

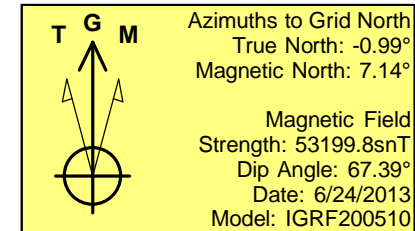
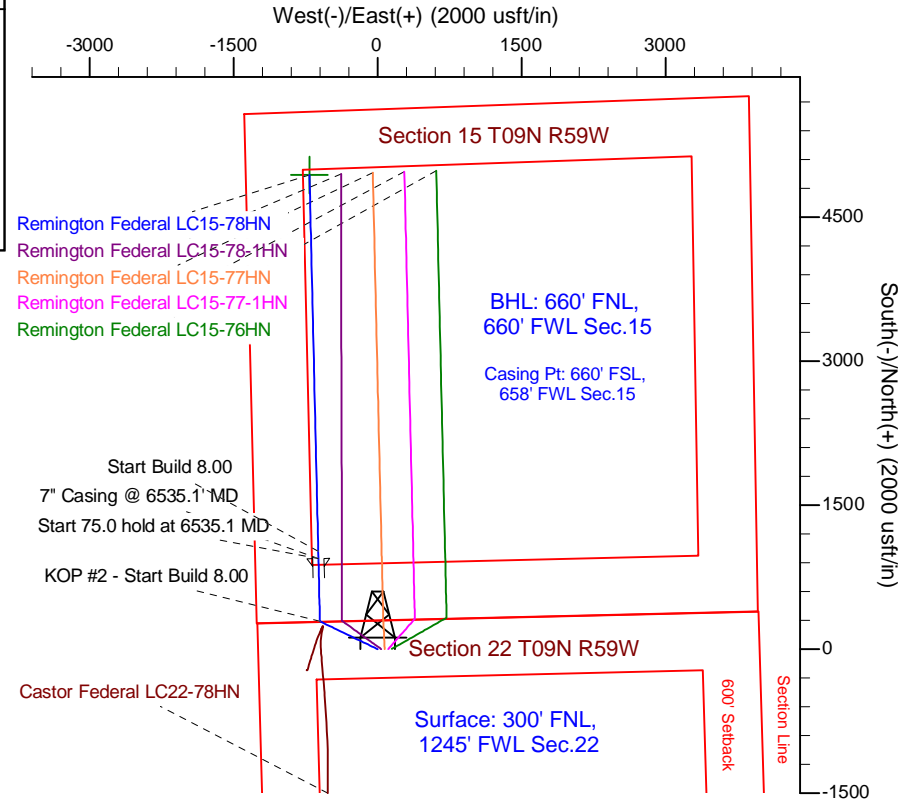
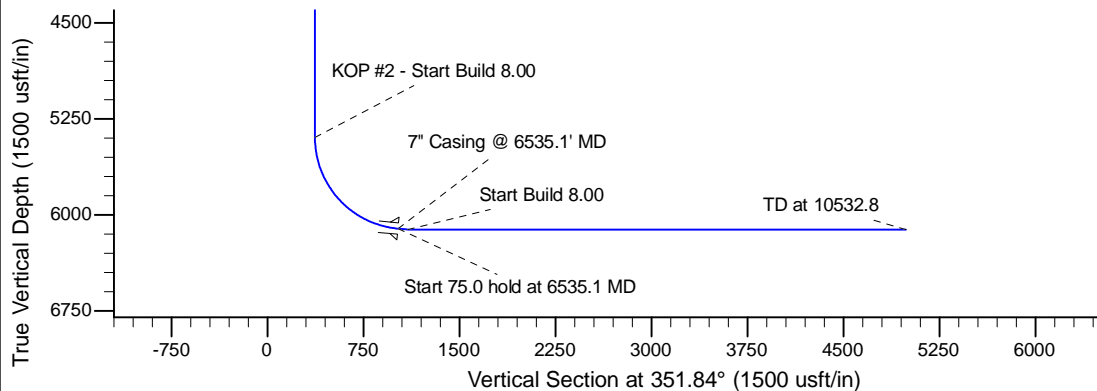
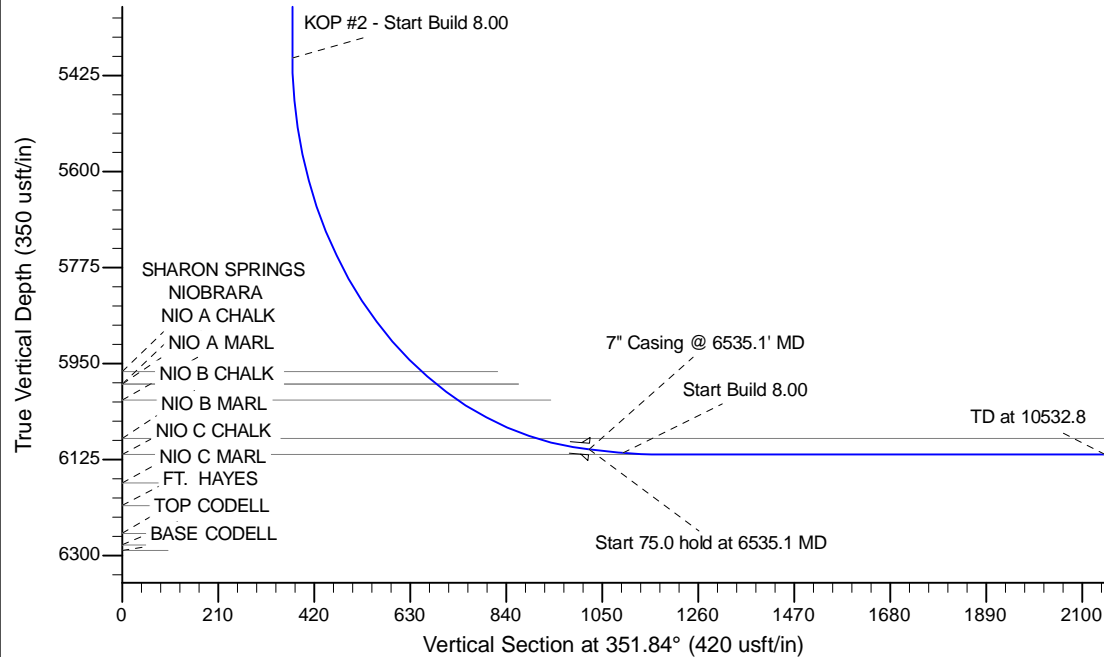
Project: Wattenberg Field  
Site: LC (Sec.22-T09N-R59W) Weld County, CO  
Well: Remington Federal LC15-78HN  
Wellbore: Original Drilling  
Design: APD - Rev 0

# 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	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1952.6	15.05	295.80	1944.0	42.8	-88.5	2.00	295.80	54.9	
4	3761.7	15.05	295.80	3691.0	247.2	-511.5	0.00	0.00	317.4	
5	4514.3	0.00	0.00	4435.0	290.0	-600.0	2.00	180.00	372.3	
6	5472.6	0.00	0.00	5393.3	290.0	-600.0	0.00	0.00	372.3	
7	6535.1	85.00	358.66	6106.7	943.6	-615.3	8.00	358.66	1021.4	
8	6610.1	85.00	358.66	6113.3	1018.3	-617.0	0.00	0.00	1095.6	
9	6672.6	90.00	358.66	6116.0	1080.7	-618.5	8.00	0.00	1157.6	
10	10532.8	90.00	358.66	6116.0	4939.8	-708.7	0.00	0.00	4990.4	Remington Federal LC15-78HN BHL 660'FNL, 660'FWL



## WELL DETAILS: Remington Federal LC15-78HN

		Ground Level:4916.0			
		Northing	Easting	Latitude	Longitude
0.0	0.0	1517039.12	3424181.71	40.742610	-103.969150

Plan: APD - Rev 0 (Remington Federal LC15-78HN/Original Drilling)

Created By: Shailey Jewell Date: 15:02, June 24 2013

Checked: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

Approved: \_\_\_\_\_ Date: \_\_\_\_\_

# **Northern Region Drilling - Working**

**Wattenberg Field**

**LC (09N-59W)**

**Remington Federal LC15-78HN**

**Original Drilling**

**Plan: APD - Rev 0**

## **Standard Planning Report**

**24 June, 2013**

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

<b>Project</b>	Wattenberg Field, Weld County CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	LC (09N-59W)		
<b>Site Position:</b>		<b>Northing:</b>	1,527,709.69 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,433,728.00 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	40.771436
		<b>Longitude:</b>	-103.934025
		<b>Grid Convergence:</b>	1.01 °

<b>Well</b>	Remington Federal LC15-78HN		
<b>Well Position</b>	<b>+N/-S</b>	-10,670.6 usft	<b>Northing:</b> 1,517,039.12 usft
	<b>+E/-W</b>	-9,546.3 usft	<b>Easting:</b> 3,424,181.71 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 40.742610
			<b>Longitude:</b> -103.969150
			<b>Ground Level:</b> 4,916.0 usft

<b>Wellbore</b>	Original Drilling				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	6/24/2013	8.13	67.39	53,200

<b>Design</b>	APD - Rev 0			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	351.84

<b>Plan Sections</b>										
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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,952.6	15.05	295.80	1,944.0	42.8	-88.5	2.00	2.00	0.00	295.80	
3,761.7	15.05	295.80	3,691.0	247.2	-511.5	0.00	0.00	0.00	0.00	
4,514.3	0.00	0.00	4,435.0	290.0	-600.0	2.00	-2.00	0.00	180.00	
5,472.6	0.00	0.00	5,393.3	290.0	-600.0	0.00	0.00	0.00	0.00	
6,535.1	85.00	358.66	6,106.7	943.6	-615.3	8.00	8.00	0.00	358.66	
6,610.1	85.00	358.66	6,113.3	1,018.3	-617.0	0.00	0.00	0.00	0.00	
6,672.6	90.00	358.66	6,116.0	1,080.7	-618.5	8.00	8.00	0.00	0.00	
10,532.8	90.00	358.66	6,116.0	4,939.8	-708.7	0.00	0.00	0.00	0.00	Remington Federal LC

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

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
1,050.0	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
KOP - Start Build 2.00									
1,250.0	1.00	295.80	1,250.0	0.2	-0.4	0.2	2.00	2.00	0.00
1,300.0	2.00	295.80	1,300.0	0.8	-1.6	1.0	2.00	2.00	0.00
1,350.0	3.00	295.80	1,349.9	1.7	-3.5	2.2	2.00	2.00	0.00
1,400.0	4.00	295.80	1,399.8	3.0	-6.3	3.9	2.00	2.00	0.00
1,450.0	5.00	295.80	1,449.7	4.7	-9.8	6.1	2.00	2.00	0.00
1,500.0	6.00	295.80	1,499.5	6.8	-14.1	8.8	2.00	2.00	0.00
1,550.0	7.00	295.80	1,549.1	9.3	-19.2	11.9	2.00	2.00	0.00
1,600.0	8.00	295.80	1,598.7	12.1	-25.1	15.6	2.00	2.00	0.00
1,650.0	9.00	295.80	1,648.2	15.3	-31.8	19.7	2.00	2.00	0.00
1,700.0	10.00	295.80	1,697.5	18.9	-39.2	24.3	2.00	2.00	0.00
1,750.0	11.00	295.80	1,746.6	22.9	-47.4	29.4	2.00	2.00	0.00
1,800.0	12.00	295.80	1,795.6	27.2	-56.4	35.0	2.00	2.00	0.00
1,850.0	13.00	295.80	1,844.4	32.0	-66.1	41.0	2.00	2.00	0.00
1,900.0	14.00	295.80	1,893.1	37.0	-76.6	47.5	2.00	2.00	0.00
1,950.0	15.00	295.80	1,941.5	42.5	-87.9	54.5	2.00	2.00	0.00
1,952.6	15.05	295.80	1,944.0	42.8	-88.5	54.9	2.00	2.00	0.00
2,000.0	15.05	295.80	1,989.7	48.1	-99.6	61.8	0.00	0.00	0.00
2,050.0	15.05	295.80	2,038.0	53.8	-111.3	69.0	0.00	0.00	0.00
2,100.0	15.05	295.80	2,086.3	59.4	-123.0	76.3	0.00	0.00	0.00
2,150.0	15.05	295.80	2,134.6	65.1	-134.7	83.5	0.00	0.00	0.00
2,200.0	15.05	295.80	2,182.9	70.7	-146.3	90.8	0.00	0.00	0.00
2,250.0	15.05	295.80	2,231.2	76.4	-158.0	98.1	0.00	0.00	0.00
2,300.0	15.05	295.80	2,279.5	82.0	-169.7	105.3	0.00	0.00	0.00
2,350.0	15.05	295.80	2,327.7	87.7	-181.4	112.6	0.00	0.00	0.00
2,400.0	15.05	295.80	2,376.0	93.3	-193.1	119.8	0.00	0.00	0.00
2,450.0	15.05	295.80	2,424.3	99.0	-204.8	127.1	0.00	0.00	0.00
2,500.0	15.05	295.80	2,472.6	104.6	-216.5	134.3	0.00	0.00	0.00
2,550.0	15.05	295.80	2,520.9	110.3	-228.2	141.6	0.00	0.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

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)
2,600.0	15.05	295.80	2,569.2	115.9	-239.9	148.8	0.00	0.00	0.00
2,650.0	15.05	295.80	2,617.4	121.6	-251.6	156.1	0.00	0.00	0.00
2,700.0	15.05	295.80	2,665.7	127.2	-263.3	163.3	0.00	0.00	0.00
2,750.0	15.05	295.80	2,714.0	132.9	-274.9	170.6	0.00	0.00	0.00
2,800.0	15.05	295.80	2,762.3	138.5	-286.6	177.8	0.00	0.00	0.00
2,850.0	15.05	295.80	2,810.6	144.2	-298.3	185.1	0.00	0.00	0.00
2,900.0	15.05	295.80	2,858.9	149.8	-310.0	192.4	0.00	0.00	0.00
2,950.0	15.05	295.80	2,907.2	155.5	-321.7	199.6	0.00	0.00	0.00
3,000.0	15.05	295.80	2,955.4	161.1	-333.4	206.9	0.00	0.00	0.00
3,050.0	15.05	295.80	3,003.7	166.8	-345.1	214.1	0.00	0.00	0.00
3,100.0	15.05	295.80	3,052.0	172.4	-356.8	221.4	0.00	0.00	0.00
3,150.0	15.05	295.80	3,100.3	178.1	-368.5	228.6	0.00	0.00	0.00
3,200.0	15.05	295.80	3,148.6	183.7	-380.2	235.9	0.00	0.00	0.00
3,250.0	15.05	295.80	3,196.9	189.4	-391.9	243.1	0.00	0.00	0.00
3,300.0	15.05	295.80	3,245.1	195.0	-403.5	250.4	0.00	0.00	0.00
3,350.0	15.05	295.80	3,293.4	200.7	-415.2	257.6	0.00	0.00	0.00
3,400.0	15.05	295.80	3,341.7	206.3	-426.9	264.9	0.00	0.00	0.00
3,450.0	15.05	295.80	3,390.0	212.0	-438.6	272.1	0.00	0.00	0.00
3,500.0	15.05	295.80	3,438.3	217.6	-450.3	279.4	0.00	0.00	0.00
3,550.0	15.05	295.80	3,486.6	223.3	-462.0	286.6	0.00	0.00	0.00
3,600.0	15.05	295.80	3,534.8	229.0	-473.7	293.9	0.00	0.00	0.00
3,650.0	15.05	295.80	3,583.1	234.6	-485.4	301.2	0.00	0.00	0.00
3,700.0	15.05	295.80	3,631.4	240.3	-497.1	308.4	0.00	0.00	0.00
3,750.0	15.05	295.80	3,679.7	245.9	-508.8	315.7	0.00	0.00	0.00
3,761.7	15.05	295.80	3,691.0	247.2	-511.5	317.4	0.00	0.00	0.00
Start Drop -2.00									
3,800.0	14.29	295.80	3,728.1	251.4	-520.2	322.8	2.00	-2.00	0.00
3,850.0	13.29	295.80	3,776.6	256.6	-531.0	329.4	2.00	-2.00	0.00
3,900.0	12.29	295.80	3,825.4	261.4	-540.9	335.6	2.00	-2.00	0.00
3,950.0	11.29	295.80	3,874.3	265.9	-550.1	341.3	2.00	-2.00	0.00
4,000.0	10.29	295.80	3,923.4	270.0	-558.5	346.6	2.00	-2.00	0.00
4,050.0	9.29	295.80	3,972.7	273.7	-566.2	351.3	2.00	-2.00	0.00
4,100.0	8.29	295.80	4,022.1	277.0	-573.1	355.6	2.00	-2.00	0.00
4,150.0	7.29	295.80	4,071.7	279.9	-579.2	359.3	2.00	-2.00	0.00
4,200.0	6.29	295.80	4,121.3	282.5	-584.5	362.6	2.00	-2.00	0.00
4,250.0	5.29	295.80	4,171.0	284.7	-589.0	365.5	2.00	-2.00	0.00
4,300.0	4.29	295.80	4,220.9	286.5	-592.8	367.8	2.00	-2.00	0.00
4,350.0	3.29	295.80	4,270.8	287.9	-595.8	369.6	2.00	-2.00	0.00
4,400.0	2.29	295.80	4,320.7	289.0	-597.9	371.0	2.00	-2.00	0.00
4,450.0	1.29	295.80	4,370.7	289.7	-599.3	371.9	2.00	-2.00	0.00
4,500.0	0.29	295.80	4,420.7	290.0	-600.0	372.3	2.00	-2.00	0.00
4,514.3	0.00	0.00	4,435.0	290.0	-600.0	372.3	2.00	-2.00	0.00
4,550.0	0.00	0.00	4,470.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,600.0	0.00	0.00	4,520.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,650.0	0.00	0.00	4,570.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,700.0	0.00	0.00	4,620.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,750.0	0.00	0.00	4,670.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,800.0	0.00	0.00	4,720.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,850.0	0.00	0.00	4,770.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,900.0	0.00	0.00	4,820.7	290.0	-600.0	372.3	0.00	0.00	0.00
4,950.0	0.00	0.00	4,870.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,000.0	0.00	0.00	4,920.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,050.0	0.00	0.00	4,970.7	290.0	-600.0	372.3	0.00	0.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

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)
5,100.0	0.00	0.00	5,020.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,150.0	0.00	0.00	5,070.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,200.0	0.00	0.00	5,120.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,250.0	0.00	0.00	5,170.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,300.0	0.00	0.00	5,220.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,350.0	0.00	0.00	5,270.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,320.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,450.0	0.00	0.00	5,370.7	290.0	-600.0	372.3	0.00	0.00	0.00
5,472.6	0.00	0.00	5,393.3	290.0	-600.0	372.3	0.00	0.00	0.00
<b>KOP #2 - Start Build 8.00</b>									
5,500.0	2.19	358.66	5,420.7	290.5	-600.0	372.8	8.00	8.00	0.00
5,550.0	6.19	358.66	5,470.5	294.2	-600.1	376.4	8.00	8.00	0.00
5,600.0	10.19	358.66	5,520.0	301.3	-600.3	383.5	8.00	8.00	0.00
5,650.0	14.19	358.66	5,568.9	311.9	-600.5	394.0	8.00	8.00	0.00
5,700.0	18.19	358.66	5,616.9	325.8	-600.8	407.8	8.00	8.00	0.00
5,750.0	22.19	358.66	5,663.8	343.0	-601.2	425.0	8.00	8.00	0.00
5,800.0	26.19	358.66	5,709.4	363.5	-601.7	445.3	8.00	8.00	0.00
5,850.0	30.19	358.66	5,753.4	387.1	-602.3	468.7	8.00	8.00	0.00
5,900.0	34.19	358.66	5,795.8	413.8	-602.9	495.2	8.00	8.00	0.00
5,950.0	38.19	358.66	5,836.1	443.3	-603.6	524.5	8.00	8.00	0.00
6,000.0	42.19	358.66	5,874.3	475.5	-604.3	556.5	8.00	8.00	0.00
6,050.0	46.19	358.66	5,910.1	510.4	-605.2	591.1	8.00	8.00	0.00
6,100.0	50.19	358.66	5,943.4	547.6	-606.0	628.1	8.00	8.00	0.00
6,134.7	52.97	358.66	5,965.0	574.8	-606.7	655.1	8.00	8.00	0.00
<b>SHARON SPRINGS</b>									
6,150.0	54.19	358.66	5,974.1	587.1	-606.9	667.3	8.00	8.00	0.00
6,174.3	56.14	358.66	5,988.0	607.1	-607.4	687.2	8.00	8.00	0.00
<b>NIOBRARA - NIO A CHALK</b>									
6,200.0	58.19	358.66	6,001.9	628.6	-607.9	708.6	8.00	8.00	0.00
6,229.6	60.56	358.66	6,017.0	654.1	-608.5	733.9	8.00	8.00	0.00
<b>NIO A MARL</b>									
6,250.0	62.19	358.66	6,026.8	672.0	-608.9	751.7	8.00	8.00	0.00
6,300.0	66.19	358.66	6,048.5	717.0	-610.0	796.3	8.00	8.00	0.00
6,350.0	70.19	358.66	6,067.1	763.4	-611.1	842.4	8.00	8.00	0.00
6,400.0	74.19	358.66	6,082.4	811.0	-612.2	889.7	8.00	8.00	0.00
6,417.7	75.61	358.66	6,087.0	828.1	-612.6	906.7	8.00	8.00	0.00
<b>NIO B CHALK</b>									
6,450.0	78.19	358.66	6,094.3	859.5	-613.3	937.9	8.00	8.00	0.00
6,500.0	82.19	358.66	6,102.8	908.7	-614.5	986.8	8.00	8.00	0.00
6,535.1	85.00	358.66	6,106.7	943.6	-615.3	1,021.4	8.00	8.00	0.00
<b>Start 75.0 hold at 6535.1 MD - 7" Casing @ 6535.1' MD</b>									
6,550.0	85.00	358.66	6,108.0	958.4	-615.6	1,036.2	0.00	0.00	0.00
6,600.0	85.00	358.66	6,112.4	1,008.2	-616.8	1,085.6	0.00	0.00	0.00
6,610.1	85.00	358.66	6,113.3	1,018.3	-617.0	1,095.6	0.00	0.00	0.00
<b>Start Build 8.00</b>									
6,650.0	88.19	358.66	6,115.6	1,058.1	-618.0	1,135.2	8.00	8.00	0.00
6,672.6	90.00	358.66	6,116.0	1,080.7	-618.5	1,157.6	8.00	8.00	0.00
<b>NIO B MARL</b>									
6,700.0	90.00	358.66	6,116.0	1,108.1	-619.1	1,184.8	0.00	0.00	0.00
6,750.0	90.00	358.66	6,116.0	1,158.1	-620.3	1,234.4	0.00	0.00	0.00
6,800.0	90.00	358.66	6,116.0	1,208.1	-621.5	1,284.1	0.00	0.00	0.00
6,850.0	90.00	358.66	6,116.0	1,258.1	-622.6	1,333.7	0.00	0.00	0.00
6,900.0	90.00	358.66	6,116.0	1,308.0	-623.8	1,383.4	0.00	0.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

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	90.00	358.66	6,116.0	1,358.0	-625.0	1,433.0	0.00	0.00	0.00
7,000.0	90.00	358.66	6,116.0	1,408.0	-626.1	1,482.7	0.00	0.00	0.00
7,050.0	90.00	358.66	6,116.0	1,458.0	-627.3	1,532.3	0.00	0.00	0.00
7,100.0	90.00	358.66	6,116.0	1,508.0	-628.5	1,582.0	0.00	0.00	0.00
7,150.0	90.00	358.66	6,116.0	1,558.0	-629.7	1,631.6	0.00	0.00	0.00
7,200.0	90.00	358.66	6,116.0	1,608.0	-630.8	1,681.3	0.00	0.00	0.00
7,250.0	90.00	358.66	6,116.0	1,657.9	-632.0	1,730.9	0.00	0.00	0.00
7,300.0	90.00	358.66	6,116.0	1,707.9	-633.2	1,780.5	0.00	0.00	0.00
7,350.0	90.00	358.66	6,116.0	1,757.9	-634.3	1,830.2	0.00	0.00	0.00
7,400.0	90.00	358.66	6,116.0	1,807.9	-635.5	1,879.8	0.00	0.00	0.00
7,450.0	90.00	358.66	6,116.0	1,857.9	-636.7	1,929.5	0.00	0.00	0.00
7,500.0	90.00	358.66	6,116.0	1,907.9	-637.8	1,979.1	0.00	0.00	0.00
7,550.0	90.00	358.66	6,116.0	1,957.9	-639.0	2,028.8	0.00	0.00	0.00
7,600.0	90.00	358.66	6,116.0	2,007.8	-640.2	2,078.4	0.00	0.00	0.00
7,650.0	90.00	358.66	6,116.0	2,057.8	-641.3	2,128.1	0.00	0.00	0.00
7,700.0	90.00	358.66	6,116.0	2,107.8	-642.5	2,177.7	0.00	0.00	0.00
7,750.0	90.00	358.66	6,116.0	2,157.8	-643.7	2,227.4	0.00	0.00	0.00
7,800.0	90.00	358.66	6,116.0	2,207.8	-644.8	2,277.0	0.00	0.00	0.00
7,850.0	90.00	358.66	6,116.0	2,257.8	-646.0	2,326.6	0.00	0.00	0.00
7,900.0	90.00	358.66	6,116.0	2,307.8	-647.2	2,376.3	0.00	0.00	0.00
7,950.0	90.00	358.66	6,116.0	2,357.8	-648.4	2,425.9	0.00	0.00	0.00
8,000.0	90.00	358.66	6,116.0	2,407.7	-649.5	2,475.6	0.00	0.00	0.00
8,050.0	90.00	358.66	6,116.0	2,457.7	-650.7	2,525.2	0.00	0.00	0.00
8,100.0	90.00	358.66	6,116.0	2,507.7	-651.9	2,574.9	0.00	0.00	0.00
8,150.0	90.00	358.66	6,116.0	2,557.7	-653.0	2,624.5	0.00	0.00	0.00
8,200.0	90.00	358.66	6,116.0	2,607.7	-654.2	2,674.2	0.00	0.00	0.00
8,250.0	90.00	358.66	6,116.0	2,657.7	-655.4	2,723.8	0.00	0.00	0.00
8,300.0	90.00	358.66	6,116.0	2,707.7	-656.5	2,773.5	0.00	0.00	0.00
8,350.0	90.00	358.66	6,116.0	2,757.6	-657.7	2,823.1	0.00	0.00	0.00
8,400.0	90.00	358.66	6,116.0	2,807.6	-658.9	2,872.7	0.00	0.00	0.00
8,450.0	90.00	358.66	6,116.0	2,857.6	-660.0	2,922.4	0.00	0.00	0.00
8,500.0	90.00	358.66	6,116.0	2,907.6	-661.2	2,972.0	0.00	0.00	0.00
8,550.0	90.00	358.66	6,116.0	2,957.6	-662.4	3,021.7	0.00	0.00	0.00
8,600.0	90.00	358.66	6,116.0	3,007.6	-663.6	3,071.3	0.00	0.00	0.00
8,650.0	90.00	358.66	6,116.0	3,057.6	-664.7	3,121.0	0.00	0.00	0.00
8,700.0	90.00	358.66	6,116.0	3,107.5	-665.9	3,170.6	0.00	0.00	0.00
8,750.0	90.00	358.66	6,116.0	3,157.5	-667.1	3,220.3	0.00	0.00	0.00
8,800.0	90.00	358.66	6,116.0	3,207.5	-668.2	3,269.9	0.00	0.00	0.00
8,850.0	90.00	358.66	6,116.0	3,257.5	-669.4	3,319.6	0.00	0.00	0.00
8,900.0	90.00	358.66	6,116.0	3,307.5	-670.6	3,369.2	0.00	0.00	0.00
8,950.0	90.00	358.66	6,116.0	3,357.5	-671.7	3,418.8	0.00	0.00	0.00
9,000.0	90.00	358.66	6,116.0	3,407.5	-672.9	3,468.5	0.00	0.00	0.00
9,050.0	90.00	358.66	6,116.0	3,457.5	-674.1	3,518.1	0.00	0.00	0.00
9,100.0	90.00	358.66	6,116.0	3,507.4	-675.2	3,567.8	0.00	0.00	0.00
9,150.0	90.00	358.66	6,116.0	3,557.4	-676.4	3,617.4	0.00	0.00	0.00
9,200.0	90.00	358.66	6,116.0	3,607.4	-677.6	3,667.1	0.00	0.00	0.00
9,250.0	90.00	358.66	6,116.0	3,657.4	-678.7	3,716.7	0.00	0.00	0.00
9,300.0	90.00	358.66	6,116.0	3,707.4	-679.9	3,766.4	0.00	0.00	0.00
9,350.0	90.00	358.66	6,116.0	3,757.4	-681.1	3,816.0	0.00	0.00	0.00
9,400.0	90.00	358.66	6,116.0	3,807.4	-682.3	3,865.7	0.00	0.00	0.00
9,450.0	90.00	358.66	6,116.0	3,857.3	-683.4	3,915.3	0.00	0.00	0.00
9,500.0	90.00	358.66	6,116.0	3,907.3	-684.6	3,965.0	0.00	0.00	0.00
9,550.0	90.00	358.66	6,116.0	3,957.3	-685.8	4,014.6	0.00	0.00	0.00
9,600.0	90.00	358.66	6,116.0	4,007.3	-686.9	4,064.2	0.00	0.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

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)	
9,650.0	90.00	358.66	6,116.0	4,057.3	-688.1	4,113.9	0.00	0.00	0.00	
9,700.0	90.00	358.66	6,116.0	4,107.3	-689.3	4,163.5	0.00	0.00	0.00	
9,750.0	90.00	358.66	6,116.0	4,157.3	-690.4	4,213.2	0.00	0.00	0.00	
9,800.0	90.00	358.66	6,116.0	4,207.2	-691.6	4,262.8	0.00	0.00	0.00	
9,850.0	90.00	358.66	6,116.0	4,257.2	-692.8	4,312.5	0.00	0.00	0.00	
9,900.0	90.00	358.66	6,116.0	4,307.2	-693.9	4,362.1	0.00	0.00	0.00	
9,950.0	90.00	358.66	6,116.0	4,357.2	-695.1	4,411.8	0.00	0.00	0.00	
10,000.0	90.00	358.66	6,116.0	4,407.2	-696.3	4,461.4	0.00	0.00	0.00	
10,050.0	90.00	358.66	6,116.0	4,457.2	-697.5	4,511.1	0.00	0.00	0.00	
10,100.0	90.00	358.66	6,116.0	4,507.2	-698.6	4,560.7	0.00	0.00	0.00	
10,150.0	90.00	358.66	6,116.0	4,557.2	-699.8	4,610.3	0.00	0.00	0.00	
10,200.0	90.00	358.66	6,116.0	4,607.1	-701.0	4,660.0	0.00	0.00	0.00	
10,250.0	90.00	358.66	6,116.0	4,657.1	-702.1	4,709.6	0.00	0.00	0.00	
10,300.0	90.00	358.66	6,116.0	4,707.1	-703.3	4,759.3	0.00	0.00	0.00	
10,350.0	90.00	358.66	6,116.0	4,757.1	-704.5	4,808.9	0.00	0.00	0.00	
10,400.0	90.00	358.66	6,116.0	4,807.1	-705.6	4,858.6	0.00	0.00	0.00	
10,450.0	90.00	358.66	6,116.0	4,857.1	-706.8	4,908.2	0.00	0.00	0.00	
10,500.0	90.00	358.66	6,116.0	4,907.1	-708.0	4,957.9	0.00	0.00	0.00	
10,532.8	90.00	358.66	6,116.0	4,939.8	-708.7	4,990.4	0.00	0.00	0.00	
TD at 10532.8 - Remington Federal LC15-78HN BHL 660'FNL, 660'FWL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
Remington Federal LC15	0.00	0.00	6,116.0	4,939.8	-708.7	1,521,978.90	3,423,472.97	40.756200	-103.971400	
- plan hits target center										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,535.1	6,106.7	7" Casing @ 6535.1' MD	7	8-3/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,134.7	5,965.0	SHARON SPRINGS		0.00		
6,174.3	5,988.0	NIOBRARA		0.00		
6,174.3	5,988.0	NIO A CHALK		0.00		
6,229.6	6,017.0	NIO A MARL		0.00		
6,417.7	6,087.0	NIO B CHALK		0.00		
6,672.6	6,116.0	NIO B MARL		0.00		



# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site:</b>	LC (09N-59W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 2.00
3,761.7	3,691.0	247.2	-511.5	Start Drop -2.00
5,472.6	5,393.3	290.0	-600.0	KOP #2 - Start Build 8.00
6,535.1	6,106.7	943.6	-615.3	Start 75.0 hold at 6535.1 MD
6,610.1	6,113.3	1,018.3	-617.0	Start Build 8.00
10,532.8	6,116.0	4,939.8	-708.7	TD at 10532.8

# **Northern Region Drilling - Working**

**Wattenberg Field**

**LC (09N-59W)**

**Remington Federal LC15-78HN**

**Original Drilling**

**APD - Rev 0**

## **Anticollision Summary Report**

**24 June, 2013**

**Noble Energy Inc**  
Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling - Working	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Reference Site:</b>	LC (09N-59W)	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	APD - Rev 0		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0 usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	6/24/2013		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	10,532.8	APD - Rev 0 (Original Drilling)	MWD	MWD - Standard

<b>Summary</b>						
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						
LC (09N-59W)						
Castor Federal LC22-78HN - Original Drilling - As Drilled	5,451.5	5,426.2	57.3	31.3	2.198	CC
Castor Federal LC22-78HN - Original Drilling - As Drilled	5,472.6	5,447.1	57.4	31.2	2.193	ES, SF
Remington Federal LC15-76HN - Original Drilling - APD	1,200.0	1,200.0	149.6	144.5	29.251	CC, ES
Remington Federal LC15-76HN - Original Drilling - APD	10,532.8	10,512.2	1,321.7	1,130.7	6.919	SF
Remington Federal LC15-77-1HN - Original Drilling - APD	1,200.0	1,200.0	113.6	108.5	22.209	CC, ES
Remington Federal LC15-77-1HN - Original Drilling - APD	10,532.8	10,484.9	989.2	798.1	5.177	SF
Remington Federal LC15-77HN - Original Drilling - APD	1,200.0	1,200.0	74.8	69.7	14.625	CC, ES
Remington Federal LC15-77HN - Original Drilling - APD	10,532.8	10,475.9	659.5	468.2	3.449	SF
Remington Federal LC15-78-1HN - Original Drilling - APD	1,200.0	1,200.0	38.8	33.7	7.583	CC, ES
Remington Federal LC15-78-1HN - Original Drilling - APD	10,532.8	10,502.1	329.6	138.8	1.727	Level 3, SF

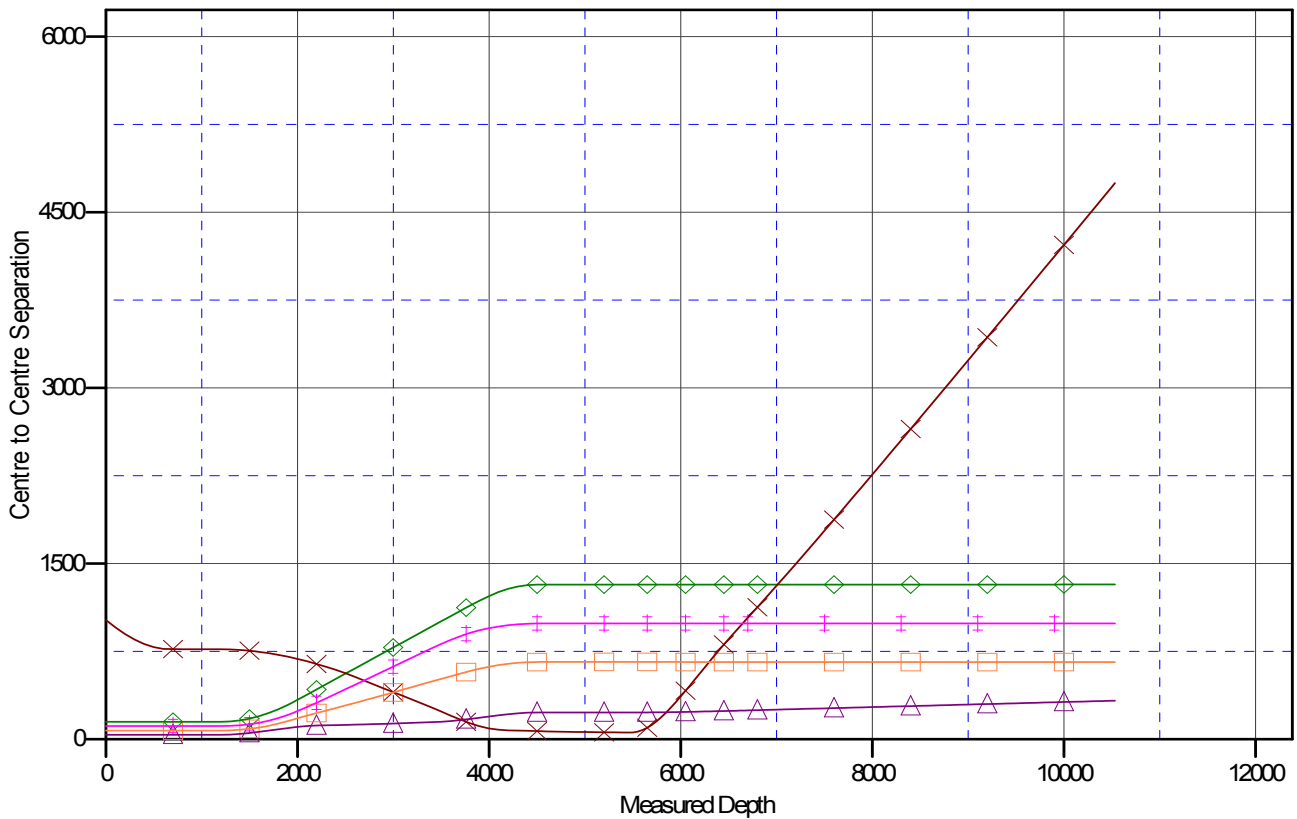
**Noble Energy Inc**  
Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling - Working	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Reference Site:</b>	LC (09N-59W)	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4940.0usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Remington Federal LC15-78HN  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.99°

## Ladder Plot



### LEGEND

C15-76HN, Original Drilling, APD-Rev 0 V0  
 -78HN, Original Drilling, As Drilled V0  
 Remington Federal LC15-78-1HN, Original Drilling, APD-Rev 0 V0  
 Remington Federal LC15-77-1HN, Original Drilling, APD-Rev 0 V0  
 Remington Federal LC15-77HN, Original

**Noble Energy Inc**  
Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling - Working	<b>Local Co-ordinate Reference:</b>	Well Remington Federal LC15-78HN
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Reference Site:</b>	LC (09N-59W)	<b>MD Reference:</b>	WELL @ 4940.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Remington Federal LC15-78HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4940.0usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Remington Federal LC15-78HN  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.99°

