

Project: Wells Ranch
 Site: A Section 21
 Well: Harper A21-626
 Wellbore: Original Drilling
 Design: APD - Rev 1

Northern Region - DJ Basin

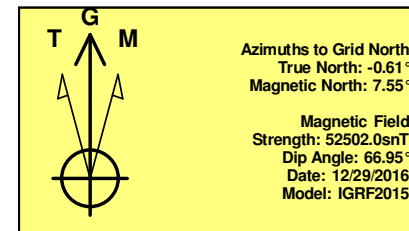
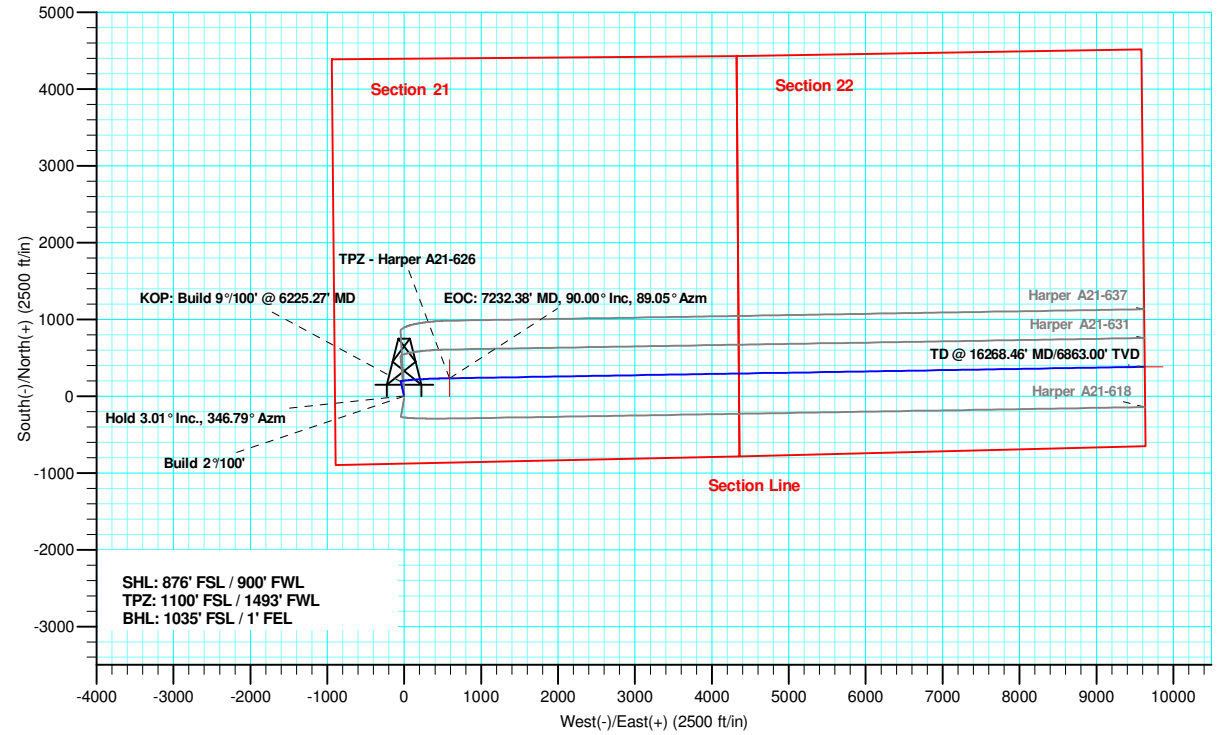
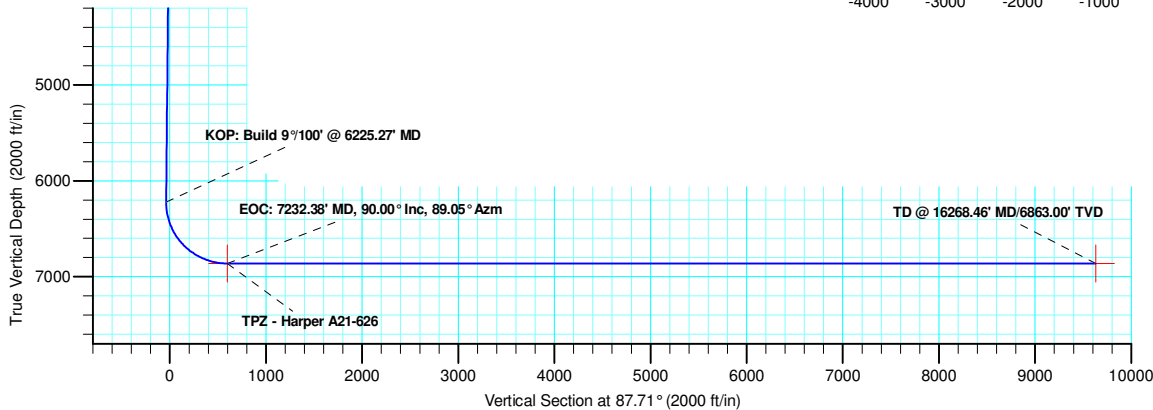
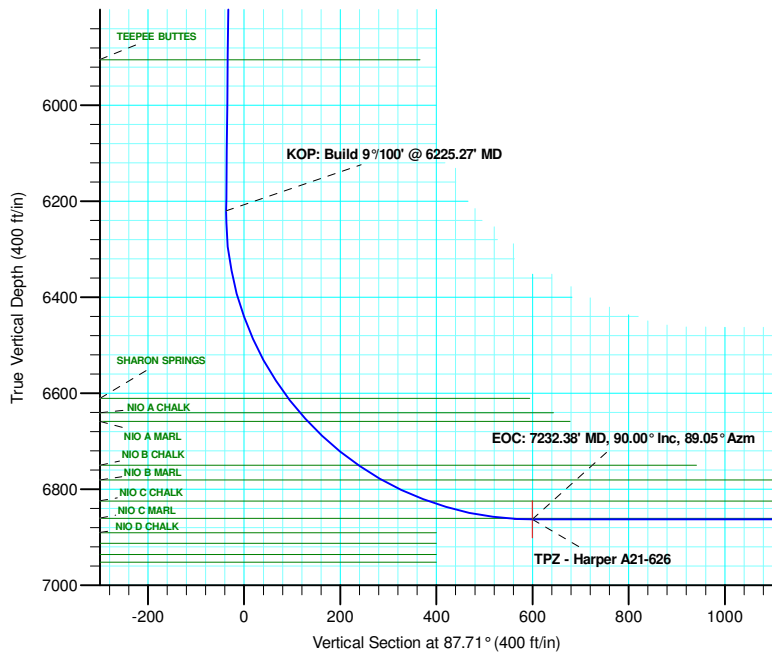
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.00	
3	2550.60	3.01	346.79	2550.53	3.85	-0.90	2.00	346.79	-0.75	
4	6225.27	3.01	346.79	6220.12	191.82	-45.03	0.00	0.00	-37.34	
5	7232.38	90.00	89.05	6863.00	235.38	590.91	9.00	102.25	599.84	TPZ - Harper A21-626
6	16268.46	90.00	89.05	6863.00	384.54	9625.77	0.00	0.00	9633.45	BHL - Harper A21-626

WELL DETAILS: Harper A21-626

+N/-S	+E/-W	Northing	Ground Level:	4727.00	Latitude	Longitude	Slot
0.00	0.00	1414224.19	Easting:	3261146.86	40.4666531	-104.5614038	



Plan: APD - Rev 1 (Harper A21-626/Original Drilling)

Created By: Shelly C. Peterkin Date: 10:49, January 23 2018

Northern Region - DJ Basin

**Wells Ranch
A Section 21
Harper A21-626**

Original Drilling

Plan: APD - Rev 1

Standard Planning Report

23 January, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Harper A21-626
Company:	Northern Region - DJ Basin	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Project:	Wells Ranch	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site:	A Section 21	North Reference:	Grid
Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
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 21				
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	Harper A21-626					
Well Position	+N/-S	21.36 ft	Northing:	1,414,224.19 usft	Latitude:	40.4666531
	+E/-W	-85.05 ft	Easting:	3,261,146.86 usft	Longitude:	-104.5614038
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,727.00 ft

Wellbore	Original Drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/29/2016	8.16	66.95	52,501.98883482

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	87.71

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,550.60	3.01	346.79	2,550.53	3.85	-0.90	2.00	2.00	0.00	346.79	
6,225.27	3.01	346.79	6,220.12	191.82	-45.03	0.00	0.00	0.00	0.00	
7,232.38	90.00	89.05	6,863.00	235.38	590.91	9.00	8.64	10.15	102.25	TPZ - Harper A21-626
16,268.46	90.00	89.05	6,863.00	384.54	9,625.77	0.00	0.00	0.00	0.00	BHL - Harper A21-626

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Harper A21-626
Company:	Northern Region - DJ Basin	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Project:	Wells Ranch	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site:	A Section 21	North Reference:	Grid
Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
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	0.00
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	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	0.00
432.00	0.00	0.00	432.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIERRE										
489.00	0.00	0.00	489.00	0.00	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	0.00
600.00	0.00	0.00	600.00	0.00	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	0.00
800.00	0.00	0.00	800.00	0.00	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	0.00
1,000.00	0.00	0.00	1,000.00	0.00	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	0.00
1,200.00	0.00	0.00	1,200.00	0.00	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	0.00
1,400.00	0.00	0.00	1,400.00	0.00	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	0.00
1,516.00	0.00	0.00	1,516.00	0.00	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	0.00
1,700.00	0.00	0.00	1,700.00	0.00	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	0.00
1,900.00	0.00	0.00	1,900.00	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	0.00
2,100.00	0.00	0.00	2,100.00	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	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 2°/100'										
2,500.00	2.00	346.79	2,499.98	1.70	-0.40	-0.33	2.00	2.00	0.00	0.00
2,550.60	3.01	346.79	2,550.53	3.85	-0.90	-0.75	2.00	2.00	0.00	0.00
Hold 3.01° Inc., 346.79° Azm										
2,600.00	3.01	346.79	2,599.86	6.38	-1.50	-1.24	0.00	0.00	0.00	0.00
2,700.00	3.01	346.79	2,699.72	11.50	-2.70	-2.24	0.00	0.00	0.00	0.00
2,800.00	3.01	346.79	2,799.59	16.61	-3.90	-3.23	0.00	0.00	0.00	0.00
2,900.00	3.01	346.79	2,899.45	21.73	-5.10	-4.23	0.00	0.00	0.00	0.00
3,000.00	3.01	346.79	2,999.31	26.84	-6.30	-5.22	0.00	0.00	0.00	0.00
3,100.00	3.01	346.79	3,099.17	31.96	-7.50	-6.22	0.00	0.00	0.00	0.00
3,200.00	3.01	346.79	3,199.03	37.07	-8.70	-7.22	0.00	0.00	0.00	0.00
3,300.00	3.01	346.79	3,298.90	42.19	-9.90	-8.21	0.00	0.00	0.00	0.00
3,400.00	3.01	346.79	3,398.76	47.30	-11.10	-9.21	0.00	0.00	0.00	0.00
3,500.00	3.01	346.79	3,498.62	52.42	-12.31	-10.20	0.00	0.00	0.00	0.00
3,600.00	3.01	346.79	3,598.48	57.53	-13.51	-11.20	0.00	0.00	0.00	0.00
3,634.57	3.01	346.79	3,633.00	59.30	-13.92	-11.54	0.00	0.00	0.00	0.00
PARKMAN										
3,700.00	3.01	346.79	3,698.34	62.65	-14.71	-12.20	0.00	0.00	0.00	0.00
3,800.00	3.01	346.79	3,798.20	67.76	-15.91	-13.19	0.00	0.00	0.00	0.00
3,900.00	3.01	346.79	3,898.07	72.88	-17.11	-14.19	0.00	0.00	0.00	0.00
4,000.00	3.01	346.79	3,997.93	77.99	-18.31	-15.18	0.00	0.00	0.00	0.00
4,100.00	3.01	346.79	4,097.79	83.11	-19.51	-16.18	0.00	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Harper A21-626
Company:	Northern Region - DJ Basin	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Project:	Wells Ranch	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site:	A Section 21	North Reference:	Grid
Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
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)
4,187.33	3.01	346.79	4,185.00	87.58	-20.56	-17.05	0.00	0.00	0.00
SUSSEX									
4,200.00	3.01	346.79	4,197.65	88.22	-20.71	-17.17	0.00	0.00	0.00
4,300.00	3.01	346.79	4,297.51	93.34	-21.91	-18.17	0.00	0.00	0.00
4,400.00	3.01	346.79	4,397.38	98.46	-23.11	-19.17	0.00	0.00	0.00
4,500.00	3.01	346.79	4,497.24	103.57	-24.31	-20.16	0.00	0.00	0.00
4,600.00	3.01	346.79	4,597.10	108.69	-25.52	-21.16	0.00	0.00	0.00
4,700.00	3.01	346.79	4,696.96	113.80	-26.72	-22.15	0.00	0.00	0.00
4,800.00	3.01	346.79	4,796.82	118.92	-27.92	-23.15	0.00	0.00	0.00
4,900.00	3.01	346.79	4,896.69	124.03	-29.12	-24.14	0.00	0.00	0.00
4,927.35	3.01	346.79	4,924.00	125.43	-29.45	-24.42	0.00	0.00	0.00
SHANNON									
5,000.00	3.01	346.79	4,996.55	129.15	-30.32	-25.14	0.00	0.00	0.00
5,100.00	3.01	346.79	5,096.41	134.26	-31.52	-26.14	0.00	0.00	0.00
5,200.00	3.01	346.79	5,196.27	139.38	-32.72	-27.13	0.00	0.00	0.00
5,300.00	3.01	346.79	5,296.13	144.49	-33.92	-28.13	0.00	0.00	0.00
5,400.00	3.01	346.79	5,395.99	149.61	-35.12	-29.12	0.00	0.00	0.00
5,500.00	3.01	346.79	5,495.86	154.72	-36.32	-30.12	0.00	0.00	0.00
5,600.00	3.01	346.79	5,595.72	159.84	-37.52	-31.11	0.00	0.00	0.00
5,700.00	3.01	346.79	5,695.58	164.95	-38.73	-32.11	0.00	0.00	0.00
5,800.00	3.01	346.79	5,795.44	170.07	-39.93	-33.11	0.00	0.00	0.00
5,900.00	3.01	346.79	5,895.30	175.18	-41.13	-34.10	0.00	0.00	0.00
5,909.71	3.01	346.79	5,905.00	175.68	-41.24	-34.20	0.00	0.00	0.00
TEEPEE BUTTES									
6,000.00	3.01	346.79	5,995.17	180.30	-42.33	-35.10	0.00	0.00	0.00
6,100.00	3.01	346.79	6,095.03	185.42	-43.53	-36.09	0.00	0.00	0.00
6,200.00	3.01	346.79	6,194.89	190.53	-44.73	-37.09	0.00	0.00	0.00
6,225.27	3.01	346.79	6,220.12	191.82	-45.03	-37.34	0.00	0.00	0.00
KOP: Build 9°/100' @ 6225.27' MD									
6,250.00	3.34	27.39	6,244.82	193.10	-44.85	-37.11	9.00	1.34	164.18
6,300.00	6.76	63.34	6,294.63	195.71	-41.55	-33.70	9.00	6.83	71.90
6,350.00	10.98	73.69	6,344.02	198.37	-34.34	-26.40	9.00	8.45	20.70
6,400.00	15.36	78.27	6,392.70	201.06	-23.28	-15.24	9.00	8.76	9.16
6,450.00	19.80	80.84	6,440.35	203.75	-8.43	-0.29	9.00	8.87	5.15
6,500.00	24.25	82.50	6,486.69	206.44	10.12	18.35	9.00	8.91	3.32
6,550.00	28.72	83.67	6,531.43	209.11	32.26	40.58	9.00	8.94	2.34
6,600.00	33.20	84.55	6,574.29	211.73	57.84	66.25	9.00	8.95	1.75
6,644.94	37.23	85.17	6,611.00	214.05	83.65	92.12	9.00	8.96	1.39
SHARON SPRINGS									
6,650.00	37.68	85.24	6,615.02	214.30	86.71	95.20	9.00	8.97	1.25
6,683.53	40.69	85.63	6,641.00	215.99	107.83	116.36	9.00	8.97	1.16
NIO A CHALK									
6,700.00	42.17	85.80	6,653.35	216.80	118.70	127.26	9.00	8.97	1.06
6,707.66	42.86	85.88	6,659.00	217.18	123.86	132.43	9.00	8.97	1.01
NIO A MARL									
6,750.00	46.66	86.27	6,689.06	219.22	153.60	162.22	9.00	8.98	0.93
6,800.00	51.15	86.68	6,721.92	221.53	191.20	199.89	9.00	8.98	0.82
6,846.96	55.36	87.02	6,750.00	223.59	228.76	237.50	9.00	8.98	0.72
NIO B CHALK									
6,850.00	55.64	87.04	6,751.72	223.72	231.26	240.01	9.00	8.98	0.68
6,900.00	60.13	87.36	6,778.30	225.79	273.55	282.34	9.00	8.98	0.64
6,905.46	60.62	87.40	6,781.00	226.00	278.29	287.09	9.00	8.98	0.61
NIO B MARL									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Harper A21-626
Company:	Northern Region - DJ Basin	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Project:	Wells Ranch	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site:	A Section 21	North Reference:	Grid
Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
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)
6,950.00	64.62	87.66	6,801.48	227.71	317.80	326.63	9.00	8.98	0.59
7,000.00	69.12	87.93	6,821.11	229.48	363.73	372.60	9.00	8.99	0.55
7,011.16	70.12	87.99	6,825.00	229.85	374.18	383.06	9.00	8.99	0.53
NIO C CHALK									
7,050.00	73.61	88.19	6,837.09	231.08	411.07	419.97	9.00	8.99	0.51
7,100.00	78.10	88.43	6,849.31	232.51	459.52	468.44	9.00	8.99	0.49
7,150.00	82.60	88.67	6,857.69	233.75	508.78	517.71	9.00	8.99	0.48
7,181.87	85.46	88.82	6,861.00	234.44	540.47	549.39	9.00	8.99	0.47
NIO C MARL									
7,200.00	87.09	88.90	6,862.18	234.80	558.56	567.49	9.00	8.99	0.46
7,232.38	90.00	89.05	6,863.00	235.38	590.91	599.84	9.00	8.99	0.46
EOC: 7232.38' MD, 90.00° Inc, 89.05° Azm									
7,300.00	90.00	89.05	6,863.00	236.50	658.53	667.45	0.00	0.00	0.00
7,400.00	90.00	89.05	6,863.00	238.15	758.52	767.42	0.00	0.00	0.00
7,500.00	90.00	89.05	6,863.00	239.80	858.50	867.39	0.00	0.00	0.00
7,600.00	90.00	89.05	6,863.00	241.45	958.49	967.36	0.00	0.00	0.00
7,700.00	90.00	89.05	6,863.00	243.10	1,058.48	1,067.34	0.00	0.00	0.00
7,800.00	90.00	89.05	6,863.00	244.75	1,158.46	1,167.31	0.00	0.00	0.00
7,900.00	90.00	89.05	6,863.00	246.40	1,258.45	1,267.28	0.00	0.00	0.00
8,000.00	90.00	89.05	6,863.00	248.05	1,358.43	1,367.25	0.00	0.00	0.00
8,100.00	90.00	89.05	6,863.00	249.70	1,458.42	1,467.23	0.00	0.00	0.00
8,200.00	90.00	89.05	6,863.00	251.35	1,558.41	1,567.20	0.00	0.00	0.00
8,300.00	90.00	89.05	6,863.00	253.00	1,658.39	1,667.17	0.00	0.00	0.00
8,400.00	90.00	89.05	6,863.00	254.65	1,758.38	1,767.14	0.00	0.00	0.00
8,500.00	90.00	89.05	6,863.00	256.30	1,858.37	1,867.12	0.00	0.00	0.00
8,600.00	90.00	89.05	6,863.00	257.96	1,958.35	1,967.09	0.00	0.00	0.00
8,700.00	90.00	89.05	6,863.00	259.61	2,058.34	2,067.06	0.00	0.00	0.00
8,800.00	90.00	89.05	6,863.00	261.26	2,158.33	2,167.03	0.00	0.00	0.00
8,900.00	90.00	89.05	6,863.00	262.91	2,258.31	2,267.01	0.00	0.00	0.00
9,000.00	90.00	89.05	6,863.00	264.56	2,358.30	2,366.98	0.00	0.00	0.00
9,100.00	90.00	89.05	6,863.00	266.21	2,458.28	2,466.95	0.00	0.00	0.00
9,200.00	90.00	89.05	6,863.00	267.86	2,558.27	2,566.92	0.00	0.00	0.00
9,300.00	90.00	89.05	6,863.00	269.51	2,658.26	2,666.90	0.00	0.00	0.00
9,400.00	90.00	89.05	6,863.00	271.16	2,758.24	2,766.87	0.00	0.00	0.00
9,500.00	90.00	89.05	6,863.00	272.81	2,858.23	2,866.84	0.00	0.00	0.00
9,600.00	90.00	89.05	6,863.00	274.46	2,958.22	2,966.81	0.00	0.00	0.00
9,700.00	90.00	89.05	6,863.00	276.11	3,058.20	3,066.79	0.00	0.00	0.00
9,800.00	90.00	89.05	6,863.00	277.76	3,158.19	3,166.76	0.00	0.00	0.00
9,900.00	90.00	89.05	6,863.00	279.41	3,258.18	3,266.73	0.00	0.00	0.00
10,000.00	90.00	89.05	6,863.00	281.06	3,358.16	3,366.70	0.00	0.00	0.00
10,100.00	90.00	89.05	6,863.00	282.72	3,458.15	3,466.68	0.00	0.00	0.00
10,200.00	90.00	89.05	6,863.00	284.37	3,558.13	3,566.65	0.00	0.00	0.00
10,300.00	90.00	89.05	6,863.00	286.02	3,658.12	3,666.62	0.00	0.00	0.00
10,400.00	90.00	89.05	6,863.00	287.67	3,758.11	3,766.60	0.00	0.00	0.00
10,500.00	90.00	89.05	6,863.00	289.32	3,858.09	3,866.57	0.00	0.00	0.00
10,600.00	90.00	89.05	6,863.00	290.97	3,958.08	3,966.54	0.00	0.00	0.00
10,700.00	90.00	89.05	6,863.00	292.62	4,058.07	4,066.51	0.00	0.00	0.00
10,800.00	90.00	89.05	6,863.00	294.27	4,158.05	4,166.49	0.00	0.00	0.00
10,900.00	90.00	89.05	6,863.00	295.92	4,258.04	4,266.46	0.00	0.00	0.00
11,000.00	90.00	89.05	6,863.00	297.57	4,358.03	4,366.43	0.00	0.00	0.00
11,100.00	90.00	89.05	6,863.00	299.22	4,458.01	4,466.40	0.00	0.00	0.00
11,200.00	90.00	89.05	6,863.00	300.87	4,558.00	4,566.38	0.00	0.00	0.00
11,300.00	90.00	89.05	6,863.00	302.52	4,657.99	4,666.35	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Harper A21-626
Company:	Northern Region - DJ Basin	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Project:	Wells Ranch	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site:	A Section 21	North Reference:	Grid
Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
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	89.05	6,863.00	304.17	4,757.97	4,766.32	0.00	0.00	0.00
11,500.00	90.00	89.05	6,863.00	305.82	4,857.96	4,866.29	0.00	0.00	0.00
11,600.00	90.00	89.05	6,863.00	307.48	4,957.94	4,966.27	0.00	0.00	0.00
11,700.00	90.00	89.05	6,863.00	309.13	5,057.93	5,066.24	0.00	0.00	0.00
11,800.00	90.00	89.05	6,863.00	310.78	5,157.92	5,166.21	0.00	0.00	0.00
11,900.00	90.00	89.05	6,863.00	312.43	5,257.90	5,266.18	0.00	0.00	0.00
12,000.00	90.00	89.05	6,863.00	314.08	5,357.89	5,366.16	0.00	0.00	0.00
12,100.00	90.00	89.05	6,863.00	315.73	5,457.88	5,466.13	0.00	0.00	0.00
12,200.00	90.00	89.05	6,863.00	317.38	5,557.86	5,566.10	0.00	0.00	0.00
12,300.00	90.00	89.05	6,863.00	319.03	5,657.85	5,666.07	0.00	0.00	0.00
12,400.00	90.00	89.05	6,863.00	320.68	5,757.84	5,766.05	0.00	0.00	0.00
12,500.00	90.00	89.05	6,863.00	322.33	5,857.82	5,866.02	0.00	0.00	0.00
12,600.00	90.00	89.05	6,863.00	323.98	5,957.81	5,965.99	0.00	0.00	0.00
12,700.00	90.00	89.05	6,863.00	325.63	6,057.79	6,065.96	0.00	0.00	0.00
12,800.00	90.00	89.05	6,863.00	327.28	6,157.78	6,165.94	0.00	0.00	0.00
12,900.00	90.00	89.05	6,863.00	328.93	6,257.77	6,265.91	0.00	0.00	0.00
13,000.00	90.00	89.05	6,863.00	330.58	6,357.75	6,365.88	0.00	0.00	0.00
13,100.00	90.00	89.05	6,863.00	332.23	6,457.74	6,465.85	0.00	0.00	0.00
13,200.00	90.00	89.05	6,863.00	333.89	6,557.73	6,565.83	0.00	0.00	0.00
13,300.00	90.00	89.05	6,863.00	335.54	6,657.71	6,665.80	0.00	0.00	0.00
13,400.00	90.00	89.05	6,863.00	337.19	6,757.70	6,765.77	0.00	0.00	0.00
13,500.00	90.00	89.05	6,863.00	338.84	6,857.69	6,865.75	0.00	0.00	0.00
13,600.00	90.00	89.05	6,863.00	340.49	6,957.67	6,965.72	0.00	0.00	0.00
13,700.00	90.00	89.05	6,863.00	342.14	7,057.66	7,065.69	0.00	0.00	0.00
13,800.00	90.00	89.05	6,863.00	343.79	7,157.64	7,165.66	0.00	0.00	0.00
13,900.00	90.00	89.05	6,863.00	345.44	7,257.63	7,265.64	0.00	0.00	0.00
14,000.00	90.00	89.05	6,863.00	347.09	7,357.62	7,365.61	0.00	0.00	0.00
14,100.00	90.00	89.05	6,863.00	348.74	7,457.60	7,465.58	0.00	0.00	0.00
14,200.00	90.00	89.05	6,863.00	350.39	7,557.59	7,565.55	0.00	0.00	0.00
14,300.00	90.00	89.05	6,863.00	352.04	7,657.58	7,665.53	0.00	0.00	0.00
14,400.00	90.00	89.05	6,863.00	353.69	7,757.56	7,765.50	0.00	0.00	0.00
14,500.00	90.00	89.05	6,863.00	355.34	7,857.55	7,865.47	0.00	0.00	0.00
14,600.00	90.00	89.05	6,863.00	356.99	7,957.54	7,965.44	0.00	0.00	0.00
14,700.00	90.00	89.05	6,863.00	358.65	8,057.52	8,065.42	0.00	0.00	0.00
14,800.00	90.00	89.05	6,863.00	360.30	8,157.51	8,165.39	0.00	0.00	0.00
14,900.00	90.00	89.05	6,863.00	361.95	8,257.49	8,265.36	0.00	0.00	0.00
15,000.00	90.00	89.05	6,863.00	363.60	8,357.48	8,365.33	0.00	0.00	0.00
15,100.00	90.00	89.05	6,863.00	365.25	8,457.47	8,465.31	0.00	0.00	0.00
15,200.00	90.00	89.05	6,863.00	366.90	8,557.45	8,565.28	0.00	0.00	0.00
15,300.00	90.00	89.05	6,863.00	368.55	8,657.44	8,665.25	0.00	0.00	0.00
15,400.00	90.00	89.05	6,863.00	370.20	8,757.43	8,765.22	0.00	0.00	0.00
15,500.00	90.00	89.05	6,863.00	371.85	8,857.41	8,865.20	0.00	0.00	0.00
15,600.00	90.00	89.05	6,863.00	373.50	8,957.40	8,965.17	0.00	0.00	0.00
15,700.00	90.00	89.05	6,863.00	375.15	9,057.39	9,065.14	0.00	0.00	0.00
15,800.00	90.00	89.05	6,863.00	376.80	9,157.37	9,165.11	0.00	0.00	0.00
15,900.00	90.00	89.05	6,863.00	378.45	9,257.36	9,265.09	0.00	0.00	0.00
16,000.00	90.00	89.05	6,863.00	380.10	9,357.34	9,365.06	0.00	0.00	0.00
16,100.00	90.00	89.05	6,863.00	381.75	9,457.33	9,465.03	0.00	0.00	0.00
16,200.00	90.00	89.05	6,863.00	383.41	9,557.32	9,565.00	0.00	0.00	0.00
16,268.46	90.00	89.05	6,863.00	384.54	9,625.77	9,633.45	0.00	0.00	0.00
TD @ 16268.46' MD/6863.00' TVD									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Harper A21-626
Company:	Northern Region - DJ Basin	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Project:	Wells Ranch	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site:	A Section 21	North Reference:	Grid
Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
TPZ - Harper A21-626 - plan hits target center - Point	0.00	0.01	6,863.00	235.38	590.91	1,414,459.57	3,261,737.77	40.4672820	-104.5592712
BHL - Harper A21-626 - plan hits target center - Point	0.00	0.00	6,863.00	384.54	9,625.77	1,414,608.73	3,270,772.61	40.4674238	-104.5267952

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
432.00	432.00	PIERRE		0.00		
489.00	489.00	UPPER PIERRE AQUIFER TOP		0.00		
1,516.00	1,516.00	UPPER PIERRE AQUIFER BASE		0.00		
3,634.57	3,633.00	PARKMAN		0.00		
4,187.33	4,185.00	SUSSEX		0.00		
4,927.35	4,924.00	SHANNON		0.00		
5,909.71	5,905.00	TEEPEE BUTTES		0.00		
6,644.94	6,611.00	SHARON SPRINGS		0.00		
6,683.53	6,641.00	NIO A CHALK		0.00		
6,707.66	6,659.00	NIO A MARL		0.00		
6,846.96	6,750.00	NIO B CHALK		0.00		
6,905.46	6,781.00	NIO B MARL		0.00		
7,011.16	6,825.00	NIO C CHALK		0.00		
7,181.87	6,861.00	NIO C MARL		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
2,400.00	2,400.00	0.00	0.00	Build 2°/100'	
2,550.60	2,550.53	3.85	-0.90	Hold 3.01° Inc., 346.79° Azm	
6,225.27	6,220.12	191.82	-45.03	KOP: Build 9°/100' @ 6225.27' MD	
7,232.38	6,863.00	235.38	590.91	EOC: 7232.38' MD, 90.00° Inc, 89.05° Azm	
16,268.46	6,863.00	384.54	9,625.77	TD @ 16268.46' MD/6863.00' TVD	

Northern Region - DJ Basin

Wells Ranch

A Section 21

Harper A21-626

Original Drilling

APD - Rev 1

Anticollision Summary Report

23 January, 2018

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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	1/22/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	16,268.46	APD - Rev 1 (Original Drilling)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary						
Site Name Offset Well - Wellbore - Design	Reference	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
A Section 15						
Kerbs 12-15 - Original Drilling - Original Drilling - As Drille	11,480.55	7,062.23	7,288.72	7,199.93	82.089	CC
Kerbs 12-15 - Original Drilling - Original Drilling - As Drille	11,600.00	7,062.99	7,289.70	7,199.53	80.844	ES
Kerbs 12-15 - Original Drilling - Original Drilling - As Drille	14,900.00	7,083.88	8,050.94	7,930.50	66.848	SF
Kerbs 14-15 - Original Drilling - Original Drilling - As Drille	11,504.63	6,877.90	4,653.90	4,565.44	52.608	CC
Kerbs 14-15 - Original Drilling - Original Drilling - As Drille	11,600.00	6,877.56	4,654.88	4,565.32	51.974	ES
Kerbs 14-15 - Original Drilling - Original Drilling - As Drille	13,100.00	6,871.89	4,919.75	4,816.45	47.626	SF
Kerbs 22-15 - Original Drilling - Original Drilling - As Drille	13,233.47	7,034.42	7,293.89	7,184.67	66.784	CC
Kerbs 22-15 - Original Drilling - Original Drilling - As Drille	13,300.00	7,034.73	7,294.19	7,184.18	66.304	ES
Kerbs 22-15 - Original Drilling - Original Drilling - As Drille	16,100.00	7,047.81	7,836.94	7,700.69	57.518	SF
Kerbs 23-15 - Original Drilling - Original Drilling - As Drille	13,220.63	6,935.51	5,961.81	5,853.06	54.823	CC
Kerbs 23-15 - Original Drilling - Original Drilling - As Drille	13,300.00	6,936.06	5,962.34	5,852.64	54.354	ES
Kerbs 23-15 - Original Drilling - Original Drilling - As Drille	15,300.00	6,955.64	6,314.01	6,185.71	49.214	SF
Kerbs 24-15 - Original Drilling - Original Drilling - As Drille	13,231.53	6,922.41	4,607.83	4,498.98	42.332	CC
Kerbs 24-15 - Original Drilling - Original Drilling - As Drille	13,300.00	6,921.82	4,608.34	4,498.68	42.022	ES
Kerbs 24-15 - Original Drilling - Original Drilling - As Drille	14,500.00	6,911.49	4,779.23	4,658.37	39.544	SF
Kerbs 33-15 - Original Drilling - Original Drilling - As Drille	14,353.84	6,929.94	6,105.65	5,983.36	49.930	CC
Kerbs 33-15 - Original Drilling - Original Drilling - As Drille	14,400.00	6,930.69	6,105.82	5,982.98	49.704	ES
Kerbs 33-15 - Original Drilling - Original Drilling - As Drille	16,268.46	6,971.10	6,398.62	6,258.08	45.528	SF
Kerbs 34-15 - Original Drilling - Original Drilling - As Drille	14,311.46	6,864.81	4,723.44	4,597.71	37.566	CC
Kerbs 34-15 - Original Drilling - Original Drilling - As Drille	14,400.00	6,864.97	4,724.27	4,597.47	37.258	ES
Kerbs 34-15 - Original Drilling - Original Drilling - As Drille	15,500.00	6,866.94	4,870.68	4,733.59	35.527	SF
Kerbs 43-15 - Original Drilling - Original Drilling - As Drille	15,569.57	6,987.63	5,924.91	5,787.78	43.207	CC
Kerbs 43-15 - Original Drilling - Original Drilling - As Drille	15,600.00	6,988.42	5,924.99	5,787.49	43.090	ES
Kerbs 43-15 - Original Drilling - Original Drilling - As Drille	16,268.46	7,005.70	5,965.96	5,821.00	41.155	SF
Kerbs 44-15 - Original Drilling - Original Drilling - As Drille	15,455.42	6,877.02	4,590.62	4,455.18	33.896	CC
Kerbs 44-15 - Original Drilling - Original Drilling - As Drille	15,500.00	6,877.08	4,590.83	4,454.86	33.762	ES
Kerbs 44-15 - Original Drilling - Original Drilling - As Drille	16,268.46	6,824.76	4,662.07	4,518.58	32.492	SF
Kerbs USX A15-12D - Original Drilling - Original Drilling	11,764.90	7,820.02	6,158.38	6,048.12	55.851	CC
Kerbs USX A15-12D - Original Drilling - Original Drilling	11,900.00	7,820.02	6,159.87	6,047.53	54.836	ES
Kerbs USX A15-12D - Original Drilling - Original Drilling	14,400.00	7,820.02	6,698.47	6,556.17	47.074	SF
McDaniel 32-15 - Original Drilling - Original Drilling - As D	14,331.46	6,928.43	7,415.02	7,292.98	60.760	CC
McDaniel 32-15 - Original Drilling - Original Drilling - As D	14,400.00	6,929.53	7,415.33	7,292.47	60.352	ES
McDaniel 32-15 - Original Drilling - Original Drilling - As D	16,268.46	6,959.78	7,663.78	7,521.74	53.955	SF
McDaniel 42-15 - Original Drilling - Original Drilling - As D	15,711.00	6,896.75	7,527.80	7,389.21	54.317	CC
McDaniel 42-15 - Original Drilling - Original Drilling - As D	15,800.00	6,897.79	7,528.32	7,388.65	53.900	ES
McDaniel 42-15 - Original Drilling - Original Drilling - As D	16,268.46	6,903.25	7,548.41	7,403.29	52.015	SF
Speicher 31-15 - Original Drilling - Original Drilling	14,576.15	6,650.01	8,779.76	8,655.54	70.681	CC

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 Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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 15						
Speicher 31-15 - Original Drilling - Original Drilling	14,700.00	6,650.01	8,780.63	8,654.92	69.849	ES
Speicher 31-15 - Original Drilling - Original Drilling	16,268.46	6,650.01	8,941.37	8,798.60	62.630	SF
Speicher 41-15 - Original Drilling - Original Drilling	15,609.47	6,900.01	8,732.85	8,595.52	63.589	CC
Speicher 41-15 - Original Drilling - Original Drilling	15,700.00	6,900.01	8,733.32	8,594.89	63.087	ES
Speicher 41-15 - Original Drilling - Original Drilling	16,268.46	6,900.01	8,757.68	8,612.62	60.371	SF
Tye USX A15-03D - Original Drilling - Original MWD	12,992.03	12,992.03	8,929.17	8,802.54	70.514	CC
Tye USX A15-03D - Original Drilling - Original MWD	13,100.00	13,100.00	8,929.82	8,801.62	69.652	ES
Tye USX A15-03D - Original Drilling - Original MWD	16,268.46	7,026.19	9,511.28	9,371.25	67.923	SF
Tye USX A15-04D - Original Drilling - Original Drilling	11,711.26	7,330.01	8,873.75	8,763.29	80.337	CC
Tye USX A15-04D - Original Drilling - Original Drilling	11,800.00	7,330.01	8,874.19	8,762.82	79.681	ES
Tye USX A15-04D - Original Drilling - Original Drilling	15,000.00	7,356.63	9,463.56	9,325.29	68.444	SF
A Section 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	6,227.54	6,185.27	1,577.79	1,534.31	36.295	CC, ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	6,400.00	6,349.25	1,600.58	1,555.94	35.856	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,245.00	6,221.30	2,847.47	2,803.82	65.236	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,250.00	6,225.06	2,847.49	2,803.81	65.190	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,462.55	2,897.06	2,851.72	63.899	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,225.65	6,163.50	2,898.78	2,753.47	19.949	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,250.00	6,187.82	2,899.24	2,753.36	19.874	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,500.00	6,429.69	2,955.80	2,804.25	19.504	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,271.19	6,268.08	1,704.94	1,661.02	38.827	CC, ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,450.00	6,424.31	1,725.80	1,680.73	38.294	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,237.40	6,243.63	7,030.22	6,983.75	151.309	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,250.00	6,256.22	7,030.34	6,983.70	150.738	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,900.00	6,792.81	7,344.88	7,290.90	136.069	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	6,287.14	6,320.38	2,718.77	2,673.82	60.480	CC
Simmons 42-20D - Original Drilling - Original Drilling - As	6,300.00	6,332.39	2,718.84	2,673.81	60.370	ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,650.00	6,657.71	2,775.17	2,727.98	58.805	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,169.75	6,084.77	4,176.22	4,133.30	97.309	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,225.27	6,122.66	4,176.35	4,133.10	96.567	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,600.00	6,399.81	4,288.54	4,243.14	94.453	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,254.98	6,315.96	4,371.02	4,327.00	99.293	CC, ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,650.00	6,713.92	4,488.35	4,441.71	96.236	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,236.13	6,156.01	5,431.54	5,388.14	125.156	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,750.00	6,828.22	5,621.01	5,573.77	118.980	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,228.46	6,159.71	5,465.34	5,421.95	125.961	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,750.00	6,677.62	5,665.98	5,619.24	121.240	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	352.99	300.00	7,139.00	7,137.09	3,737.060	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	400.00	328.06	7,139.05	7,136.86	3,267.259	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,700.00	6,715.94	7,462.48	7,413.23	151.515	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	42.32	7,123.97	7,123.77	10,000.000	CC
Winter 24-19 - Original Drilling - Original Drilling - As Dril	600.00	486.96	7,125.62	7,121.88	1,901.810	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,600.00	6,800.00	7,388.83	7,328.01	121.495	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,240.70	6,395.00	6,149.56	6,102.01	129.314	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,650.00	6,684.23	6,279.85	6,230.25	126.608	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,239.09	6,527.25	6,146.34	6,072.60	83.353	CC, ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,815.05	6,197.85	6,122.86	82.657	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 Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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 D	7,958.02	6,854.60	952.61	899.71	18.007	CC, ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	8,100.00	6,854.67	963.13	909.30	17.893	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	9,012.70	6,824.00	826.73	652.40	4.742	CC, ES, SF
Harper A21-618 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	23.00	9.13	1.658	CC, ES, SF
Harper A21-631 - Original Drilling - APD - Rev 1	2,200.00	2,200.00	22.00	6.70	1.437	Level 3, CC, ES, SF
Harper A21-637 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	45.00	31.13	3.244	CC, ES
Harper A21-637 - Original Drilling - APD - Rev 1	16,268.46	16,337.80	750.11	507.04	3.086	SF
Harper A21-643 - Original Drilling - APD - Rev 1	7,030.31	7,170.45	1,173.29	1,123.81	23.712	CC
Harper A21-643 - Original Drilling - APD - Rev 1	16,268.46	16,405.23	1,173.72	929.28	4.802	ES, SF
Harper A21-649 - Original Drilling - APD - Rev 1	3,176.51	3,120.99	1,374.37	1,352.29	62.250	CC
Harper A21-649 - Original Drilling - APD - Rev 1	16,268.46	16,513.10	1,530.15	1,285.43	6.253	ES, SF
Harper A21-656 - Original Drilling - APD - Rev 1	3,033.82	2,976.92	1,403.52	1,382.47	66.659	CC, ES
Harper A21-656 - Original Drilling - APD - Rev 1	16,268.46	16,500.79	1,909.87	1,664.67	7.789	SF
Harper A21-664 - Original Drilling - APD - Rev 1	2,814.87	2,756.55	1,436.15	1,416.67	73.712	CC, ES
Harper A21-664 - Original Drilling - APD - Rev 1	16,268.46	16,776.42	2,399.21	2,154.22	9.793	SF
Harper A21-669 - Original Drilling - APD - Rev 1	2,611.45	2,552.67	1,469.42	1,451.39	81.520	CC, ES
Harper A21-669 - Original Drilling - APD - Rev 1	16,268.46	16,706.59	2,749.52	2,503.84	11.191	SF
Harper A21-674 - Original Drilling - APD - Rev 1	2,110.32	2,126.32	1,492.55	1,477.83	101.389	CC
Harper A21-674 - Original Drilling - APD - Rev 1	2,200.00	2,210.63	1,492.58	1,477.24	97.270	ES
Harper A21-674 - Original Drilling - APD - Rev 1	16,268.46	16,892.96	3,107.92	2,862.34	12.655	SF
Harper A21-681 - Original Drilling - APD - Rev 1	1,909.84	1,926.84	1,515.54	1,502.26	114.059	CC
Harper A21-681 - Original Drilling - APD - Rev 1	2,000.00	2,011.13	1,515.58	1,501.66	108.935	ES
Harper A21-681 - Original Drilling - APD - Rev 1	16,268.46	16,742.06	3,533.93	3,290.18	14.498	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	1,982.68	1,979.01	143.12	130.75	11.564	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	2,000.00	1,995.22	143.19	130.74	11.506	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	2,100.00	2,089.06	146.29	133.48	11.419	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,982.19	6,920.07	131.05	87.92	3.039	CC, ES, SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	0.00	0.00	166.27			
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	2,100.00	2,093.97	174.44	161.98	13.999	ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	7,100.00	7,142.23	564.76	517.36	11.913	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	7,246.67	6,562.63	1,331.28	1,288.99	31.475	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	7,400.00	6,551.94	1,339.95	1,297.22	31.362	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	2,693.06	2,640.00	1,496.86	1,480.36	90.714	CC
Kona A19-662 - Original Drilling - Original Drilling - As Dr	2,700.00	2,640.00	1,496.87	1,480.35	90.595	ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	7,400.00	6,640.69	2,219.28	2,174.56	49.625	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	1,984.02	2,001.10	1,526.66	1,513.14	112.904	CC
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	2,000.00	2,009.35	1,526.70	1,513.12	112.423	ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	8,300.00	6,266.04	2,807.36	2,758.22	57.136	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	2,004.53	2,020.64	1,479.14	1,465.49	108.376	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	7,400.00	7,400.00	2,980.58	2,932.29	61.719	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,457.10	6,444.01	1,988.06	1,836.28	13.098	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,500.00	6,483.69	1,988.34	1,835.62	13.020	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,850.00	6,748.72	2,019.35	1,860.23	12.691	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,944.81	6,876.00	3,284.79	3,118.23	19.722	CC, ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	8,400.00	6,876.00	3,316.17	3,146.31	19.523	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	7,751.29	6,876.34	2,085.13	2,033.42	40.329	CC, ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	8,300.00	6,879.87	2,156.11	2,100.94	39.078	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril	8,989.84	7,027.85	3,648.65	3,586.70	58.897	CC
McKee 31-21 - Original Drilling - Original Drilling - As Dril	9,000.00	7,027.62	3,648.67	3,586.62	58.806	ES
McKee 31-21 - Original Drilling - Original Drilling - As Dril	10,400.00	6,995.51	3,911.54	3,837.58	52.882	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	8,995.54	6,868.22	2,109.01	2,047.49	34.281	CC
McKee 32-21 - Original Drilling - Original Drilling - As Dril	9,000.00	6,868.23	2,109.02	2,047.45	34.257	ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	9,500.00	6,869.66	2,168.50	2,102.68	32.942	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 Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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						
McKee 41-21 - Original Drilling - Original Drilling - As Dril	10,290.32	6,745.65	3,591.02	3,516.62	48.264	CC
McKee 41-21 - Original Drilling - Original Drilling - As Dril	10,300.00	6,745.72	3,591.03	3,516.52	48.194	ES
McKee 41-21 - Original Drilling - Original Drilling - As Dril	11,400.00	6,754.71	3,758.56	3,673.87	44.382	SF
McKee 42-21 - Original Drilling - Original Drilling - As Dril	10,352.55	6,859.93	1,929.24	1,853.79	25.569	CC, ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	10,700.00	6,859.14	1,960.28	1,881.59	24.910	SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	10,303.58	6,816.00	1,050.58	863.13	5.605	CC, ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	10,400.00	6,816.00	1,054.99	866.60	5.600	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,324.22	6,301.64	746.06	701.79	16.852	CC, ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,450.00	6,422.44	751.59	706.47	16.658	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	2,423.32	2,381.80	521.99	505.39	31.446	CC
Wells Trust 14-21 - Original Drilling - Original Drilling - As	2,500.00	2,456.71	522.43	505.30	30.489	ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	6,300.00	6,250.63	608.55	564.55	13.830	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	7,046.80	6,814.51	393.25	344.82	8.119	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	7,050.00	6,813.57	393.26	344.82	8.118	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 Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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 22						
Carpio 22-01 - Original Drilling - Original Drilling - As Dril	15,605.30	6,799.00	323.26	186.31	2.360	CC, ES, SF
Carpio 22-04-19 - Original Drilling - Original Drilling - As D	14,119.17	6,840.11	254.27	133.02	2.097	CC, ES, SF
Carpio 22-41 - Original Drilling - Original Drilling - As Dril	15,764.64	6,807.12	701.62	543.91	4.449	CC, ES
Carpio 22-41 - Original Drilling - Original Drilling - As Dril	15,800.00	6,806.98	702.51	544.48	4.445	SF
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	14,284.83	6,840.85	346.99	225.82	2.864	CC, ES, SF
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	15,255.10	6,815.59	97.48	-35.32	0.734	Level 1, CC, ES, SF
Eisenstat 22-11 (PA) - Original Drilling - Original Drilling -	15,641.24	6,830.00	3,681.25	3,430.82	14.700	CC
Eisenstat 22-11 (PA) - Original Drilling - Original Drilling -	15,700.00	6,830.00	3,681.72	3,430.58	14.660	ES
Eisenstat 22-11 (PA) - Original Drilling - Original Drilling -	16,100.00	6,830.00	3,709.73	3,454.50	14.535	SF
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	14,174.40	6,835.00	1,786.26	1,666.43	14.906	CC
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	14,200.00	6,834.81	1,786.45	1,666.31	14.870	ES
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	14,400.00	6,866.80	1,800.45	1,678.42	14.754	SF
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	14,986.09	6,804.38	3,015.46	2,885.96	23.285	CC
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	15,000.00	6,804.44	3,015.50	2,885.82	23.254	ES
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	15,500.00	6,806.54	3,058.94	2,924.59	22.767	SF
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	13,182.07	6,904.52	3,284.56	3,176.40	30.367	CC
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	13,200.00	6,904.40	3,284.61	3,176.23	30.307	ES
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	13,900.00	6,900.01	3,362.10	3,247.19	29.259	SF
Eisenstat 22-23 - Original Drilling - Original Drilling - As D	11,772.52	6,846.33	2,308.03	2,216.60	25.242	CC
Eisenstat 22-23 - Original Drilling - Original Drilling - As D	11,800.00	6,846.53	2,308.20	2,216.44	25.155	ES
Eisenstat 22-23 - Original Drilling - Original Drilling - As D	12,200.00	6,849.46	2,347.29	2,251.81	24.584	SF
Gill Land Assoc. 1 (PA) - Original Drilling - Original Drillin	15,631.41	6,831.00	2,162.50	1,912.17	8.639	CC, ES
Gill Land Assoc. 1 (PA) - Original Drilling - Original Drillin	15,800.00	6,831.00	2,169.06	1,916.96	8.604	SF
Gill Land Assoc. 22-02 (PA) - Original Drilling - Original D	12,955.65	6,841.00	2,131.98	1,913.58	9.762	CC
Gill Land Assoc. 22-02 (PA) - Original Drilling - Original D	13,000.00	6,841.00	2,132.44	1,913.52	9.741	ES
Gill Land Assoc. 22-02 (PA) - Original Drilling - Original D	13,100.00	6,841.00	2,136.86	1,916.87	9.714	SF
Gill Land Assoc. 22-03 - Original Drilling - Original Drilling	11,669.80	6,849.18	3,422.57	3,332.28	37.908	CC
Gill Land Assoc. 22-03 - Original Drilling - Original Drilling	11,700.00	6,849.16	3,422.70	3,332.06	37.762	ES
Gill Land Assoc. 22-03 - Original Drilling - Original Drilling	12,500.00	6,848.78	3,521.82	3,423.59	35.856	SF
Gill Land Assoc. 22-04 (PA) - Original Drilling - Original D	14,251.19	6,839.00	3,450.76	3,216.94	14.758	CC
Gill Land Assoc. 22-04 (PA) - Original Drilling - Original D	14,300.00	6,839.00	3,451.10	3,216.69	14.723	ES
Gill Land Assoc. 22-04 (PA) - Original Drilling - Original D	14,700.00	6,839.00	3,479.82	3,241.30	14.589	SF
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	11,607.56	6,844.08	856.42	766.93	9.570	CC, ES
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	11,700.00	6,844.59	861.39	771.10	9.540	SF
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	12,908.16	6,835.26	428.60	323.91	4.094	CC, ES, SF
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	12,931.57	6,853.19	870.34	765.29	8.285	CC, ES
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	13,000.00	6,852.99	873.03	767.34	8.260	SF
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	11,645.03	6,810.65	401.37	311.62	4.472	CC, ES, SF
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	12,256.53	6,760.29	129.56	32.77	1.339	Level 3, CC, ES, SF
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	14,285.26	6,844.14	976.99	855.84	8.064	CC
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	14,300.00	6,844.18	977.11	855.77	8.053	ES, 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 Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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 23						
Cecil 23-13 - Original Drilling - Original Drilling - As Drille	16,268.46	6,768.07	3,872.84	3,771.30	38.141	CC, ES, SF
Champlin 23-02 (PA) - Original Drilling - Original Drilling -	16,268.46	6,790.00	1,155.86	917.06	4.840	CC, ES, SF
Champlin 23-03 - Original Drilling - Original Drilling - As D	16,268.46	6,743.88	1,775.80	1,717.13	30.266	CC, ES, SF
Champlin Amoco A 1 #308 - Original Drilling - Original Dr	16,268.46	6,765.00	1,625.07	1,450.66	9.317	CC, ES, SF
Cooper 23-1-17 - Original Drilling - Original Drilling - As Dr	16,268.46	6,732.71	5,524.40	5,414.54	50.283	CC, ES, SF
Cooper 23-1-19 - Original Drilling - Original Drilling - As D	16,268.46	6,683.88	4,137.07	4,023.65	36.478	CC, ES, SF
Cooper 23-12 - Original Drilling - Original Drilling - As Dri	16,268.46	6,755.82	4,846.87	4,734.28	43.049	CC, ES, SF
Cooper 23-1-20 - Original Drilling - Original Drilling - As D	16,268.46	6,750.33	3,289.44	3,200.38	36.939	CC, ES, SF
Cooper 23-15 - Original Drilling - Original Drilling - As Dri	16,268.46	6,650.00	4,976.58	4,878.66	50.824	CC, ES, SF
Foss 41-23D - Original Drilling - Original Drilling - As Drill	16,268.46	6,945.80	5,834.31	5,728.02	54.888	CC, ES, SF
Foss 42-23 - Original Drilling - Original Drilling - As Drille	16,268.46	6,735.65	4,901.44	4,821.45	61.279	CC, ES, SF
J&L Farms 23-11 - Original Drilling - Original Drilling - As	16,268.46	6,787.09	3,586.12	3,442.65	24.997	CC, ES, SF
J&L Farms 23-12 - Original Drilling - Original Drilling - As	16,268.46	6,729.77	2,104.40	1,962.29	14.808	CC, ES, SF
J&L Farms 23-21 - Original Drilling - Original Drilling - As	16,268.46	6,697.24	4,340.64	4,211.71	33.667	CC, ES, SF
J&L Farms 23-22 - Original Drilling - Original Drilling - As	16,268.46	6,740.85	2,981.93	2,864.52	25.398	CC, ES, SF
McIntosh 33-23 - Original Drilling - Original Drilling - As D	16,268.46	7,019.00	3,384.42	3,322.90	55.014	CC, ES, SF
McIntosh 34-23 - Original Drilling - Original Drilling - As D	16,268.46	6,765.58	3,470.07	3,415.12	63.156	CC, ES, SF
McIntosh 43-23 - Original Drilling - Original Drilling - As D	16,268.46	6,704.75	4,918.16	4,858.11	81.894	CC, ES, SF
McIntosh 44-23 - Original Drilling - Original Drilling - As D	16,268.46	6,745.37	4,902.99	4,847.87	88.940	CC, ES, SF
Schroeder 23-31 - Original Drilling - Original Drilling - As	16,268.46	6,789.91	2,270.93	2,202.80	33.332	CC, ES, SF
Schroeder 23-33 - Original Drilling - Original Drilling - As	16,268.46	6,776.95	796.62	676.75	6.645	CC, ES, SF
A Section 24						
Larson A23-622 - Original Drilling - APD - Rev 0	16,268.46	17,335.78	241.31	127.24	2.115	CC, ES, SF
Larson A23-627 - Original Drilling - APD - Rev 0	16,268.46	17,349.62	127.85	12.78	1.111	Level 2, CC, ES, SF
Larson A23-633 - Original Drilling - APD - Rev 0	16,268.46	17,303.35	475.83	355.61	3.958	CC, ES, SF
Larson A23-639 - Original Drilling - APD - Rev 0	16,268.46	17,357.51	868.21	746.82	7.152	CC, ES, SF
Larson A23-645 - Original Drilling - APD - Rev 0	16,268.46	18,112.28	1,268.19	1,146.74	10.442	CC, ES, SF
Larson A23-651 - Original Drilling - APD - Rev 0	16,268.46	18,048.86	1,578.54	1,457.10	12.998	CC, ES, SF
Larson A23-656 - Original Drilling - APD - Rev 0	16,268.46	18,069.05	1,886.78	1,765.31	15.533	CC, ES, SF
Larson A23-662 - Original Drilling - APD - Rev 0	16,268.46	18,064.84	2,310.63	2,189.16	19.024	CC, ES, SF
Larson A23-668 - Original Drilling - APD - Rev 0	16,268.46	17,466.37	2,680.91	2,559.44	22.071	CC, ES, SF
Larson A23-672 - Original Drilling - APD - Rev 0	16,268.46	17,459.11	2,975.42	2,854.35	24.576	CC, ES, SF
Larson A23-678 - Original Drilling - APD - Rev 0	16,268.46	17,179.62	3,343.76	3,222.30	27.528	CC, ES, SF
Larson A23-683 - Original Drilling - APD - Rev 0	16,268.46	17,320.24	3,655.40	3,533.93	30.094	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 Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	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 27						
Howard 02-27 (PA) - Original Drilling - Original Drilling - A	14,307.10	6,846.00	1,706.35	1,471.72	7.272	CC, ES
Howard 02-27 (PA) - Original Drilling - Original Drilling - A	14,400.00	6,846.00	1,708.88	1,473.30	7.254	SF
Howard 03-27 - Original Drilling - Original Drilling - As Dr	12,897.65	6,821.34	1,784.46	1,679.93	17.072	CC
Howard 03-27 - Original Drilling - Original Drilling - As Dr	12,900.00	6,821.31	1,784.46	1,679.91	17.067	ES
Howard 03-27 - Original Drilling - Original Drilling - As Dr	13,100.00	6,818.93	1,795.90	1,689.54	16.886	SF
Howard 04-27 (PA) - Original Drilling - Original Drilling - A	11,656.91	6,806.00	1,667.66	1,465.17	8.236	CC, ES
Howard 04-27 (PA) - Original Drilling - Original Drilling - A	11,800.00	6,806.00	1,673.79	1,469.91	8.210	SF
Howard 08-27 - Original Drilling - Original Drilling - As Dr	15,594.26	6,822.08	3,109.01	2,972.13	22.713	CC
Howard 08-27 - Original Drilling - Original Drilling - As Dr	15,600.00	6,822.08	3,109.01	2,972.06	22.702	ES
Howard 08-27 - Original Drilling - Original Drilling - As Dr	16,100.00	6,821.46	3,149.87	3,008.44	22.271	SF
Howard 10-27 - Original Drilling - Original Drilling - As Dr	14,359.25	6,734.88	4,413.62	4,291.97	36.281	CC
Howard 10-27 - Original Drilling - Original Drilling - As Dr	14,400.00	6,734.93	4,413.81	4,291.68	36.140	ES
Howard 10-27 - Original Drilling - Original Drilling - As Dr	15,400.00	6,736.11	4,534.67	4,403.38	34.542	SF
Howard 15-27 - Original Drilling - Original Drilling - As Dr	14,191.89	6,893.28	5,576.19	5,458.45	47.360	CC
Howard 15-27 - Original Drilling - Original Drilling - As Dr	14,300.00	6,891.84	5,577.24	5,458.23	46.864	ES
Howard 15-27 - Original Drilling - Original Drilling - As Dr	15,800.00	6,871.79	5,803.40	5,670.71	43.735	SF
Howard 4B-27 (DA) - Original Drilling - Original Drilling - A	11,648.34	3,765.00	3,486.80	3,403.04	41.626	CC
Howard 4B-27 (DA) - Original Drilling - Original Drilling - A	11,700.00	3,765.00	3,487.18	3,402.98	41.413	ES
Howard 4B-27 (DA) - Original Drilling - Original Drilling - A	13,300.00	3,765.00	3,858.21	3,755.74	37.653	SF
Howard A27-01 - Original Drilling - Original Drilling - As D	15,635.44	6,796.86	1,716.42	1,579.11	12.501	CC, ES
Howard A27-01 - Original Drilling - Original Drilling - As D	15,800.00	6,797.17	1,724.29	1,585.55	12.429	SF
Howard A27-05 - Original Drilling - Original Drilling - As D	11,660.47	6,766.61	3,067.99	2,978.13	34.143	CC
Howard A27-05 - Original Drilling - Original Drilling - As D	11,700.00	6,766.81	3,068.24	2,977.94	33.978	ES
Howard A27-05 - Original Drilling - Original Drilling - As D	12,400.00	6,770.58	3,155.86	3,059.38	32.710	SF
Howard A27-06 - Original Drilling - Original Drilling - As D	13,038.66	6,904.07	3,032.83	2,921.04	27.129	CC
Howard A27-06 - Original Drilling - Original Drilling - As D	13,100.00	6,903.80	3,033.45	2,920.85	26.939	ES
Howard A27-06 - Original Drilling - Original Drilling - As D	13,700.00	6,901.20	3,104.10	2,985.47	26.166	SF
Howard A27-07 - Original Drilling - Original Drilling - As D	14,388.17	6,833.92	3,112.27	2,989.90	25.433	CC
Howard A27-07 - Original Drilling - Original Drilling - As D	14,400.00	6,833.99	3,112.30	2,989.78	25.404	ES
Howard A27-07 - Original Drilling - Original Drilling - As D	14,900.00	6,836.96	3,154.08	3,026.94	24.808	SF
Howard A27-09 - Original Drilling - Original Drilling - As D	15,487.17	6,753.88	4,481.57	4,346.20	33.105	CC
Howard A27-09 - Original Drilling - Original Drilling - As D	15,500.00	6,753.91	4,481.59	4,346.06	33.068	ES
Howard A27-09 - Original Drilling - Original Drilling - As D	16,268.46	6,756.34	4,549.16	4,406.12	31.803	SF
Howard A27-16 - Original Drilling - Original Drilling - As D	15,756.91	6,834.06	5,753.19	5,614.22	41.400	CC
Howard A27-16 - Original Drilling - Original Drilling - As D	15,800.00	6,833.97	5,753.35	5,613.87	41.249	ES
Howard A27-16 - Original Drilling - Original Drilling - As D	16,268.46	6,833.00	5,775.89	5,631.23	39.928	SF
Howard A27-17D - Original Drilling - Original Drilling - As	15,046.86	6,895.57	2,304.20	2,169.57	17.115	CC, ES
Howard A27-17D - Original Drilling - Original Drilling - As	15,200.00	6,895.51	2,309.28	2,173.52	17.010	SF
A Section 28						
Ankenney 28-01 (PA) - Original Drilling - Original Drilling	10,333.43	6,783.00	3,177.39	2,990.28	16.981	CC
Ankenney 28-01 (PA) - Original Drilling - Original Drilling	10,400.00	6,783.00	3,178.09	2,990.27	16.921	ES
Ankenney 28-01 (PA) - Original Drilling - Original Drilling	10,800.00	6,783.00	3,211.47	3,019.77	16.753	SF
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	10,123.34	6,771.00	5,824.70	5,640.11	31.553	CC
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	10,200.00	6,771.00	5,825.21	5,639.80	31.417	ES
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	11,700.00	6,771.00	6,034.32	5,834.20	30.153	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	9,815.98	6,766.00	5,170.45	4,989.22	28.530	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	9,900.00	6,766.00	5,171.13	4,989.03	28.397	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,100.00	6,766.00	5,327.50	5,133.80	27.504	SF
Webster 09-28 - Original Drilling - Original Drilling - As D	10,109.75	6,781.00	4,372.86	4,188.21	23.682	CC
Webster 09-28 - Original Drilling - Original Drilling - As D	10,200.00	6,781.00	4,373.79	4,188.18	23.565	ES
Webster 09-28 - Original Drilling - Original Drilling - As D	11,000.00	6,781.00	4,462.56	4,269.17	23.076	SF

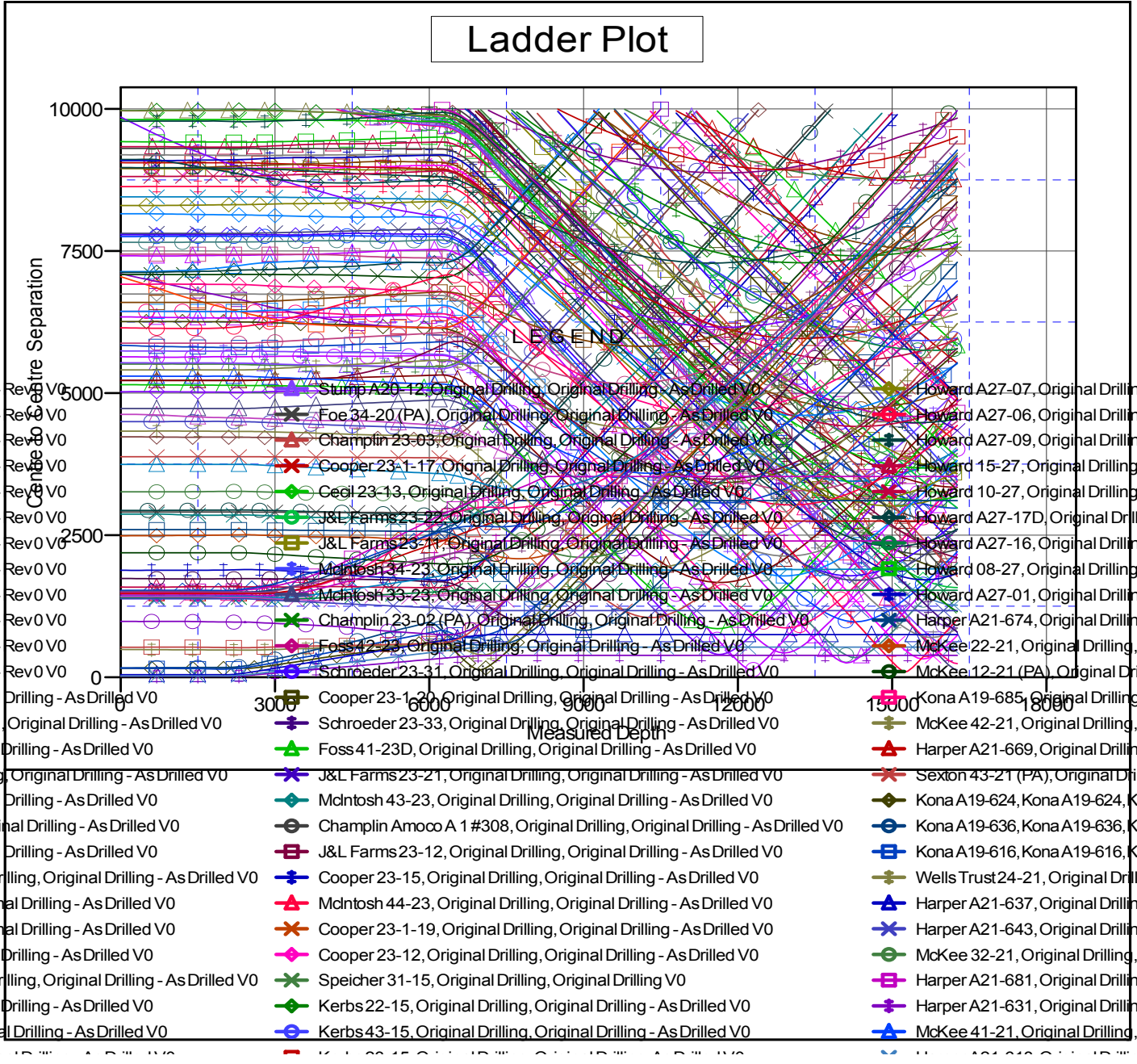
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	APD - Rev 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4757.00ft (Original Well Elev) Coordinates are relative to: Harper A21-626
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.5000000 Grid Convergence at Surface is: 0.61°



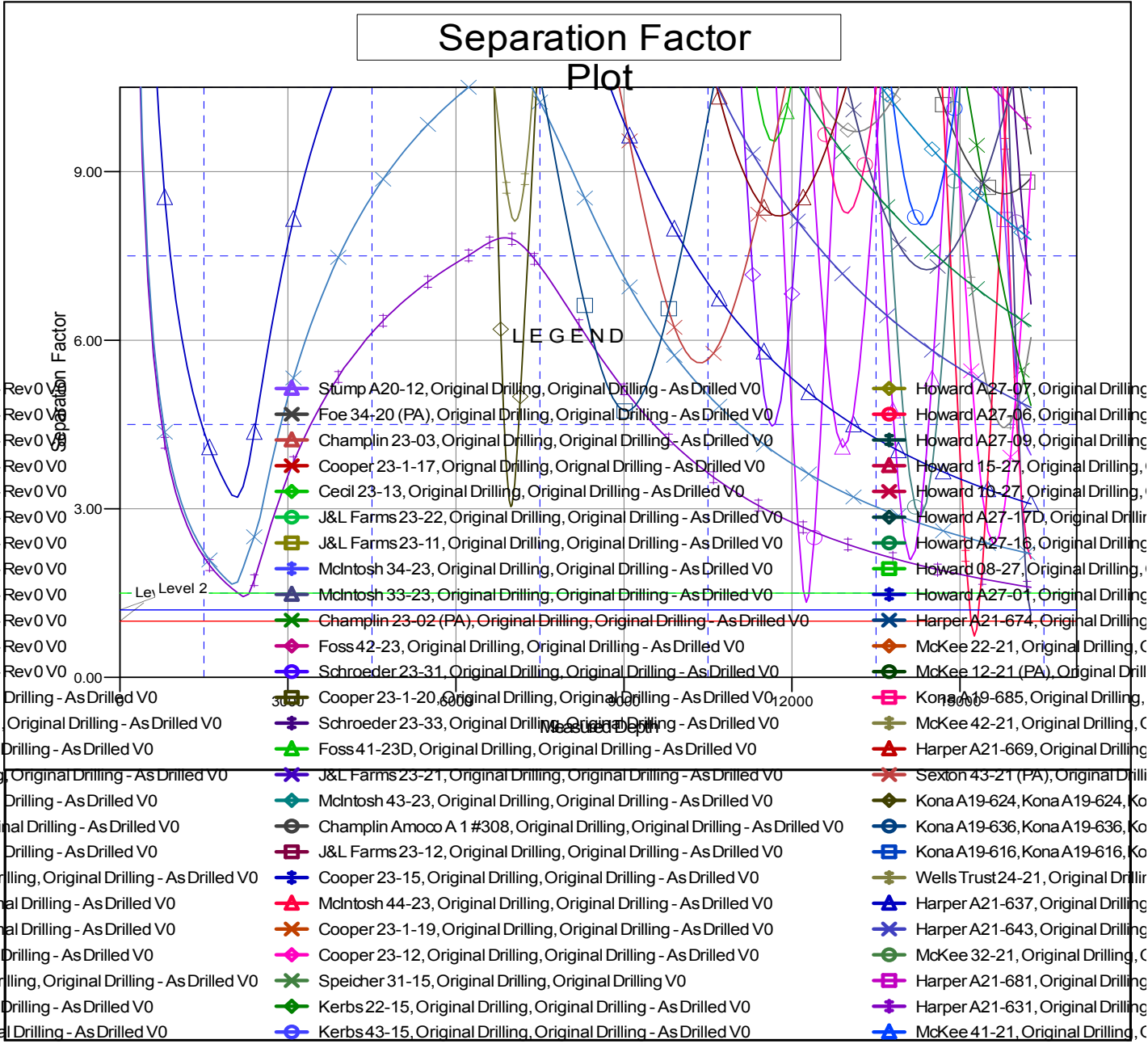
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-626
Project:	Wells Ranch	TVD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4757.00ft (Original Well Elev.)
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Harper A21-626	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	APD - Rev 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4757.00ft (Original Well Elev) Coordinates are relative to: Harper A21-626
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.5000000 Grid Convergence at Surface is: 0.61°



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