

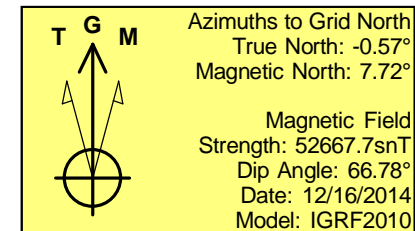
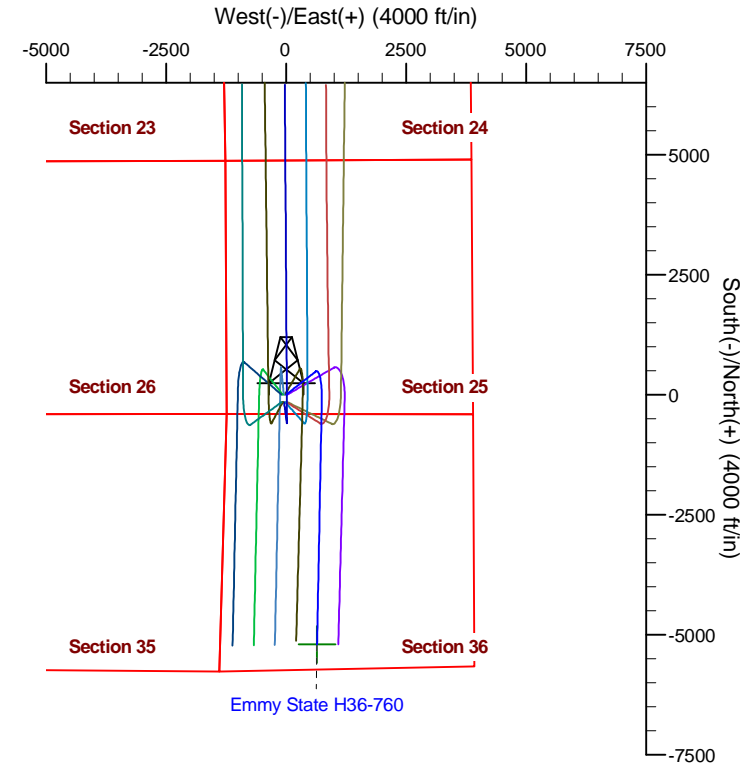
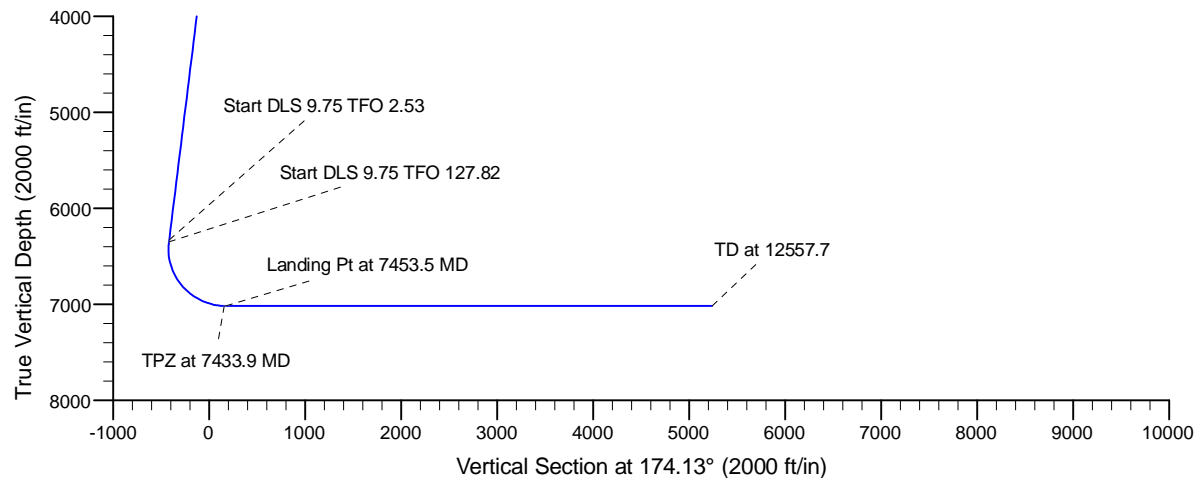
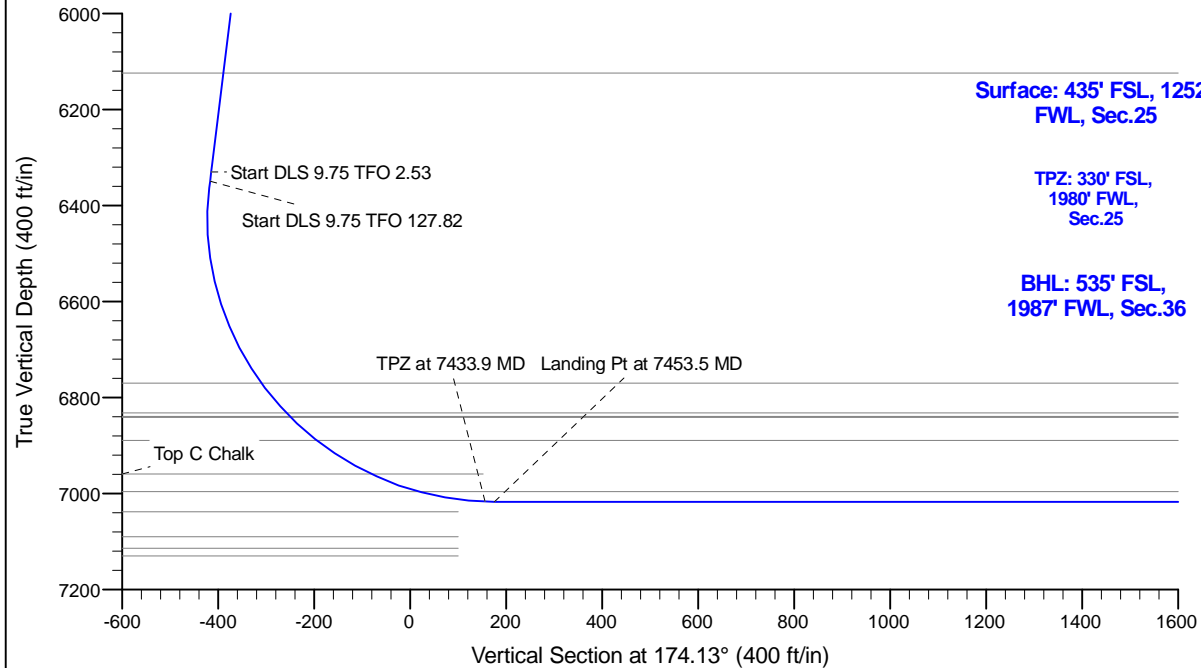
Project: Conceptual Wells
Site: DP 408
Well: Emmy State H36-760
Wellbore: Wellbore #1
Design: Design #1

Northern Region Drilling - 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	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2630.0	0.00	0.00	2630.0	0.0	0.0	0.00	0.00	0.0	
3	3280.0	13.00	52.00	3274.4	45.2	57.9	2.00	52.00	-39.1	
4	6415.9	13.00	52.00	6330.0	479.5	613.7	0.00	0.00	-414.3	
5	6435.5	14.91	52.33	6349.0	482.4	617.5	9.75	2.53	-416.8	
6	7453.5	90.00	181.10	7017.0	-100.0	745.0	9.75	127.82	175.6	
7	12557.7	90.00	181.10	7017.0	-5203.3	647.1	0.00	0.00	5242.2	Emmy State H36-760 BHL



WELL DETAILS: Emmy State H36-760

0.00.0	Ground Level: 4817.0	Latitude 40.190090	Longitude -104.616750
1313321.31	Eastings 3246751.86		

Plan: Design #1 (Emmy State H36-760/Wellbore #1)

Created By: Chad Stich Date: 11:11, November 02 2017

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

Northern Region Drilling - Sandbox

Conceptual Wells

DP 408

Emmy State H36-760

Wellbore #1

Plan: Design #1

Standard Planning Report

02 November, 2017

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-760
Company:	Northern Region Drilling - Sandbox	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Project:	Conceptual Wells	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site:	DP 408	North Reference:	Grid
Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Conceptual Wells		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	DP 408			
Site Position:		Northing:	1,318,184.69 usft	Latitude: 40.203616
From:	Lat/Long	Easting:	3,240,225.17 usft	Longitude: -104.639942
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.56 °

Well	Emmy State H36-760			
Well Position	+N/-S	-4,863.6 ft	Northing:	1,313,321.31 usft
	+E/-W	6,527.0 ft	Easting:	3,246,751.86 usft
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft
			Ground Level:	4,817.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/16/2014	8.30	66.78	52,667.72290706

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	30.0	0.0	0.0	174.13

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,630.0	0.00	0.00	2,630.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,280.0	13.00	52.00	3,274.4	45.2	57.9	2.00	2.00	0.00	52.00	
6,415.9	13.00	52.00	6,330.0	479.5	613.7	0.00	0.00	0.00	0.00	
6,435.5	14.91	52.33	6,349.0	482.4	617.5	9.75	9.74	1.67	2.53	
7,453.5	90.00	181.10	7,017.0	-100.0	745.0	9.75	7.38	12.65	127.82	
12,557.7	90.00	181.10	7,017.0	-5,203.3	647.1	0.00	0.00	0.00	0.00	Emmy State H36-760

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-760
Company:	Northern Region Drilling - Sandbox	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Project:	Conceptual Wells	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site:	DP 408	North Reference:	Grid
Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,630.0	0.00	0.00	2,630.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	1.40	52.00	2,700.0	0.5	0.7	-0.5	2.00	2.00	0.00
2,800.0	3.40	52.00	2,799.9	3.1	4.0	-2.7	2.00	2.00	0.00
2,900.0	5.40	52.00	2,899.6	7.8	10.0	-6.8	2.00	2.00	0.00
3,000.0	7.40	52.00	2,999.0	14.7	18.8	-12.7	2.00	2.00	0.00
3,100.0	9.40	52.00	3,097.9	23.7	30.3	-20.5	2.00	2.00	0.00
3,200.0	11.40	52.00	3,196.2	34.8	44.5	-30.1	2.00	2.00	0.00
3,280.0	13.00	52.00	3,274.4	45.2	57.9	-39.1	2.00	2.00	0.00
3,300.0	13.00	52.00	3,293.9	48.0	61.4	-41.4	0.00	0.00	0.00
3,400.0	13.00	52.00	3,391.4	61.8	79.1	-53.4	0.00	0.00	0.00
3,500.0	13.00	52.00	3,488.8	75.7	96.9	-65.4	0.00	0.00	0.00
3,600.0	13.00	52.00	3,586.2	89.5	114.6	-77.3	0.00	0.00	0.00
3,700.0	13.00	52.00	3,683.7	103.4	132.3	-89.3	0.00	0.00	0.00
3,800.0	13.00	52.00	3,781.1	117.2	150.0	-101.3	0.00	0.00	0.00
3,900.0	13.00	52.00	3,878.5	131.1	167.8	-113.2	0.00	0.00	0.00
4,000.0	13.00	52.00	3,976.0	144.9	185.5	-125.2	0.00	0.00	0.00
4,100.0	13.00	52.00	4,073.4	158.8	203.2	-137.2	0.00	0.00	0.00
4,200.0	13.00	52.00	4,170.9	172.6	220.9	-149.1	0.00	0.00	0.00
4,300.0	13.00	52.00	4,268.3	186.5	238.7	-161.1	0.00	0.00	0.00
4,400.0	13.00	52.00	4,365.7	200.3	256.4	-173.1	0.00	0.00	0.00
4,500.0	13.00	52.00	4,463.2	214.2	274.1	-185.0	0.00	0.00	0.00
4,600.0	13.00	52.00	4,560.6	228.0	291.8	-197.0	0.00	0.00	0.00
4,700.0	13.00	52.00	4,658.0	241.9	309.6	-209.0	0.00	0.00	0.00
4,800.0	13.00	52.00	4,755.5	255.7	327.3	-220.9	0.00	0.00	0.00
4,900.0	13.00	52.00	4,852.9	269.6	345.0	-232.9	0.00	0.00	0.00
5,000.0	13.00	52.00	4,950.4	283.4	362.8	-244.9	0.00	0.00	0.00
5,100.0	13.00	52.00	5,047.8	297.3	380.5	-256.8	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-760
Company:	Northern Region Drilling - Sandbox	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Project:	Conceptual Wells	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site:	DP 408	North Reference:	Grid
Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.0	13.00	52.00	5,145.2	311.1	398.2	-268.8	0.00	0.00	0.00
5,300.0	13.00	52.00	5,242.7	325.0	415.9	-280.7	0.00	0.00	0.00
5,400.0	13.00	52.00	5,340.1	338.8	433.7	-292.7	0.00	0.00	0.00
5,500.0	13.00	52.00	5,437.5	352.7	451.4	-304.7	0.00	0.00	0.00
5,600.0	13.00	52.00	5,535.0	366.5	469.1	-316.6	0.00	0.00	0.00
5,700.0	13.00	52.00	5,632.4	380.4	486.8	-328.6	0.00	0.00	0.00
5,800.0	13.00	52.00	5,729.8	394.2	504.6	-340.6	0.00	0.00	0.00
5,900.0	13.00	52.00	5,827.3	408.1	522.3	-352.5	0.00	0.00	0.00
6,000.0	13.00	52.00	5,924.7	421.9	540.0	-364.5	0.00	0.00	0.00
6,100.0	13.00	52.00	6,022.2	435.8	557.7	-376.5	0.00	0.00	0.00
6,200.0	13.00	52.00	6,119.6	449.6	575.5	-388.4	0.00	0.00	0.00
6,300.0	13.00	52.00	6,217.0	463.5	593.2	-400.4	0.00	0.00	0.00
6,400.0	13.00	52.00	6,314.5	477.3	610.9	-412.4	0.00	0.00	0.00
6,415.9	13.00	52.00	6,330.0	479.5	613.7	-414.3	0.00	0.00	0.00
6,435.5	14.91	52.33	6,349.0	482.4	617.5	-416.8	9.75	9.74	1.67
6,500.0	12.10	76.70	6,411.7	489.0	630.6	-422.0	9.75	-4.36	37.81
6,600.0	13.52	121.36	6,509.5	485.4	650.9	-416.3	9.75	1.42	44.66
6,700.0	20.16	146.67	6,605.3	464.8	670.4	-393.9	9.75	6.65	25.31
6,800.0	28.60	158.71	6,696.3	428.0	688.6	-355.4	9.75	8.43	12.05
6,900.0	37.63	165.48	6,780.0	376.1	704.9	-302.0	9.75	9.04	6.77
7,000.0	46.92	169.91	6,853.9	310.4	719.0	-235.3	9.75	9.29	4.43
7,100.0	56.34	173.15	6,916.0	232.9	730.4	-157.0	9.75	9.42	3.25
7,200.0	65.82	175.75	6,964.3	145.9	738.8	-69.6	9.75	9.48	2.60
7,300.0	75.35	177.99	6,997.5	51.8	743.9	24.5	9.75	9.52	2.24
7,400.0	84.89	180.04	7,014.6	-46.5	745.5	122.5	9.75	9.54	2.05
7,453.5	90.00	181.10	7,017.0	-100.0	745.0	175.6	9.75	9.55	1.99
7,500.0	90.00	181.10	7,017.0	-146.5	744.1	221.7	0.00	0.00	0.00
7,600.0	90.00	181.10	7,017.0	-246.4	742.2	321.0	0.00	0.00	0.00
7,700.0	90.00	181.10	7,017.0	-346.4	740.3	420.3	0.00	0.00	0.00
7,800.0	90.00	181.10	7,017.0	-446.4	738.3	519.5	0.00	0.00	0.00
7,900.0	90.00	181.10	7,017.0	-546.4	736.4	618.8	0.00	0.00	0.00
8,000.0	90.00	181.10	7,017.0	-646.4	734.5	718.1	0.00	0.00	0.00
8,100.0	90.00	181.10	7,017.0	-746.3	732.6	817.3	0.00	0.00	0.00
8,200.0	90.00	181.10	7,017.0	-846.3	730.7	916.6	0.00	0.00	0.00
8,300.0	90.00	181.10	7,017.0	-946.3	728.8	1,015.8	0.00	0.00	0.00
8,400.0	90.00	181.10	7,017.0	-1,046.3	726.8	1,115.1	0.00	0.00	0.00
8,500.0	90.00	181.10	7,017.0	-1,146.3	724.9	1,214.4	0.00	0.00	0.00
8,600.0	90.00	181.10	7,017.0	-1,246.3	723.0	1,313.6	0.00	0.00	0.00
8,700.0	90.00	181.10	7,017.0	-1,346.2	721.1	1,412.9	0.00	0.00	0.00
8,800.0	90.00	181.10	7,017.0	-1,446.2	719.2	1,512.1	0.00	0.00	0.00
8,900.0	90.00	181.10	7,017.0	-1,546.2	717.2	1,611.4	0.00	0.00	0.00
9,000.0	90.00	181.10	7,017.0	-1,646.2	715.3	1,710.7	0.00	0.00	0.00
9,100.0	90.00	181.10	7,017.0	-1,746.2	713.4	1,809.9	0.00	0.00	0.00
9,200.0	90.00	181.10	7,017.0	-1,846.1	711.5	1,909.2	0.00	0.00	0.00
9,300.0	90.00	181.10	7,017.0	-1,946.1	709.6	2,008.5	0.00	0.00	0.00
9,400.0	90.00	181.10	7,017.0	-2,046.1	707.6	2,107.7	0.00	0.00	0.00
9,500.0	90.00	181.10	7,017.0	-2,146.1	705.7	2,207.0	0.00	0.00	0.00
9,600.0	90.00	181.10	7,017.0	-2,246.1	703.8	2,306.2	0.00	0.00	0.00
9,700.0	90.00	181.10	7,017.0	-2,346.0	701.9	2,405.5	0.00	0.00	0.00
9,800.0	90.00	181.10	7,017.0	-2,446.0	700.0	2,504.8	0.00	0.00	0.00
9,900.0	90.00	181.10	7,017.0	-2,546.0	698.0	2,604.0	0.00	0.00	0.00
10,000.0	90.00	181.10	7,017.0	-2,646.0	696.1	2,703.3	0.00	0.00	0.00
10,100.0	90.00	181.10	7,017.0	-2,746.0	694.2	2,802.5	0.00	0.00	0.00
10,200.0	90.00	181.10	7,017.0	-2,846.0	692.3	2,901.8	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-760
Company:	Northern Region Drilling - Sandbox	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Project:	Conceptual Wells	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site:	DP 408	North Reference:	Grid
Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,300.0	90.00	181.10	7,017.0	-2,945.9	690.4	3,001.1	0.00	0.00	0.00	
10,400.0	90.00	181.10	7,017.0	-3,045.9	688.4	3,100.3	0.00	0.00	0.00	
10,500.0	90.00	181.10	7,017.0	-3,145.9	686.5	3,199.6	0.00	0.00	0.00	
10,600.0	90.00	181.10	7,017.0	-3,245.9	684.6	3,298.9	0.00	0.00	0.00	
10,700.0	90.00	181.10	7,017.0	-3,345.9	682.7	3,398.1	0.00	0.00	0.00	
10,800.0	90.00	181.10	7,017.0	-3,445.8	680.8	3,497.4	0.00	0.00	0.00	
10,900.0	90.00	181.10	7,017.0	-3,545.8	678.8	3,596.6	0.00	0.00	0.00	
11,000.0	90.00	181.10	7,017.0	-3,645.8	676.9	3,695.9	0.00	0.00	0.00	
11,100.0	90.00	181.10	7,017.0	-3,745.8	675.0	3,795.2	0.00	0.00	0.00	
11,200.0	90.00	181.10	7,017.0	-3,845.8	673.1	3,894.4	0.00	0.00	0.00	
11,300.0	90.00	181.10	7,017.0	-3,945.8	671.2	3,993.7	0.00	0.00	0.00	
11,400.0	90.00	181.10	7,017.0	-4,045.7	669.2	4,093.0	0.00	0.00	0.00	
11,500.0	90.00	181.10	7,017.0	-4,145.7	667.3	4,192.2	0.00	0.00	0.00	
11,600.0	90.00	181.10	7,017.0	-4,245.7	665.4	4,291.5	0.00	0.00	0.00	
11,700.0	90.00	181.10	7,017.0	-4,345.7	663.5	4,390.7	0.00	0.00	0.00	
11,800.0	90.00	181.10	7,017.0	-4,445.7	661.6	4,490.0	0.00	0.00	0.00	
11,900.0	90.00	181.10	7,017.0	-4,545.6	659.6	4,589.3	0.00	0.00	0.00	
12,000.0	90.00	181.10	7,017.0	-4,645.6	657.7	4,688.5	0.00	0.00	0.00	
12,100.0	90.00	181.10	7,017.0	-4,745.6	655.8	4,787.8	0.00	0.00	0.00	
12,200.0	90.00	181.10	7,017.0	-4,845.6	653.9	4,887.0	0.00	0.00	0.00	
12,300.0	90.00	181.10	7,017.0	-4,945.6	652.0	4,986.3	0.00	0.00	0.00	
12,400.0	90.00	181.10	7,017.0	-5,045.6	650.0	5,085.6	0.00	0.00	0.00	
12,500.0	90.00	181.10	7,017.0	-5,145.5	648.1	5,184.8	0.00	0.00	0.00	
12,557.7	90.00	181.10	7,017.0	-5,203.3	647.1	5,242.2	0.00	0.00	0.00	

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										
Emmy State H36-760 Bl	0.00	0.00	7,017.0	-5,203.3	647.1	1,308,118.28	3,247,398.90	40.175790	-104.614620	
- plan hits target center										
- Point										

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-760
Company:	Northern Region Drilling - Sandbox	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Project:	Conceptual Wells	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site:	DP 408	North Reference:	Grid
Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
573.0	573.0	Pierre				
725.0	725.0	Upper Pierre Aquifer Top				
1,613.0	1,613.0	Upper Pierre Aquifer Base				
3,901.5	3,880.0	Parkman				
4,508.0	4,471.0	Sussex				
5,208.0	5,153.0	Shannon				
6,204.5	6,124.0	Teepee Buttes				
6,887.4	6,770.0	Sharon Springs				
6,968.7	6,832.0	Top A Chalk				
6,978.5	6,839.0	Top A Marl				
6,981.3	6,841.0	Top B Chalk				
7,053.9	6,889.0	Top B Marl				
7,187.4	6,959.0	Top C Chalk				
7,294.3	6,996.0	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,630.0	2,630.0	0.0	0.0	KOP - Start Build 2.00	
6,415.9	6,330.0	479.5	613.7	Start DLS 9.75 TFO 2.53	
6,435.5	6,349.0	482.4	617.5	Start DLS 9.75 TFO 127.82	
7,433.9	7,016.7	-80.4	745.3	TPZ at 7433.9 MD	
7,453.5	7,017.0	-100.0	745.0	Landing Pt at 7453.5 MD	
12,557.7	7,017.0	-5,203.2	647.0	TD at 12557.7	

Northern Region Drilling - Sandbox

Conceptual Wells

DP 408

Emmy State H36-760

Wellbore #1

Design #1

Anticollision Summary Report

02 November, 2017

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference	Design #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 10,000.0 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	11/2/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,557.7	Design #1 (Wellbore #1)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 19						
Butterball H24-69HN - Original Drilling - Original Drilling -	6,568.9	11,992.0	9,820.6	9,672.0	66.087	CC, ES
Butterball H24-69HN - Original Drilling - Original Drilling -	6,650.0	11,992.0	9,826.5	9,677.7	66.020	SF
DP 408						
Emmy H25-711 - Wellbore #1 - Prelim - Rev 2	2,000.0	1,988.0	2,206.9	2,198.2	254.498	CC, ES
Emmy H25-711 - Wellbore #1 - Prelim - Rev 2	9,300.0	6,340.4	3,314.5	3,270.3	75.043	SF
Emmy State H25-718 - Wellbore #1 - Prelim - Rev 2	2,400.0	2,388.0	2,184.6	2,174.1	208.659	CC, ES
Emmy State H25-718 - Wellbore #1 - Prelim - Rev 2	9,000.0	6,473.8	2,870.0	2,828.9	69.804	SF
Emmy State H25-724 - Wellbore #1 - Prelim - Rev 2	7,821.5	6,735.6	2,076.4	2,043.9	63.978	CC, ES
Emmy State H25-724 - Wellbore #1 - Prelim - Rev 2	8,700.0	6,573.7	2,241.1	2,203.2	59.037	SF
Emmy State H25-731 - Wellbore #1 - Prelim - Rev 2	7,431.0	7,180.5	1,699.9	1,668.7	54.527	CC, ES
Emmy State H25-731 - Wellbore #1 - Prelim - Rev 2	8,400.0	6,650.0	1,824.8	1,789.6	51.859	SF
Emmy State H25-738 - Wellbore #1 - Prelim - Rev 2	7,363.4	7,206.4	1,306.0	1,275.3	42.509	CC, ES
Emmy State H25-738 - Wellbore #1 - Prelim - Rev 2	7,900.0	6,850.0	1,357.7	1,325.8	42.457	SF
Emmy State H25-744 - Wellbore #1 - Prelim - Rev 2	7,300.0	7,330.6	843.1	811.7	26.826	SF
Emmy State H25-744 - Wellbore #1 - Prelim - Rev 2	7,320.1	7,315.1	843.0	811.6	26.834	CC, ES
Emmy State H25-751 - Wellbore #1 - Design #1	2,200.0	2,199.0	154.6	145.0	16.116	CC, ES
Emmy State H25-751 - Wellbore #1 - Design #1	7,700.0	7,153.1	386.3	352.2	11.341	SF
Emmy State H25-757 - Wellbore #1 - Design #1	2,400.0	2,399.0	153.0	142.5	14.580	CC
Emmy State H25-757 - Wellbore #1 - Design #1	7,300.4	7,499.8	157.4	124.5	4.790	ES
Emmy State H25-757 - Wellbore #1 - Design #1	7,350.0	7,451.0	158.0	125.0	4.786	SF
Emmy State H25-764 - Wellbore #1 - Design #1	2,600.0	2,603.0	154.6	148.9	27.137	CC, ES
Emmy State H25-764 - Wellbore #1 - Design #1	7,226.9	7,530.2	294.9	279.0	18.453	SF
Emmy State H25-771 - Wellbore #1 - Design #1	2,400.0	2,399.0	159.4	148.9	15.189	CC, ES
Emmy State H25-771 - Wellbore #1 - Design #1	2,600.0	2,589.1	165.4	154.2	14.665	SF
Emmy State H25-777 - Wellbore #1 - Design #1	2,200.0	2,200.0	163.7	154.1	17.059	CC, ES
Emmy State H25-777 - Wellbore #1 - Design #1	2,400.0	2,388.9	170.3	159.9	16.397	SF
Emmy State H25-785 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,000.0	178.6	169.9	20.537	CC, ES
Emmy State H25-785 - Wellbore #1 - Prelim - Rev 2	2,200.0	2,188.9	184.7	175.2	19.436	SF
Emmy State H36-753 - Wellbore #1 - Design #1	2,600.0	2,599.0	22.4	11.0	1.962	CC
Emmy State H36-753 - Wellbore #1 - Design #1	2,630.0	2,628.8	22.5	11.0	1.950	ES, SF
Emmy State H36-766 - Wellbore #1 - Design #1	2,648.9	2,649.3	19.3	7.7	1.661	CC, ES, SF
Emmy State H36-773 - Wellbore #1 - Design #1	2,600.0	2,600.0	44.7	33.3	3.923	CC
Emmy State H36-773 - Wellbore #1 - Design #1	2,630.0	2,630.0	44.7	33.2	3.878	ES
Emmy State H36-773 - Wellbore #1 - Design #1	2,700.0	2,699.9	45.5	33.6	3.840	SF
Emmy State H36-780 - Wellbore #1 - Design #1	2,200.0	2,201.0	67.1	57.5	6.985	CC, ES
Emmy State H36-780 - Wellbore #1 - Design #1	2,300.0	2,299.5	68.1	58.1	6.786	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
DP 408						
Emmy State H36-787 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,002.0	92.2	83.5	10.594	CC, ES
Emmy State H36-787 - Wellbore #1 - Prelim - Rev 2	2,200.0	2,196.9	97.5	87.9	10.191	SF
Hurley H26-712 - Wellbore #1 - Design #1	6,428.3	6,616.7	2,628.0	2,597.0	84.828	CC, ES
Hurley H26-712 - Wellbore #1 - Design #1	6,550.0	6,650.0	2,638.3	2,607.0	84.282	SF
Hurley H26-717 - Wellbore #1 - Design #1	6,288.1	6,500.0	2,866.5	2,836.7	96.134	CC
Hurley H26-717 - Wellbore #1 - Design #1	6,300.0	6,500.0	2,866.5	2,836.7	96.026	ES
Hurley H26-717 - Wellbore #1 - Design #1	6,550.0	6,569.2	2,883.0	2,852.4	94.240	SF
Hurley H26-724 - Wellbore #1 - Design #1	5,969.9	6,232.5	3,250.6	3,222.5	115.805	CC
Hurley H26-724 - Wellbore #1 - Design #1	6,100.0	6,350.0	3,250.8	3,222.1	113.153	ES
Hurley H26-724 - Wellbore #1 - Design #1	6,600.0	6,500.0	3,294.9	3,264.6	108.757	SF
Hurley H26-730 - Wellbore #1 - Design #1	2,850.9	2,907.7	3,491.5	3,479.1	280.461	CC
Hurley H26-730 - Wellbore #1 - Design #1	3,000.0	3,052.2	3,492.0	3,478.9	267.329	ES
Hurley H26-730 - Wellbore #1 - Design #1	6,650.0	6,473.8	3,772.4	3,742.2	124.813	SF
Hurley H26-736 - Wellbore #1 - Design #1	2,506.3	2,544.3	3,507.3	3,496.3	317.129	CC
Hurley H26-736 - Wellbore #1 - Design #1	2,700.0	2,726.6	3,507.6	3,495.7	295.596	ES
Hurley H26-736 - Wellbore #1 - Design #1	6,700.0	6,360.4	3,955.1	3,924.2	128.314	SF
Hurley H26-743 - Wellbore #1 - Prelim - Rev 2	2,630.0	2,667.0	3,521.9	3,510.3	303.256	CC
Hurley H26-743 - Wellbore #1 - Prelim - Rev 2	2,800.0	2,836.9	3,522.2	3,509.9	284.899	ES
Hurley H26-743 - Wellbore #1 - Prelim - Rev 2	6,800.0	6,022.0	4,246.8	4,216.0	138.221	SF
Hurley H26-750 - Wellbore #1 - Prelim - Rev 2	6,173.0	6,926.2	4,899.7	4,868.2	155.584	CC
Hurley H26-750 - Wellbore #1 - Prelim - Rev 2	6,200.0	6,932.7	4,899.8	4,868.2	155.175	ES
Hurley H26-750 - Wellbore #1 - Prelim - Rev 2	6,700.0	7,050.0	4,945.8	4,913.0	150.751	SF
Hurley H26-756 - Wellbore #1 - Prelim - Rev 2	6,023.0	6,750.0	5,199.9	5,169.9	173.675	CC, ES
Hurley H26-756 - Wellbore #1 - Prelim - Rev 2	6,650.0	6,900.0	5,245.1	5,213.4	165.540	SF
Hurley H26-762 - Wellbore #1 - Prelim - Rev 2	5,739.5	6,482.7	5,542.2	5,514.2	197.820	CC
Hurley H26-762 - Wellbore #1 - Prelim - Rev 2	5,800.0	6,500.0	5,542.4	5,514.1	196.355	ES
Hurley H26-762 - Wellbore #1 - Prelim - Rev 2	6,750.0	6,750.0	5,635.6	5,604.7	182.367	SF
Hurley H26-768 - Wellbore #1 - Prelim - Rev 2	3,189.5	3,742.0	5,769.0	5,754.2	390.038	CC
Hurley H26-768 - Wellbore #1 - Prelim - Rev 2	3,200.0	3,752.0	5,769.0	5,754.1	388.853	ES
Hurley H26-768 - Wellbore #1 - Prelim - Rev 2	11,400.0	6,500.0	8,348.8	8,305.5	192.756	SF
Hurley H26-776 - Wellbore #1 - Prelim - Rev 2	2,200.0	2,204.0	5,845.1	5,835.5	608.456	CC
Hurley H26-776 - Wellbore #1 - Prelim - Rev 2	2,630.0	2,629.1	5,845.6	5,834.2	515.511	ES
Hurley H26-776 - Wellbore #1 - Prelim - Rev 2	11,900.0	6,450.0	9,018.1	8,971.6	193.596	SF
Hurley H26-783 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,004.0	5,865.2	5,856.5	673.590	CC, ES
Hurley H26-783 - Wellbore #1 - Prelim - Rev 2	12,200.0	6,450.0	9,424.8	9,375.6	191.734	SF
Hurley H35-720 - Wellbore #1 - Design #1	12,557.7	15,460.7	2,642.1	2,508.9	19.831	CC, ES, SF
Hurley H35-727 - Wellbore #1 - Design #1	6,453.3	9,547.9	3,043.0	3,000.9	72.198	CC
Hurley H35-727 - Wellbore #1 - Design #1	12,557.7	15,235.2	3,082.1	2,948.7	23.112	ES, SF
Hurley H35-733 - Wellbore #1 - Design #1	6,428.9	9,564.4	3,465.5	3,423.6	82.747	CC
Hurley H35-733 - Wellbore #1 - Design #1	12,557.7	15,247.9	3,519.4	3,386.1	26.399	ES, SF
Hurley H35-740 - Wellbore #1 - Design #1	2,630.0	2,668.0	3,622.0	3,610.4	311.816	CC
Hurley H35-740 - Wellbore #1 - Design #1	2,900.0	2,937.6	3,622.4	3,609.6	282.897	ES
Hurley H35-740 - Wellbore #1 - Design #1	12,557.7	15,344.8	3,966.4	3,832.6	29.648	SF
Hurley H35-746 - Wellbore #1 - Prelim - Rev 2	1,907.1	1,944.1	3,636.2	3,627.8	434.741	CC
Hurley H35-746 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,000.0	3,636.3	3,627.6	418.054	ES
Hurley H35-746 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,270.4	4,401.9	4,268.3	32.953	SF
Hurley H35-755 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,249.8	4,721.7	4,587.9	35.303	CC, ES, SF
Hurley H35-761 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,050.4	5,161.3	5,028.2	38.779	CC, ES, SF
Hurley H35-768 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,109.7	5,599.7	5,467.1	42.223	CC, ES, SF
Hurley H35-774 - Wellbore #1 - Prelim - Rev 2	2,400.0	2,405.0	5,889.5	5,879.0	560.492	CC, ES
Hurley H35-774 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,116.7	6,039.8	5,907.7	45.731	SF
Hurley H35-779 - Wellbore #1 - Prelim - Rev 2	2,200.0	2,204.0	5,911.1	5,901.5	615.321	CC, ES
Hurley H35-779 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,015.2	6,472.4	6,340.4	49.040	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
DP 408						
Hurley H35-787 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,004.0	5,931.0	5,922.3	681.137	CC, ES
Hurley H35-787 - Wellbore #1 - Prelim - Rev 2	12,557.7	15,224.3	6,919.8	6,786.7	51.966	SF
Hurley State H35-713 - Wellbore #1 - Design #1	6,636.4	9,509.5	2,189.1	2,145.2	49.857	CC
Hurley State H35-713 - Wellbore #1 - Design #1	12,557.7	15,207.7	2,202.6	2,069.0	16.490	ES, SF
H Section 13						
Karakakes H13-25 - Original Drilling - Original Drilling - A						Out of range
Karakakes H13-33 - Original Drilling - Original Drilling - A						Out of range
Karakakes H14-63HN - Original Drilling - Original Drilling						Out of range
Sarchet H13-75HN - Original Drilling - Original Drilling	6,523.4	6,188.0	9,506.6	9,472.0	274.901	CC, ES
Sarchet H13-75HN - Original Drilling - Original Drilling	6,800.0	6,220.0	9,574.0	9,538.8	271.945	SF
UPRC 13-13J - Original Drilling - Original Drilling - As Dri						Out of range
UPRC 13-14J - Original Drilling - Original Drilling - As Dri						Out of range
UPRC 13-15J - Original Drilling - Original Drilling - As Dri						Out of range
UPRC 13-16J - Wellbore #1 - Wellbore #1- As Drilled						Out of range
UPRR 39 Pan Am B1 (PA) - Original Drilling - Original Dr						Out of range
H Section 14						
Bohlender H14-09 - Original Drilling - Original Drilling - A						Out of range
Bohlender H14-15 - Original Drilling - Original Drilling - A						Out of range
Bohlender H14-16 - Original Drilling - Original Drilling - A						Out of range
Wilcox H14-03J - Original Drilling - Original Drilling - As D						Out of range
Wilcox H14-10 - Original Drilling - Original Drilling - As Dr						Out of range
Wilcox H14-11 - Original Drilling - Original Drilling - As Dr						Out of range
Wilcox H14-13 - Original Drilling - Original Drilling - As Dr						Out of range
H Section 19						
Butterball 13-19 - Original Drilling - Original Drilling - As D	6,574.7	6,141.0	7,527.0	7,490.1	204.288	CC, ES
Butterball 13-19 - Original Drilling - Original Drilling - As D	8,300.0	8,300.0	8,768.9	8,721.5	184.837	SF
H Section 21						
Moser 24-21 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
H Section 22						
HSR Demeules 09-22 - Original Drilling - Original Drilling	1,619.4	1,580.6	9,730.9	9,722.1	1,099.377	CC
HSR Demeules 09-22 - Original Drilling - Original Drilling	1,900.0	1,810.8	9,731.6	9,721.3	946.338	ES
HSR Demeules 09-22 - Original Drilling - Original Drilling	6,600.0	6,423.6	9,999.2	9,960.9	261.184	SF
HSR Duryea - Wellbore #1 - Wellbore #1 - As Drilled	2,721.5	2,756.6	9,571.6	9,556.1	619.865	CC, ES
HSR Duryea - Wellbore #1 - Wellbore #1 - As Drilled	6,550.0	6,550.0	9,905.5	9,867.0	257.009	SF
Sarchet 16-22 - Wellbore #1 - Wellbore #1 - As Drilled	1,068.8	1,026.8	8,857.7	8,852.0	1,560.414	CC
Sarchet 16-22 - Wellbore #1 - Wellbore #1 - As Drilled	1,300.0	1,205.6	8,858.3	8,851.5	1,298.525	ES
Sarchet 16-22 - Wellbore #1 - Wellbore #1 - As Drilled	7,000.0	6,800.0	9,436.8	9,396.8	236.266	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 23						
Eachus 32-23 - Original Drilling - Original Drilling - As Dri	6,473.1	6,431.8	8,555.3	8,517.0	223.701	CC, ES
Eachus 32-23 - Original Drilling - Original Drilling - As Dri	7,050.0	6,984.5	8,786.4	8,745.5	214.932	SF
Eachus 41-23 (PA) - Original Drilling - Original Drilling - A	6,493.0	6,396.9	9,260.3	9,116.4	64.359	CC
Eachus 41-23 (PA) - Original Drilling - Original Drilling - A	6,500.0	6,403.7	9,260.3	9,116.3	64.290	ES
Eachus 41-23 (PA) - Original Drilling - Original Drilling - A	7,050.0	6,878.6	9,494.3	9,340.0	61.548	SF
Eachus UPRR 31-23 - Original Drilling - Original Drilling -	6,478.6	6,393.9	9,788.3	9,710.0	125.078	CC
Eachus UPRR 31-23 - Original Drilling - Original Drilling -	6,500.0	6,414.9	9,788.7	9,709.6	123.856	ES
Eachus UPRR 31-23 - Original Drilling - Original Drilling -	7,000.0	6,857.8	9,986.3	9,891.3	105.097	SF
Eachus UPRR 42-23 (PA) - Original Drilling - Original Dri	6,487.4	6,401.5	7,991.8	7,847.9	55.509	CC
Eachus UPRR 42-23 (PA) - Original Drilling - Original Dri	6,500.0	6,413.7	7,992.0	7,847.7	55.404	ES
Eachus UPRR 42-23 (PA) - Original Drilling - Original Dri	7,000.0	6,855.9	8,189.6	8,035.8	53.254	SF
HSR Alberstein 16-23 - Original Drilling - Original Drilling	6,446.3	6,176.4	5,874.2	5,836.9	157.717	CC
HSR Alberstein 16-23 - Original Drilling - Original Drilling	6,450.0	6,179.7	5,874.2	5,836.9	157.626	ES
HSR Alberstein 16-23 - Original Drilling - Original Drilling	6,800.0	6,437.4	5,968.3	5,929.5	153.823	SF
HSR Ashley 15-23A - Original Drilling - Original Drilling -	0.0	0.0	6,621.5			
HSR Ashley 15-23A - Original Drilling - Original Drilling -	4,900.0	4,723.4	6,624.8	6,597.1	238.576	ES
HSR Ashley 15-23A - Original Drilling - Original Drilling -	6,800.0	6,519.1	6,741.5	6,702.4	172.459	SF
HSR Benirschke 10-23 - Original Drilling - Original Drillin	6,439.3	6,148.0	7,292.5	7,255.4	196.248	CC, ES
HSR Benirschke 10-23 - Original Drilling - Original Drillin	6,850.0	6,400.0	7,415.1	7,376.4	191.406	SF
HSR Eachus 03-23 - Original Drilling - Original Drilling - A	298.7	266.7	9,651.9	9,650.6	7,466.744	CC
HSR Eachus 03-23 - Original Drilling - Original Drilling - A	600.0	546.7	9,652.4	9,649.4	3,279.350	ES
HSR Eachus 03-23 - Original Drilling - Original Drilling - A	5,400.0	2,600.0	9,987.4	9,966.1	470.122	SF
HSR Eachus 04-23 - Original Drilling - Original Drilling - A	100.0	66.0	9,622.9	9,622.7	10,000.000	CC
HSR Eachus 04-23 - Original Drilling - Original Drilling - A	1,000.0	900.0	9,626.7	9,621.6	1,896.940	ES
HSR Eachus 04-23 - Original Drilling - Original Drilling - A	3,900.0	1,200.0	9,982.4	9,969.4	770.800	SF
HSR Eachus 05-23 - Original Drilling - Original Drilling - A	152.9	120.9	9,592.1	9,591.7	10,000.000	CC
HSR Eachus 05-23 - Original Drilling - Original Drilling - A	1,200.0	1,100.0	9,594.0	9,587.7	1,541.673	ES
HSR Eachus 05-23 - Original Drilling - Original Drilling - A	4,600.0	4,600.0	9,909.9	9,786.1	79.987	SF
HSR Fruman 06-23 - Original Drilling - Original Drilling - A	0.0	0.0	9,478.4			
HSR Fruman 06-23 - Original Drilling - Original Drilling - A	3,500.0	3,031.3	9,481.2	9,463.1	522.798	ES
HSR Fruman 06-23 - Original Drilling - Original Drilling - A	6,900.0	6,648.9	9,918.4	9,874.0	223.309	SF
HSR Grasshopper 09-23 - Original Drilling - Original Drill	6,509.2	6,817.0	6,716.2	6,676.6	169.623	CC, ES
HSR Grasshopper 09-23 - Original Drilling - Original Drill	6,800.0	7,100.0	6,778.8	6,737.8	165.040	SF
Ritchey 21-23 - Original Drilling - Original Drilling - As Dri	6,475.9	6,521.0	9,491.1	9,452.5	246.304	CC, ES
Ritchey 21-23 - Original Drilling - Original Drilling - As Dri	6,950.0	7,027.1	9,649.1	9,608.1	235.477	SF
Ritchey 24-23 - Original Drilling - Original Drilling - As Dri	1,743.8	1,734.9	7,456.3	7,446.6	771.551	CC
Ritchey 24-23 - Original Drilling - Original Drilling - As Dri	1,800.0	1,769.9	7,456.3	7,446.4	752.169	ES
Ritchey 24-23 - Original Drilling - Original Drilling - As Dri	6,900.0	6,858.4	7,867.2	7,824.4	183.981	SF
Ritchey 31-24 - Original Drilling - Original Drilling - As Dri	6,499.4	6,499.4	8,557.2	8,502.1	155.434	CC
Ritchey 31-24 - Original Drilling - Original Drilling - As Dri	6,500.0	6,500.0	8,557.2	8,502.1	155.426	ES
Ritchey 31-24 - Original Drilling - Original Drilling - As Dri	6,750.0	6,873.6	8,606.2	8,549.9	152.923	SF
UPRC 23-11J - Original Drilling - Original Drilling - As Dri	1,071.7	1,030.7	8,262.3	8,256.7	1,452.550	CC
UPRC 23-11J - Original Drilling - Original Drilling - As Dri	4,100.0	4,000.0	8,269.1	8,246.0	358.852	ES
UPRC 23-11J - Original Drilling - Original Drilling - As Dri	7,050.0	6,806.8	8,562.9	8,522.8	213.435	SF
UPRC 23-12J - Original Drilling - Original Drilling - As Dri	1,032.8	991.8	9,048.4	9,043.0	1,655.116	CC
UPRC 23-12J - Original Drilling - Original Drilling - As Dri	1,600.0	1,527.3	9,049.4	9,040.8	1,051.238	ES
UPRC 23-12J - Original Drilling - Original Drilling - As Dri	6,800.0	6,700.0	9,316.4	9,276.8	235.345	SF
UPRC H23-13 - Wellbore #1 - Wellbore #1 - As Drilled	241.4	210.0	8,180.7	8,179.8	8,557.722	CC
UPRC H23-13 - Wellbore #1 - Wellbore #1 - As Drilled	400.0	325.9	8,181.1	8,179.4	4,765.567	ES
UPRC H23-13 - Wellbore #1 - Wellbore #1 - As Drilled	7,050.0	6,720.8	8,686.0	8,646.3	218.595	SF
UPRC H23-14J - Original Drilling - Original Drilling - As D	1,118.5	1,079.6	6,989.2	6,983.2	1,171.369	CC
UPRC H23-14J - Original Drilling - Original Drilling - As D	1,700.0	1,625.9	6,990.8	6,981.7	761.209	ES
UPRC H23-14J - Original Drilling - Original Drilling - As D	6,700.0	6,700.0	7,143.0	7,103.5	180.587	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 23						
UPRC H23-24 - Original Drilling - Original Drilling - As Dr	1,573.7	1,540.7	7,495.4	7,486.8	871.698	CC
UPRC H23-24 - Original Drilling - Original Drilling - As Dr	1,700.0	1,635.0	7,495.7	7,486.5	813.799	ES
UPRC H23-24 - Original Drilling - Original Drilling - As Dr	7,050.0	6,617.5	7,850.3	7,810.8	198.756	SF
UPRR 53 Pan Am B#1 (PA) - Original Drilling - Original D	2,630.0	2,589.0	8,067.8	8,010.3	140.199	CC
UPRR 53 Pan Am B#1 (PA) - Original Drilling - Original D	3,200.0	3,155.2	8,073.5	8,003.4	115.154	ES
UPRR 53 Pan Am B#1 (PA) - Original Drilling - Original D	7,100.0	6,875.0	8,430.7	8,276.8	54.798	SF
UPRR 53 Pan Am UT V#1 - Original Drilling - Original Dr	6,485.7	6,444.5	8,649.7	8,611.4	225.914	CC, ES
UPRR 53 Pan Am UT V#1 - Original Drilling - Original Dr	6,800.0	6,600.0	8,729.1	8,689.7	221.524	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 24						
Gurtler 24-09J - Original Drilling - Original Drilling - As Dr	6,575.2	6,421.4	6,896.2	6,858.3	181.812	CC, ES
Gurtler 24-09J - Original Drilling - Original Drilling - As Dr	6,900.0	6,718.1	6,979.4	6,939.9	176.615	SF
Gurtler 24-10J - Original Drilling - Original Drilling - As Dr	6,548.7	6,366.9	6,554.8	6,516.9	173.067	CC
Gurtler 24-10J - Original Drilling - Original Drilling - As Dr	6,550.0	6,368.1	6,554.8	6,516.9	173.036	ES
Gurtler 24-10J - Original Drilling - Original Drilling - As Dr	6,900.0	6,773.8	6,652.7	6,612.8	166.810	SF
Gurtler 24-11J - Original Drilling - Original Drilling - As Dr	6,529.6	6,456.0	6,322.2	6,283.9	165.129	CC, ES
Gurtler 24-12J - Original Drilling - Original Drilling - As Dr	6,800.0	6,600.0	6,386.1	6,346.8	162.524	SF
Gurtler 24-12J - Original Drilling - Original Drilling - As Dr	6,511.3	6,500.0	6,455.1	6,416.6	167.757	CC, ES
Gurtler 24-12J - Original Drilling - Original Drilling - As Dr	6,700.0	6,500.0	6,487.1	6,448.2	166.907	SF
Gurtler 24-12J - Original Drilling - ST01 - ST01 Original D	6,581.8	7,340.0	6,285.5	6,245.0	155.084	CC, ES
Gurtler 24-12J - Original Drilling - ST01 - ST01 Original D	6,750.0	7,340.0	6,311.0	6,270.1	154.271	SF
Gurtler 24-13J - Original Drilling - Original Drilling - As Dr	6,594.9	7,380.0	4,879.7	4,838.4	118.087	CC, ES
Gurtler 24-13J - Original Drilling - Original Drilling - As Dr	6,750.0	7,380.0	4,901.6	4,859.9	117.516	SF
Gurtler 24-15J - Original Drilling - Original Drilling - As Dr	6,561.5	6,450.7	5,229.3	5,191.2	137.255	CC, ES
Gurtler 24-15J - Original Drilling - Original Drilling - As Dr	6,750.0	6,750.0	5,257.4	5,217.9	133.165	SF
Gurtler 24-16J - Original Drilling - Original Drilling - As Dr	6,574.7	6,360.3	5,580.6	5,542.9	148.153	CC, ES
Gurtler 24-16J - Original Drilling - Original Drilling - As Dr	6,900.0	6,900.0	5,662.1	5,622.0	141.179	SF
Gurtler H24-14 - Original Drilling - Original Drilling - As D	6,531.1	6,415.7	4,924.4	4,886.3	129.173	CC, ES
Gurtler H24-14 - Original Drilling - Original Drilling - As D	6,850.0	6,689.6	5,009.7	4,970.1	126.368	SF
Gurtler H24-21 (PA) - Original Drilling - Original Drilling -	6,521.1	6,175.5	6,878.6	6,841.3	184.714	CC, ES
Gurtler H24-21 (PA) - Original Drilling - Original Drilling -	7,050.0	6,582.9	7,103.9	7,064.4	179.933	SF
Gurtler H24-23 - Original Drilling - Original Drilling - As D	6,572.3	6,473.4	6,061.7	6,023.5	158.992	CC, ES
Gurtler H24-23 - Original Drilling - Original Drilling - As D	6,900.0	6,786.9	6,147.5	6,107.8	154.562	SF
Gurtler H24-24 - Original Drilling - Original Drilling - As D	6,548.7	6,472.7	5,786.9	5,748.5	150.668	CC
Gurtler H24-24 - Original Drilling - Original Drilling - As D	6,550.0	6,474.2	5,786.9	5,748.4	150.635	ES
Gurtler H24-24 - Original Drilling - Original Drilling - As D	7,050.0	6,989.5	5,985.4	5,944.4	145.935	SF
Gurtler H24-99HZ - Wellbore #1 - Original Drilling	6,000.0	10,565.7	5,953.2	5,834.1	49.967	SF
Gurtler H24-99HZ - Wellbore #1 - Original Drilling	6,559.8	10,226.3	5,831.5	5,718.4	51.545	CC, ES
Gurtler H25-27 - Original Drilling - Original Drilling - As D	6,583.2	6,484.5	4,902.0	4,863.2	126.281	CC, ES
Gurtler H25-27 - Original Drilling - Original Drilling - As D	6,900.0	6,768.5	4,980.5	4,940.2	123.416	SF
Gurtler Russell L1 (PA) - Original Drilling - Original Drillin	6,523.3	6,480.1	5,460.2	5,421.9	142.223	CC, ES
Gurtler Russell L1 (PA) - Original Drilling - Original Drillin	7,250.0	6,938.9	5,860.6	5,812.1	120.963	SF
HSR Brutschy 04-24 - Original Drilling - Original Drilling -	6,499.1	6,212.3	8,890.6	8,853.1	237.457	CC, ES
HSR Brutschy 04-24 - Original Drilling - Original Drilling -	7,200.0	7,200.0	9,263.0	9,221.3	222.129	SF
HSR Epstein 05-24 - Original Drilling - Original Drilling - A	6,503.1	6,195.3	8,045.1	8,007.8	215.372	CC, ES
HSR Hoffman 03-24 - Original Drilling - Original Drilling - A	6,900.0	6,800.0	8,168.6	8,128.5	203.600	SF
HSR Hoffman 03-24 - Original Drilling - Original Drilling -	6,539.7	6,590.1	8,911.3	8,869.0	211.018	CC
HSR Hoffman 03-24 - Original Drilling - Original Drilling -	6,550.0	6,600.1	8,911.4	8,869.0	210.400	ES
HSR Hoffman 03-24 - Original Drilling - Original Drilling -	7,200.0	7,108.9	9,245.5	9,197.2	191.360	SF
HSR Sarchet 02-24 - Original Drilling - Original Drilling - A	6,551.7	6,500.0	9,028.9	8,990.6	235.400	CC, ES
HSR Sarchet 02-24 - Original Drilling - Original Drilling - A	7,050.0	6,791.7	9,230.8	9,190.7	229.935	SF
HSR Sarchet 06-24 - Original Drilling - Original Drilling - A	6,507.7	6,081.9	7,526.3	7,489.4	203.836	CC, ES
HSR Sarchet 06-24 - Original Drilling - Original Drilling - A	7,100.0	6,836.3	7,801.8	7,761.4	193.100	SF
HSR Traurig 01-24 - Original Drilling - Original Drilling - A	6,563.3	6,521.1	9,457.4	9,419.0	246.639	CC, ES
HSR Traurig 01-24 - Original Drilling - Original Drilling - A	6,950.0	6,950.0	9,580.3	9,539.8	236.611	SF
Nopens D19-31 - Original Drilling - Original Drilling - As D	6,544.2	6,013.3	8,846.5	8,810.0	242.520	CC
Nopens D19-31 - Original Drilling - Original Drilling - As D	6,550.0	6,020.8	8,846.5	8,810.0	242.265	ES
Nopens D19-31 - Original Drilling - Original Drilling - As D	7,150.0	6,714.1	9,113.2	9,073.3	228.641	SF
Nopens H24-08 - Original Drilling - Original Drilling - As D	6,543.7	6,090.0	8,121.4	8,084.6	220.735	CC
Nopens H24-08 - Original Drilling - Original Drilling - As D	6,550.0	6,095.6	8,121.4	8,084.6	220.539	ES
Nopens H24-08 - Original Drilling - Original Drilling - As D	7,050.0	6,579.2	8,316.4	8,277.1	211.521	SF
Sarchet H24-22 - Original Drilling - Original Drilling - As D	6,536.3	6,147.5	7,555.6	7,518.6	203.883	CC, ES
Sarchet H24-22 - Original Drilling - Original Drilling - As D	6,950.0	6,454.5	7,695.1	7,656.3	198.123	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 24						
Weld County Lumber 01 - Original Drilling - Original Drilli	6,546.2	6,353.1	8,274.6	8,236.8	218.776	CC
Weld County Lumber 01 - Original Drilling - Original Drilli	6,550.0	6,356.6	8,274.7	8,236.8	218.657	ES
Weld County Lumber 01 - Original Drilling - Original Drilli	7,050.0	6,799.9	8,476.3	8,436.1	211.050	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 25						
Dechant 21-25 - Original Drilling - Original Drilling - As D	573.7	556.7	2,989.4	2,986.5	1,025.395	CC
Dechant 21-25 - Original Drilling - Original Drilling - As D	1,400.0	1,372.3	2,991.4	2,983.8	392.763	ES
Dechant 21-25 - Original Drilling - Original Drilling - As D	6,750.0	6,798.8	3,105.3	3,058.6	66.491	SF
Dechant D30-33D - Original Drilling - Original Drilling - As	100.0	51.8	2,993.7	2,993.6	10,000.000	CC, ES
Dechant D30-33D - Original Drilling - Original Drilling - As	9,200.0	9,200.0	4,127.7	4,070.6	72.270	SF
Dechant D31-30D - Original Drilling - Original Drilling - As	7,428.0	7,081.5	2,941.3	2,896.2	65.314	CC, ES
Dechant D31-30D - Original Drilling - Original Drilling - As	8,800.0	7,110.6	3,255.6	3,201.9	60.610	SF
Dechant H25-64-1HN - Original Drilling - Original Drilling	6,752.8	8,604.6	834.8	778.5	14.810	CC, ES
Dechant H25-64-1HN - Original Drilling - Original Drilling	6,850.0	8,617.8	848.2	789.7	14.495	SF
Dechant H25-65HN - Original Drilling - Original Drilling	6,667.8	8,655.0	1,675.3	1,616.5	28.510	CC, ES
Dechant H25-65HN - Original Drilling - Original Drilling	6,800.0	8,678.8	1,694.9	1,634.5	28.074	SF
HSR Cohn 03-25 - Original Drilling - Original Drilling - As	6,518.7	6,386.6	3,697.3	3,659.2	97.195	CC, ES
HSR Cohn 03-25 - Original Drilling - Original Drilling - As	6,750.0	6,628.4	3,742.3	3,703.0	95.170	SF
HSR Crowe 06-25 - Original Drilling - Original Drilling - A	6,523.0	6,420.6	2,352.4	2,314.2	61.624	CC, ES
HSR Crowe 06-25 - Original Drilling - Original Drilling - A	6,700.0	6,578.8	2,380.0	2,340.9	60.899	SF
HSR Dechant 04-25 - Original Drilling - Original Drilling -	1,545.5	1,539.6	2,705.8	2,697.3	316.626	CC, ES
HSR Dechant 04-25 - Original Drilling - Original Drilling -	6,750.0	7,103.0	4,011.2	3,970.0	97.421	SF
HSR Dechant 05-25 - Original Drilling - Original Drilling -	6,471.6	6,381.8	2,489.5	2,451.5	65.462	CC, ES
HSR Dechant 05-25 - Original Drilling - Original Drilling -	6,700.0	6,580.6	2,530.3	2,491.1	64.576	SF
KY Blue D30-32 - Original Drilling - Original Drilling - As D	6,717.5	6,530.5	3,479.8	3,441.7	91.292	CC, ES
KY Blue D30-32 - Original Drilling - Original Drilling - As D	7,050.0	6,807.0	3,532.5	3,493.0	89.451	SF
KY Blue H25-04J - Original Drilling - Original Drilling - As	7,030.5	6,827.2	2,209.4	2,181.8	79.910	CC, ES
KY Blue H25-04J - Original Drilling - Original Drilling - As	7,200.0	6,917.3	2,220.5	2,192.5	79.505	SF
KY Blue H25-09 - Original Drilling - Original Drilling - As D	6,755.9	6,599.0	2,783.5	2,745.1	72.506	CC, ES
KY Blue H25-09 - Original Drilling - Original Drilling - As D	7,050.0	6,819.9	2,824.1	2,784.6	71.491	SF
KY Blue H25-10 - Original Drilling - Original Drilling - As D	6,621.3	6,473.8	1,712.4	1,674.4	45.069	CC, ES
KY Blue H25-10 - Original Drilling - Original Drilling - As D	6,800.0	6,654.1	1,733.8	1,694.9	44.534	SF
KY Blue H25-11 - Original Drilling - Original Drilling - As D	6,515.5	6,380.2	1,105.0	1,044.1	18.144	CC, ES
KY Blue H25-11 - Original Drilling - Original Drilling - As D	6,700.0	6,557.7	1,134.4	1,070.3	17.707	SF
KY Blue H25-12 - Original Drilling - Original Drilling - As D	1,354.1	1,349.2	1,778.7	1,770.7	223.339	CC
KY Blue H25-12 - Original Drilling - Original Drilling - As D	1,500.0	1,485.6	1,779.1	1,770.3	202.134	ES
KY Blue H25-12 - Original Drilling - Original Drilling - As D	6,650.0	6,609.5	1,904.2	1,865.1	48.677	SF
KY Blue H25-14 - Original Drilling - Original Drilling - As D	7,225.0	6,940.9	67.1	27.2	1.681	CC, ES, SF
KY Blue H25-15 - Original Drilling - Original Drilling - As D	7,135.8	6,885.6	1,003.9	964.2	25.298	CC, ES
KY Blue H25-15 - Original Drilling - Original Drilling - As D	7,200.0	6,914.5	1,006.3	966.5	25.265	SF
KY H25-24 - Original Drilling - Original Drilling - As Drilled	6,691.9	6,567.1	818.0	779.8	21.393	CC
KY H25-24 - Original Drilling - Original Drilling - As Drilled	6,700.0	6,575.6	818.0	779.7	21.371	ES
KY H25-24 - Original Drilling - Original Drilling - As Drilled	6,750.0	6,623.6	819.9	781.4	21.284	SF
Moore UPRC H25-01 - Original Drilling - Original Drilling	6,614.5	6,489.4	4,686.0	4,648.0	123.269	CC, ES
Moore UPRC H25-01 - Original Drilling - Original Drilling	6,950.0	6,750.7	4,766.9	4,727.5	120.746	SF
Moore UPRC H25-02 - Original Drilling - Original Drilling	6,564.5	6,400.1	3,929.7	3,891.8	103.733	CC, ES
Moore UPRC H25-02 - Original Drilling - Original Drilling	6,800.0	6,638.9	3,973.2	3,934.0	101.497	SF
Moser 25-32 - Original Drilling - Original Drilling - As Drill	6,584.7	6,471.8	2,491.8	2,453.7	65.415	CC, ES
Moser 25-32 - Original Drilling - Original Drilling - As Drill	6,800.0	6,682.7	2,528.8	2,489.6	64.483	SF
Moser 25-42 - Original Drilling - Original Drilling - As Drill	6,651.2	6,507.0	3,679.5	3,641.4	96.707	CC, ES
Moser 25-42 - Original Drilling - Original Drilling - As Drill	6,950.0	6,767.7	3,734.8	3,695.4	94.776	SF
UPRR 53 Pan Am T#2 - Original Drilling - Original Drilling	6,496.7	6,319.7	3,009.7	2,971.9	79.630	CC
UPRR 53 Pan Am T#2 - Original Drilling - Original Drilling	6,500.0	6,322.8	3,009.7	2,971.8	79.591	ES
UPRR 53 Pan Am T#2 - Original Drilling - Original Drilling	6,700.0	6,500.0	3,044.7	3,005.9	78.400	SF
UPRR 53 Pan Am UT T#1 - Original Drilling - Original Dr	6,609.9	6,465.1	3,490.0	3,345.1	24.098	CC, ES
UPRR 53 Pan Am UT T#1 - Original Drilling - Original Dr	6,900.0	6,726.0	3,550.4	3,399.9	23.586	SF
Von Feldt 1-25B - Original Drilling - Original Drilling - As D	2,163.3	2,141.4	606.3	594.2	50.428	CC
Von Feldt 1-25B - Original Drilling - Original Drilling - As D	3,400.0	3,359.7	610.4	591.3	32.069	ES

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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 25						
Von Feldt 1-25B - Original Drilling - Original Drilling - As D	6,100.0	6,007.8	867.6	832.6	24.723	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 26						
Bullard 31-26 - Original Drilling - Original Drilling - As Dril	0.0	0.0	5,495.1			
Bullard 31-26 - Original Drilling - Original Drilling - As Dril	700.0	671.1	5,497.8	5,494.2	1,526.466	ES
Bullard 31-26 - Original Drilling - Original Drilling - As Dril	6,900.0	6,615.7	5,753.5	5,714.1	146.071	SF
Bullard 32-26 - Original Drilling - Original Drilling - As Dril	811.5	816.6	4,220.7	4,216.4	966.645	CC
Bullard 32-26 - Original Drilling - Original Drilling - As Dril	900.0	883.1	4,221.0	4,216.2	879.830	ES
Bullard 32-26 - Original Drilling - Original Drilling - As Dril	6,850.0	6,730.0	4,563.6	4,524.0	115.402	SF
Bullard 41-26 - Original Drilling - Original Drilling - As Dril	4,915.2	4,857.8	4,517.3	4,489.0	159.877	CC
Bullard 41-26 - Original Drilling - Original Drilling - As Dril	5,000.0	4,923.3	4,517.4	4,488.7	157.302	ES
Bullard 41-26 - Original Drilling - Original Drilling - As Dril	6,950.0	6,713.7	4,756.1	4,716.4	119.557	SF
Dechant H25-29D - Original Drilling - Original Drilling - As	6,517.6	6,905.9	4,485.9	4,424.6	73.236	CC, ES
Dechant H25-29D - Original Drilling - Original Drilling - As	6,700.0	7,094.9	4,513.7	4,451.6	72.765	SF
Dechant H25-33D - Original Drilling - Original Drilling - As	6,479.2	7,475.0	2,041.2	1,974.0	30.359	CC
Dechant H25-33D - Original Drilling - Original Drilling - As	6,500.0	7,485.1	2,041.4	1,973.9	30.279	ES
Dechant H25-33D - Original Drilling - Original Drilling - As	6,700.0	7,623.0	2,058.1	1,989.1	29.850	SF
Harsh H26-09D - Original Drilling - Original Drilling - As D	322.1	330.1	2,459.8	2,458.3	1,575.500	CC
Harsh H26-09D - Original Drilling - Original Drilling - As D	400.0	387.3	2,460.2	2,458.2	1,269.524	ES
Harsh H26-09D - Original Drilling - Original Drilling - As D	6,700.0	6,697.4	2,784.6	2,745.4	70.992	SF
Harsh H26-10 - Original Drilling - Original Drilling - As Dr	512.0	522.0	3,555.7	3,553.0	1,340.084	CC
Harsh H26-10 - Original Drilling - Original Drilling - As Dr	2,700.0	2,709.7	3,565.5	3,550.3	234.439	ES
Harsh H26-10 - Original Drilling - Original Drilling - As Dr	6,850.0	6,742.2	4,066.9	4,027.5	103.214	SF
Harsh H26-15 - Original Drilling - Original Drilling - As Dr	1,135.6	1,149.6	3,239.8	3,233.6	517.788	CC
Harsh H26-15 - Original Drilling - Original Drilling - As Dr	2,700.0	2,740.1	3,246.4	3,231.0	211.903	ES
Harsh H26-15 - Original Drilling - Original Drilling - As Dr	8,700.0	7,166.6	4,255.9	4,209.8	92.303	SF
Harsh H26-16 - Original Drilling - Original Drilling - As Dr	0.0	2.7	2,160.6			
Harsh H26-16 - Original Drilling - Original Drilling - As Dr	1,200.0	1,187.2	2,163.0	2,156.5	331.480	ES
Harsh H26-16 - Original Drilling - Original Drilling - As Dr	7,400.0	7,066.7	2,886.4	2,845.9	71.227	SF
Harsh H26-23D - Original Drilling - Original Drilling - As D	4,631.2	5,131.3	2,974.6	2,944.6	98.940	CC
Harsh H26-23D - Original Drilling - Original Drilling - As D	4,700.0	5,177.0	2,974.9	2,944.4	97.667	ES
Harsh H26-23D - Original Drilling - Original Drilling - As D	6,650.0	6,670.5	3,194.1	3,153.3	78.291	SF
HSR Moser 04-26 - Original Drilling - Original Drilling - As	1,894.9	1,862.9	7,455.0	7,444.5	713.861	CC
HSR Moser 04-26 - Original Drilling - Original Drilling - As	2,000.0	1,931.6	7,455.2	7,444.3	682.756	ES
HSR Moser 04-26 - Original Drilling - Original Drilling - As	6,850.0	6,453.6	7,865.3	7,826.6	203.401	SF
HSR Moser 06-26 - Original Drilling - Original Drilling - As	0.0	0.0	5,204.5			
HSR Moser 06-26 - Original Drilling - Original Drilling - As	2,500.0	2,462.6	5,210.4	5,196.5	374.895	ES
HSR Moser 06-26 - Original Drilling - Original Drilling - As	6,800.0	6,672.7	5,578.2	5,539.0	142.182	SF
HSR Regalia 05-26 - Original Drilling - Original Drilling - A	2,315.1	2,286.3	6,455.2	6,442.4	501.196	CC
HSR Regalia 05-26 - Original Drilling - Original Drilling - A	2,500.0	2,438.9	6,455.7	6,441.9	466.914	ES
HSR Regalia 05-26 - Original Drilling - Original Drilling - A	11,900.0	11,900.0	9,991.6	9,921.3	142.188	SF
HSR-Moser 03-26A - Original Drilling - Original Drilling - A	572.6	543.6	6,179.9	6,177.1	2,157.528	CC
HSR-Moser 03-26A - Original Drilling - Original Drilling - A	2,300.0	2,244.3	6,182.0	6,169.3	487.330	ES
HSR-Moser 03-26A - Original Drilling - Original Drilling - A	6,750.0	6,500.0	6,376.3	6,337.5	164.503	SF
John 03-26 - Original Drilling - Original Drilling - As Drille	2,167.4	2,143.7	6,087.8	6,075.7	505.110	CC
John 03-26 - Original Drilling - Original Drilling - As Drille	2,500.0	2,443.8	6,088.8	6,074.9	439.783	ES
John 03-26 - Original Drilling - Original Drilling - As Drille	6,800.0	6,541.8	6,360.5	6,321.6	163.402	SF
Lamp H25-31 - Original Drilling - Original Drilling - As Dri	6,455.1	6,416.6	3,668.4	3,630.3	96.328	CC, ES
Lamp H25-31 - Original Drilling - Original Drilling - As Dri	6,700.0	6,589.6	3,712.3	3,673.2	94.754	SF
Lamp H26-01 - Original Drilling - Original Drilling - As Dri	1,432.1	1,444.3	3,838.2	3,830.2	482.629	CC, ES
Lamp H26-01 - Original Drilling - Original Drilling - As Dri	6,750.0	6,810.6	4,602.3	4,562.0	114.159	SF
Lamp H26-08 - Original Drilling - Original Drilling - As Dri	1,715.3	1,721.5	3,553.8	3,544.2	371.687	CC
Lamp H26-08 - Original Drilling - Original Drilling - As Dri	6,453.3	6,571.4	3,572.7	3,534.2	92.762	ES
Lamp H26-08 - Original Drilling - Original Drilling - As Dri	6,750.0	6,857.6	3,623.2	3,583.2	90.445	SF
Lamp H26-22 - Original Drilling - Original Drilling - As Dri	3,734.2	3,882.8	3,469.2	3,442.1	127.745	CC
Lamp H26-22 - Original Drilling - Original Drilling - As Dri	3,900.0	4,039.0	3,469.8	3,441.0	120.417	ES

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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 26						
Lamp H26-22 - Original Drilling - Original Drilling - As Dr	6,650.0	6,655.9	3,694.2	3,646.5	77.380	SF
Moser 05-26 - Original Drilling - Original Drilling - As Drill	2,771.7	2,898.8	6,654.5	6,638.5	415.489	CC
Moser 05-26 - Original Drilling - Original Drilling - As Drill	2,800.0	2,927.1	6,654.6	6,638.4	411.399	ES
Moser 05-26 - Original Drilling - Original Drilling - As Drill	11,300.0	7,006.3	9,425.1	9,371.7	176.600	SF
Moser 41-27 - Original Drilling - Original Drilling - As Drill	885.6	858.6	6,666.8	6,662.1	1,425.030	CC
Moser 41-27 - Original Drilling - Original Drilling - As Drill	900.0	867.1	6,666.8	6,662.1	1,406.386	ES
Moser 41-27 - Original Drilling - Original Drilling - As Drill	7,000.0	6,931.1	8,035.2	7,993.4	191.937	SF
Moser H26-11 - Original Drilling - Original Drilling - As Dr	398.4	381.5	5,084.4	5,082.5	2,660.683	CC
Moser H26-11 - Original Drilling - Original Drilling - As Dr	1,000.0	954.9	5,086.1	5,080.9	966.492	ES
Moser H26-11 - Original Drilling - Original Drilling - As Dr	7,050.0	6,843.3	5,690.7	5,651.0	143.466	SF
Moser H26-12 - Wellbore #1 - Wellbore #1 - As Drilled	0.0	0.0	6,119.7			
Moser H26-12 - Wellbore #1 - Wellbore #1 - As Drilled	2,400.0	2,343.8	6,126.4	6,113.1	461.882	ES
Moser H26-12 - Wellbore #1 - Wellbore #1 - As Drilled	11,600.0	7,207.1	8,758.6	8,701.0	151.963	SF
Moser H26-13 - Wellbore #1 - Wellbore #1 - As Drilled	0.0	0.0	5,896.3			
Moser H26-13 - Wellbore #1 - Wellbore #1 - As Drilled	1,200.0	1,151.7	5,901.3	5,894.9	920.820	ES
Moser H26-13 - Wellbore #1 - Wellbore #1 - As Drilled	12,200.0	7,247.1	8,325.9	8,262.1	130.449	SF
Moser H26-14 - Original Drilling - Original Drilling - As Dr	572.8	565.9	4,392.6	4,389.6	1,490.568	CC
Moser H26-14 - Original Drilling - Original Drilling - As Dr	2,400.0	2,376.2	4,397.7	4,384.4	328.876	ES
Moser H26-14 - Original Drilling - Original Drilling - As Dr	10,500.0	6,873.6	6,011.5	5,959.0	114.690	SF
Moser H26-18D - Original Drilling - Original Drilling - As D	0.0	0.0	4,457.2			
Moser H26-18D - Original Drilling - Original Drilling - As D	6,750.0	7,055.9	5,462.6	5,407.7	99.506	SF
Moser H26-24 - Original Drilling - Original Drilling - As Dr	241.1	246.1	4,199.0	4,197.9	3,879.295	CC
Moser H26-24 - Original Drilling - Original Drilling - As Dr	2,632.1	2,639.3	4,206.5	4,191.7	283.730	ES
Moser H26-24 - Original Drilling - Original Drilling - As Dr	7,150.0	7,046.5	4,911.5	4,871.2	121.747	SF
Moser H26-25 - Original Drilling - Original Drilling - As Dr	0.0	0.0	4,957.7			
Moser H26-25 - Original Drilling - Original Drilling - As Dr	1,800.0	1,764.9	4,962.5	4,952.6	501.413	ES
Moser H26-25 - Original Drilling - Original Drilling - As Dr	10,600.0	7,071.9	6,929.5	6,876.9	131.849	SF
Moser H26-27D - Original Drilling - Original Drilling - As D	0.0	14.7	4,480.3			
Moser H26-27D - Original Drilling - Original Drilling - As D	6,850.0	6,917.7	5,453.0	5,411.7	131.840	SF
Moser H26-28D - Original Drilling - Original Drilling - As D	0.0	15.9	4,473.6			
Moser H26-28D - Original Drilling - Original Drilling - As D	8,900.0	8,900.0	7,963.7	7,892.1	111.299	SF
Moser H26-29D - Original Drilling - Original Drilling - As D	0.0	19.6	4,467.0			
Moser H26-29D - Original Drilling - Original Drilling - As D	200.0	196.0	4,467.6	4,466.8	5,677.483	ES
Moser H26-29D - Original Drilling - Original Drilling - As D	7,050.0	3,532.6	6,852.5	6,818.9	204.112	SF
Moser, Wesley E. G. U. B1 (PA) - Original Drilling - Origin	2,630.0	2,615.0	5,571.9	5,513.8	95.959	CC
Moser, Wesley E. G. U. B1 (PA) - Original Drilling - Origin	2,700.0	2,685.0	5,572.5	5,512.9	93.469	ES
Moser, Wesley E. G. U. B1 (PA) - Original Drilling - Origin	7,400.0	6,999.6	6,318.3	6,162.4	40.527	SF
H Section 27						
HSR Moser 1-27 - Original Drilling - Original Drilling - As	100.0	51.0	8,260.6	8,260.4	10,000.000	CC
HSR Moser 1-27 - Original Drilling - Original Drilling - As	600.0	535.5	8,261.7	8,258.8	2,848.278	ES
HSR Moser 1-27 - Original Drilling - Original Drilling - As	8,500.0	8,500.0	9,603.5	9,556.8	205.747	SF
HSR Moser 16-27 - Original Drilling - Original Drilling - As	0.0	0.0	7,029.9			
HSR Moser 16-27 - Original Drilling - Original Drilling - As	2,641.6	2,639.4	7,031.9	7,017.1	473.325	ES
HSR Moser 16-27 - Original Drilling - Original Drilling - As	12,557.7	7,035.6	9,323.0	9,255.8	138.664	SF
Moser 09-27X (PA) - Original Drilling - Original Drilling - A	0.0	0.0	7,274.1			
Moser 09-27X (PA) - Original Drilling - Original Drilling - A	100.0	46.6	7,274.2	7,274.0	10,000.000	ES
Moser 09-27X (PA) - Original Drilling - Original Drilling - A	12,100.0	6,892.1	9,944.6	9,883.4	162.458	SF
Moser 24-27 - Original Drilling - Original Drilling - As Drill	827.0	800.0	7,281.8	7,277.4	1,681.338	CC, ES
Moser 24-27 - Original Drilling - Original Drilling - As Drill	10,400.0	7,051.2	9,973.1	9,920.1	188.007	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 34						
Moser H34-09 - Wellbore #1 - Wellbore #1 - As Drilled	11,247.0	7,065.1	7,761.2	7,695.0	117.187	CC
Moser H34-09 - Wellbore #1 - Wellbore #1 - As Drilled	11,300.0	7,065.4	7,761.4	7,694.7	116.417	ES
Moser H34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,557.7	7,072.3	7,871.2	7,794.5	102.676	SF
Moser H34-16 - Wellbore #1 - Wellbore #1 - As Drilled	12,494.6	6,967.3	7,736.7	7,659.4	100.127	CC
Moser H34-16 - Wellbore #1 - Wellbore #1 - As Drilled	12,557.7	6,968.2	7,737.0	7,659.2	99.433	ES, SF
Moser H34-31 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
H Section 35						
Cannon Farms 01-35C - Original Drilling - Original Drilling	12,038.3	7,001.4	3,087.8	3,014.6	42.180	CC, ES
Cannon Farms 01-35C - Original Drilling - Original Drilling	12,557.7	7,014.2	3,131.3	3,054.8	40.939	SF
Cannon H35-03D - Original Drilling - Original Drilling - As	11,580.6	6,861.6	5,525.2	5,456.9	80.820	CC
Cannon H35-03D - Original Drilling - Original Drilling - As	11,600.0	6,862.0	5,525.3	5,456.8	80.633	ES
Cannon H35-03D - Original Drilling - Original Drilling - As	12,557.7	6,878.5	5,611.0	5,535.3	74.087	SF
Cannon H35-09 - Original Drilling - Original Drilling - As D	11,100.0	6,955.6	2,732.0	2,663.7	39.988	CC, ES
Cannon H35-09 - Original Drilling - Original Drilling - As D	11,600.0	6,945.0	2,777.4	2,706.3	39.113	SF
Cannon H35-10 - Original Drilling - Original Drilling - As D	11,240.5	7,074.8	3,969.5	3,903.2	59.932	CC
Cannon H35-10 - Original Drilling - Original Drilling - As D	11,300.0	7,075.0	3,969.9	3,903.2	59.535	ES
Cannon H35-10 - Original Drilling - Original Drilling - As D	12,300.0	7,078.3	4,108.4	4,035.5	56.323	SF
Cannon H35-11 - Original Drilling - Original Drilling - As D	11,149.9	6,890.7	5,040.2	4,975.6	78.021	CC
Cannon H35-11 - Original Drilling - Original Drilling - As D	11,200.0	6,891.1	5,040.4	4,975.4	77.549	ES
Cannon H35-11 - Original Drilling - Original Drilling - As D	12,557.7	6,904.5	5,233.1	5,158.8	70.436	SF
Cannon H35-12 - Original Drilling - Original Drilling - As D	11,293.0	7,055.5	6,504.0	6,437.3	97.645	CC
Cannon H35-12 - Original Drilling - Original Drilling - As D	11,300.0	7,055.6	6,504.0	6,437.3	97.560	ES
Cannon H35-12 - Original Drilling - Original Drilling - As D	12,557.7	7,064.4	6,625.8	6,549.6	86.857	SF
Cannon H35-13 - Wellbore #1 - Wellbore #1 - As Drilled	12,483.9	7,074.6	6,534.7	6,457.1	84.192	CC
Cannon H35-13 - Wellbore #1 - Wellbore #1 - As Drilled	12,557.7	7,072.9	6,535.2	6,456.9	83.540	ES, SF
Cannon H35-14 - Original Drilling - Original Drilling - As D	12,482.6	7,024.7	5,141.2	5,056.8	60.912	CC
Cannon H35-14 - Original Drilling - Original Drilling - As D	12,500.0	7,024.6	5,141.2	5,056.7	60.812	ES
Cannon H35-14 - Original Drilling - Original Drilling - As D	12,557.7	7,024.3	5,141.8	5,056.8	60.491	SF
Cannon H35-15 (PA) - Original Drilling - Original Drilling -	12,487.2	7,014.0	3,924.2	3,730.9	20.297	CC
Cannon H35-15 (PA) - Original Drilling - Original Drilling -	12,500.0	7,014.0	3,924.3	3,730.8	20.286	ES
Cannon H35-15 (PA) - Original Drilling - Original Drilling -	12,557.7	7,014.0	3,924.9	3,731.0	20.243	SF
Cannon H35-20 - Original Drilling - Original Drilling - As D	10,674.0	6,861.6	5,916.7	5,856.4	98.116	CC
Cannon H35-20 - Original Drilling - Original Drilling - As D	10,700.0	6,861.8	5,916.8	5,856.3	97.784	ES
Cannon H35-20 - Original Drilling - Original Drilling - As D	12,557.7	6,876.2	6,209.4	6,135.8	84.427	SF
Cannon H35-21 - Original Drilling - Original Drilling - As D	10,721.6	7,064.8	4,497.7	4,436.2	73.074	CC, ES
Cannon H35-21 - Original Drilling - Original Drilling - As D	12,200.0	7,066.6	4,734.5	4,663.5	66.698	SF
Cannon H35-22 - Original Drilling - Original Drilling - As D	10,612.7	7,058.7	3,567.7	3,507.0	58.771	CC, ES
Cannon H35-22 - Original Drilling - Original Drilling - As D	11,600.0	7,044.5	3,701.8	3,635.2	55.635	SF
Cannon H35-24 - Original Drilling - Original Drilling - As D	11,911.0	6,838.3	4,667.1	4,595.9	65.502	CC, ES
Cannon H35-24 - Original Drilling - Original Drilling - As D	12,557.7	6,845.4	4,711.8	4,635.7	61.960	SF
Cannon X02-27 - Original Drilling - Original Drilling - As D	12,557.7	7,015.9	3,514.0	3,435.6	44.839	CC, ES, SF
Cannon X02-28 - Original Drilling - Original Drilling - As D	12,557.7	6,926.6	4,684.0	4,606.2	60.173	CC, ES, SF
Cannon X02-29 - Original Drilling - Original Drilling - As D	12,557.7	7,183.9	6,009.9	5,930.6	75.786	CC, ES, SF
Foster 18-35 - Original Drilling - Original Drilling - As Drill	663.5	652.5	5,543.4	5,540.0	1,606.681	CC
Foster 18-35 - Original Drilling - Original Drilling - As Drill	1,200.0	1,153.4	5,545.8	5,539.4	865.922	ES
Foster 18-35 - Original Drilling - Original Drilling - As Drill	12,400.0	6,932.9	6,966.1	6,898.3	102.731	SF
Foster UPRR 31-35 #1 (PA) - Original Drilling - Original D	2,630.0	2,639.0	3,385.6	3,327.1	57.914	CC
Foster UPRR 31-35 #1 (PA) - Original Drilling - Original D	2,700.0	2,709.0	3,386.4	3,326.4	56.431	ES
Foster UPRR 31-35 #1 (PA) - Original Drilling - Original D	8,900.0	7,026.0	4,009.6	3,847.6	24.749	SF
Foster UPRR 32-35 - Original Drilling - Original Drilling -	9,720.6	7,034.5	4,073.8	4,020.8	76.955	CC, ES
Foster UPRR 32-35 - Original Drilling - Original Drilling -	11,200.0	7,040.1	4,334.1	4,272.3	70.121	SF
Foster UPRR 41-35 - Original Drilling - Original Drilling -	1,786.8	1,781.9	2,286.2	2,276.3	230.345	CC
Foster UPRR 41-35 - Original Drilling - Original Drilling -	2,639.2	2,641.7	2,289.7	2,274.9	154.294	ES
Foster UPRR 41-35 - Original Drilling - Original Drilling -	9,100.0	7,020.8	2,695.6	2,638.7	47.409	SF
Foster UPRR 42-35 #2 - Original Drilling - Original Drilling	9,667.0	7,102.6	2,659.2	2,606.4	50.300	CC
Foster UPRR 42-35 #2 - Original Drilling - Original Drilling	9,700.0	7,103.4	2,659.5	2,606.4	50.110	ES
Foster UPRR 42-35 #2 - Original Drilling - Original Drilling	10,300.0	7,117.9	2,733.5	2,677.2	48.553	SF
HSR Foster 03-35 - Original Drilling - Original Drilling - A	0.0	0.0	4,675.0			
HSR Foster 03-35 - Original Drilling - Original Drilling - A	2,400.0	2,371.1	4,688.0	4,674.7	350.565	ES
HSR Foster 03-35 - Original Drilling - Original Drilling - A	11,300.0	7,000.7	5,855.0	5,794.9	97.328	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #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						
H Section 35						
HSR Foster 04-35 - Wellbore #1 - Wellbore #1 - As Drille	165.5	144.5	6,163.2	6,162.6	10,000.000	CC
HSR Foster 04-35 - Wellbore #1 - Wellbore #1 - As Drille	1,200.0	1,149.8	6,165.4	6,159.0	964.249	ES
HSR Foster 04-35 - Wellbore #1 - Wellbore #1 - As Drille	12,557.7	6,730.9	8,055.4	7,988.2	119.901	SF
HSR Foster 05-35 - Wellbore #1 - Wellbore #1 - As Drille	348.0	336.0	6,361.8	6,360.2	3,888.811	CC
HSR Foster 05-35 - Wellbore #1 - Wellbore #1 - As Drille	2,000.0	1,946.0	6,367.2	6,356.3	579.803	ES
HSR Foster 05-35 - Wellbore #1 - Wellbore #1 - As Drille	12,557.7	6,700.0	7,125.2	7,053.8	99.739	SF
HSR Foster 06-35 - Original Drilling - Original Drilling - A	524.0	525.0	5,142.3	5,139.6	1,908.688	CC
HSR Foster 06-35 - Original Drilling - Original Drilling - A	700.0	683.0	5,142.6	5,139.0	1,413.213	ES
HSR Foster 06-35 - Original Drilling - Original Drilling - A	12,200.0	7,007.9	5,786.5	5,718.0	84.493	SF
UPRR 53 Pan Am Unit P1 - Original Drilling - Original Dri	428.5	425.5	3,103.4	3,101.3	1,455.931	CC
UPRR 53 Pan Am Unit P1 - Original Drilling - Original Dri	2,656.7	2,682.7	3,105.3	3,090.3	206.777	ES
UPRR 53 Pan Am Unit P1 - Original Drilling - Original Dri	10,100.0	7,006.8	3,316.6	3,263.0	61.873	SF
UPRR 53 Pan Am UT P2 - Original Drilling - Original Drill	0.0	0.0	5,140.5			
UPRR 53 Pan Am UT P2 - Original Drilling - Original Drill	1,700.0	1,662.2	5,142.0	5,132.7	552.654	ES
UPRR 53 Pan Am UT P2 - Original Drilling - Original Drill	11,900.0	6,836.5	6,432.2	6,368.4	100.823	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 36						
Dechant 07-36 - Original Drilling - Original Drilling - As D	9,966.4	6,966.8	1,026.2	971.5	18.739	CC, ES
Dechant 07-36 - Original Drilling - Original Drilling - As D	10,100.0	6,967.5	1,034.9	978.5	18.363	SF
Dechant 13N-1HZ - Original Drilling - Original Drilling - A	12,557.7	6,657.6	1,563.3	1,488.0	20.753	CC, ES, SF
Dechant 14C-1HZ - Original Drilling - Original Drilling - A	12,557.7	6,800.0	471.3	423.4	9.850	CC, ES, SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	12,419.3	6,989.6	1,078.6	983.9	11.392	CC, ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	12,557.7	6,990.2	1,087.4	991.1	11.291	SF
Dechant 15C-1HZ - Original Drilling - Original Drilling - A	8,109.5	6,971.5	1,154.8	1,112.2	27.072	CC
Dechant 15C-1HZ - Original Drilling - Original Drilling - A	12,557.7	11,437.3	1,234.4	1,095.6	8.895	ES, SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	10,283.6	7,101.6	1,723.4	1,663.5	28.791	CC
Dechant 24-36 - Original Drilling - Original Drilling - As D	10,300.0	7,101.6	1,723.5	1,663.3	28.664	ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	10,800.0	7,101.9	1,799.1	1,731.7	26.714	SF
Dechant 35N-E1HZ - Original Drilling - Original Drilling -	12,557.7	6,675.1	675.1	617.8	11.778	CC, ES, SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	12,557.7	6,700.0	1,070.8	999.0	14.911	CC, ES, SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	12,557.7	6,738.8	594.4	538.5	10.625	CC, ES, SF
Dechant 37N-E1HZ - Original Drilling - Original Drilling -	12,557.7	6,532.5	2,228.1	2,150.0	28.556	CC, ES, SF
Dechant 37N-W1HZ - Original Drilling - Original Drilling -	12,557.7	6,655.8	1,645.9	1,569.9	21.663	CC, ES, SF
Dechant State 16C-1HZ - Original Drilling - Original Drilling	7,977.8	6,995.0	2,335.9	2,294.1	55.953	CC
Dechant State 16C-1HZ - Original Drilling - Original Drilling	8,700.0	7,728.3	2,338.6	2,289.4	47.557	ES
Dechant State 16C-1HZ - Original Drilling - Original Drilling	12,200.0	12,200.0	2,484.9	2,338.7	16.999	SF
Dechant State 36N-E1HZ - Original Drilling - Original Drilling	8,412.1	7,133.7	888.0	842.8	19.639	CC
Dechant State 36N-E1HZ - Original Drilling - Original Drilling	12,557.7	11,264.7	955.3	816.3	6.871	ES, SF
Dechant State 37N-E36HZ - Original Drilling - Original Drilling	8,303.9	7,150.0	2,110.7	2,066.5	47.838	CC
Dechant State 37N-E36HZ - Original Drilling - Original Drilling	12,557.7	11,372.4	2,172.6	2,033.8	15.648	ES, SF
Dechant State 37N-W36HZ - Original Drilling - Original Drilling	8,027.0	6,904.3	1,505.4	1,463.1	35.588	CC
Dechant State 37N-W36HZ - Original Drilling - Original Drilling	12,557.7	11,437.2	1,575.2	1,435.0	11.235	ES, SF
Dechant State 38N-1HZ - Original Drilling - Original Drilling	8,301.5	6,959.5	2,811.3	2,767.7	64.511	CC
Dechant State 38N-1HZ - Original Drilling - Original Drilling	12,557.7	11,181.0	2,879.5	2,742.2	20.963	ES, SF
Dechant State H36-11D - Original Drilling - Original Drilling	11,184.2	6,994.1	109.4	43.9	1.671	CC, ES, SF
Dechant State H36-18D - Original Drilling - Original Drilling	9,122.0	7,193.4	405.7	356.2	8.191	CC, ES
Dechant State H36-18D - Original Drilling - Original Drilling	9,200.0	7,196.0	413.1	361.4	7.990	SF
Dechant State H36-19 - Original Drilling - Original Drilling	8,808.3	6,924.0	998.6	953.1	21.979	CC, ES
Dechant State H36-19 - Original Drilling - Original Drilling	8,900.0	6,926.1	1,002.8	957.1	21.964	SF
Dechant State H36-20D - Original Drilling - Original Drilling	10,586.1	7,085.7	750.6	690.3	12.438	CC, ES
Dechant State H36-20D - Original Drilling - Original Drilling	10,600.0	7,086.1	750.8	690.3	12.421	SF
Dechant State H36-21D - Original Drilling - Original Drilling	10,534.8	7,076.6	449.2	388.2	7.365	CC, ES, SF
Dechant State H36-24 - Original Drilling - Original Drilling	11,741.7	7,158.5	548.0	476.0	7.606	CC, ES
Dechant State H36-24 - Original Drilling - Original Drilling	11,800.0	7,158.0	551.1	478.0	7.537	SF
Dechant State H36-31D - Original Drilling - Original Drilling	1,086.9	1,072.0	1,535.6	1,530.9	326.316	CC
Dechant State H36-31D - Original Drilling - Original Drilling	1,100.0	1,079.0	1,535.6	1,530.9	322.690	ES
Dechant State H36-31D - Original Drilling - Original Drilling	9,700.0	7,171.2	2,067.8	2,015.0	39.138	SF
Dechant State H36-32D - Original Drilling - Original Drilling	10,437.8	7,059.8	1,988.9	1,929.1	33.281	CC, ES
Dechant State H36-32D - Original Drilling - Original Drilling	10,700.0	7,068.9	2,006.1	1,945.2	32.976	SF
Dechant State H36-33 - Original Drilling - Original Drilling	11,653.2	7,100.5	1,911.5	1,840.4	26.895	CC, ES
Dechant State H36-33 - Original Drilling - Original Drilling	11,900.0	7,099.5	1,927.4	1,855.0	26.626	SF
HSR Dechant State 02-36 - Original Drilling - Original Drilling	8,216.5	6,963.3	933.1	890.6	21.956	CC, ES
HSR Dechant State 02-36 - Original Drilling - Original Drilling	8,400.0	6,966.5	951.0	907.0	21.609	SF
HSR Dechant/State 07-36 (PA) - Original Drilling - Original Drilling	9,391.6	6,979.0	1,550.1	1,384.6	9.366	CC
HSR Dechant/State 07-36 (PA) - Original Drilling - Original Drilling	9,400.0	6,979.0	1,550.2	1,384.6	9.361	ES
HSR Dechant/State 07-36 (PA) - Original Drilling - Original Drilling	9,500.0	6,979.0	1,553.9	1,387.3	9.325	SF
Spike State GWS H36-03 - Original Drilling - Original Drilling	8,386.7	6,981.1	16.8	-26.6	0.387	Level 1, CC, ES, SF
Spike State GWS H36-04 - Original Drilling - Original Drilling	100.0	63.4	1,160.0	1,159.8	6,034.134	CC
Spike State GWS H36-04 - Original Drilling - Original Drilling	2,630.6	2,603.9	1,163.6	1,149.0	79.213	ES
Spike State GWS H36-04 - Original Drilling - Original Drilling	8,400.0	6,959.2	1,494.5	1,443.5	29.287	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

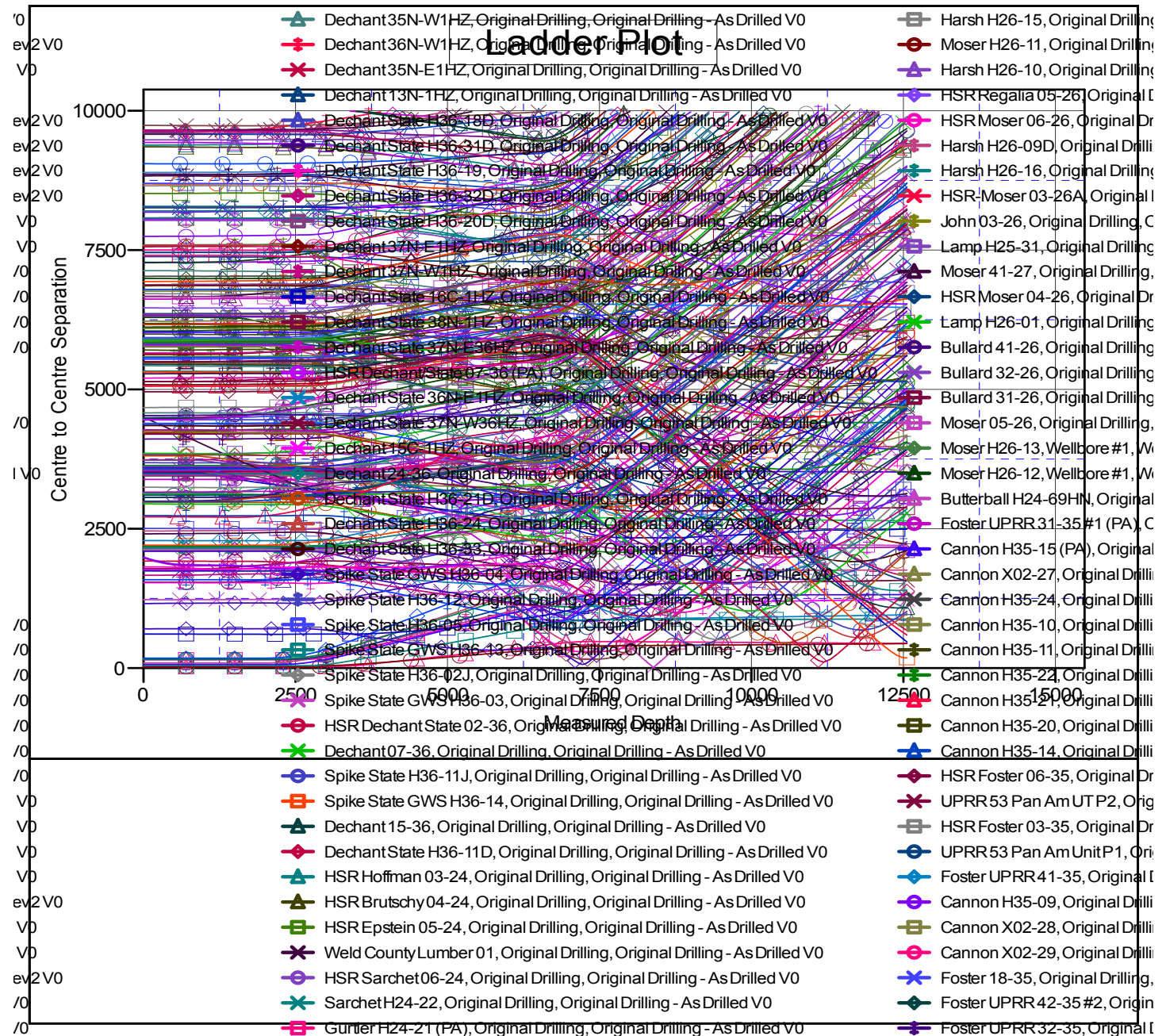
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 36						
Spike State GWS H36-13 - Original Drilling - Original Dri	12,407.1	7,403.6	1,392.0	1,312.6	17.531	CC, ES
Spike State GWS H36-13 - Original Drilling - Original Dri	12,500.0	7,376.0	1,394.9	1,315.0	17.470	SF
Spike State GWS H36-14 - Original Drilling - Original Dri	12,533.0	6,998.9	183.2	105.3	2.353	CC, ES, SF
Spike State H36-02J - Original Drilling - Original Drilling -	9,463.9	6,991.7	509.2	424.5	6.017	CC, ES, SF
Spike State H36-05 - Original Drilling - Original Drilling - A	9,666.6	6,951.1	1,510.7	1,458.6	29.021	CC, ES
Spike State H36-05 - Original Drilling - Original Drilling - A	9,800.0	6,951.1	1,516.6	1,463.9	28.816	SF
Spike State H36-11J - Original Drilling - Original Drilling -	11,804.4	7,000.2	684.5	613.5	9.634	CC, ES, SF
Spike State H36-12 - Original Drilling - Original Drilling - A	10,937.5	7,000.0	1,588.9	1,525.7	25.143	CC, ES
Spike State H36-12 - Original Drilling - Original Drilling - A	11,100.0	6,998.6	1,597.2	1,533.3	24.992	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4847.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Emmy State H36-760
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.57°



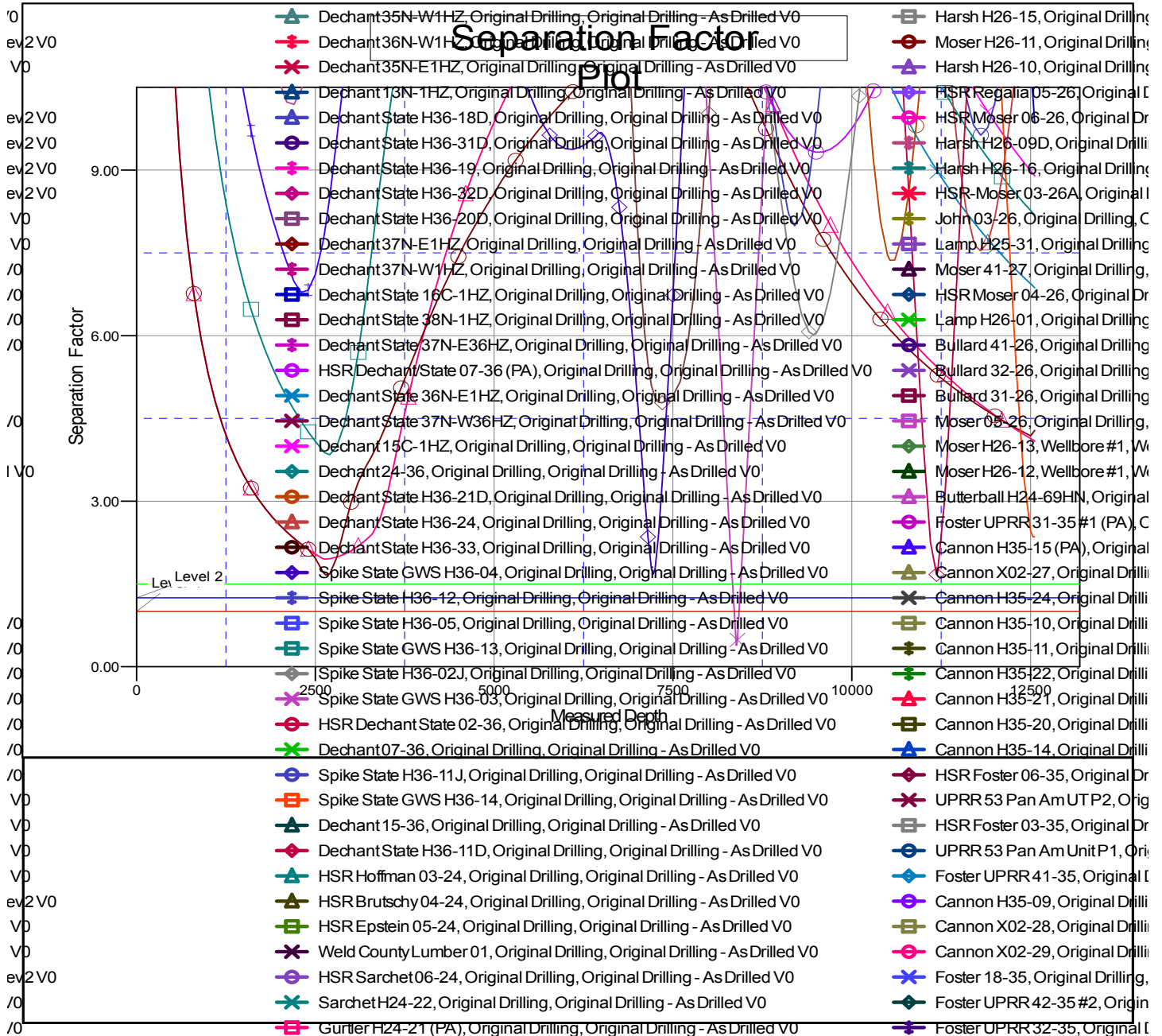
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-760
Project:	Conceptual Wells	TVD Reference:	WELL @ 4847.0ft (Original Well Elev)
Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-760	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4847.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Emmy State H36-760
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.57°



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