

Project: Wells Ranch
 Site: A Section 30
 Well: Roth A31-730
 Wellbore: Roth A31-730
 Design: Plan #2

Northern Region - DJ Basin

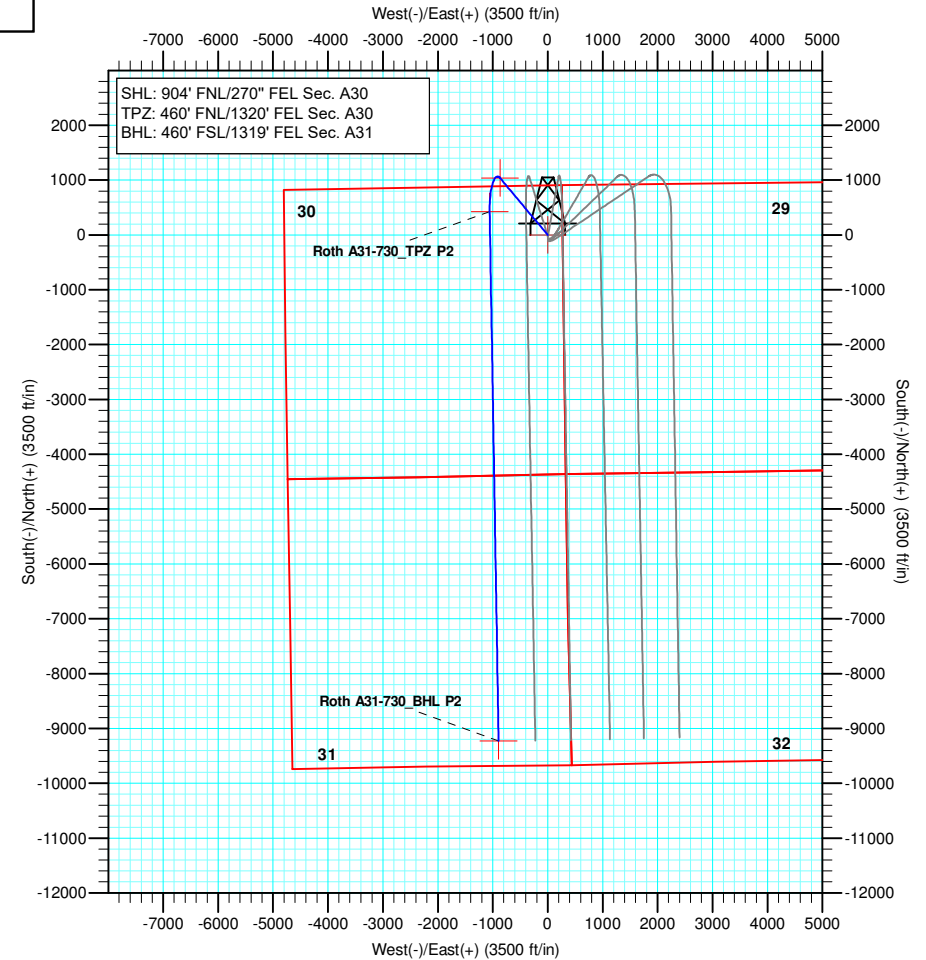
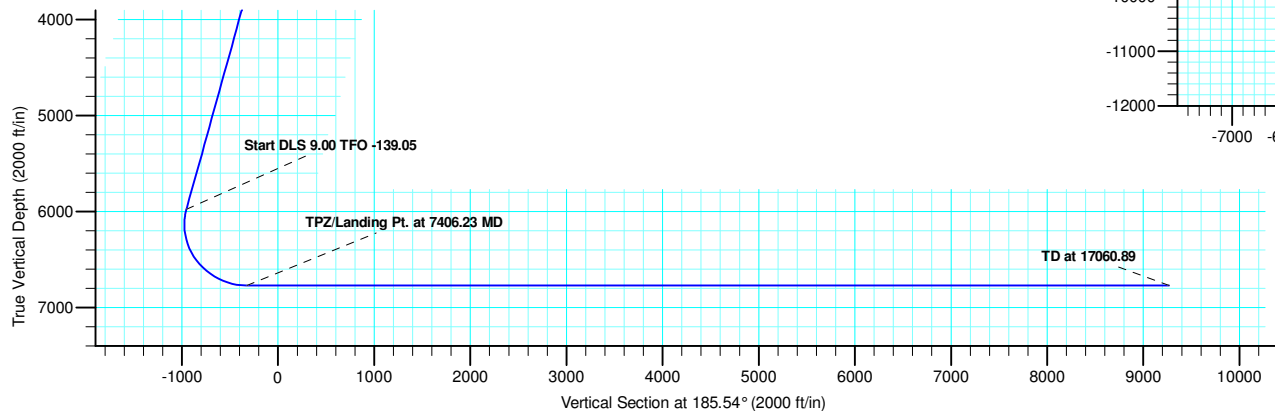
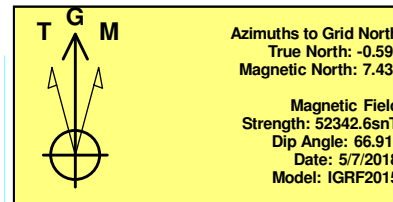
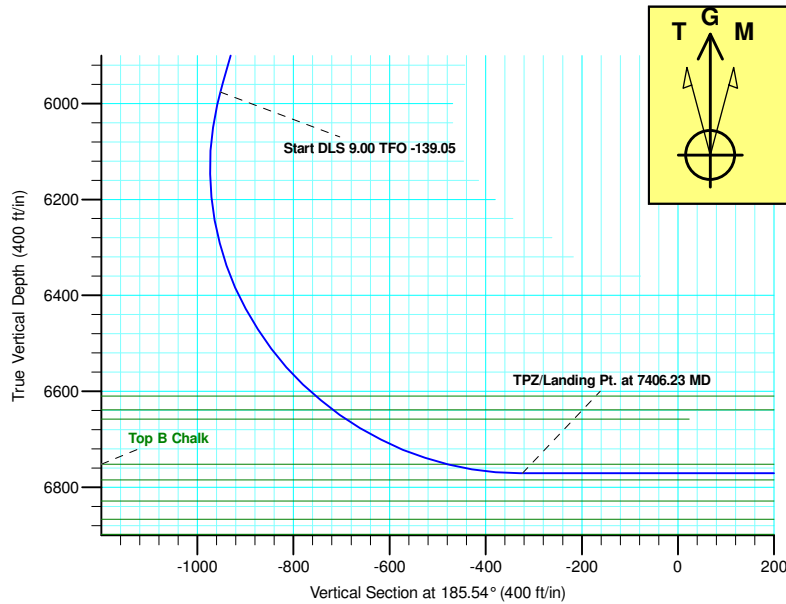
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	3077.92	21.56	320.13	3052.67	153.82	-128.47	2.00	320.13	-140.71	
4	6221.63	21.56	320.13	5976.45	1040.43	-868.95	0.00	0.00	-951.76	
5	7406.23	90.00	179.04	6771.00	427.17	-1055.87	9.00	-139.05	-323.33	Roth A31-730_TPZ P2
6	17060.89	90.00	179.04	6771.00	-9226.13	-894.11	0.00	0.00	9269.35	Roth A31-730_BHL P2

WELL DETAILS: Roth A31-730

+N/-S	+E/-W	Northing	Ground Level: Easting	4698.00 Latitude	Longitude	Slot
0.00	0.00	1412363.13	3254695.01	40.4617300	-104.5846600	



Plan: Plan #2 (Roth A31-730/Roth A31-730)

Created By: Shelly Peterkin Date: 11:00, May 11 2020

Northern Region - DJ Basin

**Wells Ranch
A Section 30
Roth A31-730**

Roth A31-730

Plan: Plan #2

Standard Planning Report

11 May, 2020

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-730		
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 A31-730			
Well Position	+N/-S	4,029.83 ft	Northing:	1,412,363.13 usft
	+E/-W	4,267.82 ft	Easting:	3,254,695.02 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 40.4617300
				Longitude: -104.5846600
				Ground Level: 4,698.00 ft

Wellbore	Roth A31-730				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/7/2018	8.03	66.91	52,342.61218129

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	185.54

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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,077.92	21.56	320.13	3,052.67	153.82	-128.47	2.00	2.00	0.00	320.13	
6,221.63	21.56	320.13	5,976.45	1,040.43	-868.95	0.00	0.00	0.00	0.00	
7,406.23	90.00	179.04	6,771.00	427.17	-1,055.87	9.00	5.78	-11.91	-139.05	Roth A31-730_TPZ P.
17,060.89	90.00	179.04	6,771.00	-9,226.13	-894.11	0.00	0.00	0.00	0.00	Roth A31-730_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 A31-730	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-730		
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
374.00	0.00	0.00	374.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
447.00	0.00	0.00	447.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
Start Build 2.00									
2,100.00	2.00	320.13	2,099.98	1.34	-1.12	-1.23	2.00	2.00	0.00
2,200.00	4.00	320.13	2,199.84	5.36	-4.47	-4.90	2.00	2.00	0.00
2,300.00	6.00	320.13	2,299.45	12.05	-10.06	-11.02	2.00	2.00	0.00
2,400.00	8.00	320.13	2,398.70	21.40	-17.87	-19.57	2.00	2.00	0.00
2,500.00	10.00	320.13	2,497.47	33.40	-27.90	-30.56	2.00	2.00	0.00
2,600.00	12.00	320.13	2,595.62	48.05	-40.13	-43.95	2.00	2.00	0.00
2,700.00	14.00	320.13	2,693.06	65.31	-54.55	-59.75	2.00	2.00	0.00
2,800.00	16.00	320.13	2,789.64	85.18	-71.14	-77.92	2.00	2.00	0.00
2,900.00	18.00	320.13	2,885.27	107.62	-89.88	-98.44	2.00	2.00	0.00
3,000.00	20.00	320.13	2,979.82	132.60	-110.75	-121.30	2.00	2.00	0.00
3,077.92	21.56	320.13	3,052.67	153.82	-128.47	-140.71	2.00	2.00	0.00
Start 3143.70 hold at 3077.92 MD									
3,100.00	21.56	320.13	3,073.20	160.05	-133.67	-146.41	0.00	0.00	0.00
3,200.00	21.56	320.13	3,166.20	188.25	-157.22	-172.21	0.00	0.00	0.00
3,300.00	21.56	320.13	3,259.21	216.45	-180.78	-198.01	0.00	0.00	0.00
3,400.00	21.56	320.13	3,352.21	244.65	-204.33	-223.80	0.00	0.00	0.00
3,500.00	21.56	320.13	3,445.22	272.86	-227.89	-249.60	0.00	0.00	0.00
3,600.00	21.56	320.13	3,538.22	301.06	-251.44	-275.40	0.00	0.00	0.00
3,630.94	21.56	320.13	3,567.00	309.79	-258.73	-283.39	0.00	0.00	0.00
Parkman									
3,700.00	21.56	320.13	3,631.23	329.26	-274.99	-301.20	0.00	0.00	0.00
3,800.00	21.56	320.13	3,724.23	357.47	-298.55	-327.00	0.00	0.00	0.00
3,900.00	21.56	320.13	3,817.23	385.67	-322.10	-352.80	0.00	0.00	0.00
4,000.00	21.56	320.13	3,910.24	413.87	-345.66	-378.60	0.00	0.00	0.00
4,100.00	21.56	320.13	4,003.24	442.07	-369.21	-404.40	0.00	0.00	0.00

Noble Energy

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Site:	A Section 30	North Reference:	Grid
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Wellbore:	Roth A31-730		
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	21.56	320.13	4,096.25	470.28	-392.77	-430.20	0.00	0.00	0.00
4,207.26	21.56	320.13	4,103.00	472.32	-394.48	-432.07	0.00	0.00	0.00
Sussex									
4,300.00	21.56	320.13	4,189.25	498.48	-416.32	-456.00	0.00	0.00	0.00
4,400.00	21.56	320.13	4,282.26	526.68	-439.88	-481.80	0.00	0.00	0.00
4,500.00	21.56	320.13	4,375.26	554.88	-463.43	-507.59	0.00	0.00	0.00
4,600.00	21.56	320.13	4,468.26	583.09	-486.98	-533.39	0.00	0.00	0.00
4,700.00	21.56	320.13	4,561.27	611.29	-510.54	-559.19	0.00	0.00	0.00
4,800.00	21.56	320.13	4,654.27	639.49	-534.09	-584.99	0.00	0.00	0.00
4,900.00	21.56	320.13	4,747.28	667.70	-557.65	-610.79	0.00	0.00	0.00
5,000.00	21.56	320.13	4,840.28	695.90	-581.20	-636.59	0.00	0.00	0.00
5,053.46	21.56	320.13	4,890.00	710.97	-593.79	-650.38	0.00	0.00	0.00
Shannon									
5,100.00	21.56	320.13	4,933.29	724.10	-604.76	-662.39	0.00	0.00	0.00
5,200.00	21.56	320.13	5,026.29	752.30	-628.31	-688.19	0.00	0.00	0.00
5,300.00	21.56	320.13	5,119.29	780.51	-651.87	-713.99	0.00	0.00	0.00
5,400.00	21.56	320.13	5,212.30	808.71	-675.42	-739.79	0.00	0.00	0.00
5,500.00	21.56	320.13	5,305.30	836.91	-698.97	-765.59	0.00	0.00	0.00
5,600.00	21.56	320.13	5,398.31	865.11	-722.53	-791.39	0.00	0.00	0.00
5,700.00	21.56	320.13	5,491.31	893.32	-746.08	-817.18	0.00	0.00	0.00
5,800.00	21.56	320.13	5,584.32	921.52	-769.64	-842.98	0.00	0.00	0.00
5,900.00	21.56	320.13	5,677.32	949.72	-793.19	-868.78	0.00	0.00	0.00
6,000.00	21.56	320.13	5,770.32	977.92	-816.75	-894.58	0.00	0.00	0.00
6,100.00	21.56	320.13	5,863.33	1,006.13	-840.30	-920.38	0.00	0.00	0.00
6,129.75	21.56	320.13	5,891.00	1,014.52	-847.31	-928.06	0.00	0.00	0.00
Teepee Buttes									
6,200.00	21.56	320.13	5,956.33	1,034.33	-863.86	-946.18	0.00	0.00	0.00
6,221.63	21.56	320.13	5,976.45	1,040.43	-868.95	-951.76	0.00	0.00	0.00
Start DLS 9.00 TFO -139.05									
6,250.00	19.70	315.16	6,003.00	1,047.82	-875.66	-958.47	9.00	-6.56	-17.52
6,300.00	16.85	304.01	6,050.49	1,057.85	-887.62	-967.30	9.00	-5.70	-22.31
6,350.00	14.81	289.23	6,098.61	1,064.02	-899.66	-972.27	9.00	-4.07	-29.56
6,400.00	13.95	271.37	6,147.07	1,066.26	-911.73	-973.35	9.00	-1.72	-35.72
6,450.00	14.47	253.08	6,195.56	1,064.59	-923.74	-970.52	9.00	1.05	-36.57
6,500.00	16.25	237.41	6,243.80	1,059.00	-935.61	-963.82	9.00	3.55	-31.36
6,550.00	18.93	225.39	6,291.47	1,049.53	-947.28	-953.26	9.00	5.36	-24.03
6,600.00	22.19	216.52	6,338.29	1,036.24	-958.68	-938.94	9.00	6.52	-17.75
6,650.00	25.81	209.92	6,383.97	1,019.21	-969.73	-920.92	9.00	7.24	-13.20
6,700.00	29.65	204.88	6,428.23	998.55	-980.37	-899.33	9.00	7.69	-10.07
6,750.00	33.65	200.93	6,470.79	974.38	-990.53	-874.29	9.00	7.99	-7.91
6,800.00	37.74	197.74	6,511.39	946.85	-1,000.14	-845.97	9.00	8.19	-6.39
6,850.00	41.91	195.09	6,549.78	916.14	-1,009.16	-814.52	9.00	8.34	-5.30
6,900.00	46.13	192.84	6,585.73	882.42	-1,017.51	-780.16	9.00	8.44	-4.50
6,936.05	49.20	191.41	6,610.00	856.37	-1,023.10	-753.69	9.00	8.51	-3.97
Sharon Springs									
6,950.00	50.39	190.89	6,619.01	845.92	-1,025.16	-743.09	9.00	8.54	-3.72
6,982.31	53.16	189.75	6,639.00	820.94	-1,029.70	-717.79	9.00	8.57	-3.51
Top A Chalk									
7,000.00	54.68	189.17	6,649.42	806.84	-1,032.05	-703.53	9.00	8.59	-3.32
7,015.09	55.98	188.68	6,658.00	794.58	-1,033.98	-691.14	9.00	8.61	-3.20
Top A Marl									
7,050.00	58.99	187.62	6,676.76	765.45	-1,038.15	-661.74	9.00	8.62	-3.05
7,100.00	63.32	186.20	6,700.88	721.98	-1,043.40	-617.97	9.00	8.65	-2.83

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-730		
Design:	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,150.00	67.66	184.89	6,721.62	676.71	-1,047.79	-572.49	9.00	8.68	-2.62
7,200.00	72.00	183.66	6,738.86	629.92	-1,051.29	-525.58	9.00	8.70	-2.46
7,247.95	76.18	182.54	6,752.00	583.89	-1,053.78	-479.52	9.00	8.71	-2.34
Top B Chalk									
7,250.00	76.36	182.49	6,752.49	581.90	-1,053.86	-477.53	9.00	8.72	-2.30
7,300.00	80.72	181.36	6,762.42	532.93	-1,055.51	-428.64	9.00	8.72	-2.26
7,350.00	85.09	180.26	6,768.59	483.33	-1,056.21	-379.20	9.00	8.73	-2.20
7,400.00	89.46	179.18	6,770.97	433.40	-1,055.96	-329.53	9.00	8.73	-2.17
7,406.23	90.00	179.04	6,771.00	427.17	-1,055.87	-323.33	9.00	8.74	-2.17
TPZ/Landing Pt. at 7406.23 MD									
7,500.00	90.00	179.04	6,771.00	333.42	-1,054.29	-230.17	0.00	0.00	0.00
7,600.00	90.00	179.04	6,771.00	233.43	-1,052.62	-130.81	0.00	0.00	0.00
7,700.00	90.00	179.04	6,771.00	133.45	-1,050.94	-31.45	0.00	0.00	0.00
7,800.00	90.00	179.04	6,771.00	33.46	-1,049.27	67.91	0.00	0.00	0.00
7,900.00	90.00	179.04	6,771.00	-66.53	-1,047.59	167.27	0.00	0.00	0.00
8,000.00	90.00	179.04	6,771.00	-166.51	-1,045.92	266.62	0.00	0.00	0.00
8,100.00	90.00	179.04	6,771.00	-266.50	-1,044.24	365.98	0.00	0.00	0.00
8,200.00	90.00	179.04	6,771.00	-366.48	-1,042.57	465.34	0.00	0.00	0.00
8,300.00	90.00	179.04	6,771.00	-466.47	-1,040.89	564.70	0.00	0.00	0.00
8,400.00	90.00	179.04	6,771.00	-566.46	-1,039.22	664.06	0.00	0.00	0.00
8,500.00	90.00	179.04	6,771.00	-666.44	-1,037.54	763.41	0.00	0.00	0.00
8,600.00	90.00	179.04	6,771.00	-766.43	-1,035.87	862.77	0.00	0.00	0.00
8,700.00	90.00	179.04	6,771.00	-866.41	-1,034.19	962.13	0.00	0.00	0.00
8,800.00	90.00	179.04	6,771.00	-966.40	-1,032.51	1,061.49	0.00	0.00	0.00
8,900.00	90.00	179.04	6,771.00	-1,066.39	-1,030.84	1,160.85	0.00	0.00	0.00
9,000.00	90.00	179.04	6,771.00	-1,166.37	-1,029.16	1,260.20	0.00	0.00	0.00
9,100.00	90.00	179.04	6,771.00	-1,266.36	-1,027.49	1,359.56	0.00	0.00	0.00
9,200.00	90.00	179.04	6,771.00	-1,366.34	-1,025.81	1,458.92	0.00	0.00	0.00
9,300.00	90.00	179.04	6,771.00	-1,466.33	-1,024.14	1,558.28	0.00	0.00	0.00
9,400.00	90.00	179.04	6,771.00	-1,566.32	-1,022.46	1,657.64	0.00	0.00	0.00
9,500.00	90.00	179.04	6,771.00	-1,666.30	-1,020.79	1,757.00	0.00	0.00	0.00
9,600.00	90.00	179.04	6,771.00	-1,766.29	-1,019.11	1,856.35	0.00	0.00	0.00
9,700.00	90.00	179.04	6,771.00	-1,866.27	-1,017.44	1,955.71	0.00	0.00	0.00
9,800.00	90.00	179.04	6,771.00	-1,966.26	-1,015.76	2,055.07	0.00	0.00	0.00
9,900.00	90.00	179.04	6,771.00	-2,066.25	-1,014.08	2,154.43	0.00	0.00	0.00
10,000.00	90.00	179.04	6,771.00	-2,166.23	-1,012.41	2,253.79	0.00	0.00	0.00
10,100.00	90.00	179.04	6,771.00	-2,266.22	-1,010.73	2,353.14	0.00	0.00	0.00
10,200.00	90.00	179.04	6,771.00	-2,366.20	-1,009.06	2,452.50	0.00	0.00	0.00
10,300.00	90.00	179.04	6,771.00	-2,466.19	-1,007.38	2,551.86	0.00	0.00	0.00
10,400.00	90.00	179.04	6,771.00	-2,566.18	-1,005.71	2,651.22	0.00	0.00	0.00
10,500.00	90.00	179.04	6,771.00	-2,666.16	-1,004.03	2,750.58	0.00	0.00	0.00
10,600.00	90.00	179.04	6,771.00	-2,766.15	-1,002.36	2,849.93	0.00	0.00	0.00
10,700.00	90.00	179.04	6,771.00	-2,866.13	-1,000.68	2,949.29	0.00	0.00	0.00
10,800.00	90.00	179.04	6,771.00	-2,966.12	-999.01	3,048.65	0.00	0.00	0.00
10,900.00	90.00	179.04	6,771.00	-3,066.11	-997.33	3,148.01	0.00	0.00	0.00
11,000.00	90.00	179.04	6,771.00	-3,166.09	-995.65	3,247.37	0.00	0.00	0.00
11,100.00	90.00	179.04	6,771.00	-3,266.08	-993.98	3,346.73	0.00	0.00	0.00
11,200.00	90.00	179.04	6,771.00	-3,366.06	-992.30	3,446.08	0.00	0.00	0.00
11,300.00	90.00	179.04	6,771.00	-3,466.05	-990.63	3,545.44	0.00	0.00	0.00
11,400.00	90.00	179.04	6,771.00	-3,566.03	-988.95	3,644.80	0.00	0.00	0.00
11,500.00	90.00	179.04	6,771.00	-3,666.02	-987.28	3,744.16	0.00	0.00	0.00
11,600.00	90.00	179.04	6,771.00	-3,766.01	-985.60	3,843.52	0.00	0.00	0.00
11,700.00	90.00	179.04	6,771.00	-3,865.99	-983.93	3,942.87	0.00	0.00	0.00
11,800.00	90.00	179.04	6,771.00	-3,965.98	-982.25	4,042.23	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-730		
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)
11,900.00	90.00	179.04	6,771.00	-4,065.96	-980.58	4,141.59	0.00	0.00	0.00
12,000.00	90.00	179.04	6,771.00	-4,165.95	-978.90	4,240.95	0.00	0.00	0.00
12,100.00	90.00	179.04	6,771.00	-4,265.94	-977.23	4,340.31	0.00	0.00	0.00
12,200.00	90.00	179.04	6,771.00	-4,365.92	-975.55	4,439.66	0.00	0.00	0.00
12,300.00	90.00	179.04	6,771.00	-4,465.91	-973.87	4,539.02	0.00	0.00	0.00
12,400.00	90.00	179.04	6,771.00	-4,565.89	-972.20	4,638.38	0.00	0.00	0.00
12,500.00	90.00	179.04	6,771.00	-4,665.88	-970.52	4,737.74	0.00	0.00	0.00
12,600.00	90.00	179.04	6,771.00	-4,765.87	-968.85	4,837.10	0.00	0.00	0.00
12,700.00	90.00	179.04	6,771.00	-4,865.85	-967.17	4,936.46	0.00	0.00	0.00
12,800.00	90.00	179.04	6,771.00	-4,965.84	-965.50	5,035.81	0.00	0.00	0.00
12,900.00	90.00	179.04	6,771.00	-5,065.82	-963.82	5,135.17	0.00	0.00	0.00
13,000.00	90.00	179.04	6,771.00	-5,165.81	-962.15	5,234.53	0.00	0.00	0.00
13,100.00	90.00	179.04	6,771.00	-5,265.80	-960.47	5,333.89	0.00	0.00	0.00
13,200.00	90.00	179.04	6,771.00	-5,365.78	-958.80	5,433.25	0.00	0.00	0.00
13,300.00	90.00	179.04	6,771.00	-5,465.77	-957.12	5,532.60	0.00	0.00	0.00
13,400.00	90.00	179.04	6,771.00	-5,565.75	-955.44	5,631.96	0.00	0.00	0.00
13,500.00	90.00	179.04	6,771.00	-5,665.74	-953.77	5,731.32	0.00	0.00	0.00
13,600.00	90.00	179.04	6,771.00	-5,765.73	-952.09	5,830.68	0.00	0.00	0.00
13,700.00	90.00	179.04	6,771.00	-5,865.71	-950.42	5,930.04	0.00	0.00	0.00
13,800.00	90.00	179.04	6,771.00	-5,965.70	-948.74	6,029.39	0.00	0.00	0.00
13,900.00	90.00	179.04	6,771.00	-6,065.68	-947.07	6,128.75	0.00	0.00	0.00
14,000.00	90.00	179.04	6,771.00	-6,165.67	-945.39	6,228.11	0.00	0.00	0.00
14,100.00	90.00	179.04	6,771.00	-6,265.66	-943.72	6,327.47	0.00	0.00	0.00
14,200.00	90.00	179.04	6,771.00	-6,365.64	-942.04	6,426.83	0.00	0.00	0.00
14,300.00	90.00	179.04	6,771.00	-6,465.63	-940.37	6,526.19	0.00	0.00	0.00
14,400.00	90.00	179.04	6,771.00	-6,565.61	-938.69	6,625.54	0.00	0.00	0.00
14,500.00	90.00	179.04	6,771.00	-6,665.60	-937.01	6,724.90	0.00	0.00	0.00
14,600.00	90.00	179.04	6,771.00	-6,765.59	-935.34	6,824.26	0.00	0.00	0.00
14,700.00	90.00	179.04	6,771.00	-6,865.57	-933.66	6,923.62	0.00	0.00	0.00
14,800.00	90.00	179.04	6,771.00	-6,965.56	-931.99	7,022.98	0.00	0.00	0.00
14,900.00	90.00	179.04	6,771.00	-7,065.54	-930.31	7,122.33	0.00	0.00	0.00
15,000.00	90.00	179.04	6,771.00	-7,165.53	-928.64	7,221.69	0.00	0.00	0.00
15,100.00	90.00	179.04	6,771.00	-7,265.52	-926.96	7,321.05	0.00	0.00	0.00
15,200.00	90.00	179.04	6,771.00	-7,365.50	-925.29	7,420.41	0.00	0.00	0.00
15,300.00	90.00	179.04	6,771.00	-7,465.49	-923.61	7,519.77	0.00	0.00	0.00
15,400.00	90.00	179.04	6,771.00	-7,565.47	-921.94	7,619.12	0.00	0.00	0.00
15,500.00	90.00	179.04	6,771.00	-7,665.46	-920.26	7,718.48	0.00	0.00	0.00
15,600.00	90.00	179.04	6,771.00	-7,765.45	-918.59	7,817.84	0.00	0.00	0.00
15,700.00	90.00	179.04	6,771.00	-7,865.43	-916.91	7,917.20	0.00	0.00	0.00
15,800.00	90.00	179.04	6,771.00	-7,965.42	-915.23	8,016.56	0.00	0.00	0.00
15,900.00	90.00	179.04	6,771.00	-8,065.40	-913.56	8,115.92	0.00	0.00	0.00
16,000.00	90.00	179.04	6,771.00	-8,165.39	-911.88	8,215.27	0.00	0.00	0.00
16,100.00	90.00	179.04	6,771.00	-8,265.38	-910.21	8,314.63	0.00	0.00	0.00
16,200.00	90.00	179.04	6,771.00	-8,365.36	-908.53	8,413.99	0.00	0.00	0.00
16,300.00	90.00	179.04	6,771.00	-8,465.35	-906.86	8,513.35	0.00	0.00	0.00
16,400.00	90.00	179.04	6,771.00	-8,565.33	-905.18	8,612.71	0.00	0.00	0.00
16,500.00	90.00	179.04	6,771.00	-8,665.32	-903.51	8,712.06	0.00	0.00	0.00
16,600.00	90.00	179.04	6,771.00	-8,765.31	-901.83	8,811.42	0.00	0.00	0.00
16,700.00	90.00	179.04	6,771.00	-8,865.29	-900.16	8,910.78	0.00	0.00	0.00
16,800.00	90.00	179.04	6,771.00	-8,965.28	-898.48	9,010.14	0.00	0.00	0.00
16,900.00	90.00	179.04	6,771.00	-9,065.26	-896.80	9,109.50	0.00	0.00	0.00
17,000.00	90.00	179.04	6,771.00	-9,165.25	-895.13	9,208.85	0.00	0.00	0.00
17,060.89	90.00	179.04	6,771.00	-9,226.13	-894.11	9,269.35	0.00	0.00	0.00

Noble Energy
Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-730		
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)
TD at 17060.89									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Roth A31-730_SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,412,363.14	3,254,695.02	40.4617300	-104.5846600
Roth A31-730_KOP P2 - plan hits target center - Point	0.00	0.00	5,976.45	1,040.43	-868.95	1,413,403.56	3,253,826.07	40.4646104	-104.5877442
Roth A31-730_TPZ P2 - plan hits target center - Point	0.00	0.00	6,771.00	427.17	-1,055.87	1,412,790.30	3,253,639.15	40.4629323	-104.5884386
Roth A31-730_BHL P2 - plan hits target center - Point	0.00	0.00	6,771.00	-9,226.13	-894.11	1,403,137.02	3,253,800.91	40.4364311	-104.5882140

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
374.00	374.00	Pierre				
447.00	447.00	Upper Pierre Aquifer Top				
1,464.00	1,464.00	Upper Pierre Aquifer Base				
3,630.94	3,567.00	Parkman				
4,207.26	4,103.00	Sussex				
5,053.46	4,890.00	Shannon				
6,129.75	5,891.00	Teepee Buttes				
6,936.05	6,610.00	Sharon Springs				
6,982.31	6,639.00	Top A Chalk				
7,015.09	6,658.00	Top A Marl				
7,247.95	6,752.00	Top B Chalk				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,000.00	2,000.00	0.00	0.00	Start Build 2.00
3,077.92	3,052.67	153.82	-128.47	Start 3143.70 hold at 3077.92 MD
6,221.63	5,976.45	1,040.43	-868.95	Start DLS 9.00 TFO -139.05
7,406.23	6,771.00	427.17	-1,055.87	TPZ/Landing Pt. at 7406.23 MD
17,060.89	6,771.00	-9,226.13	-894.11	TD at 17060.89

Northern Region - DJ Basin

Wells Ranch

A Section 30

Roth A31-730

Roth A31-730

Plan #2

Anticollision Summary Report

11 May, 2020

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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 A31-730)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	17,060.88	Plan #2 (Roth A31-730)	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 -	6,472.04	6,161.88	4,813.63	4,671.15	33.784	CC
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,500.00	6,188.80	4,814.21	4,671.10	33.641	ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,850.00	6,494.78	4,916.03	4,766.20	32.811	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,438.52	6,107.03	3,180.90	3,140.39	78.524	CC, ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,700.00	6,371.19	3,232.69	3,190.68	76.951	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,363.04	5,977.78	3,148.55	3,108.32	78.270	CC, ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,650.00	6,334.68	3,209.68	3,167.53	76.139	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D	6,584.92	6,304.32	4,545.42	4,504.27	110.473	CC, ES
Luppens 05-19 - Original Drilling - Original Drilling - As D	7,300.00	7,300.00	4,812.80	4,767.45	106.142	SF
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	6,586.80	6,292.63	2,769.90	2,727.71	65.651	CC
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	6,600.00	6,304.93	2,770.00	2,727.66	65.428	ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,587.76	2,844.86	2,799.40	62.570	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,843.04	6,490.58	2,057.88	1,908.18	13.747	CC
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,850.00	6,495.78	2,057.90	1,908.09	13.736	ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,000.00	6,595.42	2,068.16	1,916.23	13.613	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	6,681.23	6,440.38	2,968.62	2,920.80	62.077	CC, ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,641.74	3,001.72	2,952.77	61.316	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,554.73	6,390.48	3,638.71	3,596.34	85.879	CC, ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,800.00	6,634.00	3,674.41	3,630.99	84.615	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,623.69	6,377.61	2,250.81	2,209.05	53.897	CC, ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,850.00	6,582.32	2,275.99	2,233.27	53.274	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,501.19	6,292.20	2,763.20	2,714.19	56.378	CC, ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,650.00	6,439.35	2,778.30	2,728.63	55.936	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,651.58	6,354.75	3,572.53	3,531.09	86.213	CC, ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,950.00	6,607.29	3,615.28	3,572.59	84.683	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	6,827.96	6,472.15	3,354.31	3,205.00	22.466	CC
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	6,850.00	6,488.78	3,354.48	3,204.82	22.414	ES
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	7,100.00	6,639.88	3,382.28	3,229.39	22.122	SF
Roth A31-740 - Roth A31-740 - APD-Rev 0	7,404.59	7,308.58	683.44	642.08	16.524	CC
Roth A31-740 - Roth A31-740 - APD-Rev 0	17,060.89	16,960.37	692.29	520.04	4.019	ES, SF
Roth A31-748 - Roth A31-748 - APD-Rev 0	7,389.42	7,191.34	1,106.19	1,065.63	27.277	CC
Roth A31-748 - Roth A31-748 - APD-Rev 0	17,060.89	16,858.49	1,213.17	1,041.23	7.056	ES, SF
Roth A31-760 - Roth A31-760 - APD-Rev 0	7,403.65	7,212.21	1,735.21	1,695.34	43.526	CC
Roth A31-760 - Roth A31-760 - APD-Rev 0	17,060.89	16,861.60	1,741.01	1,569.00	10.122	ES, SF
Roth A31-770 - Roth A31-770 - APD-Rev 0	6,951.18	6,314.48	2,410.11	2,371.97	63.183	CC
Roth A31-770 - Roth A31-770 - APD-Rev 0	17,060.89	16,886.72	2,440.26	2,268.09	14.174	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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 A31-780 - Roth A31-780 - APD-Rev 0	5,496.79	4,576.57	2,862.59	2,834.55	102.115	CC
Roth A31-780 - Roth A31-780 - APD-Rev 0	5,700.00	4,765.85	2,863.54	2,834.04	97.062	ES
Roth A31-780 - Roth A31-780 - APD-Rev 0	17,060.89	17,045.89	3,079.38	2,907.30	17.895	SF
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	4,099.30	3,063.12	2,947.13	2,928.88	161.470	CC
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	4,100.00	3,063.46	2,947.13	2,928.88	161.446	ES
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	17,060.89	17,254.35	3,762.48	3,590.03	21.817	SF
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,514.35	6,208.55	5,482.91	5,339.54	38.241	CC, ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,950.00	6,570.01	5,604.76	5,453.47	37.047	SF
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,356.71	6,076.87	1,725.80	1,685.21	42.512	CC, ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,207.64	1,741.91	1,700.39	41.962	SF
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,678.95	6,339.40	1,173.92	1,132.24	28.163	CC, ES
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,800.00	6,448.30	1,180.75	1,138.53	27.968	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,227.69	4,070.00	1,745.39	1,652.99	18.888	CC, ES, SF
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,414.49	6,229.27	1,214.89	1,173.23	29.158	CC, ES
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,297.76	1,221.28	1,179.02	28.896	SF
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	1,771.88			
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	61.46	1,772.07	1,771.84	7,630.986	ES
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,648.55	2,429.86	2,384.44	53.503	SF
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,258.27	6,133.18	1,533.23	1,491.29	36.558	CC, ES
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,400.00	6,266.78	1,545.08	1,502.39	36.195	SF
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	75.05	1,771.48	1,771.22	6,919.447	CC
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	200.00	169.70	1,771.72	1,770.82	1,977.067	ES
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	6,550.00	6,576.57	2,536.18	2,491.03	56.176	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,483.62	6,166.34	2,394.31	2,353.54	58.726	CC, ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,700.00	6,381.90	2,426.73	2,384.75	57.815	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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)	Between Ellipses (ft)	Separation Factor	Warning
A Section 20						
Offset Well - Wellbore - Design						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	1,532.16	1,514.31	5,135.51	5,125.26	501.179	CC
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	2,000.00	1,959.32	5,136.70	5,123.27	382.381	ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,150.00	6,716.94	6,013.33	5,969.57	137.416	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	2,054.68	2,051.48	4,544.44	4,530.58	327.823	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	2,300.00	2,316.47	4,544.79	4,529.86	304.553	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	7,250.00	7,250.00	5,152.32	5,106.51	112.474	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,000.00	1,972.00	3,849.72	3,803.52	83.330	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,200.00	2,171.84	3,851.90	3,801.51	76.440	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,150.00	6,693.62	4,685.01	4,530.66	30.354	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	2,318.18	2,414.05	5,892.93	5,877.65	385.776	CC
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	2,400.00	2,491.13	5,893.13	5,877.54	377.965	ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,513.28	6,464.93	6,421.88	150.201	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,337.62	6,059.49	717.51	675.51	17.081	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,350.00	6,071.41	717.63	675.45	17.014	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,500.00	6,216.26	737.33	693.15	16.690	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	2,000.00	2,009.00	4,380.41	4,366.86	323.361	CC, ES
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,060.89	16,906.69	5,827.58	5,655.48	33.861	SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	2,000.00	2,008.00	4,359.75	4,346.22	322.259	CC, ES
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,060.89	16,790.15	5,255.23	5,083.98	30.687	SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	2,938.21	3,527.42	4,283.72	4,267.31	260.964	CC, ES
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,060.89	16,877.36	4,632.87	4,460.93	26.945	SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	5,884.40	6,868.60	3,853.31	3,815.20	101.103	CC
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,060.89	16,949.50	3,917.03	3,745.33	22.813	ES, SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	2,000.00	2,009.00	4,394.77	4,381.22	324.412	CC, ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	17,060.89	17,316.90	7,178.19	7,005.17	41.488	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	2,000.00	2,009.00	4,387.58	4,374.03	323.886	CC, ES
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	17,060.89	17,008.18	6,541.88	6,369.40	37.928	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	4,883.39	5,062.89	6,598.93	6,567.69	211.267	CC
Simmons 42-20D - Original Drilling - Original Drilling - As	5,000.00	5,145.49	6,599.29	6,567.32	206.402	ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,950.00	6,653.11	6,879.13	6,835.57	157.931	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	180.06	154.06	2,739.14	2,738.38	3,575.226	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	2,100.00	2,066.27	2,744.16	2,730.18	196.236	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,850.00	6,596.52	3,321.78	3,278.56	76.859	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	4,484.94	4,312.08	3,368.12	3,340.99	124.141	CC
Stump A20-11 - Original Drilling - Original Drilling - As Dr	4,700.00	4,530.67	3,368.77	3,340.09	117.434	ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,850.00	6,570.36	3,615.04	3,571.70	83.417	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,228.14	5,854.00	2,840.25	2,800.79	71.984	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,550.00	6,250.34	2,895.67	2,853.79	69.151	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	3,777.96	3,660.40	1,691.49	1,669.03	75.306	CC
Stump A20-13 - Original Drilling - Original Drilling - As Dr	3,900.00	3,772.41	1,692.06	1,668.82	72.817	ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,550.00	6,270.25	1,970.73	1,929.17	47.410	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,405.76	6,222.23	1,237.06	1,195.59	29.830	CC, ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,297.52	1,244.80	1,202.68	29.556	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	0.00	0.00	1,768.34			
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	61.73	1,768.52	1,768.29	7,595.693	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,600.00	6,648.28	2,460.06	2,414.76	54.303	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,236.85	6,114.75	1,496.87	1,454.52	35.344	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,400.00	6,268.50	1,511.55	1,468.42	35.047	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	100.00	76.54	1,762.90	1,762.64	6,814.936	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	200.00	171.86	1,763.03	1,762.12	1,950.552	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,534.10	2,509.43	2,464.44	55.785	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
A Section 21						
Culbreath 23-21 - Original Drilling - Original Drilling - As D	1,438.65	1,442.72	8,322.94	8,313.26	860.018	CC
Culbreath 23-21 - Original Drilling - Original Drilling - As D	2,000.00	1,980.36	8,323.97	8,310.46	616.093	ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	9,500.00	6,795.23	9,966.01	9,917.72	206.400	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	2,000.00	1,990.00	9,290.80	9,244.24	199.555	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	2,200.00	2,189.84	9,293.34	9,242.59	183.120	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,750.00	6,460.79	9,997.37	9,847.99	66.922	SF
Harper A21-618 - Harper A21-618 OH - As-Drilled	1,302.40	1,331.47	6,712.05	6,703.26	764.233	CC
Harper A21-618 - Harper A21-618 OH - As-Drilled	2,234.95	2,488.72	6,714.85	6,700.98	484.009	ES
Harper A21-618 - Harper A21-618 OH - As-Drilled	12,400.00	6,350.00	9,632.33	9,579.22	181.352	SF
Harper A21-626 - Harper A21-626 OH - As-Drilled	1,524.56	1,553.58	6,719.99	6,709.66	650.527	CC
Harper A21-626 - Harper A21-626 OH - As-Drilled	2,000.00	2,011.57	6,721.76	6,708.36	501.727	ES
Harper A21-626 - Harper A21-626 OH - As-Drilled	12,400.00	6,148.00	9,932.89	9,881.34	192.692	SF
Harper A21-631 - Harper A21-631 OH - As-Drilled	100.00	121.66	6,730.50	6,730.15	10,000.000	CC
Harper A21-631 - Harper A21-631 OH - As-Drilled	1,700.00	1,685.00	6,732.68	6,721.28	590.759	ES
Harper A21-631 - Harper A21-631 OH - As-Drilled	11,900.00	5,986.07	9,829.54	9,780.28	199.516	SF
Harper A21-637 - Harper A21-637 OH - As-Drilled	1,718.09	1,747.12	6,730.49	6,718.80	575.919	CC
Harper A21-637 - Harper A21-637 OH - As-Drilled	2,000.00	2,010.21	6,731.38	6,717.98	502.329	ES
Harper A21-637 - Harper A21-637 OH - As-Drilled	11,000.00	11,000.00	9,477.16	9,413.69	149.304	SF
Harper A21-643 - Harper A21-643 OH - As-Drilled	2,753.23	3,255.53	7,218.74	7,203.24	465.608	CC, ES
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,600.00	6,154.00	7,494.78	7,458.43	206.190	SF
Harper A21-649 - Harper A21-649 OH - As-Drilled	1,906.49	1,950.59	7,270.74	7,257.72	558.702	CC
Harper A21-649 - Harper A21-649 OH - As-Drilled	2,100.00	2,173.27	7,270.86	7,257.24	533.851	ES
Harper A21-649 - Harper A21-649 OH - As-Drilled	6,600.00	6,250.00	7,602.64	7,565.94	207.150	SF
Harper A21-656 - Harper A21-656 OH - As-Drilled	1,883.90	1,928.00	7,277.08	7,264.18	564.235	CC
Harper A21-656 - Harper A21-656 OH - As-Drilled	1,900.00	1,928.00	7,277.10	7,264.14	561.789	ES
Harper A21-656 - Harper A21-656 OH - As-Drilled	10,500.00	10,500.00	9,719.19	9,660.83	166.544	SF
Harper A21-664 - Harper A21-664 OH - As-Drilled	0.00	23.52	7,295.93			
Harper A21-664 - Harper A21-664 OH - As-Drilled	2,009.84	2,059.63	7,296.51	7,283.05	542.339	ES
Harper A21-664 - Harper A21-664 OH - As-Drilled	10,200.00	10,200.00	9,780.22	9,722.20	168.545	SF
Harper A21-669 - Harper A21-669 OH - As-Drilled	0.00	39.84	7,305.62			
Harper A21-669 - Harper A21-669 OH - As-Drilled	2,000.00	2,042.52	7,309.84	7,296.44	545.262	ES
Harper A21-669 - Harper A21-669 OH - As-Drilled	6,600.00	6,250.00	7,914.63	7,876.26	206.272	SF
Harper A21-674 - Harper A21-674 OH - As-Drilled	1,892.95	1,938.06	7,312.24	7,299.33	566.393	CC
Harper A21-674 - Harper A21-674 OH - As-Drilled	2,000.00	2,027.27	7,312.51	7,299.15	547.122	ES
Harper A21-674 - Harper A21-674 OH - As-Drilled	7,600.00	7,600.00	8,551.96	8,506.99	190.139	SF
Harper A21-681 - Harper A21-681 OH - As-Drilled	1,918.03	1,964.12	7,316.94	7,303.86	559.192	CC
Harper A21-681 - Harper A21-681 OH - As-Drilled	2,000.00	2,007.14	7,317.13	7,303.73	545.973	ES
Harper A21-681 - Harper A21-681 OH - As-Drilled	6,750.00	4,886.21	8,324.21	8,290.37	246.002	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,812.07	14,580.45	463.56	359.82	4.469	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,850.00	14,587.70	466.16	359.21	4.358	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,900.00	14,596.73	477.38	366.74	4.315	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,741.73	14,719.60	960.79	854.48	9.037	CC
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,750.00	14,721.16	960.88	854.22	9.008	ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,850.00	14,738.60	975.62	865.06	8.824	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,596.22	15,012.44	1,614.38	1,497.39	13.799	CC
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,600.00	15,013.16	1,614.40	1,497.32	13.789	ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,700.00	15,032.22	1,625.94	1,506.83	13.650	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,559.64	14,732.47	2,295.65	2,180.60	19.954	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,700.00	14,756.81	2,315.04	2,198.21	19.815	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,534.16	14,643.70	3,336.07	3,222.02	29.251	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,750.00	14,776.41	3,377.80	3,260.62	28.826	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,493.14	15,059.32	4,024.69	3,905.57	33.785	CC
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,500.00	15,063.27	4,024.74	3,905.51	33.758	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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						
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,700.00	15,138.30	4,062.50	3,941.10	33.463	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,481.28	15,689.00	4,788.36	4,687.34	47.398	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,650.00	15,689.00	4,813.41	4,711.36	47.165	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	2,000.00	2,026.00	7,343.23	7,295.94	155.301	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	2,500.00	2,523.47	7,348.35	7,290.75	127.582	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,100.00	6,726.88	7,907.30	7,752.14	50.962	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	2,000.00	2,042.00	9,401.23	9,353.63	197.486	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	2,600.00	2,637.62	9,406.75	9,346.78	156.842	ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,150.00	6,763.62	9,938.74	9,782.82	63.741	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	0.00	16.40	8,576.93			
McKee 22-21 - Original Drilling - Original Drilling - As Dril	1,600.00	1,560.21	8,583.80	8,573.15	805.867	ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	7,050.00	6,653.91	9,223.40	9,179.73	211.227	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril						Out of range
McKee 32-21 - Original Drilling - Original Drilling - As Dril	2,083.12	2,163.30	9,710.68	9,696.26	673.464	CC
McKee 32-21 - Original Drilling - Original Drilling - As Dril	2,100.00	2,177.68	9,710.69	9,696.19	669.777	ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	5,000.00	4,833.09	9,992.21	9,961.41	324.402	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	6,813.43	6,800.49	526.633	CC
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,000.00	2,000.00	6,813.49	6,799.97	504.243	ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	11,200.00	3,300.00	9,971.57	9,931.14	246.641	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	1,903.05	1,932.05	6,791.40	6,778.46	524.973	CC
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,000.00	2,000.00	6,791.46	6,777.95	502.613	ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	17,060.89	17,515.21	9,859.38	9,684.99	56.536	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	1,903.05	1,932.05	6,769.59	6,756.65	523.286	CC
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	2,000.00	2,000.00	6,769.65	6,756.14	500.998	ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	17,060.89	17,093.98	9,187.24	9,013.40	52.850	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	1,903.70	1,931.70	6,747.77	6,734.83	521.556	CC
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	2,000.00	2,000.00	6,747.83	6,734.31	499.382	ES
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	17,060.89	16,956.23	8,552.51	8,378.86	49.253	SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	1,903.05	1,932.05	6,725.86	6,712.92	519.905	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	2,000.00	2,000.00	6,725.92	6,712.41	497.760	ES
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,060.89	16,811.58	7,864.55	7,690.63	45.219	SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A						Out of range
Wells Trust 13-21 - Original Drilling - Original Drilling - As	565.03	569.05	6,739.11	6,735.55	1,890.469	CC
Wells Trust 13-21 - Original Drilling - Original Drilling - As	2,100.00	2,131.49	6,741.87	6,727.66	474.502	ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,050.00	6,637.34	7,420.86	7,377.36	170.569	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	1,150.88	1,136.90	6,209.40	6,201.81	818.269	CC
Wells Trust 14-21 - Original Drilling - Original Drilling - As	1,600.00	1,554.16	6,210.02	6,199.40	585.155	ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	11,200.00	6,747.61	8,585.84	8,530.98	156.508	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	2,004.89	1,986.28	7,080.67	7,067.13	523.135	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	12,300.00	6,585.90	9,976.86	9,917.66	168.516	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	2,000.00	1,964.00	8,766.87	8,720.84	190.441	CC
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	2,100.00	2,063.98	8,767.91	8,719.70	181.864	ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	9,400.00	6,735.00	9,993.26	9,832.61	62.203	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys						Out of range
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	2,000.00	1,959.00	7,866.44	7,820.50	171.243	CC
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	2,100.00	2,058.98	7,867.90	7,819.79	163.526	ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	12,700.00	6,730.00	8,863.68	8,682.80	49.003	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	2,046.19	2,087.43	6,483.12	6,469.15	464.313	CC
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	2,100.00	2,147.27	6,483.38	6,469.12	454.418	ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	12,500.00	6,728.17	9,082.96	9,020.87	146.300	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	1,978.81	1,948.84	6,330.14	6,316.83	475.449	CC
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,968.99	6,330.14	6,316.69	470.353	ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	13,200.00	6,854.25	8,465.36	8,396.65	123.206	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	2,000.35	1,957.08	6,667.59	6,654.16	496.465	CC, ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	13,900.00	6,564.58	8,130.35	8,056.59	110.230	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	2,033.97	2,049.88	7,248.04	7,234.22	524.452	CC
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,606.37	7,265.66	7,201.38	113.039	ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,693.93	7,919.06	7,837.22	96.757	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	0.00	0.00	7,543.18			
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	2,000.24	1,972.64	7,544.62	7,531.15	560.123	ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	12,800.00	6,558.17	9,965.89	9,901.12	153.848	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	2,022.60	2,028.08	7,610.30	7,596.58	554.988	CC, ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	13,900.00	6,550.78	9,992.03	9,920.15	139.006	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	100.00	28.10	8,418.99	8,418.82	10,000.000	CC
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	2,000.00	1,903.46	8,427.80	8,414.55	636.199	ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	15,800.00	6,685.95	9,499.25	9,411.55	108.317	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	1,646.93	1,600.00	7,601.10	7,590.15	693.712	CC
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	2,005.29	1,970.78	7,602.32	7,588.83	563.520	ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	6,538.14	9,102.31	9,021.70	112.912	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Wardlaw 20-28 - Original Drilling - Original Drilling - As D						Out of range
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	423.40	361.41	8,540.04	8,537.70	3,642.218	CC
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	2,000.00	1,905.78	8,546.71	8,533.47	645.449	ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	13,100.00	5,900.00	9,968.71	9,900.59	146.343	SF
Webster 09-28 (PR) - Original Drilling - Original Drilling -						Out of range
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	1,775.14	1,709.17	9,396.10	9,384.33	798.551	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	2,011.61	1,979.37	9,396.44	9,382.92	695.238	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	14,000.00	6,637.16	9,997.60	9,918.36	126.170	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys						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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	2,000.00	1,942.00	2,738.88	2,693.26	60.039	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	2,100.00	2,041.98	2,740.59	2,692.79	57.340	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	4,300.00	4,131.25	3,377.39	3,283.46	35.958	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	2,044.38	2,027.75	2,277.22	2,263.47	165.564	CC, ES
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,700.00	6,757.37	3,282.04	3,238.85	76.005	SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	2,000.00	1,956.00	2,566.72	2,520.84	55.944	CC
Andy 29-1 (PA) - Wellbore #1 - No Surveys	2,100.00	2,055.98	2,568.31	2,520.25	53.443	ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,300.00	6,727.00	3,356.04	3,195.62	20.920	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	1,612.65	1,571.68	1,419.35	1,408.62	132.263	CC
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	1,700.00	1,651.55	1,419.57	1,408.25	125.463	ES
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	9,100.00	6,722.68	2,084.26	2,036.50	43.641	SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	2,020.06	1,988.43	3,649.69	3,636.13	269.120	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,687.41	4,823.58	4,768.97	88.314	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	100.00	52.10	3,792.71	3,792.50	10,000.000	CC
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	2,100.00	2,098.40	3,803.00	3,788.91	269.866	ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	9,500.00	6,696.01	5,207.10	5,158.48	107.094	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	184.54	149.54	5,020.42	5,019.65	6,559.753	CC
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	900.00	832.36	5,021.75	5,016.10	889.299	ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	11,100.00	6,651.89	7,020.84	6,965.45	126.747	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	1,711.03	1,665.09	2,284.71	2,273.30	200.221	CC
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,938.43	2,286.18	2,272.81	171.030	ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,700.00	6,724.69	3,123.48	3,072.73	61.545	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,376.84	6,230.65	4,616.85	4,556.95	77.074	CC
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,400.00	6,230.72	4,616.91	4,556.86	76.885	ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,800.00	6,234.07	4,831.21	4,763.58	71.426	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,603.47	6,805.86	6,166.60	6,102.07	95.561	CC, ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	13,900.00	6,898.96	6,579.69	6,502.54	85.287	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	1,752.22	1,690.28	4,321.25	4,309.62	371.435	CC
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	1,900.00	1,823.41	4,321.43	4,308.81	342.590	ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	16,700.00	16,700.00	7,834.22	7,728.55	74.138	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	100.00	32.21	5,545.10	5,544.93	10,000.000	CC
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,936.76	5,547.44	5,534.09	415.540	ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,454.23	6,503.99	6,435.60	95.112	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,362.61	6,872.69	4,573.08	4,509.76	72.230	CC
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,400.00	6,869.06	4,573.23	4,509.71	71.993	ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	6,766.63	4,736.12	4,666.77	68.287	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,518.84	6,720.91	1,948.53	1,885.01	30.674	CC, ES
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,719.12	1,956.93	1,892.62	30.429	SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,264.56	6,720.73	1,881.68	1,826.65	34.193	CC, ES
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,500.00	6,721.68	1,896.35	1,840.38	33.884	SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,691.87	6,878.45	3,438.57	3,372.73	52.225	CC
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,878.02	3,438.58	3,372.69	52.190	ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,400.00	6,840.99	3,510.52	3,441.41	50.791	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,047.50	6,711.89	2,809.73	2,749.53	46.680	CC, ES
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,500.00	6,705.29	2,845.92	2,783.58	45.652	SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,598.93	6,712.50	3,501.34	3,444.15	61.219	CC
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,712.49	3,501.34	3,444.14	61.213	ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,710.98	3,591.81	3,530.70	58.778	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	11,637.40	6,700.98	654.07	589.81	10.178	CC, ES
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,703.95	657.05	592.15	10.123	SF
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	11,548.71	6,699.86	636.61	572.99	10.008	CC, ES, SF
Fairmeadows 03-30 - Original Drilling - Original Drilling - As						Out of range
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,072.15	6,749.56	1,987.14	1,933.39	36.971	CC
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,100.00	6,749.03	1,987.33	1,933.37	36.829	ES
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	6,741.49	2,032.66	1,975.96	35.848	SF
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,509.19	6,652.36	1,784.85	1,721.44	28.151	CC, ES
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,653.54	1,808.38	1,742.66	27.513	SF
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	10,868.41	6,687.73	2,687.00	2,628.00	45.539	CC
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,687.27	2,687.19	2,627.93	45.346	ES
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,676.75	2,784.80	2,720.73	43.469	SF
J&L Farms 32-30 - Original Drilling - Original Drilling - As						Out of range
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,557.49	6,720.62	1,921.02	1,876.15	42.813	CC, ES
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,600.00	6,718.08	1,921.49	1,876.60	42.806	SF
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	4,240.28	4,076.71	1,407.98	1,315.20	15.176	CC, ES, SF
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	7,466.53	6,671.68	3,215.19	3,171.52	73.638	CC, ES
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	8,300.00	6,649.85	3,321.36	3,275.99	73.207	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,229.60	4,065.78	3,818.03	3,725.59	41.305	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,800.00	3,699.00	3,792.92	3,707.85	44.590	ES
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,800.24	3,699.00	3,792.92	3,707.85	44.590	CC
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	8,158.14	6,694.67	2,349.02	2,304.31	52.545	CC, ES
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,690.83	2,410.70	2,363.92	51.529	SF
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	9,041.14	6,727.95	3,044.04	2,995.70	62.967	CC, ES
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	10,000.00	6,691.16	3,191.28	3,137.59	59.435	SF
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	9,216.31	6,708.98	1,758.39	1,709.47	35.943	CC, ES
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	9,600.00	6,708.15	1,799.77	1,748.54	35.134	SF
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	3,703.99	3,594.02	221.45	199.49	10.084	CC, ES
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	3,800.00	3,683.61	224.22	201.63	9.928	SF
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	7,820.25	6,737.93	588.59	544.50	13.351	CC, ES, SF
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	10,256.33	6,759.67	3,181.05	3,126.06	57.849	CC
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	10,300.00	6,759.46	3,181.35	3,126.04	57.522	ES
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,755.31	3,318.07	3,256.87	54.222	SF
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	11,811.02	6,700.00	3,153.48	2,977.16	17.885	CC, ES
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	12,200.00	6,700.00	3,177.38	2,997.99	17.713	SF
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	4,240.28	4,076.71	1,407.97	1,315.20	15.176	CC, ES, SF
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	8,875.47	6,689.74	706.28	658.92	14.914	CC, ES
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	8,900.00	6,689.49	706.71	659.16	14.865	SF
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	8,863.87	6,727.15	700.71	653.17	14.741	CC, ES, SF
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	8,278.63	6,728.68	37.44	-7.85	0.827	Level 1, CC, ES, SF
Roth A31-720 - Roth A31-720 - Plan #2	2,000.00	2,000.00	21.85	8.28	1.611	CC, ES, SF
Roth A32-760 - Roth A32-760 - Plan #2	2,000.00	1,999.00	112.93	99.36	8.324	CC, ES
Roth A32-760 - Roth A32-760 - Plan #2	2,100.00	2,098.77	114.37	100.44	8.214	SF
Roth A32-770 - Roth A32-770 - Plan #2	2,000.00	2,000.00	87.43	73.86	6.443	CC, ES
Roth A32-770 - Roth A32-770 - Plan #2	2,100.00	2,099.98	88.79	74.86	6.376	SF
Roth A32-779 - Roth A32-779 - Plan #2	2,000.00	2,000.00	65.57	52.00	4.832	CC, ES
Roth A32-779 - Roth A32-779 - Plan #2	2,100.00	2,100.02	66.93	53.01	4.806	SF
Roth A32-790 - Roth A32-790 - Plan #2	2,000.00	2,000.00	43.71	30.14	3.221	CC, ES, SF
Sander #1 (PA) - Original Drilling - Original Drilling - As D	11,561.82	6,705.00	3,099.79	2,925.16	17.750	CC
Sander #1 (PA) - Original Drilling - Original Drilling - As D	11,600.00	6,705.00	3,100.03	2,925.08	17.720	ES
Sander #1 (PA) - Original Drilling - Original Drilling - As D	12,000.00	6,705.00	3,130.61	2,952.59	17.586	SF
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,325.37	6,703.41	731.49	676.04	13.193	CC, ES
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,703.62	735.28	679.12	13.093	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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						
Uhlich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,616.03	6,675.01	680.69	624.15	12.038	CC, ES, SF
Wolfe 02-30G - Original Drilling - Original Drilling - As Dri						Out of range
A Section 31						
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,200.00	10,082.39	31.13	-79.35	0.282	Level 1, ES, SF
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,203.94	10,082.36	30.88	-76.83	0.287	Level 1, CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,061.33	6,731.59	3,174.80	3,099.88	42.372	CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,100.00	6,732.61	3,175.04	3,099.77	42.184	ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,800.00	6,750.45	3,259.53	3,179.27	40.611	SF
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,742.48	6,704.79	614.41	519.09	6.446	CC, ES
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,706.28	617.09	521.25	6.438	SF
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,687.05	6,667.55	348.28	253.14	3.661	CC, ES, SF
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	16,871.92	6,720.10	883.29	778.74	8.449	CC, ES
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	16,900.00	6,720.60	883.74	778.87	8.427	SF
Marcy 1-31X (PA) - Original Hole - Original Hole	12,941.06	6,727.26	615.90	540.17	8.134	CC, ES, SF
Marcy 1-31X (PA) - Surface Gyros - Gyros	12,941.04	6,715.26	615.92	540.20	8.134	CC, ES, SF
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,146.25	6,680.75	2,387.50	2,304.38	28.725	CC, ES
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,679.20	2,413.56	2,327.65	28.093	SF
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,291.07	6,687.32	480.20	390.72	5.367	CC, ES, SF
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,270.91	6,698.66	1,945.57	1,861.87	23.245	CC
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,300.00	6,698.64	1,945.78	1,861.80	23.169	ES
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	6,698.45	1,959.01	1,873.40	22.882	SF
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	12,871.68	6,693.39	712.73	639.39	9.718	CC, ES
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	12,900.00	6,693.77	713.30	639.61	9.681	SF
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	12,824.09	6,706.25	2,091.62	2,018.54	28.622	CC, ES
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,709.89	2,125.13	2,049.17	27.978	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	15,408.22	6,616.18	1,899.35	1,806.88	20.539	CC, ES
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,600.00	6,633.32	1,908.95	1,815.55	20.439	SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,814.44	6,652.76	2,000.15	1,896.18	19.239	CC, ES
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,900.00	6,650.20	2,001.97	1,897.60	19.180	SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,646.91	6,634.77	4,571.78	4,477.11	48.293	CC
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,634.72	4,572.09	4,477.06	48.110	ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,634.10	4,650.69	4,551.25	46.769	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,881.29	6,655.97	5,935.94	5,831.31	56.735	CC
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,900.00	6,656.04	5,935.97	5,831.20	56.662	ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,656.58	5,938.65	5,832.76	56.080	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,906.03	6,731.55	4,607.32	4,533.49	62.403	CC, ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	14,100.00	6,712.24	4,759.47	4,679.30	59.368	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,242.29	6,634.55	4,586.92	4,503.31	54.857	CC
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,300.00	6,632.51	4,587.28	4,503.29	54.613	ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,595.64	4,685.78	4,597.00	52.781	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,520.83	6,629.45	2,210.65	2,125.04	25.824	CC, ES
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,630.36	2,217.90	2,131.40	25.642	SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,398.17	6,667.61	3,455.99	3,371.04	40.683	CC
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	6,667.62	3,455.99	3,371.03	40.677	ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	15,000.00	6,670.54	3,508.00	3,419.93	39.831	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	12,956.39	6,700.04	5,902.52	5,828.47	79.709	CC
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,699.99	5,902.68	5,828.33	79.392	ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,698.27	6,183.74	6,099.35	73.274	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,000.00	14,000.00	5,886.84	5,779.24	54.709	ES, SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,177.56	6,720.00	5,884.22	5,800.68	70.435	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,484.05	6,687.64	5,480.55	5,402.80	70.489	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,500.00	6,687.22	5,480.58	5,402.72	70.392	ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	15,000.00	6,650.30	5,686.22	5,600.14	66.057	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,500.69	6,720.42	2,901.00	2,822.65	37.026	CC, ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,900.00	6,726.48	2,928.34	2,847.94	36.423	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,705.88	6,739.46	3,387.10	3,314.87	46.892	CC, ES
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	6,746.56	3,438.80	3,363.47	45.647	SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,706.43	6,708.00	2,052.67	1,869.58	11.211	CC, ES
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,800.00	6,708.00	2,054.80	1,871.24	11.194	SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,420.74	6,653.22	3,502.71	3,409.77	37.688	CC, ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,900.00	6,657.62	3,535.34	3,439.79	36.997	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,060.89	6,681.98	3,270.26	3,165.85	31.323	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,814.19	6,683.44	4,678.13	4,573.92	44.890	CC, ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,060.89	6,683.97	4,684.63	4,578.78	44.257	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,481.62	6,767.41	5,901.38	5,807.45	62.826	CC
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,500.00	6,767.64	5,901.41	5,807.34	62.739	ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	17,000.00	6,786.86	6,093.55	5,991.04	59.445	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	17,060.89	6,626.37	2,349.92	2,253.02	24.251	CC, ES, SF
Ehrlich 5E-323 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,520.59	1,902.87	1,800.71	18.627	CC, ES, SF
Ehrlich 5E-423 (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,586.71	1,627.39	1,525.35	15.950	CC, ES, SF
Ehrlich 5J-203 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,450.00	2,743.64	2,639.48	26.340	CC, ES, SF
Ehrlich 5J-223 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,500.00	3,184.84	3,079.32	30.183	CC, ES, SF
Ehrlich 5J-243 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,450.00	2,261.00	2,158.30	22.014	CC, ES, SF
Ehrlich 5J-303 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,481.40	2,486.05	2,382.09	23.913	CC, ES, SF
Ehrlich 5J-323 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,500.00	2,967.88	2,862.70	28.217	CC, ES, SF
Ehrlich 5M-243 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,675.59	3,679.77	3,572.50	34.303	CC, ES, SF
Ehrlich 5M-343 (PR) - Wellbore #1 - Permitted-PDC	17,060.89	6,600.00	3,421.31	3,314.60	32.064	CC, ES, SF
Mininger Pfeif 41-5 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,642.77	6,029.57	5,924.17	57.206	CC, ES, SF
Noffsinger 21-5 (TA) - Wellbore #1 - Gyro Surveys	17,060.89	6,673.60	3,456.63	3,353.00	33.354	CC, ES, SF
Noffsinger 31-5 (TA) - Wellbore #1 - Gyro Surveys	17,060.89	6,611.69	4,683.78	4,578.95	44.682	CC, ES, SF
Snowmass 10N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	7,022.42	4,138.42	4,017.70	34.282	CC, ES, SF
Snowmass 1C (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,350.00	3,786.81	3,682.21	36.200	CC, ES, SF
Snowmass 2N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,300.00	3,846.52	3,741.14	36.502	CC, ES, SF
Snowmass 3N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,400.00	3,432.78	3,324.96	31.838	CC, ES, SF
Snowmass 4N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,600.00	3,289.85	3,178.06	29.429	CC, ES, SF
Snowmass 5N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,500.00	3,604.83	3,492.83	32.186	CC, ES, SF
Snowmass 6N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,750.00	3,528.33	3,411.94	30.316	CC, ES, SF
Snowmass 7N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,650.00	3,844.75	3,728.85	33.174	CC, ES, SF
Snowmass 8N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,850.00	3,776.20	3,657.23	31.743	CC, ES, SF
Snowmass 9N (DG) - Wellbore #1 - Permitted-PDC	17,060.89	6,774.68	4,089.40	3,971.27	34.618	CC, ES, SF
B Section 06						
Webster B6-1 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,659.35	1,144.58	1,088.55	20.427	CC, ES, SF
Webster B6-2 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,643.83	1,110.18	1,045.27	17.104	CC, ES, SF
B Section 07						
Dunn 7I-201 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,804.00	3,541.36	3,288.06	13.981	CC, ES, SF
Dunn 7I-221 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,773.00	3,146.94	2,894.32	12.457	CC, ES, SF
Dunn 7I-321 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,853.00	3,377.54	3,124.24	13.334	CC, ES, SF
Dunn 7L-201 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,789.00	2,555.50	2,306.83	10.276	CC, ES, SF
Dunn 7L-221 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,878.00	2,098.99	1,856.93	8.671	CC, ES, SF
Dunn 7L-301 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,840.00	2,355.54	2,109.69	9.581	CC, ES, SF
Dunn 7L-341 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,843.00	2,828.49	2,578.09	11.296	CC, ES, SF
Dunn 7Q-221 (PR) - Wellbore #1 - MWD Surveys	17,060.89	17,087.00	1,123.82	927.53	5.725	CC, ES, SF
Dunn 7Q-241 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,925.00	1,566.56	1,339.39	6.896	CC, ES, SF
Dunn 7Q-301 (PR) - Wellbore #1 - MWD Surveys	17,060.89	17,027.00	1,358.64	1,142.01	6.272	CC, ES, SF
Dunn 7Q-341 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,864.00	1,796.39	1,561.76	7.656	CC, ES, SF
J Klein 7Q-321 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,410.00	1,168.41	1,018.96	7.818	CC, ES, SF
J Klein 7T-121 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,284.00	1,185.41	1,037.75	8.028	CC, ES, SF
J Klein 7T-201 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,391.00	1,013.29	911.11	9.916	CC, ES, SF
J Klein 7T-241 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,310.00	990.63	916.64	13.388	CC, ES, SF
J Klein 7T-301 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,448.00	971.40	912.63	16.528	CC, ES, SF
J Klein 7Y-201 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,568.00	1,710.18	1,483.56	7.547	CC, ES, SF
J Klein 7Y-241 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,503.00	1,338.18	1,143.65	6.879	CC, ES, SF
J Klein 7Y-341 (PR) - Wellbore #1 - MWD Surveys	17,060.89	16,596.00	1,512.09	1,298.95	7.094	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	6,922.16	6,722.14	8,609.83	8,566.59	199.128	CC, ES
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	10,400.00	6,873.90	9,963.23	9,908.39	181.692	SF
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	7,101.18	6,679.00	7,155.18	7,100.89	131.786	CC, ES
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	11,000.00	6,715.00	8,546.65	8,477.98	124.461	SF
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,539.59	6,170.13	6,347.28	6,306.66	156.238	CC
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,550.00	6,181.44	6,347.35	6,306.66	155.987	ES
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,950.00	6,446.79	6,447.47	6,405.20	152.521	SF
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,610.17	6,280.93	5,448.22	5,407.07	132.387	CC, ES
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	7,000.00	6,754.48	5,516.84	5,473.66	127.766	SF
Courtney E24-02 - Original Drilling - As Drilled	6,587.60	6,200.01	7,373.95	7,333.13	180.628	CC, ES
Courtney E24-02 - Original Drilling - As Drilled	7,200.00	7,200.00	7,555.97	7,510.99	167.977	SF
Courtney E24-07 - Original Drilling - As Drilled	6,684.17	6,474.64	6,566.72	6,524.81	156.713	CC, ES
Courtney E24-07 - Original Drilling - As Drilled	7,100.00	6,760.82	6,642.96	6,599.59	153.191	SF
Felt 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	7,131.18	6,753.78	8,467.95	8,424.28	193.901	CC, ES
Felt 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	11,600.00	6,837.82	9,999.11	9,937.45	162.166	SF
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled	6,761.01	6,565.17	9,111.86	9,069.43	214.753	CC, ES
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled	8,900.00	6,700.01	9,997.45	9,950.03	210.836	SF
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,743.05	6,379.12	4,655.45	4,613.61	111.267	CC
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,750.00	6,383.72	4,655.47	4,613.60	111.192	ES
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,850.00	6,554.18	4,659.82	4,617.21	109.356	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,200.00	4,042.26	5,130.27	5,038.45	55.874	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	5,312.07	3,684.00	5,021.09	4,935.20	58.457	CC, ES
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,850.00	11,144.00	3,545.34	3,448.07	36.448	SF
Mackinaw A19-79HNA - Original Drilling - Original Drilling	7,015.85	11,144.00	3,534.86	3,438.32	36.616	CC, ES
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,950.00	11,451.00	3,725.96	3,628.34	38.168	SF
Mackinaw A19-79HNC - Original Drilling - Original Drilling	7,062.26	11,451.00	3,720.83	3,623.68	38.299	CC, ES
Miller #33-24 - Original Drilling - As Drilled	6,813.02	6,470.61	5,925.60	5,776.36	39.704	CC
Miller #33-24 - Original Drilling - As Drilled	6,850.00	6,498.79	5,926.06	5,776.21	39.546	ES
Miller #33-24 - Original Drilling - As Drilled	7,200.00	6,687.87	5,977.46	5,823.54	38.834	SF
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	7,029.49	6,448.41	5,619.30	5,576.66	131.789	CC, ES
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	9,800.00	6,487.88	6,574.49	6,523.46	128.828	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,950.00	11,309.00	3,986.32	3,888.12	40.595	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	7,050.00	11,309.00	3,982.06	3,884.18	40.684	ES
Storis E24-72-1HN - Original Drilling - Original Drilling - A	7,056.80	11,309.00	3,982.04	3,884.19	40.695	CC
Storis E24-73-1HNA - Original Drilling - Original Drilling -	7,200.00	11,685.00	4,901.61	4,792.82	45.056	SF
Storis E24-73-1HNA - Original Drilling - Original Drilling -	7,214.80	11,685.00	4,901.55	4,792.77	45.058	CC, ES
Storis E24-73-1HNC - Original Drilling - Original Drilling -	7,200.00	11,464.00	4,754.03	4,646.97	44.407	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling -	7,228.07	11,464.00	4,753.77	4,646.74	44.416	CC, ES
Storis E24-73HC - Original Drilling - Original Drilling - As	7,100.00	11,368.00	5,109.32	5,009.23	51.045	SF
Storis E24-73HC - Original Drilling - Original Drilling - As	7,117.03	11,368.00	5,109.22	5,009.13	51.048	CC, ES
Storis E24-73HN - Original Drilling - Original Drilling	7,100.00	11,262.00	5,307.28	5,206.70	52.765	SF
Storis E24-73HN - Original Drilling - Original Drilling	7,101.17	11,262.00	5,307.28	5,206.70	52.765	CC, ES
Storis E24-75-1HC - Original Drilling - Original Drilling - A	7,213.08	11,784.00	6,113.56	6,002.92	55.256	CC, ES
Storis E24-75-1HC - Original Drilling - Original Drilling - A	7,350.00	11,784.00	6,119.32	6,008.46	55.199	SF
Storis E24-75-1HN - Original Drilling - Original Drilling - A	7,202.49	11,684.00	6,229.57	6,164.93	96.379	CC, ES
Storis E24-75-1HN - Original Drilling - Original Drilling - A	9,100.00	11,684.00	6,652.71	6,583.41	95.990	SF
Storis E24-75HN - Original Drilling - Original Drilling - As	7,212.50	11,585.00	6,425.06	6,360.54	99.589	CC, ES
Storis E24-75HN - Original Drilling - Original Drilling - As	9,500.00	11,585.00	6,987.71	6,916.61	98.289	SF
Storis E24-76-1HN - Original Drilling - Original Drilling - A	7,115.28	7,257.00	6,634.46	6,589.57	147.775	CC, ES
Storis E24-76-1HN - Original Drilling - Original Drilling - A	11,300.00	7,019.00	8,192.18	8,129.16	129.979	SF
Storis E24-77-1HN - Original Drilling - Original Drilling - A	7,205.08	6,640.00	7,361.04	7,319.31	176.400	CC, ES
Storis E24-77-1HN - Original Drilling - Original Drilling - A	12,700.00	6,260.00	9,414.77	9,351.09	147.846	SF
Storis E24-78-1HN - Original Drilling - Original Drilling - A	7,232.01	6,497.00	8,017.21	7,976.19	195.464	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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 E24-78-1HN - Original Drilling - Original Drilling - A	12,700.00	6,260.00	9,941.29	9,877.51	155.856	SF
Storis E24-79-1HN - Original Drilling - Original Drilling - A	7,230.72	6,214.00	8,699.86	8,659.11	213.490	CC, ES
Storis E24-79-1HN - Original Drilling - Original Drilling - A	11,700.00	6,166.00	9,968.25	9,906.86	162.386	SF
Storis E24-79HN - Original Drilling - Original Drilling - As	7,241.91	6,379.94	8,948.74	8,906.55	212.142	CC, ES
Storis E24-79HN - Original Drilling - Original Drilling - As	11,200.00	6,312.00	9,960.24	9,899.72	164.580	SF
Wake E24-77HN - Original Drilling - Original Drilling	7,100.00	11,040.02	7,731.17	7,630.50	76.797	SF
Wake E24-77HN - Original Drilling - Original Drilling	7,156.22	11,040.02	7,730.30	7,629.65	76.804	CC, ES

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	7,584.52	6,765.84	8,346.10	8,302.11	189.726	CC, ES
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,747.55	9,949.10	9,879.11	142.158	SF
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	8,901.02	7,021.69	8,363.86	8,316.04	174.929	CC, ES
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	14,300.00	7,087.80	9,954.83	9,876.31	126.781	SF
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys	9,938.49	6,516.52	8,778.26	8,725.75	167.185	CC
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys	10,000.00	6,515.91	8,778.47	8,725.58	165.953	ES
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys	14,700.00	6,483.67	9,986.42	9,904.16	121.395	SF
LDS E25-33D - Original Drilling - Original Drilling - As Dri	10,792.05	6,925.90	8,938.90	8,875.42	140.820	CC
LDS E25-33D - Original Drilling - Original Drilling - As Dri	10,900.00	6,920.08	8,939.55	8,875.30	139.133	ES
LDS E25-33D - Original Drilling - Original Drilling - As Dri	15,200.00	6,743.75	9,964.45	9,872.74	108.660	SF
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	11,710.77	6,640.18	4,530.56	4,465.80	69.959	CC, ES
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	6,623.99	4,801.19	4,725.74	63.634	SF
Little Will #10 - Original Drilling - Original Drilling - As Dri	7,565.02	6,630.23	4,287.37	4,243.74	98.260	CC, ES
Little Will #10 - Original Drilling - Original Drilling - As Dri	9,600.00	6,609.18	4,745.73	4,694.86	93.295	SF
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	10,207.42	6,700.00	5,720.34	5,665.73	104.755	CC, ES
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	12,900.00	6,684.09	6,322.33	6,250.92	88.529	SF
Little Will #3 (PA) - Original Drilling - No Surveys	8,972.31	6,713.00	4,420.38	4,261.56	27.833	CC
Little Will #3 (PA) - Original Drilling - No Surveys	9,000.00	6,713.00	4,420.46	4,261.51	27.809	ES
Little Will #3 (PA) - Original Drilling - No Surveys	9,700.00	6,713.00	4,479.87	4,316.99	27.504	SF
Little Will #4 - Original Drilling - Original Drilling - As Drille	7,898.67	6,554.50	5,190.17	5,146.30	118.307	CC
Little Will #4 - Original Drilling - Original Drilling - As Drille	7,900.00	6,554.48	5,190.17	5,146.30	118.300	ES
Little Will #4 - Original Drilling - Original Drilling - As Drille	10,800.00	6,509.04	5,945.80	5,888.85	104.406	SF
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,571.05	6,629.48	5,661.27	5,597.61	88.929	CC
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,628.90	5,661.35	5,597.46	88.617	ES
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	13,900.00	6,592.06	6,121.51	6,042.57	77.547	SF
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	7,295.77	6,844.66	8,928.77	8,876.35	170.335	CC, ES
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	11,400.00	6,890.17	9,974.53	9,906.10	145.761	SF
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	8,399.25	7,128.39	8,849.00	8,802.26	189.338	CC
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	8,400.00	7,128.36	8,849.00	8,802.26	189.328	ES
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,958.04	9,972.10	9,899.89	138.095	SF
Meisner 02-25EG (PA) - Original Drilling - No Surveys	8,666.78	6,733.00	7,061.94	6,904.03	44.720	CC
Meisner 02-25EG (PA) - Original Drilling - No Surveys	8,700.00	6,733.00	7,062.02	6,903.97	44.681	ES
Meisner 02-25EG (PA) - Original Drilling - No Surveys	10,600.00	6,733.00	7,321.77	7,153.06	43.398	SF
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	11,560.14	6,664.16	7,062.38	6,973.83	79.758	CC
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,664.38	7,062.49	6,973.63	79.483	ES
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	14,400.00	6,679.91	7,611.95	7,504.16	70.619	SF
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	10,205.58	6,882.76	7,054.80	6,999.88	128.473	CC
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	10,300.00	6,883.02	7,055.43	6,999.88	127.014	ES
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	14,000.00	6,893.19	8,010.47	7,932.17	102.304	SF
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	10,442.81	6,718.00	8,401.41	8,234.17	50.236	CC
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	10,500.00	6,718.00	8,401.60	8,233.97	50.119	ES
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	13,100.00	6,718.00	8,811.60	8,626.09	47.499	SF
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	10,362.57	6,582.14	8,159.52	8,104.23	147.562	CC
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,580.52	8,159.61	8,104.06	146.896	ES
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	15,100.00	6,500.00	9,434.62	9,350.29	111.872	SF
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	11,718.07	6,350.25	7,952.98	7,888.97	124.253	CC
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,350.26	7,953.40	7,888.76	123.044	ES
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,350.78	8,894.14	8,804.41	99.121	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 26						
Bear E26-650 - Bear E26-650 - Plan #1	9,583.15	17,966.68	4,217.23	4,156.64	69.607	CC, ES
Bear E26-650 - Bear E26-650 - Plan #1	13,200.00	17,966.68	5,555.78	5,425.75	42.729	SF
Bear E26-660 - Bear E26-660 - Plan #1	8,923.13	17,652.10	4,212.24	4,157.44	76.871	CC, ES
Bear E26-660 - Bear E26-660 - Plan #1	12,600.00	17,652.10	5,591.27	5,463.14	43.636	SF
Bear E26-670 - Bear E26-670 - Plan #1	8,263.10	17,547.99	4,210.62	4,160.28	83.641	CC, ES
Bear E26-670 - Bear E26-670 - Plan #1	12,100.00	17,547.99	5,696.59	5,568.87	44.603	SF
Bear E26-680 - Bear E26-680 - Plan #1	7,600.00	17,404.52	4,205.66	4,157.41	87.163	ES
Bear E26-680 - Bear E26-680 - Plan #1	7,603.08	17,404.52	4,205.66	4,157.42	87.168	CC
Bear E26-680 - Bear E26-680 - Plan #1	11,500.00	17,404.52	5,733.55	5,607.32	45.420	SF
Bear E26-690 - Bear E26-690 - Plan #1	7,243.28	17,453.70	4,219.90	4,170.70	85.773	CC
Bear E26-690 - Bear E26-690 - Plan #1	7,250.00	17,453.70	4,219.91	4,170.64	85.650	ES
Bear E26-690 - Bear E26-690 - Plan #1	10,900.00	17,453.70	5,772.89	5,648.16	46.282	SF
Bear E28-653 - Bear E28-653 - Plan #1						Out of range
Healy E34-69HN - Original Drilling - Original Drilling	12,244.00	6,145.00	9,288.63	9,222.31	140.056	CC
Healy E34-69HN - Original Drilling - Original Drilling	12,300.00	6,145.00	9,288.80	9,222.04	139.138	ES
Healy E34-69HN - Original Drilling - Original Drilling	15,900.00	6,145.00	9,982.24	9,890.71	109.068	SF
Howard 06-26EG (SI) - Wellbore #1 - Gyro Surveys						Out of range
Howard 11-26EG (SI) - Wellbore #1 - Gyro Surveys	8,637.06	6,882.48	9,752.02	9,705.16	208.122	CC
Howard 11-26EG (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,881.55	9,752.22	9,705.11	207.002	ES
Howard 11-26EG (SI) - Wellbore #1 - Gyro Surveys	10,800.00	6,850.31	9,988.95	9,929.83	168.967	SF
Howard 14-26EG - Original Drilling - No Surveys						Out of range
Howard E26-1 (TA) - Wellbore #1 - Gyro Surveys	7,589.29	6,856.01	9,940.40	9,897.44	231.414	CC
Howard E26-1 (TA) - Wellbore #1 - Gyro Surveys	7,600.00	6,856.19	9,940.40	9,897.44	231.372	ES
Howard E26-1 (TA) - Wellbore #1 - Gyro Surveys	8,600.00	6,872.75	9,991.63	9,946.12	219.516	SF
Howard E26-17 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Lyster 04-26EG - Wellbore #1 - Wellbore #1- As Drilled	11,487.10	6,934.43	9,686.22	9,622.37	151.681	CC
Lyster 04-26EG - Wellbore #1 - Wellbore #1- As Drilled	11,600.00	6,933.79	9,686.88	9,622.18	149.715	ES
Lyster 04-26EG - Wellbore #1 - Wellbore #1- As Drilled	13,900.00	6,939.27	9,982.23	9,900.80	122.589	SF
Lyster 9-26EG (PA) - Wellbore #1 - Gyro Surveys	10,156.61	6,862.29	9,711.11	9,656.36	177.373	CC
Lyster 9-26EG (PA) - Wellbore #1 - Gyro Surveys	10,200.00	6,860.51	9,711.21	9,656.18	176.476	ES
Lyster 9-26EG (PA) - Wellbore #1 - Gyro Surveys	12,500.00	6,766.47	9,989.39	9,918.68	141.263	SF
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	11,273.60	11,387.00	4,289.29	4,222.32	64.047	CC
Resolute E25-63-1HN - Original Drilling - Original Drilling	11,300.00	11,387.00	4,289.37	4,222.00	63.668	ES
Resolute E25-63-1HN - Original Drilling - Original Drilling	14,400.00	11,387.00	5,307.77	5,172.84	39.338	SF
Resolute E25-63HC - Original Drilling - Original Drilling -	10,950.90	11,166.00	4,289.21	4,222.04	63.849	CC
Resolute E25-63HC - Original Drilling - Original Drilling -	11,000.00	11,166.00	4,289.49	4,221.51	63.094	ES
Resolute E25-63HC - Original Drilling - Original Drilling -	14,000.00	11,166.00	5,262.54	5,132.16	40.363	SF
Resolute E25-63HN - Original Drilling - Original Drilling -	11,111.52	11,151.00	4,294.99	4,228.36	64.462	CC
Resolute E25-63HN - Original Drilling - Original Drilling -	11,200.00	11,151.00	4,295.90	4,227.83	63.103	ES
Resolute E25-63HN - Original Drilling - Original Drilling -	14,200.00	11,151.00	5,290.15	5,157.53	39.890	SF
Resolute State E25-62-1HN - Original Drilling - Original D	11,946.57	11,410.00	4,293.71	4,223.37	61.040	CC
Resolute State E25-62-1HN - Original Drilling - Original D	12,000.00	11,410.00	4,294.04	4,223.36	60.748	ES
Resolute State E25-62-1HN - Original Drilling - Original D	15,200.00	11,410.00	5,387.09	5,253.02	40.180	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

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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 26						
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	11,863.34	6,054.00	9,332.08	9,269.87	150.008	CC
Steadfast E27-62-1HN - Original Drilling - Original Drilling	11,900.00	6,054.00	9,332.15	9,269.66	149.330	ES
Steadfast E27-62-1HN - Original Drilling - Original Drilling	15,400.00	6,054.00	9,979.76	9,892.84	114.811	SF
Steadfast E27-63-1HN - Original Drilling - Original Drilling	11,180.27	6,147.00	9,269.21	9,209.00	153.935	CC
Steadfast E27-63-1HN - Original Drilling - Original Drilling	11,200.00	6,147.00	9,269.23	9,208.87	153.561	ES
Steadfast E27-63-1HN - Original Drilling - Original Drilling	14,900.00	6,147.00	9,987.73	9,902.05	116.579	SF
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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	13,535.97	11,279.00	4,304.66	4,217.79	49.555	CC
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,600.00	11,279.00	4,305.13	4,216.94	48.813	ES
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	16,200.00	11,279.00	5,062.32	4,918.09	35.098	SF
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,521.79	6,945.03	3,191.81	3,087.37	30.560	CC, ES
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	16,200.00	6,934.67	3,263.05	3,152.46	29.507	SF
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	16,819.84	6,862.69	3,178.49	3,073.42	30.250	CC, ES
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,060.89	6,860.38	3,187.62	3,080.45	29.744	SF
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,537.86	7,281.29	1,986.76	1,879.14	18.461	CC
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,600.00	7,279.85	1,987.73	1,878.84	18.255	ES
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	16,000.00	7,270.50	2,039.77	1,924.39	17.679	SF
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	16,885.61	7,103.88	1,953.47	1,844.85	17.986	CC
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	16,900.00	7,103.91	1,953.52	1,844.76	17.962	ES
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,060.89	7,104.22	1,961.31	1,851.01	17.781	SF
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys	16,156.01	6,869.03	8,885.22	8,786.04	89.585	CC
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,870.13	8,885.33	8,785.78	89.254	ES
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,891.71	8,931.15	8,824.72	83.917	SF
LDS F 01-27 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,695.49	5,075.19	4,969.25	47.906	CC, ES, SF
LDS F 01-28D (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,891.30	6,346.17	6,239.66	59.584	CC, ES, SF
LDS F 01-29 (SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,688.46	7,736.77	7,513.62	34.671	CC, ES, SF
LDS F 01-30D (TA) - Wellbore #1 - MWD Surveys	17,060.89	6,771.14	8,985.08	8,870.79	78.616	CC, ES, SF
Mansfield E36-65HN - Original Drilling - Original Drilling	14,958.66	7,500.02	7,974.45	7,882.46	86.689	CC
Mansfield E36-65HN - Original Drilling - Original Drilling	15,000.00	7,500.02	7,974.56	7,882.23	86.373	ES
Mansfield E36-65HN - Original Drilling - Original Drilling	17,060.89	7,500.02	8,246.89	8,139.69	76.925	SF
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	14,860.02	11,178.00	4,297.93	4,204.76	46.132	CC
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	14,900.00	11,178.00	4,298.12	4,204.57	45.948	ES
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	17,060.89	11,178.00	4,828.67	4,694.09	35.881	SF
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,765.14	6,861.31	7,046.26	6,973.28	96.554	CC
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,800.00	6,861.59	7,046.35	6,973.09	96.184	ES
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	15,800.00	6,900.00	7,671.97	7,578.98	82.499	SF
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	16,936.44	6,668.79	5,809.77	5,704.61	55.250	CC
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,000.00	6,668.97	5,810.11	5,704.41	54.964	ES
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,060.89	6,669.14	5,811.10	5,704.87	54.703	SF
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	12,834.71	12,834.71	8,388.62	8,294.24	88.885	CC
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	12,900.00	12,900.00	8,388.87	8,293.75	88.187	ES
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	13,300.00	13,300.00	8,401.51	8,301.83	84.283	SF
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	12,835.35	6,874.10	8,388.39	8,314.63	113.732	CC
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	12,900.00	6,874.73	8,388.64	8,314.36	112.938	ES
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	16,800.00	6,912.74	9,278.04	9,178.25	92.979	SF
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	12,782.75	6,850.69	4,515.00	4,442.16	61.990	CC
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	12,800.00	6,851.05	4,515.03	4,442.05	61.868	ES
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	14,200.00	6,879.98	4,732.12	4,649.63	57.370	SF
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,618.11	6,686.00	5,719.41	5,514.18	27.869	CC
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,700.00	6,686.00	5,719.99	5,514.06	27.776	ES
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	16,600.00	6,686.00	5,803.08	5,590.33	27.277	SF
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,507.11	6,682.00	6,945.63	6,741.37	34.003	CC
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,600.00	6,682.00	6,946.25	6,741.20	33.875	ES
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	17,000.00	6,682.00	7,104.26	6,888.85	32.981	SF
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	15,684.25	6,838.08	8,442.22	8,346.49	88.192	CC
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,839.90	8,443.01	8,346.31	87.306	ES
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,859.73	8,553.70	8,447.17	80.296	SF
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	16,614.49	6,966.34	8,455.38	8,351.78	81.619	CC
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	16,700.00	6,968.72	8,455.81	8,351.48	81.052	ES
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	17,060.89	6,978.76	8,467.14	8,359.82	78.894	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	16,642.00	6,681.00	7,044.60	6,831.33	33.031	CC
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	16,700.00	6,681.00	7,044.84	6,831.07	32.956	ES
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	17,060.89	6,681.00	7,057.04	6,840.29	32.558	SF
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	16,936.44	6,668.79	5,809.77	5,714.70	61.111	CC
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,000.00	6,668.97	5,810.11	5,714.49	60.761	ES
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,060.89	6,669.15	5,811.10	5,714.96	60.442	SF
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,025.92	6,684.85	4,469.81	4,363.92	42.214	CC
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,060.89	6,685.09	4,469.94	4,363.75	42.091	ES, SF
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	12,871.73	6,775.15	5,941.52	5,867.96	80.775	CC
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,775.37	5,941.58	5,867.79	80.522	ES
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	6,795.04	6,345.58	6,257.05	71.674	SF
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,075.26	7,338.33	7,585.87	7,483.71	74.258	CC
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	7,338.83	7,585.91	7,483.54	74.105	ES
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	7,358.39	7,649.60	7,539.60	69.538	SF
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	14,378.11	7,007.99	8,367.06	8,281.26	97.522	CC
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	7,007.88	8,367.09	8,281.11	97.317	ES
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	17,060.89	6,995.53	8,786.63	8,681.93	83.929	SF
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,181.92	6,696.00	7,082.81	6,888.66	36.482	CC
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,200.00	6,696.00	7,082.83	6,888.53	36.453	ES
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	15,800.00	6,696.00	7,265.28	7,059.08	35.234	SF
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,425.96	6,689.00	5,738.14	5,542.23	29.290	CC
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,500.00	6,689.00	5,738.61	5,542.08	29.199	ES
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	15,500.00	6,689.00	5,837.79	5,633.71	28.605	SF
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,417.35	6,713.56	4,259.38	4,174.06	49.924	CC, ES
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	15,500.00	6,714.29	4,394.83	4,301.89	47.286	SF
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,763.59	6,693.00	4,445.53	4,239.01	21.526	CC
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,800.00	6,693.00	4,445.67	4,238.83	21.493	ES
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,400.00	6,693.00	4,490.85	4,279.35	21.234	SF
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,580.74	7,045.91	7,762.51	7,682.83	97.422	CC
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,600.00	7,046.59	7,762.54	7,682.70	97.228	ES
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	16,900.00	7,091.00	8,441.90	8,340.30	83.091	SF
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,804.15	6,990.71	7,682.64	7,593.53	86.215	CC
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,993.16	7,683.24	7,593.33	85.449	ES
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	17,060.89	7,048.39	8,007.03	7,901.73	76.042	SF
Trex E35-618 - Trex E35-618 - Plan #1	16,715.81	6,900.00	3,652.48	3,543.04	33.374	CC, ES
Trex E35-618 - Trex E35-618 - Plan #1	17,060.89	6,900.00	3,668.75	3,556.65	32.727	SF
Trex E35-628 - Trex E35-628 - Plan #1	16,174.77	6,625.30	3,806.03	3,703.71	37.197	CC
Trex E35-628 - Trex E35-628 - Plan #1	16,200.00	6,626.72	3,806.11	3,703.56	37.115	ES
Trex E35-628 - Trex E35-628 - Plan #1	16,900.00	6,650.00	3,873.27	3,765.74	36.020	SF
Trex E35-638 - Trex E35-638 - Plan #1	15,541.16	6,400.00	3,620.93	3,525.86	38.085	CC
Trex E35-638 - Trex E35-638 - Plan #1	15,600.00	6,400.00	3,621.41	3,525.81	37.882	ES
Trex E35-638 - Trex E35-638 - Plan #1	16,300.00	6,450.00	3,698.11	3,597.54	36.773	SF
Trex E35-659 - Trex E35-659 - Plan #1	14,324.06	6,300.00	3,622.41	3,538.08	42.955	CC, ES
Trex E35-659 - Trex E35-659 - Plan #1	15,200.00	6,300.00	3,726.81	3,636.04	41.057	SF
Trex E35-671 - Trex E35-671 - Plan #1	13,508.76	6,500.00	3,606.31	3,526.90	45.412	CC, ES
Trex E35-671 - Trex E35-671 - Plan #1	14,400.00	6,472.44	3,714.13	3,628.00	43.124	SF
Trex E35-682 - Trex E35-682 - Plan #1	12,951.64	6,650.00	3,612.67	3,535.92	47.073	CC
Trex E35-682 - Trex E35-682 - Plan #1	13,000.00	6,650.00	3,612.99	3,535.80	46.803	ES
Trex E35-682 - Trex E35-682 - Plan #1	13,900.00	6,575.15	3,730.11	3,646.25	44.478	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 A31-730
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 A31-730	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-730	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	17,060.89	6,667.53	5,863.45	5,758.83	56.046	CC, ES, SF
BJB 3(PA) - Wellbore #1 - No Surveys	17,060.89	6,671.00	6,334.66	6,201.98	47.743	CC, ES, SF
BJB 4 - Wellbore #1 - Gyro Surveys	17,060.89	6,604.31	4,940.99	4,811.62	38.192	CC, ES, SF
BJB 5 - Wellbore #1 - Gyro Surveys	17,060.89	6,755.07	5,290.93	5,190.49	52.673	CC, ES, SF
BJB 6I - Wellbore #1 - As Drilled	17,060.89	6,830.57	6,605.58	6,500.75	63.014	CC, ES, SF
CDOT F 1-10(SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,667.32	6,894.45	6,694.25	34.437	CC, ES, SF
DPG Bird Farm 1-14H5(SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,566.45	8,409.30	8,319.46	93.602	CC, ES, SF
DPG Bird Farm 1-15H5(SI) - Wellbore #1 - No Surveys	17,060.89	6,647.00	7,531.71	7,412.66	63.267	CC, ES, SF
DPG Bird Farm 1-16H5 - Wellbore #1 - Gyro Surveys	17,060.89	6,861.44	6,658.21	6,577.89	82.891	CC, ES, SF
DPG F 1-13(SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,649.48	9,849.14	9,629.98	44.941	CC, ES, SF
DPG F 12-28(SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,650.00	8,470.08	8,257.35	39.816	CC, ES, SF
DPG F 12-29(AL) - Wellbore #1 - No Surveys	17,060.89	6,647.00	9,533.86	9,409.05	76.388	CC, ES, SF
DPG F 1-23(SI) - Wellbore #1 - No Surveys	17,060.89	6,645.00	6,807.37	6,686.08	56.125	CC, ES, SF
DPG F 1-24(SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,655.55	7,634.75	7,442.07	39.623	CC, ES, SF
DPG F 1-25(SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,648.54	8,991.12	8,800.11	47.071	CC, ES, SF
DPG F 1-33(SI) - Wellbore #1 - As Drilled	17,060.89	7,080.00	9,935.37	9,831.78	95.903	CC, ES, SF
Gatewood 11-1 - Wellbore #1 - Gyro Surveys	17,060.89	6,478.46	7,917.27	7,821.38	82.567	CC, ES, SF
Gatewood 3-1 - Wellbore #1 - Gyro Surveys	17,060.89	6,609.77	6,922.68	6,818.35	66.355	CC, ES, SF
Gatewood 4-1(SI) - Wellbore #1 - Gyro Surveys	17,060.89	6,757.14	8,646.22	8,541.86	82.853	CC, ES, SF
Gatewood 5(SI) - Wellbore #1 - No Surveys	17,060.89	6,683.00	7,947.20	7,808.59	57.336	CC, ES, SF
Gatewood 6-1 - Wellbore #1 - Gyro Surveys	17,060.89	17,060.89	7,289.35	7,170.69	61.430	CC, ES, SF
Gatewood F 1-12(SI) - Wellbore #1 - Inc Only Surveys	17,060.89	6,677.76	9,238.67	8,996.99	38.226	CC, ES, SF
LDS 1U-234 - Wellbore #1 - As Drilled	17,060.89	6,174.00	3,984.01	3,881.97	39.041	CC, ES, SF
LDS 1U-304 - Wellbore #1 - As Drilled	17,060.89	6,077.00	3,929.72	3,826.55	38.090	CC, ES, SF
LDS 1V-204 - Wellbore #1 - As Drilled	17,060.89	6,192.00	4,312.86	4,212.09	42.800	CC, ES, SF
LDS 1V-214 - Wellbore #1 - Permitted-PDC	17,060.89	6,150.00	4,115.89	4,015.12	40.844	CC, ES, SF
LDS 1V-234 - Wellbore #1 - MWD Surveys	17,060.89	6,107.61	4,516.51	4,424.78	49.238	CC, ES, SF
LDS 1V-304 - Wellbore #1 - As Drilled	17,060.89	6,193.00	4,186.02	4,085.37	41.591	CC, ES, SF
LDS 1V-314 - Wellbore #1 - As Drilled	17,060.89	6,171.00	4,049.96	3,948.99	40.113	CC, ES, SF
LDS 1V-334 - Wellbore #1 - As Drilled	17,060.89	6,236.00	4,403.67	4,309.72	46.870	CC, ES, SF
LDS 1W-234 - Wellbore #1 - As Drilled	17,060.89	6,107.71	4,501.01	4,409.09	48.963	CC, ES, SF
LDS 1W-314 - Wellbore #1 - As Drilled	17,060.89	6,076.00	4,620.43	4,530.21	51.215	CC, ES, SF
LDS 1W-414 - Wellbore #1 - As Drilled	17,060.89	6,146.00	4,786.01	4,697.90	54.323	CC, ES, SF
LDS F 1-5(AL) - Wellbore #1 - No Surveys	17,060.89	6,683.00	8,737.48	8,600.28	63.688	CC, ES, SF
Noffsinger 1 (PA) - Wellbore #1 - No Surveys	17,060.89	6,677.00	4,573.92	4,360.90	21.471	CC, ES, SF
Weld County 1-9H5 - Wellbore #1 - No Surveys	17,060.89	6,646.00	5,930.84	5,808.61	48.521	CC, ES, SF

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