

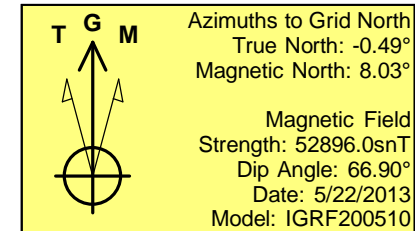
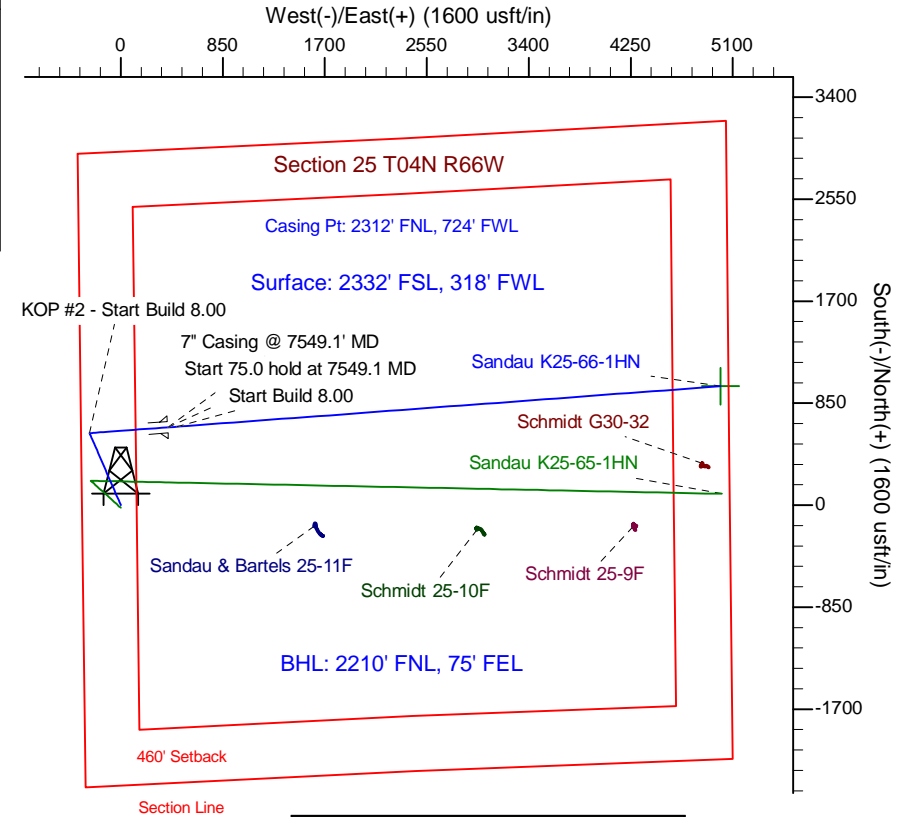
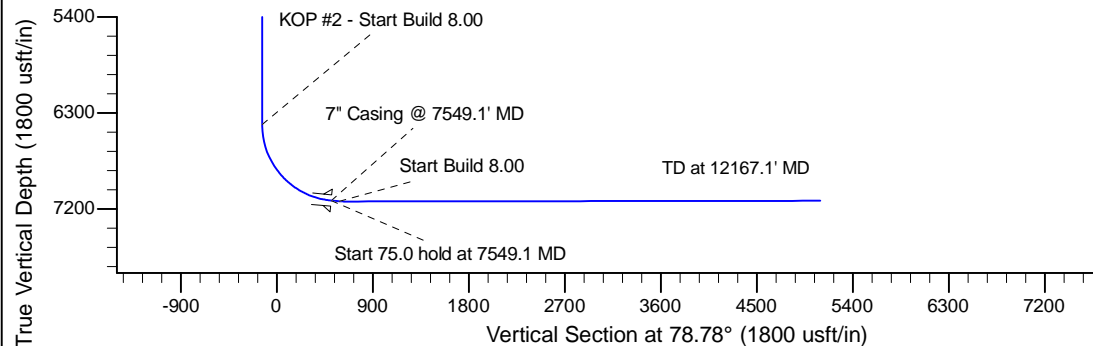
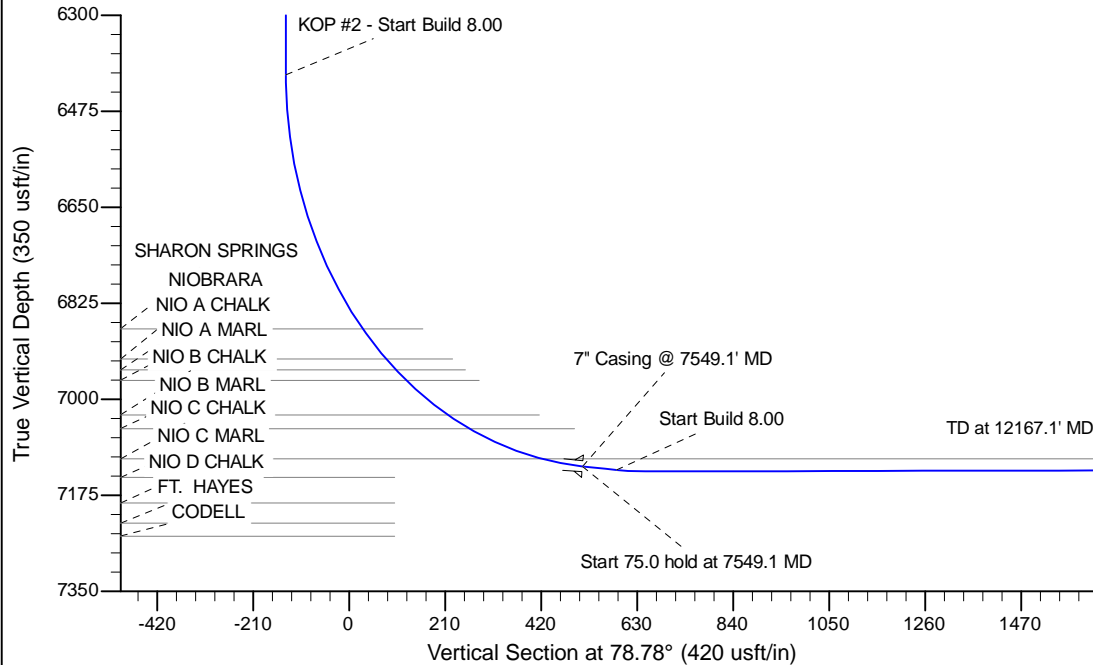
Project: Wattenberg Field
Site: K (Sec.25-T04-R66W) Weld County, CO
Well: Sandau K25-66-1HN
Wellbore: Original Drilling
Design: APD - Rev 0

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	VFace	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	1949.9	15.00	336.57	1941.4	89.5	-38.8	2.00	336.57	-20.6	
4	3722.6	15.00	336.57	3653.6	510.5	-221.2	0.00	0.00	-117.7	
5	4472.5	0.00	0.00	4395.0	600.0	-260.0	2.00	180.00	-138.3	
6	6486.6	0.00	0.00	6409.2	600.0	-260.0	0.00	0.00	-138.3	
7	7549.1	85.00	85.75	7122.7	648.5	392.0	8.00	85.75	510.6	
8	7624.1	85.00	85.75	7129.2	654.0	466.5	0.00	0.00	584.8	
9	7687.9	90.10	85.75	7131.9	658.7	530.0	8.00	0.00	648.0	
10	12167.1	90.10	85.75	7124.1	990.9	4996.8	0.00	0.00	5094.1	Sandau K25-66-1HN BHL 2210'FNL, 75'FEL



WELL DETAILS: Sandau K25-66-1HN					
Ground Level: 4780.0					
0.0	0.0	Northing	Easting	Latitude	Longitude
		1346548.55	3213779.70	40.282140	-104.733740
Plan: APD - Rev 0 (Sandau K25-66-1HN/Original Drilling)					
Created By: Shailey Jewell			Date: 10:55, May 22 2013		
Checked: _____			Date: _____		
Reviewed: _____			Date: _____		
Approved: _____			Date: _____		

Northern Region Drilling

Wattenberg Field

K (04-66W)

Sandau K25-66-1HN

Original Drilling

Plan: APD - Rev 0

Standard Planning Report

22 May, 2013

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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	K (04-66W)				
Site Position:		Northing:	1,345,613.68 usft	Latitude:	40.279820
From:	Lat/Long	Easting:	3,203,135.01 usft	Longitude:	-104.771920
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47 °

Well	Sandau K25-66-1HN					
Well Position	+N/-S	934.9 usft	Northing:	1,346,548.55 usft	Latitude:	40.282140
	+E/-W	10,645.2 usft	Easting:	3,213,779.70 usft	Longitude:	-104.733740
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	4,780.0 usft

Wellbore	Original Drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	5/22/2013	8.53	66.90	52,896

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	78.78

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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,949.9	15.00	336.57	1,941.4	89.5	-38.8	2.00	2.00	0.00	336.57	
3,722.6	15.00	336.57	3,653.6	510.5	-221.2	0.00	0.00	0.00	0.00	
4,472.5	0.00	0.00	4,395.0	600.0	-260.0	2.00	-2.00	0.00	180.00	
6,486.6	0.00	0.00	6,409.2	600.0	-260.0	0.00	0.00	0.00	0.00	
7,549.1	85.00	85.75	7,122.7	648.5	392.0	8.00	8.00	0.00	85.75	
7,624.1	85.00	85.75	7,129.2	654.0	466.5	0.00	0.00	0.00	0.00	
7,687.9	90.10	85.75	7,131.9	658.7	530.0	8.00	8.00	0.00	0.00	
12,167.1	90.10	85.75	7,124.1	990.9	4,996.8	0.00	0.00	0.00	0.00	Sandau K25-66-1HN

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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
KOP - Start Build 2.00									
1,250.0	1.00	336.57	1,250.0	0.4	-0.2	-0.1	2.00	2.00	0.00
1,300.0	2.00	336.57	1,300.0	1.6	-0.7	-0.4	2.00	2.00	0.00
1,350.0	3.00	336.57	1,349.9	3.6	-1.6	-0.8	2.00	2.00	0.00
1,400.0	4.00	336.57	1,399.8	6.4	-2.8	-1.5	2.00	2.00	0.00
1,450.0	5.00	336.57	1,449.7	10.0	-4.3	-2.3	2.00	2.00	0.00
1,500.0	6.00	336.57	1,499.5	14.4	-6.2	-3.3	2.00	2.00	0.00
1,550.0	7.00	336.57	1,549.1	19.6	-8.5	-4.5	2.00	2.00	0.00
1,600.0	8.00	336.57	1,598.7	25.6	-11.1	-5.9	2.00	2.00	0.00
1,650.0	9.00	336.57	1,648.2	32.4	-14.0	-7.5	2.00	2.00	0.00
1,700.0	10.00	336.57	1,697.5	39.9	-17.3	-9.2	2.00	2.00	0.00
1,750.0	11.00	336.57	1,746.6	48.3	-20.9	-11.1	2.00	2.00	0.00
1,800.0	12.00	336.57	1,795.6	57.4	-24.9	-13.2	2.00	2.00	0.00
1,850.0	13.00	336.57	1,844.4	67.4	-29.2	-15.5	2.00	2.00	0.00
1,900.0	14.00	336.57	1,893.1	78.1	-33.8	-18.0	2.00	2.00	0.00
1,949.9	15.00	336.57	1,941.4	89.5	-38.8	-20.6	2.00	2.00	0.00
1,950.0	15.00	336.57	1,941.5	89.6	-38.8	-20.6	0.00	0.00	0.00
2,000.0	15.00	336.57	1,989.8	101.4	-44.0	-23.4	0.00	0.00	0.00
2,050.0	15.00	336.57	2,038.1	113.3	-49.1	-26.1	0.00	0.00	0.00
2,100.0	15.00	336.57	2,086.4	125.2	-54.2	-28.9	0.00	0.00	0.00
2,150.0	15.00	336.57	2,134.6	137.1	-59.4	-31.6	0.00	0.00	0.00
2,200.0	15.00	336.57	2,182.9	148.9	-64.5	-34.3	0.00	0.00	0.00
2,250.0	15.00	336.57	2,231.2	160.8	-69.7	-37.1	0.00	0.00	0.00
2,300.0	15.00	336.57	2,279.5	172.7	-74.8	-39.8	0.00	0.00	0.00
2,350.0	15.00	336.57	2,327.8	184.5	-80.0	-42.5	0.00	0.00	0.00
2,400.0	15.00	336.57	2,376.1	196.4	-85.1	-45.3	0.00	0.00	0.00
2,450.0	15.00	336.57	2,424.4	208.3	-90.3	-48.0	0.00	0.00	0.00
2,500.0	15.00	336.57	2,472.7	220.2	-95.4	-50.8	0.00	0.00	0.00
2,550.0	15.00	336.57	2,521.0	232.0	-100.5	-53.5	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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)
2,600.0	15.00	336.57	2,569.3	243.9	-105.7	-56.2	0.00	0.00	0.00
2,650.0	15.00	336.57	2,617.6	255.8	-110.8	-59.0	0.00	0.00	0.00
2,650.4	15.00	336.57	2,618.0	255.9	-110.9	-59.0	0.00	0.00	0.00
PIERRE									
2,700.0	15.00	336.57	2,665.9	267.7	-116.0	-61.7	0.00	0.00	0.00
2,750.0	15.00	336.57	2,714.2	279.5	-121.1	-64.4	0.00	0.00	0.00
2,800.0	15.00	336.57	2,762.5	291.4	-126.3	-67.2	0.00	0.00	0.00
2,850.0	15.00	336.57	2,810.8	303.3	-131.4	-69.9	0.00	0.00	0.00
2,900.0	15.00	336.57	2,859.1	315.1	-136.6	-72.7	0.00	0.00	0.00
2,950.0	15.00	336.57	2,907.4	327.0	-141.7	-75.4	0.00	0.00	0.00
3,000.0	15.00	336.57	2,955.7	338.9	-146.9	-78.1	0.00	0.00	0.00
3,050.0	15.00	336.57	3,004.0	350.8	-152.0	-80.9	0.00	0.00	0.00
3,100.0	15.00	336.57	3,052.3	362.6	-157.1	-83.6	0.00	0.00	0.00
3,150.0	15.00	336.57	3,100.6	374.5	-162.3	-86.3	0.00	0.00	0.00
3,200.0	15.00	336.57	3,148.9	386.4	-167.4	-89.1	0.00	0.00	0.00
3,250.0	15.00	336.57	3,197.2	398.2	-172.6	-91.8	0.00	0.00	0.00
3,300.0	15.00	336.57	3,245.5	410.1	-177.7	-94.5	0.00	0.00	0.00
3,350.0	15.00	336.57	3,293.8	422.0	-182.9	-97.3	0.00	0.00	0.00
3,400.0	15.00	336.57	3,342.1	433.9	-188.0	-100.0	0.00	0.00	0.00
3,450.0	15.00	336.57	3,390.4	445.7	-193.2	-102.8	0.00	0.00	0.00
3,500.0	15.00	336.57	3,438.7	457.6	-198.3	-105.5	0.00	0.00	0.00
3,550.0	15.00	336.57	3,487.0	469.5	-203.4	-108.2	0.00	0.00	0.00
3,600.0	15.00	336.57	3,535.3	481.4	-208.6	-111.0	0.00	0.00	0.00
3,650.0	15.00	336.57	3,583.6	493.2	-213.7	-113.7	0.00	0.00	0.00
3,700.0	15.00	336.57	3,631.8	505.1	-218.9	-116.4	0.00	0.00	0.00
3,722.6	15.00	336.57	3,653.7	510.5	-221.2	-117.7	0.00	0.00	0.00
Start Drop -2.00									
3,750.0	14.45	336.57	3,680.2	516.9	-224.0	-119.2	2.00	-2.00	0.00
3,800.0	13.45	336.57	3,728.7	527.9	-228.8	-121.7	2.00	-2.00	0.00
3,820.8	13.03	336.57	3,749.0	532.3	-230.7	-122.7	2.00	-2.00	0.00
PARKMAN									
3,850.0	12.45	336.57	3,777.4	538.2	-233.2	-124.1	2.00	-2.00	0.00
3,900.0	11.45	336.57	3,826.3	547.7	-237.3	-126.3	2.00	-2.00	0.00
3,950.0	10.45	336.57	3,875.4	556.4	-241.1	-128.3	2.00	-2.00	0.00
4,000.0	9.45	336.57	3,924.7	564.3	-244.5	-130.1	2.00	-2.00	0.00
4,050.0	8.45	336.57	3,974.1	571.5	-247.6	-131.7	2.00	-2.00	0.00
4,100.0	7.45	336.57	4,023.6	577.8	-250.4	-133.2	2.00	-2.00	0.00
4,150.0	6.45	336.57	4,073.2	583.4	-252.8	-134.5	2.00	-2.00	0.00
4,200.0	5.45	336.57	4,123.0	588.1	-254.9	-135.6	2.00	-2.00	0.00
4,250.0	4.45	336.57	4,172.8	592.1	-256.6	-136.5	2.00	-2.00	0.00
4,300.0	3.45	336.57	4,222.7	595.2	-257.9	-137.2	2.00	-2.00	0.00
4,350.0	2.45	336.57	4,272.6	597.6	-259.0	-137.8	2.00	-2.00	0.00
4,400.0	1.45	336.57	4,322.6	599.2	-259.6	-138.1	2.00	-2.00	0.00
4,443.5	0.58	336.57	4,366.0	599.9	-259.9	-138.3	2.00	-2.00	0.00
SUSSEX									
4,450.0	0.45	336.57	4,372.5	599.9	-260.0	-138.3	2.00	-2.00	0.00
4,472.5	0.00	0.00	4,395.0	600.0	-260.0	-138.3	2.00	-2.00	0.00
4,500.0	0.00	0.00	4,422.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,550.0	0.00	0.00	4,472.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,600.0	0.00	0.00	4,522.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,650.0	0.00	0.00	4,572.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,700.0	0.00	0.00	4,622.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,750.0	0.00	0.00	4,672.5	600.0	-260.0	-138.3	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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	4,722.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,850.0	0.00	0.00	4,772.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,900.0	0.00	0.00	4,822.5	600.0	-260.0	-138.3	0.00	0.00	0.00
4,950.0	0.00	0.00	4,872.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,000.0	0.00	0.00	4,922.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,045.5	0.00	0.00	4,968.0	600.0	-260.0	-138.3	0.00	0.00	0.00
SHANNON									
5,050.0	0.00	0.00	4,972.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,100.0	0.00	0.00	5,022.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,150.0	0.00	0.00	5,072.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,200.0	0.00	0.00	5,122.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,250.0	0.00	0.00	5,172.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,300.0	0.00	0.00	5,222.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,350.0	0.00	0.00	5,272.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,322.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,450.0	0.00	0.00	5,372.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,500.0	0.00	0.00	5,422.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,550.0	0.00	0.00	5,472.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,522.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,650.0	0.00	0.00	5,572.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,700.0	0.00	0.00	5,622.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,750.0	0.00	0.00	5,672.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,722.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,850.0	0.00	0.00	5,772.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,900.0	0.00	0.00	5,822.5	600.0	-260.0	-138.3	0.00	0.00	0.00
5,950.0	0.00	0.00	5,872.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,922.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,050.0	0.00	0.00	5,972.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,100.0	0.00	0.00	6,022.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,150.0	0.00	0.00	6,072.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,122.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,250.0	0.00	0.00	6,172.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,280.5	0.00	0.00	6,203.0	600.0	-260.0	-138.3	0.00	0.00	0.00
TEEPEE BUTTES									
6,300.0	0.00	0.00	6,222.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,350.0	0.00	0.00	6,272.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,322.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,450.0	0.00	0.00	6,372.5	600.0	-260.0	-138.3	0.00	0.00	0.00
6,486.6	0.00	0.00	6,409.1	600.0	-260.0	-138.3	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,500.0	1.07	85.75	6,422.5	600.0	-259.9	-138.2	7.98	7.98	0.00
6,550.0	5.07	85.75	6,472.5	600.2	-257.2	-135.5	8.00	8.00	0.00
6,600.0	9.07	85.75	6,522.1	600.7	-251.1	-129.4	8.00	8.00	0.00
6,650.0	13.07	85.75	6,571.1	601.4	-241.5	-119.9	8.00	8.00	0.00
6,700.0	17.07	85.75	6,619.4	602.3	-228.5	-107.0	8.00	8.00	0.00
6,750.0	21.07	85.75	6,666.7	603.6	-212.3	-90.8	8.00	8.00	0.00
6,800.0	25.07	85.75	6,712.6	605.0	-192.7	-71.4	8.00	8.00	0.00
6,850.0	29.07	85.75	6,757.2	606.7	-170.0	-48.8	8.00	8.00	0.00
6,900.0	33.07	85.75	6,800.0	608.6	-144.3	-23.2	8.00	8.00	0.00
6,950.0	37.07	85.75	6,840.9	610.7	-115.7	5.3	8.00	8.00	0.00
6,989.8	40.26	85.75	6,872.0	612.6	-90.8	30.1	8.00	8.00	0.00
SHARON SPRINGS									
7,000.0	41.07	85.75	6,879.7	613.1	-84.2	36.6	8.00	8.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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)
7,050.0	45.07	85.75	6,916.2	615.6	-50.2	70.5	8.00	8.00	0.00
7,065.4	46.30	85.75	6,927.0	616.4	-39.2	81.5	8.00	8.00	0.00
NIOBRARA									
7,095.0	48.67	85.75	6,947.0	618.0	-17.4	103.1	8.00	8.00	0.00
NIO A CHALK									
7,100.0	49.07	85.75	6,950.3	618.3	-13.7	106.8	8.00	8.00	0.00
7,124.5	51.03	85.75	6,966.0	619.7	5.0	125.5	8.00	8.00	0.00
NIO A MARL									
7,150.0	53.07	85.75	6,981.7	621.2	25.1	145.4	8.00	8.00	0.00
7,200.0	57.07	85.75	7,010.3	624.2	66.0	186.1	8.00	8.00	0.00
7,235.8	59.93	85.75	7,029.0	626.5	96.4	216.4	8.00	8.00	0.00
NIO B CHALK									
7,250.0	61.07	85.75	7,036.0	627.4	108.7	228.7	8.00	8.00	0.00
7,289.2	64.20	85.75	7,054.0	630.0	143.4	263.2	8.00	8.00	0.00
NIO B MARL									
7,300.0	65.07	85.75	7,058.6	630.7	153.2	272.9	8.00	8.00	0.00
7,350.0	69.07	85.75	7,078.1	634.1	199.1	318.6	8.00	8.00	0.00
7,400.0	73.07	85.75	7,094.3	637.6	246.2	365.6	8.00	8.00	0.00
7,450.0	77.07	85.75	7,107.2	641.2	294.4	413.5	8.00	8.00	0.00
7,458.2	77.72	85.75	7,109.0	641.8	302.3	421.4	8.00	8.00	0.00
NIO C CHALK									
7,500.0	81.07	85.75	7,116.7	644.9	343.3	462.2	8.00	8.00	0.00
7,549.1	85.00	85.75	7,122.7	648.5	391.9	510.6	8.00	8.00	0.00
Start 75.0 hold at 7549.1 MD - 7" Casing @ 7549.1' MD									
7,550.0	85.00	85.75	7,122.7	648.5	392.8	511.5	0.34	0.34	0.00
7,600.0	85.00	85.75	7,127.1	652.2	442.5	560.9	0.00	0.00	0.00
7,624.1	85.00	85.75	7,129.2	654.0	466.4	584.8	0.00	0.00	0.00
Start Build 8.00									
7,650.0	87.07	85.75	7,131.0	655.9	492.2	610.4	7.99	7.99	0.00
7,687.9	90.10	85.75	7,131.9	658.7	530.0	648.0	8.00	8.00	0.00
7,700.0	90.10	85.75	7,131.9	659.6	542.1	660.0	0.00	0.00	0.00
7,750.0	90.10	85.75	7,131.8	663.4	591.9	709.7	0.00	0.00	0.00
7,800.0	90.10	85.75	7,131.7	667.1	641.8	759.3	0.00	0.00	0.00
7,850.0	90.10	85.75	7,131.6	670.8	691.6	808.9	0.00	0.00	0.00
7,900.0	90.10	85.75	7,131.5	674.5	741.5	858.5	0.00	0.00	0.00
7,950.0	90.10	85.75	7,131.5	678.2	791.4	908.2	0.00	0.00	0.00
8,000.0	90.10	85.75	7,131.4	681.9	841.2	957.8	0.00	0.00	0.00
8,050.0	90.10	85.75	7,131.3	685.6	891.1	1,007.4	0.00	0.00	0.00
8,100.0	90.10	85.75	7,131.2	689.3	941.0	1,057.1	0.00	0.00	0.00
8,150.0	90.10	85.75	7,131.1	693.0	990.8	1,106.7	0.00	0.00	0.00
8,200.0	90.10	85.75	7,131.0	696.7	1,040.7	1,156.3	0.00	0.00	0.00
8,250.0	90.10	85.75	7,130.9	700.4	1,090.5	1,206.0	0.00	0.00	0.00
8,300.0	90.10	85.75	7,130.8	704.1	1,140.4	1,255.6	0.00	0.00	0.00
8,350.0	90.10	85.75	7,130.8	707.8	1,190.3	1,305.2	0.00	0.00	0.00
8,400.0	90.10	85.75	7,130.7	711.6	1,240.1	1,354.9	0.00	0.00	0.00
8,450.0	90.10	85.75	7,130.6	715.3	1,290.0	1,404.5	0.00	0.00	0.00
8,500.0	90.10	85.75	7,130.5	719.0	1,339.9	1,454.1	0.00	0.00	0.00
8,550.0	90.10	85.75	7,130.4	722.7	1,389.7	1,503.7	0.00	0.00	0.00
8,600.0	90.10	85.75	7,130.3	726.4	1,439.6	1,553.4	0.00	0.00	0.00
8,650.0	90.10	85.75	7,130.2	730.1	1,489.4	1,603.0	0.00	0.00	0.00
8,700.0	90.10	85.75	7,130.2	733.8	1,539.3	1,652.6	0.00	0.00	0.00
8,750.0	90.10	85.75	7,130.1	737.5	1,589.2	1,702.3	0.00	0.00	0.00
8,800.0	90.10	85.75	7,130.0	741.2	1,639.0	1,751.9	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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)
8,850.0	90.10	85.75	7,129.9	744.9	1,688.9	1,801.5	0.00	0.00	0.00
8,900.0	90.10	85.75	7,129.8	748.6	1,738.8	1,851.2	0.00	0.00	0.00
8,950.0	90.10	85.75	7,129.7	752.3	1,788.6	1,900.8	0.00	0.00	0.00
9,000.0	90.10	85.75	7,129.6	756.1	1,838.5	1,950.4	0.00	0.00	0.00
9,050.0	90.10	85.75	7,129.5	759.8	1,888.3	2,000.1	0.00	0.00	0.00
9,100.0	90.10	85.75	7,129.5	763.5	1,938.2	2,049.7	0.00	0.00	0.00
9,150.0	90.10	85.75	7,129.4	767.2	1,988.1	2,099.3	0.00	0.00	0.00
9,200.0	90.10	85.75	7,129.3	770.9	2,037.9	2,149.0	0.00	0.00	0.00
9,250.0	90.10	85.75	7,129.2	774.6	2,087.8	2,198.6	0.00	0.00	0.00
9,300.0	90.10	85.75	7,129.1	778.3	2,137.7	2,248.2	0.00	0.00	0.00
9,350.0	90.10	85.75	7,129.0	782.0	2,187.5	2,297.8	0.00	0.00	0.00
9,400.0	90.10	85.75	7,128.9	785.7	2,237.4	2,347.5	0.00	0.00	0.00
9,450.0	90.10	85.75	7,128.8	789.4	2,287.2	2,397.1	0.00	0.00	0.00
9,500.0	90.10	85.75	7,128.8	793.1	2,337.1	2,446.7	0.00	0.00	0.00
9,550.0	90.10	85.75	7,128.7	796.8	2,387.0	2,496.4	0.00	0.00	0.00
9,600.0	90.10	85.75	7,128.6	800.5	2,436.8	2,546.0	0.00	0.00	0.00
9,650.0	90.10	85.75	7,128.5	804.3	2,486.7	2,595.6	0.00	0.00	0.00
9,700.0	90.10	85.75	7,128.4	808.0	2,536.5	2,645.3	0.00	0.00	0.00
9,750.0	90.10	85.75	7,128.3	811.7	2,586.4	2,694.9	0.00	0.00	0.00
9,800.0	90.10	85.75	7,128.2	815.4	2,636.3	2,744.5	0.00	0.00	0.00
9,850.0	90.10	85.75	7,128.1	819.1	2,686.1	2,794.2	0.00	0.00	0.00
9,900.0	90.10	85.75	7,128.1	822.8	2,736.0	2,843.8	0.00	0.00	0.00
9,950.0	90.10	85.75	7,128.0	826.5	2,785.9	2,893.4	0.00	0.00	0.00
10,000.0	90.10	85.75	7,127.9	830.2	2,835.7	2,943.0	0.00	0.00	0.00
10,050.0	90.10	85.75	7,127.8	833.9	2,885.6	2,992.7	0.00	0.00	0.00
10,100.0	90.10	85.75	7,127.7	837.6	2,935.4	3,042.3	0.00	0.00	0.00
10,150.0	90.10	85.75	7,127.6	841.3	2,985.3	3,091.9	0.00	0.00	0.00
10,200.0	90.10	85.75	7,127.5	845.0	3,035.2	3,141.6	0.00	0.00	0.00
10,250.0	90.10	85.75	7,127.4	848.7	3,085.0	3,191.2	0.00	0.00	0.00
10,300.0	90.10	85.75	7,127.4	852.5	3,134.9	3,240.8	0.00	0.00	0.00
10,350.0	90.10	85.75	7,127.3	856.2	3,184.8	3,290.5	0.00	0.00	0.00
10,400.0	90.10	85.75	7,127.2	859.9	3,234.6	3,340.1	0.00	0.00	0.00
10,450.0	90.10	85.75	7,127.1	863.6	3,284.5	3,389.7	0.00	0.00	0.00
10,500.0	90.10	85.75	7,127.0	867.3	3,334.3	3,439.4	0.00	0.00	0.00
10,550.0	90.10	85.75	7,126.9	871.0	3,384.2	3,489.0	0.00	0.00	0.00
10,600.0	90.10	85.75	7,126.8	874.7	3,434.1	3,538.6	0.00	0.00	0.00
10,650.0	90.10	85.75	7,126.7	878.4	3,483.9	3,588.3	0.00	0.00	0.00
10,700.0	90.10	85.75	7,126.7	882.1	3,533.8	3,637.9	0.00	0.00	0.00
10,750.0	90.10	85.75	7,126.6	885.8	3,583.7	3,687.5	0.00	0.00	0.00
10,800.0	90.10	85.75	7,126.5	889.5	3,633.5	3,737.1	0.00	0.00	0.00
10,850.0	90.10	85.75	7,126.4	893.2	3,683.4	3,786.8	0.00	0.00	0.00
10,900.0	90.10	85.75	7,126.3	897.0	3,733.2	3,836.4	0.00	0.00	0.00
10,950.0	90.10	85.75	7,126.2	900.7	3,783.1	3,886.0	0.00	0.00	0.00
11,000.0	90.10	85.75	7,126.1	904.4	3,833.0	3,935.7	0.00	0.00	0.00
11,050.0	90.10	85.75	7,126.0	908.1	3,882.8	3,985.3	0.00	0.00	0.00
11,100.0	90.10	85.75	7,126.0	911.8	3,932.7	4,034.9	0.00	0.00	0.00
11,150.0	90.10	85.75	7,125.9	915.5	3,982.6	4,084.6	0.00	0.00	0.00
11,200.0	90.10	85.75	7,125.8	919.2	4,032.4	4,134.2	0.00	0.00	0.00
11,250.0	90.10	85.75	7,125.7	922.9	4,082.3	4,183.8	0.00	0.00	0.00
11,300.0	90.10	85.75	7,125.6	926.6	4,132.1	4,233.5	0.00	0.00	0.00
11,350.0	90.10	85.75	7,125.5	930.3	4,182.0	4,283.1	0.00	0.00	0.00
11,400.0	90.10	85.75	7,125.4	934.0	4,231.9	4,332.7	0.00	0.00	0.00
11,450.0	90.10	85.75	7,125.4	937.7	4,281.7	4,382.3	0.00	0.00	0.00
11,500.0	90.10	85.75	7,125.3	941.4	4,331.6	4,432.0	0.00	0.00	0.00

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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)	
11,550.0	90.10	85.75	7,125.2	945.2	4,381.5	4,481.6	0.00	0.00	0.00	
11,600.0	90.10	85.75	7,125.1	948.9	4,431.3	4,531.2	0.00	0.00	0.00	
11,650.0	90.10	85.75	7,125.0	952.6	4,481.2	4,580.9	0.00	0.00	0.00	
11,700.0	90.10	85.75	7,124.9	956.3	4,531.0	4,630.5	0.00	0.00	0.00	
11,750.0	90.10	85.75	7,124.8	960.0	4,580.9	4,680.1	0.00	0.00	0.00	
11,800.0	90.10	85.75	7,124.7	963.7	4,630.8	4,729.8	0.00	0.00	0.00	
11,850.0	90.10	85.75	7,124.7	967.4	4,680.6	4,779.4	0.00	0.00	0.00	
11,900.0	90.10	85.75	7,124.6	971.1	4,730.5	4,829.0	0.00	0.00	0.00	
11,950.0	90.10	85.75	7,124.5	974.8	4,780.3	4,878.7	0.00	0.00	0.00	
12,000.0	90.10	85.75	7,124.4	978.5	4,830.2	4,928.3	0.00	0.00	0.00	
12,050.0	90.10	85.75	7,124.3	982.2	4,880.1	4,977.9	0.00	0.00	0.00	
12,100.0	90.10	85.75	7,124.2	985.9	4,929.9	5,027.6	0.00	0.00	0.00	
12,150.0	90.10	85.75	7,124.1	989.7	4,979.8	5,077.2	0.00	0.00	0.00	
12,167.1	90.10	85.75	7,124.1	990.9	4,996.8	5,094.1	0.00	0.00	0.00	
TD at 12167.1 - Sandau K25-66-1HN BHL 2210'FNL, 75'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										
Sandau K25-66-1HN BH-	0.00	0.00	7,124.1	990.9	4,996.8	1,347,539.42	3,218,776.30	40.284740	-104.715800	
- plan hits target center										
- Point										

Casing Points										
Measured Depth (usft)	Vertical Depth (usft)	Name				Casing Diameter (")	Hole Diameter (")			
7,549.1	7,122.7	7" Casing @ 7549.1' MD				7	8-3/4			

Formations										
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)					
2,650.4	2,618.0	PIERRE		0.00						
3,820.8	3,749.0	PARKMAN		0.00						
4,443.5	4,366.0	SUSSEX		0.00						
5,045.5	4,968.0	SHANNON		0.00						
6,280.5	6,203.0	TEEPEE BUTTES		0.00						
6,989.8	6,872.0	SHARON SPRINGS		0.00						
7,065.4	6,927.0	NIOBRARA		0.00						
7,095.0	6,947.0	NIO A CHALK		0.00						
7,124.5	6,966.0	NIO A MARL		0.00						
7,235.8	7,029.0	NIO B CHALK		0.00						
7,289.2	7,054.0	NIO B MARL		0.00						
7,458.2	7,109.0	NIO C CHALK		0.00						

Noble Energy Inc

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site:	K (04-66W)	North Reference:	Grid
Well:	Sandau K25-66-1HN	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)	
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 2.00
3,722.6	3,653.7	510.5	-221.2	Start Drop -2.00
6,486.6	6,409.1	600.0	-260.0	KOP #2 - Start Build 8.00
7,549.1	7,122.7	648.5	391.9	Start 75.0 hold at 7549.1 MD
7,624.1	7,129.2	654.0	466.4	Start Build 8.00
12,167.1	7,124.1	990.9	4,996.8	TD at 12167.1

Northern Region Drilling

Wattenberg Field

K (04-66W)

Sandau K25-66-1HN

Original Drilling

APD - Rev 0

Anticollision Summary Report

22 May, 2013

Noble Energy Inc
Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Reference Site:	K (04-66W)	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Sandau K25-66-1HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.54 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	5/22/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,166.9	APD - Rev 0 (Original Drilling)	MWD	MWD - Standard

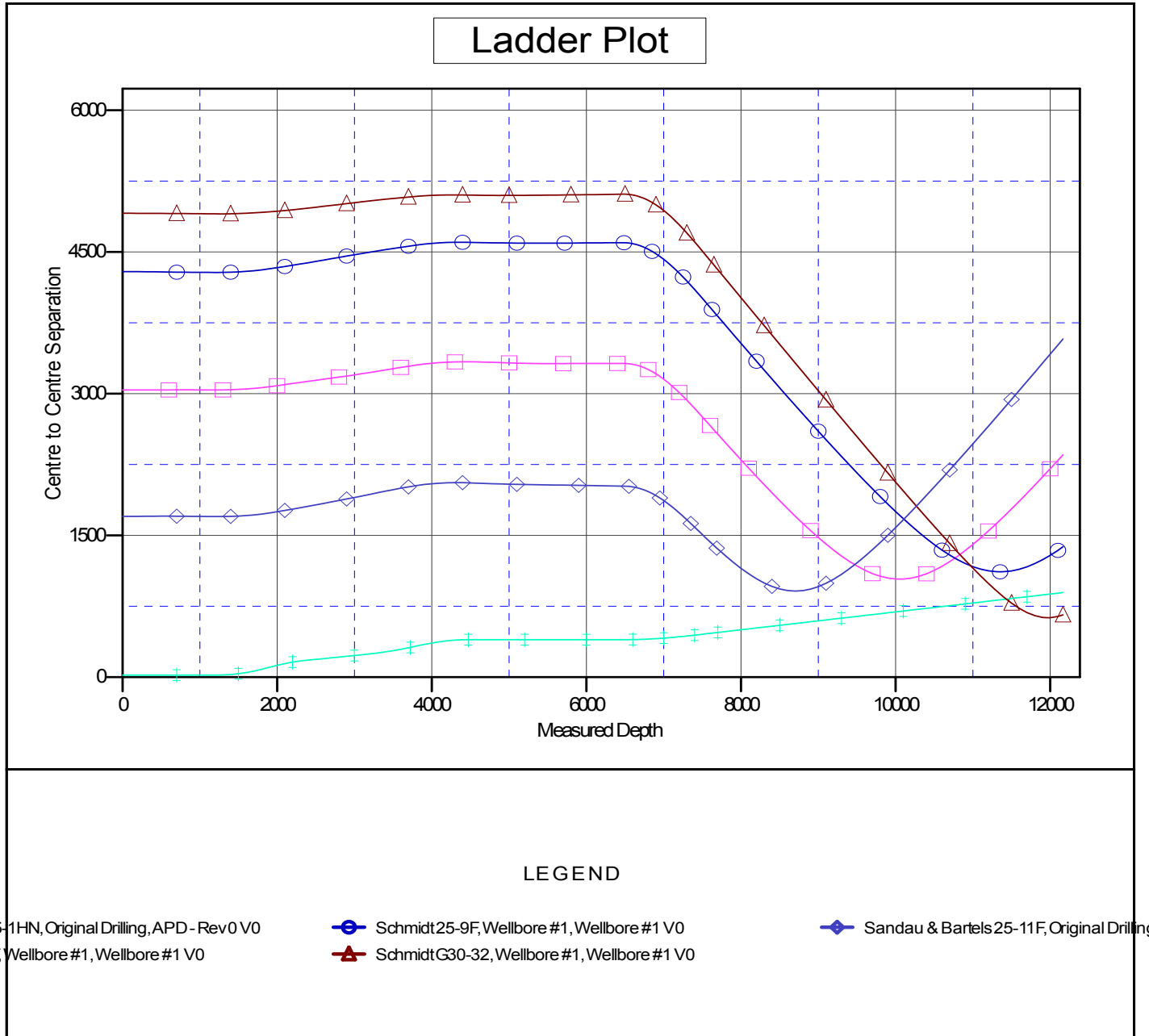
Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
G (04N-65W)						
Schmidt G30-32 - Wellbore #1 - Wellbore #1	11,968.2	7,150.4	629.0	476.1	4.114	CC
Schmidt G30-32 - Wellbore #1 - Wellbore #1	12,000.0	7,149.2	629.8	476.0	4.095	ES, SF
K (04-66W)						
Sandau & Bartels 25-11F - Original Drilling - Original Dril	8,704.8	7,115.9	911.1	847.3	14.295	CC, ES
Sandau & Bartels 25-11F - Original Drilling - Original Dril	9,100.0	7,115.8	993.1	918.9	13.381	SF
Sandau K25-65-1HN - Original Drilling - APD - Rev 0	1,200.0	1,200.0	21.9	16.7	4.258	CC, ES
Sandau K25-65-1HN - Original Drilling - APD - Rev 0	12,167.1	12,105.8	895.7	609.4	3.128	SF
Schmidt 25-10F - Wellbore #1 - Wellbore #1	10,053.0	7,075.7	1,038.0	938.2	10.397	CC
Schmidt 25-10F - Wellbore #1 - Wellbore #1	10,100.0	7,076.2	1,039.1	938.0	10.275	ES
Schmidt 25-10F - Wellbore #1 - Wellbore #1	10,400.0	7,079.4	1,094.5	985.1	10.007	SF
Schmidt 25-9F - Wellbore #1 - Wellbore #1	11,352.6	7,113.3	1,115.2	979.4	8.214	CC
Schmidt 25-9F - Wellbore #1 - Wellbore #1	11,400.0	7,113.4	1,116.2	979.1	8.143	ES
Schmidt 25-9F - Wellbore #1 - Wellbore #1	11,600.0	7,113.8	1,142.3	999.7	8.010	SF

Noble Energy Inc
Anticollision Summary Report

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Project:	Wattenberg Field	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Reference Site:	K (04-66W)	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Sandau K25-66-1HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.54 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4796.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Sandau K25-66-1HN
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.50°



Noble Energy Inc
Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Sandau K25-66-1HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4796.0usft (Original Well Elev)
Reference Site:	K (04-66W)	MD Reference:	WELL @ 4796.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Sandau K25-66-1HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.54 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4796.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Sandau K25-66-1HN
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.50°

