

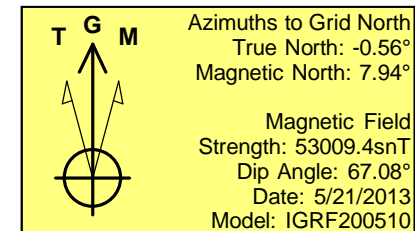
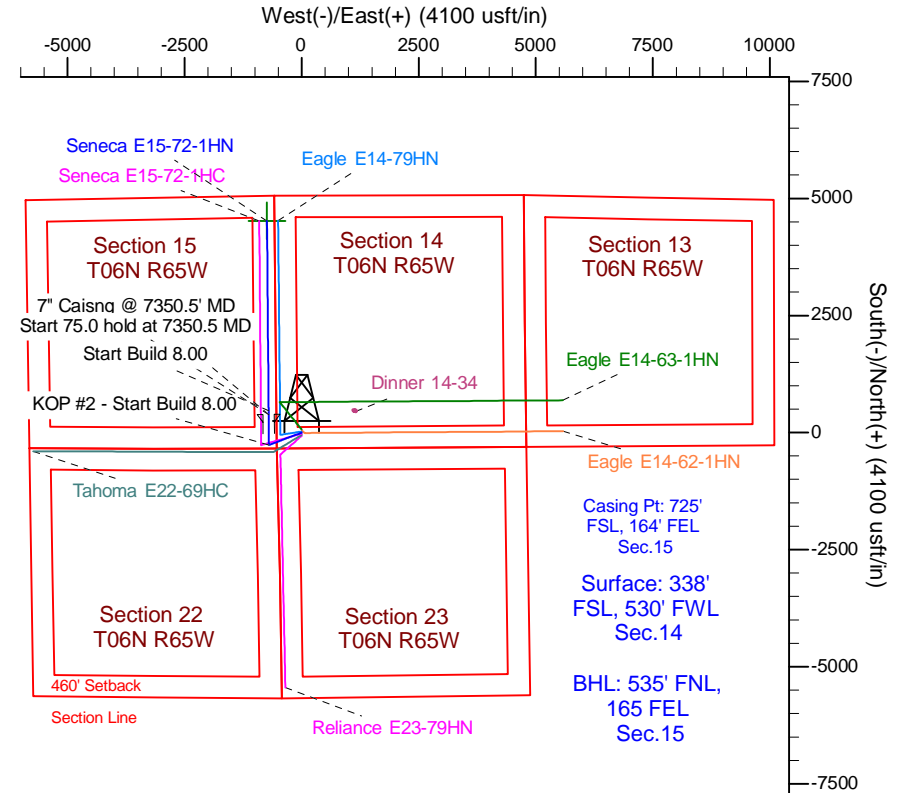
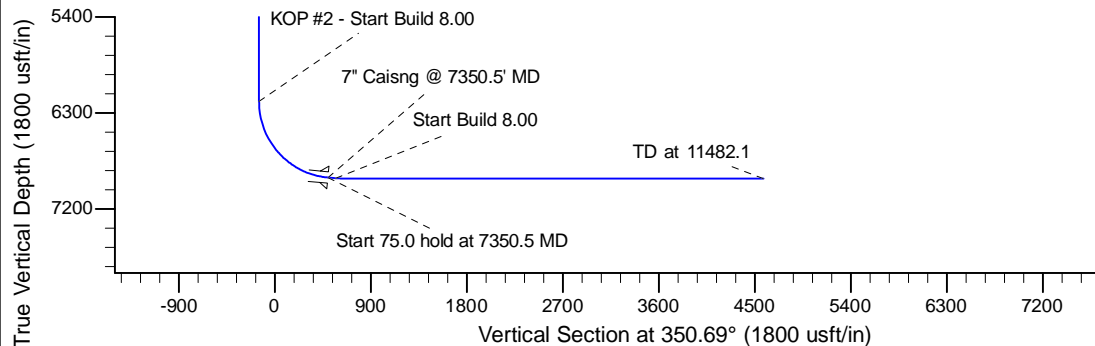
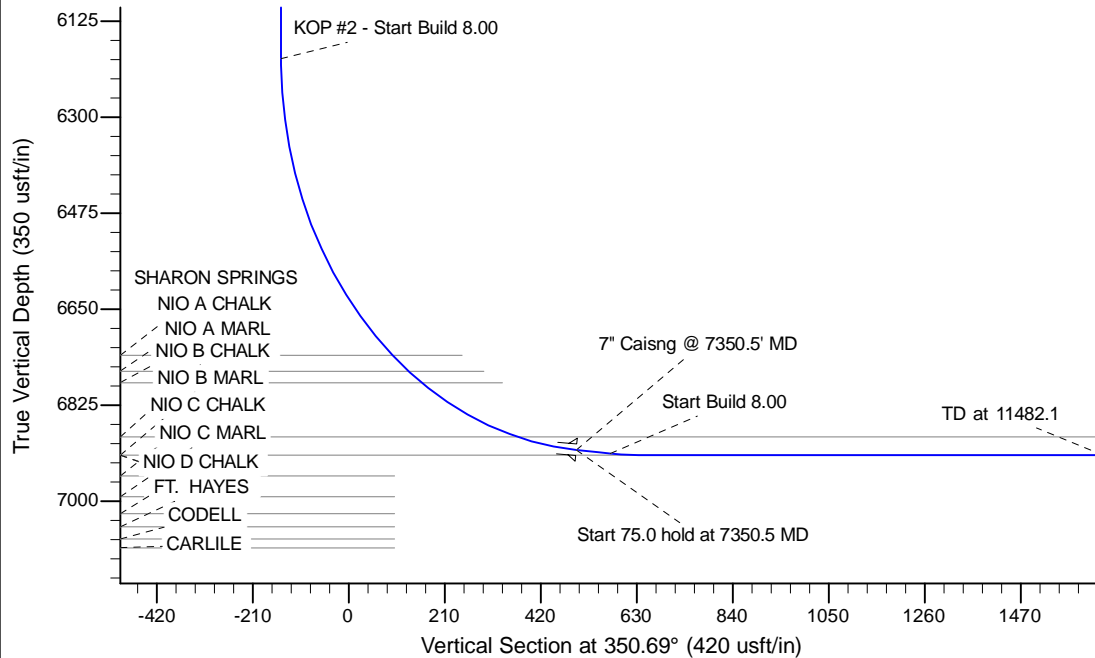
Project: Wattenberg Field
Site: E (Sec.14-T06N-R65W) Weld County, CO
Well: Seneca E15-72-1HN
Wellbore: Original Drilling
Design: APD - Rev 1

Northern Region Drilling - Working

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	1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	
3	2600.2	16.00	249.26	2589.8	-39.3	-103.8	2.00	249.26	-22.0	
4	4509.5	16.00	249.26	4425.2	-225.7	-596.2	0.00	0.00	-126.3	
5	5309.7	0.00	0.00	5215.0	-265.0	-700.0	2.00	180.00	-148.2	
6	6288.0	0.00	0.00	6193.3	-265.0	-700.0	0.00	0.00	-148.2	
7	7350.5	85.00	359.51	6906.7	388.8	-705.6	8.00	359.51	497.8	
8	7425.5	85.00	359.51	6913.3	463.5	-706.3	0.00	0.00	571.6	
9	7488.0	90.00	359.51	6916.0	525.9	-706.8	8.00	0.00	633.3	
10	11482.1	90.00	359.51	6916.0	4519.9	-741.2	0.00	0.00	4580.3	Seneca E15-72-1HN BHL 535'FNL, 165'FEL



WELL DETAILS: Seneca E15-72-1HN

Ground Level: 4737.0			
North	East	Latitude	Longitude
0.0	0.0	1418771.10	3239745.29
		40.479730	-104.638160

Plan: APD - Rev 1 (Seneca E15-72-1HN/Original Drilling)

Created By: Shailey Jewell	Date: 13:31, October 14 2013
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

Northern Region Drilling - Working

Wattenberg Field

E (06N-65W)

Seneca E15-72-1HN

Original Drilling

Plan: APD - Rev 1

Standard Planning Report

14 October, 2013

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Project	Wattenberg Field, Weld County CO		
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		E (06N-65W)			
Site Position:		Northing:	1,417,105.06 usft	Latitude:	40.475150
From:	Lat/Long	Easting:	3,240,006.32 usft	Longitude:	-104.637280
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.56 °

Well	Seneca E15-72-1HN					
Well Position	+N/-S	1,666.1 usft	Northing:	1,418,771.11 usft	Latitude:	40.479730
	+E/-W	-261.0 usft	Easting:	3,239,745.30 usft	Longitude:	-104.638160
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	4,737.0 usft

Wellbore	Original Drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	5/21/2013	8.49	67.08	53,009

Design	APD - Rev 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	350.69

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,600.2	16.00	249.26	2,589.8	-39.3	-103.8	2.00	2.00	0.00	249.26	
4,509.5	16.00	249.26	4,425.2	-225.7	-596.2	0.00	0.00	0.00	0.00	
5,309.7	0.00	0.00	5,215.0	-265.0	-700.0	2.00	-2.00	0.00	180.00	
6,288.0	0.00	0.00	6,193.3	-265.0	-700.0	0.00	0.00	0.00	0.00	
7,350.5	85.00	359.51	6,906.7	388.8	-705.6	8.00	8.00	0.00	359.51	
7,425.5	85.00	359.51	6,913.3	463.5	-706.3	0.00	0.00	0.00	0.00	
7,488.0	90.00	359.51	6,916.0	525.9	-706.8	8.00	8.00	0.00	0.00	
11,482.1	90.00	359.51	6,916.0	4,519.9	-741.2	0.00	0.00	0.00	0.00	Seneca E15-72-1HN

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	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
50.0	0.00	0.00	50.0	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
150.0	0.00	0.00	150.0	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
250.0	0.00	0.00	250.0	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
350.0	0.00	0.00	350.0	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
450.0	0.00	0.00	450.0	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
550.0	0.00	0.00	550.0	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
650.0	0.00	0.00	650.0	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
750.0	0.00	0.00	750.0	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
850.0	0.00	0.00	850.0	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
950.0	0.00	0.00	950.0	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
1,002.0	0.00	0.00	1,002.0	0.0	0.0	0.0	0.00	0.00	0.00
PIERRE									
1,050.0	0.00	0.00	1,050.0	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
1,150.0	0.00	0.00	1,150.0	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
1,250.0	0.00	0.00	1,250.0	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
1,350.0	0.00	0.00	1,350.0	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
1,450.0	0.00	0.00	1,450.0	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
1,550.0	0.00	0.00	1,550.0	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
1,650.0	0.00	0.00	1,650.0	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
1,750.0	0.00	0.00	1,750.0	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
KOP - Start Build 2.00									
1,850.0	1.00	249.26	1,850.0	-0.2	-0.4	-0.1	2.00	2.00	0.00
1,900.0	2.00	249.26	1,900.0	-0.6	-1.6	-0.3	2.00	2.00	0.00
1,950.0	3.00	249.26	1,949.9	-1.4	-3.7	-0.8	2.00	2.00	0.00
2,000.0	4.00	249.26	1,999.8	-2.5	-6.5	-1.4	2.00	2.00	0.00
2,050.0	5.00	249.26	2,049.7	-3.9	-10.2	-2.2	2.00	2.00	0.00
2,100.0	6.00	249.26	2,099.5	-5.6	-14.7	-3.1	2.00	2.00	0.00
2,150.0	7.00	249.26	2,149.1	-7.6	-20.0	-4.2	2.00	2.00	0.00
2,200.0	8.00	249.26	2,198.7	-9.9	-26.1	-5.5	2.00	2.00	0.00
2,250.0	9.00	249.26	2,248.2	-12.5	-33.0	-7.0	2.00	2.00	0.00
2,300.0	10.00	249.26	2,297.5	-15.4	-40.7	-8.6	2.00	2.00	0.00
2,350.0	11.00	249.26	2,346.6	-18.6	-49.2	-10.4	2.00	2.00	0.00
2,400.0	12.00	249.26	2,395.6	-22.2	-58.5	-12.4	2.00	2.00	0.00
2,450.0	13.00	249.26	2,444.4	-26.0	-68.7	-14.5	2.00	2.00	0.00
2,500.0	14.00	249.26	2,493.1	-30.1	-79.6	-16.9	2.00	2.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,550.0	15.00	249.26	2,541.5	-34.6	-91.3	-19.3	2.00	2.00	0.00
2,600.0	16.00	249.26	2,589.6	-39.3	-103.8	-22.0	2.00	2.00	0.00
2,600.2	16.00	249.26	2,589.8	-39.3	-103.8	-22.0	2.00	2.00	0.00
2,650.0	16.00	249.26	2,637.7	-44.2	-116.7	-24.7	0.00	0.00	0.00
2,700.0	16.00	249.26	2,685.8	-49.1	-129.6	-27.4	0.00	0.00	0.00
2,750.0	16.00	249.26	2,733.8	-53.9	-142.5	-30.2	0.00	0.00	0.00
2,800.0	16.00	249.26	2,781.9	-58.8	-155.4	-32.9	0.00	0.00	0.00
2,850.0	16.00	249.26	2,830.0	-63.7	-168.3	-35.6	0.00	0.00	0.00
2,900.0	16.00	249.26	2,878.0	-68.6	-181.1	-38.4	0.00	0.00	0.00
2,950.0	16.00	249.26	2,926.1	-73.5	-194.0	-41.1	0.00	0.00	0.00
3,000.0	16.00	249.26	2,974.1	-78.3	-206.9	-43.8	0.00	0.00	0.00
3,050.0	16.00	249.26	3,022.2	-83.2	-219.8	-46.6	0.00	0.00	0.00
3,100.0	16.00	249.26	3,070.3	-88.1	-232.7	-49.3	0.00	0.00	0.00
3,150.0	16.00	249.26	3,118.3	-93.0	-245.6	-52.0	0.00	0.00	0.00
3,200.0	16.00	249.26	3,166.4	-97.9	-258.5	-54.7	0.00	0.00	0.00
3,250.0	16.00	249.26	3,214.4	-102.7	-271.4	-57.5	0.00	0.00	0.00
3,300.0	16.00	249.26	3,262.5	-107.6	-284.3	-60.2	0.00	0.00	0.00
3,350.0	16.00	249.26	3,310.6	-112.5	-297.2	-62.9	0.00	0.00	0.00
3,400.0	16.00	249.26	3,358.6	-117.4	-310.1	-65.7	0.00	0.00	0.00
3,450.0	16.00	249.26	3,406.7	-122.3	-323.0	-68.4	0.00	0.00	0.00
3,500.0	16.00	249.26	3,454.8	-127.1	-335.9	-71.1	0.00	0.00	0.00
3,550.0	16.00	249.26	3,502.8	-132.0	-348.7	-73.9	0.00	0.00	0.00
3,600.0	16.00	249.26	3,550.9	-136.9	-361.6	-76.6	0.00	0.00	0.00
3,650.0	16.00	249.26	3,598.9	-141.8	-374.5	-79.3	0.00	0.00	0.00
3,692.7	16.00	249.26	3,640.0	-146.0	-385.5	-81.6	0.00	0.00	0.00
PARKMAN									
3,700.0	16.00	249.26	3,647.0	-146.7	-387.4	-82.0	0.00	0.00	0.00
3,750.0	16.00	249.26	3,695.1	-151.5	-400.3	-84.8	0.00	0.00	0.00
3,800.0	16.00	249.26	3,743.1	-156.4	-413.2	-87.5	0.00	0.00	0.00
3,850.0	16.00	249.26	3,791.2	-161.3	-426.1	-90.2	0.00	0.00	0.00
3,900.0	16.00	249.26	3,839.3	-166.2	-439.0	-93.0	0.00	0.00	0.00
3,950.0	16.00	249.26	3,887.3	-171.1	-451.9	-95.7	0.00	0.00	0.00
4,000.0	16.00	249.26	3,935.4	-176.0	-464.8	-98.4	0.00	0.00	0.00
4,050.0	16.00	249.26	3,983.4	-180.8	-477.7	-101.2	0.00	0.00	0.00
4,100.0	16.00	249.26	4,031.5	-185.7	-490.6	-103.9	0.00	0.00	0.00
4,150.0	16.00	249.26	4,079.6	-190.6	-503.5	-106.6	0.00	0.00	0.00
4,200.0	16.00	249.26	4,127.6	-195.5	-516.3	-109.4	0.00	0.00	0.00
4,250.0	16.00	249.26	4,175.7	-200.4	-529.2	-112.1	0.00	0.00	0.00
4,278.4	16.00	249.26	4,203.0	-203.1	-536.6	-113.6	0.00	0.00	0.00
SUSSEX									
4,300.0	16.00	249.26	4,223.8	-205.2	-542.1	-114.8	0.00	0.00	0.00
4,350.0	16.00	249.26	4,271.8	-210.1	-555.0	-117.5	0.00	0.00	0.00
4,400.0	16.00	249.26	4,319.9	-215.0	-567.9	-120.3	0.00	0.00	0.00
4,450.0	16.00	249.26	4,367.9	-219.9	-580.8	-123.0	0.00	0.00	0.00
4,500.0	16.00	249.26	4,416.0	-224.8	-593.7	-125.7	0.00	0.00	0.00
4,509.5	16.00	249.26	4,425.1	-225.7	-596.2	-126.3	0.00	0.00	0.00
Start Drop -2.00									
4,550.0	15.19	249.26	4,464.1	-229.5	-606.3	-128.4	2.00	-2.00	0.00
4,600.0	14.19	249.26	4,512.5	-234.0	-618.2	-130.9	2.00	-2.00	0.00
4,650.0	13.19	249.26	4,561.1	-238.2	-629.3	-133.3	2.00	-2.00	0.00
4,700.0	12.19	249.26	4,609.9	-242.1	-639.5	-135.4	2.00	-2.00	0.00
4,750.0	11.19	249.26	4,658.8	-245.7	-649.0	-137.4	2.00	-2.00	0.00
4,800.0	10.19	249.26	4,708.0	-249.0	-657.7	-139.3	2.00	-2.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,850.0	9.19	249.26	4,757.2	-252.0	-665.6	-141.0	2.00	-2.00	0.00
4,900.0	8.19	249.26	4,806.7	-254.6	-672.6	-142.5	2.00	-2.00	0.00
4,950.0	7.19	249.26	4,856.2	-257.0	-678.9	-143.8	2.00	-2.00	0.00
5,000.0	6.19	249.26	4,905.9	-259.1	-684.4	-144.9	2.00	-2.00	0.00
5,050.0	5.19	249.26	4,955.6	-260.8	-689.0	-145.9	2.00	-2.00	0.00
5,051.4	5.17	249.26	4,957.0	-260.9	-689.1	-145.9	2.00	-2.00	0.00
SHANNON									
5,100.0	4.19	249.26	5,005.5	-262.3	-692.8	-146.7	2.00	-2.00	0.00
5,150.0	3.19	249.26	5,055.4	-263.4	-695.8	-147.4	2.00	-2.00	0.00
5,200.0	2.19	249.26	5,105.3	-264.3	-698.0	-147.8	2.00	-2.00	0.00
5,250.0	1.19	249.26	5,155.3	-264.8	-699.4	-148.1	2.00	-2.00	0.00
5,300.0	0.19	249.26	5,205.3	-265.0	-700.0	-148.2	2.00	-2.00	0.00
5,309.7	0.00	0.00	5,215.0	-265.0	-700.0	-148.2	2.00	-2.00	0.00
5,350.0	0.00	0.00	5,255.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,400.0	0.00	0.00	5,305.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,450.0	0.00	0.00	5,355.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,500.0	0.00	0.00	5,405.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,550.0	0.00	0.00	5,455.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,600.0	0.00	0.00	5,505.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,650.0	0.00	0.00	5,555.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,700.0	0.00	0.00	5,605.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,750.0	0.00	0.00	5,655.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,705.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,850.0	0.00	0.00	5,755.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,805.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
5,950.0	0.00	0.00	5,855.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,905.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,050.0	0.00	0.00	5,955.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,005.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,121.7	0.00	0.00	6,027.0	-265.0	-700.0	-148.2	0.00	0.00	0.00
TEEPEE BUTTES									
6,150.0	0.00	0.00	6,055.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,105.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,250.0	0.00	0.00	6,155.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
6,288.0	0.00	0.00	6,193.3	-265.0	-700.0	-148.2	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,300.0	0.96	359.51	6,205.3	-264.9	-700.0	-148.1	8.00	8.00	0.00
6,350.0	4.96	359.51	6,255.2	-262.3	-700.0	-145.6	8.00	8.00	0.00
6,400.0	8.96	359.51	6,304.8	-256.3	-700.1	-139.6	8.00	8.00	0.00
6,450.0	12.96	359.51	6,353.9	-246.8	-700.2	-130.2	8.00	8.00	0.00
6,500.0	16.96	359.51	6,402.2	-233.9	-700.3	-117.5	8.00	8.00	0.00
6,550.0	20.96	359.51	6,449.5	-217.6	-700.4	-101.4	8.00	8.00	0.00
6,600.0	24.96	359.51	6,495.5	-198.1	-700.6	-82.1	8.00	8.00	0.00
6,650.0	28.96	359.51	6,540.0	-175.4	-700.8	-59.7	8.00	8.00	0.00
6,700.0	32.96	359.51	6,582.9	-149.7	-701.0	-34.3	8.00	8.00	0.00
6,750.0	36.96	359.51	6,623.9	-121.1	-701.2	-6.0	8.00	8.00	0.00
6,800.0	40.96	359.51	6,662.8	-89.7	-701.5	25.0	8.00	8.00	0.00
6,850.0	44.96	359.51	6,699.3	-55.6	-701.8	58.7	8.00	8.00	0.00
6,900.0	48.96	359.51	6,733.5	-19.1	-702.1	94.8	8.00	8.00	0.00
6,900.8	49.03	359.51	6,734.0	-18.4	-702.1	95.4	8.00	8.00	0.00
SHARON SPRINGS									
6,946.8	52.70	359.51	6,763.0	17.2	-702.4	130.6	8.00	8.00	0.00
NIO A CHALK									

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,950.0	52.96	359.51	6,764.9	19.8	-702.5	133.2	8.00	8.00	0.00
6,982.6	55.57	359.51	6,784.0	46.3	-702.7	159.3	8.00	8.00	0.00
NIO A MARL									
7,000.0	56.96	359.51	6,793.6	60.7	-702.8	173.6	8.00	8.00	0.00
7,050.0	60.96	359.51	6,819.4	103.5	-703.2	215.9	8.00	8.00	0.00
7,100.0	64.96	359.51	6,842.2	148.1	-703.6	259.9	8.00	8.00	0.00
7,150.0	68.96	359.51	6,861.7	194.1	-704.0	305.4	8.00	8.00	0.00
7,200.0	72.96	359.51	6,878.0	241.3	-704.4	352.1	8.00	8.00	0.00
7,217.7	74.38	359.51	6,883.0	258.3	-704.5	368.9	8.00	8.00	0.00
NIO B CHALK									
7,250.0	76.96	359.51	6,891.0	289.6	-704.8	399.8	8.00	8.00	0.00
7,300.0	80.96	359.51	6,900.6	338.6	-705.2	448.3	8.00	8.00	0.00
7,350.0	84.96	359.51	6,906.7	388.3	-705.6	497.3	8.00	8.00	0.00
7,350.5	85.00	359.51	6,906.7	388.8	-705.6	497.8	7.98	7.98	0.00
Start 75.0 hold at 7350.5 MD - 7" Caisng @ 7350.5' MD									
7,400.0	85.00	359.51	6,911.1	438.1	-706.1	546.5	0.00	0.00	0.00
7,425.5	85.00	359.51	6,913.3	463.5	-706.3	571.6	0.00	0.00	0.00
Start Build 8.00									
7,450.0	86.96	359.51	6,915.0	487.9	-706.5	595.8	8.00	8.00	0.00
7,488.0	90.00	359.51	6,916.0	525.9	-706.8	633.3	8.00	8.00	0.00
NIO B MARL									
7,500.0	90.00	359.51	6,916.0	537.9	-706.9	645.2	0.00	0.00	0.00
7,550.0	90.00	359.51	6,916.0	587.9	-707.3	694.6	0.00	0.00	0.00
7,600.0	90.00	359.51	6,916.0	637.9	-707.8	744.0	0.00	0.00	0.00
7,650.0	90.00	359.51	6,916.0	687.9	-708.2	793.4	0.00	0.00	0.00
7,700.0	90.00	359.51	6,916.0	737.9	-708.6	842.8	0.00	0.00	0.00
7,750.0	90.00	359.51	6,916.0	787.9	-709.1	892.2	0.00	0.00	0.00
7,800.0	90.00	359.51	6,916.0	837.9	-709.5	941.6	0.00	0.00	0.00
7,850.0	90.00	359.51	6,916.0	887.9	-709.9	991.0	0.00	0.00	0.00
7,900.0	90.00	359.51	6,916.0	937.9	-710.4	1,040.4	0.00	0.00	0.00
7,950.0	90.00	359.51	6,916.0	987.9	-710.8	1,089.9	0.00	0.00	0.00
8,000.0	90.00	359.51	6,916.0	1,037.9	-711.2	1,139.3	0.00	0.00	0.00
8,050.0	90.00	359.51	6,916.0	1,087.9	-711.6	1,188.7	0.00	0.00	0.00
8,100.0	90.00	359.51	6,916.0	1,137.9	-712.1	1,238.1	0.00	0.00	0.00
8,150.0	90.00	359.51	6,916.0	1,187.9	-712.5	1,287.5	0.00	0.00	0.00
8,200.0	90.00	359.51	6,916.0	1,237.9	-712.9	1,336.9	0.00	0.00	0.00
8,250.0	90.00	359.51	6,916.0	1,287.9	-713.4	1,386.3	0.00	0.00	0.00
8,300.0	90.00	359.51	6,916.0	1,337.9	-713.8	1,435.7	0.00	0.00	0.00
8,350.0	90.00	359.51	6,916.0	1,387.9	-714.2	1,485.1	0.00	0.00	0.00
8,400.0	90.00	359.51	6,916.0	1,437.9	-714.7	1,534.5	0.00	0.00	0.00
8,450.0	90.00	359.51	6,916.0	1,487.8	-715.1	1,583.9	0.00	0.00	0.00
8,500.0	90.00	359.51	6,916.0	1,537.8	-715.5	1,633.4	0.00	0.00	0.00
8,550.0	90.00	359.51	6,916.0	1,587.8	-716.0	1,682.8	0.00	0.00	0.00
8,600.0	90.00	359.51	6,916.0	1,637.8	-716.4	1,732.2	0.00	0.00	0.00
8,650.0	90.00	359.51	6,916.0	1,687.8	-716.8	1,781.6	0.00	0.00	0.00
8,700.0	90.00	359.51	6,916.0	1,737.8	-717.2	1,831.0	0.00	0.00	0.00
8,750.0	90.00	359.51	6,916.0	1,787.8	-717.7	1,880.4	0.00	0.00	0.00
8,800.0	90.00	359.51	6,916.0	1,837.8	-718.1	1,929.8	0.00	0.00	0.00
8,850.0	90.00	359.51	6,916.0	1,887.8	-718.5	1,979.2	0.00	0.00	0.00
8,900.0	90.00	359.51	6,916.0	1,937.8	-719.0	2,028.6	0.00	0.00	0.00
8,950.0	90.00	359.51	6,916.0	1,987.8	-719.4	2,078.0	0.00	0.00	0.00
9,000.0	90.00	359.51	6,916.0	2,037.8	-719.8	2,127.4	0.00	0.00	0.00
9,050.0	90.00	359.51	6,916.0	2,087.8	-720.3	2,176.9	0.00	0.00	0.00
9,100.0	90.00	359.51	6,916.0	2,137.8	-720.7	2,226.3	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,150.0	90.00	359.51	6,916.0	2,187.8	-721.1	2,275.7	0.00	0.00	0.00
9,200.0	90.00	359.51	6,916.0	2,237.8	-721.6	2,325.1	0.00	0.00	0.00
9,250.0	90.00	359.51	6,916.0	2,287.8	-722.0	2,374.5	0.00	0.00	0.00
9,300.0	90.00	359.51	6,916.0	2,337.8	-722.4	2,423.9	0.00	0.00	0.00
9,350.0	90.00	359.51	6,916.0	2,387.8	-722.8	2,473.3	0.00	0.00	0.00
9,400.0	90.00	359.51	6,916.0	2,437.8	-723.3	2,522.7	0.00	0.00	0.00
9,450.0	90.00	359.51	6,916.0	2,487.8	-723.7	2,572.1	0.00	0.00	0.00
9,500.0	90.00	359.51	6,916.0	2,537.8	-724.1	2,621.5	0.00	0.00	0.00
9,550.0	90.00	359.51	6,916.0	2,587.8	-724.6	2,670.9	0.00	0.00	0.00
9,600.0	90.00	359.51	6,916.0	2,637.8	-725.0	2,720.4	0.00	0.00	0.00
9,650.0	90.00	359.51	6,916.0	2,687.8	-725.4	2,769.8	0.00	0.00	0.00
9,700.0	90.00	359.51	6,916.0	2,737.8	-725.9	2,819.2	0.00	0.00	0.00
9,750.0	90.00	359.51	6,916.0	2,787.8	-726.3	2,868.6	0.00	0.00	0.00
9,800.0	90.00	359.51	6,916.0	2,837.8	-726.7	2,918.0	0.00	0.00	0.00
9,850.0	90.00	359.51	6,916.0	2,887.8	-727.1	2,967.4	0.00	0.00	0.00
9,900.0	90.00	359.51	6,916.0	2,937.8	-727.6	3,016.8	0.00	0.00	0.00
9,950.0	90.00	359.51	6,916.0	2,987.8	-728.0	3,066.2	0.00	0.00	0.00
10,000.0	90.00	359.51	6,916.0	3,037.8	-728.4	3,115.6	0.00	0.00	0.00
10,050.0	90.00	359.51	6,916.0	3,087.8	-728.9	3,165.0	0.00	0.00	0.00
10,100.0	90.00	359.51	6,916.0	3,137.8	-729.3	3,214.4	0.00	0.00	0.00
10,150.0	90.00	359.51	6,916.0	3,187.8	-729.7	3,263.9	0.00	0.00	0.00
10,200.0	90.00	359.51	6,916.0	3,237.8	-730.2	3,313.3	0.00	0.00	0.00
10,250.0	90.00	359.51	6,916.0	3,287.8	-730.6	3,362.7	0.00	0.00	0.00
10,300.0	90.00	359.51	6,916.0	3,337.8	-731.0	3,412.1	0.00	0.00	0.00
10,350.0	90.00	359.51	6,916.0	3,387.8	-731.5	3,461.5	0.00	0.00	0.00
10,400.0	90.00	359.51	6,916.0	3,437.8	-731.9	3,510.9	0.00	0.00	0.00
10,450.0	90.00	359.51	6,916.0	3,487.8	-732.3	3,560.3	0.00	0.00	0.00
10,500.0	90.00	359.51	6,916.0	3,537.8	-732.7	3,609.7	0.00	0.00	0.00
10,550.0	90.00	359.51	6,916.0	3,587.8	-733.2	3,659.1	0.00	0.00	0.00
10,600.0	90.00	359.51	6,916.0	3,637.8	-733.6	3,708.5	0.00	0.00	0.00
10,650.0	90.00	359.51	6,916.0	3,687.8	-734.0	3,757.9	0.00	0.00	0.00
10,700.0	90.00	359.51	6,916.0	3,737.8	-734.5	3,807.4	0.00	0.00	0.00
10,750.0	90.00	359.51	6,916.0	3,787.8	-734.9	3,856.8	0.00	0.00	0.00
10,800.0	90.00	359.51	6,916.0	3,837.8	-735.3	3,906.2	0.00	0.00	0.00
10,850.0	90.00	359.51	6,916.0	3,887.8	-735.8	3,955.6	0.00	0.00	0.00
10,900.0	90.00	359.51	6,916.0	3,937.8	-736.2	4,005.0	0.00	0.00	0.00
10,950.0	90.00	359.51	6,916.0	3,987.8	-736.6	4,054.4	0.00	0.00	0.00
11,000.0	90.00	359.51	6,916.0	4,037.8	-737.0	4,103.8	0.00	0.00	0.00
11,050.0	90.00	359.51	6,916.0	4,087.8	-737.5	4,153.2	0.00	0.00	0.00
11,100.0	90.00	359.51	6,916.0	4,137.7	-737.9	4,202.6	0.00	0.00	0.00
11,150.0	90.00	359.51	6,916.0	4,187.7	-738.3	4,252.0	0.00	0.00	0.00
11,200.0	90.00	359.51	6,916.0	4,237.7	-738.8	4,301.4	0.00	0.00	0.00
11,250.0	90.00	359.51	6,916.0	4,287.7	-739.2	4,350.9	0.00	0.00	0.00
11,300.0	90.00	359.51	6,916.0	4,337.7	-739.6	4,400.3	0.00	0.00	0.00
11,350.0	90.00	359.51	6,916.0	4,387.7	-740.1	4,449.7	0.00	0.00	0.00
11,400.0	90.00	359.51	6,916.0	4,437.7	-740.5	4,499.1	0.00	0.00	0.00
11,450.0	90.00	359.51	6,916.0	4,487.7	-740.9	4,548.5	0.00	0.00	0.00
11,482.1	90.00	359.51	6,916.0	4,519.8	-741.2	4,580.2	0.00	0.00	0.00
TD at 11482.1 - Seneca E15-72-1HN BHL 535'FNL, 165'FEL									

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site:	E (06N-65W)	North Reference:	Grid
Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Seneca E15-72-1HN BH	0.00	0.00	6,916.0	4,519.9	-741.2	1,423,290.83	3,239,004.12	40.492156	-104.640667
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
7,350.5	6,906.7	7" Caisng @ 7350.5' MD	7	8-3/4

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
1,002.0	1,002.0	PIERRE		0.00		
3,692.7	3,640.0	PARKMAN		0.00		
4,278.4	4,203.0	SUSSEX		0.00		
5,051.4	4,957.0	SHANNON		0.00		
6,121.7	6,027.0	TEEPEE BUTTES		0.00		
6,900.8	6,734.0	SHARON SPRINGS		0.00		
6,946.8	6,763.0	NIO A CHALK		0.00		
6,982.6	6,784.0	NIO A MARL		0.00		
7,217.7	6,883.0	NIO B CHALK		0.00		
7,488.0	6,916.0	NIO B MARL		0.00		

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,800.0	1,800.0	0.0	0.0	KOP - Start Build 2.00
4,509.5	4,425.2	-39.3	-103.8	Start Drop -2.00
6,288.0	6,193.3	-225.7	-596.2	KOP #2 - Start Build 8.00
7,350.5	6,906.7	-265.0	-700.0	Start 75.0 hold at 7350.5 MD
7,425.5	6,913.3	-265.0	-700.0	Start Build 8.00
11,482.1	6,916.0	388.8	-705.6	TD at 11482.1

Northern Region Drilling - Working

**Wattenberg Field
E (06N-65W)
Seneca E15-72-1HN**

**Original Drilling
APD - Rev 1**

Anticollision Summary Report

14 October, 2013

Noble Energy Inc
Anticollision Summary Report

Company:	Northern Region Drilling - Working	Local Co-ordinate Reference:	Well Seneca E15-72-1HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4753.0usft (Original Well Elev)
Reference Site:	E (06N-65W)	MD Reference:	WELL @ 4753.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 1	Offset TVD Reference:	Offset Datum

Reference	APD - Rev 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	10/14/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,482.1	APD - Rev 1 (Original Drilling)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E (06N-65W)						
Dinner 14-34 - Original Drilling - As Drilled	1,811.4	1,795.3	1,232.2	1,224.0	149.240	CC, ES
Dinner 14-34 - Original Drilling - As Drilled	9,900.0	6,861.9	3,118.0	3,046.3	43.485	SF
Eagle E14-62-1HN - Original Drilling - APD - Rev 0	1,800.0	1,799.0	43.7	35.9	5.584	CC, ES
Eagle E14-62-1HN - Original Drilling - APD - Rev 0	1,900.0	1,899.0	44.3	36.1	5.369	SF
Eagle E14-63-1HN - Original Drilling - APD - Rev 0	1,800.0	1,799.0	65.6	57.7	8.377	CC, ES
Eagle E14-63-1HN - Original Drilling - APD - Rev 0	2,000.0	1,998.8	68.3	59.6	7.874	SF
Eagle E14-79HN - Original Drilling - APD - Rev 0	1,800.0	1,800.0	22.0	14.2	2.814	CC, ES
Eagle E14-79HN - Original Drilling - APD - Rev 0	11,482.7	11,281.1	245.3	72.1	1.416	Level 2, SF
Reliance E23-79HN - Original Drilling - APD - Rev 0	1,000.0	1,000.0	69.2	65.0	16.346	CC, ES
Reliance E23-79HN - Original Drilling - APD - Rev 0	6,288.0	6,260.2	319.5	283.8	8.962	SF
Seneca E15-72-1HC - Original Drilling - APD - Rev 0	1,466.3	1,467.3	21.9	15.5	3.452	CC
Seneca E15-72-1HC - Original Drilling - APD - Rev 0	1,500.0	1,501.0	21.9	15.4	3.371	ES
Seneca E15-72-1HC - Original Drilling - APD - Rev 0	11,482.7	11,669.3	228.5	93.4	1.692	Level 3, SF
Tahoma E22-69HC - Original Drilling - APD - Rev 0	1,166.0	1,168.0	47.4	42.4	9.500	CC
Tahoma E22-69HC - Original Drilling - APD - Rev 0	1,200.0	1,202.0	47.4	42.2	9.218	ES
Tahoma E22-69HC - Original Drilling - APD - Rev 0	6,300.0	6,295.7	180.9	142.8	4.746	SF

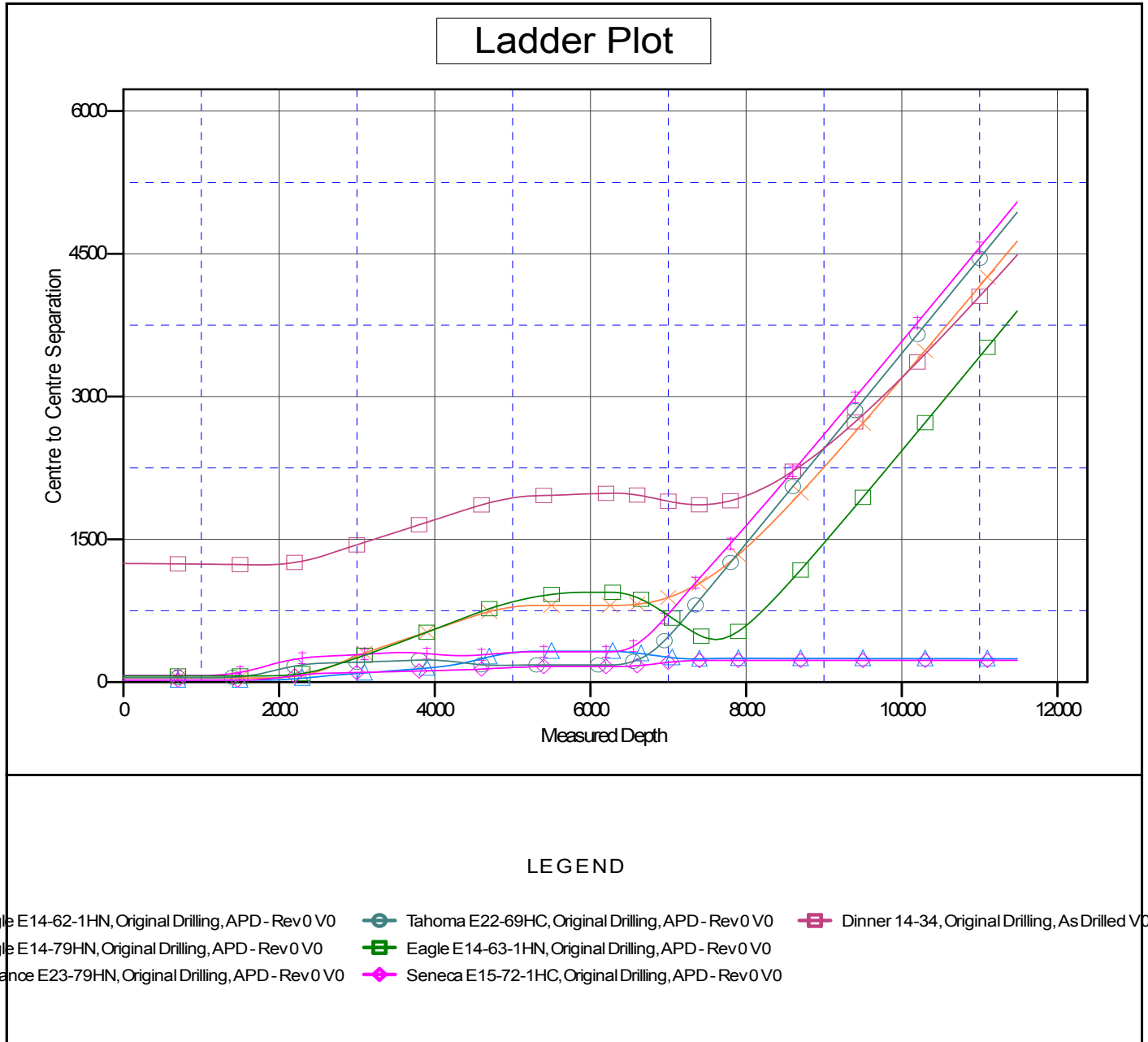
Noble Energy Inc

Anticollision Summary Report

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Reference Well:	Seneca E15-72-1HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4753.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Seneca E15-72-1HN
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°



Noble Energy Inc
Anticollision Summary Report

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