

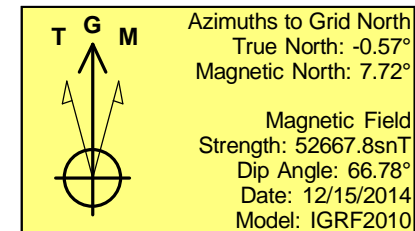
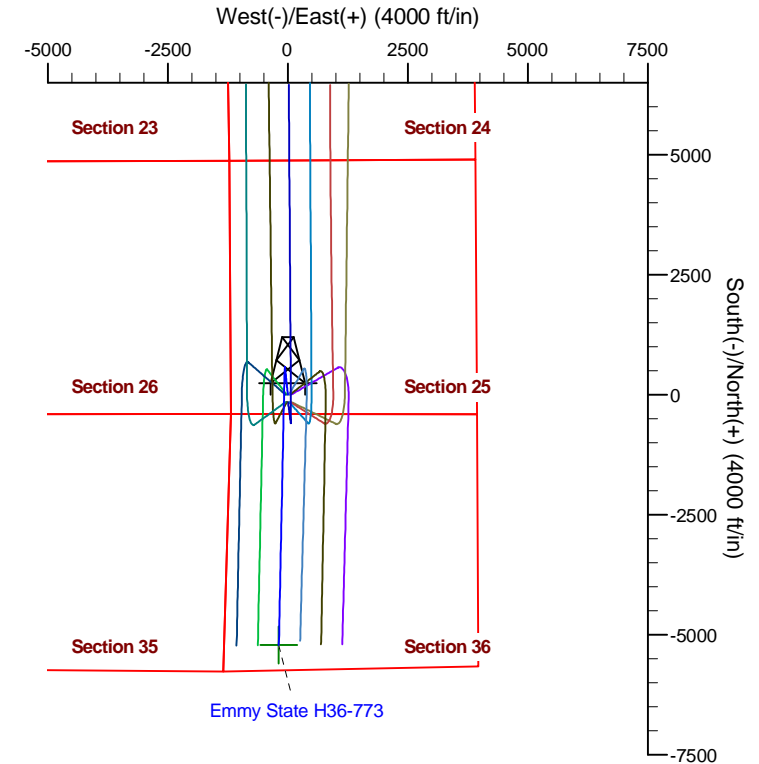
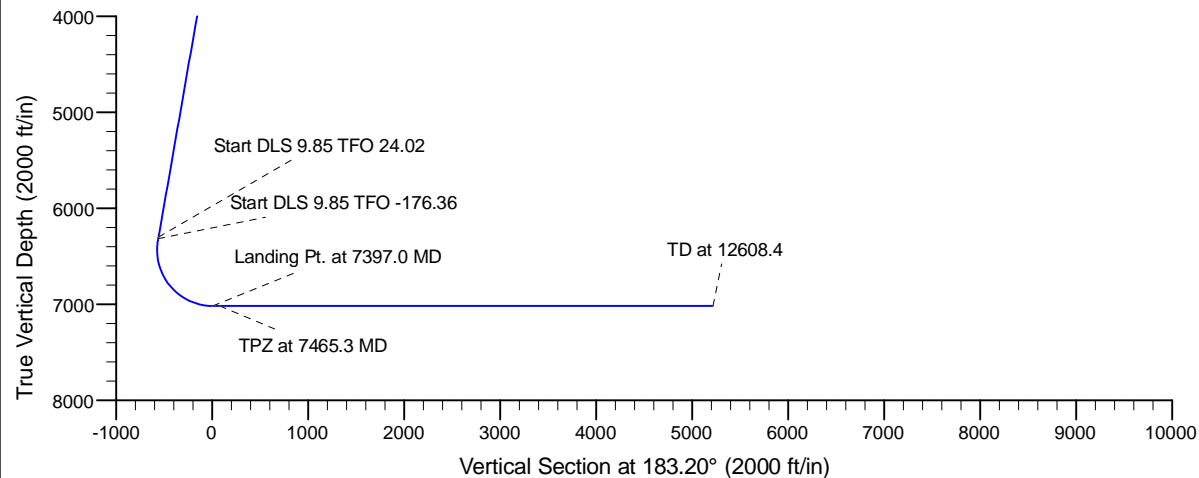
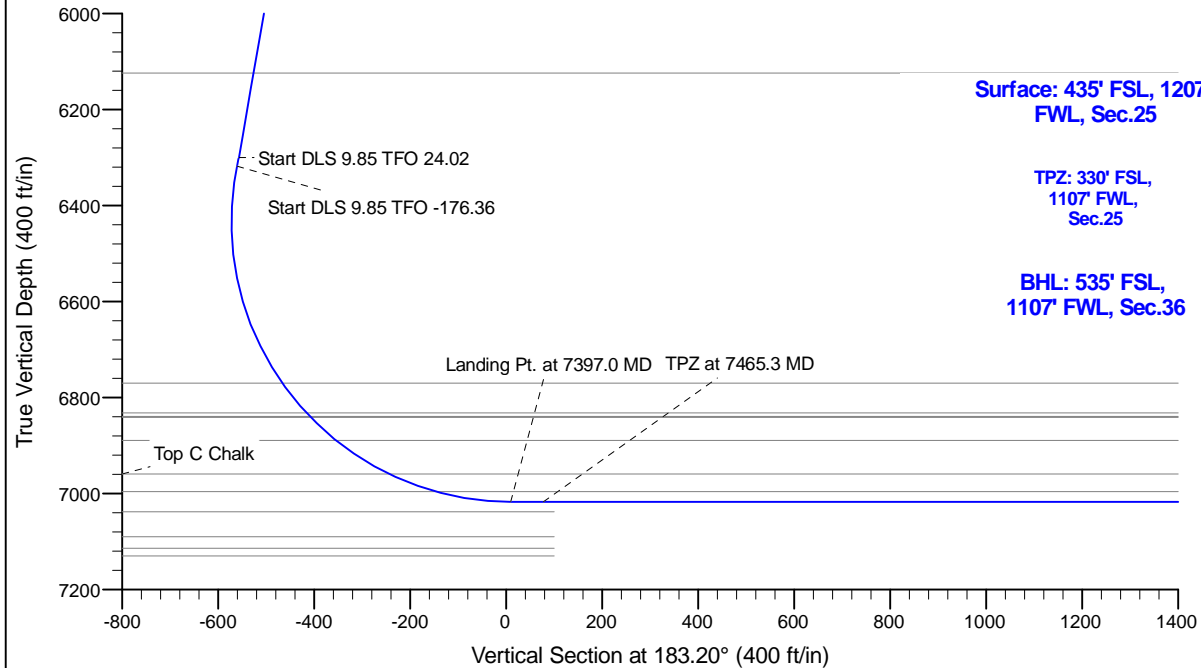
Project: Conceptual Wells
Site: DP 408
Well: Emmy State H36-773
Wellbore: Wellbore #1
Design: Design #1

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	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2600.0	0.00	0.00	2600.0	0.0	0.0	0.00	0.00	0.0	
3	3600.0	10.00	354.00	3594.9	86.6	-9.1	1.00	354.00	-85.9	
4	6346.8	10.00	354.00	6300.0	560.9	-59.0	0.00	0.00	-556.8	
5	6365.1	11.67	357.63	6318.0	564.4	-59.2	9.85	24.02	-560.2	
6	7397.0	90.00	181.19	7017.0	-5.0	-80.0	9.85	-176.36	9.5	
7	12608.4	90.00	181.19	7017.0	-5215.2	-188.4	0.00	0.00	5217.6	Emmy State H36-773 BHL



WELL DETAILS: Emmy State H36-773

Ground Level: 4817.0			
0.00.0	Northings	Easting	Latitude
	1313320.87	3246707.16	40.190090
			Longitude
			-104.616910

Plan: Design #1 (Emmy State H36-773/Wellbore #1)

Created By: Chad Stich Date: 13:51, November 02 2017
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

Northern Region Drilling - Sandbox

Conceptual Wells

DP 408

Emmy State H36-773

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 H36-773
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 H36-773	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 H36-773			
Well Position	+N/-S	-4,864.0 ft	Northing:	1,313,320.87 usft
	+E/-W	6,482.3 ft	Easting:	3,246,707.16 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	12/15/2014	8.30	66.78	52,667.75059670

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	183.20

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	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,600.0	10.00	354.00	3,594.9	86.6	-9.1	1.00	1.00	0.00	354.00	
6,346.8	10.00	354.00	6,300.0	560.9	-59.0	0.00	0.00	0.00	0.00	
6,365.1	11.67	357.63	6,318.0	564.4	-59.2	9.85	9.12	19.84	24.02	
7,397.0	90.00	181.19	7,017.0	-5.0	-80.0	9.85	7.59	-17.10	-176.36	
12,608.4	90.00	181.19	7,017.0	-5,215.2	-188.4	0.00	0.00	0.00	0.00	Emmy State H36-773

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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
2,700.0	1.00	354.00	2,700.0	0.9	-0.1	-0.9	1.00	1.00	0.00
2,800.0	2.00	354.00	2,800.0	3.5	-0.4	-3.4	1.00	1.00	0.00
2,900.0	3.00	354.00	2,899.9	7.8	-0.8	-7.8	1.00	1.00	0.00
3,000.0	4.00	354.00	2,999.7	13.9	-1.5	-13.8	1.00	1.00	0.00
3,100.0	5.00	354.00	3,099.4	21.7	-2.3	-21.5	1.00	1.00	0.00
3,200.0	6.00	354.00	3,198.9	31.2	-3.3	-31.0	1.00	1.00	0.00
3,300.0	7.00	354.00	3,298.3	42.5	-4.5	-42.2	1.00	1.00	0.00
3,400.0	8.00	354.00	3,397.4	55.5	-5.8	-55.0	1.00	1.00	0.00
3,500.0	9.00	354.00	3,496.3	70.2	-7.4	-69.6	1.00	1.00	0.00
3,600.0	10.00	354.00	3,594.9	86.6	-9.1	-85.9	1.00	1.00	0.00
3,700.0	10.00	354.00	3,693.4	103.8	-10.9	-103.1	0.00	0.00	0.00
3,800.0	10.00	354.00	3,791.9	121.1	-12.7	-120.2	0.00	0.00	0.00
3,900.0	10.00	354.00	3,890.4	138.4	-14.5	-137.4	0.00	0.00	0.00
4,000.0	10.00	354.00	3,988.9	155.6	-16.4	-154.5	0.00	0.00	0.00
4,100.0	10.00	354.00	4,087.3	172.9	-18.2	-171.6	0.00	0.00	0.00
4,200.0	10.00	354.00	4,185.8	190.2	-20.0	-188.8	0.00	0.00	0.00
4,300.0	10.00	354.00	4,284.3	207.5	-21.8	-205.9	0.00	0.00	0.00
4,400.0	10.00	354.00	4,382.8	224.7	-23.6	-223.1	0.00	0.00	0.00
4,500.0	10.00	354.00	4,481.3	242.0	-25.4	-240.2	0.00	0.00	0.00
4,600.0	10.00	354.00	4,579.7	259.3	-27.2	-257.3	0.00	0.00	0.00
4,700.0	10.00	354.00	4,678.2	276.5	-29.1	-274.5	0.00	0.00	0.00
4,800.0	10.00	354.00	4,776.7	293.8	-30.9	-291.6	0.00	0.00	0.00
4,900.0	10.00	354.00	4,875.2	311.1	-32.7	-308.8	0.00	0.00	0.00
5,000.0	10.00	354.00	4,973.7	328.3	-34.5	-325.9	0.00	0.00	0.00
5,100.0	10.00	354.00	5,072.1	345.6	-36.3	-343.1	0.00	0.00	0.00
5,200.0	10.00	354.00	5,170.6	362.9	-38.1	-360.2	0.00	0.00	0.00
5,300.0	10.00	354.00	5,269.1	380.2	-40.0	-377.3	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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)
5,400.0	10.00	354.00	5,367.6	397.4	-41.8	-394.5	0.00	0.00	0.00
5,500.0	10.00	354.00	5,466.1	414.7	-43.6	-411.6	0.00	0.00	0.00
5,600.0	10.00	354.00	5,564.5	432.0	-45.4	-428.8	0.00	0.00	0.00
5,700.0	10.00	354.00	5,663.0	449.2	-47.2	-445.9	0.00	0.00	0.00
5,800.0	10.00	354.00	5,761.5	466.5	-49.0	-463.0	0.00	0.00	0.00
5,900.0	10.00	354.00	5,860.0	483.8	-50.8	-480.2	0.00	0.00	0.00
6,000.0	10.00	354.00	5,958.5	501.0	-52.7	-497.3	0.00	0.00	0.00
6,100.0	10.00	354.00	6,057.0	518.3	-54.5	-514.5	0.00	0.00	0.00
6,200.0	10.00	354.00	6,155.4	535.6	-56.3	-531.6	0.00	0.00	0.00
6,300.0	10.00	354.00	6,253.9	552.8	-58.1	-548.8	0.00	0.00	0.00
6,346.8	10.00	354.00	6,300.0	560.9	-59.0	-556.8	0.00	0.00	0.00
6,365.1	11.67	357.63	6,318.0	564.4	-59.2	-560.2	9.85	9.12	19.84
6,400.0	8.24	356.10	6,352.3	570.4	-59.5	-566.2	9.85	-9.82	-4.36
6,500.0	1.80	205.27	6,452.0	576.1	-60.7	-571.8	9.85	-6.44	-150.83
6,600.0	11.52	184.80	6,551.3	564.7	-62.2	-560.4	9.85	9.72	-20.47
6,700.0	21.36	183.07	6,647.1	536.5	-64.0	-532.1	9.85	9.84	-1.73
6,800.0	31.20	182.40	6,736.6	492.4	-66.1	-487.9	9.85	9.85	-0.67
6,900.0	41.05	182.03	6,817.3	433.5	-68.3	-429.0	9.85	9.85	-0.37
7,000.0	50.90	181.79	6,886.7	361.7	-70.7	-357.2	9.85	9.85	-0.25
7,100.0	60.75	181.60	6,942.8	279.1	-73.1	-274.6	9.85	9.85	-0.19
7,200.0	70.60	181.45	6,983.9	188.2	-75.6	-183.7	9.85	9.85	-0.15
7,300.0	80.45	181.31	7,008.9	91.5	-77.9	-87.0	9.85	9.85	-0.14
7,397.0	90.00	181.19	7,017.0	-5.0	-80.0	9.5	9.85	9.85	-0.13
7,400.0	90.00	181.19	7,017.0	-8.0	-80.1	12.5	0.00	0.00	0.00
7,500.0	90.00	181.19	7,017.0	-108.0	-82.1	112.4	0.00	0.00	0.00
7,600.0	90.00	181.19	7,017.0	-208.0	-84.2	212.3	0.00	0.00	0.00
7,700.0	90.00	181.19	7,017.0	-307.9	-86.3	312.3	0.00	0.00	0.00
7,800.0	90.00	181.19	7,017.0	-407.9	-88.4	412.2	0.00	0.00	0.00
7,900.0	90.00	181.19	7,017.0	-507.9	-90.4	512.1	0.00	0.00	0.00
8,000.0	90.00	181.19	7,017.0	-607.9	-92.5	612.1	0.00	0.00	0.00
8,100.0	90.00	181.19	7,017.0	-707.8	-94.6	712.0	0.00	0.00	0.00
8,200.0	90.00	181.19	7,017.0	-807.8	-96.7	812.0	0.00	0.00	0.00
8,300.0	90.00	181.19	7,017.0	-907.8	-98.8	911.9	0.00	0.00	0.00
8,400.0	90.00	181.19	7,017.0	-1,007.8	-100.8	1,011.8	0.00	0.00	0.00
8,500.0	90.00	181.19	7,017.0	-1,107.8	-102.9	1,111.8	0.00	0.00	0.00
8,600.0	90.00	181.19	7,017.0	-1,207.7	-105.0	1,211.7	0.00	0.00	0.00
8,700.0	90.00	181.19	7,017.0	-1,307.7	-107.1	1,311.7	0.00	0.00	0.00
8,800.0	90.00	181.19	7,017.0	-1,407.7	-109.1	1,411.6	0.00	0.00	0.00
8,900.0	90.00	181.19	7,017.0	-1,507.7	-111.2	1,511.5	0.00	0.00	0.00
9,000.0	90.00	181.19	7,017.0	-1,607.7	-113.3	1,611.5	0.00	0.00	0.00
9,100.0	90.00	181.19	7,017.0	-1,707.6	-115.4	1,711.4	0.00	0.00	0.00
9,200.0	90.00	181.19	7,017.0	-1,807.6	-117.4	1,811.3	0.00	0.00	0.00
9,300.0	90.00	181.19	7,017.0	-1,907.6	-119.5	1,911.3	0.00	0.00	0.00
9,400.0	90.00	181.19	7,017.0	-2,007.6	-121.6	2,011.2	0.00	0.00	0.00
9,500.0	90.00	181.19	7,017.0	-2,107.5	-123.7	2,111.2	0.00	0.00	0.00
9,600.0	90.00	181.19	7,017.0	-2,207.5	-125.8	2,211.1	0.00	0.00	0.00
9,700.0	90.00	181.19	7,017.0	-2,307.5	-127.8	2,311.0	0.00	0.00	0.00
9,800.0	90.00	181.19	7,017.0	-2,407.5	-129.9	2,411.0	0.00	0.00	0.00
9,900.0	90.00	181.19	7,017.0	-2,507.5	-132.0	2,510.9	0.00	0.00	0.00
10,000.0	90.00	181.19	7,017.0	-2,607.4	-134.1	2,610.9	0.00	0.00	0.00
10,100.0	90.00	181.19	7,017.0	-2,707.4	-136.1	2,710.8	0.00	0.00	0.00
10,200.0	90.00	181.19	7,017.0	-2,807.4	-138.2	2,810.7	0.00	0.00	0.00
10,300.0	90.00	181.19	7,017.0	-2,907.4	-140.3	2,910.7	0.00	0.00	0.00
10,400.0	90.00	181.19	7,017.0	-3,007.4	-142.4	3,010.6	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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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 H36-773	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)	
10,500.0	90.00	181.19	7,017.0	-3,107.3	-144.4	3,110.6	0.00	0.00	0.00	
10,600.0	90.00	181.19	7,017.0	-3,207.3	-146.5	3,210.5	0.00	0.00	0.00	
10,700.0	90.00	181.19	7,017.0	-3,307.3	-148.6	3,310.4	0.00	0.00	0.00	
10,800.0	90.00	181.19	7,017.0	-3,407.3	-150.7	3,410.4	0.00	0.00	0.00	
10,900.0	90.00	181.19	7,017.0	-3,507.2	-152.8	3,510.3	0.00	0.00	0.00	
11,000.0	90.00	181.19	7,017.0	-3,607.2	-154.8	3,610.2	0.00	0.00	0.00	
11,100.0	90.00	181.19	7,017.0	-3,707.2	-156.9	3,710.2	0.00	0.00	0.00	
11,200.0	90.00	181.19	7,017.0	-3,807.2	-159.0	3,810.1	0.00	0.00	0.00	
11,300.0	90.00	181.19	7,017.0	-3,907.2	-161.1	3,910.1	0.00	0.00	0.00	
11,400.0	90.00	181.19	7,017.0	-4,007.1	-163.1	4,010.0	0.00	0.00	0.00	
11,500.0	90.00	181.19	7,017.0	-4,107.1	-165.2	4,109.9	0.00	0.00	0.00	
11,600.0	90.00	181.19	7,017.0	-4,207.1	-167.3	4,209.9	0.00	0.00	0.00	
11,700.0	90.00	181.19	7,017.0	-4,307.1	-169.4	4,309.8	0.00	0.00	0.00	
11,800.0	90.00	181.19	7,017.0	-4,407.1	-171.4	4,409.8	0.00	0.00	0.00	
11,900.0	90.00	181.19	7,017.0	-4,507.0	-173.5	4,509.7	0.00	0.00	0.00	
12,000.0	90.00	181.19	7,017.0	-4,607.0	-175.6	4,609.6	0.00	0.00	0.00	
12,100.0	90.00	181.19	7,017.0	-4,707.0	-177.7	4,709.6	0.00	0.00	0.00	
12,200.0	90.00	181.19	7,017.0	-4,807.0	-179.7	4,809.5	0.00	0.00	0.00	
12,300.0	90.00	181.19	7,017.0	-4,906.9	-181.8	4,909.4	0.00	0.00	0.00	
12,400.0	90.00	181.19	7,017.0	-5,006.9	-183.9	5,009.4	0.00	0.00	0.00	
12,500.0	90.00	181.19	7,017.0	-5,106.9	-186.0	5,109.3	0.00	0.00	0.00	
12,600.0	90.00	181.19	7,017.0	-5,206.9	-188.1	5,209.3	0.00	0.00	0.00	
12,608.4	90.00	181.19	7,017.0	-5,215.2	-188.4	5,217.6	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 H36-773 Bl	0.00	0.00	7,017.0	-5,215.2	-188.4	1,308,105.86	3,246,518.77	40.175780		-104.617770
- plan hits target center										
- Point										

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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				
3,889.5	3,880.0	Parkman				
4,489.6	4,471.0	Sussex				
5,182.1	5,153.0	Shannon				
6,168.1	6,124.0	Teepee Buttes				
6,839.9	6,770.0	Sharon Springs				
6,919.8	6,832.0	Top A Chalk				
6,929.5	6,839.0	Top A Marl				
6,932.2	6,841.0	Top B Chalk				
7,003.7	6,889.0	Top B Marl				
7,135.1	6,959.0	Top C Chalk				
7,240.3	6,996.0	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,600.0	2,600.0	0.0	0.0	KOP - Start Build 1.00	
6,346.8	6,300.0	86.6	-9.1	Start DLS 9.85 TFO 24.02	
6,365.1	6,318.0	560.9	-59.0	Start DLS 9.85 TFO -176.36	
7,397.0	7,017.0	564.4	-59.2	Landing Pt. at 7397.0 MD	
7,465.3	7,017.0	-5.0	-80.0	TPZ at 7465.3 MD	
12,608.4	7,017.0	-73.3	-81.4	TD at 12608.4	

Northern Region Drilling - Sandbox

Conceptual Wells

DP 408

Emmy State H36-773

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 H36-773
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 H36-773	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	12,608.4	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 -	6,511.2	11,992.0	9,844.6	9,698.3	67.311	CC, ES
Butterball H24-69HN - Original Drilling - Original Drilling -	6,600.0	11,992.0	9,851.6	9,705.2	67.274	SF
DP 408						
Emmy H25-711 - Wellbore #1 - Prelim - Rev 2	2,000.0	1,988.0	2,251.5	2,242.8	259.641	CC, ES
Emmy H25-711 - Wellbore #1 - Prelim - Rev 2	10,100.0	6,108.8	4,431.5	4,386.9	99.421	SF
Emmy State H25-718 - Wellbore #1 - Prelim - Rev 2	2,400.0	2,388.0	2,229.2	2,218.7	212.918	CC, ES
Emmy State H25-718 - Wellbore #1 - Prelim - Rev 2	11,100.0	11,100.0	4,796.7	4,733.1	75.509	SF
Emmy State H25-724 - Wellbore #1 - Prelim - Rev 2	2,400.0	2,388.0	2,206.9	2,196.4	210.789	CC, ES
Emmy State H25-724 - Wellbore #1 - Prelim - Rev 2	9,300.0	6,500.0	3,255.2	3,216.6	84.256	SF
Emmy State H25-731 - Wellbore #1 - Prelim - Rev 2	2,400.0	2,387.0	2,184.6	2,174.1	208.704	CC, ES
Emmy State H25-731 - Wellbore #1 - Prelim - Rev 2	8,900.0	6,564.0	2,794.2	2,758.7	78.777	SF
Emmy State H25-738 - Wellbore #1 - Prelim - Rev 2	3,046.9	3,068.6	2,161.4	2,148.2	163.556	CC
Emmy State H25-738 - Wellbore #1 - Prelim - Rev 2	6,800.0	7,709.8	2,177.4	2,146.0	69.416	SF
Emmy State H25-738 - Wellbore #1 - Prelim - Rev 2	7,037.7	7,549.3	2,168.3	2,137.5	70.293	ES
Emmy State H25-744 - Wellbore #1 - Prelim - Rev 2	6,800.0	7,760.6	1,714.3	1,682.1	53.200	SF
Emmy State H25-744 - Wellbore #1 - Prelim - Rev 2	7,036.7	7,600.8	1,703.7	1,672.2	53.983	CC, ES
Emmy State H25-751 - Wellbore #1 - Design #1	2,200.0	2,199.0	167.1	157.5	17.410	CC, ES
Emmy State H25-751 - Wellbore #1 - Design #1	2,400.0	2,390.2	172.2	161.8	16.536	SF
Emmy State H25-757 - Wellbore #1 - Design #1	2,400.0	2,399.0	159.4	148.9	15.190	CC, ES
Emmy State H25-757 - Wellbore #1 - Design #1	2,600.0	2,590.7	164.5	153.1	14.543	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	2,700.0	2,698.5	157.0	151.1	26.511	SF
Emmy State H25-771 - Wellbore #1 - Design #1	7,177.1	7,550.0	135.8	104.8	4.387	CC, ES, SF
Emmy State H25-777 - Wellbore #1 - Design #1	2,200.0	2,200.0	151.0	141.4	15.736	CC, ES
Emmy State H25-777 - Wellbore #1 - Design #1	7,597.7	7,180.5	234.2	203.5	7.628	SF
Emmy State H25-785 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,000.0	160.2	151.5	18.418	CC, ES
Emmy State H25-785 - Wellbore #1 - Prelim - Rev 2	2,300.0	2,286.3	172.4	162.5	17.407	SF
Emmy State H36-753 - Wellbore #1 - Design #1	2,600.0	2,599.0	67.1	55.7	5.885	CC, ES
Emmy State H36-753 - Wellbore #1 - Design #1	2,700.0	2,697.0	68.6	56.8	5.800	SF
Emmy State H36-760 - Wellbore #1 - Design #1	2,600.0	2,600.0	44.7	33.3	3.923	CC, ES
Emmy State H36-760 - Wellbore #1 - Design #1	2,700.0	2,699.1	45.5	33.6	3.840	SF
Emmy State H36-766 - Wellbore #1 - Design #1	2,400.0	2,400.0	22.4	11.9	2.129	CC, ES
Emmy State H36-766 - Wellbore #1 - Design #1	2,500.0	2,499.6	23.3	12.3	2.128	SF
Emmy State H36-780 - Wellbore #1 - Design #1	2,200.0	2,201.0	22.4	12.8	2.328	CC, ES, SF
Emmy State H36-787 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,002.0	47.5	38.8	5.457	CC, ES
Emmy State H36-787 - Wellbore #1 - Prelim - Rev 2	2,100.0	2,100.7	48.9	39.7	5.343	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 H36-773
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 H36-773	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 H26-712 - Wellbore #1 - Design #1	6,503.0	6,616.6	2,033.0	2,002.8	67.275	CC, ES
Hurley H26-712 - Wellbore #1 - Design #1	6,600.0	6,650.0	2,041.1	2,010.7	67.154	SF
Hurley H26-717 - Wellbore #1 - Design #1	6,493.4	6,550.0	2,242.9	2,213.4	76.043	CC, ES
Hurley H26-717 - Wellbore #1 - Design #1	6,600.0	6,572.8	2,251.5	2,221.8	75.932	SF
Hurley H26-724 - Wellbore #1 - Design #1	6,479.0	6,468.7	2,604.5	2,575.3	89.237	CC, ES
Hurley H26-724 - Wellbore #1 - Design #1	6,550.0	6,500.0	2,607.7	2,578.4	88.870	SF
Hurley H26-730 - Wellbore #1 - Design #1	6,471.1	6,440.0	3,065.2	3,036.1	105.343	CC, ES
Hurley H26-730 - Wellbore #1 - Design #1	6,650.0	6,500.0	3,083.3	3,053.8	104.713	SF
Hurley H26-736 - Wellbore #1 - Design #1	6,412.8	6,232.9	3,208.6	3,179.2	109.280	CC, ES
Hurley H26-736 - Wellbore #1 - Design #1	6,600.0	6,376.5	3,224.2	3,194.1	107.307	SF
Hurley H26-743 - Wellbore #1 - Prelim - Rev 2	4,987.8	4,640.4	3,367.6	3,345.9	155.373	CC
Hurley H26-743 - Wellbore #1 - Prelim - Rev 2	5,100.0	4,741.3	3,367.9	3,345.7	151.302	ES
Hurley H26-743 - Wellbore #1 - Prelim - Rev 2	6,850.0	6,329.8	3,545.5	3,514.2	113.231	SF
Hurley H26-750 - Wellbore #1 - Prelim - Rev 2	6,591.9	7,000.0	4,184.9	4,153.0	131.235	CC, ES
Hurley H26-750 - Wellbore #1 - Prelim - Rev 2	6,650.0	7,000.0	4,186.3	4,154.4	131.134	SF
Hurley H26-756 - Wellbore #1 - Prelim - Rev 2	6,575.2	6,850.0	4,490.8	4,460.0	145.631	CC, ES
Hurley H26-756 - Wellbore #1 - Prelim - Rev 2	6,700.0	6,875.1	4,496.5	4,465.5	145.258	SF
Hurley H26-762 - Wellbore #1 - Prelim - Rev 2	6,557.5	6,700.0	4,849.5	4,819.5	161.703	CC, ES
Hurley H26-762 - Wellbore #1 - Prelim - Rev 2	6,700.0	6,720.1	4,856.3	4,826.2	161.175	SF
Hurley H26-768 - Wellbore #1 - Prelim - Rev 2	6,509.2	6,500.0	5,196.7	5,167.2	176.252	CC, ES
Hurley H26-768 - Wellbore #1 - Prelim - Rev 2	10,400.0	6,550.0	7,011.5	6,969.9	168.379	SF
Hurley H26-776 - Wellbore #1 - Prelim - Rev 2	6,440.7	6,272.8	5,611.9	5,582.8	192.560	CC
Hurley H26-776 - Wellbore #1 - Prelim - Rev 2	6,450.0	6,281.9	5,611.9	5,582.7	192.285	ES
Hurley H26-776 - Wellbore #1 - Prelim - Rev 2	11,000.0	6,476.6	7,749.4	7,704.1	170.866	SF
Hurley H26-783 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,004.0	5,825.0	5,816.3	668.973	CC
Hurley H26-783 - Wellbore #1 - Prelim - Rev 2	5,300.0	4,861.2	5,836.8	5,813.7	253.406	ES
Hurley H26-783 - Wellbore #1 - Prelim - Rev 2	11,300.0	6,450.0	8,156.0	8,108.1	170.300	SF
Hurley H35-720 - Wellbore #1 - Design #1	12,608.4	15,481.9	1,762.1	1,628.4	13.181	CC, ES, SF
Hurley H35-727 - Wellbore #1 - Design #1	12,608.4	15,259.6	2,202.2	2,068.3	16.446	CC, ES, SF
Hurley H35-733 - Wellbore #1 - Design #1	12,608.4	15,274.1	2,639.5	2,505.7	19.719	CC, ES, SF
Hurley H35-740 - Wellbore #1 - Design #1	12,608.4	15,362.3	3,086.4	2,952.1	22.994	CC, ES, SF
Hurley H35-746 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,306.6	3,522.0	3,387.8	26.246	CC, ES, SF
Hurley H35-755 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,250.5	3,841.4	3,707.6	28.692	CC, ES, SF
Hurley H35-761 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,054.6	4,281.1	4,147.8	32.123	CC, ES, SF
Hurley H35-768 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,105.0	4,719.5	4,586.8	35.555	CC, ES, SF
Hurley H35-774 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,124.4	5,159.5	5,027.2	38.998	CC, ES, SF
Hurley H35-779 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,034.4	5,592.4	5,459.9	42.229	CC, ES, SF
Hurley H35-787 - Wellbore #1 - Prelim - Rev 2	2,000.0	2,004.0	5,891.2	5,882.5	676.574	CC, ES
Hurley H35-787 - Wellbore #1 - Prelim - Rev 2	12,608.4	15,233.2	6,039.6	5,906.2	45.271	SF
Hurley State H35-713 - Wellbore #1 - Design #1	12,608.4	15,215.5	1,322.7	1,188.8	9.877	CC, 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	6,467.1	6,188.0	9,516.6	9,483.0	283.245	CC, ES
Sarchet H13-75HN - Original Drilling - Original Drilling	6,750.0	6,220.0	9,587.0	9,552.9	281.527	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

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 H36-773
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 H36-773	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 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	6,452.3	6,057.3	7,867.3	7,831.4	219.106	CC, ES
Butterball 13-19 - Original Drilling - Original Drilling - As D	9,100.0	9,100.0	9,853.0	9,803.9	200.766	SF
H Section 21						
Moser 41-21 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
H Section 22						
HSR Demeules 09-22 - Original Drilling - Original Drilling	6,489.9	6,380.9	9,359.6	9,322.6	253.076	CC, ES
HSR Demeules 09-22 - Original Drilling - Original Drilling	7,050.0	7,050.0	9,524.3	9,484.6	240.165	SF
HSR Duryea - Wellbore #1 - Wellbore #1 - As Drilled	6,482.7	6,291.7	9,236.6	9,199.9	251.808	CC, ES
HSR Duryea - Wellbore #1 - Wellbore #1 - As Drilled	7,150.0	6,814.7	9,434.4	9,395.5	242.838	SF
Sarchet 16-22 - Wellbore #1 - Wellbore #1 - As Drilled	6,487.9	6,348.6	8,597.6	8,560.5	232.142	CC, ES
Sarchet 16-22 - Wellbore #1 - Wellbore #1 - As Drilled	6,800.0	6,800.0	8,640.8	8,601.9	222.179	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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	6,491.5	6,497.4	8,174.3	8,136.9	218.737	CC
Eachus 32-23 - Original Drilling - Original Drilling - As Dri	6,500.0	6,509.4	8,174.3	8,136.9	218.416	ES
Eachus 32-23 - Original Drilling - Original Drilling - As Dri	7,000.0	6,979.3	8,365.2	8,325.7	212.118	SF
Eachus 41-23 (PA) - Original Drilling - Original Drilling - A	6,485.1	6,429.1	8,994.7	8,851.3	62.727	CC
Eachus 41-23 (PA) - Original Drilling - Original Drilling - A	6,500.0	6,444.0	8,994.9	8,851.2	62.587	ES
Eachus 41-23 (PA) - Original Drilling - Original Drilling - A	7,000.0	6,878.7	9,202.6	9,049.8	60.221	SF
Eachus UPRR 31-23 - Original Drilling - Original Drilling -	6,487.5	6,432.5	9,439.2	9,360.8	120.283	CC
Eachus UPRR 31-23 - Original Drilling - Original Drilling -	6,500.0	6,445.0	9,439.4	9,360.4	119.596	ES
Eachus UPRR 31-23 - Original Drilling - Original Drilling -	7,250.0	6,990.1	9,845.2	9,747.0	100.248	SF
Eachus UPRR 42-23 (PA) - Original Drilling - Original Dri	6,485.3	6,439.4	7,701.2	7,557.6	53.630	CC
Eachus UPRR 42-23 (PA) - Original Drilling - Original Dri	6,500.0	6,454.0	7,701.4	7,557.4	53.513	ES
Eachus UPRR 42-23 (PA) - Original Drilling - Original Dri	6,950.0	6,855.5	7,871.3	7,718.9	51.671	SF
HSR Alberstein 16-23 - Original Drilling - Original Drilling	6,465.3	6,241.9	5,499.5	5,463.1	151.024	CC, ES
HSR Alberstein 16-23 - Original Drilling - Original Drilling	6,850.0	6,549.8	5,615.9	5,578.0	148.191	SF
HSR Ashley 15-23A - Original Drilling - Original Drilling -	6,474.9	6,298.1	6,162.0	6,125.3	167.962	CC, ES
HSR Ashley 15-23A - Original Drilling - Original Drilling -	6,750.0	6,524.8	6,216.2	6,178.4	164.445	SF
HSR Benirschke 10-23 - Original Drilling - Original Drillin	6,460.2	6,177.5	6,871.3	6,835.1	189.727	CC, ES
HSR Benirschke 10-23 - Original Drilling - Original Drillin	6,800.0	6,400.0	6,957.1	6,919.7	186.151	SF
HSR Eachus 03-23 - Original Drilling - Original Drilling - A	4,007.1	2,455.2	9,628.4	9,611.2	560.614	CC, ES
HSR Eachus 03-23 - Original Drilling - Original Drilling - A	6,700.0	6,916.9	9,996.6	9,957.8	257.088	SF
HSR Eachus 04-23 - Original Drilling - Original Drilling - A	100.0	66.0	9,603.7	9,603.5	10,000.000	CC
HSR Eachus 04-23 - Original Drilling - Original Drilling - A	1,000.0	900.0	9,607.5	9,602.4	1,893.150	ES
HSR Eachus 04-23 - Original Drilling - Original Drilling - A	4,700.0	1,300.0	9,991.8	9,976.2	643.127	SF
HSR Eachus 05-23 - Original Drilling - Original Drilling - A	154.1	122.1	9,572.9	9,572.4	10,000.000	CC
HSR Eachus 05-23 - Original Drilling - Original Drilling - A	6,464.4	6,545.9	9,576.7	9,455.5	78.986	ES
HSR Eachus 05-23 - Original Drilling - Original Drilling - A	7,000.0	7,012.1	9,756.4	9,629.3	76.711	SF
HSR Fruman 06-23 - Original Drilling - Original Drilling - A	6,444.0	5,847.2	9,303.2	9,262.7	229.630	CC
HSR Fruman 06-23 - Original Drilling - Original Drilling - A	6,450.0	5,855.5	9,303.3	9,262.7	229.405	ES
HSR Fruman 06-23 - Original Drilling - Original Drilling - A	6,850.0	6,664.9	9,403.4	9,359.8	216.006	SF
HSR Grasshopper 09-23 - Original Drilling - Original Drill	6,521.2	6,842.5	6,356.6	6,318.1	164.974	CC, ES
HSR Grasshopper 09-23 - Original Drilling - Original Drill	6,800.0	7,100.0	6,417.8	6,378.1	161.633	SF
Ritchey 21-23 - Original Drilling - Original Drilling - As Dri	6,496.8	6,566.3	9,092.0	9,054.5	241.860	CC
Ritchey 21-23 - Original Drilling - Original Drilling - As Dri	6,500.0	6,569.5	9,092.1	9,054.4	241.755	ES
Ritchey 21-23 - Original Drilling - Original Drilling - As Dri	6,900.0	7,012.8	9,212.8	9,173.3	233.261	SF
Ritchey 24-23 - Original Drilling - Original Drilling - As Dri	6,475.0	6,364.3	7,358.3	7,319.1	187.795	CC, ES
Ritchey 24-23 - Original Drilling - Original Drilling - As Dri	6,850.0	6,849.7	7,463.1	7,422.1	181.859	SF
Ritchey 31-24 - Original Drilling - Original Drilling - As Dri	6,489.1	6,648.6	8,330.5	8,276.4	154.033	CC, ES
Ritchey 31-24 - Original Drilling - Original Drilling - As Dri	6,750.0	6,902.7	8,387.1	8,332.2	152.767	SF
UPRC 23-11J - Original Drilling - Original Drilling - As Dri	6,489.0	6,400.0	7,804.1	7,767.0	210.696	CC, ES
UPRC 23-11J - Original Drilling - Original Drilling - As Dri	6,950.0	6,777.6	7,942.4	7,903.7	205.103	SF
UPRC 23-12J - Original Drilling - Original Drilling - As Dri	6,494.9	6,452.1	8,647.8	8,610.5	232.217	CC
UPRC 23-12J - Original Drilling - Original Drilling - As Dri	6,500.0	6,458.4	8,647.8	8,610.5	232.031	ES
UPRC 23-12J - Original Drilling - Original Drilling - As Dri	6,750.0	6,700.0	8,685.6	8,647.3	226.363	SF
UPRC H23-13 - Wellbore #1 - Wellbore #1 - As Drilled	6,486.5	6,358.0	7,843.6	7,806.6	211.878	CC, ES
UPRC H23-13 - Wellbore #1 - Wellbore #1 - As Drilled	7,000.0	6,722.8	7,982.1	7,943.5	206.574	SF
UPRC H23-14J - Original Drilling - Original Drilling - As D	6,482.0	6,332.1	6,527.2	6,490.4	177.086	CC, ES
UPRC H23-14J - Original Drilling - Original Drilling - As D	6,800.0	6,583.5	6,591.0	6,553.0	173.168	SF
UPRC H23-24 - Original Drilling - Original Drilling - As Dr	6,459.3	6,091.1	7,092.5	7,056.5	197.386	CC, ES
UPRC H23-24 - Original Drilling - Original Drilling - As Dr	6,950.0	6,583.2	7,250.5	7,212.4	190.376	SF
UPRR 53 Pan Am B#1 (PA) - Original Drilling - Original D	6,491.4	6,402.4	7,584.8	7,441.9	53.079	CC
UPRR 53 Pan Am B#1 (PA) - Original Drilling - Original D	6,500.0	6,411.0	7,584.8	7,441.7	53.010	ES
UPRR 53 Pan Am B#1 (PA) - Original Drilling - Original D	7,050.0	6,875.5	7,755.9	7,603.2	50.790	SF
UPRR 53 Pan Am UT V#1 - Original Drilling - Original Dr	6,487.9	6,473.3	8,332.0	8,294.8	223.641	CC, 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 H36-773
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 H36-773	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						
UPRR 53 Pan Am UT V#1 - Original Drilling - Original Dr	6,850.0	6,654.5	8,439.7	8,401.4	220.524	SF

Noble Energy, Inc.
Anticollision Summary Report

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Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-773	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	6,477.1	6,348.4	7,132.9	7,096.0	193.168	CC, ES
Gurtler 24-09J - Original Drilling - Original Drilling - As Dr	6,850.0	6,709.8	7,236.4	7,197.8	187.693	SF
Gurtler 24-10J - Original Drilling - Original Drilling - As Dr	6,473.3	6,310.9	6,670.2	6,633.5	181.360	CC, ES
Gurtler 24-10J - Original Drilling - Original Drilling - As Dr	6,750.0	6,750.0	6,730.6	6,692.0	174.235	SF
Gurtler 24-11J - Original Drilling - Original Drilling - As Dr	6,485.3	6,454.2	6,272.8	6,235.5	168.507	CC, ES
Gurtler 24-11J - Original Drilling - Original Drilling - As Dr	7,100.0	7,100.0	6,575.5	6,535.5	164.658	SF
Gurtler 24-12J - Original Drilling - Original Drilling - As Dr	6,489.4	6,500.0	6,265.8	6,228.4	167.757	CC, ES
Gurtler 24-12J - Original Drilling - Original Drilling - As Dr	6,600.0	6,500.0	6,277.1	6,239.6	167.301	SF
Gurtler 24-12J - Original Drilling - ST01 - ST01 Original D	6,558.8	7,340.0	6,111.0	6,071.5	154.579	CC, ES
Gurtler 24-12J - Original Drilling - ST01 - ST01 Original D	6,700.0	7,340.0	6,129.6	6,089.8	154.126	SF
Gurtler 24-13J - Original Drilling - Original Drilling - As Dr	6,579.5	7,380.0	4,669.4	4,629.2	116.182	CC, ES
Gurtler 24-13J - Original Drilling - Original Drilling - As Dr	6,700.0	7,380.0	4,683.3	4,642.9	115.856	SF
Gurtler 24-15J - Original Drilling - Original Drilling - As Dr	6,481.4	6,402.8	5,386.7	5,349.6	145.268	CC, ES
Gurtler 24-15J - Original Drilling - Original Drilling - As Dr	6,700.0	6,719.5	5,423.1	5,384.7	141.095	SF
Gurtler 24-16J - Original Drilling - Original Drilling - As Dr	6,473.4	6,319.1	5,855.3	5,818.5	159.067	CC, ES
Gurtler 24-16J - Original Drilling - Original Drilling - As Dr	6,850.0	6,850.0	5,957.4	5,918.4	152.634	SF
Gurtler H24-14 - Original Drilling - Original Drilling - As D	6,479.9	6,397.7	4,919.5	4,882.4	132.802	CC, ES
Gurtler H24-14 - Original Drilling - Original Drilling - As D	6,750.0	6,642.1	4,980.5	4,942.3	130.318	SF
Gurtler H24-21 (PA) - Original Drilling - Original Drilling -	6,462.4	6,164.0	6,908.6	6,872.4	190.718	CC, ES
Gurtler H24-21 (PA) - Original Drilling - Original Drilling -	6,850.0	6,464.8	7,032.9	6,995.2	186.598	SF
Gurtler H24-23 - Original Drilling - Original Drilling - As D	6,480.2	6,388.7	6,264.0	6,226.9	169.132	CC, ES
Gurtler H24-23 - Original Drilling - Original Drilling - As D	6,850.0	6,786.1	6,366.2	6,327.4	164.168	SF
Gurtler H24-24 - Original Drilling - Original Drilling - As D	6,478.4	6,381.5	5,854.8	5,817.7	157.727	CC, ES
Gurtler H24-24 - Original Drilling - Original Drilling - As D	6,800.0	6,703.7	5,938.5	5,899.9	153.726	SF
Gurtler H24-99HZ - Wellbore #1 - Original Drilling	6,529.3	11,035.6	5,650.2	5,517.2	42.486	CC, ES
Gurtler H24-99HZ - Wellbore #1 - Original Drilling	6,600.0	11,037.3	5,654.9	5,521.6	42.440	SF
Gurtler H25-27 - Original Drilling - Original Drilling - As D	6,484.9	6,435.8	5,165.7	5,128.1	137.115	CC, ES
Gurtler H25-27 - Original Drilling - Original Drilling - As D	6,800.0	6,731.8	5,238.1	5,199.1	134.253	SF
Gurtler Russell L1 (PA) - Original Drilling - Original Drilling	6,487.9	6,483.8	5,362.9	5,325.5	143.679	CC, ES
Gurtler Russell L1 (PA) - Original Drilling - Original Drilling	7,200.0	6,948.0	5,753.1	5,705.9	121.778	SF
HSR Brutschy 04-24 - Original Drilling - Original Drilling -	6,469.8	6,212.8	8,736.4	8,700.1	240.376	CC, ES
HSR Brutschy 04-24 - Original Drilling - Original Drilling -	7,100.0	6,676.2	9,049.6	9,011.2	235.446	SF
HSR Epstein 05-24 - Original Drilling - Original Drilling - A	6,467.5	6,194.8	7,930.8	7,894.5	218.635	CC, ES
HSR Epstein 05-24 - Original Drilling - Original Drilling - A	6,850.0	6,800.0	8,047.5	8,008.7	207.527	SF
HSR Hoffman 03-24 - Original Drilling - Original Drilling -	6,493.0	6,587.6	8,865.7	8,824.6	215.391	CC
HSR Hoffman 03-24 - Original Drilling - Original Drilling -	6,500.0	6,594.6	8,865.8	8,824.5	214.962	ES
HSR Hoffman 03-24 - Original Drilling - Original Drilling -	7,150.0	7,113.8	9,198.0	9,151.1	196.045	SF
HSR Sarchet 02-24 - Original Drilling - Original Drilling - A	6,487.1	6,500.0	9,095.0	9,057.6	243.065	CC, ES
HSR Sarchet 02-24 - Original Drilling - Original Drilling - A	7,000.0	6,792.9	9,306.9	9,268.1	239.462	SF
HSR Sarchet 06-24 - Original Drilling - Original Drilling - A	6,457.2	6,070.7	7,501.0	7,465.1	209.125	CC, ES
HSR Sarchet 06-24 - Original Drilling - Original Drilling - A	7,050.0	6,827.4	7,777.7	7,738.7	199.515	SF
HSR Traurig 01-24 - Original Drilling - Original Drilling - A	6,489.0	6,489.0	9,587.1	9,549.7	256.523	CC, ES
HSR Traurig 01-24 - Original Drilling - Original Drilling - A	6,900.0	6,900.0	9,724.5	9,685.3	248.116	SF
Nopens D19-31 - Original Drilling - Original Drilling - As D	6,451.3	5,952.8	9,049.6	9,014.2	255.097	CC, ES
Nopens D19-31 - Original Drilling - Original Drilling - As D	7,000.0	6,636.3	9,266.8	9,228.4	241.786	SF
Nopens H24-08 - Original Drilling - Original Drilling - As D	6,455.2	6,034.7	8,304.8	8,269.1	232.066	CC, ES
Nopens H24-08 - Original Drilling - Original Drilling - As D	6,950.0	6,531.2	8,487.0	8,449.0	223.507	SF
Sarchet H24-22 - Original Drilling - Original Drilling - As D	6,461.9	6,134.8	7,678.6	7,642.5	212.499	CC, ES
Sarchet H24-22 - Original Drilling - Original Drilling - As D	6,800.0	6,411.8	7,771.8	7,734.3	207.292	SF
Weld County Lumber 01 - Original Drilling - Original Drilling	6,476.6	6,328.1	8,362.6	8,325.7	227.096	CC, ES
Weld County Lumber 01 - Original Drilling - Original Drilling	7,000.0	6,808.5	8,575.7	8,536.7	220.279	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 H36-773
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 H36-773	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 25						
Dechant 21-25 - Original Drilling - Original Drilling - As D	573.7	556.7	2,998.3	2,995.4	1,028.392	CC
Dechant 21-25 - Original Drilling - Original Drilling - As D	1,400.0	1,372.1	3,000.4	2,992.7	393.962	ES
Dechant 21-25 - Original Drilling - Original Drilling - As D	6,700.0	6,802.6	3,299.9	3,257.0	76.901	SF
Dechant D30-33D - Original Drilling - Original Drilling - As	100.0	51.7	3,037.3	3,037.1	10,000.000	CC, ES
Dechant D30-33D - Original Drilling - Original Drilling - As	9,800.0	9,800.0	5,165.6	5,106.6	87.555	SF
Dechant D31-30D - Original Drilling - Original Drilling - As	100.0	57.1	3,029.0	3,028.8	10,000.000	CC
Dechant D31-30D - Original Drilling - Original Drilling - As	200.0	150.8	3,029.4	3,028.7	4,456.571	ES
Dechant D31-30D - Original Drilling - Original Drilling - As	9,400.0	7,112.2	4,296.3	4,241.3	78.076	SF
Dechant H25-64-1HN - Original Drilling - Original Drilling	6,733.4	7,829.7	717.3	674.5	16.767	CC, ES
Dechant H25-64-1HN - Original Drilling - Original Drilling	6,800.0	7,827.3	724.2	680.3	16.512	SF
Dechant H25-65HN - Original Drilling - Original Drilling	6,627.5	7,776.0	1,580.7	1,538.0	37.021	CC, ES
Dechant H25-65HN - Original Drilling - Original Drilling	6,700.0	7,776.0	1,586.8	1,543.7	36.737	SF
HSR Cohn 03-25 - Original Drilling - Original Drilling - As	6,476.7	6,380.8	3,655.2	3,618.2	98.866	CC, ES
HSR Cohn 03-25 - Original Drilling - Original Drilling - As	6,700.0	6,618.9	3,697.2	3,659.1	97.087	SF
HSR Crowe 06-25 - Original Drilling - Original Drilling - A	6,480.8	6,414.9	2,359.9	2,322.8	63.554	CC, ES
HSR Crowe 06-25 - Original Drilling - Original Drilling - A	6,650.0	6,571.0	2,384.5	2,346.6	62.909	SF
HSR Dechant 04-25 - Original Drilling - Original Drilling -	1,543.3	1,537.5	2,701.6	2,693.0	316.595	CC, ES
HSR Dechant 04-25 - Original Drilling - Original Drilling -	6,700.0	7,090.7	3,749.2	3,709.8	95.171	SF
HSR Dechant 05-25 - Original Drilling - Original Drilling -	6,484.2	6,430.7	2,185.3	2,148.2	58.900	CC, ES
HSR Dechant 05-25 - Original Drilling - Original Drilling -	6,650.0	6,584.2	2,208.9	2,171.1	58.339	SF
KY Blue D30-32 - Original Drilling - Original Drilling - As D	6,443.7	6,280.9	4,130.2	4,093.5	112.491	CC
KY Blue D30-32 - Original Drilling - Original Drilling - As D	6,450.0	6,285.5	4,130.2	4,093.5	112.406	ES
KY Blue D30-32 - Original Drilling - Original Drilling - As D	6,900.0	6,734.3	4,198.0	4,159.4	108.557	SF
KY Blue H25-04J - Original Drilling - Original Drilling - As	4,956.0	4,883.4	2,999.8	2,980.1	152.317	CC
KY Blue H25-04J - Original Drilling - Original Drilling - As	5,400.0	5,320.6	3,000.8	2,979.2	139.139	ES
KY Blue H25-04J - Original Drilling - Original Drilling - As	7,050.0	6,869.5	3,037.7	3,010.5	111.540	SF
KY Blue H25-09 - Original Drilling - Original Drilling - As D	6,473.8	6,405.1	3,470.3	3,433.1	93.315	CC, ES
KY Blue H25-09 - Original Drilling - Original Drilling - As D	6,900.0	6,737.4	3,524.3	3,485.6	91.143	SF
KY Blue H25-10 - Original Drilling - Original Drilling - As D	6,460.5	6,346.7	2,227.3	2,190.3	60.170	CC, ES
KY Blue H25-10 - Original Drilling - Original Drilling - As D	6,750.0	6,652.3	2,266.0	2,227.6	59.016	SF
KY Blue H25-11 - Original Drilling - Original Drilling - As D	6,475.0	6,392.4	1,239.0	1,178.8	20.596	CC, ES
KY Blue H25-11 - Original Drilling - Original Drilling - As D	6,700.0	6,611.7	1,275.0	1,211.1	19.962	SF
KY Blue H25-12 - Original Drilling - Original Drilling - As D	6,507.6	6,491.9	1,290.4	1,252.9	34.418	CC, ES
KY Blue H25-12 - Original Drilling - Original Drilling - As D	6,600.0	6,581.8	1,296.3	1,258.4	34.178	SF
KY Blue H25-14 - Original Drilling - Original Drilling - As D	3,331.3	3,296.6	747.2	728.5	40.055	CC
KY Blue H25-14 - Original Drilling - Original Drilling - As D	3,600.0	3,564.5	748.0	727.8	37.047	ES
KY Blue H25-14 - Original Drilling - Original Drilling - As D	7,250.3	6,958.4	795.3	755.9	20.209	SF
KY Blue H25-15 - Original Drilling - Original Drilling - As D	868.8	826.8	1,790.4	1,785.9	395.850	CC
KY Blue H25-15 - Original Drilling - Original Drilling - As D	4,600.0	4,556.2	1,800.0	1,773.9	69.120	ES
KY Blue H25-15 - Original Drilling - Original Drilling - As D	7,150.0	6,911.1	1,853.4	1,814.2	47.288	SF
KY H25-24 - Original Drilling - Original Drilling - As Drilled	6,402.8	6,277.8	1,479.4	1,442.7	40.387	CC, ES
KY H25-24 - Original Drilling - Original Drilling - As Drilled	6,750.0	6,668.8	1,502.2	1,463.8	39.109	SF
Moore UPRC H25-01 - Original Drilling - Original Drilling	6,482.0	6,407.2	5,091.5	5,054.4	137.018	CC, ES
Moore UPRC H25-01 - Original Drilling - Original Drilling	6,800.0	6,675.8	5,156.3	5,117.8	134.207	SF
Moore UPRC H25-02 - Original Drilling - Original Drilling	6,473.8	6,356.2	4,163.7	4,126.7	112.684	CC, ES
Moore UPRC H25-02 - Original Drilling - Original Drilling	6,700.0	6,609.2	4,201.1	4,163.0	110.235	SF
UPRR 53 Pan Am T#2 - Original Drilling - Original Drilling	6,466.2	6,331.4	2,919.0	2,882.2	79.396	CC, ES
UPRR 53 Pan Am T#2 - Original Drilling - Original Drilling	6,650.0	6,493.8	2,948.1	2,910.5	78.436	SF
UPRR 53 Pan Am UT T#1 - Original Drilling - Original Dr	6,476.2	6,374.3	3,906.1	3,763.6	27.423	CC
UPRR 53 Pan Am UT T#1 - Original Drilling - Original Dr	6,500.0	6,398.0	3,906.4	3,763.5	27.326	ES
UPRR 53 Pan Am UT T#1 - Original Drilling - Original Dr	6,850.0	6,724.2	3,990.8	3,841.0	26.645	SF
Von Feldt 1-25B - Original Drilling - Original Drilling - As D	6,698.7	6,628.7	184.1	145.9	4.825	CC
Von Feldt 1-25B - Original Drilling - Original Drilling - As D	6,700.0	6,629.9	184.1	145.9	4.825	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 Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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						

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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						
Bullard 31-26 - Original Drilling - Original Drilling - As Dril	6,458.1	6,200.0	5,043.5	5,007.1	138.870	CC, ES
Bullard 31-26 - Original Drilling - Original Drilling - As Dril	6,850.0	6,616.4	5,138.8	5,100.6	134.655	SF
Bullard 32-26 - Original Drilling - Original Drilling - As Dril	6,490.5	6,436.0	3,796.5	3,759.3	102.034	CC
Bullard 32-26 - Original Drilling - Original Drilling - As Dril	6,500.0	6,446.1	3,796.6	3,759.3	101.896	ES
Bullard 32-26 - Original Drilling - Original Drilling - As Dril	6,800.0	6,732.0	3,842.2	3,803.6	99.725	SF
Bullard 41-26 - Original Drilling - Original Drilling - As Dril	6,426.3	6,034.0	4,044.7	4,009.1	113.611	CC, ES
Bullard 41-26 - Original Drilling - Original Drilling - As Dril	6,850.0	6,659.6	4,160.1	4,121.8	108.663	SF
Dechant H25-29D - Original Drilling - Original Drilling - As	6,481.9	6,900.0	4,391.7	4,333.4	75.257	CC, ES
Dechant H25-29D - Original Drilling - Original Drilling - As	6,600.0	7,027.2	4,403.5	4,344.7	74.933	SF
Dechant H25-33D - Original Drilling - Original Drilling - As	6,700.0	7,623.0	1,319.0	1,254.3	20.398	ES
Dechant H25-33D - Original Drilling - Original Drilling - As	6,702.0	7,623.0	1,319.0	1,254.3	20.399	CC
Dechant H25-33D - Original Drilling - Original Drilling - As	6,750.0	7,657.8	1,320.2	1,255.5	20.398	SF
Harsh H26-09D - Original Drilling - Original Drilling - As D	6,528.2	6,550.9	2,054.8	2,017.2	54.559	CC, ES
Harsh H26-09D - Original Drilling - Original Drilling - As D	6,750.0	6,762.6	2,076.6	2,038.0	53.790	SF
Harsh H26-10 - Original Drilling - Original Drilling - As Dr	6,488.9	6,424.9	3,254.6	3,217.4	87.454	CC
Harsh H26-10 - Original Drilling - Original Drilling - As Dr	6,500.0	6,436.4	3,254.6	3,217.4	87.317	ES
Harsh H26-10 - Original Drilling - Original Drilling - As Dr	6,850.0	6,780.9	3,293.3	3,254.6	85.009	SF
Harsh H26-15 - Original Drilling - Original Drilling - As Dr	7,156.3	7,065.5	3,069.5	3,029.6	76.845	CC
Harsh H26-15 - Original Drilling - Original Drilling - As Dr	7,200.0	7,082.3	3,069.9	3,029.5	76.135	ES
Harsh H26-15 - Original Drilling - Original Drilling - As Dr	8,200.0	7,133.9	3,254.7	3,211.0	74.427	SF
Harsh H26-16 - Original Drilling - Original Drilling - As Dr	7,171.3	6,998.5	2,005.0	1,965.5	50.762	CC, ES
Harsh H26-16 - Original Drilling - Original Drilling - As Dr	7,300.0	7,045.2	2,009.0	1,969.3	50.632	SF
Harsh H26-23D - Original Drilling - Original Drilling - As D	6,541.6	6,632.5	2,421.5	2,381.5	60.409	CC, ES
Harsh H26-23D - Original Drilling - Original Drilling - As D	6,950.0	6,995.5	2,452.9	2,411.9	59.959	SF
HSR Moser 04-26 - Original Drilling - Original Drilling - As	6,470.7	6,238.6	7,088.6	7,052.0	193.670	CC, ES
HSR Moser 04-26 - Original Drilling - Original Drilling - As	6,850.0	6,500.0	7,155.9	7,118.1	189.080	SF
HSR Moser 06-26 - Original Drilling - Original Drilling - As	6,516.4	6,526.5	4,803.2	4,765.6	127.762	CC, ES
HSR Moser 06-26 - Original Drilling - Original Drilling - As	6,850.0	6,728.4	4,849.8	4,811.3	125.773	SF
HSR Regalia 05-26 - Original Drilling - Original Drilling - A	6,502.8	6,450.9	6,031.9	5,994.5	161.529	CC, ES
HSR Regalia 05-26 - Original Drilling - Original Drilling - A	6,900.0	6,918.9	6,086.6	6,047.3	155.116	SF
HSR-Moser 03-26A - Original Drilling - Original Drilling - A	6,484.4	6,380.1	5,691.2	5,654.2	153.924	CC, ES
HSR-Moser 03-26A - Original Drilling - Original Drilling - A	6,700.0	6,500.0	5,718.4	5,680.8	151.884	SF
John 03-26 - Original Drilling - Original Drilling - As Drille	6,486.2	6,377.2	5,637.8	5,600.8	152.424	CC, ES
John 03-26 - Original Drilling - Original Drilling - As Drille	6,850.0	6,600.0	5,709.8	5,671.8	149.921	SF
Lamp H25-31 - Original Drilling - Original Drilling - As Dri	6,487.7	6,457.7	3,238.4	3,201.2	87.081	CC, ES
Lamp H25-31 - Original Drilling - Original Drilling - As Dri	6,700.0	6,629.3	3,274.4	3,236.4	86.045	SF
Lamp H26-01 - Original Drilling - Original Drilling - As Dri	1,432.5	1,444.7	3,822.0	3,814.0	480.447	CC, ES
Lamp H26-01 - Original Drilling - Original Drilling - As Dri	6,750.0	6,831.1	4,169.2	4,130.1	106.755	SF
Lamp H26-08 - Original Drilling - Original Drilling - As Dri	6,529.4	6,657.1	3,025.5	2,987.5	79.813	CC, ES
Lamp H26-08 - Original Drilling - Original Drilling - As Dri	6,700.0	6,827.0	3,044.9	3,006.2	78.711	SF
Lamp H26-22 - Original Drilling - Original Drilling - As Dri	6,485.9	6,547.5	2,984.0	2,937.4	63.999	CC, ES
Lamp H26-22 - Original Drilling - Original Drilling - As Dri	6,700.0	6,752.7	3,005.2	2,957.8	63.403	SF
Moser 05-26 - Original Drilling - Original Drilling - As Drill	6,539.4	6,585.9	6,267.0	6,229.1	165.613	CC
Moser 05-26 - Original Drilling - Original Drilling - As Drill	6,550.0	6,594.2	6,267.0	6,229.1	165.420	ES
Moser 05-26 - Original Drilling - Original Drilling - As Drill	10,400.0	7,005.1	8,155.1	8,103.4	158.004	SF
Moser H26-11 - Original Drilling - Original Drilling - As Dr	6,540.2	6,524.2	4,810.1	4,772.5	127.878	CC
Moser H26-11 - Original Drilling - Original Drilling - As Dr	6,550.0	6,530.4	4,810.1	4,772.5	127.755	ES
Moser H26-11 - Original Drilling - Original Drilling - As Dr	7,150.0	6,932.4	4,894.2	4,855.0	124.743	SF
Moser H26-12 - Wellbore #1 - Wellbore #1 - As Drilled	6,675.8	6,818.2	5,889.4	5,850.7	151.852	CC, ES
Moser H26-12 - Wellbore #1 - Wellbore #1 - As Drilled	10,900.0	7,180.0	7,623.7	7,567.4	135.606	SF
Moser H26-13 - Wellbore #1 - Wellbore #1 - As Drilled	7,279.7	7,279.7	5,820.2	5,779.7	143.621	CC
Moser H26-13 - Wellbore #1 - Wellbore #1 - As Drilled	7,300.0	7,300.0	5,820.2	5,779.6	143.350	ES
Moser H26-13 - Wellbore #1 - Wellbore #1 - As Drilled	11,500.0	7,211.7	7,191.9	7,129.9	115.971	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 H36-773
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 H36-773	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						
Moser H26-14 - Original Drilling - Original Drilling - As Dr	7,428.1	6,900.0	4,279.5	4,240.3	109.039	CC, ES
Moser H26-14 - Original Drilling - Original Drilling - As Dr	9,900.0	6,890.6	4,942.1	4,891.0	96.787	SF
Moser H26-18D - Original Drilling - Original Drilling - As D	0.0	0.0	4,439.1			
Moser H26-18D - Original Drilling - Original Drilling - As D	6,800.0	7,140.3	4,804.3	4,748.8	86.597	SF
Moser H26-24 - Original Drilling - Original Drilling - As Dr	6,428.4	6,428.4	4,025.6	3,988.5	108.387	CC, ES
Moser H26-24 - Original Drilling - Original Drilling - As Dr	7,150.0	7,054.3	4,064.6	4,025.0	102.471	SF
Moser H26-25 - Original Drilling - Original Drilling - As Dr	6,813.2	6,857.2	4,804.6	4,765.6	123.150	CC, ES
Moser H26-25 - Original Drilling - Original Drilling - As Dr	9,900.0	7,062.9	5,799.0	5,748.2	114.104	SF
Moser H26-27D - Original Drilling - Original Drilling - As D	0.0	14.7	4,462.8			
Moser H26-27D - Original Drilling - Original Drilling - As D	6,800.0	6,916.1	4,938.9	4,898.6	122.486	SF
Moser H26-28D - Original Drilling - Original Drilling - As D	0.0	15.9	4,455.9			
Moser H26-28D - Original Drilling - Original Drilling - As D	11,200.0	11,200.0	9,493.1	9,386.3	88.839	SF
Moser H26-29D - Original Drilling - Original Drilling - As D	0.0	19.5	4,449.1			
Moser H26-29D - Original Drilling - Original Drilling - As D	200.0	196.0	4,449.7	4,448.9	5,654.671	ES
Moser H26-29D - Original Drilling - Original Drilling - As D	8,100.0	8,100.0	7,132.9	7,053.3	89.589	SF
Moser, Wesley E. G. U. B1 (PA) - Original Drilling - Origin	6,964.8	6,848.7	5,431.5	5,279.3	35.684	CC
Moser, Wesley E. G. U. B1 (PA) - Original Drilling - Origin	7,050.0	6,901.5	5,432.0	5,278.8	35.444	ES
Moser, Wesley E. G. U. B1 (PA) - Original Drilling - Origin	7,350.0	7,000.1	5,444.7	5,289.4	35.066	SF
H Section 27						
HSR Moser 1-27 - Original Drilling - Original Drilling - As	6,483.8	6,316.4	7,972.7	7,935.8	216.402	CC, ES
HSR Moser 1-27 - Original Drilling - Original Drilling - As	9,900.0	9,900.0	9,794.8	9,736.0	166.367	SF
HSR Moser 16-27 - Original Drilling - Original Drilling - As	7,458.3	7,025.5	6,912.2	6,872.5	174.102	CC, ES
HSR Moser 16-27 - Original Drilling - Original Drilling - As	12,608.4	7,033.8	8,619.7	8,550.5	124.527	SF
Moser 09-27X (PA) - Original Drilling - Original Drilling - A	6,493.2	6,365.0	7,037.9	7,000.4	187.663	CC
Moser 09-27X (PA) - Original Drilling - Original Drilling - A	6,500.0	6,367.4	7,037.9	7,000.4	187.567	ES
Moser 09-27X (PA) - Original Drilling - Original Drilling - A	12,200.0	6,892.8	9,317.0	9,253.3	146.274	SF
H Section 34						
Moser H34-09 - Wellbore #1 - Wellbore #1 - As Drilled	11,279.1	7,058.2	6,883.8	6,817.5	103.914	CC
Moser H34-09 - Wellbore #1 - Wellbore #1 - As Drilled	11,300.0	7,058.3	6,883.8	6,817.4	103.615	ES
Moser H34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,608.4	7,065.5	7,010.8	6,933.0	90.177	SF
Moser H34-16 - Wellbore #1 - Wellbore #1 - As Drilled	12,526.8	6,970.2	6,857.3	6,779.9	88.549	CC
Moser H34-16 - Wellbore #1 - Wellbore #1 - As Drilled	12,608.4	6,971.5	6,857.6	6,779.4	87.682	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 H36-773
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 H36-773	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	12,063.0	7,001.7	2,209.2	2,135.9	30.149	CC
Cannon Farms 01-35C - Original Drilling - Original Drilling	12,100.0	7,000.8	2,209.5	2,135.9	30.013	ES
Cannon Farms 01-35C - Original Drilling - Original Drilling	12,500.0	7,009.1	2,252.0	2,175.4	29.398	SF
Cannon H35-03D - Original Drilling - Original Drilling - As	11,609.6	6,877.7	4,647.7	4,579.0	67.728	CC, ES
Cannon H35-03D - Original Drilling - Original Drilling - As	12,608.4	6,900.0	4,753.5	4,676.5	61.733	SF
Cannon H35-09 - Original Drilling - Original Drilling - As D	11,124.0	6,969.4	1,854.9	1,786.3	27.019	CC, ES
Cannon H35-09 - Original Drilling - Original Drilling - As D	11,400.0	6,963.5	1,875.3	1,804.6	26.512	SF
Cannon H35-10 - Original Drilling - Original Drilling - As D	11,266.7	7,061.5	3,092.1	3,026.0	46.753	CC
Cannon H35-10 - Original Drilling - Original Drilling - As D	11,300.0	7,061.6	3,092.3	3,025.9	46.541	ES
Cannon H35-10 - Original Drilling - Original Drilling - As D	12,100.0	7,064.2	3,202.5	3,130.0	44.218	SF
Cannon H35-11 - Original Drilling - Original Drilling - As D	11,177.9	6,912.5	4,163.2	4,098.3	64.212	CC
Cannon H35-11 - Original Drilling - Original Drilling - As D	11,200.0	6,912.7	4,163.2	4,098.2	64.013	ES
Cannon H35-11 - Original Drilling - Original Drilling - As D	12,608.4	6,927.1	4,401.9	4,326.2	58.194	SF
Cannon H35-12 - Original Drilling - Original Drilling - As D	11,323.0	7,050.4	5,626.5	5,559.8	84.459	CC
Cannon H35-12 - Original Drilling - Original Drilling - As D	11,400.0	7,050.9	5,627.0	5,559.7	83.583	ES
Cannon H35-12 - Original Drilling - Original Drilling - As D	12,608.4	7,059.7	5,771.2	5,693.8	74.558	SF
Cannon H35-13 - Wellbore #1 - Wellbore #1 - As Drilled	12,514.3	7,066.0	5,655.4	5,577.7	72.819	CC
Cannon H35-13 - Wellbore #1 - Wellbore #1 - As Drilled	12,608.4	7,063.7	5,656.0	5,577.4	72.018	ES, SF
Cannon H35-14 - Original Drilling - Original Drilling - As D	12,510.6	7,024.2	4,261.8	4,177.3	50.443	CC, ES
Cannon H35-14 - Original Drilling - Original Drilling - As D	12,608.4	7,023.6	4,262.7	4,177.4	49.924	SF
Cannon H35-15 (PA) - Original Drilling - Original Drilling -	12,513.3	7,014.0	3,044.8	2,851.4	15.742	CC, ES
Cannon H35-15 (PA) - Original Drilling - Original Drilling -	12,608.4	7,014.0	3,046.2	2,851.9	15.677	SF
Cannon H35-20 - Original Drilling - Original Drilling - As D	10,703.4	6,874.9	5,040.5	4,980.0	83.335	CC, ES
Cannon H35-20 - Original Drilling - Original Drilling - As D	12,608.4	6,900.0	5,388.3	5,313.2	71.753	SF
Cannon H35-21 - Original Drilling - Original Drilling - As D	10,748.5	7,055.3	3,621.2	3,559.7	58.911	CC
Cannon H35-21 - Original Drilling - Original Drilling - As D	10,800.0	7,055.4	3,621.5	3,559.6	58.478	ES
Cannon H35-21 - Original Drilling - Original Drilling - As D	11,900.0	7,057.4	3,799.8	3,729.7	54.177	SF
Cannon H35-22 - Original Drilling - Original Drilling - As D	10,638.8	7,036.2	2,692.0	2,631.6	44.556	CC, ES
Cannon H35-22 - Original Drilling - Original Drilling - As D	12,300.0	12,300.0	3,163.2	3,075.9	36.257	SF
Cannon H35-24 - Original Drilling - Original Drilling - As D	11,938.6	6,862.1	3,789.3	3,717.7	52.933	CC
Cannon H35-24 - Original Drilling - Original Drilling - As D	12,000.0	6,862.8	3,789.8	3,717.7	52.519	ES
Cannon H35-24 - Original Drilling - Original Drilling - As D	12,608.4	6,869.6	3,847.9	3,770.7	49.836	SF
Cannon X02-27 - Original Drilling - Original Drilling - As D	12,608.4	7,014.5	2,637.6	2,559.8	33.920	CC, ES, SF
Cannon X02-28 - Original Drilling - Original Drilling - As D	12,608.4	6,942.8	3,804.0	3,726.0	48.751	CC, ES, SF
Cannon X02-29 - Original Drilling - Original Drilling - As D	12,608.4	7,165.9	5,130.1	5,051.1	64.869	CC, ES, SF
Foster 18-35 - Original Drilling - Original Drilling - As Drill	9,045.3	6,921.6	5,215.0	5,168.0	110.978	CC
Foster 18-35 - Original Drilling - Original Drilling - As Drill	9,100.0	6,922.0	5,215.2	5,167.8	110.039	ES
Foster 18-35 - Original Drilling - Original Drilling - As Drill	11,800.0	6,937.8	5,897.8	5,831.5	89.030	SF
Foster UPRR 31-35 #1 (PA) - Original Drilling - Original D	8,410.1	7,026.0	3,103.3	2,944.3	19.509	CC, ES
Foster UPRR 31-35 #1 (PA) - Original Drilling - Original D	8,800.0	7,026.0	3,127.7	2,966.3	19.369	SF
Foster UPRR 32-35 - Original Drilling - Original Drilling -	9,746.9	7,032.2	3,198.7	3,145.9	60.575	CC
Foster UPRR 32-35 - Original Drilling - Original Drilling -	9,800.0	7,032.4	3,199.2	3,145.9	60.081	ES
Foster UPRR 32-35 - Original Drilling - Original Drilling -	10,800.0	7,036.1	3,367.6	3,307.1	55.650	SF
Foster UPRR 41-35 - Original Drilling - Original Drilling -	8,594.9	7,016.3	1,769.9	1,715.9	32.786	CC
Foster UPRR 41-35 - Original Drilling - Original Drilling -	8,600.0	7,016.3	1,769.9	1,715.9	32.766	ES
Foster UPRR 41-35 - Original Drilling - Original Drilling -	8,900.0	7,018.0	1,796.0	1,740.1	32.101	SF
Foster UPRR 42-35 #2 - Original Drilling - Original Drilling	9,690.4	7,074.0	1,784.8	1,732.3	34.013	CC
Foster UPRR 42-35 #2 - Original Drilling - Original Drilling	9,700.0	7,074.2	1,784.8	1,732.2	33.961	ES
Foster UPRR 42-35 #2 - Original Drilling - Original Drilling	10,100.0	7,083.9	1,831.1	1,775.7	33.046	SF
HSR Foster 03-35 - Original Drilling - Original Drilling - A	8,657.4	7,068.6	4,337.6	4,292.8	96.828	CC
HSR Foster 03-35 - Original Drilling - Original Drilling - A	8,700.0	7,067.4	4,337.8	4,292.8	96.250	ES
HSR Foster 03-35 - Original Drilling - Original Drilling - A	12,400.0	12,400.0	5,728.0	5,643.4	67.725	SF
HSR Foster 04-35 - Wellbore #1 - Wellbore #1 - As Drille	8,402.6	6,758.7	6,010.1	5,967.9	142.436	CC, 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 H36-773
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 H36-773	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	12,200.0	6,753.4	7,109.3	7,042.1	105.765	SF
HSR Foster 05-35 - Wellbore #1 - Wellbore #1 - As Drille	9,985.0	6,715.0	5,758.3	5,704.6	107.247	CC
HSR Foster 05-35 - Wellbore #1 - Wellbore #1 - As Drille	10,000.0	6,715.1	5,758.3	5,704.5	106.994	ES
HSR Foster 05-35 - Wellbore #1 - Wellbore #1 - As Drille	12,608.4	6,722.1	6,327.5	6,254.2	86.342	SF
HSR Foster 06-35 - Original Drilling - Original Drilling - A	9,841.7	7,011.5	4,396.3	4,342.8	82.165	CC
HSR Foster 06-35 - Original Drilling - Original Drilling - A	9,900.0	7,010.9	4,396.7	4,342.7	81.431	ES
HSR Foster 06-35 - Original Drilling - Original Drilling - A	11,700.0	7,008.5	4,772.8	4,705.8	71.197	SF
UPRR 53 Pan Am Unit P1 - Original Drilling - Original Dri	9,195.5	7,012.2	2,309.5	2,261.2	47.742	CC
UPRR 53 Pan Am Unit P1 - Original Drilling - Original Dri	9,200.0	7,012.2	2,309.5	2,261.1	47.709	ES
UPRR 53 Pan Am Unit P1 - Original Drilling - Original Dri	9,800.0	7,009.7	2,387.3	2,334.7	45.367	SF
UPRR 53 Pan Am UT P2 - Original Drilling - Original Drill	8,891.3	6,853.8	4,796.5	4,750.9	105.158	CC
UPRR 53 Pan Am UT P2 - Original Drilling - Original Drill	8,900.0	6,853.8	4,796.5	4,750.8	105.018	ES
UPRR 53 Pan Am UT P2 - Original Drilling - Original Drill	11,400.0	6,856.1	5,412.9	5,350.1	86.177	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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						
Dechant 07-36 - Original Drilling - Original Drilling - As D	9,984.7	6,950.1	1,901.5	1,847.0	34.908	CC
Dechant 07-36 - Original Drilling - Original Drilling - As D	10,000.0	6,950.1	1,901.6	1,847.0	34.830	ES
Dechant 07-36 - Original Drilling - Original Drilling - As D	10,400.0	6,952.0	1,946.3	1,889.0	33.945	SF
Dechant 13N-1HZ - Original Drilling - Original Drilling - A	12,608.4	6,718.9	800.8	734.2	12.022	CC, ES, SF
Dechant 14C-1HZ - Original Drilling - Original Drilling - A	12,608.4	6,750.0	981.5	908.0	13.369	CC, ES, SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	12,437.5	6,984.6	1,957.8	1,863.3	20.713	CC, ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	12,608.4	6,985.3	1,965.4	1,869.5	20.494	SF
Dechant 15C-1HZ - Original Drilling - Original Drilling - A	904.5	865.5	1,805.8	1,801.0	375.386	CC
Dechant 15C-1HZ - Original Drilling - Original Drilling - A	1,000.0	938.2	1,806.2	1,800.9	341.937	ES
Dechant 15C-1HZ - Original Drilling - Original Drilling - A	12,608.4	11,452.2	2,113.3	1,973.6	15.124	SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	10,300.8	7,105.4	2,599.3	2,539.5	43.503	CC, ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	11,200.0	7,105.8	2,750.4	2,681.6	39.984	SF
Dechant 35N-E1HZ - Original Drilling - Original Drilling -	12,608.4	6,660.5	799.7	735.1	12.367	CC, ES, SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	12,608.4	6,711.0	538.6	491.6	11.460	CC, ES, SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	12,608.4	6,673.9	1,236.0	1,161.5	16.604	CC, ES, SF
Dechant 37N-E1HZ - Original Drilling - Original Drilling -	12,608.4	6,366.1	3,068.0	2,990.7	39.648	CC, ES, SF
Dechant 37N-W1HZ - Original Drilling - Original Drilling -	12,608.4	6,575.8	2,490.5	2,413.5	32.322	CC, ES, SF
Dechant State 16C-1HZ - Original Drilling - Original Drilling	7,994.1	6,995.0	3,207.9	3,166.8	77.955	CC
Dechant State 16C-1HZ - Original Drilling - Original Drilling	8,700.0	7,707.5	3,211.0	3,162.3	65.945	ES
Dechant State 16C-1HZ - Original Drilling - Original Drilling	12,608.4	11,825.1	3,369.9	3,226.4	23.474	SF
Dechant State 36N-E1HZ - Original Drilling - Original Drilling	8,360.9	7,061.8	1,759.0	1,715.3	40.223	CC
Dechant State 36N-E1HZ - Original Drilling - Original Drilling	12,608.4	11,279.4	1,834.4	1,695.1	13.165	ES, SF
Dechant State 37N-E36HZ - Original Drilling - Original Drilling	8,297.7	7,127.1	2,982.0	2,938.7	68.908	CC
Dechant State 37N-E36HZ - Original Drilling - Original Drilling	12,608.4	11,388.7	3,051.5	2,912.3	21.925	ES, SF
Dechant State 37N-W36HZ - Original Drilling - Original Drilling	906.7	866.7	1,825.3	1,820.5	378.749	CC
Dechant State 37N-W36HZ - Original Drilling - Original Drilling	1,000.0	938.6	1,825.7	1,820.4	345.498	ES
Dechant State 37N-W36HZ - Original Drilling - Original Drilling	12,608.4	11,453.5	2,454.8	2,314.2	17.470	SF
Dechant State 38N-1HZ - Original Drilling - Original Drilling	902.5	859.5	3,567.6	3,562.8	745.718	CC
Dechant State 38N-1HZ - Original Drilling - Original Drilling	1,000.0	925.6	3,567.9	3,562.6	681.148	ES
Dechant State 38N-1HZ - Original Drilling - Original Drilling	12,608.4	11,204.2	3,759.5	3,621.7	27.267	SF
Dechant State H36-11D - Original Drilling - Original Drilling	11,204.7	6,976.3	767.7	702.4	11.759	CC, ES
Dechant State H36-11D - Original Drilling - Original Drilling	11,300.0	6,974.4	773.6	707.8	11.754	SF
Dechant State H36-18D - Original Drilling - Original Drilling	9,140.9	7,182.5	1,279.8	1,230.6	26.013	CC, ES
Dechant State H36-18D - Original Drilling - Original Drilling	9,500.0	7,196.6	1,329.1	1,276.2	25.142	SF
Dechant State H36-19 - Original Drilling - Original Drilling	8,831.0	6,980.7	126.8	81.2	2.780	CC, ES, SF
Dechant State H36-20D - Original Drilling - Original Drilling	10,600.0	7,118.7	125.4	64.7	2.065	SF
Dechant State H36-20D - Original Drilling - Original Drilling	10,608.0	7,118.9	125.1	64.6	2.066	CC, ES
Dechant State H36-21D - Original Drilling - Original Drilling	10,554.0	7,074.4	1,325.5	1,264.7	21.768	CC, ES
Dechant State H36-21D - Original Drilling - Original Drilling	10,700.0	7,074.1	1,333.6	1,272.0	21.648	SF
Dechant State H36-24 - Original Drilling - Original Drilling	11,760.7	7,165.2	1,426.2	1,354.1	19.784	CC, ES
Dechant State H36-24 - Original Drilling - Original Drilling	12,000.0	7,162.9	1,446.1	1,372.2	19.557	SF
Dechant State H36-31D - Original Drilling - Original Drilling	9,208.9	7,159.3	1,128.7	1,079.6	22.995	CC, ES
Dechant State H36-31D - Original Drilling - Original Drilling	9,500.0	7,161.1	1,165.6	1,113.4	22.333	SF
Dechant State H36-32D - Original Drilling - Original Drilling	10,461.0	7,065.1	1,112.7	1,053.0	18.629	CC, ES
Dechant State H36-32D - Original Drilling - Original Drilling	10,600.0	7,068.9	1,121.4	1,060.9	18.531	SF
Dechant State H36-33 - Original Drilling - Original Drilling	11,675.9	7,138.2	1,034.5	963.0	14.479	CC, ES
Dechant State H36-33 - Original Drilling - Original Drilling	11,800.0	7,137.4	1,041.9	969.4	14.377	SF
HSR Dechant State 02-36 - Original Drilling - Original Drilling	8,234.7	6,947.3	1,805.6	1,763.7	43.071	CC, ES
HSR Dechant State 02-36 - Original Drilling - Original Drilling	8,600.0	6,954.0	1,842.2	1,798.4	42.043	SF
HSR Dechant/State 07-36 (PA) - Original Drilling - Original Drilling	9,409.1	6,979.0	2,424.7	2,259.4	14.670	CC, ES
HSR Dechant/State 07-36 (PA) - Original Drilling - Original Drilling	9,700.0	6,979.0	2,442.0	2,274.6	14.586	SF
Spike State GWS H36-03 - Original Drilling - Original Drilling	8,406.9	6,988.5	889.7	846.7	20.679	CC, ES
Spike State GWS H36-03 - Original Drilling - Original Drilling	8,500.0	6,993.6	894.5	851.0	20.560	SF

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Noble Energy, Inc.
Anticollision Summary Report

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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 H36-773	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

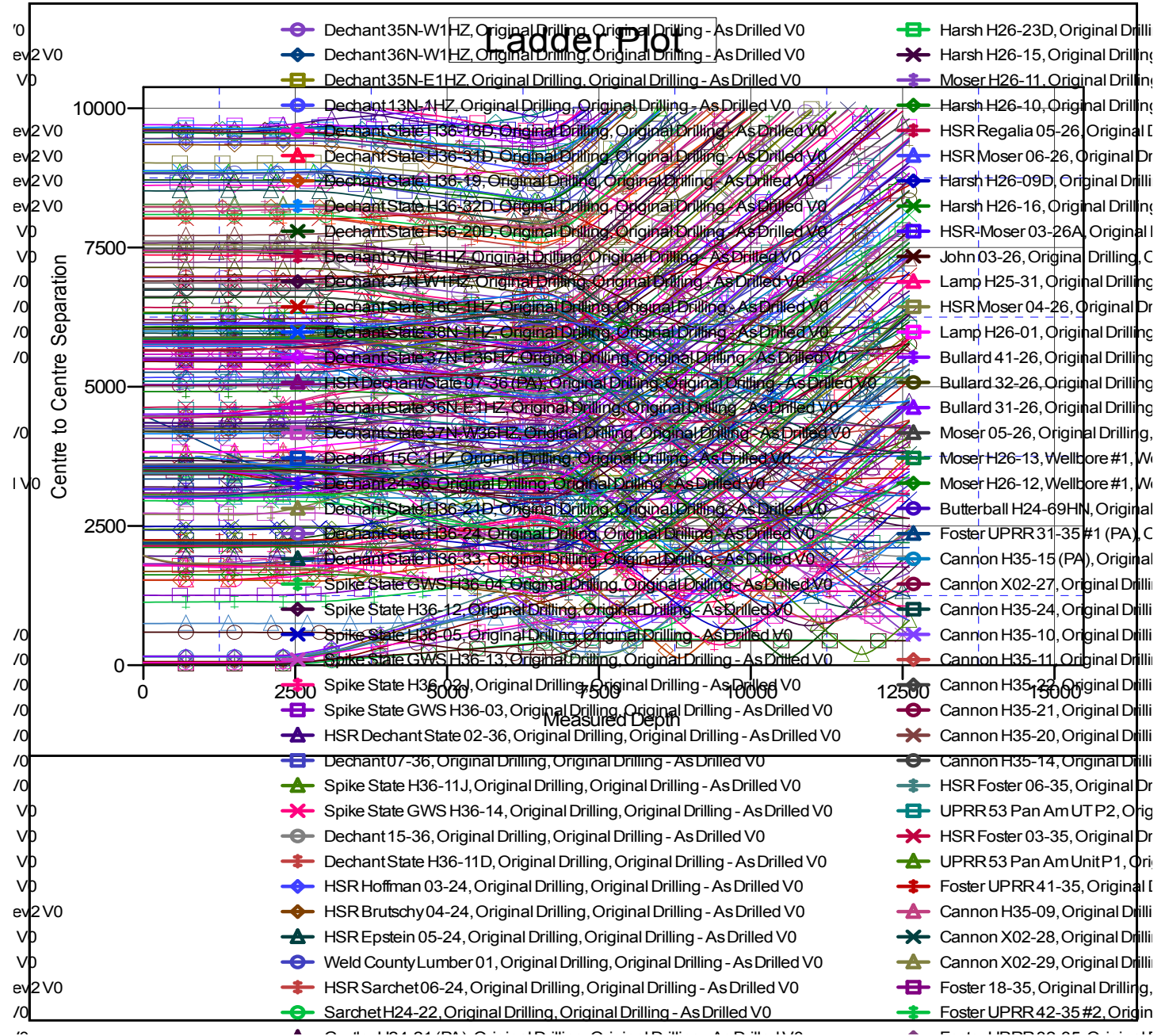
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 36						
Spike State GWS H36-04 - Original Drilling - Original Dri	8,286.8	6,978.1	615.8	565.3	12.189	CC, ES
Spike State GWS H36-04 - Original Drilling - Original Dri	8,300.0	6,978.0	615.9	565.4	12.175	SF
Spike State GWS H36-13 - Original Drilling - Original Dri	12,500.9	7,162.7	543.2	466.2	7.051	CC, ES, SF
Spike State GWS H36-14 - Original Drilling - Original Dri	12,553.3	6,985.5	1,062.6	984.8	13.663	CC, ES
Spike State GWS H36-14 - Original Drilling - Original Dri	12,608.4	6,982.6	1,064.1	986.0	13.612	SF
Spike State H36-02J - Original Drilling - Original Drilling -	9,484.5	6,982.0	365.4	281.3	4.347	CC, ES
Spike State H36-02J - Original Drilling - Original Drilling -	9,500.0	6,982.3	365.7	281.6	4.345	SF
Spike State H36-05 - Original Drilling - Original Drilling - A	9,688.9	7,023.7	636.2	583.9	12.164	CC
Spike State H36-05 - Original Drilling - Original Drilling - A	9,700.0	7,023.8	636.3	583.9	12.143	ES, SF
Spike State H36-11J - Original Drilling - Original Drilling -	11,825.4	6,995.6	193.8	122.8	2.729	CC, ES, SF
Spike State H36-12 - Original Drilling - Original Drilling - A	10,959.9	7,000.2	712.0	648.8	11.271	CC, ES
Spike State H36-12 - Original Drilling - Original Drilling - A	11,000.0	6,999.9	713.1	649.6	11.229	SF

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Reference Site:	DP 408	MD Reference:	WELL @ 4847.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Emmy State H36-773	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 H36-773
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.57°



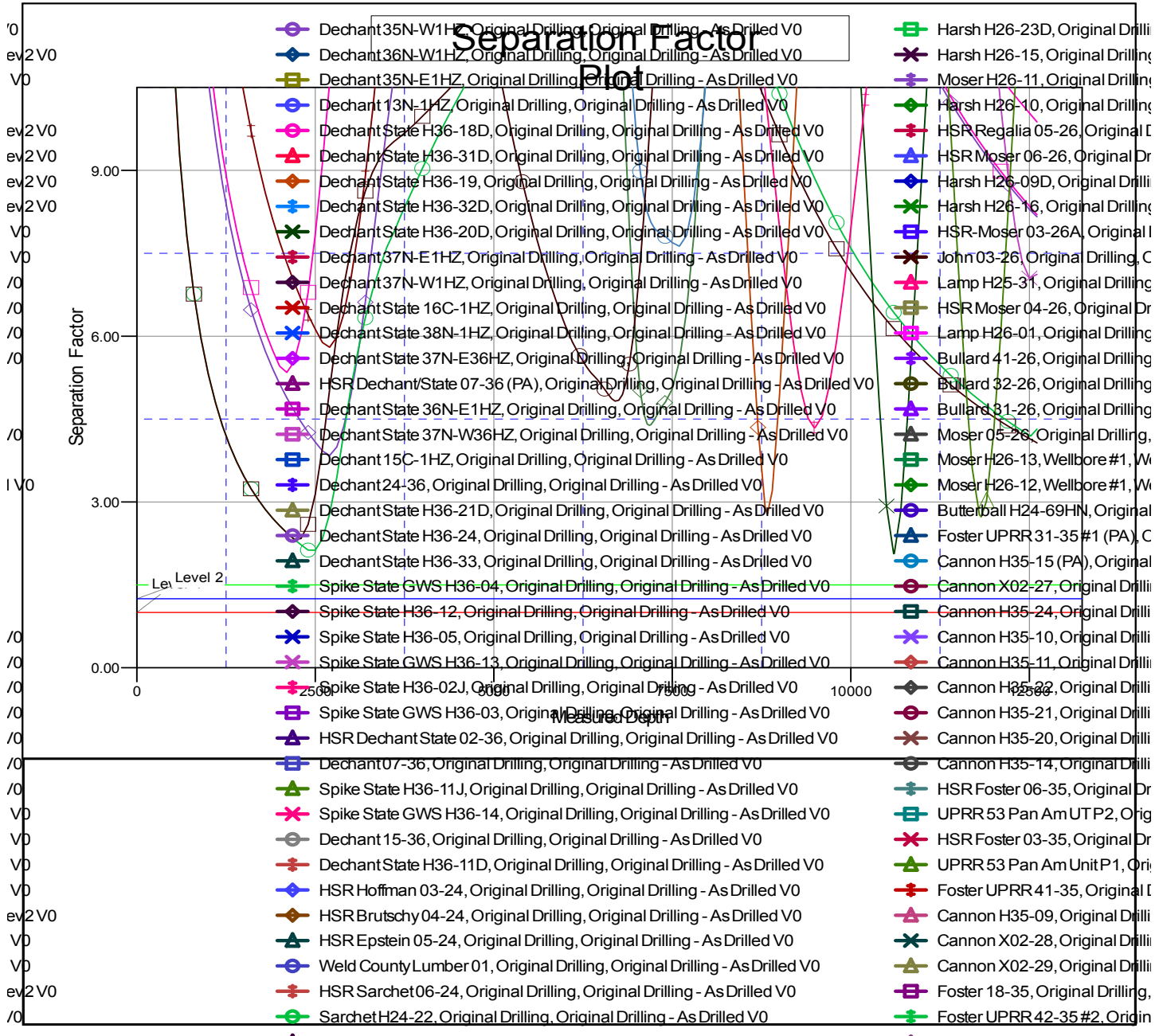
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region Drilling - Sandbox	Local Co-ordinate Reference:	Well Emmy State H36-773
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 H36-773	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 H36-773
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