

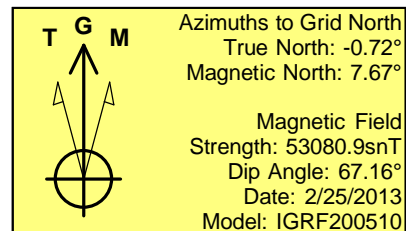
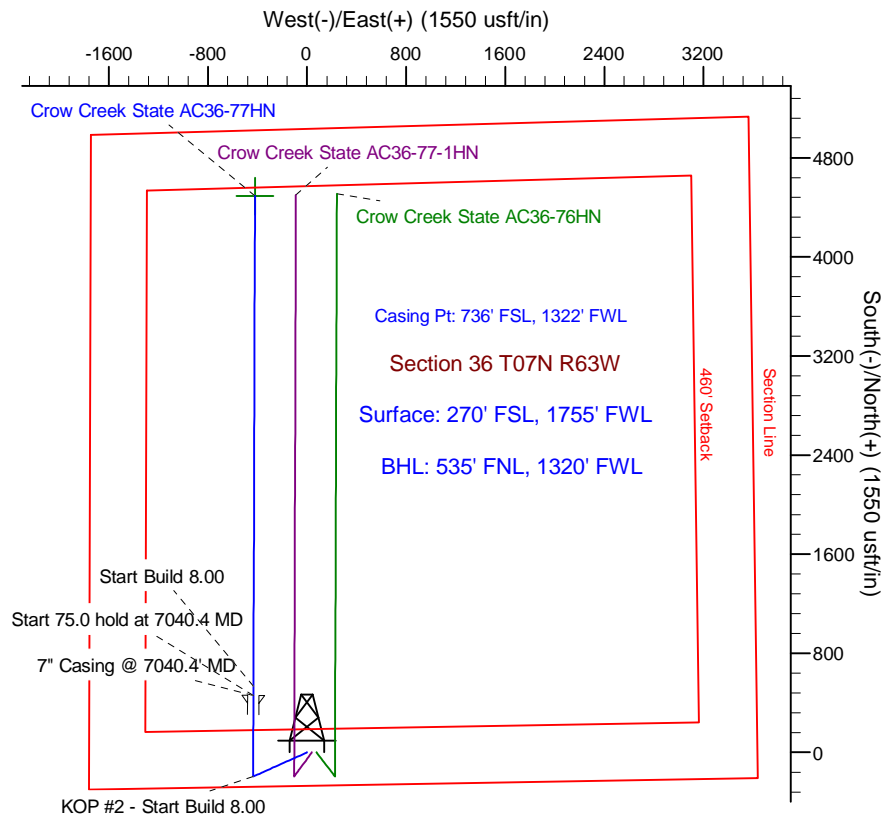
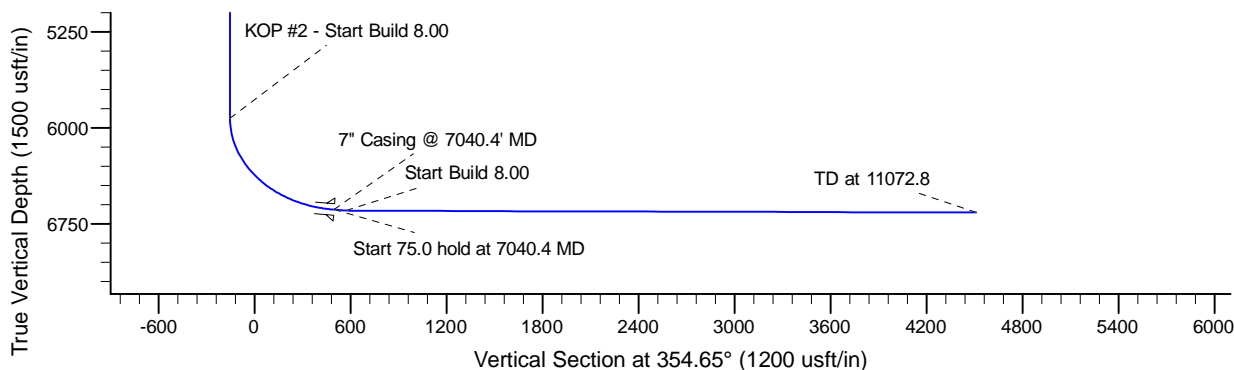
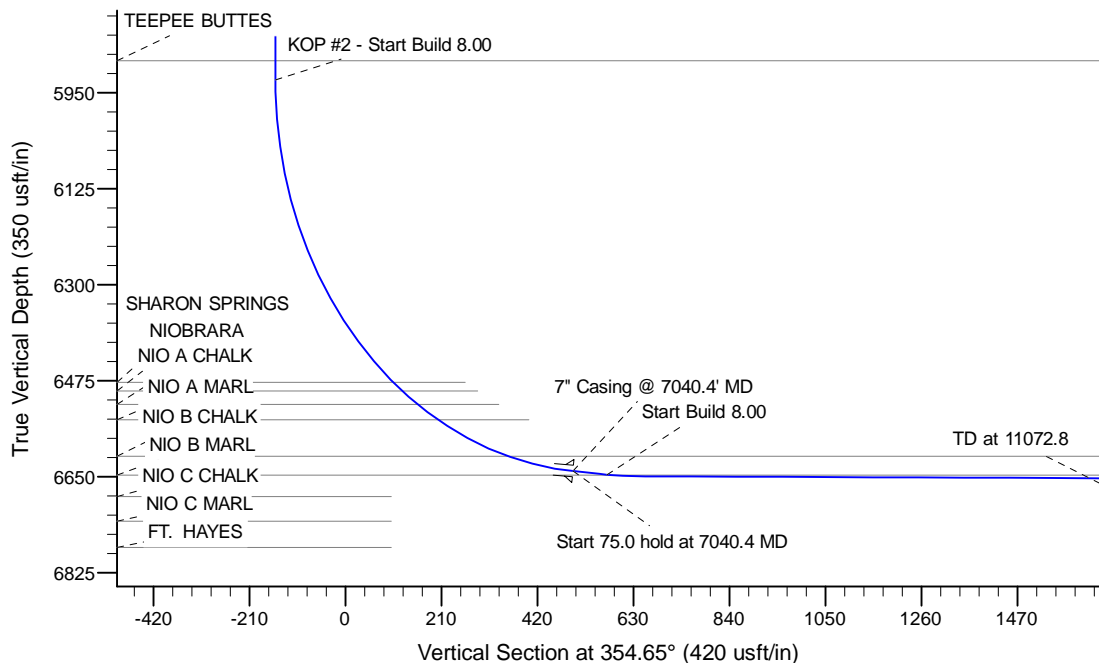
Project: Wattenberg Field
 Site: AC (Sec.36-T07N-R63W) Weld County, CO
 Well: Crow Creek State AC36-77HN
 Wellbore: Original Drilling
 Design: APD - Rev 0

Northern Region Drilling

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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	2200.3	14.01	245.85	2193.3	-34.8	-77.7	2.00	245.85	-27.4	
4	3466.3	14.01	245.85	3421.7	-160.2	-357.3	0.00	0.00	-126.2	
5	4166.5	0.00	0.00	4115.0	-195.0	-435.0	2.00	180.00	-153.6	
6	5977.9	0.00	0.00	5926.4	-195.0	-435.0	0.00	0.00	-153.6	
7	7040.4	85.00	0.18	6639.8	458.8	-433.0	8.00	0.18	497.1	
8	7115.4	85.00	0.18	6646.4	533.5	-432.7	0.00	0.00	571.5	
9	7175.4	89.80	0.18	6649.1	593.4	-432.6	8.00	0.00	631.1	
10	11072.8	89.80	0.18	6662.7	4490.8	-420.5	0.00	0.00	4510.4	Crow Creek State AC 36-77HN BHL 535'FNL, 1320'FWL



WELL DETAILS: Crow Creek State AC36-77HN

Ground Level: 4788.0			
Northing	Easting	Latitude	Longitude
0.0	0.0	1435519.35	3309147.53
		40.523580	-104.387940

Plan: APD - Rev 0 (Crow Creek State AC36-77HN/Original Drilling)

Created By: Shailey Jewell Date: 8:54, February 26 2013

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

Northern Region Drilling

Wattenberg Field

AC (07N-63W)

Crow Creek State AC36-77HN

Original Drilling

Plan: APD - Rev 0

Standard Planning Report

26 February, 2013

Noble Energy Inc

Planning Report

Database:	edm10p	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site:	AC (07N-63W)	North Reference:	Grid
Well:	Crow Creek State AC36-77HN	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	AC (07N-63W)		
Site Position:		Northing:	1,435,093.74 usft
From:	Lat/Long	Easting:	3,291,559.33 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	40.523000
		Longitude:	-104.451220
		Grid Convergence:	0.68 °

Well	Crow Creek State AC36-77HN		
Well Position	+N/-S	425.6 usft	Northing:
	+E/-W	17,588.8 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Original Drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/25/2013	8.39	67.16	53,081

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	354.65

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,200.3	14.01	245.85	2,193.3	-34.8	-77.7	2.00	2.00	0.00	245.85	
3,466.3	14.01	245.85	3,421.7	-160.2	-357.3	0.00	0.00	0.00	0.00	
4,166.5	0.00	0.00	4,115.0	-195.0	-435.0	2.00	-2.00	0.00	180.00	
5,977.9	0.00	0.00	5,926.4	-195.0	-435.0	0.00	0.00	0.00	0.00	
7,040.4	85.00	0.18	6,639.8	458.8	-433.0	8.00	8.00	0.00	0.18	
7,115.4	85.00	0.18	6,646.4	533.5	-432.7	0.00	0.00	0.00	0.00	
7,175.4	89.80	0.18	6,649.1	593.4	-432.6	8.00	8.00	0.00	0.00	
11,072.8	89.80	0.18	6,662.7	4,490.8	-420.5	0.00	0.00	0.00	0.00	Crow Creek State AC

Noble Energy Inc

Planning Report

Database:	edm10p	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site:	AC (07N-63W)	North Reference:	Grid
Well:	Crow Creek State AC36-77HN	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
1,050.0	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
KOP - Start Build 2.00									
1,550.0	1.00	245.85	1,550.0	-0.2	-0.4	-0.1	2.00	2.00	0.00
1,600.0	2.00	245.85	1,600.0	-0.7	-1.6	-0.6	2.00	2.00	0.00
1,650.0	3.00	245.85	1,649.9	-1.6	-3.6	-1.3	2.00	2.00	0.00
1,700.0	4.00	245.85	1,699.8	-2.9	-6.4	-2.2	2.00	2.00	0.00
1,750.0	5.00	245.85	1,749.7	-4.5	-9.9	-3.5	2.00	2.00	0.00
1,800.0	6.00	245.85	1,799.5	-6.4	-14.3	-5.1	2.00	2.00	0.00
1,850.0	7.00	245.85	1,849.1	-8.7	-19.5	-6.9	2.00	2.00	0.00
1,900.0	8.00	245.85	1,898.7	-11.4	-25.4	-9.0	2.00	2.00	0.00
1,950.0	9.00	245.85	1,948.2	-14.4	-32.2	-11.4	2.00	2.00	0.00
2,000.0	10.00	245.85	1,997.5	-17.8	-39.7	-14.0	2.00	2.00	0.00
2,050.0	11.00	245.85	2,046.6	-21.5	-48.0	-17.0	2.00	2.00	0.00
2,100.0	12.00	245.85	2,095.6	-25.6	-57.1	-20.2	2.00	2.00	0.00
2,150.0	13.00	245.85	2,144.4	-30.0	-67.0	-23.7	2.00	2.00	0.00
2,200.0	14.00	245.85	2,193.1	-34.8	-77.7	-27.4	2.00	2.00	0.00
2,200.3	14.01	245.85	2,193.3	-34.8	-77.7	-27.4	2.00	2.00	0.00
2,250.0	14.01	245.85	2,241.6	-39.8	-88.7	-31.3	0.00	0.00	0.00
2,300.0	14.01	245.85	2,290.1	-44.7	-99.7	-35.2	0.00	0.00	0.00
2,350.0	14.01	245.85	2,338.6	-49.7	-110.8	-39.1	0.00	0.00	0.00
2,400.0	14.01	245.85	2,387.1	-54.6	-121.8	-43.0	0.00	0.00	0.00
2,450.0	14.01	245.85	2,435.6	-59.6	-132.9	-46.9	0.00	0.00	0.00
2,500.0	14.01	245.85	2,484.1	-64.5	-143.9	-50.8	0.00	0.00	0.00
2,505.0	14.01	245.85	2,489.0	-65.0	-145.0	-51.2	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	edm10p	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site:	AC (07N-63W)	North Reference:	Grid
Well:	Crow Creek State AC36-77HN	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)
PIERRE									
2,550.0	14.01	245.85	2,532.7	-69.5	-154.9	-54.7	0.00	0.00	0.00
2,600.0	14.01	245.85	2,581.2	-74.4	-166.0	-58.6	0.00	0.00	0.00
2,650.0	14.01	245.85	2,629.7	-79.4	-177.0	-62.5	0.00	0.00	0.00
2,700.0	14.01	245.85	2,678.2	-84.3	-188.1	-66.4	0.00	0.00	0.00
2,750.0	14.01	245.85	2,726.7	-89.3	-199.1	-70.3	0.00	0.00	0.00
2,800.0	14.01	245.85	2,775.2	-94.2	-210.2	-74.2	0.00	0.00	0.00
2,850.0	14.01	245.85	2,823.7	-99.2	-221.2	-78.1	0.00	0.00	0.00
2,900.0	14.01	245.85	2,872.2	-104.1	-232.2	-82.0	0.00	0.00	0.00
2,950.0	14.01	245.85	2,920.8	-109.1	-243.3	-85.9	0.00	0.00	0.00
3,000.0	14.01	245.85	2,969.3	-114.0	-254.3	-89.8	0.00	0.00	0.00
3,050.0	14.01	245.85	3,017.8	-119.0	-265.4	-93.7	0.00	0.00	0.00
3,100.0	14.01	245.85	3,066.3	-123.9	-276.4	-97.6	0.00	0.00	0.00
3,150.0	14.01	245.85	3,114.8	-128.9	-287.4	-101.5	0.00	0.00	0.00
3,200.0	14.01	245.85	3,163.3	-133.8	-298.5	-105.4	0.00	0.00	0.00
3,250.0	14.01	245.85	3,211.8	-138.8	-309.5	-109.3	0.00	0.00	0.00
3,300.0	14.01	245.85	3,260.4	-143.7	-320.6	-113.2	0.00	0.00	0.00
3,350.0	14.01	245.85	3,308.9	-148.7	-331.6	-117.1	0.00	0.00	0.00
3,400.0	14.01	245.85	3,357.4	-153.6	-342.7	-121.0	0.00	0.00	0.00
3,450.0	14.01	245.85	3,405.9	-158.6	-353.7	-124.9	0.00	0.00	0.00
3,466.3	14.01	245.85	3,421.7	-160.2	-357.3	-126.2	0.00	0.00	0.00
Start Drop -2.00									
3,500.0	13.33	245.85	3,454.5	-163.4	-364.6	-128.7	2.00	-2.00	0.00
3,550.0	12.33	245.85	3,503.2	-168.0	-374.7	-132.3	2.00	-2.00	0.00
3,600.0	11.33	245.85	3,552.1	-172.2	-384.0	-135.6	2.00	-2.00	0.00
3,650.0	10.33	245.85	3,601.3	-176.0	-392.6	-138.6	2.00	-2.00	0.00
3,653.8	10.25	245.85	3,605.0	-176.3	-393.2	-138.9	2.00	-2.00	0.00
PARKMAN									
3,700.0	9.33	245.85	3,650.5	-179.5	-400.4	-141.4	2.00	-2.00	0.00
3,750.0	8.33	245.85	3,699.9	-182.6	-407.4	-143.9	2.00	-2.00	0.00
3,800.0	7.33	245.85	3,749.5	-185.4	-413.6	-146.1	2.00	-2.00	0.00
3,850.0	6.33	245.85	3,799.1	-187.9	-419.1	-148.0	2.00	-2.00	0.00
3,900.0	5.33	245.85	3,848.8	-189.9	-423.7	-149.6	2.00	-2.00	0.00
3,950.0	4.33	245.85	3,898.7	-191.7	-427.5	-151.0	2.00	-2.00	0.00
4,000.0	3.33	245.85	3,948.6	-193.0	-430.6	-152.0	2.00	-2.00	0.00
4,050.0	2.33	245.85	3,998.5	-194.0	-432.8	-152.8	2.00	-2.00	0.00
4,100.0	1.33	245.85	4,048.5	-194.7	-434.3	-153.3	2.00	-2.00	0.00
4,150.0	0.33	245.85	4,098.5	-195.0	-435.0	-153.6	2.00	-2.00	0.00
4,166.5	0.00	0.00	4,115.0	-195.0	-435.0	-153.6	2.00	-2.00	0.00
4,200.0	0.00	0.00	4,148.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,250.0	0.00	0.00	4,198.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,300.0	0.00	0.00	4,248.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,350.0	0.00	0.00	4,298.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,400.0	0.00	0.00	4,348.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,448.5	0.00	0.00	4,397.0	-195.0	-435.0	-153.6	0.00	0.00	0.00
SUSSEX									
4,450.0	0.00	0.00	4,398.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,500.0	0.00	0.00	4,448.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,550.0	0.00	0.00	4,498.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,548.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,650.0	0.00	0.00	4,598.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,648.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,750.0	0.00	0.00	4,698.5	-195.0	-435.0	-153.6	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database: edm10p
Company: Northern Region Drilling
Project: Wattenberg Field
Site: AC (07N-63W)
Well: Crow Creek State AC36-77HN
Wellbore: Original Drilling
Design: APD - Rev 0

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Crow Creek State AC36-77HN
 WELL @ 4818.0usft (Original Well Elev)
 WELL @ 4818.0usft (Original Well Elev)
 Grid
 Minimum Curvature

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	4,748.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,850.0	0.00	0.00	4,798.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,900.0	0.00	0.00	4,848.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,950.0	0.00	0.00	4,898.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
4,980.5	0.00	0.00	4,929.0	-195.0	-435.0	-153.6	0.00	0.00	0.00
SHANNON									
5,000.0	0.00	0.00	4,948.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,050.0	0.00	0.00	4,998.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,100.0	0.00	0.00	5,048.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,150.0	0.00	0.00	5,098.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,148.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,250.0	0.00	0.00	5,198.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,248.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,350.0	0.00	0.00	5,298.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,348.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,450.0	0.00	0.00	5,398.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,448.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,550.0	0.00	0.00	5,498.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,548.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,650.0	0.00	0.00	5,598.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,648.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,750.0	0.00	0.00	5,698.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,748.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,850.0	0.00	0.00	5,798.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,848.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,943.5	0.00	0.00	5,892.0	-195.0	-435.0	-153.6	0.00	0.00	0.00
TEEPEE BUTTES									
5,950.0	0.00	0.00	5,898.5	-195.0	-435.0	-153.6	0.00	0.00	0.00
5,977.9	0.00	0.00	5,926.4	-195.0	-435.0	-153.6	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,000.0	1.77	0.18	5,948.5	-194.7	-435.0	-153.3	8.00	8.00	0.00
6,050.0	5.77	0.18	5,998.3	-191.4	-435.0	-150.0	8.00	8.00	0.00
6,100.0	9.77	0.18	6,047.9	-184.6	-435.0	-143.3	8.00	8.00	0.00
6,150.0	13.77	0.18	6,096.8	-174.4	-434.9	-133.1	8.00	8.00	0.00
6,200.0	17.77	0.18	6,144.9	-160.8	-434.9	-119.6	8.00	8.00	0.00
6,250.0	21.77	0.18	6,192.0	-143.9	-434.8	-102.8	8.00	8.00	0.00
6,300.0	25.77	0.18	6,237.7	-123.8	-434.8	-82.7	8.00	8.00	0.00
6,350.0	29.77	0.18	6,281.9	-100.5	-434.7	-59.5	8.00	8.00	0.00
6,400.0	33.77	0.18	6,324.4	-74.2	-434.6	-33.3	8.00	8.00	0.00
6,450.0	37.77	0.18	6,365.0	-45.0	-434.5	-4.3	8.00	8.00	0.00
6,500.0	41.77	0.18	6,403.4	-13.0	-434.4	27.6	8.00	8.00	0.00
6,550.0	45.77	0.18	6,439.5	21.6	-434.3	62.0	8.00	8.00	0.00
6,600.0	49.77	0.18	6,473.1	58.6	-434.2	98.8	8.00	8.00	0.00
6,607.6	50.37	0.18	6,478.0	64.4	-434.2	104.6	8.00	8.00	0.00
SHARON SPRINGS									
6,633.2	52.43	0.18	6,494.0	84.5	-434.1	124.6	8.00	8.00	0.00
NIORARA									
6,650.0	53.77	0.18	6,504.1	97.9	-434.1	137.9	8.00	8.00	0.00
6,674.1	55.70	0.18	6,518.0	117.6	-434.0	157.5	8.00	8.00	0.00
NIO A CHALK									
6,700.0	57.77	0.18	6,532.2	139.2	-434.0	179.1	8.00	8.00	0.00
6,726.7	59.90	0.18	6,546.0	162.0	-433.9	201.8	8.00	8.00	0.00
NIO A MARL									

Noble Energy Inc

Planning Report

Database:	edm10p	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site:	AC (07N-63W)	North Reference:	Grid
Well:	Crow Creek State AC36-77HN	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	61.77	0.18	6,557.4	182.4	-433.8	222.0	8.00	8.00	0.00
6,800.0	65.77	0.18	6,579.5	227.2	-433.7	266.7	8.00	8.00	0.00
6,850.0	69.77	0.18	6,598.4	273.5	-433.5	312.7	8.00	8.00	0.00
6,896.4	73.48	0.18	6,613.0	317.5	-433.4	356.6	8.00	8.00	0.00
NIO B CHALK									
6,900.0	73.77	0.18	6,614.0	321.0	-433.4	360.0	8.00	8.00	0.00
6,950.0	77.77	0.18	6,626.3	369.4	-433.3	408.2	8.00	8.00	0.00
7,000.0	81.77	0.18	6,635.2	418.6	-433.1	457.2	8.00	8.00	0.00
7,040.4	85.00	0.18	6,639.8	458.8	-433.0	497.1	8.00	8.00	0.00
Start 75.0 hold at 7040.4 MD - 7" Casing @ 7040.4' MD									
7,050.0	85.00	0.18	6,640.7	468.3	-432.9	506.7	0.00	0.00	0.00
7,100.0	85.00	0.18	6,645.0	518.1	-432.8	556.2	0.00	0.00	0.00
7,115.4	85.00	0.18	6,646.4	533.5	-432.7	571.5	0.00	0.00	0.00
Start Build 8.00									
7,123.0	85.61	0.18	6,647.0	541.1	-432.7	579.1	7.99	7.99	0.00
NIO B MARL									
7,150.0	87.77	0.18	6,648.6	568.0	-432.6	605.9	8.00	8.00	0.00
7,175.4	89.80	0.18	6,649.1	593.4	-432.6	631.1	8.00	8.00	0.00
7,200.0	89.80	0.18	6,649.2	618.0	-432.5	655.6	0.00	0.00	0.00
7,250.0	89.80	0.18	6,649.4	668.0	-432.3	705.4	0.00	0.00	0.00
7,300.0	89.80	0.18	6,649.5	718.0	-432.2	755.2	0.00	0.00	0.00
7,350.0	89.80	0.18	6,649.7	768.0	-432.0	804.9	0.00	0.00	0.00
7,400.0	89.80	0.18	6,649.9	818.0	-431.9	854.7	0.00	0.00	0.00
7,450.0	89.80	0.18	6,650.1	868.0	-431.7	904.5	0.00	0.00	0.00
7,500.0	89.80	0.18	6,650.2	918.0	-431.6	954.2	0.00	0.00	0.00
7,550.0	89.80	0.18	6,650.4	968.0	-431.4	1,004.0	0.00	0.00	0.00
7,600.0	89.80	0.18	6,650.6	1,018.0	-431.2	1,053.8	0.00	0.00	0.00
7,650.0	89.80	0.18	6,650.8	1,068.0	-431.1	1,103.5	0.00	0.00	0.00
7,700.0	89.80	0.18	6,650.9	1,118.0	-430.9	1,153.3	0.00	0.00	0.00
7,750.0	89.80	0.18	6,651.1	1,168.0	-430.8	1,203.1	0.00	0.00	0.00
7,800.0	89.80	0.18	6,651.3	1,218.0	-430.6	1,252.8	0.00	0.00	0.00
7,850.0	89.80	0.18	6,651.5	1,268.0	-430.5	1,302.6	0.00	0.00	0.00
7,900.0	89.80	0.18	6,651.6	1,318.0	-430.3	1,352.4	0.00	0.00	0.00
7,950.0	89.80	0.18	6,651.8	1,368.0	-430.2	1,402.1	0.00	0.00	0.00
8,000.0	89.80	0.18	6,652.0	1,418.0	-430.0	1,451.9	0.00	0.00	0.00
8,050.0	89.80	0.18	6,652.1	1,468.0	-429.8	1,501.7	0.00	0.00	0.00
8,100.0	89.80	0.18	6,652.3	1,518.0	-429.7	1,551.4	0.00	0.00	0.00
8,150.0	89.80	0.18	6,652.5	1,568.0	-429.5	1,601.2	0.00	0.00	0.00
8,200.0	89.80	0.18	6,652.7	1,618.0	-429.4	1,651.0	0.00	0.00	0.00
8,250.0	89.80	0.18	6,652.8	1,668.0	-429.2	1,700.7	0.00	0.00	0.00
8,300.0	89.80	0.18	6,653.0	1,718.0	-429.1	1,750.5	0.00	0.00	0.00
8,350.0	89.80	0.18	6,653.2	1,768.0	-428.9	1,800.3	0.00	0.00	0.00
8,400.0	89.80	0.18	6,653.4	1,818.0	-428.8	1,850.0	0.00	0.00	0.00
8,450.0	89.80	0.18	6,653.5	1,868.0	-428.6	1,899.8	0.00	0.00	0.00
8,500.0	89.80	0.18	6,653.7	1,918.0	-428.5	1,949.6	0.00	0.00	0.00
8,550.0	89.80	0.18	6,653.9	1,968.0	-428.3	1,999.3	0.00	0.00	0.00
8,600.0	89.80	0.18	6,654.1	2,018.0	-428.1	2,049.1	0.00	0.00	0.00
8,650.0	89.80	0.18	6,654.2	2,068.0	-428.0	2,098.9	0.00	0.00	0.00
8,700.0	89.80	0.18	6,654.4	2,118.0	-427.8	2,148.6	0.00	0.00	0.00
8,750.0	89.80	0.18	6,654.6	2,168.0	-427.7	2,198.4	0.00	0.00	0.00
8,800.0	89.80	0.18	6,654.8	2,218.0	-427.5	2,248.2	0.00	0.00	0.00
8,850.0	89.80	0.18	6,654.9	2,268.0	-427.4	2,297.9	0.00	0.00	0.00
8,900.0	89.80	0.18	6,655.1	2,318.0	-427.2	2,347.7	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	edm10p	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site:	AC (07N-63W)	North Reference:	Grid
Well:	Crow Creek State AC36-77HN	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	89.80	0.18	6,655.3	2,368.0	-427.1	2,397.5	0.00	0.00	0.00	
9,000.0	89.80	0.18	6,655.5	2,418.0	-426.9	2,447.3	0.00	0.00	0.00	
9,050.0	89.80	0.18	6,655.6	2,468.0	-426.7	2,497.0	0.00	0.00	0.00	
9,100.0	89.80	0.18	6,655.8	2,518.0	-426.6	2,546.8	0.00	0.00	0.00	
9,150.0	89.80	0.18	6,656.0	2,568.0	-426.4	2,596.6	0.00	0.00	0.00	
9,200.0	89.80	0.18	6,656.2	2,618.0	-426.3	2,646.3	0.00	0.00	0.00	
9,250.0	89.80	0.18	6,656.3	2,668.0	-426.1	2,696.1	0.00	0.00	0.00	
9,300.0	89.80	0.18	6,656.5	2,718.0	-426.0	2,745.9	0.00	0.00	0.00	
9,350.0	89.80	0.18	6,656.7	2,768.0	-425.8	2,795.6	0.00	0.00	0.00	
9,400.0	89.80	0.18	6,656.9	2,818.0	-425.7	2,845.4	0.00	0.00	0.00	
9,450.0	89.80	0.18	6,657.0	2,868.0	-425.5	2,895.2	0.00	0.00	0.00	
9,500.0	89.80	0.18	6,657.2	2,918.0	-425.4	2,944.9	0.00	0.00	0.00	
9,550.0	89.80	0.18	6,657.4	2,968.0	-425.2	2,994.7	0.00	0.00	0.00	
9,600.0	89.80	0.18	6,657.6	3,018.0	-425.0	3,044.5	0.00	0.00	0.00	
9,650.0	89.80	0.18	6,657.7	3,068.0	-424.9	3,094.2	0.00	0.00	0.00	
9,700.0	89.80	0.18	6,657.9	3,118.0	-424.7	3,144.0	0.00	0.00	0.00	
9,750.0	89.80	0.18	6,658.1	3,168.0	-424.6	3,193.8	0.00	0.00	0.00	
9,800.0	89.80	0.18	6,658.3	3,218.0	-424.4	3,243.5	0.00	0.00	0.00	
9,850.0	89.80	0.18	6,658.4	3,268.0	-424.3	3,293.3	0.00	0.00	0.00	
9,900.0	89.80	0.18	6,658.6	3,318.0	-424.1	3,343.1	0.00	0.00	0.00	
9,950.0	89.80	0.18	6,658.8	3,368.0	-424.0	3,392.8	0.00	0.00	0.00	
10,000.0	89.80	0.18	6,659.0	3,418.0	-423.8	3,442.6	0.00	0.00	0.00	
10,050.0	89.80	0.18	6,659.1	3,468.0	-423.6	3,492.4	0.00	0.00	0.00	
10,100.0	89.80	0.18	6,659.3	3,518.0	-423.5	3,542.1	0.00	0.00	0.00	
10,150.0	89.80	0.18	6,659.5	3,568.0	-423.3	3,591.9	0.00	0.00	0.00	
10,200.0	89.80	0.18	6,659.7	3,618.0	-423.2	3,641.7	0.00	0.00	0.00	
10,250.0	89.80	0.18	6,659.8	3,668.0	-423.0	3,691.4	0.00	0.00	0.00	
10,300.0	89.80	0.18	6,660.0	3,718.0	-422.9	3,741.2	0.00	0.00	0.00	
10,350.0	89.80	0.18	6,660.2	3,768.0	-422.7	3,791.0	0.00	0.00	0.00	
10,400.0	89.80	0.18	6,660.4	3,818.0	-422.6	3,840.7	0.00	0.00	0.00	
10,450.0	89.80	0.18	6,660.5	3,868.0	-422.4	3,890.5	0.00	0.00	0.00	
10,500.0	89.80	0.18	6,660.7	3,918.0	-422.3	3,940.3	0.00	0.00	0.00	
10,550.0	89.80	0.18	6,660.9	3,968.0	-422.1	3,990.0	0.00	0.00	0.00	
10,600.0	89.80	0.18	6,661.0	4,018.0	-421.9	4,039.8	0.00	0.00	0.00	
10,650.0	89.80	0.18	6,661.2	4,068.0	-421.8	4,089.6	0.00	0.00	0.00	
10,700.0	89.80	0.18	6,661.4	4,118.0	-421.6	4,139.3	0.00	0.00	0.00	
10,750.0	89.80	0.18	6,661.6	4,168.0	-421.5	4,189.1	0.00	0.00	0.00	
10,800.0	89.80	0.18	6,661.7	4,218.0	-421.3	4,238.9	0.00	0.00	0.00	
10,850.0	89.80	0.18	6,661.9	4,268.0	-421.2	4,288.6	0.00	0.00	0.00	
10,900.0	89.80	0.18	6,662.1	4,318.0	-421.0	4,338.4	0.00	0.00	0.00	
10,950.0	89.80	0.18	6,662.3	4,368.0	-420.9	4,388.2	0.00	0.00	0.00	
11,000.0	89.80	0.18	6,662.4	4,418.0	-420.7	4,437.9	0.00	0.00	0.00	
11,050.0	89.80	0.18	6,662.6	4,468.0	-420.5	4,487.7	0.00	0.00	0.00	
11,072.8	89.80	0.18	6,662.7	4,490.8	-420.5	4,510.4	0.00	0.00	0.00	
TD at 11072.8 - Crow Creek State AC 36-77HN BHL 535'FNL, 1320'FWL										

Noble Energy Inc

Planning Report

Database:	edm10p	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site:	AC (07N-63W)	North Reference:	Grid
Well:	Crow Creek State AC36-77HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 0		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Crow Creek State AC 36	0.00	0.00	6,662.7	4,490.8	-420.5	1,440,010.01	3,308,727.07	40.535920	-104.389250
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
7,040.4	6,639.8	7" Casing @ 7040.4' MD	7	8-3/4

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
2,505.0	2,489.0	PIERRE		0.00		
3,653.8	3,605.0	PARKMAN		0.00		
4,448.5	4,397.0	SUSSEX		0.00		
4,980.5	4,929.0	SHANNON		0.00		
5,943.5	5,892.0	TEEPEE BUTTES		0.00		
6,607.6	6,478.0	SHARON SPRINGS		0.00		
6,633.2	6,494.0	NIOBRARA		0.00		
6,674.1	6,518.0	NIO A CHALK		0.00		
6,726.7	6,546.0	NIO A MARL		0.00		
6,896.4	6,613.0	NIO B CHALK		0.00		
7,123.0	6,647.0	NIO B MARL		0.00		

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S	+E/-W	
(usft)	(usft)	(usft)	(usft)	
1,500.0	1,500.0	0.0	0.0	KOP - Start Build 2.00
3,466.3	3,421.7	-160.2	-357.3	Start Drop -2.00
5,977.9	5,926.4	-195.0	-435.0	KOP #2 - Start Build 8.00
7,040.4	6,639.8	458.8	-433.0	Start 75.0 hold at 7040.4 MD
7,115.4	6,646.4	533.5	-432.7	Start Build 8.00
11,072.8	6,662.7	4,490.8	-420.5	TD at 11072.8

Northern Region Drilling

Wattenberg Field

AC (07N-63W)

Crow Creek State AC36-77HN

Original Drilling

APD - Rev 0

Anticollision Summary Report

26 February, 2013

Noble Energy Inc
Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Reference Site:	AC (07N-63W)	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Crow Creek State AC36-77HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.54 sigma
Reference Wellbore	Original Drilling	Database:	edm10p
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	2/25/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,072.8	APD - Rev 0 (Original Drilling)	MWD	MWD - Standard

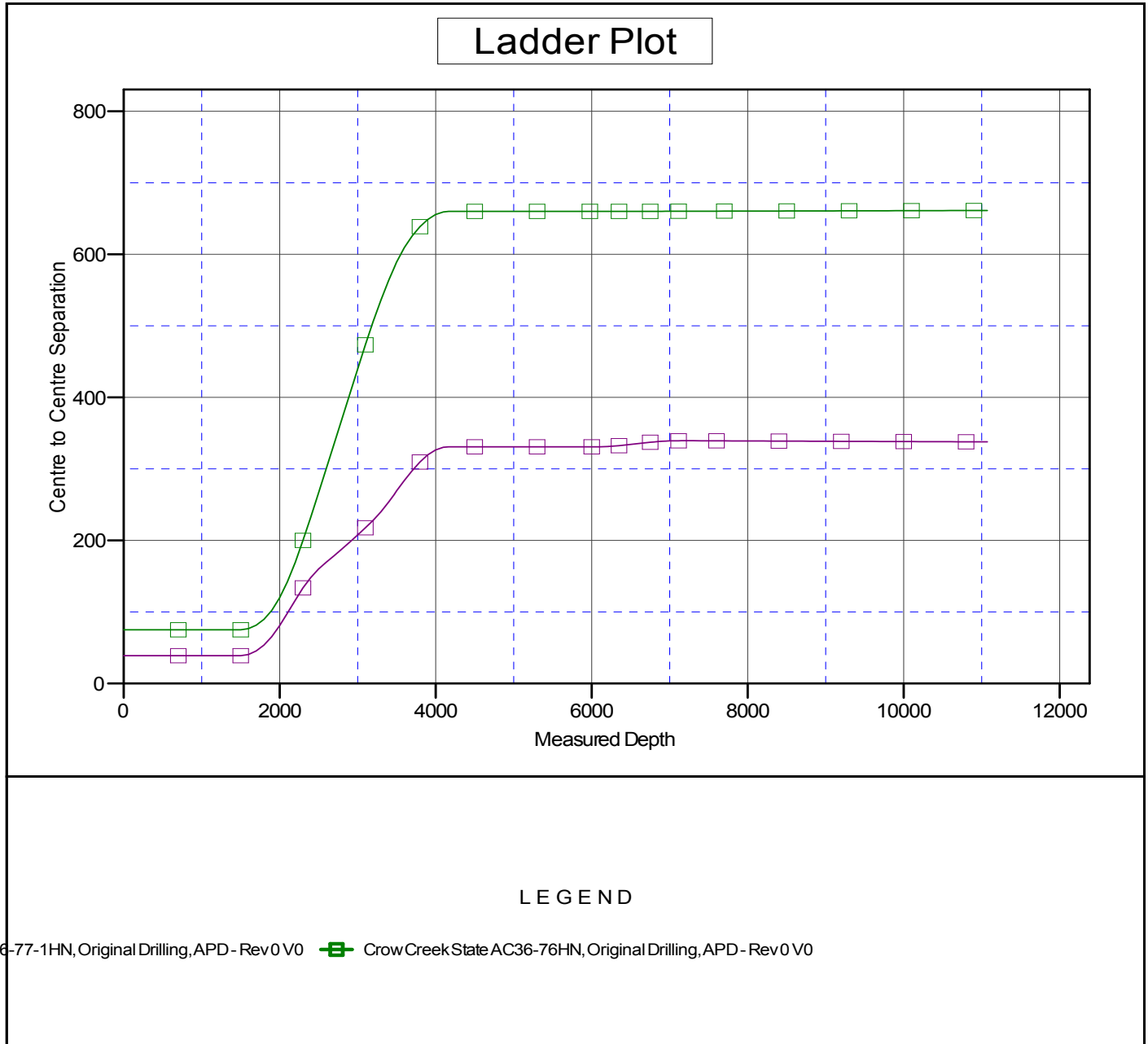
Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
AC (07N-63W)						
Crow Creek State AC36-76HN - Original Drilling - APD -	1,500.0	1,501.0	75.1	68.6	11.632	CC, ES
Crow Creek State AC36-76HN - Original Drilling - APD -	11,072.8	11,039.5	661.3	486.0	3.773	SF
Crow Creek State AC36-77-1HN - Original Drilling - APD	1,500.0	1,501.0	38.9	32.5	6.032	CC, ES
Crow Creek State AC36-77-1HN - Original Drilling - APD	11,072.8	11,117.6	337.8	165.3	1.959	SF

Noble Energy Inc
Anticollision Summary Report

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Reference Site:	AC (07N-63W)	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Crow Creek State AC36-77HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.54 sigma
Reference Wellbore	Original Drilling	Database:	edm10p
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4818.0usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Crow Creek State AC36-77HN
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.72°



Noble Energy Inc
Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Crow Creek State AC36-77HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4818.0usft (Original Well Elev)
Reference Site:	AC (07N-63W)	MD Reference:	WELL @ 4818.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Crow Creek State AC36-77HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.54 sigma
Reference Wellbore	Original Drilling	Database:	edm10p
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4818.0usft (Original Well Ele
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Coordinate System is US State Plane 1983, Colorado Northern Zone
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