

Project: Wells Ranch
Site: A Section 30
Well: Roth A31-720
Wellbore: Roth A31-720
Design: Plan #2

Northern Region - DJ Basin

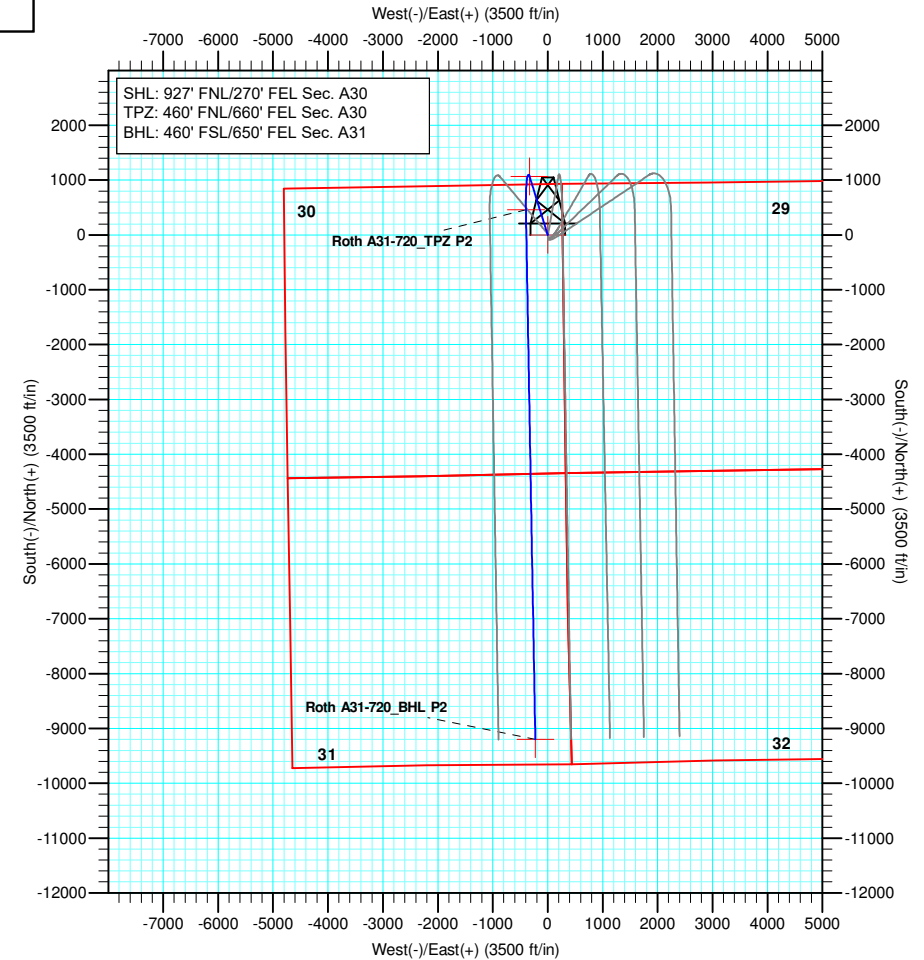
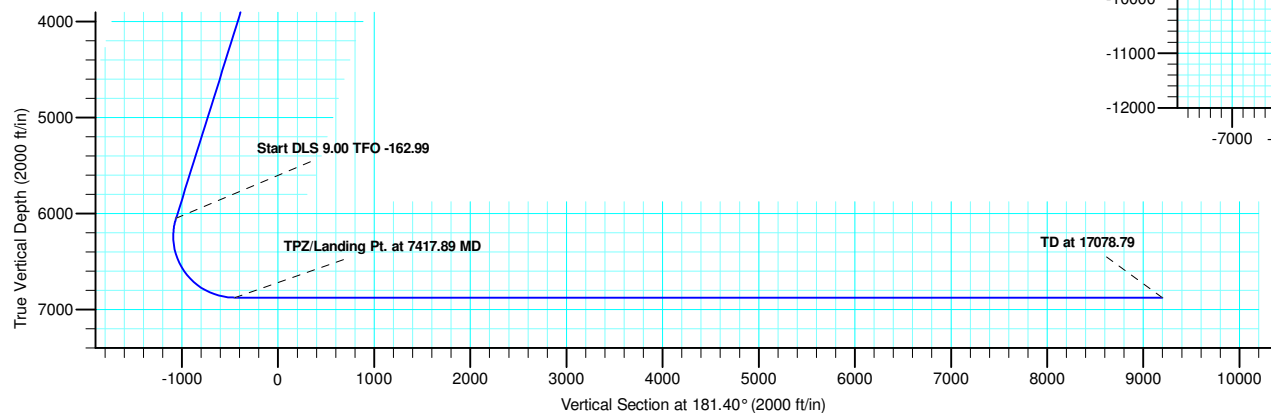
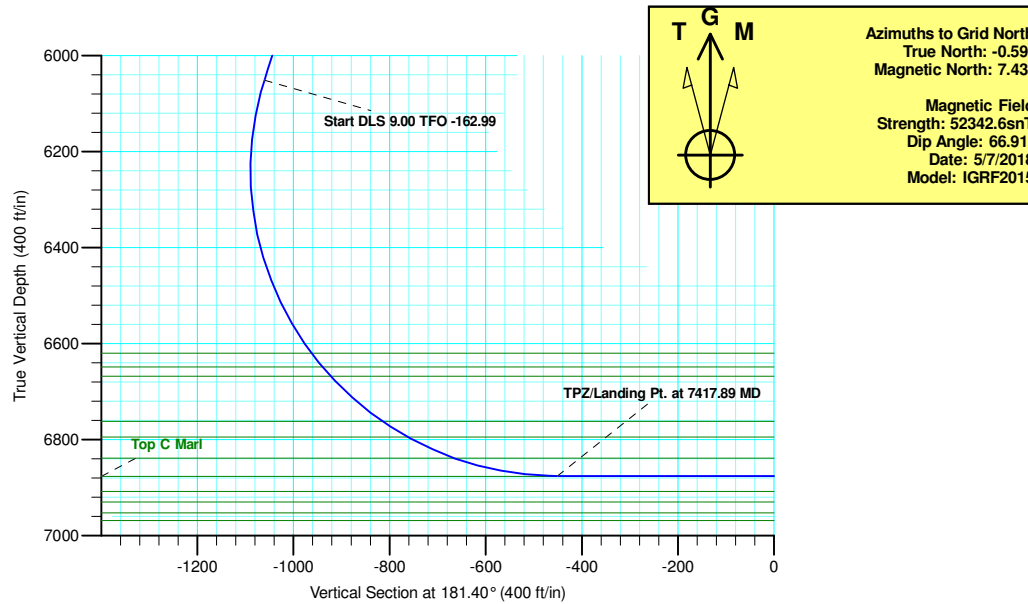
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	3113.02	18.26	342.79	3097.64	137.80	-42.68	2.00	342.79	-136.72	
4	6223.31	18.26	342.79	6051.31	1068.74	-331.03	0.00	0.00	-1060.31	
5	7417.89	90.00	178.99	6876.00	460.37	-396.18	9.00	-162.99	-450.53	Roth A31-720_TPZ P2
6	17078.79	90.00	178.99	6876.00	-9199.02	-225.42	0.00	0.00	9201.78	Roth A31-720_BHL P2

WELL DETAILS: Roth A31-720

+N/-S	+E/-W	Northing	Ground Level: Easting	4698.00 Latitude	Longitude	Slot
0.00	0.00	1412341.28	3254695.24	40.4616700	-104.5846600	



Plan: Plan #2 (Roth A31-720/Roth A31-720)

Created By: Shelly Peterkin Date: 10:42, May 11 2020

Northern Region - DJ Basin

**Wells Ranch
A Section 30
Roth A31-720**

Roth A31-720

Plan: Plan #2

Standard Planning Report

11 May, 2020

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
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 A31-720			
Well Position	+N/-S	4,007.97 ft	Northing:	1,412,341.28 usft
	+E/-W	4,268.05 ft	Easting:	3,254,695.24 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 40.4616700
				Longitude: -104.5846600
				Ground Level: 4,698.00 ft

Wellbore	Roth A31-720				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/7/2018	8.03	66.91	52,342.58117554

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	181.40

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	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,113.02	18.26	342.79	3,097.64	137.80	-42.68	2.00	2.00	0.00	342.79	
6,223.31	18.26	342.79	6,051.31	1,068.74	-331.03	0.00	0.00	0.00	0.00	
7,417.89	90.00	178.99	6,876.00	460.37	-396.18	9.00	6.01	-13.71	-162.99	Roth A31-720_TPZ P.
17,078.79	90.00	178.99	6,876.00	-9,199.02	-225.42	0.00	0.00	0.00	0.00	Roth A31-720_BHL P.

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
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
384.00	0.00	0.00	384.00	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
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
2,300.00	2.00	342.79	2,299.98	1.67	-0.52	-1.65	2.00	2.00	0.00
2,400.00	4.00	342.79	2,399.84	6.67	-2.06	-6.61	2.00	2.00	0.00
2,500.00	6.00	342.79	2,499.45	14.99	-4.64	-14.87	2.00	2.00	0.00
2,600.00	8.00	342.79	2,598.70	26.63	-8.25	-26.42	2.00	2.00	0.00
2,700.00	10.00	342.79	2,697.47	41.57	-12.88	-41.25	2.00	2.00	0.00
2,800.00	12.00	342.79	2,795.62	59.80	-18.52	-59.33	2.00	2.00	0.00
2,900.00	14.00	342.79	2,893.06	81.29	-25.18	-80.65	2.00	2.00	0.00
3,000.00	16.00	342.79	2,989.64	106.01	-32.83	-105.17	2.00	2.00	0.00
3,100.00	18.00	342.79	3,085.27	133.94	-41.48	-132.88	2.00	2.00	0.00
3,113.02	18.26	342.79	3,097.64	137.80	-42.68	-136.72	2.00	2.00	0.00
Start 3110.29 hold at 3113.02 MD									
3,200.00	18.26	342.79	3,180.24	163.84	-50.75	-162.55	0.00	0.00	0.00
3,300.00	18.26	342.79	3,275.21	193.77	-60.02	-192.24	0.00	0.00	0.00
3,400.00	18.26	342.79	3,370.17	223.70	-69.29	-221.94	0.00	0.00	0.00
3,500.00	18.26	342.79	3,465.13	253.63	-78.56	-251.63	0.00	0.00	0.00
3,600.00	18.26	342.79	3,560.10	283.56	-87.83	-281.33	0.00	0.00	0.00
3,617.80	18.26	342.79	3,577.00	288.89	-89.48	-286.61	0.00	0.00	0.00
Parkman									
3,700.00	18.26	342.79	3,655.06	313.49	-97.10	-311.02	0.00	0.00	0.00
3,800.00	18.26	342.79	3,750.03	343.42	-106.37	-340.71	0.00	0.00	0.00
3,900.00	18.26	342.79	3,844.99	373.35	-115.64	-370.41	0.00	0.00	0.00
4,000.00	18.26	342.79	3,939.96	403.28	-124.91	-400.10	0.00	0.00	0.00
4,100.00	18.26	342.79	4,034.92	433.22	-134.18	-429.80	0.00	0.00	0.00

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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
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)
4,182.22	18.26	342.79	4,113.00	457.82	-141.80	-454.21	0.00	0.00	0.00
Sussex									
4,200.00	18.26	342.79	4,129.88	463.15	-143.45	-459.49	0.00	0.00	0.00
4,300.00	18.26	342.79	4,224.85	493.08	-152.72	-489.19	0.00	0.00	0.00
4,400.00	18.26	342.79	4,319.81	523.01	-161.99	-518.88	0.00	0.00	0.00
4,500.00	18.26	342.79	4,414.78	552.94	-171.26	-548.58	0.00	0.00	0.00
4,600.00	18.26	342.79	4,509.74	582.87	-180.54	-578.27	0.00	0.00	0.00
4,700.00	18.26	342.79	4,604.71	612.80	-189.81	-607.97	0.00	0.00	0.00
4,800.00	18.26	342.79	4,699.67	642.73	-199.08	-637.66	0.00	0.00	0.00
4,900.00	18.26	342.79	4,794.63	672.66	-208.35	-667.36	0.00	0.00	0.00
5,000.00	18.26	342.79	4,889.60	702.59	-217.62	-697.05	0.00	0.00	0.00
5,010.95	18.26	342.79	4,900.00	705.87	-218.63	-700.30	0.00	0.00	0.00
Shannon									
5,100.00	18.26	342.79	4,984.56	732.52	-226.89	-726.74	0.00	0.00	0.00
5,200.00	18.26	342.79	5,079.53	762.45	-236.16	-756.44	0.00	0.00	0.00
5,300.00	18.26	342.79	5,174.49	792.38	-245.43	-786.13	0.00	0.00	0.00
5,400.00	18.26	342.79	5,269.46	822.31	-254.70	-815.83	0.00	0.00	0.00
5,500.00	18.26	342.79	5,364.42	852.25	-263.97	-845.52	0.00	0.00	0.00
5,600.00	18.26	342.79	5,459.38	882.18	-273.24	-875.22	0.00	0.00	0.00
5,700.00	18.26	342.79	5,554.35	912.11	-282.51	-904.91	0.00	0.00	0.00
5,800.00	18.26	342.79	5,649.31	942.04	-291.78	-934.61	0.00	0.00	0.00
5,900.00	18.26	342.79	5,744.28	971.97	-301.05	-964.30	0.00	0.00	0.00
6,000.00	18.26	342.79	5,839.24	1,001.90	-310.32	-994.00	0.00	0.00	0.00
6,065.03	18.26	342.79	5,901.00	1,021.36	-316.35	-1,013.31	0.00	0.00	0.00
Teepee Buttes									
6,100.00	18.26	342.79	5,934.21	1,031.83	-319.59	-1,023.69	0.00	0.00	0.00
6,200.00	18.26	342.79	6,029.17	1,061.76	-328.86	-1,053.39	0.00	0.00	0.00
6,223.31	18.26	342.79	6,051.31	1,068.74	-331.03	-1,060.31	0.00	0.00	0.00
Start DLS 9.00 TFO -162.99									
6,250.00	15.98	340.24	6,076.81	1,076.19	-333.51	-1,067.70	9.00	-8.55	-9.56
6,300.00	11.83	332.92	6,125.34	1,087.23	-338.17	-1,078.62	9.00	-8.30	-14.64
6,350.00	8.05	318.42	6,174.59	1,094.42	-342.83	-1,085.69	9.00	-7.55	-29.00
6,400.00	5.50	286.03	6,224.25	1,097.70	-347.46	-1,088.86	9.00	-5.11	-64.77
6,450.00	6.00	240.14	6,274.03	1,097.06	-352.03	-1,088.11	9.00	1.00	-91.79
6,500.00	9.06	214.23	6,323.60	1,092.51	-356.51	-1,083.44	9.00	6.13	-51.81
6,550.00	12.99	202.51	6,372.68	1,084.06	-360.88	-1,074.89	9.00	7.85	-23.45
6,600.00	17.19	196.29	6,420.94	1,071.77	-365.10	-1,062.50	9.00	8.41	-12.43
6,650.00	21.51	192.49	6,468.11	1,055.72	-369.16	-1,046.36	9.00	8.64	-7.61
6,700.00	25.89	189.92	6,513.88	1,036.00	-373.03	-1,026.55	9.00	8.76	-5.15
6,750.00	30.31	188.05	6,557.98	1,012.74	-376.68	-1,003.21	9.00	8.83	-3.74
6,800.00	34.74	186.61	6,600.13	986.09	-380.08	-976.48	9.00	8.87	-2.87
6,824.51	36.92	186.02	6,620.00	971.82	-381.66	-962.18	9.00	8.89	-2.41
Sharon Springs									
6,850.00	39.19	185.47	6,640.07	956.19	-383.23	-946.52	9.00	8.90	-2.17
6,861.61	40.22	185.23	6,649.00	948.81	-383.92	-939.12	9.00	8.91	-2.02
Top A Chalk									
6,886.92	42.48	184.76	6,668.00	932.15	-385.38	-922.43	9.00	8.91	-1.89
Top A Marl									
6,900.00	43.64	184.52	6,677.55	923.25	-386.10	-913.52	9.00	8.92	-1.77
6,950.00	48.11	183.72	6,712.36	887.46	-388.67	-877.67	9.00	8.93	-1.60
7,000.00	52.58	183.03	6,744.26	849.04	-390.93	-839.21	9.00	8.94	-1.39
7,030.13	55.27	182.65	6,762.00	824.72	-392.13	-814.87	9.00	8.94	-1.26
Top B Chalk									

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
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)
7,050.00	57.05	182.41	6,773.06	808.24	-392.86	-798.37	9.00	8.95	-1.20
7,092.54	60.85	181.93	6,795.00	771.83	-394.23	-761.94	9.00	8.95	-1.12
Top B Marl									
7,100.00	61.52	181.85	6,798.60	765.29	-394.45	-755.40	9.00	8.95	-1.07
7,150.00	66.00	181.34	6,820.70	720.47	-395.69	-710.56	9.00	8.95	-1.03
7,199.31	70.41	180.86	6,839.00	674.71	-396.57	-664.79	9.00	8.96	-0.96
Top C Chalk									
7,200.00	70.48	180.86	6,839.23	674.06	-396.58	-664.14	9.00	8.96	-0.93
7,250.00	74.96	180.40	6,854.08	626.33	-397.10	-616.41	9.00	8.96	-0.91
7,300.00	79.44	179.97	6,865.16	577.59	-397.26	-567.68	9.00	8.96	-0.87
7,350.00	83.92	179.55	6,872.40	528.13	-397.05	-518.24	9.00	8.96	-0.84
7,400.00	88.40	179.13	6,875.75	478.26	-396.48	-468.40	9.00	8.96	-0.83
7,417.89	90.00	178.99	6,876.00	460.37	-396.18	-450.53	9.00	8.96	-0.83
TPZ/Landing Pt. at 7417.89 MD									
7,500.00	90.00	178.99	6,876.00	378.27	-394.73	-368.49	0.00	0.00	0.00
7,600.00	90.00	178.99	6,876.00	278.29	-392.97	-268.58	0.00	0.00	0.00
7,700.00	90.00	178.99	6,876.00	178.30	-391.20	-168.67	0.00	0.00	0.00
7,800.00	90.00	178.99	6,876.00	78.32	-389.43	-68.76	0.00	0.00	0.00
7,900.00	90.00	178.99	6,876.00	-21.66	-387.66	31.15	0.00	0.00	0.00
8,000.00	90.00	178.99	6,876.00	-121.65	-385.90	131.07	0.00	0.00	0.00
8,100.00	90.00	178.99	6,876.00	-221.63	-384.13	230.98	0.00	0.00	0.00
8,200.00	90.00	178.99	6,876.00	-321.62	-382.36	330.89	0.00	0.00	0.00
8,300.00	90.00	178.99	6,876.00	-421.60	-380.59	430.80	0.00	0.00	0.00
8,400.00	90.00	178.99	6,876.00	-521.59	-378.82	530.71	0.00	0.00	0.00
8,500.00	90.00	178.99	6,876.00	-621.57	-377.06	630.62	0.00	0.00	0.00
8,600.00	90.00	178.99	6,876.00	-721.56	-375.29	730.53	0.00	0.00	0.00
8,700.00	90.00	178.99	6,876.00	-821.54	-373.52	830.44	0.00	0.00	0.00
8,800.00	90.00	178.99	6,876.00	-921.52	-371.75	930.35	0.00	0.00	0.00
8,900.00	90.00	178.99	6,876.00	-1,021.51	-369.99	1,030.27	0.00	0.00	0.00
9,000.00	90.00	178.99	6,876.00	-1,121.49	-368.22	1,130.18	0.00	0.00	0.00
9,100.00	90.00	178.99	6,876.00	-1,221.48	-366.45	1,230.09	0.00	0.00	0.00
9,200.00	90.00	178.99	6,876.00	-1,321.46	-364.68	1,330.00	0.00	0.00	0.00
9,300.00	90.00	178.99	6,876.00	-1,421.45	-362.92	1,429.91	0.00	0.00	0.00
9,400.00	90.00	178.99	6,876.00	-1,521.43	-361.15	1,529.82	0.00	0.00	0.00
9,500.00	90.00	178.99	6,876.00	-1,621.41	-359.38	1,629.73	0.00	0.00	0.00
9,600.00	90.00	178.99	6,876.00	-1,721.40	-357.61	1,729.64	0.00	0.00	0.00
9,700.00	90.00	178.99	6,876.00	-1,821.38	-355.85	1,829.55	0.00	0.00	0.00
9,800.00	90.00	178.99	6,876.00	-1,921.37	-354.08	1,929.47	0.00	0.00	0.00
9,900.00	90.00	178.99	6,876.00	-2,021.35	-352.31	2,029.38	0.00	0.00	0.00
10,000.00	90.00	178.99	6,876.00	-2,121.34	-350.54	2,129.29	0.00	0.00	0.00
10,100.00	90.00	178.99	6,876.00	-2,221.32	-348.78	2,229.20	0.00	0.00	0.00
10,200.00	90.00	178.99	6,876.00	-2,321.31	-347.01	2,329.11	0.00	0.00	0.00
10,300.00	90.00	178.99	6,876.00	-2,421.29	-345.24	2,429.02	0.00	0.00	0.00
10,400.00	90.00	178.99	6,876.00	-2,521.27	-343.47	2,528.93	0.00	0.00	0.00
10,500.00	90.00	178.99	6,876.00	-2,621.26	-341.71	2,628.84	0.00	0.00	0.00
10,600.00	90.00	178.99	6,876.00	-2,721.24	-339.94	2,728.75	0.00	0.00	0.00
10,700.00	90.00	178.99	6,876.00	-2,821.23	-338.17	2,828.66	0.00	0.00	0.00
10,800.00	90.00	178.99	6,876.00	-2,921.21	-336.40	2,928.58	0.00	0.00	0.00
10,900.00	90.00	178.99	6,876.00	-3,021.20	-334.64	3,028.49	0.00	0.00	0.00
11,000.00	90.00	178.99	6,876.00	-3,121.18	-332.87	3,128.40	0.00	0.00	0.00
11,100.00	90.00	178.99	6,876.00	-3,221.16	-331.10	3,228.31	0.00	0.00	0.00
11,200.00	90.00	178.99	6,876.00	-3,321.15	-329.33	3,328.22	0.00	0.00	0.00
11,300.00	90.00	178.99	6,876.00	-3,421.13	-327.57	3,428.13	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
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)
11,400.00	90.00	178.99	6,876.00	-3,521.12	-325.80	3,528.04	0.00	0.00	0.00
11,500.00	90.00	178.99	6,876.00	-3,621.10	-324.03	3,627.95	0.00	0.00	0.00
11,600.00	90.00	178.99	6,876.00	-3,721.09	-322.26	3,727.86	0.00	0.00	0.00
11,700.00	90.00	178.99	6,876.00	-3,821.07	-320.50	3,827.78	0.00	0.00	0.00
11,800.00	90.00	178.99	6,876.00	-3,921.06	-318.73	3,927.69	0.00	0.00	0.00
11,900.00	90.00	178.99	6,876.00	-4,021.04	-316.96	4,027.60	0.00	0.00	0.00
12,000.00	90.00	178.99	6,876.00	-4,121.02	-315.19	4,127.51	0.00	0.00	0.00
12,100.00	90.00	178.99	6,876.00	-4,221.01	-313.43	4,227.42	0.00	0.00	0.00
12,200.00	90.00	178.99	6,876.00	-4,320.99	-311.66	4,327.33	0.00	0.00	0.00
12,300.00	90.00	178.99	6,876.00	-4,420.98	-309.89	4,427.24	0.00	0.00	0.00
12,400.00	90.00	178.99	6,876.00	-4,520.96	-308.12	4,527.15	0.00	0.00	0.00
12,500.00	90.00	178.99	6,876.00	-4,620.95	-306.36	4,627.06	0.00	0.00	0.00
12,600.00	90.00	178.99	6,876.00	-4,720.93	-304.59	4,726.98	0.00	0.00	0.00
12,700.00	90.00	178.99	6,876.00	-4,820.91	-302.82	4,826.89	0.00	0.00	0.00
12,800.00	90.00	178.99	6,876.00	-4,920.90	-301.05	4,926.80	0.00	0.00	0.00
12,900.00	90.00	178.99	6,876.00	-5,020.88	-299.29	5,026.71	0.00	0.00	0.00
13,000.00	90.00	178.99	6,876.00	-5,120.87	-297.52	5,126.62	0.00	0.00	0.00
13,100.00	90.00	178.99	6,876.00	-5,220.85	-295.75	5,226.53	0.00	0.00	0.00
13,200.00	90.00	178.99	6,876.00	-5,320.84	-293.98	5,326.44	0.00	0.00	0.00
13,300.00	90.00	178.99	6,876.00	-5,420.82	-292.22	5,426.35	0.00	0.00	0.00
13,400.00	90.00	178.99	6,876.00	-5,520.81	-290.45	5,526.26	0.00	0.00	0.00
13,500.00	90.00	178.99	6,876.00	-5,620.79	-288.68	5,626.17	0.00	0.00	0.00
13,600.00	90.00	178.99	6,876.00	-5,720.77	-286.91	5,726.09	0.00	0.00	0.00
13,700.00	90.00	178.99	6,876.00	-5,820.76	-285.15	5,826.00	0.00	0.00	0.00
13,800.00	90.00	178.99	6,876.00	-5,920.74	-283.38	5,925.91	0.00	0.00	0.00
13,900.00	90.00	178.99	6,876.00	-6,020.73	-281.61	6,025.82	0.00	0.00	0.00
14,000.00	90.00	178.99	6,876.00	-6,120.71	-279.84	6,125.73	0.00	0.00	0.00
14,100.00	90.00	178.99	6,876.00	-6,220.70	-278.08	6,225.64	0.00	0.00	0.00
14,200.00	90.00	178.99	6,876.00	-6,320.68	-276.31	6,325.55	0.00	0.00	0.00
14,300.00	90.00	178.99	6,876.00	-6,420.66	-274.54	6,425.46	0.00	0.00	0.00
14,400.00	90.00	178.99	6,876.00	-6,520.65	-272.77	6,525.37	0.00	0.00	0.00
14,500.00	90.00	178.99	6,876.00	-6,620.63	-271.01	6,625.29	0.00	0.00	0.00
14,600.00	90.00	178.99	6,876.00	-6,720.62	-269.24	6,725.20	0.00	0.00	0.00
14,700.00	90.00	178.99	6,876.00	-6,820.60	-267.47	6,825.11	0.00	0.00	0.00
14,800.00	90.00	178.99	6,876.00	-6,920.59	-265.70	6,925.02	0.00	0.00	0.00
14,900.00	90.00	178.99	6,876.00	-7,020.57	-263.93	7,024.93	0.00	0.00	0.00
15,000.00	90.00	178.99	6,876.00	-7,120.56	-262.17	7,124.84	0.00	0.00	0.00
15,100.00	90.00	178.99	6,876.00	-7,220.54	-260.40	7,224.75	0.00	0.00	0.00
15,200.00	90.00	178.99	6,876.00	-7,320.52	-258.63	7,324.66	0.00	0.00	0.00
15,300.00	90.00	178.99	6,876.00	-7,420.51	-256.86	7,424.57	0.00	0.00	0.00
15,400.00	90.00	178.99	6,876.00	-7,520.49	-255.10	7,524.49	0.00	0.00	0.00
15,500.00	90.00	178.99	6,876.00	-7,620.48	-253.33	7,624.40	0.00	0.00	0.00
15,600.00	90.00	178.99	6,876.00	-7,720.46	-251.56	7,724.31	0.00	0.00	0.00
15,700.00	90.00	178.99	6,876.00	-7,820.45	-249.79	7,824.22	0.00	0.00	0.00
15,800.00	90.00	178.99	6,876.00	-7,920.43	-248.03	7,924.13	0.00	0.00	0.00
15,900.00	90.00	178.99	6,876.00	-8,020.41	-246.26	8,024.04	0.00	0.00	0.00
16,000.00	90.00	178.99	6,876.00	-8,120.40	-244.49	8,123.95	0.00	0.00	0.00
16,100.00	90.00	178.99	6,876.00	-8,220.38	-242.72	8,223.86	0.00	0.00	0.00
16,200.00	90.00	178.99	6,876.00	-8,320.37	-240.96	8,323.77	0.00	0.00	0.00
16,300.00	90.00	178.99	6,876.00	-8,420.35	-239.19	8,423.69	0.00	0.00	0.00
16,400.00	90.00	178.99	6,876.00	-8,520.34	-237.42	8,523.60	0.00	0.00	0.00
16,500.00	90.00	178.99	6,876.00	-8,620.32	-235.65	8,623.51	0.00	0.00	0.00
16,600.00	90.00	178.99	6,876.00	-8,720.31	-233.89	8,723.42	0.00	0.00	0.00
16,700.00	90.00	178.99	6,876.00	-8,820.29	-232.12	8,823.33	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
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)
16,800.00	90.00	178.99	6,876.00	-8,920.27	-230.35	8,923.24	0.00	0.00	0.00
16,900.00	90.00	178.99	6,876.00	-9,020.26	-228.58	9,023.15	0.00	0.00	0.00
17,000.00	90.00	178.99	6,876.00	-9,120.24	-226.82	9,123.06	0.00	0.00	0.00
17,078.79	90.00	178.99	6,876.00	-9,199.02	-225.42	9,201.78	0.00	0.00	0.00
TD at 17078.79									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Roth A31-720_SHL - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	1,412,341.28	3,254,695.24	40.4616700	-104.5846600
Roth A31-720_KOP P2 - plan hits target center - Point	0.00	0.00	6,051.31	1,068.74	-331.03	1,413,410.01	3,254,364.22	40.4646129	-104.5858100
Roth A31-720_TPZ P2 - plan hits target center - Point	0.00	0.00	6,876.00	460.37	-396.18	1,412,801.65	3,254,299.06	40.4629449	-104.5860667
Roth A31-720_BHL P2 - plan hits target center - Point	0.00	0.00	6,876.00	-9,199.02	-225.42	1,403,142.28	3,254,469.82	40.4364266	-104.5858109

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
384.00	384.00	Pierre				
447.00	447.00	Upper Pierre Aquifer Top				
1,464.00	1,464.00	Upper Pierre Aquifer Base				
3,617.80	3,577.00	Parkman				
4,182.22	4,113.00	Sussex				
5,010.95	4,900.00	Shannon				
6,065.03	5,901.00	Teepee Buttes				
6,824.51	6,620.00	Sharon Springs				
6,861.61	6,649.00	Top A Chalk				
6,886.92	6,668.00	Top A Marl				
7,030.13	6,762.00	Top B Chalk				
7,092.54	6,795.00	Top B Marl				
7,199.31	6,839.00	Top C Chalk				

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A31-720		
Design:	Plan #2		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,200.00	2,200.00	0.00	0.00	Start Build 2.00
3,113.02	3,097.64	137.80	-42.68	Start 3110.29 hold at 3113.02 MD
6,223.31	6,051.31	1,068.74	-331.03	Start DLS 9.00 TFO -162.99
7,417.89	6,876.00	460.37	-396.18	TPZ/Landing Pt. at 7417.89 MD
17,078.79	6,876.00	-9,199.02	-225.42	TD at 17078.79

Northern Region - DJ Basin

Wells Ranch

A Section 30

Roth A31-720

Roth A31-720

Plan #2

Anticollision Summary Report

11 May, 2020

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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 A31-720)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	17,078.79	Plan #2 (Roth A31-720)	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 -	6,450.56	6,219.58	5,067.27	4,924.47	35.485	CC, ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,850.00	6,585.07	5,174.11	5,023.40	34.332	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,441.09	6,208.64	3,365.68	3,325.75	84.290	CC
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,450.00	6,219.28	3,365.74	3,325.75	84.164	ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,700.00	6,462.37	3,413.83	3,372.54	82.666	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,396.73	6,089.21	3,130.43	3,090.88	79.163	CC
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,400.00	6,092.61	3,130.43	3,090.87	79.120	ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,700.00	6,501.93	3,195.04	3,153.57	77.055	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D	6,504.85	6,316.21	5,002.62	4,962.15	123.625	CC, ES
Luppens 05-19 - Original Drilling - Original Drilling - As D	7,000.00	6,784.25	5,116.80	5,074.10	119.815	SF
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	6,512.83	6,302.99	3,236.69	3,195.08	77.798	CC, ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,000.00	6,713.71	3,343.10	3,297.04	72.584	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,701.56	6,461.29	2,657.90	2,509.58	17.919	CC
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,750.00	6,503.98	2,658.39	2,509.13	17.811	ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,050.00	6,719.06	2,686.94	2,533.09	17.464	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	6,555.35	6,406.86	3,510.88	3,464.39	75.516	CC, ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	7,000.00	6,819.60	3,575.83	3,527.33	73.733	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,491.00	6,405.82	4,061.91	4,019.69	96.224	CC
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,415.04	4,061.95	4,019.68	96.112	ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,800.00	6,723.41	4,109.75	4,066.17	94.311	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,518.13	6,354.01	2,772.91	2,731.68	67.263	CC, ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,800.00	6,625.84	2,800.93	2,758.44	65.909	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,469.75	6,348.54	3,110.43	3,061.80	63.955	CC, ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,650.00	6,534.12	3,129.28	3,079.82	63.272	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,544.13	6,345.20	4,089.86	4,049.20	100.577	CC
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,550.00	6,349.82	4,089.88	4,049.18	100.501	ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	7,000.00	6,775.12	4,166.65	4,123.92	97.519	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	6,654.87	6,411.64	3,946.15	3,798.92	26.802	CC
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	6,700.00	6,452.88	3,946.59	3,798.45	26.641	ES
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	7,150.00	6,759.70	4,004.80	3,850.08	25.886	SF
Roth A31-740 - Roth A31-740 - APD-Rev 0	7,414.68	7,311.04	1,338.70	1,297.81	32.737	CC
Roth A31-740 - Roth A31-740 - APD-Rev 0	17,078.79	16,956.79	1,356.55	1,184.47	7.883	ES, SF
Roth A31-748 - Roth A31-748 - APD-Rev 0	7,387.57	7,182.18	1,765.15	1,725.20	44.180	CC
Roth A31-748 - Roth A31-748 - APD-Rev 0	17,078.79	16,857.03	1,881.23	1,709.33	10.944	ES, SF
Roth A31-760 - Roth A31-760 - APD-Rev 0	7,406.31	7,203.43	2,392.80	2,353.39	60.707	CC
Roth A31-760 - Roth A31-760 - APD-Rev 0	17,078.79	16,861.60	2,407.54	2,235.23	13.972	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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 A31-770 - Roth A31-770 - APD-Rev 0	5,209.62	4,685.39	2,981.32	2,955.06	113.521	CC
Roth A31-770 - Roth A31-770 - APD-Rev 0	17,078.79	16,881.93	3,108.58	2,936.12	18.025	ES, SF
Roth A31-780 - Roth A31-780 - APD-Rev 0	3,408.44	2,732.46	3,109.44	3,093.69	197.465	CC, ES
Roth A31-780 - Roth A31-780 - APD-Rev 0	17,078.79	17,042.23	3,747.18	3,574.69	21.724	SF
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	3,386.81	2,700.00	3,133.52	3,117.87	200.293	CC, ES
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	17,078.79	17,259.11	4,431.22	4,258.35	25.633	SF
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,466.97	6,241.89	5,836.42	5,693.14	40.733	CC
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,500.00	6,274.60	5,837.08	5,693.06	40.529	ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,950.00	6,663.36	5,972.57	5,820.21	39.199	SF
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,410.76	6,195.34	1,658.67	1,618.76	41.569	CC, ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,550.00	6,335.52	1,673.53	1,632.81	41.102	SF
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,575.92	6,316.12	1,735.95	1,695.11	42.510	CC
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,600.00	6,344.82	1,736.05	1,695.07	42.360	ES
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,576.77	1,754.85	1,712.69	41.624	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,165.62	4,045.23	1,990.48	1,898.97	21.751	CC, ES, SF
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,441.85	6,316.52	1,351.95	1,311.48	33.408	CC
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,450.00	6,323.99	1,352.00	1,311.48	33.367	ES
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,550.00	6,413.96	1,360.61	1,319.52	33.114	SF
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	1,792.21			
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	61.31	1,792.40	1,792.17	7,727.440	ES
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,718.32	2,492.33	2,448.19	56.465	SF
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,394.08	6,342.91	1,193.64	1,148.69	26.553	CC
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,400.00	6,348.40	1,193.66	1,148.68	26.537	ES
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,442.69	1,201.68	1,156.24	26.444	SF
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	74.97	1,791.90	1,791.65	7,002.703	CC
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	200.00	169.55	1,792.15	1,791.25	2,001.043	ES
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	6,550.00	6,657.16	2,327.78	2,281.86	50.686	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,456.90	6,213.99	2,722.10	2,681.92	67.753	CC, ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,700.00	6,455.72	2,756.92	2,715.45	66.471	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	1,530.00	1,512.15	5,142.16	5,131.92	502.565	CC
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	4,000.00	3,993.45	5,145.28	5,121.34	214.929	ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,200.00	6,813.34	5,375.26	5,331.97	124.151	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,282.16	6,123.08	4,307.74	4,268.36	109.395	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,300.00	6,136.69	4,307.84	4,268.35	109.088	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	7,050.00	7,050.00	4,466.16	4,422.15	101.482	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	3,675.17	3,603.48	3,844.30	3,762.98	47.273	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	4,600.00	4,481.74	3,855.21	3,753.51	37.907	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,200.00	6,811.23	4,047.77	3,891.86	25.963	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,245.21	6,033.87	5,737.02	5,698.09	147.359	CC
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,250.00	6,037.47	5,737.03	5,698.07	147.244	ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,599.49	5,865.65	5,823.27	138.398	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,444.50	6,246.57	699.47	656.66	16.338	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,450.00	6,252.05	699.49	656.61	16.311	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,550.00	6,350.64	707.76	663.61	16.031	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	2,000.00	2,009.00	4,387.23	4,373.68	323.860	CC, ES
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,078.79	16,906.69	5,158.24	4,986.26	29.993	SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	2,812.12	2,815.47	4,365.78	4,350.86	292.767	CC
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	3,000.00	3,002.36	4,366.02	4,350.55	282.243	ES
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,078.79	16,790.15	4,587.29	4,416.21	26.813	SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	6,432.00	6,700.00	3,958.48	3,921.20	106.197	CC
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,070.27	16,883.96	3,963.64	3,792.05	23.099	ES, SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,062.69	16,949.50	3,249.75	3,078.64	18.992	CC
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,078.79	16,949.50	3,249.79	3,078.60	18.983	ES, SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	2,000.00	2,009.00	4,401.79	4,388.24	324.926	CC, ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	17,078.79	17,316.90	6,508.84	6,335.80	37.615	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	2,000.00	2,009.00	4,394.50	4,380.95	324.392	CC, ES
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	17,078.79	17,008.18	5,873.59	5,701.09	34.051	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	6,316.02	6,175.71	6,174.58	6,134.91	155.642	CC, ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,950.00	6,764.56	6,327.32	6,284.51	147.803	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	5,364.90	5,197.95	2,614.03	2,581.30	79.863	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	5,400.00	5,226.28	2,614.09	2,581.13	79.318	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,900.00	6,689.42	2,714.54	2,671.87	63.612	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,313.78	6,073.00	2,965.72	2,926.37	75.365	CC, ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,750.00	6,594.04	3,043.42	3,001.30	72.258	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,364.90	6,136.66	2,489.56	2,449.83	62.662	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,650.00	6,461.02	2,539.06	2,497.59	61.236	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,252.23	6,058.80	1,380.42	1,341.36	35.342	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,650.00	6,446.96	1,420.23	1,378.75	34.237	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,438.05	6,313.19	1,339.88	1,299.40	33.099	CC, ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,550.00	6,414.73	1,349.36	1,308.24	32.816	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	0.00	0.00	1,788.67			
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	61.58	1,788.86	1,788.62	7,692.304	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,600.00	6,718.47	2,466.32	2,422.07	55.740	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,388.48	6,337.89	1,124.24	1,078.40	24.524	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,450.00	6,395.11	1,126.84	1,080.73	24.437	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	100.00	76.48	1,783.30	1,783.04	6,896.546	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	200.00	171.72	1,783.44	1,782.53	1,974.140	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,550.00	6,658.06	2,263.55	2,216.53	48.147	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 21						
Culbreath 23-21 - Original Drilling - Original Drilling - As D	5,953.61	5,926.93	8,326.86	8,289.41	222.300	CC
Culbreath 23-21 - Original Drilling - Original Drilling - As D	6,000.00	5,946.26	8,326.94	8,289.24	220.876	ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	10,600.00	6,919.77	9,958.28	9,905.42	188.388	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	3,402.09	3,362.16	9,294.59	9,218.78	122.609	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	5,600.00	5,449.38	9,320.07	9,195.48	74.808	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,300.00	6,855.16	9,513.10	9,356.29	60.668	SF
Harper A21-618 - Harper A21-618 OH - As-Drilled	2,622.96	2,676.02	6,710.04	6,695.69	467.483	CC
Harper A21-618 - Harper A21-618 OH - As-Drilled	4,800.00	4,980.29	6,710.79	6,685.48	265.182	ES
Harper A21-618 - Harper A21-618 OH - As-Drilled	11,900.00	6,350.00	8,801.24	8,749.62	170.507	SF
Harper A21-626 - Harper A21-626 OH - As-Drilled	1,524.55	1,553.57	6,725.85	6,715.52	651.097	CC
Harper A21-626 - Harper A21-626 OH - As-Drilled	2,500.00	2,534.30	6,727.76	6,713.70	478.626	ES
Harper A21-626 - Harper A21-626 OH - As-Drilled	11,400.00	6,243.00	8,786.23	8,737.56	180.518	SF
Harper A21-631 - Harper A21-631 OH - As-Drilled	100.00	121.66	6,736.44	6,736.09	10,000.000	CC
Harper A21-631 - Harper A21-631 OH - As-Drilled	2,200.00	2,225.94	6,740.73	6,727.08	493.470	ES
Harper A21-631 - Harper A21-631 OH - As-Drilled	11,300.00	6,116.00	8,940.82	8,892.82	186.253	SF
Harper A21-637 - Harper A21-637 OH - As-Drilled	1,718.88	1,747.92	6,736.49	6,724.79	576.155	CC
Harper A21-637 - Harper A21-637 OH - As-Drilled	2,000.00	2,009.85	6,737.37	6,723.97	502.775	ES
Harper A21-637 - Harper A21-637 OH - As-Drilled	11,500.00	11,500.00	9,286.78	9,218.89	136.793	SF
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,246.17	6,154.00	6,890.33	6,855.86	199.894	CC
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,250.00	6,154.00	6,890.34	6,855.85	199.813	ES
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,700.00	6,154.00	6,953.09	6,917.52	195.475	SF
Harper A21-649 - Harper A21-649 OH - As-Drilled	6,287.03	6,193.23	7,006.72	6,972.01	201.838	CC, ES
Harper A21-649 - Harper A21-649 OH - As-Drilled	6,700.00	6,250.00	7,067.23	7,031.33	196.882	SF
Harper A21-656 - Harper A21-656 OH - As-Drilled	6,265.55	6,157.00	7,089.19	7,054.36	203.540	CC, ES
Harper A21-656 - Harper A21-656 OH - As-Drilled	6,800.00	6,251.00	7,188.19	7,151.84	197.736	SF
Harper A21-664 - Harper A21-664 OH - As-Drilled	6,259.74	6,113.43	7,241.21	7,205.83	204.664	CC, ES
Harper A21-664 - Harper A21-664 OH - As-Drilled	10,300.00	10,300.00	9,367.33	9,308.04	158.007	SF
Harper A21-669 - Harper A21-669 OH - As-Drilled	4,700.28	4,355.00	7,288.47	7,264.78	307.648	CC, ES
Harper A21-669 - Harper A21-669 OH - As-Drilled	10,200.00	10,200.00	9,418.80	9,359.60	159.100	SF
Harper A21-674 - Harper A21-674 OH - As-Drilled	1,893.50	1,938.61	7,322.08	7,309.17	567.027	CC
Harper A21-674 - Harper A21-674 OH - As-Drilled	2,800.00	2,548.00	7,323.02	7,308.65	509.711	ES
Harper A21-674 - Harper A21-674 OH - As-Drilled	10,000.00	10,000.00	9,448.93	9,389.72	159.587	SF
Harper A21-681 - Harper A21-681 OH - As-Drilled	1,919.33	1,965.42	7,326.84	7,313.75	559.653	CC
Harper A21-681 - Harper A21-681 OH - As-Drilled	2,000.00	2,007.15	7,327.03	7,313.62	546.708	ES
Harper A21-681 - Harper A21-681 OH - As-Drilled	10,200.00	10,200.00	9,739.66	9,677.27	156.093	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,774.52	13,918.08	408.25	309.82	4.148	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,800.00	13,919.16	409.55	309.05	4.075	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,850.00	13,920.90	419.50	315.57	4.037	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,726.55	14,204.49	914.91	813.04	8.981	CC
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,750.00	14,207.23	915.63	812.88	8.911	ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,850.00	14,218.97	934.80	828.78	8.817	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,584.03	14,372.40	1,594.01	1,484.43	14.546	CC
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,600.00	14,373.81	1,594.29	1,484.42	14.510	ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,700.00	14,380.78	1,608.65	1,497.16	14.429	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,558.46	14,217.42	2,259.85	2,151.31	20.821	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,650.00	14,222.75	2,268.25	2,158.76	20.717	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,533.79	14,091.52	3,316.04	3,209.13	31.018	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,650.00	14,101.16	3,328.60	3,220.70	30.848	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,492.34	14,363.00	3,991.19	3,880.89	36.187	CC
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,500.00	14,363.00	3,991.24	3,880.89	36.169	ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,600.00	14,363.00	4,001.70	3,890.67	36.043	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,490.79	15,345.03	4,757.08	4,660.95	49.485	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,650.00	15,348.58	4,779.48	4,682.46	49.261	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 21						
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,286.26	6,137.92	7,122.84	6,981.89	50.534	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,300.00	6,151.34	7,122.90	6,981.63	50.420	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,150.00	6,846.70	7,334.36	7,177.82	46.854	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,305.88	6,173.10	9,129.45	8,987.72	64.413	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,350.00	6,216.59	9,130.17	8,987.42	63.959	ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,150.00	6,862.70	9,358.63	9,201.79	59.671	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	6,231.06	5,897.16	8,453.60	8,415.16	219.930	CC
McKee 22-21 - Original Drilling - Original Drilling - As Dril	6,250.00	5,913.61	8,453.70	8,415.14	219.203	ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	8,000.00	8,000.00	9,021.63	8,973.83	188.759	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril						Out of range
McKee 32-21 - Original Drilling - Original Drilling - As Dril	6,239.24	6,045.01	9,643.29	9,604.29	247.260	CC
McKee 32-21 - Original Drilling - Original Drilling - As Dril	6,250.00	6,057.42	9,643.32	9,604.23	246.734	ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	7,200.00	6,861.58	9,842.20	9,798.71	226.350	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	6,818.51	6,805.57	527.022	CC
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,000.00	2,000.00	6,818.56	6,805.05	504.615	ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	17,078.79	17,720.27	9,837.32	9,662.50	56.269	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	1,903.05	1,932.05	6,796.49	6,783.56	525.364	CC
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,000.00	2,000.00	6,796.56	6,783.04	502.986	ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	17,078.79	17,515.21	9,190.07	9,015.68	52.699	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	1,903.05	1,932.05	6,774.70	6,761.76	523.678	CC
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	2,000.00	2,000.00	6,774.76	6,761.25	501.373	ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	17,078.79	17,093.98	8,518.96	8,345.11	49.004	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	1,903.70	1,931.70	6,752.89	6,739.96	521.949	CC
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	2,000.00	2,000.00	6,752.95	6,739.44	499.758	ES
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	17,078.79	16,956.23	7,883.76	7,710.18	45.420	SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	1,903.05	1,932.05	6,731.01	6,718.07	520.299	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	2,000.00	2,000.00	6,731.07	6,717.56	498.137	ES
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,078.79	16,811.58	7,196.54	7,022.73	41.403	SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A						Out of range
Wells Trust 13-21 - Original Drilling - Original Drilling - As	5,368.02	5,248.30	6,648.53	6,615.59	201.810	CC
Wells Trust 13-21 - Original Drilling - Original Drilling - As	5,500.00	5,336.33	6,649.06	6,615.34	197.132	ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,150.00	6,828.46	8,824.24	8,780.92	157.525	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	1,148.97	1,134.99	6,214.74	6,207.17	820.411	CC
Wells Trust 14-21 - Original Drilling - Original Drilling - As	1,600.00	1,554.02	6,215.37	6,204.76	585.684	ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	10,700.00	6,854.68	7,749.82	7,696.51	145.373	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	2,578.38	2,614.11	7,083.37	7,067.22	438.550	CC
Wells Trust 24-21 - Original Drilling - Original Drilling - As	2,600.00	2,630.90	7,083.38	7,067.15	436.436	ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	11,800.00	6,754.69	9,139.88	9,081.87	157.558	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	2,200.00	2,164.00	8,767.96	8,717.73	174.556	CC
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	2,400.00	2,363.84	8,769.61	8,715.30	161.449	ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	10,400.00	6,840.00	9,595.23	9,427.69	57.273	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys						Out of range
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	2,200.00	2,159.00	7,859.84	7,809.71	156.781	CC
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,400.00	6,835.00	7,866.55	7,697.79	46.613	ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	12,400.00	6,835.00	8,140.12	7,958.83	44.902	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	2,353.62	2,409.26	6,481.87	6,466.60	424.473	CC
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	2,400.00	2,448.66	6,481.98	6,466.54	419.984	ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	11,900.00	6,823.02	8,191.26	8,131.17	136.316	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	2,202.20	2,174.35	6,326.58	6,312.20	440.227	CC, ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	12,600.00	6,940.45	7,585.61	7,519.30	114.386	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,322.59	6,714.08	6,631.26	6,576.47	121.025	CC
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,400.00	6,714.84	6,631.71	6,576.43	119.962	ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	13,500.00	6,749.22	7,353.12	7,280.34	101.039	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,669.64	6,708.66	6,603.21	6,539.14	103.056	CC
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,709.73	6,603.28	6,538.99	102.709	ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,805.18	7,183.64	7,102.72	88.776	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	0.00	0.00	7,543.76			
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	2,100.00	2,045.91	7,545.33	7,531.43	542.741	ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	13,300.00	6,633.99	9,671.28	9,604.00	143.753	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	2,211.81	2,186.39	7,607.20	7,592.78	527.370	CC, ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	14,900.00	9,985.86	9,879.92	94.258	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,705.72	6,804.36	7,898.73	7,834.25	122.497	CC
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,800.00	6,804.07	7,899.30	7,834.15	121.257	ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	15,400.00	6,792.84	8,719.95	8,633.69	101.086	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,816.36	6,583.01	7,414.00	7,356.43	128.786	CC
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,584.63	7,414.47	7,356.34	127.545	ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	6,663.94	8,278.33	8,199.24	104.677	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	423.76	361.78	8,535.28	8,532.93	3,636.201	CC
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	2,249.41	2,259.62	8,541.55	8,526.86	581.361	ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	14,600.00	6,060.00	9,970.75	9,893.83	129.631	SF
Webster 09-28 (PR) - Original Drilling - Original Drilling -						Out of range
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,595.25	6,733.79	9,036.20	8,972.55	141.964	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,734.01	9,036.81	8,972.42	140.343	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	15,800.00	9,966.55	9,845.66	82.444	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A Section 29						
Amos 1 (DA) - Wellbore #1 - No Surveys	2,200.00	2,142.00	2,719.52	2,669.71	54.594	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	2,300.00	2,241.98	2,721.23	2,669.38	52.482	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	4,300.00	4,166.85	3,227.50	3,133.14	34.204	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	2,609.35	2,613.49	2,277.22	2,261.04	140.712	CC, ES
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,600.00	6,858.44	2,615.55	2,573.05	61.543	SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	2,200.00	2,156.00	2,557.12	2,507.05	51.065	CC
Andy 29-1 (PA) - Wellbore #1 - No Surveys	2,300.00	2,255.98	2,558.30	2,506.19	49.092	ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,200.00	6,832.00	2,687.58	2,526.02	16.635	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	8,825.11	6,831.29	1,403.38	1,356.83	30.149	CC, ES
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	9,000.00	6,830.47	1,414.24	1,367.08	29.990	SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	2,241.01	2,216.96	3,641.64	3,627.11	250.531	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	10,300.00	6,826.99	4,095.23	4,041.64	76.426	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	100.00	52.01	3,794.22	3,794.01	10,000.000	CC
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	2,500.00	2,527.26	3,800.97	3,785.20	241.025	ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	9,100.00	6,810.91	4,444.39	4,397.11	93.994	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	184.62	149.62	5,021.56	5,020.79	6,556.587	CC
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	900.00	832.40	5,022.89	5,017.24	889.475	ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	10,600.00	6,777.37	6,195.22	6,141.42	115.171	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	1,711.45	1,665.51	2,273.85	2,262.43	199.220	CC
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,938.59	2,275.31	2,261.94	170.211	ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,500.00	6,825.56	2,433.32	2,383.47	48.817	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,390.91	6,339.53	3,969.12	3,908.75	65.742	CC
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,400.00	6,339.15	3,969.14	3,908.70	65.675	ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,500.00	6,303.39	4,121.03	4,054.21	61.670	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,624.32	6,900.43	5,501.11	5,436.99	85.784	CC
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,903.50	5,501.63	5,436.98	85.099	ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	13,600.00	6,980.49	5,844.58	5,769.02	77.349	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,376.24	6,797.28	3,943.28	3,887.79	71.061	CC
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,797.00	3,943.35	3,887.72	70.878	ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,782.66	4,128.78	4,066.71	66.511	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,462.75	6,580.04	5,324.14	5,268.97	96.504	CC
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	6,580.16	5,324.27	5,268.86	96.093	ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	13,900.00	13,900.00	6,337.20	6,239.68	64.987	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,370.31	6,953.49	3,906.05	3,843.03	61.978	CC
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,400.00	6,950.60	3,906.16	3,842.95	61.799	ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,400.00	6,853.50	4,038.25	3,969.78	58.973	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,530.92	6,824.74	1,284.65	1,221.13	20.224	CC, ES
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,824.08	1,286.51	1,222.62	20.137	SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,278.03	6,825.36	1,219.22	1,164.38	22.233	CC, ES
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,400.00	6,825.81	1,225.30	1,169.91	22.119	SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,702.52	6,951.15	2,770.31	2,704.68	42.212	CC, ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,924.81	2,814.50	2,746.26	41.246	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,059.53	6,821.07	2,146.36	2,086.19	35.674	CC, ES
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,814.47	2,173.18	2,111.23	35.077	SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,612.89	6,814.94	2,838.38	2,781.27	49.698	CC, ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,810.43	2,898.46	2,838.19	48.090	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	11,654.21	6,818.34	1,316.96	1,252.59	20.461	CC, ES
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	11,800.00	6,875.09	1,324.96	1,259.45	20.226	SF
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	11,558.84	6,805.28	27.15	-36.43	0.427	Level 1, CC, ES, SF
Fairmeadows 03-30 - Original Drilling - Original Drilling -						Out of range
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,079.29	6,867.84	2,647.08	2,593.42	49.324	CC
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,100.00	6,867.42	2,647.16	2,593.36	49.201	ES
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,855.35	2,718.86	2,661.48	47.386	SF
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,519.50	6,741.26	2,450.93	2,387.71	38.766	CC, ES
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	12,000.00	6,746.96	2,497.58	2,431.15	37.599	SF
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	10,876.40	6,786.69	3,350.72	3,291.83	56.896	CC
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,786.60	3,350.81	3,291.74	56.733	ES
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,782.87	3,475.68	3,411.00	53.733	SF
J&L Farms 32-30 - Original Drilling - Original Drilling - As						Out of range
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,560.52	6,830.13	2,580.48	2,535.40	57.238	CC, ES
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,700.00	6,821.80	2,584.23	2,539.07	57.225	SF
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	4,206.09	4,078.67	1,651.48	1,559.11	17.880	CC, ES, SF
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	7,471.97	6,747.53	3,876.84	3,833.66	89.793	CC, ES
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	8,800.00	6,705.17	4,097.71	4,051.37	88.417	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,163.92	4,037.62	4,078.67	3,987.28	44.629	CC, ES, SF
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	8,166.58	6,796.95	3,010.14	2,965.88	68.011	CC, ES
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	9,000.00	6,791.05	3,123.38	3,076.06	66.010	SF
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	9,045.50	6,836.65	3,704.99	3,656.75	76.810	CC, ES
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	10,400.00	6,784.67	3,944.48	3,889.36	71.562	SF
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	9,225.80	6,812.46	2,420.30	2,371.77	49.869	CC, ES
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	9,800.00	6,811.23	2,487.48	2,435.95	48.268	SF
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	7,636.24	6,842.69	106.02	62.57	2.440	CC, ES, SF
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	7,833.05	6,855.90	1,246.32	1,202.62	28.520	CC, ES
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	7,900.00	6,857.11	1,248.12	1,204.30	28.483	SF
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	10,263.93	6,856.21	3,842.30	3,787.47	70.072	CC
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	10,300.00	6,855.90	3,842.47	3,787.40	69.768	ES
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	11,500.00	6,845.47	4,036.21	3,973.95	64.822	SF
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	11,819.45	6,805.00	3,817.54	3,639.49	21.440	CC, ES
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	12,300.00	6,805.00	3,847.67	3,666.16	21.199	SF
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	4,206.09	4,078.67	1,651.48	1,559.11	17.880	CC, ES, SF
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	8,885.26	6,778.84	1,369.97	1,323.13	29.252	CC, ES
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	9,100.00	6,776.68	1,386.69	1,338.79	28.950	SF
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	8,875.55	6,818.26	37.56	-9.54	0.797	Level 1, CC, ES, SF
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	8,288.39	6,874.63	699.04	653.97	15.510	CC, ES
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	8,300.00	6,874.91	699.13	654.02	15.497	SF
Roth A31-730 - Roth A31-730 - 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	2,000.28	1,999.28	91.08	77.51	6.713	CC
Roth A32-760 - Roth A32-760 - Plan #2	2,100.00	2,098.86	91.14	77.22	6.546	ES, SF
Roth A32-770 - Roth A32-770 - Plan #2	2,107.36	2,107.36	65.57	51.64	4.704	CC, ES
Roth A32-770 - Roth A32-770 - Plan #2	2,200.00	2,199.94	65.62	51.65	4.700	SF
Roth A32-779 - Roth A32-779 - Plan #2	2,200.00	2,200.00	43.72	29.75	3.131	CC, ES, SF
Roth A32-790 - Roth A32-790 - Plan #2	2,200.00	2,200.00	21.86	7.90	1.566	CC, ES, SF
Sander #1 (PA) - Original Drilling - Original Drilling - As D	11,570.30	6,810.00	3,763.62	3,587.27	21.342	CC
Sander #1 (PA) - Original Drilling - Original Drilling - As D	11,600.00	6,810.00	3,763.74	3,587.17	21.315	ES
Sander #1 (PA) - Original Drilling - Original Drilling - As D	12,100.00	6,810.00	3,800.72	3,620.63	21.105	SF
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,336.32	6,800.29	1,394.74	1,339.42	25.212	CC, ES
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	6,800.75	1,404.31	1,347.91	24.899	SF
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,622.55	6,813.55	23.06	-33.82	0.405	Level 1, CC, ES, SF
Wolfe 02-30G - Original Drilling - Original Drilling - As Dri						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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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 31						
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,200.00	10,749.49	81.04	-42.78	0.654	Level 1, SF
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,232.36	10,751.13	74.32	-36.97	0.668	Level 1, CC
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,300.00	10,754.46	100.43	-47.02	0.681	Level 1, ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,072.48	6,827.74	3,839.31	3,764.27	51.166	CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,100.00	6,828.49	3,839.41	3,764.15	51.016	ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	14,000.00	6,854.29	3,949.67	3,868.47	48.642	SF
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,759.44	6,854.07	1,275.01	1,179.11	13.295	CC, ES
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,856.35	1,275.66	1,179.43	13.256	SF
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,695.53	6,774.31	319.14	223.83	3.348	CC
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,774.18	319.18	223.81	3.347	ES, SF
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	16,885.31	6,840.07	1,549.03	1,444.06	14.758	CC
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	16,900.00	6,840.53	1,549.10	1,444.00	14.740	ES
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,000.00	6,843.67	1,553.27	1,447.47	14.682	SF
Marcy 1-31X (PA) - Original Hole - Original Hole	12,959.52	6,857.13	46.25	-29.90	0.607	Level 1, CC, ES, SF
Marcy 1-31X (PA) - Surface Gyros - Gyros	12,957.56	6,800.00	64.61	-7.46	0.896	Level 1, CC, ES, SF
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,154.80	6,778.92	3,053.71	2,970.53	36.715	CC
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,200.00	6,778.60	3,054.04	2,970.49	36.555	ES
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,775.08	3,101.99	3,015.13	35.714	SF
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,300.62	6,794.16	185.85	95.88	2.066	CC, ES, SF
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,280.36	6,805.54	2,611.60	2,527.98	31.234	CC
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,300.00	6,805.52	2,611.67	2,527.89	31.174	ES
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,700.00	6,805.15	2,645.10	2,558.65	30.598	SF
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	12,883.92	6,803.09	1,377.22	1,303.86	18.772	CC
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	12,900.00	6,803.33	1,377.32	1,303.81	18.738	ES
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,804.79	1,382.11	1,307.88	18.620	SF
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	12,834.32	6,809.04	2,756.20	2,683.30	37.805	CC, ES
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,400.00	6,813.39	2,813.65	2,737.06	36.735	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	15,432.79	6,756.03	1,235.98	1,142.88	13.277	CC, ES
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,761.43	1,237.79	1,144.30	13.240	SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,824.14	6,759.06	1,333.65	1,229.44	12.798	CC, ES
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,900.00	6,757.19	1,335.81	1,231.21	12.771	SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,662.22	6,763.06	3,905.25	3,810.29	41.124	CC
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,763.23	3,905.43	3,810.19	41.004	ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,766.38	3,974.33	3,875.01	40.014	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,898.43	6,759.32	5,267.58	5,162.94	50.343	CC
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,900.00	6,759.33	5,267.58	5,162.93	50.337	ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,759.90	5,270.66	5,164.68	49.733	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,920.04	6,829.57	3,941.43	3,867.62	53.393	CC, ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,800.00	6,815.65	4,038.45	3,959.45	51.119	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,256.66	6,819.86	3,920.30	3,836.20	46.615	CC
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,300.00	6,819.75	3,920.54	3,836.12	46.444	ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	17,000.00	17,000.00	4,784.83	4,657.91	37.700	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,536.05	6,763.90	1,547.46	1,461.41	17.984	CC, ES
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,768.34	1,556.11	1,469.23	17.910	SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,412.97	6,767.09	2,790.55	2,705.43	32.783	CC, ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,767.82	2,817.26	2,729.86	32.233	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	12,972.63	6,819.32	5,237.13	5,162.94	70.590	CC
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,819.13	5,237.20	5,162.81	70.403	ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,809.30	5,455.30	5,371.96	65.460	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,194.20	6,777.35	5,217.87	5,134.38	62.501	CC
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,200.00	6,777.35	5,217.87	5,134.34	62.468	ES
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	15,600.00	6,775.80	5,403.93	5,312.01	58.792	SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,497.40	6,792.45	4,815.00	4,737.12	61.825	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,500.00	6,792.37	4,815.00	4,737.10	61.810	ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	14,800.00	6,754.07	4,987.93	4,902.46	58.358	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,516.12	6,822.29	2,234.88	2,156.42	28.485	CC, ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,800.00	6,825.59	2,252.83	2,172.78	28.142	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,721.52	6,838.45	2,721.28	2,649.41	37.865	CC, ES
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,844.16	2,763.02	2,688.47	37.063	SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,719.65	6,813.00	1,387.78	1,202.87	7.505	CC, ES
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,800.00	6,813.00	1,390.10	1,204.75	7.500	SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,436.38	6,760.88	2,836.37	2,743.19	30.439	CC, ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,800.00	6,763.69	2,859.58	2,764.24	29.993	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,078.79	6,783.86	2,600.84	2,496.48	24.921	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,830.11	6,765.05	4,009.55	3,905.21	38.429	CC, ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,078.79	6,765.90	4,017.26	3,911.17	37.867	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,499.60	6,862.00	5,232.37	5,138.70	55.861	CC
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,500.00	6,862.01	5,232.37	5,138.69	55.859	ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	6,878.64	5,391.51	5,290.10	53.164	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	17,078.79	6,742.58	1,812.88	1,725.54	20.757	CC, ES, SF
Ehrlich 5E-323 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,568.78	1,309.22	1,212.75	13.572	CC, ES, SF
Ehrlich 5E-423 (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,637.74	1,052.51	958.96	11.251	CC, ES, SF
Ehrlich 5J-203 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,500.00	2,115.54	2,013.22	20.676	CC, ES, SF
Ehrlich 5J-223 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,537.67	2,547.19	2,442.73	24.383	CC, ES, SF
Ehrlich 5J-243 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,500.00	1,651.69	1,552.56	16.661	CC, ES, SF
Ehrlich 5J-303 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,529.64	1,860.41	1,758.90	18.327	CC, ES, SF
Ehrlich 5J-323 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,550.00	2,330.12	2,226.22	22.427	CC, ES, SF
Ehrlich 5M-243 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,720.75	3,034.92	2,928.10	28.411	CC, ES, SF
Ehrlich 5M-343 (PR) - Wellbore #1 - Permitted-PDC	17,078.79	6,650.00	2,776.28	2,670.28	26.191	CC, ES, SF
Mininger Pfeif 41-5 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,750.39	5,373.84	5,269.46	51.483	CC, ES, SF
Noffsinger 21-5 (TA) - Wellbore #1 - Gyro Surveys	17,078.79	6,776.50	2,827.80	2,726.65	27.957	CC, ES, SF
Noffsinger 31-5 (TA) - Wellbore #1 - Gyro Surveys	17,078.79	6,723.08	4,031.01	3,927.25	38.851	CC, ES, SF
Snowmass 10N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	7,072.20	3,702.77	3,591.26	33.208	CC, ES, SF
Snowmass 1C (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,400.00	3,149.32	3,045.31	30.282	CC, ES, SF
Snowmass 2N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,350.00	3,223.98	3,119.73	30.925	CC, ES, SF
Snowmass 3N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,450.00	2,838.08	2,732.14	26.789	CC, ES, SF
Snowmass 4N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,650.00	2,718.76	2,609.93	24.982	CC, ES, SF
Snowmass 5N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,550.00	3,045.55	2,937.03	28.064	CC, ES, SF
Snowmass 6N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,800.00	3,003.61	2,892.41	27.012	CC, ES, SF
Snowmass 7N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,700.00	3,328.34	3,217.97	30.155	CC, ES, SF
Snowmass 8N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,900.00	3,292.20	3,180.38	29.443	CC, ES, SF
Snowmass 9N (DG) - Wellbore #1 - Permitted-PDC	17,078.79	6,822.12	3,608.65	3,497.71	32.527	CC, ES, SF
B Section 06						
Webster B6-1 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,768.41	1,182.57	1,124.19	20.255	CC, ES, SF
Webster B6-2 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,738.82	1,546.09	1,457.47	17.446	CC, ES, SF
B Section 07						
Dunn 7I-201 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,804.00	4,199.49	3,944.38	16.461	CC, ES, SF
Dunn 7I-221 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,773.00	3,803.18	3,548.14	14.912	CC, ES, SF
Dunn 7I-321 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,853.00	4,034.66	3,779.31	15.800	CC, ES, SF
Dunn 7L-201 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,789.00	3,206.36	2,953.56	12.683	CC, ES, SF
Dunn 7L-221 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,878.00	2,741.88	2,492.91	11.013	CC, ES, SF
Dunn 7L-301 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,840.00	3,000.15	2,748.87	11.940	CC, ES, SF
Dunn 7L-341 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,843.00	3,480.18	3,226.41	13.714	CC, ES, SF
Dunn 7Q-221 (PR) - Wellbore #1 - MWD Surveys	17,078.79	17,087.00	1,706.81	1,476.27	7.403	CC, ES, SF
Dunn 7Q-241 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,925.00	2,189.99	1,948.05	9.052	CC, ES, SF
Dunn 7Q-301 (PR) - Wellbore #1 - MWD Surveys	17,078.79	17,027.00	1,963.52	1,725.35	8.244	CC, ES, SF
Dunn 7Q-341 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,864.00	2,426.47	2,181.10	9.889	CC, ES, SF
J Klein 7Q-321 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,410.00	1,638.70	1,429.24	7.823	CC, ES, SF
J Klein 7T-121 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,284.00	1,045.78	989.84	18.695	CC, ES, SF
J Klein 7T-201 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,391.00	1,040.38	944.84	10.889	CC, ES, SF
J Klein 7T-241 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,310.00	1,319.09	1,143.99	7.534	CC, ES, SF
J Klein 7T-301 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,448.00	1,161.75	1,018.82	8.128	CC, ES, SF
J Klein 7Y-201 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,568.00	1,227.14	1,049.40	6.904	CC, ES, SF
J Klein 7Y-241 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,503.00	1,009.23	911.79	10.358	CC, ES, SF
J Klein 7Y-341 (PR) - Wellbore #1 - MWD Surveys	17,078.79	16,596.00	1,089.72	948.45	7.714	CC, ES, SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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)	Distance Between Ellipses (ft)	Separation Factor	Warning
E Section 24						
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	6,723.68	6,688.66	9,214.86	9,172.58	217.983	CC, ES
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	9,300.00	6,940.42	9,986.30	9,937.45	204.450	SF
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	6,913.28	6,668.56	7,793.36	7,739.96	145.958	CC
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	6,950.00	6,693.61	7,793.55	7,739.94	145.377	ES
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	11,600.00	6,817.46	9,426.85	9,356.00	133.051	SF
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,471.91	6,190.57	6,758.04	6,718.11	169.230	CC, ES
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	7,000.00	6,609.22	6,906.01	6,863.90	164.001	SF
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,503.36	6,241.74	5,936.67	5,896.43	147.509	CC, ES
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,950.00	6,830.43	6,009.05	5,966.19	140.209	SF
Courtney E24-02 - Original Drilling - As Drilled	6,488.48	6,179.99	7,844.68	7,804.71	196.286	CC
Courtney E24-02 - Original Drilling - As Drilled	6,500.00	6,200.01	7,844.76	7,804.70	195.814	ES
Courtney E24-02 - Original Drilling - As Drilled	9,900.00	9,900.00	9,934.00	9,875.24	169.052	SF
Courtney E24-07 - Original Drilling - As Drilled	6,557.29	6,450.58	7,092.57	7,051.51	172.751	CC, ES
Courtney E24-07 - Original Drilling - As Drilled	7,100.00	6,869.83	7,197.95	7,154.79	166.759	SF
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	6,951.87	6,756.58	9,108.89	9,066.00	212.387	CC, ES
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	10,400.00	6,957.95	9,992.11	9,937.31	182.342	SF
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled	6,595.62	6,521.99	9,672.98	9,631.54	233.435	CC
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled	6,600.00	6,525.65	9,672.98	9,631.52	233.309	ES
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled	7,150.00	6,732.73	9,764.87	9,722.02	227.886	SF
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,577.95	6,322.60	5,221.25	5,180.50	128.124	CC, ES
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	7,100.00	6,686.45	5,298.52	5,255.85	124.178	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,171.56	4,048.89	5,385.11	5,293.48	58.773	ES, SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,599.34	3,684.00	5,380.48	5,295.54	63.345	CC
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,750.00	11,144.00	4,165.54	4,067.98	42.698	SF
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,867.82	11,144.00	4,162.12	4,064.79	42.761	CC, ES
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,850.00	11,451.00	4,350.04	4,251.89	44.321	SF
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,941.75	11,451.00	4,347.81	4,249.85	44.382	CC, ES
Miller #33-24 - Original Drilling - As Drilled	6,621.11	6,390.02	6,509.49	6,362.77	44.366	CC
Miller #33-24 - Original Drilling - As Drilled	6,650.00	6,417.12	6,509.68	6,362.36	44.187	ES
Miller #33-24 - Original Drilling - As Drilled	7,200.00	6,788.24	6,589.93	6,434.63	42.433	SF
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	6,774.27	6,342.20	6,250.80	6,209.56	151.571	CC
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	6,800.00	6,364.38	6,250.88	6,209.52	151.150	ES
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	10,600.00	6,531.21	7,566.97	7,513.80	142.321	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,850.00	11,309.00	4,613.38	4,515.02	46.903	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,918.84	11,309.00	4,612.23	4,513.97	46.937	CC, ES
Storis E24-73-1HNA - Original Drilling - Original Drilling -	7,096.05	11,685.00	5,553.88	5,445.71	51.344	CC, ES
Storis E24-73-1HNA - Original Drilling - Original Drilling -	7,100.00	11,685.00	5,553.88	5,445.71	51.344	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling -	7,100.00	11,464.00	5,403.98	5,297.33	50.673	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling -	7,134.68	11,464.00	5,403.75	5,297.12	50.674	CC, ES
Storis E24-73HC - Original Drilling - Original Drilling - As	6,991.31	11,368.00	5,743.80	5,643.97	57.534	CC, ES
Storis E24-73HC - Original Drilling - Original Drilling - As	7,050.00	11,368.00	5,744.57	5,644.72	57.531	SF
Storis E24-73HN - Original Drilling - Original Drilling	6,949.88	11,262.00	5,944.21	5,844.16	59.415	CC
Storis E24-73HN - Original Drilling - Original Drilling	6,950.00	11,262.00	5,944.21	5,844.16	59.415	ES
Storis E24-73HN - Original Drilling - Original Drilling	7,000.00	11,262.00	5,944.71	5,844.63	59.398	SF
Storis E24-75-1HC - Original Drilling - Original Drilling - A	7,103.94	11,784.00	6,761.15	6,651.30	61.550	CC, ES
Storis E24-75-1HC - Original Drilling - Original Drilling - A	7,350.00	11,784.00	6,771.76	6,661.48	61.403	SF
Storis E24-75-1HN - Original Drilling - Original Drilling - A	7,072.07	11,684.00	6,878.94	6,815.09	107.730	CC, ES
Storis E24-75-1HN - Original Drilling - Original Drilling - A	9,800.00	11,684.00	7,530.20	7,458.99	105.743	SF
Storis E24-75HN - Original Drilling - Original Drilling - As	7,093.54	11,585.00	7,073.99	7,010.21	110.915	CC
Storis E24-75HN - Original Drilling - Original Drilling - As	7,100.00	11,585.00	7,074.00	7,010.21	110.898	ES
Storis E24-75HN - Original Drilling - Original Drilling - As	10,100.00	11,585.00	7,834.59	7,761.81	107.653	SF
Storis E24-76-1HN - Original Drilling - Original Drilling - A	6,939.31	7,293.11	7,272.21	7,228.11	164.901	CC, ES
Storis E24-76-1HN - Original Drilling - Original Drilling - A	11,900.00	7,019.00	9,076.62	9,012.08	140.637	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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 E24-77-1HN - Original Drilling - Original Drilling - A	7,029.38	6,688.00	8,013.13	7,972.12	195.432	CC, ES
Storis E24-77-1HN - Original Drilling - Original Drilling - A	12,700.00	6,260.00	9,941.04	9,878.72	159.521	SF
Storis E24-78-1HN - Original Drilling - Original Drilling - A	7,067.78	6,850.59	8,671.72	8,630.70	211.379	CC, ES
Storis E24-78-1HN - Original Drilling - Original Drilling - A	11,700.00	6,307.00	9,954.70	9,896.80	171.939	SF
Storis E24-79-1HN - Original Drilling - Original Drilling - A	0.00	0.00	9,242.31			
Storis E24-79-1HN - Original Drilling - Original Drilling - A	900.00	817.00	9,246.81	9,241.82	1,851.260	ES
Storis E24-79-1HN - Original Drilling - Original Drilling - A	10,300.00	6,214.00	9,980.49	9,928.51	192.007	SF
Storis E24-79HN - Original Drilling - Original Drilling - As	986.84	942.91	9,263.27	9,258.16	1,811.872	CC
Storis E24-79HN - Original Drilling - Original Drilling - As	1,000.00	947.06	9,263.31	9,258.14	1,792.428	ES
Storis E24-79HN - Original Drilling - Original Drilling - As	9,600.00	6,359.00	9,998.79	9,949.13	201.334	SF
Wake E24-77HN - Original Drilling - Original Drilling	6,992.75	11,040.02	8,374.26	8,274.14	83.644	CC, ES
Wake E24-77HN - Original Drilling - Original Drilling	7,000.00	11,040.02	8,374.27	8,274.15	83.642	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	7,587.90	6,839.14	9,005.84	8,962.29	206.793	CC
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	7,600.00	6,839.12	9,005.85	8,962.29	206.752	ES
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	11,900.00	6,832.31	9,984.95	9,921.31	156.900	SF
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	8,906.23	7,149.99	9,021.10	8,973.56	189.779	CC, ES
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	13,200.00	7,160.00	9,990.78	9,918.23	137.706	SF
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys	9,940.35	9,940.35	9,442.55	9,378.81	148.158	CC
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys	10,000.00	10,000.00	9,442.73	9,378.42	146.826	ES
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	11,700.00	9,605.10	9,523.58	117.824	SF
LDS E25-33D - Original Drilling - Original Drilling - As Dri	10,789.19	7,036.61	9,601.19	9,537.85	151.586	CC
LDS E25-33D - Original Drilling - Original Drilling - As Dri	10,900.00	7,030.64	9,601.83	9,537.72	149.775	ES
LDS E25-33D - Original Drilling - Original Drilling - As Dri	13,500.00	6,909.50	9,975.47	9,893.74	122.050	SF
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	11,717.01	6,745.42	5,195.75	5,131.17	80.455	CC, ES
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	6,728.96	5,526.41	5,449.93	72.260	SF
Little Will #10 - Original Drilling - Original Drilling - As Dri	7,571.41	6,700.00	4,949.98	4,906.89	114.878	CC, ES
Little Will #10 - Original Drilling - Original Drilling - As Dri	10,200.00	6,668.27	5,604.50	5,551.97	106.683	SF
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	10,212.77	6,781.59	6,383.24	6,328.85	117.364	CC, ES
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	13,300.00	6,762.26	7,090.58	7,017.80	97.425	SF
Little Will #3 (PA) - Original Drilling - No Surveys	8,979.57	6,818.00	5,081.82	4,921.52	31.702	CC
Little Will #3 (PA) - Original Drilling - No Surveys	9,000.00	6,818.00	5,081.86	4,921.47	31.683	ES
Little Will #3 (PA) - Original Drilling - No Surveys	9,900.00	6,818.00	5,164.51	4,999.26	31.253	SF
Little Will #4 - Original Drilling - Original Drilling - As Drille	7,903.93	6,611.42	5,853.86	5,810.62	135.374	CC, ES
Little Will #4 - Original Drilling - Original Drilling - As Drille	11,300.00	6,558.89	6,767.34	6,709.14	116.294	SF
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,575.78	11,575.78	6,325.50	6,245.10	78.673	CC
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	11,600.00	6,325.55	6,244.88	78.416	ES
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	14,900.00	7,145.79	7,034.34	64.118	SF
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	7,201.23	6,884.93	9,586.63	9,534.87	185.205	CC, ES
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	9,800.00	6,935.60	9,998.23	9,938.76	168.100	SF
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	8,401.46	7,155.00	9,505.16	9,458.77	204.920	CC, ES
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	11,500.00	7,148.77	9,997.45	9,934.12	157.878	SF
Meisner 02-25EG (PA) - Original Drilling - No Surveys	8,671.61	6,838.00	7,723.10	7,563.75	48.464	CC
Meisner 02-25EG (PA) - Original Drilling - No Surveys	8,700.00	6,838.00	7,723.16	7,563.68	48.430	ES
Meisner 02-25EG (PA) - Original Drilling - No Surveys	10,900.00	6,838.00	8,038.16	7,866.55	46.840	SF
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	11,565.53	6,766.11	7,726.67	7,637.71	86.848	CC
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,766.30	7,726.75	7,637.53	86.600	ES
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	14,800.00	6,784.04	8,376.33	8,266.39	76.186	SF
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	10,210.75	7,004.26	7,714.55	7,659.96	141.319	CC
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	10,300.00	7,004.50	7,715.07	7,659.89	139.838	ES
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	14,500.00	7,016.14	8,826.76	8,746.82	110.409	SF
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	10,446.41	6,823.00	9,064.21	8,895.36	53.684	CC
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	10,500.00	6,823.00	9,064.37	8,895.16	53.571	ES
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	13,400.00	6,823.00	9,533.29	9,344.74	50.563	SF
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	10,362.53	6,725.69	8,823.48	8,768.31	159.925	CC
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,724.42	8,823.56	8,768.15	159.221	ES
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	15,000.00	6,579.74	9,966.92	9,883.62	119.645	SF
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	11,721.61	6,435.51	8,621.03	8,557.38	135.438	CC
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,434.36	8,621.39	8,557.15	134.217	ES
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,400.00	9,714.74	9,623.41	106.365	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	9,590.60	17,966.68	4,877.20	4,816.52	80.384	CC, ES
Bear E26-650 - Bear E26-650 - Plan #1	13,800.00	17,966.68	6,442.52	6,310.81	48.914	SF
Bear E26-660 - Bear E26-660 - Plan #1	8,930.58	17,652.10	4,873.28	4,818.48	88.925	CC, ES
Bear E26-660 - Bear E26-660 - Plan #1	13,200.00	17,652.10	6,478.95	6,349.28	49.968	SF
Bear E26-670 - Bear E26-670 - Plan #1	8,270.56	17,547.99	4,869.24	4,818.90	96.731	CC, ES
Bear E26-670 - Bear E26-670 - Plan #1	12,700.00	17,547.99	6,582.50	6,453.50	51.024	SF
Bear E26-680 - Bear E26-680 - Plan #1	7,610.54	17,404.52	4,865.22	4,817.06	101.011	CC, ES
Bear E26-680 - Bear E26-680 - Plan #1	12,100.00	17,404.52	6,620.09	6,492.76	51.992	SF
Bear E26-690 - Bear E26-690 - Plan #1	7,162.54	17,453.70	4,871.21	4,823.14	101.329	CC, ES
Bear E26-690 - Bear E26-690 - Plan #1	11,500.00	17,453.70	6,658.00	6,532.28	52.958	SF
Bear E28-653 - Bear E28-653 - Plan #1						Out of range
Healy E34-69HN - Original Drilling - Original Drilling	12,246.74	6,169.50	9,958.52	9,892.84	151.627	CC
Healy E34-69HN - Original Drilling - Original Drilling	12,300.00	6,169.47	9,958.66	9,892.58	150.698	ES
Healy E34-69HN - Original Drilling - Original Drilling	13,100.00	6,168.97	9,995.01	9,922.90	138.603	SF
Howard 06-26EG (SI) - Wellbore #1 - Gyro Surveys						Out of range
Howard 11-26EG (SI) - Wellbore #1 - Gyro Surveys						Out of range
Howard 14-26EG - Original Drilling - No Surveys						Out of range
Howard E26-1 (TA) - Wellbore #1 - Gyro Surveys						Out of range
Howard E26-17 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Lyster 04-26EG - Wellbore #1 - Wellbore #1- As Drilled						Out of range
Lyster 9-26EG (PA) - Wellbore #1 - Gyro Surveys						Out of range
Lyster E26-10 - Original Drilling - No Surveys						Out of range
Lyster E26-10X (SI) - Wellbore #1 - Gyro Surveys						Out of range
Lyster E26-15 - Original Drilling - Original Drilling - As Dri						Out of range
Lyster E26-22DX - Sidetrack 01 - MWD Surveys						Out of range
Lyster E26-22DX - Wellbore #1 - MWD Surveys						Out of range
Lyster E26-23 (SI) - Wellbore #1 - Gyro Surveys						Out of range
NGL C4 (SI) - Wellbore #1 - Gyro Surveys						Out of range
NGL C4A (IJ) - Wellbore #1 - MWD Surveys						Out of range
Resolute E25-63-1HN - Original Drilling - Original Drilling	11,280.99	11,387.00	4,951.05	4,884.35	74.229	CC
Resolute E25-63-1HN - Original Drilling - Original Drilling	11,400.00	11,387.00	4,952.48	4,884.06	72.382	ES
Resolute E25-63-1HN - Original Drilling - Original Drilling	14,900.00	11,387.00	6,132.71	5,996.26	44.946	SF
Resolute E25-63HC - Original Drilling - Original Drilling -	10,958.29	11,166.00	4,948.47	4,881.53	73.924	CC
Resolute E25-63HC - Original Drilling - Original Drilling -	11,000.00	11,166.00	4,948.65	4,881.09	73.255	ES
Resolute E25-63HC - Original Drilling - Original Drilling -	14,500.00	11,166.00	6,085.32	5,953.21	46.064	SF
Resolute E25-63HN - Original Drilling - Original Drilling -	11,118.90	11,151.00	4,958.51	4,892.28	74.866	CC
Resolute E25-63HN - Original Drilling - Original Drilling -	11,200.00	11,151.00	4,959.17	4,891.76	73.565	ES
Resolute E25-63HN - Original Drilling - Original Drilling -	14,800.00	11,151.00	6,175.54	6,040.13	45.606	SF
Resolute State E25-62-1HN - Original Drilling - Original D	11,953.96	11,410.00	4,955.76	4,885.60	70.638	CC
Resolute State E25-62-1HN - Original Drilling - Original D	12,000.00	11,410.00	4,955.97	4,885.54	70.370	ES
Resolute State E25-62-1HN - Original Drilling - Original D	15,700.00	11,410.00	6,212.28	6,076.87	45.878	SF
RSW Farms 02-26EG (PA) - Original Drilling - No Survey						Out of range
RSW Farms 13-26EG (PA) - Original Drilling - No Survey						Out of range
Ryan 01-26EG (PA) - Wellbore #1 - Gyro Surveys						Out of range
Ryan 03-26EG (PA) - Original Drilling - No Surveys						Out of range
Steadfast E27-62-1HN - Original Drilling - Original Drilling						Out of range
Steadfast E27-63-1HN - Original Drilling - Original Drilling	11,183.09	6,147.00	9,938.48	9,879.07	167.263	CC
Steadfast E27-63-1HN - Original Drilling - Original Drilling	11,300.00	6,147.00	9,939.17	9,878.90	164.912	ES
Steadfast E27-63-1HN - Original Drilling - Original Drilling	12,200.00	6,147.00	9,990.37	9,923.54	149.476	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

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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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						

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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
Offset Well - Wellbore - Design						
E Section 36						
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,543.34	11,279.00	4,969.73	4,883.07	57.341	CC
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,600.00	11,279.00	4,970.06	4,882.34	56.662	ES
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	16,600.00	11,279.00	5,834.50	5,689.25	40.168	SF
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,528.28	7,044.28	3,858.37	3,753.85	36.918	CC
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,600.00	7,042.97	3,859.03	3,753.79	36.668	ES
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	16,300.00	7,030.13	3,934.76	3,823.86	35.482	SF
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	16,827.25	6,967.86	3,842.87	3,737.43	36.445	CC, ES
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,078.79	6,966.42	3,851.10	3,743.65	35.842	SF
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,544.61	7,388.89	2,650.47	2,542.67	24.587	CC
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,600.00	7,387.76	2,651.05	2,542.34	24.387	ES
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	16,200.00	7,375.43	2,730.26	2,613.76	23.436	SF
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	16,895.36	7,202.81	2,618.27	2,509.38	24.046	CC
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	16,900.00	7,202.81	2,618.27	2,509.35	24.037	ES
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,078.79	7,203.12	2,624.69	2,514.27	23.772	SF
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys	16,162.12	6,986.76	9,551.10	9,452.07	96.445	CC
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,987.71	9,551.18	9,451.84	96.148	ES
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	7,009.73	9,594.96	9,488.81	90.387	SF
LDS F 01-27 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,835.99	5,742.55	5,636.44	54.123	CC, ES, SF
LDS F 01-28D (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,999.44	7,013.33	6,906.52	65.664	CC, ES, SF
LDS F 01-29 (SI) - Wellbore #1 - Inc Only Surveys	17,078.79	6,793.46	8,405.30	8,178.47	37.056	CC, ES, SF
LDS F 01-30D (TA) - Wellbore #1 - MWD Surveys	17,078.79	6,864.08	9,654.63	9,540.12	84.314	CC, ES, SF
Mansfield E36-65HN - Original Drilling - Original Drilling	14,962.65	7,500.02	8,641.98	8,550.26	94.217	CC
Mansfield E36-65HN - Original Drilling - Original Drilling	15,000.00	7,500.02	8,642.06	8,550.04	93.916	ES
Mansfield E36-65HN - Original Drilling - Original Drilling	17,078.79	7,500.02	8,897.30	8,790.60	83.391	SF
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	14,867.39	11,178.00	4,965.90	4,872.94	53.423	CC
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	14,900.00	11,178.00	4,966.01	4,872.77	53.264	ES
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	17,078.79	11,178.00	5,436.03	5,305.85	41.759	SF
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,771.36	6,940.94	7,708.93	7,635.87	105.524	CC
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,800.00	6,941.44	7,708.98	7,635.70	105.204	ES
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	16,200.00	7,001.58	8,436.79	8,342.07	89.072	SF
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	16,942.99	6,769.48	6,478.94	6,373.66	61.540	CC
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,000.00	6,770.08	6,479.19	6,373.44	61.268	ES
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,078.79	6,770.92	6,480.36	6,373.97	60.909	SF
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	12,838.27	6,800.00	9,053.06	8,979.92	123.785	CC
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	12,900.00	6,800.00	9,053.27	8,979.66	122.983	ES
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	17,078.79	6,800.00	9,996.99	9,896.96	99.935	SF
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	12,840.11	6,991.98	9,051.22	8,976.94	121.852	CC
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	12,900.00	6,992.56	9,051.42	8,976.67	121.094	ES
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	17,078.79	7,033.37	9,994.46	9,893.11	98.612	SF
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	12,792.57	6,978.30	5,175.98	5,103.18	71.099	CC
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	12,800.00	6,978.45	5,175.98	5,103.12	71.043	ES
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	7,013.64	5,450.21	5,366.56	65.152	SF
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,624.17	6,791.00	6,386.98	6,179.89	30.843	CC
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,700.00	6,791.00	6,387.43	6,179.73	30.753	ES
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	16,800.00	6,791.00	6,494.31	6,278.75	30.128	SF
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,512.05	6,787.00	7,613.10	7,406.99	36.937	CC
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,600.00	6,787.00	7,613.61	7,406.78	36.812	ES
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	17,078.79	6,787.00	7,772.64	7,555.24	35.752	SF
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	15,689.64	6,954.50	9,107.93	9,011.59	94.534	CC
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,956.24	9,108.60	9,011.35	93.664	ES
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,976.37	9,213.23	9,106.29	86.150	SF
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	16,619.83	7,031.00	9,120.28	9,016.44	87.825	CC
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	16,700.00	7,031.00	9,120.63	9,016.14	87.281	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 A31-720
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 A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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 E36-13 (TA) - Wellbore #1 - Gyro Surveys	17,078.79	7,031.00	9,131.82	9,024.32	84.946	SF
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	16,646.84	6,786.00	7,713.11	7,497.97	35.852	CC
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	16,700.00	6,786.00	7,713.30	7,497.72	35.780	ES
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	17,078.79	6,786.00	7,725.20	7,506.62	35.343	SF
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	16,942.99	6,769.48	6,478.94	6,384.01	68.250	CC
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,000.00	6,770.08	6,479.19	6,383.79	67.916	ES
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,078.79	6,770.92	6,480.36	6,384.32	67.476	SF
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,034.04	6,790.59	5,138.63	5,032.87	48.583	CC
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,078.79	6,790.99	5,138.83	5,032.69	48.416	ES, SF
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	12,878.66	6,887.68	6,605.09	6,531.37	89.588	CC
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,887.89	6,605.13	6,531.23	89.386	ES
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,912.93	7,106.20	7,015.84	78.642	SF
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,082.91	7,498.63	8,242.73	8,139.19	79.608	CC
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	7,501.02	8,243.56	8,139.06	78.887	ES
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	7,518.97	8,302.65	8,191.43	74.655	SF
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	14,381.53	7,052.00	9,029.38	8,943.49	105.119	CC
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	7,052.00	9,030.16	8,943.32	103.987	ES
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	17,078.79	7,052.00	9,423.64	9,319.07	90.120	SF
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,186.73	6,801.00	7,749.05	7,553.10	39.545	CC
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,200.00	6,801.00	7,749.06	7,553.00	39.524	ES
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	16,000.00	6,801.00	7,958.38	7,749.49	38.099	SF
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,432.00	6,794.00	6,404.60	6,206.87	32.390	CC
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,500.00	6,794.00	6,404.97	6,206.68	32.302	ES
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	15,700.00	6,794.00	6,528.92	6,322.08	31.566	SF
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,425.36	6,780.71	4,925.83	4,840.48	57.718	CC
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	6,781.22	4,926.39	4,840.44	57.319	ES
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,790.34	5,114.03	5,019.78	54.260	SF
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,770.83	6,798.00	5,113.23	4,904.84	24.537	CC
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,800.00	6,798.00	5,113.31	4,904.68	24.509	ES
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,500.00	6,798.00	5,164.96	4,951.23	24.166	SF
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,586.50	7,091.00	8,423.32	8,343.51	105.538	CC
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,700.00	7,091.00	8,424.09	8,343.38	104.382	ES
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	17,078.79	7,091.00	9,118.58	9,016.38	89.231	SF
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,810.21	7,061.00	8,345.19	8,255.85	93.410	CC
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	7,061.00	8,345.67	8,255.61	92.669	ES
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	17,078.79	7,061.00	8,648.04	8,542.93	82.270	SF
Trex E35-618 - Trex E35-618 - Plan #1	16,723.81	6,900.00	4,328.82	4,220.19	39.848	CC, ES
Trex E35-618 - Trex E35-618 - Plan #1	17,078.79	6,900.00	4,343.35	4,232.14	39.052	SF
Trex E35-628 - Trex E35-628 - Plan #1	16,183.70	6,628.09	4,481.90	4,380.38	44.149	CC, ES
Trex E35-628 - Trex E35-628 - Plan #1	17,078.79	6,650.00	4,569.18	4,461.69	42.509	SF
Trex E35-638 - Trex E35-638 - Plan #1	15,549.19	6,400.00	4,296.58	4,202.46	45.650	CC
Trex E35-638 - Trex E35-638 - Plan #1	15,600.00	6,400.00	4,296.88	4,202.34	45.453	ES
Trex E35-638 - Trex E35-638 - Plan #1	16,500.00	6,450.00	4,398.75	4,298.23	43.759	SF
Trex E35-659 - Trex E35-659 - Plan #1	14,332.09	6,300.00	4,296.93	4,213.58	51.555	CC
Trex E35-659 - Trex E35-659 - Plan #1	14,400.00	6,300.00	4,297.46	4,213.55	51.211	ES
Trex E35-659 - Trex E35-659 - Plan #1	15,400.00	6,300.00	4,427.64	4,337.00	48.850	SF
Trex E35-671 - Trex E35-671 - Plan #1	13,516.79	6,500.00	4,279.78	4,201.28	54.523	CC, ES
Trex E35-671 - Trex E35-671 - Plan #1	14,600.00	6,474.08	4,414.15	4,328.11	51.306	SF
Trex E35-682 - Trex E35-682 - Plan #1	12,959.67	6,650.00	4,285.73	4,209.96	56.560	CC
Trex E35-682 - Trex E35-682 - Plan #1	13,000.00	6,650.00	4,285.92	4,209.80	56.307	ES
Trex E35-682 - Trex E35-682 - Plan #1	14,100.00	6,575.25	4,430.02	4,346.36	52.951	SF

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Noble Energy

Anticollision Summary Report

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Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
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Reference Well:	Roth A31-720	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A31-720	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	17,078.79	6,786.35	6,524.93	6,419.70	62.006	CC, ES, SF
BJB 3(PA) - Wellbore #1 - No Surveys	17,078.79	6,776.00	6,947.46	6,811.58	51.130	CC, ES, SF
BJB 4 - Wellbore #1 - Gyro Surveys	17,078.79	6,703.11	5,592.86	5,461.47	42.565	CC, ES, SF
BJB 5 - Wellbore #1 - Gyro Surveys	17,078.79	6,870.09	5,924.74	5,822.36	57.873	CC, ES, SF
BJB 6I - Wellbore #1 - As Drilled	17,078.79	6,886.89	7,251.97	7,145.68	68.231	CC, ES, SF
CDOT F 1-10(SI) - Wellbore #1 - Inc Only Surveys	17,078.79	6,772.32	7,464.27	7,259.08	36.377	CC, ES, SF
DPG Bird Farm 1-14H5(SI) - Wellbore #1 - Gyro Surveys	15,800.00	15,800.00	9,708.43	9,595.94	86.302	SF
DPG Bird Farm 1-14H5(SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,751.31	8,963.75	8,870.06	95.678	CC, ES
DPG Bird Farm 1-15H5(SI) - Wellbore #1 - No Surveys	17,078.79	6,752.00	8,038.77	7,914.44	64.656	CC, ES, SF
DPG Bird Farm 1-16H5 - Wellbore #1 - Gyro Surveys	17,078.79	6,986.75	7,126.73	7,040.70	82.847	CC, ES, SF
DPG F 1-13(SI) - Wellbore #1 - Inc Only Surveys						Out of range
DPG F 12-28(SI) - Wellbore #1 - Inc Only Surveys	17,078.79	6,755.00	8,991.91	8,771.95	40.880	CC, ES, SF
DPG F 12-29(AL) - Wellbore #1 - No Surveys						Out of range
DPG F 1-23(SI) - Wellbore #1 - No Surveys	17,078.79	6,750.00	7,333.86	7,207.37	57.984	CC, ES, SF
DPG F 1-24(SI) - Wellbore #1 - Inc Only Surveys	17,078.79	6,760.55	8,182.29	7,983.85	41.233	CC, ES, SF
DPG F 1-25(SI) - Wellbore #1 - Inc Only Surveys	17,078.79	6,752.87	9,581.30	9,385.66	48.974	CC, ES, SF
DPG F 1-33(SI) - Wellbore #1 - As Drilled						Out of range
Gatewood 11-1 - Wellbore #1 - Gyro Surveys	17,078.79	6,611.78	8,523.18	8,424.58	86.443	CC, ES, SF
Gatewood 3-1 - Wellbore #1 - Gyro Surveys	17,078.79	6,709.00	7,584.35	7,479.60	72.402	CC, ES, SF
Gatewood 4-1(SI) - Wellbore #1 - Gyro Surveys	17,078.79	6,869.42	9,308.69	9,203.95	88.875	CC, ES, SF
Gatewood 5(SI) - Wellbore #1 - No Surveys	17,078.79	6,788.00	8,600.62	8,460.31	61.299	CC, ES, SF
Gatewood 6-1 - Wellbore #1 - Gyro Surveys	17,078.79	6,697.95	7,932.73	7,849.17	94.937	CC, ES, SF
Gatewood F 1-12(SI) - Wellbore #1 - Inc Only Surveys	17,078.79	6,772.42	9,858.22	9,610.93	39.865	CC, ES, SF
LDS 1U-234 - Wellbore #1 - As Drilled	17,078.79	6,174.00	4,645.84	4,543.42	45.362	CC, ES, SF
LDS 1U-304 - Wellbore #1 - As Drilled	17,078.79	6,077.00	4,598.11	4,495.06	44.621	CC, ES, SF
LDS 1V-204 - Wellbore #1 - As Drilled	17,078.79	6,192.00	4,929.51	4,826.32	47.773	CC, ES, SF
LDS 1V-214 - Wellbore #1 - Permitted-PDC	17,078.79	6,150.00	4,757.29	4,655.21	46.602	CC, ES, SF
LDS 1V-234 - Wellbore #1 - MWD Surveys	17,078.79	6,146.00	5,108.58	5,013.45	53.699	CC, ES, SF
LDS 1V-304 - Wellbore #1 - As Drilled	17,078.79	6,193.00	4,816.50	4,714.02	47.001	CC, ES, SF
LDS 1V-314 - Wellbore #1 - As Drilled	17,078.79	6,171.00	4,699.47	4,597.54	46.108	CC, ES, SF
LDS 1V-334 - Wellbore #1 - As Drilled	17,078.79	6,236.00	5,005.35	4,908.32	51.589	CC, ES, SF
LDS 1W-234 - Wellbore #1 - As Drilled	17,078.79	6,146.00	5,094.52	4,999.23	53.464	CC, ES, SF
LDS 1W-314 - Wellbore #1 - As Drilled	17,078.79	6,076.00	5,200.64	5,106.94	55.505	CC, ES, SF
LDS 1W-414 - Wellbore #1 - As Drilled	17,078.79	6,146.00	5,346.34	5,254.19	58.016	CC, ES, SF
LDS F 1-5(AL) - Wellbore #1 - No Surveys	17,078.79	6,788.00	9,381.01	9,241.81	67.395	CC, ES, SF
Noffsinger 1 (PA) - Wellbore #1 - No Surveys	17,078.79	6,782.00	5,222.99	5,006.65	24.142	CC, ES, SF
Weld County 1-9H5 - Wellbore #1 - No Surveys	17,078.79	6,751.00	6,466.38	6,338.77	50.673	CC, ES, SF