

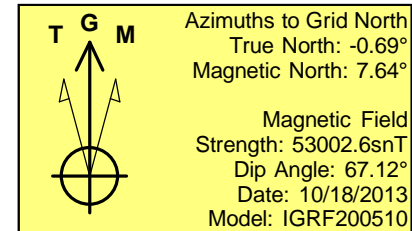
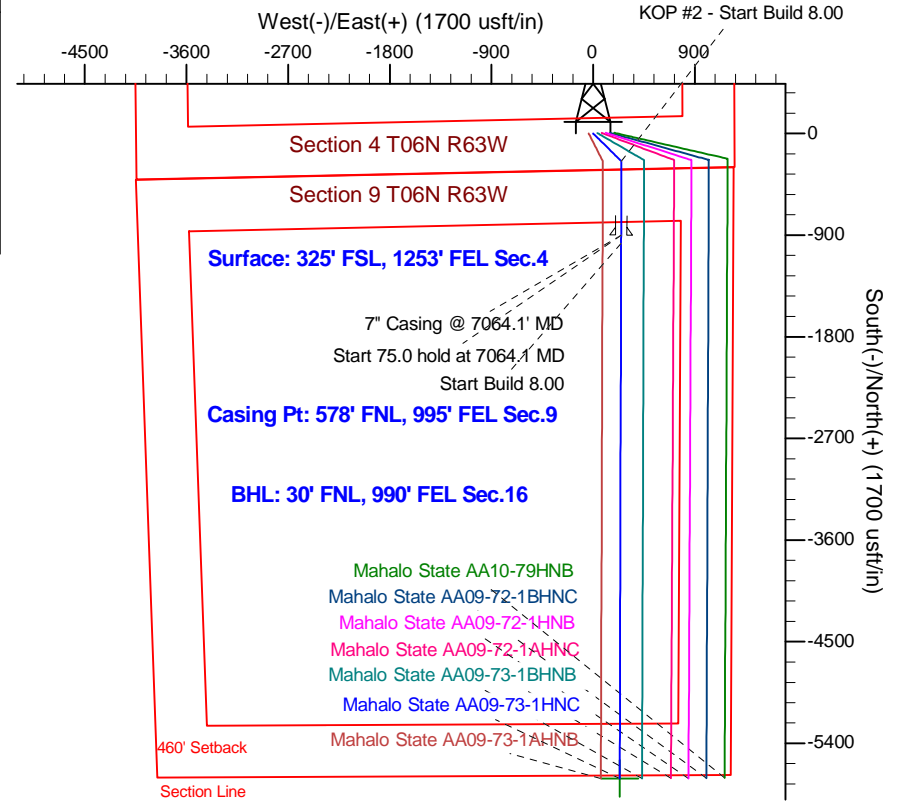
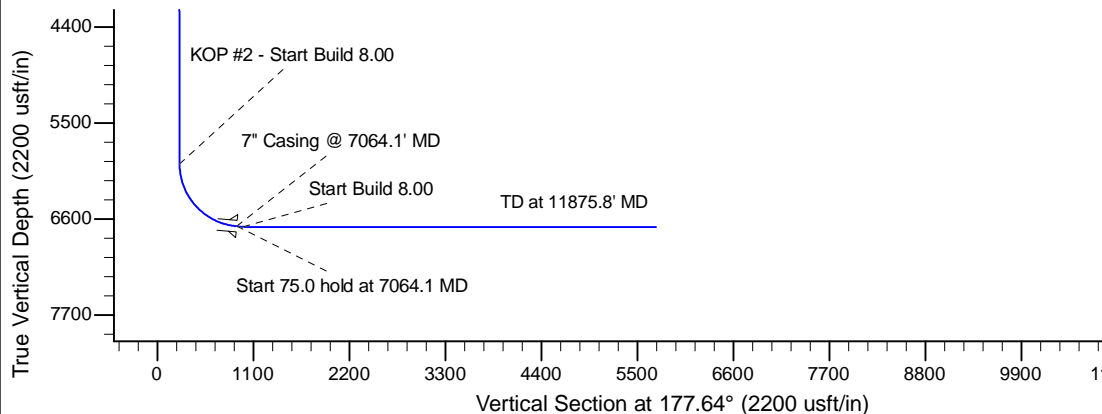
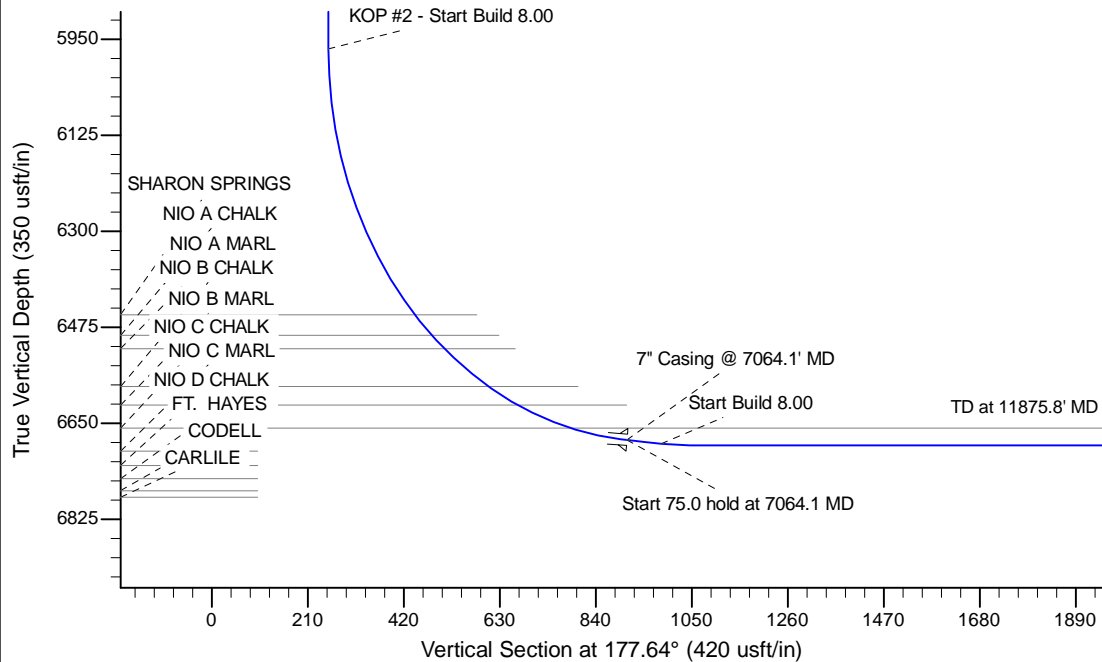
Project: Wattenberg Field
 Site: AA (Sec.4-T06N-R63W) Weld County, CO
 Well: Mahalo State AA09-73-1HNC
 Wellbore: Original Drilling
 Design: APD - Rev 0

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	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2200.0	0.00	0.00	2200.0	0.0	0.0	0.00	0.00	0.0	
3	2852.9	13.06	134.42	2847.2	-51.8	52.9	2.00	134.42	54.0	
4	3746.5	13.06	134.42	3717.8	-193.2	197.1	0.00	0.00	201.1	
5	4399.4	0.00	0.00	4365.0	-245.0	250.0	2.00	180.00	255.1	
6	6001.6	0.00	0.00	5967.3	-245.0	250.0	0.00	0.00	255.1	
7	7064.1	85.00	180.15	6680.7	-898.8	248.2	8.00	180.15	908.2	
8	7139.1	85.00	180.15	6687.3	-973.5	248.0	0.00	0.00	982.9	
9	7201.6	90.00	180.15	6690.0	-1035.9	247.9	8.00	0.00	1045.2	
10	11875.8	90.00	180.15	6690.0	-5710.1	235.4	0.00	0.00	5714.9	Mahalo State AA09-73-1HNC BHL 30' FNL, 990' FEL



WELL DETAILS: Mahalo State AA09-73-1HNC					
Ground Level: 4700.0					
0.0	0.0	Northing	Easting	Latitude	Longitude
		1430227.75	3295662.94	40.509510	-104.436670
Plan: APD - Rev 0 (Mahalo State AA09-73-1HNC/Original Drilling)					
Created By: Shailey Jewell		Date: 10:49, December 06 2013			
Checked: _____		Date: _____			
Reviewed: _____		Date: _____			
Approved: _____		Date: _____			

Northern Region Drilling - Working

Wattenberg Field

AA (06N-63W)

Mahalo State AA09-73-1HNC

Original Drilling

Plan: APD - Rev 0

Standard Planning Report

06 December, 2013

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 0		

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		AA (06N-63W)			
Site Position:		Northing:	1,427,844.88 usft	Latitude:	40.502740
From:	Lat/Long	Easting:	3,302,558.01 usft	Longitude:	-104.411980
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.70 °

Well		Mahalo State AA09-73-1HNC				
Well Position	+N/-S	2,383.0 usft	Northing:	1,430,227.75 usft	Latitude:	40.509510
	+E/-W	-6,895.3 usft	Easting:	3,295,662.95 usft	Longitude:	-104.436670
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	4,700.0 usft

Wellbore	Original Drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/18/2013	8.33	67.12	53,003

Design	APD - Rev 0			
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	177.64

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	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,852.9	13.06	134.42	2,847.2	-51.8	52.9	2.00	2.00	0.00	134.42	
3,746.5	13.06	134.42	3,717.8	-193.2	197.1	0.00	0.00	0.00	0.00	
4,399.4	0.00	0.00	4,365.0	-245.0	250.0	2.00	-2.00	0.00	180.00	
6,001.6	0.00	0.00	5,967.3	-245.0	250.0	0.00	0.00	0.00	0.00	
7,064.1	85.00	180.15	6,680.7	-898.8	248.2	8.00	8.00	0.00	180.15	
7,139.1	85.00	180.15	6,687.3	-973.5	248.0	0.00	0.00	0.00	0.00	
7,201.6	90.00	180.15	6,690.0	-1,035.9	247.9	8.00	8.00	0.00	0.00	
11,875.8	90.00	180.15	6,690.0	-5,710.1	235.4	0.00	0.00	0.00	0.00	Mahalo State AA09-73-1HNC

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	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
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
1,850.0	0.00	0.00	1,850.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,950.0	0.00	0.00	1,950.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,050.0	0.00	0.00	2,050.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,150.0	0.00	0.00	2,150.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
2,250.0	1.00	134.42	2,250.0	-0.3	0.3	0.3	2.00	2.00	0.00
2,300.0	2.00	134.42	2,300.0	-1.2	1.2	1.3	2.00	2.00	0.00
2,350.0	3.00	134.42	2,349.9	-2.7	2.8	2.9	2.00	2.00	0.00
2,400.0	4.00	134.42	2,399.8	-4.9	5.0	5.1	2.00	2.00	0.00
2,450.0	5.00	134.42	2,449.7	-7.6	7.8	7.9	2.00	2.00	0.00
2,500.0	6.00	134.42	2,499.5	-11.0	11.2	11.4	2.00	2.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	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	7.00	134.42	2,549.1	-14.9	15.3	15.6	2.00	2.00	0.00
2,600.0	8.00	134.42	2,598.7	-19.5	19.9	20.3	2.00	2.00	0.00
2,650.0	9.00	134.42	2,648.2	-24.7	25.2	25.7	2.00	2.00	0.00
2,700.0	10.00	134.42	2,697.5	-30.5	31.1	31.7	2.00	2.00	0.00
2,750.0	11.00	134.42	2,746.6	-36.8	37.6	38.4	2.00	2.00	0.00
2,800.0	12.00	134.42	2,795.6	-43.8	44.7	45.6	2.00	2.00	0.00
2,850.0	13.00	134.42	2,844.4	-51.4	52.4	53.5	2.00	2.00	0.00
2,852.9	13.06	134.42	2,847.2	-51.8	52.9	54.0	2.00	2.00	0.00
2,900.0	13.06	134.42	2,893.1	-59.3	60.5	61.7	0.00	0.00	0.00
2,950.0	13.06	134.42	2,941.9	-67.2	68.6	70.0	0.00	0.00	0.00
3,000.0	13.06	134.42	2,990.6	-75.1	76.6	78.2	0.00	0.00	0.00
3,050.0	13.06	134.42	3,039.3	-83.0	84.7	86.4	0.00	0.00	0.00
3,100.0	13.06	134.42	3,088.0	-90.9	92.8	94.7	0.00	0.00	0.00
3,150.0	13.06	134.42	3,136.7	-98.8	100.8	102.9	0.00	0.00	0.00
3,200.0	13.06	134.42	3,185.4	-106.7	108.9	111.1	0.00	0.00	0.00
3,250.0	13.06	134.42	3,234.1	-114.6	117.0	119.4	0.00	0.00	0.00
3,300.0	13.06	134.42	3,282.8	-122.5	125.1	127.6	0.00	0.00	0.00
3,350.0	13.06	134.42	3,331.5	-130.5	133.1	135.8	0.00	0.00	0.00
3,400.0	13.06	134.42	3,380.2	-138.4	141.2	144.1	0.00	0.00	0.00
3,450.0	13.06	134.42	3,428.9	-146.3	149.3	152.3	0.00	0.00	0.00
3,500.0	13.06	134.42	3,477.6	-154.2	157.3	160.5	0.00	0.00	0.00
3,507.6	13.06	134.42	3,485.0	-155.4	158.5	161.8	0.00	0.00	0.00
PARKMAN									
3,550.0	13.06	134.42	3,526.3	-162.1	165.4	168.8	0.00	0.00	0.00
3,600.0	13.06	134.42	3,575.0	-170.0	173.5	177.0	0.00	0.00	0.00
3,650.0	13.06	134.42	3,623.8	-177.9	181.5	185.2	0.00	0.00	0.00
3,700.0	13.06	134.42	3,672.5	-185.8	189.6	193.5	0.00	0.00	0.00
3,746.5	13.06	134.42	3,717.8	-193.2	197.1	201.1	0.00	0.00	0.00
Start Drop -2.00									
3,750.0	12.99	134.42	3,721.2	-193.7	197.7	201.7	1.99	-1.99	0.00
3,800.0	11.99	134.42	3,770.0	-201.3	205.4	209.6	2.00	-2.00	0.00
3,850.0	10.99	134.42	3,819.0	-208.2	212.5	216.8	2.00	-2.00	0.00
3,900.0	9.99	134.42	3,868.1	-214.6	219.0	223.4	2.00	-2.00	0.00
3,950.0	8.99	134.42	3,917.5	-220.4	224.9	229.5	2.00	-2.00	0.00
4,000.0	7.99	134.42	3,966.9	-225.5	230.1	234.8	2.00	-2.00	0.00
4,050.0	6.99	134.42	4,016.5	-230.1	234.8	239.6	2.00	-2.00	0.00
4,100.0	5.99	134.42	4,066.2	-234.1	238.8	243.7	2.00	-2.00	0.00
4,150.0	4.99	134.42	4,115.9	-237.4	242.3	247.2	2.00	-2.00	0.00
4,200.0	3.99	134.42	4,165.8	-240.1	245.0	250.0	2.00	-2.00	0.00
4,250.0	2.99	134.42	4,215.7	-242.3	247.2	252.3	2.00	-2.00	0.00
4,300.0	1.99	134.42	4,265.6	-243.8	248.8	253.8	2.00	-2.00	0.00
4,346.4	1.06	134.42	4,312.0	-244.7	249.6	254.7	2.00	-2.00	0.00
SUSSEX									
4,350.0	0.99	134.42	4,315.6	-244.7	249.7	254.8	2.00	-2.00	0.00
4,399.4	0.00	0.00	4,365.0	-245.0	250.0	255.1	2.00	-2.00	0.00
4,400.0	0.00	0.00	4,365.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,450.0	0.00	0.00	4,415.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,500.0	0.00	0.00	4,465.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,550.0	0.00	0.00	4,515.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,600.0	0.00	0.00	4,565.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,650.0	0.00	0.00	4,615.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,700.0	0.00	0.00	4,665.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,750.0	0.00	0.00	4,715.6	-245.0	250.0	255.1	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	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)
4,800.0	0.00	0.00	4,765.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,850.0	0.00	0.00	4,815.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,881.4	0.00	0.00	4,847.0	-245.0	250.0	255.1	0.00	0.00	0.00
SHANNON									
4,900.0	0.00	0.00	4,865.6	-245.0	250.0	255.1	0.00	0.00	0.00
4,950.0	0.00	0.00	4,915.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,000.0	0.00	0.00	4,965.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,050.0	0.00	0.00	5,015.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,100.0	0.00	0.00	5,065.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,150.0	0.00	0.00	5,115.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,200.0	0.00	0.00	5,165.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,250.0	0.00	0.00	5,215.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,300.0	0.00	0.00	5,265.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,350.0	0.00	0.00	5,315.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,365.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,450.0	0.00	0.00	5,415.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,465.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,550.0	0.00	0.00	5,515.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,565.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,650.0	0.00	0.00	5,615.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,700.0	0.00	0.00	5,665.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,750.0	0.00	0.00	5,715.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,796.4	0.00	0.00	5,762.0	-245.0	250.0	255.1	0.00	0.00	0.00
TEEPEE BUTTES									
5,800.0	0.00	0.00	5,765.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,850.0	0.00	0.00	5,815.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,865.6	-245.0	250.0	255.1	0.00	0.00	0.00
5,950.0	0.00	0.00	5,915.6	-245.0	250.0	255.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,965.6	-245.0	250.0	255.1	0.00	0.00	0.00
6,001.6	0.00	0.00	5,967.2	-245.0	250.0	255.1	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,050.0	3.87	180.15	6,015.6	-246.6	250.0	256.7	7.99	7.99	0.00
6,100.0	7.87	180.15	6,065.3	-251.7	250.0	261.8	8.00	8.00	0.00
6,150.0	11.87	180.15	6,114.6	-260.3	250.0	270.4	8.00	8.00	0.00
6,200.0	15.87	180.15	6,163.1	-272.3	249.9	282.4	8.00	8.00	0.00
6,250.0	19.87	180.15	6,210.7	-287.6	249.9	297.7	8.00	8.00	0.00
6,300.0	23.87	180.15	6,257.1	-306.3	249.8	316.3	8.00	8.00	0.00
6,350.0	27.87	180.15	6,302.0	-328.1	249.8	338.1	8.00	8.00	0.00
6,400.0	31.87	180.15	6,345.4	-353.0	249.7	362.9	8.00	8.00	0.00
6,450.0	35.87	180.15	6,386.9	-380.8	249.6	390.8	8.00	8.00	0.00
6,500.0	39.87	180.15	6,426.4	-411.5	249.6	421.4	8.00	8.00	0.00
6,534.1	42.60	180.15	6,452.0	-434.0	249.5	443.9	8.00	8.00	0.00
SHARON SPRINGS									
6,550.0	43.87	180.15	6,463.6	-444.9	249.5	454.8	8.00	8.00	0.00
6,587.6	46.88	180.15	6,490.0	-471.6	249.4	481.5	8.00	8.00	0.00
NIO A CHALK									
6,600.0	47.87	180.15	6,498.4	-480.7	249.4	490.6	8.00	8.00	0.00
6,623.7	49.76	180.15	6,514.0	-498.6	249.3	508.4	8.00	8.00	0.00
NIO A MARL									
6,650.0	51.87	180.15	6,530.6	-519.0	249.3	528.8	8.00	8.00	0.00
6,700.0	55.87	180.15	6,560.1	-559.3	249.2	569.1	8.00	8.00	0.00
6,742.7	59.29	180.15	6,583.0	-595.4	249.1	605.1	8.00	8.00	0.00
NIO B CHALK									

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	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)
6,750.0	59.87	180.15	6,586.7	-601.7	249.0	611.4	8.00	8.00	0.00
6,800.0	63.87	180.15	6,610.3	-645.8	248.9	655.5	8.00	8.00	0.00
6,815.7	65.12	180.15	6,617.0	-659.9	248.9	669.6	8.00	8.00	0.00
NIO B MARL									
6,850.0	67.87	180.15	6,630.7	-691.4	248.8	701.0	8.00	8.00	0.00
6,900.0	71.87	180.15	6,647.9	-738.3	248.7	747.9	8.00	8.00	0.00
6,938.9	74.98	180.15	6,659.0	-775.6	248.6	785.2	8.00	8.00	0.00
NIO C CHALK									
6,950.0	75.87	180.15	6,661.8	-786.3	248.6	795.9	8.00	8.00	0.00
7,000.0	79.87	180.15	6,672.3	-835.2	248.4	844.7	8.00	8.00	0.00
7,050.0	83.87	180.15	6,679.4	-884.7	248.3	894.2	8.00	8.00	0.00
7,064.1	85.00	180.15	6,680.7	-898.7	248.2	908.2	8.00	8.00	0.00
Start 75.0 hold at 7064.1 MD - 7" Casing @ 7064.1' MD									
7,100.0	85.00	180.15	6,683.9	-934.5	248.2	943.9	0.01	0.01	0.00
7,139.1	85.00	180.15	6,687.3	-973.4	248.0	982.8	0.00	0.00	0.00
Start Build 8.00									
7,150.0	85.87	180.15	6,688.1	-984.3	248.0	993.7	7.97	7.97	0.00
7,200.0	89.87	180.15	6,690.0	-1,034.3	247.9	1,043.6	8.00	8.00	0.00
7,201.6	90.00	180.15	6,690.0	-1,035.9	247.9	1,045.2	8.00	8.00	0.00
7,250.0	90.00	180.15	6,690.0	-1,084.3	247.8	1,093.5	0.00	0.00	0.00
7,300.0	90.00	180.15	6,690.0	-1,134.3	247.6	1,143.5	0.00	0.00	0.00
7,350.0	90.00	180.15	6,690.0	-1,184.3	247.5	1,193.5	0.00	0.00	0.00
7,400.0	90.00	180.15	6,690.0	-1,234.3	247.4	1,243.4	0.00	0.00	0.00
7,450.0	90.00	180.15	6,690.0	-1,284.3	247.2	1,293.4	0.00	0.00	0.00
7,500.0	90.00	180.15	6,690.0	-1,334.3	247.1	1,343.3	0.00	0.00	0.00
7,550.0	90.00	180.15	6,690.0	-1,384.3	246.9	1,393.3	0.00	0.00	0.00
7,600.0	90.00	180.15	6,690.0	-1,434.3	246.8	1,443.2	0.00	0.00	0.00
7,650.0	90.00	180.15	6,690.0	-1,484.3	246.7	1,493.2	0.00	0.00	0.00
7,700.0	90.00	180.15	6,690.0	-1,534.3	246.5	1,543.1	0.00	0.00	0.00
7,750.0	90.00	180.15	6,690.0	-1,584.3	246.4	1,593.1	0.00	0.00	0.00
7,800.0	90.00	180.15	6,690.0	-1,634.3	246.3	1,643.0	0.00	0.00	0.00
7,850.0	90.00	180.15	6,690.0	-1,684.3	246.1	1,693.0	0.00	0.00	0.00
7,900.0	90.00	180.15	6,690.0	-1,734.3	246.0	1,742.9	0.00	0.00	0.00
7,950.0	90.00	180.15	6,690.0	-1,784.3	245.9	1,792.9	0.00	0.00	0.00
8,000.0	90.00	180.15	6,690.0	-1,834.3	245.7	1,842.8	0.00	0.00	0.00
8,050.0	90.00	180.15	6,690.0	-1,884.3	245.6	1,892.8	0.00	0.00	0.00
8,100.0	90.00	180.15	6,690.0	-1,934.3	245.5	1,942.7	0.00	0.00	0.00
8,150.0	90.00	180.15	6,690.0	-1,984.3	245.3	1,992.7	0.00	0.00	0.00
8,200.0	90.00	180.15	6,690.0	-2,034.3	245.2	2,042.6	0.00	0.00	0.00
8,250.0	90.00	180.15	6,690.0	-2,084.3	245.1	2,092.6	0.00	0.00	0.00
8,300.0	90.00	180.15	6,690.0	-2,134.3	244.9	2,142.5	0.00	0.00	0.00
8,350.0	90.00	180.15	6,690.0	-2,184.3	244.8	2,192.5	0.00	0.00	0.00
8,400.0	90.00	180.15	6,690.0	-2,234.3	244.7	2,242.4	0.00	0.00	0.00
8,450.0	90.00	180.15	6,690.0	-2,284.3	244.5	2,292.4	0.00	0.00	0.00
8,500.0	90.00	180.15	6,690.0	-2,334.3	244.4	2,342.3	0.00	0.00	0.00
8,550.0	90.00	180.15	6,690.0	-2,384.3	244.3	2,392.3	0.00	0.00	0.00
8,600.0	90.00	180.15	6,690.0	-2,434.3	244.1	2,442.2	0.00	0.00	0.00
8,650.0	90.00	180.15	6,690.0	-2,484.3	244.0	2,492.2	0.00	0.00	0.00
8,700.0	90.00	180.15	6,690.0	-2,534.3	243.9	2,542.2	0.00	0.00	0.00
8,750.0	90.00	180.15	6,690.0	-2,584.3	243.7	2,592.1	0.00	0.00	0.00
8,800.0	90.00	180.15	6,690.0	-2,634.3	243.6	2,642.1	0.00	0.00	0.00
8,850.0	90.00	180.15	6,690.0	-2,684.3	243.5	2,692.0	0.00	0.00	0.00
8,900.0	90.00	180.15	6,690.0	-2,734.3	243.3	2,742.0	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	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)	
8,950.0	90.00	180.15	6,690.0	-2,784.3	243.2	2,791.9	0.00	0.00	0.00	
9,000.0	90.00	180.15	6,690.0	-2,834.3	243.1	2,841.9	0.00	0.00	0.00	
9,050.0	90.00	180.15	6,690.0	-2,884.3	242.9	2,891.8	0.00	0.00	0.00	
9,100.0	90.00	180.15	6,690.0	-2,934.3	242.8	2,941.8	0.00	0.00	0.00	
9,150.0	90.00	180.15	6,690.0	-2,984.3	242.7	2,991.7	0.00	0.00	0.00	
9,200.0	90.00	180.15	6,690.0	-3,034.3	242.5	3,041.7	0.00	0.00	0.00	
9,250.0	90.00	180.15	6,690.0	-3,084.3	242.4	3,091.6	0.00	0.00	0.00	
9,300.0	90.00	180.15	6,690.0	-3,134.3	242.3	3,141.6	0.00	0.00	0.00	
9,350.0	90.00	180.15	6,690.0	-3,184.3	242.1	3,191.5	0.00	0.00	0.00	
9,400.0	90.00	180.15	6,690.0	-3,234.3	242.0	3,241.5	0.00	0.00	0.00	
9,450.0	90.00	180.15	6,690.0	-3,284.3	241.9	3,291.4	0.00	0.00	0.00	
9,500.0	90.00	180.15	6,690.0	-3,334.3	241.7	3,341.4	0.00	0.00	0.00	
9,550.0	90.00	180.15	6,690.0	-3,384.3	241.6	3,391.3	0.00	0.00	0.00	
9,600.0	90.00	180.15	6,690.0	-3,434.3	241.5	3,441.3	0.00	0.00	0.00	
9,650.0	90.00	180.15	6,690.0	-3,484.3	241.3	3,491.2	0.00	0.00	0.00	
9,700.0	90.00	180.15	6,690.0	-3,534.3	241.2	3,541.2	0.00	0.00	0.00	
9,750.0	90.00	180.15	6,690.0	-3,584.3	241.1	3,591.1	0.00	0.00	0.00	
9,800.0	90.00	180.15	6,690.0	-3,634.3	240.9	3,641.1	0.00	0.00	0.00	
9,850.0	90.00	180.15	6,690.0	-3,684.3	240.8	3,691.0	0.00	0.00	0.00	
9,900.0	90.00	180.15	6,690.0	-3,734.3	240.7	3,741.0	0.00	0.00	0.00	
9,950.0	90.00	180.15	6,690.0	-3,784.3	240.5	3,791.0	0.00	0.00	0.00	
10,000.0	90.00	180.15	6,690.0	-3,834.3	240.4	3,840.9	0.00	0.00	0.00	
10,050.0	90.00	180.15	6,690.0	-3,884.3	240.3	3,890.9	0.00	0.00	0.00	
10,100.0	90.00	180.15	6,690.0	-3,934.3	240.1	3,940.8	0.00	0.00	0.00	
10,150.0	90.00	180.15	6,690.0	-3,984.3	240.0	3,990.8	0.00	0.00	0.00	
10,200.0	90.00	180.15	6,690.0	-4,034.3	239.9	4,040.7	0.00	0.00	0.00	
10,250.0	90.00	180.15	6,690.0	-4,084.3	239.7	4,090.7	0.00	0.00	0.00	
10,300.0	90.00	180.15	6,690.0	-4,134.3	239.6	4,140.6	0.00	0.00	0.00	
10,350.0	90.00	180.15	6,690.0	-4,184.3	239.5	4,190.6	0.00	0.00	0.00	
10,400.0	90.00	180.15	6,690.0	-4,234.3	239.3	4,240.5	0.00	0.00	0.00	
10,450.0	90.00	180.15	6,690.0	-4,284.3	239.2	4,290.5	0.00	0.00	0.00	
10,500.0	90.00	180.15	6,690.0	-4,334.3	239.1	4,340.4	0.00	0.00	0.00	
10,550.0	90.00	180.15	6,690.0	-4,384.3	238.9	4,390.4	0.00	0.00	0.00	
10,600.0	90.00	180.15	6,690.0	-4,434.3	238.8	4,440.3	0.00	0.00	0.00	
10,650.0	90.00	180.15	6,690.0	-4,484.3	238.6	4,490.3	0.00	0.00	0.00	
10,700.0	90.00	180.15	6,690.0	-4,534.3	238.5	4,540.2	0.00	0.00	0.00	
10,750.0	90.00	180.15	6,690.0	-4,584.3	238.4	4,590.2	0.00	0.00	0.00	
10,800.0	90.00	180.15	6,690.0	-4,634.3	238.2	4,640.1	0.00	0.00	0.00	
10,850.0	90.00	180.15	6,690.0	-4,684.3	238.1	4,690.1	0.00	0.00	0.00	
10,900.0	90.00	180.15	6,690.0	-4,734.3	238.0	4,740.0	0.00	0.00	0.00	
10,950.0	90.00	180.15	6,690.0	-4,784.3	237.8	4,790.0	0.00	0.00	0.00	
11,000.0	90.00	180.15	6,690.0	-4,834.3	237.7	4,839.9	0.00	0.00	0.00	
11,050.0	90.00	180.15	6,690.0	-4,884.3	237.6	4,889.9	0.00	0.00	0.00	
11,100.0	90.00	180.15	6,690.0	-4,934.3	237.4	4,939.8	0.00	0.00	0.00	
11,150.0	90.00	180.15	6,690.0	-4,984.3	237.3	4,989.8	0.00	0.00	0.00	
11,200.0	90.00	180.15	6,690.0	-5,034.3	237.2	5,039.7	0.00	0.00	0.00	
11,250.0	90.00	180.15	6,690.0	-5,084.3	237.0	5,089.7	0.00	0.00	0.00	
11,300.0	90.00	180.15	6,690.0	-5,134.3	236.9	5,139.7	0.00	0.00	0.00	
11,350.0	90.00	180.15	6,690.0	-5,184.3	236.8	5,189.6	0.00	0.00	0.00	
11,400.0	90.00	180.15	6,690.0	-5,234.2	236.6	5,239.6	0.00	0.00	0.00	
11,450.0	90.00	180.15	6,690.0	-5,284.2	236.5	5,289.5	0.00	0.00	0.00	
11,500.0	90.00	180.15	6,690.0	-5,334.2	236.4	5,339.5	0.00	0.00	0.00	
11,550.0	90.00	180.15	6,690.0	-5,384.2	236.2	5,389.4	0.00	0.00	0.00	
11,600.0	90.00	180.15	6,690.0	-5,434.2	236.1	5,439.4	0.00	0.00	0.00	

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	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)
11,650.0	90.00	180.15	6,690.0	-5,484.2	236.0	5,489.3	0.00	0.00	0.00
11,700.0	90.00	180.15	6,690.0	-5,534.2	235.8	5,539.3	0.00	0.00	0.00
11,750.0	90.00	180.15	6,690.0	-5,584.2	235.7	5,589.2	0.00	0.00	0.00
11,800.0	90.00	180.15	6,690.0	-5,634.2	235.6	5,639.2	0.00	0.00	0.00
11,850.0	90.00	180.15	6,690.0	-5,684.2	235.4	5,689.1	0.00	0.00	0.00
11,875.8	90.00	180.15	6,690.0	-5,710.0	235.4	5,714.9	0.00	0.00	0.00
TD at 11875.8 - Mahalo State AA09-73-1HNC BHL 30' FNL, 990' FEL									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Mahalo State AA09-73-1 - plan hits target center - Point	0.00	0.00	6,690.0	-5,710.1	235.4	1,424,517.87	3,295,898.30	40.493830	-104.436070

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
7,064.1	6,680.7	7" Casing @ 7064.1' 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		
3,507.6	3,485.0	PARKMAN		0.00		
4,346.4	4,312.0	SUSSEX		0.00		
4,881.4	4,847.0	SHANNON		0.00		
5,796.4	5,762.0	TEEPEE BUTTES		0.00		
6,534.1	6,452.0	SHARON SPRINGS		0.00		
6,587.6	6,490.0	NIO A CHALK		0.00		
6,623.7	6,514.0	NIO A MARL		0.00		
6,742.7	6,583.0	NIO B CHALK		0.00		
6,815.7	6,617.0	NIO B MARL		0.00		
6,938.9	6,659.0	NIO C CHALK		0.00		

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Project:	Wattenberg Field	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site:	AA (06N-63W)	North Reference:	Grid
Well:	Mahalo State AA09-73-1HNC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 0		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,200.0	2,200.0	0.0	0.0	KOP - Start Build 2.00
3,746.5	3,717.8	-193.2	197.1	Start Drop -2.00
6,001.6	5,967.2	-245.0	250.0	KOP #2 - Start Build 8.00
7,064.1	6,680.7	-898.7	248.2	Start 75.0 hold at 7064.1 MD
7,139.1	6,687.3	-973.4	248.0	Start Build 8.00
11,875.8	6,690.0	-5,710.0	235.4	TD at 11875.8

Northern Region Drilling - Working

Wattenberg Field

AA (06N-63W)

Mahalo State AA09-73-1HNC

Original Drilling

APD - Rev 0

Anticollision Summary Report

06 December, 2013

Noble Energy Inc

Anticollision Summary Report

Company:	Northern Region Drilling - Working	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Project:	Wattenberg Field	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Reference Site:	AA (06N-63W)	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Mahalo State AA09-73-1HNC	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 0	Offset TVD Reference:	Offset Datum

Reference	APD - Rev 0		
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	12/6/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,875.1	APD - Rev 0 (Original Drilling)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction

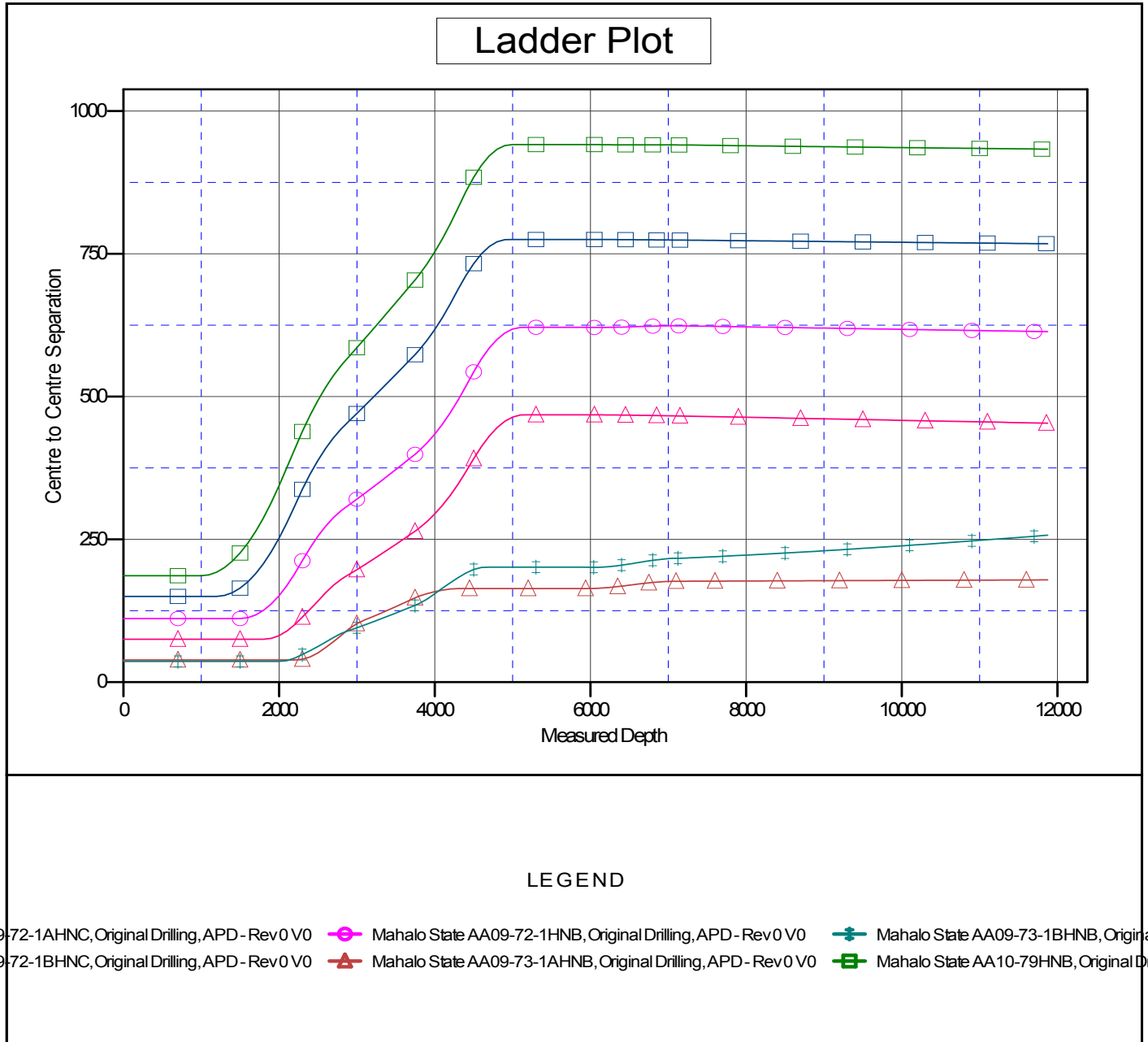
Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
AA (06N-63W)						
Mahalo State AA09-72-1AHNC - Original Drilling - APD -	1,800.0	1,800.0	75.2	67.4	9.638	CC, ES
Mahalo State AA09-72-1AHNC - Original Drilling - APD -	11,875.8	11,921.2	453.5	338.7	3.949	SF
Mahalo State AA09-72-1BHNC - Original Drilling - APD -	1,200.0	1,200.0	150.2	145.1	29.439	CC, ES
Mahalo State AA09-72-1BHNC - Original Drilling - APD -	11,875.8	11,968.7	767.7	652.5	6.662	SF
Mahalo State AA09-72-1HNB - Original Drilling - APD - R	1,500.0	1,500.0	111.3	104.8	17.252	CC, ES
Mahalo State AA09-72-1HNB - Original Drilling - APD - R	11,875.8	11,878.0	613.8	498.7	5.333	SF
Mahalo State AA09-73-1AHNB - Original Drilling - APD -	2,200.0	2,200.0	38.9	29.3	4.056	CC, ES
Mahalo State AA09-73-1AHNB - Original Drilling - APD -	11,875.8	11,800.0	179.1	69.2	1.630	Level 3, SF
Mahalo State AA09-73-1BHNB - Original Drilling - APD -	2,000.0	2,000.0	36.3	27.6	4.177	CC, ES
Mahalo State AA09-73-1BHNB - Original Drilling - APD -	11,875.8	11,817.6	257.3	153.0	2.466	SF
Mahalo State AA10-79HNB - Original Drilling - APD - Rev	1,000.0	1,000.0	186.3	182.1	44.334	CC, ES
Mahalo State AA10-79HNB - Original Drilling - APD - Rev	11,875.8	11,964.1	933.4	818.0	8.086	SF

Noble Energy Inc
Anticollision Summary Report

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Project:	Wattenberg Field	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Reference Site:	AA (06N-63W)	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Mahalo State AA09-73-1HNC	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 0	Offset TVD Reference:	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 AA09-73-1HNC
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.69°



Noble Energy Inc
Anticollision Summary Report

Company:	Northern Region Drilling - Working	Local Co-ordinate Reference:	Well Mahalo State AA09-73-1HNC
Project:	Wattenberg Field	TVD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Reference Site:	AA (06N-63W)	MD Reference:	WELL @ 4730.0usft (Original Well Elev.)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Mahalo State AA09-73-1HNC	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 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4730.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
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