

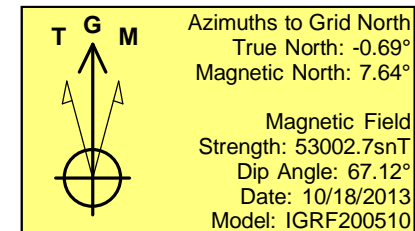
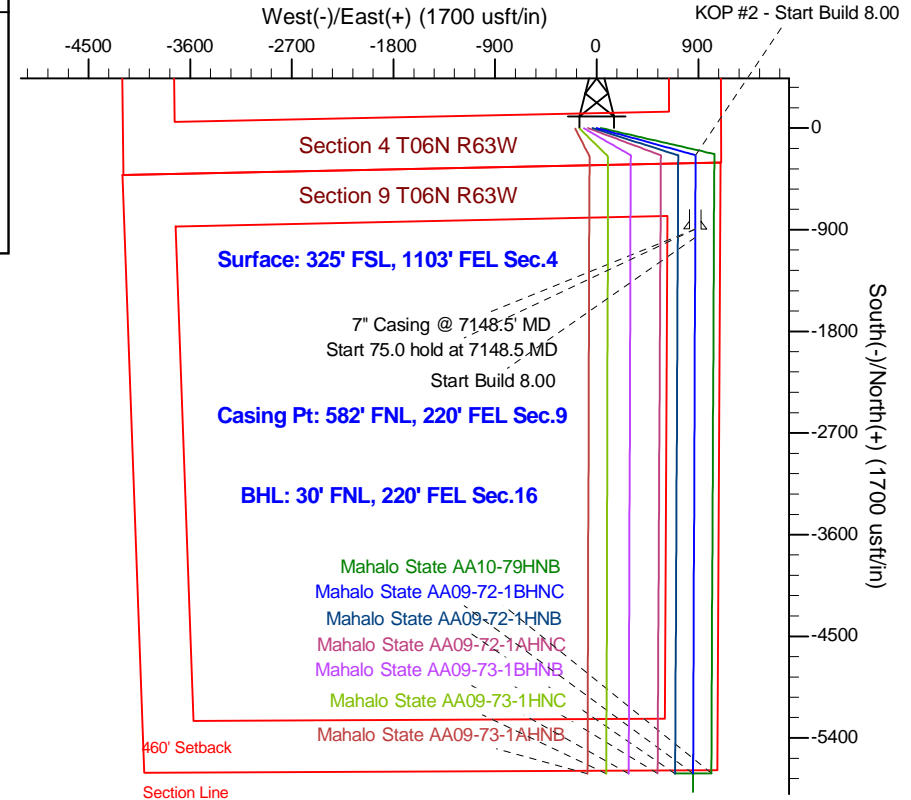
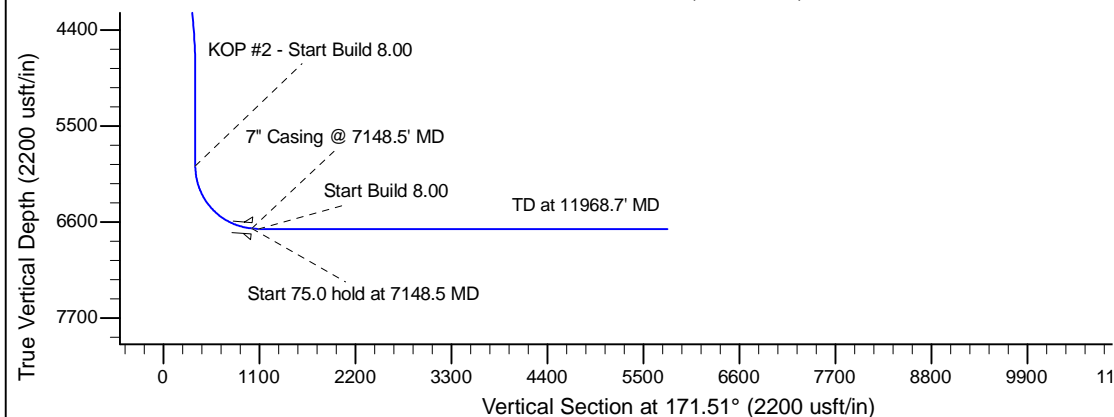
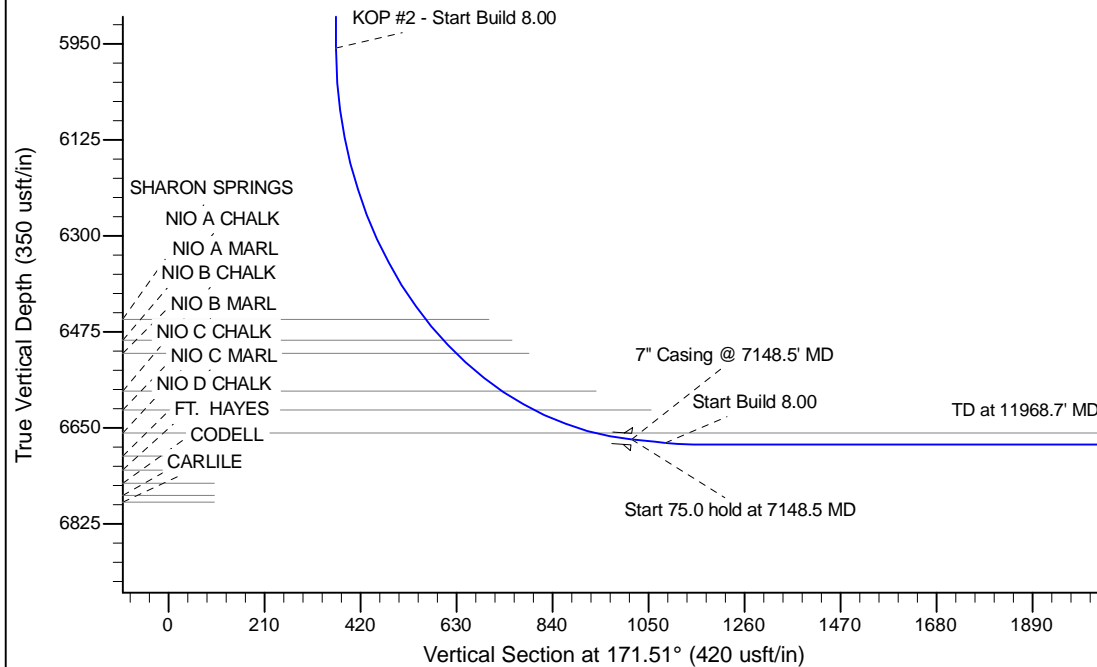
Project: Wattenberg Field  
Site: AA (Sec.4-T06N-R63W) Weld County, CO  
Well: Mahalo State AA09-72-1BHNC  
Wellbore: Original Drilling  
Design: APD - Rev 0

# 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	2100.0	18.00	105.34	2085.2	-37.1	135.2	2.00	105.34	56.6	
4	4128.8	18.00	105.34	4014.8	-202.9	739.8	0.00	0.00	309.9	
5	5028.7	0.00	0.00	4900.0	-240.0	875.0	2.00	180.00	366.6	
6	6086.0	0.00	0.00	5957.3	-240.0	875.0	0.00	0.00	366.6	
7	7148.5	85.00	180.23	6670.7	-893.8	872.4	8.00	180.23	1012.8	
8	7223.5	85.00	180.23	6677.3	-968.5	872.1	0.00	0.00	1086.6	
9	7286.0	90.00	180.23	6680.0	-1030.9	871.8	8.00	0.00	1148.3	
10	11968.7	90.00	180.23	6680.0	-5713.6	852.9	0.00	0.00	5776.9	Mahalo State AA09-72-1BHNC BHL 30'FNL, 220'FEL



## WELL DETAILS: Mahalo State AA09-72-1BHNC

Ground Level: 4700.0			
0.0	0.0	Northings	Eastings
1430233.20	3295813.04	Latitude	Longitude
40.509520	-104.436130		

Plan: APD - Rev 0 (Mahalo State AA09-72-1BHNC/Original Drilling)

Created By: Shailey Jewell Date: 10:24, December 06 2013

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

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

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

# **Northern Region Drilling - Working**

**Wattenberg Field**

**AA (06N-63W)**

**Mahalo State AA09-72-1BHNC**

**Original Drilling**

**Plan: APD - Rev 0**

## **Standard Planning Report**

**06 December, 2013**

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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>	AA (06N-63W)		
<b>Site Position:</b>		<b>Northing:</b>	1,427,844.88 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,302,558.01 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	40.502740
		<b>Longitude:</b>	-104.411980
		<b>Grid Convergence:</b>	0.70 °

<b>Well</b>	Mahalo State AA09-72-1BHNC		
<b>Well Position</b>	<b>+N/-S</b>	2,388.4 usft	<b>Northing:</b>
	<b>+E/-W</b>	-6,745.2 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<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	10/18/2013	8.33	67.12	53,003

<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	171.51

<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	
2,100.0	18.00	105.34	2,085.2	-37.1	135.2	2.00	2.00	0.00	105.34	
4,128.8	18.00	105.34	4,014.8	-202.9	739.8	0.00	0.00	0.00	0.00	
5,028.7	0.00	0.00	4,900.0	-240.0	875.0	2.00	-2.00	0.00	180.00	
6,086.0	0.00	0.00	5,957.3	-240.0	875.0	0.00	0.00	0.00	0.00	
7,148.5	85.00	180.23	6,670.7	-893.8	872.4	8.00	8.00	0.00	180.23	
7,223.5	85.00	180.23	6,677.3	-968.5	872.1	0.00	0.00	0.00	0.00	
7,286.0	90.00	180.23	6,680.0	-1,030.9	871.8	8.00	8.00	0.00	0.00	
11,968.7	90.00	180.23	6,680.0	-5,713.6	852.9	0.00	0.00	0.00	0.00	Mahalo State AA09-7:

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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
1,015.0	0.00	0.00	1,015.0	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
KOP - Start Build 2.00									
1,250.0	1.00	105.34	1,250.0	-0.1	0.4	0.2	2.00	2.00	0.00
1,300.0	2.00	105.34	1,300.0	-0.5	1.7	0.7	2.00	2.00	0.00
1,350.0	3.00	105.34	1,349.9	-1.0	3.8	1.6	2.00	2.00	0.00
1,400.0	4.00	105.34	1,399.8	-1.8	6.7	2.8	2.00	2.00	0.00
1,450.0	5.00	105.34	1,449.7	-2.9	10.5	4.4	2.00	2.00	0.00
1,500.0	6.00	105.34	1,499.5	-4.2	15.1	6.3	2.00	2.00	0.00
1,550.0	7.00	105.34	1,549.1	-5.6	20.6	8.6	2.00	2.00	0.00
1,600.0	8.00	105.34	1,598.7	-7.4	26.9	11.3	2.00	2.00	0.00
1,650.0	9.00	105.34	1,648.2	-9.3	34.0	14.2	2.00	2.00	0.00
1,700.0	10.00	105.34	1,697.5	-11.5	42.0	17.6	2.00	2.00	0.00
1,750.0	11.00	105.34	1,746.6	-13.9	50.8	21.3	2.00	2.00	0.00
1,800.0	12.00	105.34	1,795.6	-16.6	60.4	25.3	2.00	2.00	0.00
1,850.0	13.00	105.34	1,844.4	-19.4	70.8	29.7	2.00	2.00	0.00
1,900.0	14.00	105.34	1,893.1	-22.5	82.1	34.4	2.00	2.00	0.00
1,950.0	15.00	105.34	1,941.5	-25.8	94.1	39.4	2.00	2.00	0.00
2,000.0	16.00	105.34	1,989.6	-29.4	107.0	44.8	2.00	2.00	0.00
2,050.0	17.00	105.34	2,037.6	-33.1	120.7	50.6	2.00	2.00	0.00
2,100.0	18.00	105.34	2,085.2	-37.1	135.2	56.6	2.00	2.00	0.00
2,150.0	18.00	105.34	2,132.8	-41.2	150.1	62.9	0.00	0.00	0.00
2,200.0	18.00	105.34	2,180.4	-45.3	165.0	69.1	0.00	0.00	0.00
2,250.0	18.00	105.34	2,227.9	-49.3	179.9	75.4	0.00	0.00	0.00
2,300.0	18.00	105.34	2,275.5	-53.4	194.8	81.6	0.00	0.00	0.00
2,350.0	18.00	105.34	2,323.0	-57.5	209.7	87.9	0.00	0.00	0.00
2,400.0	18.00	105.34	2,370.6	-61.6	224.6	94.1	0.00	0.00	0.00
2,450.0	18.00	105.34	2,418.1	-65.7	239.5	100.3	0.00	0.00	0.00
2,500.0	18.00	105.34	2,465.7	-69.8	254.4	106.6	0.00	0.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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)
2,550.0	18.00	105.34	2,513.2	-73.9	269.3	112.8	0.00	0.00	0.00
2,600.0	18.00	105.34	2,560.8	-78.0	284.2	119.1	0.00	0.00	0.00
2,650.0	18.00	105.34	2,608.4	-82.0	299.1	125.3	0.00	0.00	0.00
2,700.0	18.00	105.34	2,655.9	-86.1	314.0	131.6	0.00	0.00	0.00
2,750.0	18.00	105.34	2,703.5	-90.2	328.9	137.8	0.00	0.00	0.00
2,800.0	18.00	105.34	2,751.0	-94.3	343.8	144.0	0.00	0.00	0.00
2,850.0	18.00	105.34	2,798.6	-98.4	358.7	150.3	0.00	0.00	0.00
2,900.0	18.00	105.34	2,846.1	-102.5	373.6	156.5	0.00	0.00	0.00
2,950.0	18.00	105.34	2,893.7	-106.6	388.5	162.8	0.00	0.00	0.00
3,000.0	18.00	105.34	2,941.2	-110.7	403.4	169.0	0.00	0.00	0.00
3,050.0	18.00	105.34	2,988.8	-114.7	418.3	175.2	0.00	0.00	0.00
3,100.0	18.00	105.34	3,036.3	-118.8	433.2	181.5	0.00	0.00	0.00
3,150.0	18.00	105.34	3,083.9	-122.9	448.1	187.7	0.00	0.00	0.00
3,200.0	18.00	105.34	3,131.4	-127.0	463.0	194.0	0.00	0.00	0.00
3,250.0	18.00	105.34	3,179.0	-131.1	477.9	200.2	0.00	0.00	0.00
3,300.0	18.00	105.34	3,226.5	-135.2	492.8	206.5	0.00	0.00	0.00
3,350.0	18.00	105.34	3,274.1	-139.3	507.7	212.7	0.00	0.00	0.00
3,400.0	18.00	105.34	3,321.6	-143.3	522.6	218.9	0.00	0.00	0.00
3,450.0	18.00	105.34	3,369.2	-147.4	537.5	225.2	0.00	0.00	0.00
3,500.0	18.00	105.34	3,416.8	-151.5	552.4	231.4	0.00	0.00	0.00
3,550.0	18.00	105.34	3,464.3	-155.6	567.3	237.7	0.00	0.00	0.00
3,571.8	18.00	105.34	3,485.0	-157.4	573.8	240.4	0.00	0.00	0.00
<b>PARKMAN</b>									
3,600.0	18.00	105.34	3,511.9	-159.7	582.2	243.9	0.00	0.00	0.00
3,650.0	18.00	105.34	3,559.4	-163.8	597.1	250.1	0.00	0.00	0.00
3,700.0	18.00	105.34	3,607.0	-167.9	612.0	256.4	0.00	0.00	0.00
3,750.0	18.00	105.34	3,654.5	-172.0	626.9	262.6	0.00	0.00	0.00
3,800.0	18.00	105.34	3,702.1	-176.0	641.8	268.9	0.00	0.00	0.00
3,850.0	18.00	105.34	3,749.6	-180.1	656.7	275.1	0.00	0.00	0.00
3,900.0	18.00	105.34	3,797.2	-184.2	671.6	281.4	0.00	0.00	0.00
3,950.0	18.00	105.34	3,844.7	-188.3	686.5	287.6	0.00	0.00	0.00
4,000.0	18.00	105.34	3,892.3	-192.4	701.4	293.8	0.00	0.00	0.00
4,050.0	18.00	105.34	3,939.8	-196.5	716.3	300.1	0.00	0.00	0.00
4,100.0	18.00	105.34	3,987.4	-200.6	731.2	306.3	0.00	0.00	0.00
4,128.8	18.00	105.34	4,014.8	-202.9	739.8	309.9	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
4,150.0	17.57	105.34	4,035.0	-204.6	746.0	312.5	2.00	-2.00	0.00
4,200.0	16.57	105.34	4,082.8	-208.5	760.2	318.5	2.00	-2.00	0.00
4,250.0	15.57	105.34	4,130.8	-212.2	773.6	324.1	2.00	-2.00	0.00
4,300.0	14.57	105.34	4,179.1	-215.6	786.1	329.3	2.00	-2.00	0.00
4,350.0	13.57	105.34	4,227.6	-218.8	797.8	334.2	2.00	-2.00	0.00
4,400.0	12.57	105.34	4,276.3	-221.8	808.7	338.8	2.00	-2.00	0.00
4,436.5	11.84	105.34	4,312.0	-223.9	816.2	341.9	2.00	-2.00	0.00
<b>SUSSEX</b>									
4,450.0	11.57	105.34	4,325.2	-224.6	818.8	343.0	2.00	-2.00	0.00
4,500.0	10.57	105.34	4,374.2	-227.1	828.1	346.9	2.00	-2.00	0.00
4,550.0	9.57	105.34	4,423.5	-229.4	836.5	350.4	2.00	-2.00	0.00
4,600.0	8.57	105.34	4,472.9	-231.5	844.1	353.6	2.00	-2.00	0.00
4,650.0	7.57	105.34	4,522.4	-233.4	850.9	356.5	2.00	-2.00	0.00
4,700.0	6.57	105.34	4,572.0	-235.0	856.8	358.9	2.00	-2.00	0.00
4,750.0	5.57	105.34	4,621.7	-236.4	861.9	361.1	2.00	-2.00	0.00
4,800.0	4.57	105.34	4,671.5	-237.6	866.2	362.9	2.00	-2.00	0.00
4,850.0	3.57	105.34	4,721.4	-238.5	869.6	364.3	2.00	-2.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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)
4,900.0	2.57	105.34	4,771.3	-239.2	872.2	365.4	2.00	-2.00	0.00
4,950.0	1.57	105.34	4,821.3	-239.7	874.0	366.1	2.00	-2.00	0.00
4,975.7	1.06	105.34	4,847.0	-239.9	874.5	366.4	2.00	-2.00	0.00
<b>SHANNON</b>									
5,000.0	0.57	105.34	4,871.3	-240.0	874.9	366.5	2.00	-2.00	0.00
5,028.7	0.00	0.00	4,900.0	-240.0	875.0	366.6	2.00	-2.00	0.00
5,050.0	0.00	0.00	4,921.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,100.0	0.00	0.00	4,971.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,150.0	0.00	0.00	5,021.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,071.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,250.0	0.00	0.00	5,121.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,171.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,350.0	0.00	0.00	5,221.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,271.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,450.0	0.00	0.00	5,321.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,371.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,550.0	0.00	0.00	5,421.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,471.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,650.0	0.00	0.00	5,521.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,571.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,750.0	0.00	0.00	5,621.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,671.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,850.0	0.00	0.00	5,721.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,890.7	0.00	0.00	5,762.0	-240.0	875.0	366.6	0.00	0.00	0.00
<b>TEEPEE BUTTES</b>									
5,900.0	0.00	0.00	5,771.3	-240.0	875.0	366.6	0.00	0.00	0.00
5,950.0	0.00	0.00	5,821.3	-240.0	875.0	366.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,871.3	-240.0	875.0	366.6	0.00	0.00	0.00
6,050.0	0.00	0.00	5,921.3	-240.0	875.0	366.6	0.00	0.00	0.00
6,086.0	0.00	0.00	5,957.3	-240.0	875.0	366.6	0.00	0.00	0.00
<b>KOP #2 - Start Build 8.00</b>									
6,100.0	1.12	180.23	5,971.3	-240.1	875.0	366.7	7.99	7.99	0.00
6,150.0	5.12	180.23	6,021.2	-242.9	875.0	369.4	8.00	8.00	0.00
6,200.0	9.12	180.23	6,070.8	-249.1	875.0	375.5	8.00	8.00	0.00
6,250.0	13.12	180.23	6,119.8	-258.7	874.9	385.0	8.00	8.00	0.00
6,300.0	17.12	180.23	6,168.1	-271.7	874.9	397.9	8.00	8.00	0.00
6,350.0	21.12	180.23	6,215.3	-288.1	874.8	414.1	8.00	8.00	0.00
6,400.0	25.12	180.23	6,261.3	-307.7	874.7	433.5	8.00	8.00	0.00
6,450.0	29.12	180.23	6,305.8	-330.5	874.6	456.0	8.00	8.00	0.00
6,500.0	33.12	180.23	6,348.6	-356.4	874.5	481.6	8.00	8.00	0.00
6,550.0	37.12	180.23	6,389.5	-385.1	874.4	510.0	8.00	8.00	0.00
6,600.0	41.12	180.23	6,428.3	-416.7	874.3	541.2	8.00	8.00	0.00
6,632.2	43.69	180.23	6,452.0	-438.3	874.2	562.6	8.00	8.00	0.00
<b>SHARON SPRINGS</b>									
6,650.0	45.12	180.23	6,464.7	-450.8	874.2	574.9	8.00	8.00	0.00
6,686.8	48.06	180.23	6,490.0	-477.5	874.0	601.3	8.00	8.00	0.00
<b>NIO A CHALK</b>									
6,700.0	49.12	180.23	6,498.8	-487.4	874.0	611.2	8.00	8.00	0.00
6,723.7	51.02	180.23	6,514.0	-505.7	873.9	629.1	8.00	8.00	0.00
<b>NIO A MARL</b>									
6,750.0	53.12	180.23	6,530.1	-526.4	873.8	649.6	8.00	8.00	0.00
6,800.0	57.12	180.23	6,558.7	-567.4	873.7	690.2	8.00	8.00	0.00
6,847.1	60.89	180.23	6,583.0	-607.8	873.5	730.1	8.00	8.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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)
<b>NIO B CHALK</b>									
6,850.0	61.12	180.23	6,584.4	-610.3	873.5	732.6	8.00	8.00	0.00
6,900.0	65.12	180.23	6,607.0	-654.9	873.3	776.6	8.00	8.00	0.00
6,924.7	67.10	180.23	6,617.0	-677.5	873.2	799.0	8.00	8.00	0.00
<b>NIO B MARL</b>									
6,950.0	69.12	180.23	6,626.4	-700.9	873.1	822.2	8.00	8.00	0.00
7,000.0	73.12	180.23	6,642.6	-748.2	873.0	868.9	8.00	8.00	0.00
7,050.0	77.12	180.23	6,655.4	-796.5	872.8	916.7	8.00	8.00	0.00
7,066.8	78.47	180.23	6,659.0	-813.0	872.7	932.9	8.00	8.00	0.00
<b>NIO C CHALK</b>									
7,100.0	81.12	180.23	6,664.9	-845.6	872.6	965.2	8.00	8.00	0.00
7,148.5	85.00	180.23	6,670.7	-893.8	872.4	1,012.8	8.00	8.00	0.00
<b>Start 75.0 hold at 7148.5 MD - 7" Casing @ 7148.5' MD</b>									
7,150.0	85.00	180.23	6,670.9	-895.3	872.4	1,014.2	0.08	0.08	0.00
7,200.0	85.00	180.23	6,675.2	-945.1	872.2	1,063.5	0.00	0.00	0.00
7,223.5	85.00	180.23	6,677.3	-968.5	872.1	1,086.6	0.00	0.00	0.00
<b>Start Build 8.00</b>									
7,250.0	87.12	180.23	6,679.1	-994.9	872.0	1,112.7	8.00	8.00	0.00
7,286.0	90.00	180.23	6,680.0	-1,030.9	871.8	1,148.3	8.00	8.00	0.00
7,300.0	90.00	180.23	6,680.0	-1,044.9	871.8	1,162.2	0.00	0.00	0.00
7,350.0	90.00	180.23	6,680.0	-1,094.9	871.6	1,211.6	0.00	0.00	0.00
7,400.0	90.00	180.23	6,680.0	-1,144.9	871.4	1,261.0	0.00	0.00	0.00
7,450.0	90.00	180.23	6,680.0	-1,194.9	871.2	1,310.4	0.00	0.00	0.00
7,500.0	90.00	180.23	6,680.0	-1,244.9	871.0	1,359.8	0.00	0.00	0.00
7,550.0	90.00	180.23	6,680.0	-1,294.9	870.7	1,409.3	0.00	0.00	0.00
7,600.0	90.00	180.23	6,680.0	-1,344.9	870.5	1,458.7	0.00	0.00	0.00
7,650.0	90.00	180.23	6,680.0	-1,394.9	870.3	1,508.1	0.00	0.00	0.00
7,700.0	90.00	180.23	6,680.0	-1,444.9	870.1	1,557.5	0.00	0.00	0.00
7,750.0	90.00	180.23	6,680.0	-1,494.9	869.9	1,606.9	0.00	0.00	0.00
7,800.0	90.00	180.23	6,680.0	-1,544.9	869.7	1,656.4	0.00	0.00	0.00
7,850.0	90.00	180.23	6,680.0	-1,594.9	869.5	1,705.8	0.00	0.00	0.00
7,900.0	90.00	180.23	6,680.0	-1,644.9	869.3	1,755.2	0.00	0.00	0.00
7,950.0	90.00	180.23	6,680.0	-1,694.9	869.1	1,804.6	0.00	0.00	0.00
8,000.0	90.00	180.23	6,680.0	-1,744.9	868.9	1,854.1	0.00	0.00	0.00
8,050.0	90.00	180.23	6,680.0	-1,794.9	868.7	1,903.5	0.00	0.00	0.00
8,100.0	90.00	180.23	6,680.0	-1,844.9	868.5	1,952.9	0.00	0.00	0.00
8,150.0	90.00	180.23	6,680.0	-1,894.9	868.3	2,002.3	0.00	0.00	0.00
8,200.0	90.00	180.23	6,680.0	-1,944.9	868.1	2,051.7	0.00	0.00	0.00
8,250.0	90.00	180.23	6,680.0	-1,994.9	867.9	2,101.2	0.00	0.00	0.00
8,300.0	90.00	180.23	6,680.0	-2,044.9	867.7	2,150.6	0.00	0.00	0.00
8,350.0	90.00	180.23	6,680.0	-2,094.9	867.5	2,200.0	0.00	0.00	0.00
8,400.0	90.00	180.23	6,680.0	-2,144.9	867.3	2,249.4	0.00	0.00	0.00
8,450.0	90.00	180.23	6,680.0	-2,194.9	867.1	2,298.9	0.00	0.00	0.00
8,500.0	90.00	180.23	6,680.0	-2,244.9	866.9	2,348.3	0.00	0.00	0.00
8,550.0	90.00	180.23	6,680.0	-2,294.9	866.7	2,397.7	0.00	0.00	0.00
8,600.0	90.00	180.23	6,680.0	-2,344.9	866.5	2,447.1	0.00	0.00	0.00
8,650.0	90.00	180.23	6,680.0	-2,394.9	866.3	2,496.5	0.00	0.00	0.00
8,700.0	90.00	180.23	6,680.0	-2,444.9	866.1	2,546.0	0.00	0.00	0.00
8,750.0	90.00	180.23	6,680.0	-2,494.9	865.9	2,595.4	0.00	0.00	0.00
8,800.0	90.00	180.23	6,680.0	-2,544.9	865.7	2,644.8	0.00	0.00	0.00
8,850.0	90.00	180.23	6,680.0	-2,594.9	865.5	2,694.2	0.00	0.00	0.00
8,900.0	90.00	180.23	6,680.0	-2,644.9	865.3	2,743.7	0.00	0.00	0.00
8,950.0	90.00	180.23	6,680.0	-2,694.9	865.1	2,793.1	0.00	0.00	0.00

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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)	
9,000.0	90.00	180.23	6,680.0	-2,744.9	864.9	2,842.5	0.00	0.00	0.00	
9,050.0	90.00	180.23	6,680.0	-2,794.9	864.7	2,891.9	0.00	0.00	0.00	
9,100.0	90.00	180.23	6,680.0	-2,844.9	864.5	2,941.3	0.00	0.00	0.00	
9,150.0	90.00	180.23	6,680.0	-2,894.9	864.3	2,990.8	0.00	0.00	0.00	
9,200.0	90.00	180.23	6,680.0	-2,944.9	864.1	3,040.2	0.00	0.00	0.00	
9,250.0	90.00	180.23	6,680.0	-2,994.9	863.9	3,089.6	0.00	0.00	0.00	
9,300.0	90.00	180.23	6,680.0	-3,044.9	863.7	3,139.0	0.00	0.00	0.00	
9,350.0	90.00	180.23	6,680.0	-3,094.9	863.5	3,188.4	0.00	0.00	0.00	
9,400.0	90.00	180.23	6,680.0	-3,144.9	863.3	3,237.9	0.00	0.00	0.00	
9,450.0	90.00	180.23	6,680.0	-3,194.9	863.1	3,287.3	0.00	0.00	0.00	
9,500.0	90.00	180.23	6,680.0	-3,244.9	862.9	3,336.7	0.00	0.00	0.00	
9,550.0	90.00	180.23	6,680.0	-3,294.9	862.7	3,386.1	0.00	0.00	0.00	
9,600.0	90.00	180.23	6,680.0	-3,344.9	862.5	3,435.6	0.00	0.00	0.00	
9,650.0	90.00	180.23	6,680.0	-3,394.9	862.3	3,485.0	0.00	0.00	0.00	
9,700.0	90.00	180.23	6,680.0	-3,444.9	862.1	3,534.4	0.00	0.00	0.00	
9,750.0	90.00	180.23	6,680.0	-3,494.9	861.9	3,583.8	0.00	0.00	0.00	
9,800.0	90.00	180.23	6,680.0	-3,544.9	861.7	3,633.2	0.00	0.00	0.00	
9,850.0	90.00	180.23	6,680.0	-3,594.9	861.5	3,682.7	0.00	0.00	0.00	
9,900.0	90.00	180.23	6,680.0	-3,644.9	861.3	3,732.1	0.00	0.00	0.00	
9,950.0	90.00	180.23	6,680.0	-3,694.9	861.1	3,781.5	0.00	0.00	0.00	
10,000.0	90.00	180.23	6,680.0	-3,744.9	860.9	3,830.9	0.00	0.00	0.00	
10,050.0	90.00	180.23	6,680.0	-3,794.9	860.7	3,880.4	0.00	0.00	0.00	
10,100.0	90.00	180.23	6,680.0	-3,844.9	860.5	3,929.8	0.00	0.00	0.00	
10,150.0	90.00	180.23	6,680.0	-3,894.9	860.3	3,979.2	0.00	0.00	0.00	
10,200.0	90.00	180.23	6,680.0	-3,944.9	860.1	4,028.6	0.00	0.00	0.00	
10,250.0	90.00	180.23	6,680.0	-3,994.9	859.9	4,078.0	0.00	0.00	0.00	
10,300.0	90.00	180.23	6,680.0	-4,044.9	859.7	4,127.5	0.00	0.00	0.00	
10,350.0	90.00	180.23	6,680.0	-4,094.9	859.5	4,176.9	0.00	0.00	0.00	
10,400.0	90.00	180.23	6,680.0	-4,144.9	859.3	4,226.3	0.00	0.00	0.00	
10,450.0	90.00	180.23	6,680.0	-4,194.9	859.1	4,275.7	0.00	0.00	0.00	
10,500.0	90.00	180.23	6,680.0	-4,244.9	858.9	4,325.2	0.00	0.00	0.00	
10,550.0	90.00	180.23	6,680.0	-4,294.9	858.7	4,374.6	0.00	0.00	0.00	
10,600.0	90.00	180.23	6,680.0	-4,344.9	858.5	4,424.0	0.00	0.00	0.00	
10,650.0	90.00	180.23	6,680.0	-4,394.9	858.3	4,473.4	0.00	0.00	0.00	
10,700.0	90.00	180.23	6,680.0	-4,444.9	858.1	4,522.8	0.00	0.00	0.00	
10,750.0	90.00	180.23	6,680.0	-4,494.9	857.9	4,572.3	0.00	0.00	0.00	
10,800.0	90.00	180.23	6,680.0	-4,544.9	857.7	4,621.7	0.00	0.00	0.00	
10,850.0	90.00	180.23	6,680.0	-4,594.9	857.5	4,671.1	0.00	0.00	0.00	
10,900.0	90.00	180.23	6,680.0	-4,644.9	857.3	4,720.5	0.00	0.00	0.00	
10,950.0	90.00	180.23	6,680.0	-4,694.9	857.1	4,769.9	0.00	0.00	0.00	
11,000.0	90.00	180.23	6,680.0	-4,744.9	856.8	4,819.4	0.00	0.00	0.00	
11,050.0	90.00	180.23	6,680.0	-4,794.9	856.6	4,868.8	0.00	0.00	0.00	
11,100.0	90.00	180.23	6,680.0	-4,844.9	856.4	4,918.2	0.00	0.00	0.00	
11,150.0	90.00	180.23	6,680.0	-4,894.9	856.2	4,967.6	0.00	0.00	0.00	
11,200.0	90.00	180.23	6,680.0	-4,944.9	856.0	5,017.1	0.00	0.00	0.00	
11,250.0	90.00	180.23	6,680.0	-4,994.9	855.8	5,066.5	0.00	0.00	0.00	
11,300.0	90.00	180.23	6,680.0	-5,044.9	855.6	5,115.9	0.00	0.00	0.00	
11,350.0	90.00	180.23	6,680.0	-5,094.9	855.4	5,165.3	0.00	0.00	0.00	
11,400.0	90.00	180.23	6,680.0	-5,144.9	855.2	5,214.7	0.00	0.00	0.00	
11,450.0	90.00	180.23	6,680.0	-5,194.9	855.0	5,264.2	0.00	0.00	0.00	
11,500.0	90.00	180.23	6,680.0	-5,244.9	854.8	5,313.6	0.00	0.00	0.00	
11,550.0	90.00	180.23	6,680.0	-5,294.9	854.6	5,363.0	0.00	0.00	0.00	
11,600.0	90.00	180.23	6,680.0	-5,344.9	854.4	5,412.4	0.00	0.00	0.00	
11,650.0	90.00	180.23	6,680.0	-5,394.9	854.2	5,461.9	0.00	0.00	0.00	



# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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)
11,700.0	90.00	180.23	6,680.0	-5,444.9	854.0	5,511.3	0.00	0.00	0.00
11,750.0	90.00	180.23	6,680.0	-5,494.9	853.8	5,560.7	0.00	0.00	0.00
11,800.0	90.00	180.23	6,680.0	-5,544.9	853.6	5,610.1	0.00	0.00	0.00
11,850.0	90.00	180.23	6,680.0	-5,594.9	853.4	5,659.5	0.00	0.00	0.00
11,900.0	90.00	180.23	6,680.0	-5,644.9	853.2	5,709.0	0.00	0.00	0.00
11,950.0	90.00	180.23	6,680.0	-5,694.9	853.0	5,758.4	0.00	0.00	0.00
11,968.7	90.00	180.23	6,680.0	-5,713.6	852.9	5,776.9	0.00	0.00	0.00
TD at 11968.7 - Mahalo State AA09-72-1BHNC BHL 30°FNL, 220°FEL									

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									
Mahalo State AA09-72-1	0.00	0.00	6,680.0	-5,713.6	852.9	1,424,519.80	3,296,665.96	40.493810	-104.433310
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
7,148.5	6,670.7	7" Casing @ 7148.5' MD	7	8-3/4	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,015.0	1,015.0	PIERRE		0.00	
3,571.8	3,485.0	PARKMAN		0.00	
4,436.5	4,312.0	SUSSEX		0.00	
4,975.7	4,847.0	SHANNON		0.00	
5,890.7	5,762.0	TEEPEE BUTTES		0.00	
6,632.2	6,452.0	SHARON SPRINGS		0.00	
6,686.8	6,490.0	NIO A CHALK		0.00	
6,723.7	6,514.0	NIO A MARL		0.00	
6,847.1	6,583.0	NIO B CHALK		0.00	
6,924.7	6,617.0	NIO B MARL		0.00	
7,066.8	6,659.0	NIO C CHALK		0.00	

# Noble Energy Inc

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Company:</b>	Northern Region Drilling - Working	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site:</b>	AA (06N-63W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Mahalo State AA09-72-1BHNC	<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
4,128.8	4,014.8	-202.9	739.8	Start Drop -2.00
6,086.0	5,957.3	-240.0	875.0	KOP #2 - Start Build 8.00
7,148.5	6,670.7	-893.8	872.4	Start 75.0 hold at 7148.5 MD
7,223.5	6,677.3	-968.5	872.1	Start Build 8.00
11,968.7	6,680.0	-5,713.6	852.9	TD at 11968.7

# **Northern Region Drilling - Working**

**Wattenberg Field**

**AA (06N-63W)**

**Mahalo State AA09-72-1BHNC**

**Original Drilling**

**APD - Rev 0**

## **Anticollision Summary Report**

**06 December, 2013**

**Noble Energy Inc**  
Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling - Working	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Reference Site:</b>	AA (06N-63W)	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Mahalo State AA09-72-1BHNC	<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>	12/6/2013		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,967.8	APD - Rev 0 (Original Drilling)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction

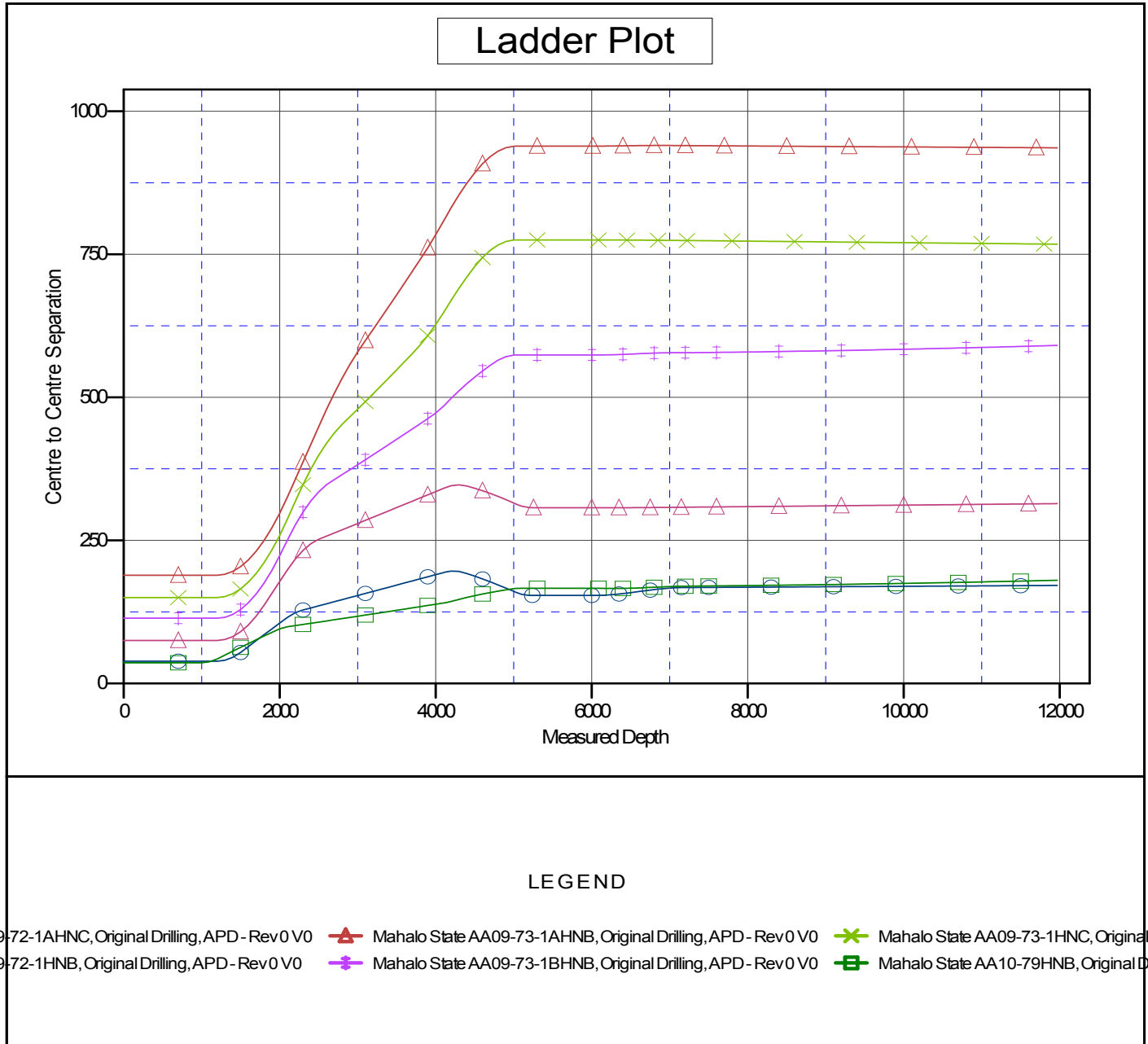
<b>Summary</b>						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
AA (06N-63W)						
Mahalo State AA09-72-1AHNC - Original Drilling - APD -	1,200.0	1,200.0	75.1	70.0	14.715	CC, ES
Mahalo State AA09-72-1AHNC - Original Drilling - APD -	11,968.7	11,919.3	314.3	199.2	2.730	SF
Mahalo State AA09-72-1HNB - Original Drilling - APD - R	1,200.0	1,200.0	38.9	33.8	7.630	CC, ES
Mahalo State AA09-72-1HNB - Original Drilling - APD - R	11,968.7	11,875.3	171.3	63.3	1.586	Level 3, SF
Mahalo State AA09-73-1AHNB - Original Drilling - APD -	1,200.0	1,200.0	189.1	184.0	37.067	CC, ES
Mahalo State AA09-73-1AHNB - Original Drilling - APD -	11,968.7	11,795.6	936.2	821.8	8.187	SF
Mahalo State AA09-73-1BHNB - Original Drilling - APD -	1,200.0	1,200.0	114.0	108.9	22.345	CC, ES
Mahalo State AA09-73-1BHNB - Original Drilling - APD -	11,968.7	11,813.3	590.8	479.6	5.313	SF
Mahalo State AA09-73-1HNC - Original Drilling - APD - R	1,200.0	1,200.0	150.2	145.1	29.439	CC, ES
Mahalo State AA09-73-1HNC - Original Drilling - APD - R	11,968.7	11,871.8	767.7	652.6	6.666	SF
Mahalo State AA10-79HNB - Original Drilling - APD - Rev	1,000.0	1,000.0	36.1	31.9	8.601	CC, ES
Mahalo State AA10-79HNB - Original Drilling - APD - Rev	11,968.7	11,964.1	180.3	66.2	1.580	Level 3, SF

**Noble Energy Inc**  
Anticollision Summary Report

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<b>Reference Site:</b>	AA (06N-63W)	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Mahalo State AA09-72-1BHNC	<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 @ 4730.0usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Mahalo State AA09-72-1BHNC  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.69°



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

**Noble Energy Inc**  
Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling - Working	<b>Local Co-ordinate Reference:</b>	Well Mahalo State AA09-72-1BHNC
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Reference Site:</b>	AA (06N-63W)	<b>MD Reference:</b>	WELL @ 4730.0usft (Original Well Elev.)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Mahalo State AA09-72-1BHNC	<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 @ 4730.0usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Mahalo State AA09-72-1BHNC  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.69°

