

Project: Wells Ranch
Site: A Section 20
Well: Rampart A32-721
Wellbore: Rampart A32-721
Design: APD-Rev 1

Northern Region - DJ Basin

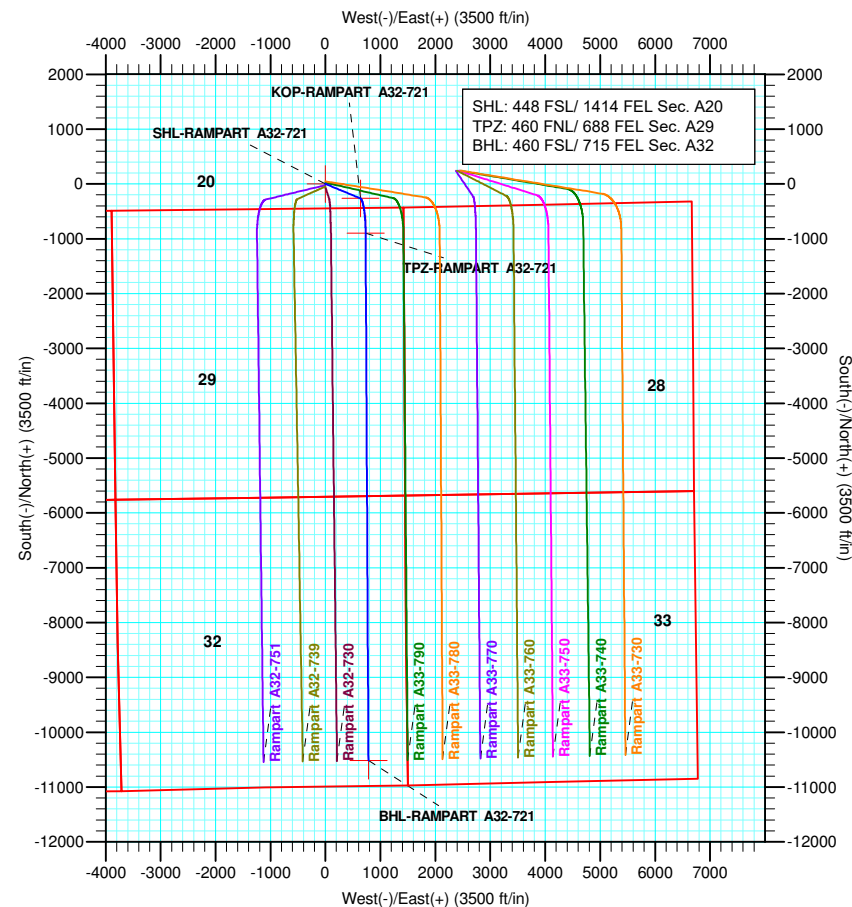
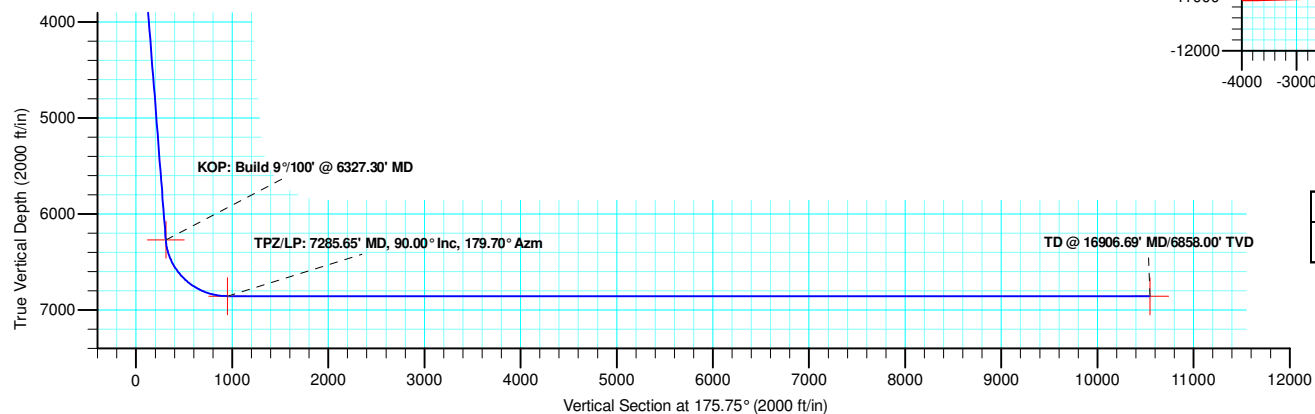
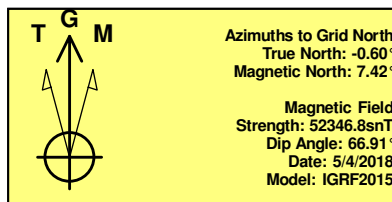
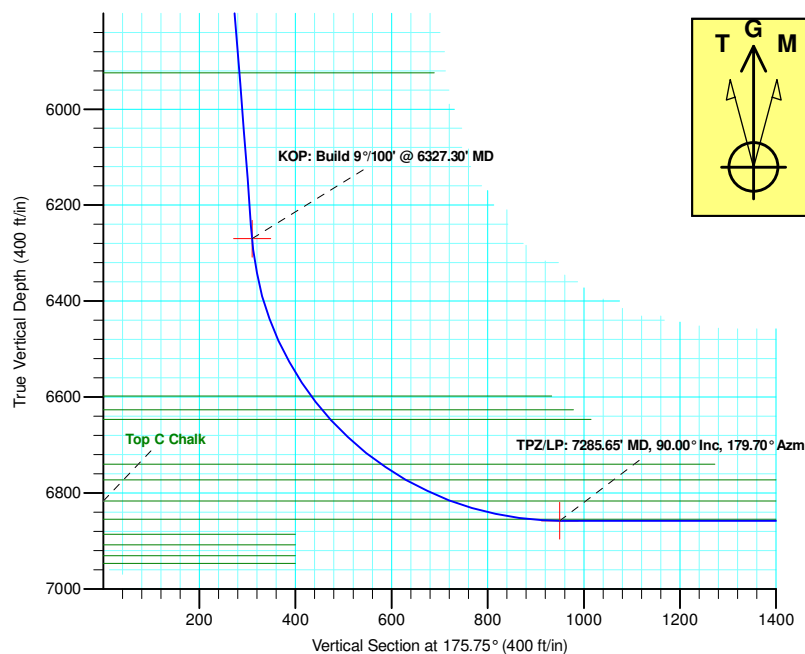
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00
3	2484.24	9.68	112.57	2481.94	-15.67	37.70	2.00	112.57	18.42
4	6327.30	9.68	112.57	6270.23	-263.79	634.70	0.00	0.00	310.07
5	7285.65	90.00	179.70	6858.00	-898.55	730.47	9.00	67.42	950.18
6	16906.69	90.00	179.70	6858.00	-10519.47	781.15	0.00	0.00	10548.43

WELL DETAILS: Rampart A32-721

+N/-S	+E/-W	Northing	Ground Level: Easting	4707.00 Latitude	Longitude	Slot
0.00	0.00	1413762.61	3258845.84	40.4654527	-104.5696908	



Plan: APD-Rev 1 (Rampart A32-721/Rampart A32-721)

Created By: Keith Noack

Date: 14:16, October 31 2018

Northern Region - DJ Basin

Wells Ranch

A Section 20

Rampart A32-721

Rampart A32-721

Plan: APD-Rev 1

Standard Planning Report

31 October, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Rampart A32-721
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4737.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

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 20				
Site Position:		Northing:	1,414,202.83 usft	Latitude:	40.4665920
From:	Lat/Long	Easting:	3,261,231.91 usft	Longitude:	-104.5610990
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.61 °

Well	Rampart A32-721					
Well Position	+N/-S	-440.22 ft	Northing:	1,413,762.61 usft	Latitude:	40.4654527
	+E/-W	-2,386.07 ft	Easting:	3,258,845.84 usft	Longitude:	-104.5696908
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,707.00 ft

Wellbore	Rampart A32-721				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/4/2018	8.02	66.91	52,346.79419169

Design	APD-Rev 1			
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	175.75

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,484.24	9.68	112.57	2,481.94	-15.67	37.70	2.00	2.00	0.00	112.57	
6,327.30	9.68	112.57	6,270.23	-263.79	634.70	0.00	0.00	0.00	0.00	
7,285.65	90.00	179.70	6,858.00	-898.55	730.47	9.00	8.38	7.00	67.42	TPZ-RAMPART A3
16,906.69	90.00	179.70	6,858.00	-10,519.47	781.15	0.00	0.00	0.00	0.00	BHL-RAMPART A3

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4737.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
435.00	0.00	0.00	435.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
476.00	0.00	0.00	476.00	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
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,513.00	0.00	0.00	1,513.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
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
Build: 2°/100'									
2,100.00	2.00	112.57	2,099.98	-0.67	1.61	0.79	2.00	2.00	0.00
2,200.00	4.00	112.57	2,199.84	-2.68	6.44	3.15	2.00	2.00	0.00
2,300.00	6.00	112.57	2,299.45	-6.02	14.49	7.08	2.00	2.00	0.00
2,400.00	8.00	112.57	2,398.70	-10.70	25.74	12.58	2.00	2.00	0.00
2,484.24	9.68	112.57	2,481.94	-15.67	37.70	18.42	2.00	2.00	0.00
Hold: 9.68° Inc, 112.57° Azm									
2,500.00	9.68	112.57	2,497.47	-16.69	40.15	19.61	0.00	0.00	0.00
2,600.00	9.68	112.57	2,596.05	-23.14	55.68	27.20	0.00	0.00	0.00
2,700.00	9.68	112.57	2,694.62	-29.60	71.22	34.79	0.00	0.00	0.00
2,800.00	9.68	112.57	2,793.20	-36.06	86.75	42.38	0.00	0.00	0.00
2,900.00	9.68	112.57	2,891.77	-42.51	102.29	49.97	0.00	0.00	0.00
3,000.00	9.68	112.57	2,990.35	-48.97	117.82	57.56	0.00	0.00	0.00
3,100.00	9.68	112.57	3,088.92	-55.43	133.36	65.15	0.00	0.00	0.00
3,200.00	9.68	112.57	3,187.50	-61.88	148.89	72.74	0.00	0.00	0.00
3,300.00	9.68	112.57	3,286.07	-68.34	164.43	80.33	0.00	0.00	0.00
3,400.00	9.68	112.57	3,384.65	-74.79	179.96	87.92	0.00	0.00	0.00
3,500.00	9.68	112.57	3,483.22	-81.25	195.49	95.51	0.00	0.00	0.00
3,600.00	9.68	112.57	3,581.80	-87.71	211.03	103.09	0.00	0.00	0.00
3,642.81	9.68	112.57	3,624.00	-90.47	217.68	106.34	0.00	0.00	0.00
Parkman									
3,700.00	9.68	112.57	3,680.37	-94.16	226.56	110.68	0.00	0.00	0.00
3,800.00	9.68	112.57	3,778.95	-100.62	242.10	118.27	0.00	0.00	0.00
3,900.00	9.68	112.57	3,877.52	-107.08	257.63	125.86	0.00	0.00	0.00
4,000.00	9.68	112.57	3,976.10	-113.53	273.17	133.45	0.00	0.00	0.00
4,100.00	9.68	112.57	4,074.67	-119.99	288.70	141.04	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Rampart A32-721
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4737.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

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)
4,168.30	9.68	112.57	4,142.00	-124.40	299.31	146.22	0.00	0.00	0.00
Sussex									
4,200.00	9.68	112.57	4,173.24	-126.45	304.24	148.63	0.00	0.00	0.00
4,300.00	9.68	112.57	4,271.82	-132.90	319.77	156.22	0.00	0.00	0.00
4,400.00	9.68	112.57	4,370.39	-139.36	335.30	163.81	0.00	0.00	0.00
4,500.00	9.68	112.57	4,468.97	-145.82	350.84	171.40	0.00	0.00	0.00
4,600.00	9.68	112.57	4,567.54	-152.27	366.37	178.98	0.00	0.00	0.00
4,700.00	9.68	112.57	4,666.12	-158.73	381.91	186.57	0.00	0.00	0.00
4,800.00	9.68	112.57	4,764.69	-165.18	397.44	194.16	0.00	0.00	0.00
4,900.00	9.68	112.57	4,863.27	-171.64	412.98	201.75	0.00	0.00	0.00
5,000.00	9.68	112.57	4,961.84	-178.10	428.51	209.34	0.00	0.00	0.00
5,012.33	9.68	112.57	4,974.00	-178.89	430.43	210.28	0.00	0.00	0.00
Shannon									
5,100.00	9.68	112.57	5,060.42	-184.55	444.05	216.93	0.00	0.00	0.00
5,200.00	9.68	112.57	5,158.99	-191.01	459.58	224.52	0.00	0.00	0.00
5,300.00	9.68	112.57	5,257.57	-197.47	475.11	232.11	0.00	0.00	0.00
5,400.00	9.68	112.57	5,356.14	-203.92	490.65	239.70	0.00	0.00	0.00
5,500.00	9.68	112.57	5,454.72	-210.38	506.18	247.29	0.00	0.00	0.00
5,600.00	9.68	112.57	5,553.29	-216.84	521.72	254.88	0.00	0.00	0.00
5,700.00	9.68	112.57	5,651.87	-223.29	537.25	262.46	0.00	0.00	0.00
5,800.00	9.68	112.57	5,750.44	-229.75	552.79	270.05	0.00	0.00	0.00
5,900.00	9.68	112.57	5,849.02	-236.20	568.32	277.64	0.00	0.00	0.00
5,976.07	9.68	112.57	5,924.00	-241.12	580.14	283.41	0.00	0.00	0.00
Teepee Buttes									
6,000.00	9.68	112.57	5,947.59	-242.66	583.86	285.23	0.00	0.00	0.00
6,100.00	9.68	112.57	6,046.17	-249.12	599.39	292.82	0.00	0.00	0.00
6,200.00	9.68	112.57	6,144.74	-255.57	614.92	300.41	0.00	0.00	0.00
6,300.00	9.68	112.57	6,243.32	-262.03	630.46	308.00	0.00	0.00	0.00
6,327.30	9.68	112.57	6,270.23	-263.79	634.70	310.07	0.00	0.00	0.00
KOP: Build 9°/100' @ 6327.30' MD									
6,350.00	10.64	122.84	6,292.57	-265.66	638.22	312.20	9.00	4.19	45.26
6,400.00	13.60	139.15	6,341.47	-272.61	645.95	319.70	9.00	5.92	32.62
6,450.00	17.23	149.23	6,389.67	-283.43	653.59	331.05	9.00	7.26	20.16
6,500.00	21.19	155.77	6,436.88	-298.04	661.09	346.18	9.00	7.92	13.07
6,550.00	25.32	160.29	6,482.81	-316.36	668.41	364.98	9.00	8.27	9.04
6,600.00	29.56	163.60	6,527.18	-338.26	675.50	387.36	9.00	8.47	6.62
6,650.00	33.86	166.14	6,569.71	-363.63	682.32	413.16	9.00	8.60	5.08
6,684.69	36.86	167.59	6,598.00	-383.18	686.87	432.99	9.00	8.67	4.18
Sharon Springs									
6,700.00	38.20	168.17	6,610.14	-392.30	688.83	442.23	9.00	8.70	3.77
6,721.74	40.09	168.93	6,627.00	-405.75	691.55	455.85	9.00	8.72	3.51
Top A Chalk									
6,748.35	42.42	169.79	6,647.00	-422.99	694.78	473.28	9.00	8.75	3.22
Top A Marl									
6,750.00	42.56	169.84	6,648.22	-424.09	694.98	474.39	9.00	8.76	3.06
6,800.00	46.95	171.25	6,683.71	-458.81	700.75	509.44	9.00	8.78	2.83
6,850.00	51.36	172.48	6,716.41	-496.25	706.08	547.17	9.00	8.81	2.45
6,889.29	54.83	173.34	6,740.00	-527.42	709.96	578.54	9.00	8.83	2.19
Top B Chalk									
6,900.00	55.77	173.56	6,746.10	-536.16	710.96	587.34	9.00	8.84	2.07
6,950.00	60.20	174.53	6,772.60	-578.32	715.35	629.71	9.00	8.85	1.95
6,950.81	60.27	174.55	6,773.00	-579.02	715.42	630.41	9.00	8.85	1.86
Top B Marl									

Noble Energy, Inc.

Planning Report

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Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

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)
7,000.00	64.63	175.42	6,795.75	-622.45	719.23	674.00	9.00	8.86	1.78
7,050.00	69.06	176.25	6,815.41	-668.29	722.56	719.96	9.00	8.87	1.66
7,054.50	69.46	176.32	6,817.00	-672.49	722.83	724.17	9.00	8.87	1.60
Top C Chalk									
7,100.00	73.50	177.03	6,831.45	-715.55	725.33	767.30	9.00	8.88	1.56
7,150.00	77.94	177.77	6,843.78	-763.95	727.52	815.72	9.00	8.88	1.49
7,200.00	82.39	178.49	6,852.32	-813.17	729.12	864.93	9.00	8.89	1.44
7,223.44	84.47	178.83	6,855.00	-836.45	729.67	888.19	9.00	8.89	1.42
Top C Marl									
7,250.00	86.83	179.20	6,857.01	-862.93	730.13	914.63	9.00	8.89	1.41
7,285.65	90.00	179.70	6,858.00	-898.55	730.47	950.18	9.00	8.89	1.40
TPZ/LP: 7285.65' MD, 90.00° Inc, 179.70° Azm									
7,300.00	90.00	179.70	6,858.00	-912.91	730.54	964.50	0.00	0.00	0.00
7,400.00	90.00	179.70	6,858.00	-1,012.91	731.07	1,064.26	0.00	0.00	0.00
7,500.00	90.00	179.70	6,858.00	-1,112.91	731.60	1,164.03	0.00	0.00	0.00
7,600.00	90.00	179.70	6,858.00	-1,212.90	732.12	1,263.79	0.00	0.00	0.00
7,700.00	90.00	179.70	6,858.00	-1,312.90	732.65	1,363.55	0.00	0.00	0.00
7,800.00	90.00	179.70	6,858.00	-1,412.90	733.18	1,463.32	0.00	0.00	0.00
7,900.00	90.00	179.70	6,858.00	-1,512.90	733.70	1,563.08	0.00	0.00	0.00
8,000.00	90.00	179.70	6,858.00	-1,612.90	734.23	1,662.84	0.00	0.00	0.00
8,100.00	90.00	179.70	6,858.00	-1,712.90	734.76	1,762.61	0.00	0.00	0.00
8,200.00	90.00	179.70	6,858.00	-1,812.90	735.28	1,862.37	0.00	0.00	0.00
8,300.00	90.00	179.70	6,858.00	-1,912.90	735.81	1,962.13	0.00	0.00	0.00
8,400.00	90.00	179.70	6,858.00	-2,012.89	736.34	2,061.90	0.00	0.00	0.00
8,500.00	90.00	179.70	6,858.00	-2,112.89	736.86	2,161.66	0.00	0.00	0.00
8,600.00	90.00	179.70	6,858.00	-2,212.89	737.39	2,261.42	0.00	0.00	0.00
8,700.00	90.00	179.70	6,858.00	-2,312.89	737.92	2,361.18	0.00	0.00	0.00
8,800.00	90.00	179.70	6,858.00	-2,412.89	738.44	2,460.95	0.00	0.00	0.00
8,900.00	90.00	179.70	6,858.00	-2,512.89	738.97	2,560.71	0.00	0.00	0.00
9,000.00	90.00	179.70	6,858.00	-2,612.89	739.50	2,660.47	0.00	0.00	0.00
9,100.00	90.00	179.70	6,858.00	-2,712.88	740.03	2,760.24	0.00	0.00	0.00
9,200.00	90.00	179.70	6,858.00	-2,812.88	740.55	2,860.00	0.00	0.00	0.00
9,300.00	90.00	179.70	6,858.00	-2,912.88	741.08	2,959.76	0.00	0.00	0.00
9,400.00	90.00	179.70	6,858.00	-3,012.88	741.61	3,059.53	0.00	0.00	0.00
9,500.00	90.00	179.70	6,858.00	-3,112.88	742.13	3,159.29	0.00	0.00	0.00
9,600.00	90.00	179.70	6,858.00	-3,212.88	742.66	3,259.05	0.00	0.00	0.00
9,700.00	90.00	179.70	6,858.00	-3,312.88	743.19	3,358.81	0.00	0.00	0.00
9,800.00	90.00	179.70	6,858.00	-3,412.87	743.71	3,458.58	0.00	0.00	0.00
9,900.00	90.00	179.70	6,858.00	-3,512.87	744.24	3,558.34	0.00	0.00	0.00
10,000.00	90.00	179.70	6,858.00	-3,612.87	744.77	3,658.10	0.00	0.00	0.00
10,100.00	90.00	179.70	6,858.00	-3,712.87	745.29	3,757.87	0.00	0.00	0.00
10,200.00	90.00	179.70	6,858.00	-3,812.87	745.82	3,857.63	0.00	0.00	0.00
10,300.00	90.00	179.70	6,858.00	-3,912.87	746.35	3,957.39	0.00	0.00	0.00
10,400.00	90.00	179.70	6,858.00	-4,012.87	746.87	4,057.16	0.00	0.00	0.00
10,500.00	90.00	179.70	6,858.00	-4,112.86	747.40	4,156.92	0.00	0.00	0.00
10,600.00	90.00	179.70	6,858.00	-4,212.86	747.93	4,256.68	0.00	0.00	0.00
10,700.00	90.00	179.70	6,858.00	-4,312.86	748.45	4,356.45	0.00	0.00	0.00
10,800.00	90.00	179.70	6,858.00	-4,412.86	748.98	4,456.21	0.00	0.00	0.00
10,900.00	90.00	179.70	6,858.00	-4,512.86	749.51	4,555.97	0.00	0.00	0.00
11,000.00	90.00	179.70	6,858.00	-4,612.86	750.03	4,655.73	0.00	0.00	0.00
11,100.00	90.00	179.70	6,858.00	-4,712.86	750.56	4,755.50	0.00	0.00	0.00
11,200.00	90.00	179.70	6,858.00	-4,812.86	751.09	4,855.26	0.00	0.00	0.00
11,300.00	90.00	179.70	6,858.00	-4,912.85	751.61	4,955.02	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Rampart A32-721
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4737.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

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	179.70	6,858.00	-5,012.85	752.14	5,054.79	0.00	0.00	0.00	
11,500.00	90.00	179.70	6,858.00	-5,112.85	752.67	5,154.55	0.00	0.00	0.00	
11,600.00	90.00	179.70	6,858.00	-5,212.85	753.19	5,254.31	0.00	0.00	0.00	
11,700.00	90.00	179.70	6,858.00	-5,312.85	753.72	5,354.08	0.00	0.00	0.00	
11,800.00	90.00	179.70	6,858.00	-5,412.85	754.25	5,453.84	0.00	0.00	0.00	
11,900.00	90.00	179.70	6,858.00	-5,512.85	754.77	5,553.60	0.00	0.00	0.00	
12,000.00	90.00	179.70	6,858.00	-5,612.84	755.30	5,653.37	0.00	0.00	0.00	
12,100.00	90.00	179.70	6,858.00	-5,712.84	755.83	5,753.13	0.00	0.00	0.00	
12,200.00	90.00	179.70	6,858.00	-5,812.84	756.35	5,852.89	0.00	0.00	0.00	
12,300.00	90.00	179.70	6,858.00	-5,912.84	756.88	5,952.65	0.00	0.00	0.00	
12,400.00	90.00	179.70	6,858.00	-6,012.84	757.41	6,052.42	0.00	0.00	0.00	
12,500.00	90.00	179.70	6,858.00	-6,112.84	757.93	6,152.18	0.00	0.00	0.00	
12,600.00	90.00	179.70	6,858.00	-6,212.84	758.46	6,251.94	0.00	0.00	0.00	
12,700.00	90.00	179.70	6,858.00	-6,312.83	758.99	6,351.71	0.00	0.00	0.00	
12,800.00	90.00	179.70	6,858.00	-6,412.83	759.51	6,451.47	0.00	0.00	0.00	
12,900.00	90.00	179.70	6,858.00	-6,512.83	760.04	6,551.23	0.00	0.00	0.00	
13,000.00	90.00	179.70	6,858.00	-6,612.83	760.57	6,651.00	0.00	0.00	0.00	
13,100.00	90.00	179.70	6,858.00	-6,712.83	761.09	6,750.76	0.00	0.00	0.00	
13,200.00	90.00	179.70	6,858.00	-6,812.83	761.62	6,850.52	0.00	0.00	0.00	
13,300.00	90.00	179.70	6,858.00	-6,912.83	762.15	6,950.28	0.00	0.00	0.00	
13,400.00	90.00	179.70	6,858.00	-7,012.82	762.67	7,050.05	0.00	0.00	0.00	
13,500.00	90.00	179.70	6,858.00	-7,112.82	763.20	7,149.81	0.00	0.00	0.00	
13,600.00	90.00	179.70	6,858.00	-7,212.82	763.73	7,249.57	0.00	0.00	0.00	
13,700.00	90.00	179.70	6,858.00	-7,312.82	764.25	7,349.34	0.00	0.00	0.00	
13,800.00	90.00	179.70	6,858.00	-7,412.82	764.78	7,449.10	0.00	0.00	0.00	
13,900.00	90.00	179.70	6,858.00	-7,512.82	765.31	7,548.86	0.00	0.00	0.00	
14,000.00	90.00	179.70	6,858.00	-7,612.82	765.83	7,648.63	0.00	0.00	0.00	
14,100.00	90.00	179.70	6,858.00	-7,712.81	766.36	7,748.39	0.00	0.00	0.00	
14,200.00	90.00	179.70	6,858.00	-7,812.81	766.89	7,848.15	0.00	0.00	0.00	
14,300.00	90.00	179.70	6,858.00	-7,912.81	767.42	7,947.92	0.00	0.00	0.00	
14,400.00	90.00	179.70	6,858.00	-8,012.81	767.94	8,047.68	0.00	0.00	0.00	
14,500.00	90.00	179.70	6,858.00	-8,112.81	768.47	8,147.44	0.00	0.00	0.00	
14,600.00	90.00	179.70	6,858.00	-8,212.81	769.00	8,247.20	0.00	0.00	0.00	
14,700.00	90.00	179.70	6,858.00	-8,312.81	769.52	8,346.97	0.00	0.00	0.00	
14,800.00	90.00	179.70	6,858.00	-8,412.81	770.05	8,446.73	0.00	0.00	0.00	
14,900.00	90.00	179.70	6,858.00	-8,512.80	770.58	8,546.49	0.00	0.00	0.00	
15,000.00	90.00	179.70	6,858.00	-8,612.80	771.10	8,646.26	0.00	0.00	0.00	
15,100.00	90.00	179.70	6,858.00	-8,712.80	771.63	8,746.02	0.00	0.00	0.00	
15,200.00	90.00	179.70	6,858.00	-8,812.80	772.16	8,845.78	0.00	0.00	0.00	
15,300.00	90.00	179.70	6,858.00	-8,912.80	772.68	8,945.55	0.00	0.00	0.00	
15,400.00	90.00	179.70	6,858.00	-9,012.80	773.21	9,045.31	0.00	0.00	0.00	
15,500.00	90.00	179.70	6,858.00	-9,112.80	773.74	9,145.07	0.00	0.00	0.00	
15,600.00	90.00	179.70	6,858.00	-9,212.79	774.26	9,244.84	0.00	0.00	0.00	
15,700.00	90.00	179.70	6,858.00	-9,312.79	774.79	9,344.60	0.00	0.00	0.00	
15,800.00	90.00	179.70	6,858.00	-9,412.79	775.32	9,444.36	0.00	0.00	0.00	
15,900.00	90.00	179.70	6,858.00	-9,512.79	775.84	9,544.12	0.00	0.00	0.00	
16,000.00	90.00	179.70	6,858.00	-9,612.79	776.37	9,643.89	0.00	0.00	0.00	
16,100.00	90.00	179.70	6,858.00	-9,712.79	776.90	9,743.65	0.00	0.00	0.00	
16,200.00	90.00	179.70	6,858.00	-9,812.79	777.42	9,843.41	0.00	0.00	0.00	
16,300.00	90.00	179.70	6,858.00	-9,912.78	777.95	9,943.18	0.00	0.00	0.00	
16,400.00	90.00	179.70	6,858.00	-10,012.78	778.48	10,042.94	0.00	0.00	0.00	
16,500.00	90.00	179.70	6,858.00	-10,112.78	779.00	10,142.70	0.00	0.00	0.00	
16,600.00	90.00	179.70	6,858.00	-10,212.78	779.53	10,242.47	0.00	0.00	0.00	
16,700.00	90.00	179.70	6,858.00	-10,312.78	780.06	10,342.23	0.00	0.00	0.00	

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Rampart A32-721
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4737.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

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	179.70	6,858.00	-10,412.78	780.58	10,441.99	0.00	0.00	0.00
16,906.69	90.00	179.70	6,858.00	-10,519.47	781.15	10,548.43	0.00	0.00	0.00
TD @ 16906.69' MD/6858.00' TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL-RAMPART A32- - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,413,762.61	3,258,845.84	40.4654527	-104.5696908
KOP-RAMPART A32- - plan hits target center - Point	0.00	0.00	6,270.23	-263.79	634.70	1,413,498.82	3,259,480.54	40.4647104	-104.5674198
TPZ-RAMPART A32- - plan hits target center - Point	0.00	0.00	6,858.00	-898.55	730.47	1,412,864.06	3,259,576.31	40.4629653	-104.5670996
BHL-RAMPART A32- - plan hits target center - Point	0.00	0.00	6,858.00	-10,519.47	781.14	1,403,243.17	3,259,626.99	40.4365561	-104.5672812

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
435.00	435.00	Pierre				
476.00	476.00	Upper Pierre Aquifer Top				
1,513.00	1,513.00	Upper Pierre Aquifer Base				
3,642.81	3,624.00	Parkman				
4,168.30	4,142.00	Sussex				
5,012.33	4,974.00	Shannon				
5,976.07	5,924.00	Teepee Buttes				
6,684.69	6,598.00	Sharon Springs				
6,721.74	6,627.00	Top A Chalk				
6,748.35	6,647.00	Top A Marl				
6,889.29	6,740.00	Top B Chalk				
6,950.81	6,773.00	Top B Marl				
7,054.50	6,817.00	Top C Chalk				
7,223.44	6,855.00	Top C Marl				

Noble Energy, Inc.
Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Rampart A32-721
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4737.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4737.00ft
Site:	A Section 20	North Reference:	Grid
Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rampart A32-721		
Design:	APD-Rev 1		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
2,000.00	2,000.00	0.00	0.00	Build: 2°/100'	
2,484.24	2,481.94	-15.67	37.70	Hold: 9.68° Inc, 112.57° Azm	
6,327.30	6,270.23	-263.79	634.70	KOP: Build 9°/100' @ 6327.30' MD	
7,285.65	6,858.00	-898.55	730.47	TPZ/LP: 7285.65' MD, 90.00° Inc, 179.70° Azm	
16,906.69	6,858.00	-10,519.47	781.15	TD @ 16906.69' MD/6858.00' TVD	

Northern Region - DJ Basin

Wells Ranch

A Section 20

Rampart A32-721

Rampart A32-721

APD-Rev 1

Anticollision Summary Report

31 October, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	Offset TVD Reference:	Offset Datum

Reference	APD-Rev 1		
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	10/31/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	2,000.00	APD-Rev 1 (Rampart A32-721)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	16,906.69	APD-Rev 1 (Rampart A32-721)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

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
A Section 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	5,634.89	5,557.31	487.13	452.62	14.115	CC
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	5,900.00	5,823.77	487.32	450.99	13.415	ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	6,350.00	6,265.94	496.64	457.25	12.610	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	2,001.13	1,984.68	1,419.33	1,405.78	104.758	CC, ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,452.14	1,997.36	1,957.06	49.562	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,000.00	1,963.00	573.65	527.63	12.467	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,062.98	575.28	527.09	11.937	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,400.00	6,304.47	1,254.29	1,110.53	8.725	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	3,449.78	3,437.56	1,889.51	1,868.95	91.873	CC
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	4,200.00	4,183.61	1,892.27	1,867.13	75.291	ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,414.66	1,983.87	1,943.47	49.113	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	349.54	313.54	4,790.72	4,788.81	2,502.979	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	2,000.00	1,954.96	4,792.17	4,778.76	357.455	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	8,100.00	6,880.86	5,859.83	5,805.99	108.839	SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	2,388.25	2,386.06	62.08	47.96	4.395	CC, ES
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	16,906.69	16,788.43	575.75	399.42	3.265	SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	2,020.39	2,019.27	44.97	31.33	3.297	CC
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	2,100.00	2,098.27	45.09	31.17	3.239	ES, SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	2,076.53	2,075.34	22.30	8.46	1.611	CC
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	2,100.00	2,098.71	22.34	8.42	1.605	ES, SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	2,000.00	2,000.00	45.04	31.47	3.319	CC, ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	2,100.00	2,100.25	45.43	31.51	3.262	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	2,000.00	2,000.00	22.56	8.99	1.663	CC
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	2,100.00	2,100.18	22.85	8.92	1.641	ES, SF
Simmons 42-20D - Original Drilling - Original Drilling - As	4,703.74	4,859.81	3,130.56	3,100.97	105.791	CC
Simmons 42-20D - Original Drilling - Original Drilling - As	4,800.00	4,929.00	3,131.09	3,100.93	103.837	ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,600.00	6,581.29	3,262.84	3,221.03	78.053	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	1,284.91	1,249.93	1,924.77	1,916.32	227.620	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	2,024.49	2,005.26	1,924.96	1,911.33	141.263	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,950.00	6,701.09	2,722.81	2,680.11	63.770	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	2,043.11	2,053.38	2,516.73	2,502.90	181.917	CC, ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,800.00	6,822.27	3,289.64	3,246.98	77.114	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	2,004.30	1,981.58	3,520.73	3,507.21	260.475	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,900.00	6,851.92	4,401.19	4,358.18	102.327	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	2,036.15	2,039.63	3,194.49	3,180.72	232.076	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	7,000.00	6,827.31	3,969.73	3,926.33	91.474	SF

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

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	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						
Winter 20-19 - Original Drilling - Original Drilling - As Dril	324.54	291.54	4,840.26	4,838.51	2,759.378	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	400.00	336.18	4,840.48	4,838.29	2,216.199	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	7,150.00	6,852.41	6,005.59	5,959.85	131.310	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	59.34	4,825.31	4,825.08	10,000.000	CC
Winter 24-19 - Original Drilling - Original Drilling - As Dril	400.00	329.82	4,826.56	4,824.32	2,153.234	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,850.00	6,962.30	6,169.36	6,114.01	111.468	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	3,126.14	3,900.00	4,199.67	4,170.71	145.004	CC
Winter 39-19 - Original Drilling - Original Drilling - As Dril	3,200.00	3,939.40	4,199.88	4,170.53	143.078	ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	8,000.00	6,949.85	5,137.90	5,083.03	93.644	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	2,394.72	3,142.33	4,491.11	4,457.01	131.704	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	2,400.00	3,147.27	4,491.11	4,456.95	131.468	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,550.00	6,818.14	4,930.24	4,857.06	67.366	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	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 21						
Culbreath 23-21 - Original Drilling - Original Drilling - As Drilled	6,433.87	6,367.86	3,532.76	3,492.63	88.035	CC
Culbreath 23-21 - Original Drilling - Original Drilling - As Drilled	6,450.00	6,396.59	3,532.85	3,492.57	87.700	ES
Culbreath 23-21 - Original Drilling - Original Drilling - As Drilled	6,900.00	6,754.54	3,631.57	3,588.41	84.149	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,494.59	6,412.83	4,405.04	4,258.54	30.069	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,550.00	6,463.81	4,406.15	4,258.43	29.828	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,000.00	6,776.75	4,499.92	4,344.30	28.916	SF
Harper A21-618 - Original Drilling - APD - Rev 1	6,418.83	6,232.32	1,689.03	1,649.44	42.668	CC, ES
Harper A21-618 - Original Drilling - APD - Rev 1	6,600.00	6,280.80	1,703.30	1,663.08	42.346	SF
Harper A21-626 - Original Drilling - APD - Rev 1	6,387.52	6,250.00	1,861.70	1,821.66	46.502	CC, ES
Harper A21-626 - Original Drilling - APD - Rev 1	6,500.00	6,300.00	1,869.18	1,828.59	46.047	SF
Harper A21-631 - Original Drilling - APD - Rev 1	6,334.27	6,169.40	2,045.29	2,005.58	51.506	CC, ES
Harper A21-631 - Original Drilling - APD - Rev 1	6,500.00	6,217.55	2,062.86	2,022.45	51.055	SF
Harper A21-637 - Original Drilling - APD - Rev 1	4,921.78	4,736.28	2,203.54	2,173.76	73.997	CC
Harper A21-637 - Original Drilling - APD - Rev 1	5,100.00	4,905.80	2,204.22	2,173.23	71.119	ES
Harper A21-637 - Original Drilling - APD - Rev 1	6,600.00	6,309.59	2,303.45	2,262.01	55.584	SF
Harper A21-643 - Original Drilling - APD - Rev 1	6,293.08	6,200.00	2,535.15	2,495.79	64.399	CC
Harper A21-643 - Original Drilling - APD - Rev 1	6,300.00	6,200.00	2,535.16	2,495.78	64.364	ES
Harper A21-643 - Original Drilling - APD - Rev 1	6,450.00	6,250.00	2,548.62	2,508.60	63.687	SF
Harper A21-649 - Original Drilling - APD - Rev 1	6,072.35	6,005.77	2,788.37	2,750.25	73.135	CC
Harper A21-649 - Original Drilling - APD - Rev 1	6,300.00	6,212.34	2,789.20	2,749.53	70.310	ES
Harper A21-649 - Original Drilling - APD - Rev 1	6,550.00	6,300.00	2,832.71	2,791.91	69.418	SF
Harper A21-656 - Original Drilling - APD - Rev 1	4,187.65	4,051.78	2,923.32	2,898.39	117.268	CC
Harper A21-656 - Original Drilling - APD - Rev 1	4,300.00	4,156.85	2,923.59	2,897.95	114.027	ES
Harper A21-656 - Original Drilling - APD - Rev 1	6,450.00	6,164.15	3,041.37	3,001.21	75.730	SF
Harper A21-664 - Original Drilling - APD - Rev 2	3,301.94	3,116.30	2,974.03	2,954.75	154.220	CC, ES
Harper A21-664 - Original Drilling - APD - Rev 2	6,550.00	5,865.85	3,439.90	3,400.54	87.404	SF
Harper A21-669 - Original Drilling - APD - Rev 1	3,044.47	2,857.14	2,995.72	2,977.87	167.838	CC
Harper A21-669 - Original Drilling - APD - Rev 1	3,100.00	2,900.00	2,995.93	2,977.83	165.538	ES
Harper A21-669 - Original Drilling - APD - Rev 1	6,550.00	5,600.26	3,669.02	3,630.77	95.928	SF
Harper A21-674 - Original Drilling - APD - Rev 1	2,817.17	2,626.94	3,026.40	3,009.75	181.739	CC, ES
Harper A21-674 - Original Drilling - APD - Rev 1	6,550.00	5,374.65	3,867.20	3,829.89	103.672	SF
Harper A21-681 - Original Drilling - APD - Rev 1	2,550.04	2,354.47	3,070.80	3,055.45	200.013	CC, ES
Harper A21-681 - Original Drilling - APD - Rev 1	6,550.00	4,960.26	4,160.08	4,124.82	117.991	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drilled	6,643.56	8,748.25	411.54	365.35	8.910	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drilled	6,650.00	8,747.57	411.62	365.21	8.868	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drilled	6,700.00	8,742.59	417.80	369.85	8.712	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drilled	6,582.79	8,981.10	949.36	902.23	20.141	CC, ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drilled	6,700.00	8,971.84	967.03	918.10	19.763	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drilled	6,459.15	9,161.26	1,569.50	1,518.06	30.510	CC, ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drilled	6,500.00	9,133.49	1,571.28	1,519.65	30.435	SF
Kona A19-646 - Original Drilling - Original Drilling - As Drilled	6,432.72	8,783.13	2,324.09	2,277.08	49.439	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Drilled	6,550.00	8,767.09	2,337.68	2,290.07	49.101	SF
Kona A19-662 - Original Drilling - Original Drilling - As Drilled	2,720.77	2,497.10	3,158.28	3,144.00	221.159	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Drilled	6,600.00	8,646.06	3,321.61	3,274.43	70.406	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Drilled	1,912.74	1,949.80	3,187.96	3,174.91	244.240	CC, ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Drilled	6,600.00	9,477.86	3,978.41	3,923.71	72.735	SF
Kona A19-685 - Original Drilling - Original Drilling - As Drilled	2,910.57	2,689.53	3,129.42	3,114.63	211.673	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Drilled	6,300.00	4,258.00	4,067.29	4,040.86	153.901	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - As Drilled	6,332.42	6,292.27	3,194.58	3,051.07	22.260	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - As Drilled	6,350.00	6,309.57	3,194.80	3,050.88	22.199	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - As Drilled	6,650.00	6,586.71	3,265.98	3,115.46	21.699	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - As Drilled	6,353.75	6,329.25	5,159.01	5,014.65	35.738	CC, ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - As Drilled	6,800.00	6,716.71	5,285.61	5,131.95	34.397	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 21						
McKee 22-21 - Original Drilling - Original Drilling - As Drill	6,371.12	6,314.02	4,101.05	4,061.27	103.092	CC, ES
McKee 22-21 - Original Drilling - Original Drilling - As Drill	7,285.65	7,285.65	4,539.52	4,493.52	98.687	SF
McKee 31-21 - Original Drilling - Original Drilling - As Drill	6,408.12	6,667.04	6,115.99	6,074.90	148.833	CC, ES
McKee 31-21 - Original Drilling - Original Drilling - As Drill	7,000.00	7,126.40	6,319.74	6,275.03	141.331	SF
McKee 32-21 - Original Drilling - Original Drilling - As Drill	6,414.21	6,371.26	5,045.20	5,005.08	125.749	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Drill	7,000.00	6,823.75	5,212.59	5,168.82	119.109	SF
McKee 41-21 - Original Drilling - Original Drilling - As Drill	6,380.92	6,195.53	6,971.92	6,932.56	177.093	CC, ES
McKee 41-21 - Original Drilling - Original Drilling - As Drill	7,100.00	6,664.76	7,224.97	7,181.50	166.177	SF
McKee 42-21 - Original Drilling - Original Drilling - As Drill	6,463.52	6,404.30	6,096.28	6,055.93	151.084	CC, ES
McKee 42-21 - Original Drilling - Original Drilling - As Drill	7,200.00	6,904.40	6,304.86	6,260.17	141.068	SF
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,788.67	2,440.68	2,452.52	2,438.12	170.266	CC
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,800.00	2,446.88	2,452.53	2,438.11	170.072	ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	16,906.69	17,720.27	4,679.17	4,497.93	25.817	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,784.87	2,441.37	2,430.33	2,415.93	168.777	CC
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,800.00	2,449.69	2,430.35	2,415.93	168.521	ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	16,906.69	17,515.21	4,031.93	3,851.41	22.335	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	2,803.30	2,463.16	2,406.64	2,392.20	166.638	CC, ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	16,906.69	17,093.98	3,361.01	3,180.68	18.638	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	2,837.66	2,500.00	2,381.11	2,366.59	163.948	CC, ES
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	16,906.69	16,956.23	2,725.57	2,545.65	15.149	SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	7,268.69	7,197.42	2,009.55	1,967.74	48.057	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	16,906.69	16,811.58	2,039.30	1,858.96	11.308	ES, SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	6,525.53	6,433.51	5,684.64	5,537.64	38.669	CC
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	6,550.00	6,455.81	5,684.84	5,537.29	38.529	ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,100.00	6,804.45	5,793.74	5,637.22	37.016	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,365.86	6,300.77	2,082.03	2,042.36	52.484	CC, ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,650.00	6,567.81	2,131.96	2,090.35	51.230	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	6,520.51	6,435.96	1,300.96	1,260.34	32.029	CC, ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	6,750.00	6,624.91	1,323.52	1,281.37	31.404	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	6,568.08	6,437.87	2,138.27	2,097.47	52.409	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	6,950.00	6,715.20	2,188.82	2,145.64	50.682	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	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	9,066.01	6,813.00	5,324.33	5,158.58	32.124	CC
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	9,100.00	6,813.00	5,324.44	5,158.46	32.080	ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	10,200.00	6,813.00	5,443.75	5,270.17	31.362	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	8,928.57	6,748.30	5,348.13	5,296.94	104.485	CC
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,000.00	6,748.87	5,348.60	5,296.94	103.526	ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	11,500.00	6,768.69	5,934.17	5,866.88	88.194	SF
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,109.79	6,808.00	2,623.68	2,451.10	15.203	CC, ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,400.00	6,808.00	2,639.68	2,464.77	15.092	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,247.87	6,808.72	1,577.96	1,533.64	35.601	CC
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,250.00	6,808.88	1,577.96	1,533.63	35.594	ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,500.00	6,813.19	1,599.91	1,554.56	35.277	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	8,822.58	6,806.93	1,421.57	1,369.92	27.522	CC, ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,100.00	6,818.16	1,448.34	1,394.64	26.968	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,143.24	6,821.95	1,389.69	1,329.37	23.040	CC, ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,400.00	6,818.20	1,413.20	1,350.81	22.649	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,491.49	6,763.91	1,378.16	1,308.17	19.691	CC
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,500.00	6,764.18	1,378.19	1,308.11	19.666	ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,770.48	1,393.83	1,322.05	19.417	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	7,577.64	6,729.80	2,664.44	2,619.24	58.954	CC
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	7,600.00	6,730.04	2,664.53	2,619.24	58.828	ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	8,400.00	6,739.28	2,788.45	2,739.04	56.445	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	8,691.80	6,667.25	2,716.42	2,665.89	53.760	CC
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,667.64	2,716.43	2,665.84	53.699	ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	9,500.00	6,708.60	2,833.79	2,777.91	50.712	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,509.82	6,782.85	2,673.79	2,603.88	38.245	CC, ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	12,100.00	6,781.01	2,738.15	2,663.79	36.822	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,629.52	6,730.33	2,180.09	2,116.49	34.279	CC, ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	11,100.00	6,739.00	2,230.26	2,163.08	33.195	SF
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	11,493.38	6,786.00	5,126.09	4,943.89	28.135	CC
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	11,500.00	6,786.00	5,126.10	4,943.84	28.126	ES
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	12,500.00	6,786.00	5,223.99	5,034.11	27.511	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,452.53	6,747.39	5,147.17	5,077.57	73.954	CC
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,500.00	6,746.96	5,147.39	5,077.40	73.541	ES
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	13,300.00	6,729.10	5,468.65	5,386.43	66.509	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	10,842.62	6,781.00	4,811.40	4,634.12	27.140	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	10,900.00	6,781.00	4,811.74	4,634.00	27.071	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,700.00	6,781.00	4,887.20	4,703.36	26.585	SF
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	10,809.41	6,752.29	4,820.31	4,755.46	74.331	CC, ES
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	12,600.00	6,732.83	5,142.10	5,065.12	66.797	SF
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	9,655.53	6,058.92	3,568.27	3,513.60	65.275	CC
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	9,700.00	6,062.00	3,568.54	3,513.52	64.860	ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	15,800.00	7,550.96	6,952.27	6,762.27	36.590	SF
Webster 09-28 - Original Drilling - Original Drilling - As D	10,041.78	6,796.00	5,096.18	4,924.32	29.653	CC
Webster 09-28 - Original Drilling - Original Drilling - As D	10,100.00	6,796.00	5,096.51	4,924.20	29.577	ES
Webster 09-28 - Original Drilling - Original Drilling - As D	11,100.00	6,796.00	5,204.89	5,025.25	28.973	SF
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,385.23	6,757.26	3,809.77	3,740.64	55.107	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,757.34	3,809.80	3,740.54	55.006	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	12,500.00	6,758.87	3,969.52	3,892.51	51.542	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,002.04	6,771.65	5,111.46	5,052.35	86.465	CC, ES
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	12,100.00	6,763.52	5,525.26	5,452.19	75.622	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 29						
Amos 1 (DA) - Wellbore #1 - No Surveys	10,182.46	3,800.00	4,683.71	4,593.71	52.045	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	10,200.00	3,800.00	4,683.74	4,593.64	51.986	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	11,700.00	3,800.00	4,923.42	4,823.80	49.424	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	223.67	180.67	2,133.52	2,132.51	2,112.570	CC
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	700.00	644.90	2,135.54	2,131.24	496.980	ES
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,800.00	6,799.21	2,703.36	2,658.59	60.380	SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	8,885.35	6,805.00	2,576.59	2,412.11	15.665	CC
Andy 29-1 (PA) - Wellbore #1 - No Surveys	8,900.00	6,805.00	2,576.63	2,412.09	15.659	ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,100.00	6,805.00	2,585.51	2,420.06	15.627	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	8,710.00	6,822.03	3,856.85	3,806.20	76.155	CC, ES
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	9,900.00	6,816.42	4,036.25	3,980.17	71.973	SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	8,832.19	6,805.62	1,382.44	1,330.81	26.778	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	8,900.00	6,805.70	1,384.10	1,332.25	26.694	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	7,480.10	6,818.18	1,081.10	1,036.02	23.980	CC, ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	7,500.00	6,818.07	1,081.28	1,036.16	23.963	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	7,537.21	6,813.39	201.67	156.38	4.453	CC, ES, SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	8,943.60	6,808.56	2,862.02	2,809.68	54.680	CC, ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,500.00	6,805.50	2,915.61	2,860.82	53.216	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,203.40	6,906.64	1,235.37	1,166.66	17.980	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,300.00	6,897.61	1,239.11	1,170.14	17.965	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,453.60	6,788.36	276.41	206.77	3.969	CC, ES, SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,229.48	6,805.31	1,297.90	1,237.02	21.319	CC, ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,300.00	6,806.06	1,299.81	1,238.70	21.268	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,298.96	6,791.94	85.80	24.39	1.397	Level 3, CC
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,300.00	6,791.93	85.81	24.34	1.396	Level 3, ES, SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,244.45	6,733.04	1,318.02	1,250.21	19.438	CC, ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,300.00	6,728.49	1,319.18	1,251.22	19.411	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,417.35	6,793.38	3,941.90	3,872.46	56.760	CC, ES
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	12,300.00	6,784.28	4,039.50	3,965.47	54.559	SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,164.99	6,809.73	4,022.95	3,962.53	66.578	CC
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,200.00	6,809.86	4,023.10	3,962.47	66.351	ES
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	11,200.00	6,813.04	4,153.96	4,088.26	63.227	SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,584.40	6,678.81	2,446.77	2,376.73	34.937	CC
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,678.23	2,446.82	2,376.70	34.896	ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,667.06	2,467.00	2,395.59	34.546	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	10,935.59	6,790.00	3,086.11	3,020.23	46.842	CC, ES
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,500.00	6,780.30	3,137.28	3,068.67	45.722	SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,479.99	6,788.48	2,399.71	2,337.12	38.340	CC
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	6,788.34	2,399.80	2,337.10	38.276	ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,814.52	2,436.19	2,371.71	37.780	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	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	15,328.20	6,894.19	3,940.46	3,840.01	39.231	CC, ES
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,900.00	6,918.71	3,981.59	3,877.96	38.420	SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,706.86	6,865.10	3,826.22	3,714.92	34.378	CC, ES
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,906.69	6,860.84	3,831.43	3,718.91	34.050	SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,515.29	6,780.20	1,270.16	1,168.76	12.527	CC, ES, SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,734.68	6,751.42	107.23	-3.65	0.967	Level 1, CC, ES, SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,774.15	6,761.45	1,267.73	1,188.08	15.918	CC, ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,800.00	6,761.03	1,267.99	1,188.26	15.903	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,110.08	6,750.24	1,272.32	1,182.24	14.124	CC, ES, SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,420.75	6,847.49	3,641.28	3,548.45	39.224	CC, ES
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	15,000.00	6,862.38	3,687.04	3,591.15	38.454	SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,280.26	6,809.22	2,400.28	2,308.56	26.169	CC
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,300.00	6,809.26	2,400.36	2,308.53	26.137	ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,809.66	2,410.32	2,317.55	25.981	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	12,809.89	6,772.84	28.27	-51.73	0.353	Level 1, CC, ES, SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,031.33	6,759.37	24.01	-65.51	0.268	Level 1, CC, ES, SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,340.31	6,768.17	387.46	303.59	4.620	CC, ES, SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,389.60	6,770.62	2,966.96	2,882.41	35.093	CC
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,400.00	6,770.77	2,966.98	2,882.37	35.066	ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,800.00	6,776.64	2,995.20	2,908.58	34.577	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,588.82	6,764.39	2,490.19	2,412.20	31.930	CC
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	6,764.52	2,490.21	2,412.16	31.904	ES
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,768.13	2,509.55	2,430.11	31.589	SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,604.39	6,786.00	3,824.06	3,633.40	20.057	CC, ES
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	13,000.00	6,786.00	3,844.47	3,651.49	19.922	SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,303.05	6,778.55	2,341.90	2,242.19	23.486	CC, ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,779.61	2,350.17	2,249.53	23.353	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,906.69	6,732.21	2,557.35	2,446.86	23.146	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,681.97	6,757.49	1,151.55	1,040.88	10.405	CC, ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,700.00	6,757.57	1,151.69	1,040.96	10.401	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,335.02	6,753.76	55.77	-43.96	0.559	Level 1, CC, ES, SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	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 33						
Achziger 11-33 (PR) - Wellbore #1 - Gyro Surveys	15,249.05	6,723.90	2,904.40	2,805.22	29.285	CC
Achziger 11-33 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,724.63	2,904.85	2,805.19	29.148	ES
Achziger 11-33 (PR) - Wellbore #1 - Gyro Surveys	15,700.00	6,730.65	2,939.19	2,836.52	28.626	SF
Achziger 14-33 (PA) - Wellbore #1 - No Surveys	16,863.76	6,746.00	2,676.58	2,452.98	11.970	CC
Achziger 14-33 (PA) - Wellbore #1 - No Surveys	16,906.69	6,746.00	2,676.92	2,452.91	11.950	ES, SF
Briggs 15-33 (SI) - Wellbore #1 - Gyro Surveys	16,654.06	6,579.38	3,986.12	3,876.13	36.240	CC
Briggs 15-33 (SI) - Wellbore #1 - Gyro Surveys	16,700.00	6,579.52	3,986.39	3,875.98	36.105	ES
Briggs 15-33 (SI) - Wellbore #1 - Gyro Surveys	16,906.69	6,580.19	3,994.12	3,881.95	35.609	SF
Ehrlich 19-33 (PR) - Wellbore #1 - Gyro Survey	16,086.63	6,750.31	1,884.41	1,778.54	17.799	CC
Ehrlich 19-33 (PR) - Wellbore #1 - Gyro Survey	16,100.00	6,750.24	1,884.46	1,778.45	17.776	ES
Ehrlich 19-33 (PR) - Wellbore #1 - Gyro Survey	16,300.00	6,750.76	1,896.45	1,788.81	17.618	SF
French 09-33 - Original Drilling - Original Drilling - As Dril	15,322.62	6,849.44	5,338.48	5,238.51	53.400	CC
French 09-33 - Original Drilling - Original Drilling - As Dril	15,400.00	6,848.31	5,339.04	5,238.39	53.045	ES
French 09-33 - Original Drilling - Original Drilling - As Dril	16,700.00	6,829.39	5,513.27	5,403.61	50.274	SF
Hammerbeck 16-33 - Original Drilling - Original Drilling -	16,740.25	6,877.16	5,402.08	5,290.69	48.499	CC
Hammerbeck 16-33 - Original Drilling - Original Drilling -	16,800.00	6,877.54	5,402.41	5,290.49	48.272	ES
Hammerbeck 16-33 - Original Drilling - Original Drilling -	16,906.69	6,878.22	5,404.64	5,291.80	47.896	SF
Hammerbeck 20-33 - Wellbore #1 - Gyro Surveys	16,015.66	6,842.47	4,636.35	4,531.11	44.054	CC, ES
Hammerbeck 20-33 - Wellbore #1 - Gyro Surveys	16,906.69	6,831.71	4,721.18	4,609.32	42.207	SF
Noffsinger 11-33 (PR) - Wellbore #1 - Gyro Surveys	12,594.23	6,769.06	1,251.58	1,173.23	15.975	CC
Noffsinger 11-33 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	6,769.08	1,251.59	1,173.18	15.962	ES
Noffsinger 11-33 (PR) - Wellbore #1 - Gyro Surveys	12,700.00	6,769.48	1,256.04	1,176.66	15.822	SF
Noffsinger 12-33 (PR) - Wellbore #1 - Gyro Surveys	14,324.22	6,763.87	1,449.26	1,357.50	15.794	CC, ES
Noffsinger 12-33 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,763.66	1,459.88	1,366.61	15.653	SF
Noffsinger 21-33 (PA) - Wellbore #1 - No Surveys	12,563.12	6,786.00	2,677.18	2,487.09	14.084	CC
Noffsinger 21-33 (PA) - Wellbore #1 - No Surveys	12,600.00	6,786.00	2,677.44	2,487.00	14.060	ES
Noffsinger 21-33 (PA) - Wellbore #1 - No Surveys	12,800.00	6,786.00	2,687.64	2,495.50	13.988	SF
Noffsinger 22-33 (PR) - Wellbore #1 - Gyro Surveys	12,526.92	6,445.86	4,218.44	4,141.62	54.914	CC, ES
Noffsinger 22-33 (PR) - Wellbore #1 - Gyro Surveys	13,700.00	6,405.04	4,378.35	4,293.28	51.473	SF
Noffsinger 31-33 (PR) - Wellbore #1 - Gyro Surveys						Out of range
Noffsinger 32-33 (PR) - Wellbore #1 - Gyro Surveys	14,334.59	6,579.45	3,884.58	3,793.03	42.431	CC
Noffsinger 32-33 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	6,584.14	3,885.12	3,792.98	42.162	ES
Noffsinger 32-33 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	15,100.00	3,959.15	3,831.96	31.126	SF
Sitzman 12-33 (PR) - Wellbore #1 - Gyro Surveys	15,407.29	6,749.53	1,317.98	1,217.65	13.136	CC, ES
Sitzman 12-33 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,749.42	1,321.24	1,220.00	13.051	SF
Sitzman 13-33 (SI) - Wellbore #1 - Gyro Surveys	16,906.69	6,751.62	1,328.89	1,216.75	11.850	CC, ES, SF
Sughrue 41-33 - Original Drilling - Original Drilling - As I	12,549.71	7,021.00	5,374.71	5,296.11	68.376	CC
Sughrue 41-33 - Original Drilling - Original Drilling - As I	12,600.00	7,021.00	5,374.95	5,295.91	68.006	ES
Sughrue 41-33 - Original Drilling - Original Drilling - As I	14,300.00	6,989.29	5,652.44	5,561.66	62.264	SF
Webster 10-33 (PA) - Wellbore #1 - Gyro Surveys	15,297.90	6,640.03	4,039.00	3,939.85	40.737	CC
Webster 10-33 (PA) - Wellbore #1 - Gyro Surveys	15,300.00	6,640.00	4,039.00	3,939.83	40.729	ES
Webster 10-33 (PA) - Wellbore #1 - Gyro Surveys	16,100.00	6,630.26	4,117.86	4,012.82	39.204	SF

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

Noble Energy, Inc.

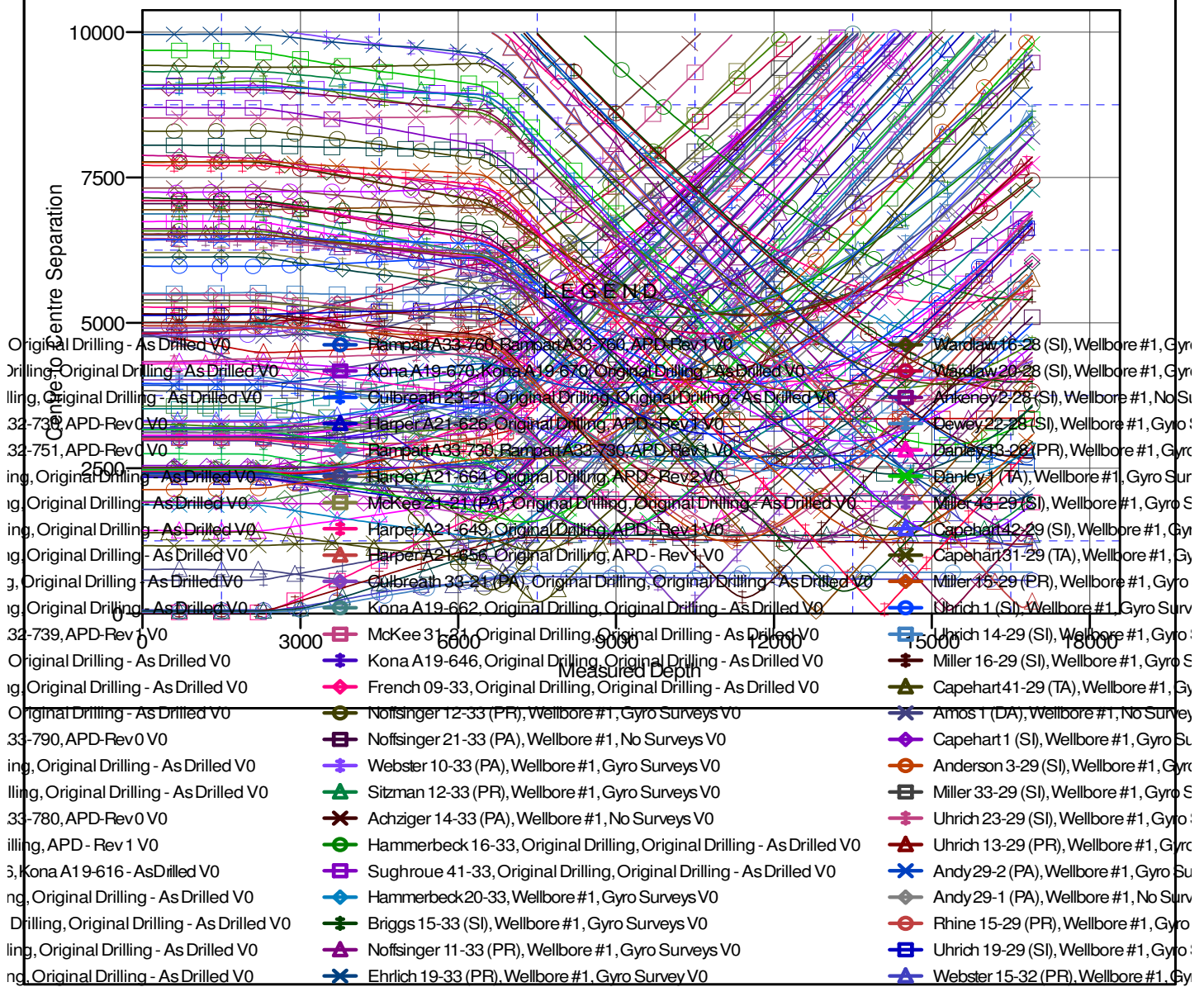
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4737.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Rampart A32-721
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°

Ladder Plot



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

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Rampart A32-721
Project:	Wells Ranch	TVD Reference:	KB @ 4737.00ft
Reference Site:	A Section 20	MD Reference:	KB @ 4737.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Rampart A32-721	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Rampart A32-721	Database:	EDMP
Reference Design:	APD-Rev 1	Offset TVD Reference:	Offset Datum

Offset Depths are relative to Offset Datum

Central Meridian is -105.5000000

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.60°

