

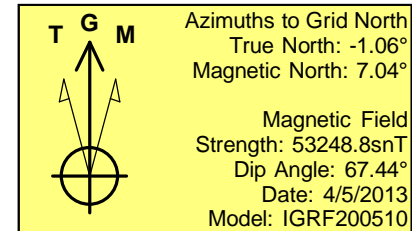
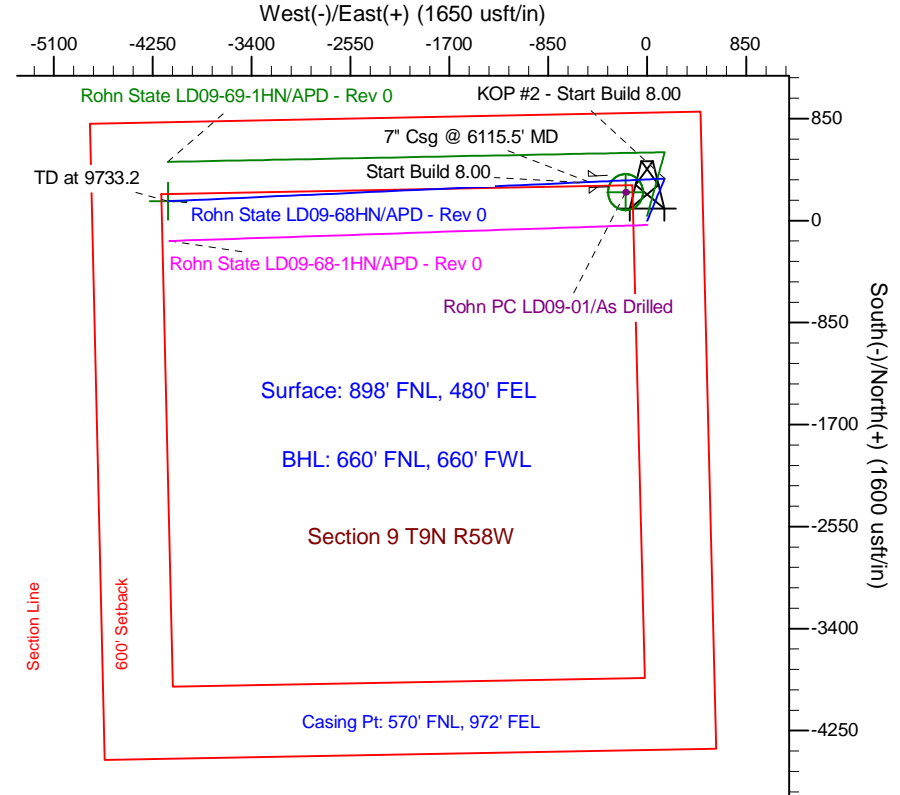
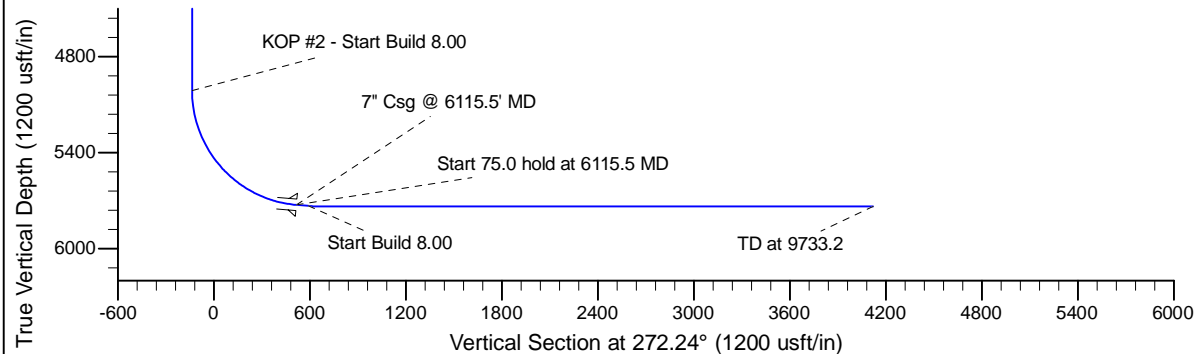
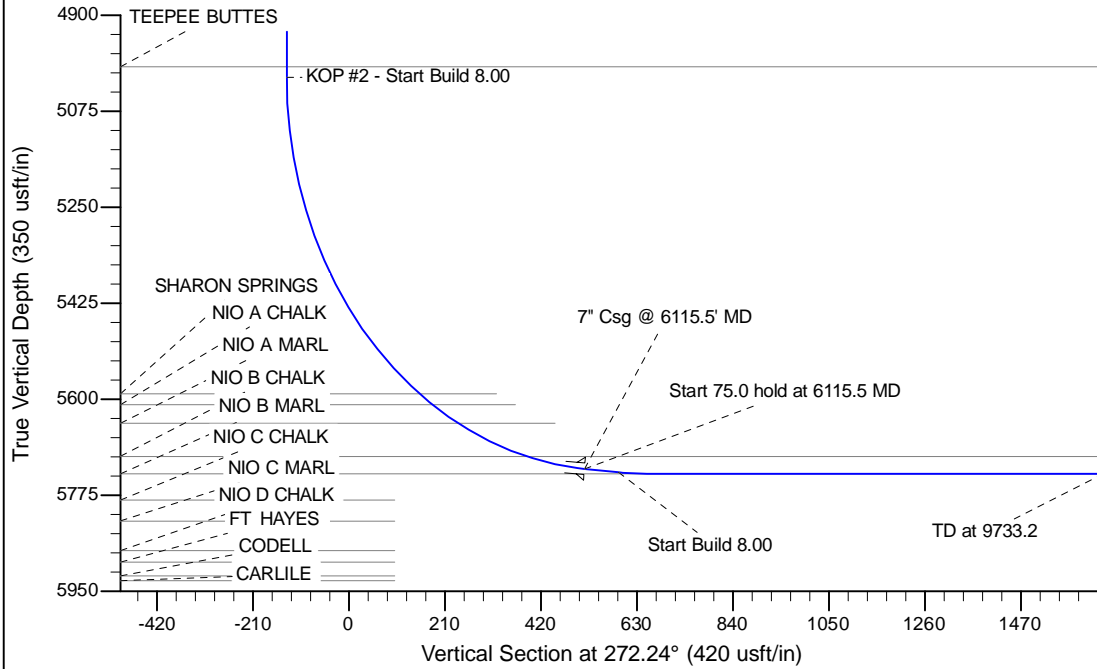
Project: Wattenberg Field  
Site: LD (Sec.9-T09N-R58W) Weld County, CO  
Well: Rohn State LD09-68HN  
Wellbore: Original Drilling  
Design: APD - Rev 0

# 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	1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	
3	2500.6	14.01	23.20	2493.6	78.4	33.6	2.00	23.20	-30.5	
4	3369.2	14.01	23.20	3336.4	271.6	116.4	0.00	0.00	-105.7	
5	4069.8	0.00	0.00	4030.0	350.0	150.0	2.00	180.00	-136.2	
6	5053.0	0.00	0.00	5013.3	350.0	150.0	0.00	0.00	-136.2	
7	6115.5	85.00	267.47	5726.7	321.1	-503.1	8.00	267.47	515.3	
8	6190.5	85.00	267.47	5733.3	317.8	-577.8	0.00	0.00	589.8	
9	6253.0	90.00	267.47	5736.0	315.0	-640.1	8.00	0.00	652.0	
10	9733.2	90.00	267.47	5736.0	161.1	-4116.9	0.00	0.00	4120.1	Rohn State LD09-68HN BHL 660'FNL, 660'FWL



## WELL DETAILS: Rohn State LD09-68HN

Ground Level:	4740.0
Northing	1527799.85
Easting	3453762.65
Latitude	40.770690
Longitude	-103.861700

Plan: APD - Rev 0 (Rohn State LD09-68HN/Original Drilling)

Created By: Carrie Willers	Date: 17:16, April 05 2013
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

# **Northern Region Drilling**

**Wattenberg Field**

**LD (09N-58W)**

**Rohn State LD09-68HN**

**Original Drilling**

**Plan: APD - Rev 0**

## **Standard Planning Report**

**05 April, 2013**

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

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

Site		LD (09N-58W)			
Site Position:		Northing:	1,523,557.18 usft	Latitude:	40.759270
From:	Lat/Long	Easting:	3,449,341.23 usft	Longitude:	-103.877940
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.05 °

Well	Rohn State LD09-68HN					
Well Position	+N/-S	4,242.7 usft	Northing:	1,527,799.86 usft	Latitude:	40.770690
	+E/-W	4,421.4 usft	Easting:	3,453,762.64 usft	Longitude:	-103.861700
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	4,740.0 usft

<b>Wellbore</b>	Original Drilling				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	4/5/2013	8.10	67.44	53,249

<b>Design</b>	APD - Rev 0			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	272.24

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,500.6	14.01	23.20	2,493.6	78.4	33.6	2.00	2.00	0.00	23.20	
3,369.2	14.01	23.20	3,336.4	271.6	116.4	0.00	0.00	0.00	0.00	
4,069.8	0.00	0.00	4,030.0	350.0	150.0	2.00	-2.00	0.00	180.00	
5,053.0	0.00	0.00	5,013.3	350.0	150.0	0.00	0.00	0.00	0.00	
6,115.5	85.00	267.47	5,726.7	321.1	-503.1	8.00	8.00	0.00	267.47	
6,190.5	85.00	267.47	5,733.3	317.8	-577.8	0.00	0.00	0.00	0.00	
6,253.0	90.00	267.47	5,736.0	315.0	-640.1	8.00	8.00	0.00	0.00	
9,733.2	90.00	267.47	5,736.0	161.1	-4,116.9	0.00	0.00	0.00	0.00	Rohn State LD09-68H

# Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
50.0	0.00	0.00	50.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
150.0	0.00	0.00	150.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
250.0	0.00	0.00	250.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
450.0	0.00	0.00	450.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
750.0	0.00	0.00	750.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
950.0	0.00	0.00	950.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,050.0	0.00	0.00	1,050.0	0.0	0.0	0.0	0.00	0.00	0.00
1,082.0	0.00	0.00	1,082.0	0.0	0.0	0.0	0.00	0.00	0.00
PIERRE									
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
KOP - Start Build 2.00									
1,850.0	1.00	23.20	1,850.0	0.4	0.2	-0.2	2.00	2.00	0.00
1,900.0	2.00	23.20	1,900.0	1.6	0.7	-0.6	2.00	2.00	0.00
1,950.0	3.00	23.20	1,949.9	3.6	1.5	-1.4	2.00	2.00	0.00
2,000.0	4.00	23.20	1,999.8	6.4	2.7	-2.5	2.00	2.00	0.00
2,050.0	5.00	23.20	2,049.7	10.0	4.3	-3.9	2.00	2.00	0.00
2,100.0	6.00	23.20	2,099.5	14.4	6.2	-5.6	2.00	2.00	0.00
2,150.0	7.00	23.20	2,149.1	19.6	8.4	-7.6	2.00	2.00	0.00
2,200.0	8.00	23.20	2,198.7	25.6	11.0	-10.0	2.00	2.00	0.00
2,250.0	9.00	23.20	2,248.2	32.4	13.9	-12.6	2.00	2.00	0.00
2,300.0	10.00	23.20	2,297.5	40.0	17.1	-15.6	2.00	2.00	0.00
2,350.0	11.00	23.20	2,346.6	48.4	20.7	-18.8	2.00	2.00	0.00
2,400.0	12.00	23.20	2,395.6	57.5	24.7	-22.4	2.00	2.00	0.00
2,450.0	13.00	23.20	2,444.4	67.5	28.9	-26.3	2.00	2.00	0.00
2,500.0	14.00	23.20	2,493.1	78.2	33.5	-30.4	2.00	2.00	0.00

# Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
2,500.6	14.01	23.20	2,493.6	78.4	33.6	-30.5	2.00	2.00	0.00	
2,550.0	14.01	23.20	2,541.6	89.3	38.3	-34.8	0.00	0.00	0.00	
2,600.0	14.01	23.20	2,590.1	100.5	43.1	-39.1	0.00	0.00	0.00	
2,650.0	14.01	23.20	2,638.6	111.6	47.8	-43.4	0.00	0.00	0.00	
2,700.0	14.01	23.20	2,687.1	122.7	52.6	-47.8	0.00	0.00	0.00	
2,750.0	14.01	23.20	2,735.6	133.9	57.4	-52.1	0.00	0.00	0.00	
2,800.0	14.01	23.20	2,784.1	145.0	62.1	-56.4	0.00	0.00	0.00	
2,850.0	14.01	23.20	2,832.6	156.1	66.9	-60.7	0.00	0.00	0.00	
2,900.0	14.01	23.20	2,881.2	167.2	71.7	-65.1	0.00	0.00	0.00	
2,950.0	14.01	23.20	2,929.7	178.4	76.4	-69.4	0.00	0.00	0.00	
3,000.0	14.01	23.20	2,978.2	189.5	81.2	-73.7	0.00	0.00	0.00	
3,050.0	14.01	23.20	3,026.7	200.6	86.0	-78.1	0.00	0.00	0.00	
3,100.0	14.01	23.20	3,075.2	211.7	90.7	-82.4	0.00	0.00	0.00	
3,150.0	14.01	23.20	3,123.7	222.9	95.5	-86.7	0.00	0.00	0.00	
3,200.0	14.01	23.20	3,172.2	234.0	100.3	-91.1	0.00	0.00	0.00	
3,217.3	14.01	23.20	3,189.0	237.8	101.9	-92.6	0.00	0.00	0.00	
<b>PARKMAN</b>										
3,250.0	14.01	23.20	3,220.7	245.1	105.1	-95.4	0.00	0.00	0.00	
3,300.0	14.01	23.20	3,269.3	256.3	109.8	-99.7	0.00	0.00	0.00	
3,350.0	14.01	23.20	3,317.8	267.4	114.6	-104.0	0.00	0.00	0.00	
3,369.2	14.01	23.20	3,336.4	271.7	116.4	-105.7	0.00	0.00	0.00	
<b>Start Drop -2.00</b>										
3,400.0	13.40	23.20	3,366.3	278.4	119.3	-108.3	2.00	-2.00	0.00	
3,450.0	12.40	23.20	3,415.1	288.6	123.7	-112.3	2.00	-2.00	0.00	
3,500.0	11.40	23.20	3,464.0	298.1	127.8	-116.0	2.00	-2.00	0.00	
3,550.0	10.40	23.20	3,513.1	306.8	131.5	-119.4	2.00	-2.00	0.00	
3,600.0	9.40	23.20	3,562.3	314.7	134.9	-122.5	2.00	-2.00	0.00	
3,650.0	8.40	23.20	3,611.7	321.8	137.9	-125.2	2.00	-2.00	0.00	
3,656.3	8.27	23.20	3,618.0	322.6	138.3	-125.5	2.00	-2.00	0.00	
<b>SUSSEX</b>										
3,700.0	7.40	23.20	3,661.3	328.1	140.6	-127.7	2.00	-2.00	0.00	
3,750.0	6.40	23.20	3,710.9	333.6	143.0	-129.8	2.00	-2.00	0.00	
3,800.0	5.40	23.20	3,760.6	338.3	145.0	-131.7	2.00	-2.00	0.00	
3,850.0	4.40	23.20	3,810.4	342.3	146.7	-133.2	2.00	-2.00	0.00	
3,900.0	3.40	23.20	3,860.3	345.4	148.0	-134.4	2.00	-2.00	0.00	
3,950.0	2.40	23.20	3,910.3	347.7	149.0	-135.3	2.00	-2.00	0.00	
4,000.0	1.40	23.20	3,960.2	349.2	149.7	-135.9	2.00	-2.00	0.00	
4,050.0	0.40	23.20	4,010.2	349.9	150.0	-136.2	2.00	-2.00	0.00	
4,069.8	0.00	0.00	4,030.0	350.0	150.0	-136.2	2.00	-2.00	0.00	
4,100.0	0.00	0.00	4,060.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,150.0	0.00	0.00	4,110.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,200.0	0.00	0.00	4,160.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,250.0	0.00	0.00	4,210.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,300.0	0.00	0.00	4,260.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,344.8	0.00	0.00	4,305.0	350.0	150.0	-136.2	0.00	0.00	0.00	
<b>SHANNON</b>										
4,350.0	0.00	0.00	4,310.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,400.0	0.00	0.00	4,360.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,450.0	0.00	0.00	4,410.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,500.0	0.00	0.00	4,460.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,550.0	0.00	0.00	4,510.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,600.0	0.00	0.00	4,560.2	350.0	150.0	-136.2	0.00	0.00	0.00	
4,650.0	0.00	0.00	4,610.2	350.0	150.0	-136.2	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,700.0	0.00	0.00	4,660.2	350.0	150.0	-136.2	0.00	0.00	0.00
4,750.0	0.00	0.00	4,710.2	350.0	150.0	-136.2	0.00	0.00	0.00
4,800.0	0.00	0.00	4,760.2	350.0	150.0	-136.2	0.00	0.00	0.00
4,850.0	0.00	0.00	4,810.2	350.0	150.0	-136.2	0.00	0.00	0.00
4,900.0	0.00	0.00	4,860.2	350.0	150.0	-136.2	0.00	0.00	0.00
4,950.0	0.00	0.00	4,910.2	350.0	150.0	-136.2	0.00	0.00	0.00
5,000.0	0.00	0.00	4,960.2	350.0	150.0	-136.2	0.00	0.00	0.00
5,033.8	0.00	0.00	4,994.0	350.0	150.0	-136.2	0.00	0.00	0.00
TEEPEE BUTTES									
5,050.0	0.00	0.00	5,010.2	350.0	150.0	-136.2	0.00	0.00	0.00
5,053.0	0.00	0.00	5,013.2	350.0	150.0	-136.2	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
5,100.0	3.76	267.47	5,060.2	349.9	148.5	-134.7	7.99	7.99	0.00
5,150.0	7.76	267.47	5,109.9	349.7	143.5	-129.7	8.00	8.00	0.00
5,200.0	11.76	267.47	5,159.2	349.3	135.0	-121.2	8.00	8.00	0.00
5,250.0	15.76	267.47	5,207.8	348.8	123.1	-109.4	8.00	8.00	0.00
5,300.0	19.76	267.47	5,255.4	348.1	107.9	-94.2	8.00	8.00	0.00
5,350.0	23.76	267.47	5,301.8	347.3	89.4	-75.7	8.00	8.00	0.00
5,400.0	27.76	267.47	5,346.8	346.4	67.7	-54.1	8.00	8.00	0.00
5,450.0	31.76	267.47	5,390.2	345.3	42.9	-29.3	8.00	8.00	0.00
5,500.0	35.76	267.47	5,431.8	344.0	15.1	-1.7	8.00	8.00	0.00
5,550.0	39.76	267.47	5,471.3	342.7	-15.4	28.8	8.00	8.00	0.00
5,600.0	43.76	267.47	5,508.6	341.2	-48.7	62.0	8.00	8.00	0.00
5,650.0	47.76	267.47	5,543.5	339.6	-84.5	97.7	8.00	8.00	0.00
5,700.0	51.76	267.47	5,575.8	337.9	-122.6	135.7	8.00	8.00	0.00
5,723.5	53.64	267.47	5,590.0	337.1	-141.3	154.4	8.00	8.00	0.00
SHARON SPRINGS									
5,750.0	55.76	267.47	5,605.3	336.2	-162.9	175.9	8.00	8.00	0.00
5,758.4	56.43	267.47	5,610.0	335.8	-169.8	182.9	8.00	8.00	0.00
NIO A CHALK									
5,800.0	59.76	267.47	5,632.0	334.3	-205.1	218.0	8.00	8.00	0.00
5,824.6	61.72	267.47	5,644.0	333.3	-226.5	239.4	8.00	8.00	0.00
NIO A MARL									
5,850.0	63.76	267.47	5,655.6	332.3	-249.1	261.9	8.00	8.00	0.00
5,900.0	67.76	267.47	5,676.2	330.3	-294.7	307.4	8.00	8.00	0.00
5,950.0	71.76	267.47	5,693.5	328.2	-341.5	354.1	8.00	8.00	0.00
Rohn PC LD09-01 (Existing)									
5,986.5	74.68	267.47	5,704.0	326.7	-376.4	388.9	8.00	8.00	0.00
NIO B CHALK									
6,000.0	75.76	267.47	5,707.4	326.1	-389.5	401.9	8.00	8.00	0.00
6,050.0	79.76	267.47	5,718.0	324.0	-438.3	450.6	8.00	8.00	0.00
6,100.0	83.76	267.47	5,725.2	321.8	-487.7	499.9	8.00	8.00	0.00
6,115.5	85.00	267.47	5,726.7	321.1	-503.1	515.3	8.00	8.00	0.00
Start 75.0 hold at 6115.5 MD - 7" Csg @ 6115.5' MD									
6,150.0	85.00	267.47	5,729.7	319.6	-537.4	549.5	0.01	0.01	0.00
6,190.5	85.00	267.47	5,733.3	317.8	-577.7	589.7	0.00	0.00	0.00
Start Build 8.00									
6,200.0	85.76	267.47	5,734.0	317.4	-587.2	599.2	7.97	7.97	0.00
6,250.0	89.76	267.47	5,736.0	315.2	-637.1	648.9	8.00	8.00	0.00
6,253.0	90.00	267.47	5,736.0	315.0	-640.1	652.0	8.00	8.00	0.00
NIO B MARL									
6,300.0	90.00	267.47	5,736.0	313.0	-687.1	698.8	0.00	0.00	0.00
6,350.0	90.00	267.47	5,736.0	310.7	-737.0	748.6	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,400.0	90.00	267.47	5,736.0	308.5	-787.0	798.4	0.00	0.00	0.00
6,450.0	90.00	267.47	5,736.0	306.3	-836.9	848.2	0.00	0.00	0.00
6,500.0	90.00	267.47	5,736.0	304.1	-886.9	898.1	0.00	0.00	0.00
6,550.0	90.00	267.47	5,736.0	301.9	-936.8	947.9	0.00	0.00	0.00
6,600.0	90.00	267.47	5,736.0	299.7	-986.8	997.7	0.00	0.00	0.00
6,650.0	90.00	267.47	5,736.0	297.5	-1,036.7	1,047.6	0.00	0.00	0.00
6,700.0	90.00	267.47	5,736.0	295.3	-1,086.7	1,097.4	0.00	0.00	0.00
6,750.0	90.00	267.47	5,736.0	293.1	-1,136.6	1,147.2	0.00	0.00	0.00
6,800.0	90.00	267.47	5,736.0	290.8	-1,186.6	1,197.0	0.00	0.00	0.00
6,850.0	90.00	267.47	5,736.0	288.6	-1,236.5	1,246.9	0.00	0.00	0.00
6,900.0	90.00	267.47	5,736.0	286.4	-1,286.5	1,296.7	0.00	0.00	0.00
6,950.0	90.00	267.47	5,736.0	284.2	-1,336.4	1,346.5	0.00	0.00	0.00
7,000.0	90.00	267.47	5,736.0	282.0	-1,386.4	1,396.3	0.00	0.00	0.00
7,050.0	90.00	267.47	5,736.0	279.8	-1,436.3	1,446.2	0.00	0.00	0.00
7,100.0	90.00	267.47	5,736.0	277.6	-1,486.3	1,496.0	0.00	0.00	0.00
7,150.0	90.00	267.47	5,736.0	275.4	-1,536.2	1,545.8	0.00	0.00	0.00
7,200.0	90.00	267.47	5,736.0	273.2	-1,586.2	1,595.6	0.00	0.00	0.00
7,250.0	90.00	267.47	5,736.0	270.9	-1,636.1	1,645.5	0.00	0.00	0.00
7,300.0	90.00	267.47	5,736.0	268.7	-1,686.1	1,695.3	0.00	0.00	0.00
7,350.0	90.00	267.47	5,736.0	266.5	-1,736.0	1,745.1	0.00	0.00	0.00
7,400.0	90.00	267.47	5,736.0	264.3	-1,786.0	1,795.0	0.00	0.00	0.00
7,450.0	90.00	267.47	5,736.0	262.1	-1,835.9	1,844.8	0.00	0.00	0.00
7,500.0	90.00	267.47	5,736.0	259.9	-1,885.9	1,894.6	0.00	0.00	0.00
7,550.0	90.00	267.47	5,736.0	257.7	-1,935.8	1,944.4	0.00	0.00	0.00
7,600.0	90.00	267.47	5,736.0	255.5	-1,985.8	1,994.3	0.00	0.00	0.00
7,650.0	90.00	267.47	5,736.0	253.3	-2,035.7	2,044.1	0.00	0.00	0.00
7,700.0	90.00	267.47	5,736.0	251.0	-2,085.7	2,093.9	0.00	0.00	0.00
7,750.0	90.00	267.47	5,736.0	248.8	-2,135.6	2,143.7	0.00	0.00	0.00
7,800.0	90.00	267.47	5,736.0	246.6	-2,185.6	2,193.6	0.00	0.00	0.00
7,850.0	90.00	267.47	5,736.0	244.4	-2,235.5	2,243.4	0.00	0.00	0.00
7,900.0	90.00	267.47	5,736.0	242.2	-2,285.5	2,293.2	0.00	0.00	0.00
7,950.0	90.00	267.47	5,736.0	240.0	-2,335.4	2,343.0	0.00	0.00	0.00
8,000.0	90.00	267.47	5,736.0	237.8	-2,385.4	2,392.9	0.00	0.00	0.00
8,050.0	90.00	267.47	5,736.0	235.6	-2,435.3	2,442.7	0.00	0.00	0.00
8,100.0	90.00	267.47	5,736.0	233.4	-2,485.3	2,492.5	0.00	0.00	0.00
8,150.0	90.00	267.47	5,736.0	231.1	-2,535.2	2,542.3	0.00	0.00	0.00
8,200.0	90.00	267.47	5,736.0	228.9	-2,585.2	2,592.2	0.00	0.00	0.00
8,250.0	90.00	267.47	5,736.0	226.7	-2,635.1	2,642.0	0.00	0.00	0.00
8,300.0	90.00	267.47	5,736.0	224.5	-2,685.1	2,691.8	0.00	0.00	0.00
8,350.0	90.00	267.47	5,736.0	222.3	-2,735.1	2,741.7	0.00	0.00	0.00
8,400.0	90.00	267.47	5,736.0	220.1	-2,785.0	2,791.5	0.00	0.00	0.00
8,450.0	90.00	267.47	5,736.0	217.9	-2,835.0	2,841.3	0.00	0.00	0.00
8,500.0	90.00	267.47	5,736.0	215.7	-2,884.9	2,891.1	0.00	0.00	0.00
8,550.0	90.00	267.47	5,736.0	213.5	-2,934.9	2,941.0	0.00	0.00	0.00
8,600.0	90.00	267.47	5,736.0	211.2	-2,984.8	2,990.8	0.00	0.00	0.00
8,650.0	90.00	267.47	5,736.0	209.0	-3,034.8	3,040.6	0.00	0.00	0.00
8,700.0	90.00	267.47	5,736.0	206.8	-3,084.7	3,090.4	0.00	0.00	0.00
8,750.0	90.00	267.47	5,736.0	204.6	-3,134.7	3,140.3	0.00	0.00	0.00
8,800.0	90.00	267.47	5,736.0	202.4	-3,184.6	3,190.1	0.00	0.00	0.00
8,850.0	90.00	267.47	5,736.0	200.2	-3,234.6	3,239.9	0.00	0.00	0.00
8,900.0	90.00	267.47	5,736.0	198.0	-3,284.5	3,289.7	0.00	0.00	0.00
8,950.0	90.00	267.47	5,736.0	195.8	-3,334.5	3,339.6	0.00	0.00	0.00
9,000.0	90.00	267.47	5,736.0	193.6	-3,384.4	3,389.4	0.00	0.00	0.00
9,050.0	90.00	267.47	5,736.0	191.4	-3,434.4	3,439.2	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,100.0	90.00	267.47	5,736.0	189.1	-3,484.3	3,489.0	0.00	0.00	0.00	
9,150.0	90.00	267.47	5,736.0	186.9	-3,534.3	3,538.9	0.00	0.00	0.00	
9,200.0	90.00	267.47	5,736.0	184.7	-3,584.2	3,588.7	0.00	0.00	0.00	
9,250.0	90.00	267.47	5,736.0	182.5	-3,634.2	3,638.5	0.00	0.00	0.00	
9,300.0	90.00	267.47	5,736.0	180.3	-3,684.1	3,688.4	0.00	0.00	0.00	
9,350.0	90.00	267.47	5,736.0	178.1	-3,734.1	3,738.2	0.00	0.00	0.00	
9,400.0	90.00	267.47	5,736.0	175.9	-3,784.0	3,788.0	0.00	0.00	0.00	
9,450.0	90.00	267.47	5,736.0	173.7	-3,834.0	3,837.8	0.00	0.00	0.00	
9,500.0	90.00	267.47	5,736.0	171.5	-3,883.9	3,887.7	0.00	0.00	0.00	
9,550.0	90.00	267.47	5,736.0	169.2	-3,933.9	3,937.5	0.00	0.00	0.00	
9,600.0	90.00	267.47	5,736.0	167.0	-3,983.8	3,987.3	0.00	0.00	0.00	
9,650.0	90.00	267.47	5,736.0	164.8	-4,033.8	4,037.1	0.00	0.00	0.00	
9,700.0	90.00	267.47	5,736.0	162.6	-4,083.7	4,087.0	0.00	0.00	0.00	
9,733.2	90.00	267.47	5,736.0	161.1	-4,116.9	4,120.1	0.00	0.00	0.00	
TD at 9733.2 - Rohn State LD09-68HN BHL 660'FNL, 660'FWL										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Rohn State LD09-68HN	0.00	0.00	5,736.0	161.1	-4,116.9	1,527,961.00	3,449,645.74	40.771340	-103.876550
- plan hits target center									
- Point									
Rohn PC LD09-01 (Exis-	0.00	0.00	6,135.0	237.0	-187.2	1,528,036.90	3,453,575.42	40.771350	-103.862360
- plan misses target center by 476.5usft at 5950.0usft MD (5693.5 TVD, 328.2 N, -341.5 E)									
- Circle (radius 150.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
6,115.5	5,726.7	7" Csg @ 6115.5' MD		7	8-3/4



## Planning Report

<b>Database:</b>	EDM Production	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Company:</b>	Northern Region Drilling	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Project:</b>	Wattenberg Field	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site:</b>	LD (09N-58W)	<b>North Reference:</b>	Grid
<b>Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Drilling		
<b>Design:</b>	APD - Rev 0		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,082.0	1,082.0	PIERRE		0.00		
3,217.3	3,189.0	PARKMAN		0.00		
3,656.3	3,618.0	SUSSEX		0.00		
4,344.8	4,305.0	SHANNON		0.00		
5,033.8	4,994.0	TEEPEE BUTTES		0.00		
5,723.5	5,590.0	SHARON SPRINGS		0.00		
5,758.4	5,610.0	NIO A CHALK		0.00		
5,824.6	5,644.0	NIO A MARL		0.00		
5,986.5	5,704.0	NIO B CHALK		0.00		
6,253.0	5,736.0	NIO B MARL		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,800.0	1,800.0	0.0	0.0	KOP - Start Build 2.00	
3,369.2	3,336.4	271.7	116.4	Start Drop -2.00	
5,053.0	5,013.2	350.0	150.0	KOP #2 - Start Build 8.00	
6,115.5	5,726.7	321.1	-503.1	Start 75.0 hold at 6115.5 MD	
6,190.5	5,733.3	317.8	-577.7	Start Build 8.00	
9,733.2	5,736.0	161.1	-4,116.9	TD at 9733.2	

# **Northern Region Drilling**

**Wattenberg Field**

**LD (09N-58W)**

**Rohn State LD09-68HN**

**Original Drilling**

**APD - Rev 0**

## **Anticollision Summary Report**

**05 April, 2013**

## Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Reference Site:</b>	LD (09N-58W)	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.54 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

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

<b>Survey Tool Program</b>	<b>Date</b>	4/5/2013		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	9,733.2	APD - Rev 0 (Original Drilling)	MWD	MWD - Standard

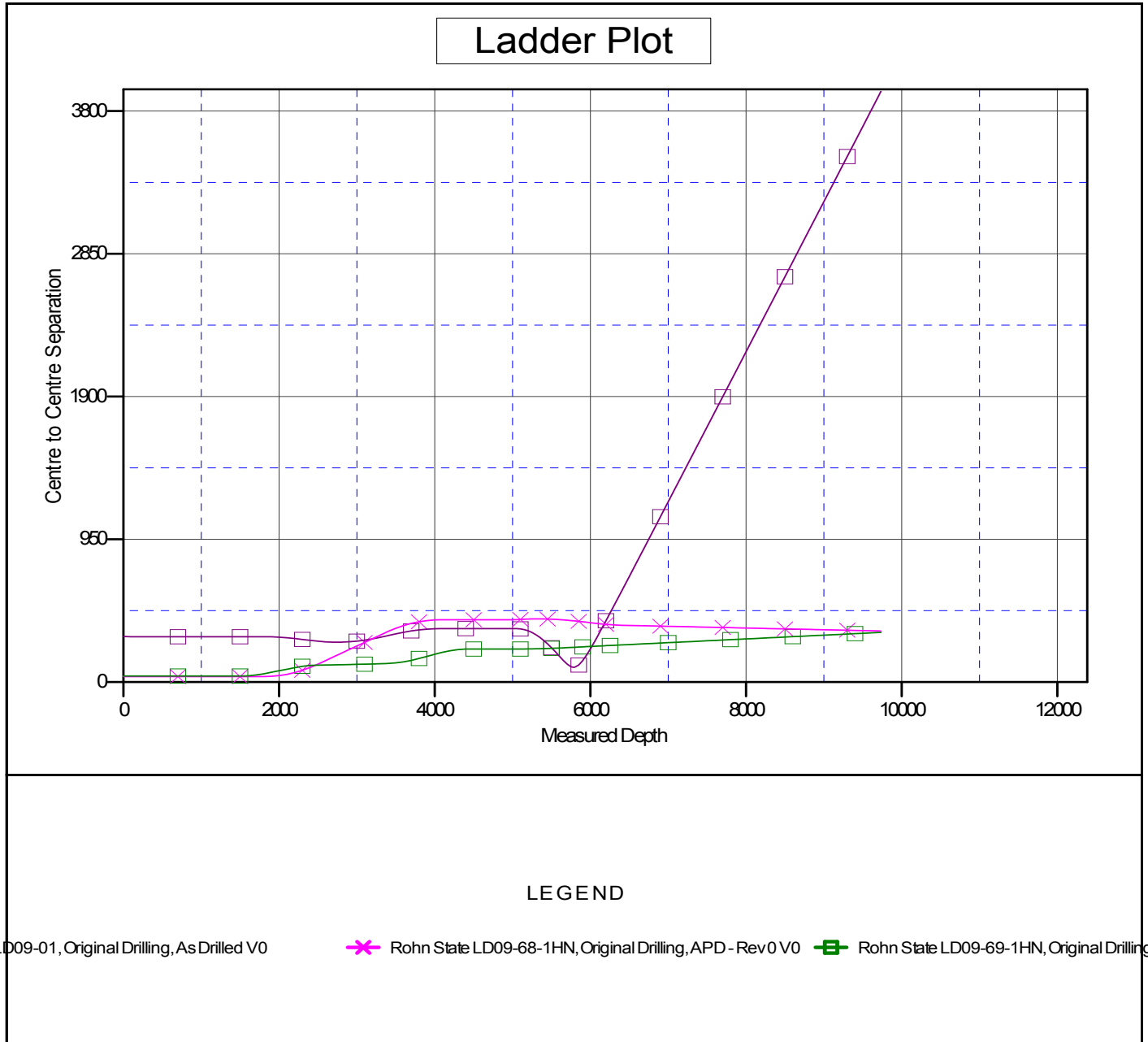
<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
LD (09N-58W)						
Rohn PC LD09-01 - Original Drilling - As Drilled	5,784.1	5,597.8	97.9	-27.9	0.778	Level 1, CC, ES, SF
Rohn State LD09-68-1HN - Original Drilling - APD - Rev	1,800.0	1,799.0	36.4	28.6	4.673	CC, ES
Rohn State LD09-68-1HN - Original Drilling - APD - Rev	9,733.2	9,455.3	339.9	115.3	1.513	SF
Rohn State LD09-69-1HN - Original Drilling - APD - Rev	1,500.0	1,500.0	40.1	33.6	6.213	CC, ES
Rohn State LD09-69-1HN - Original Drilling - APD - Rev	9,733.2	9,714.0	330.6	98.9	1.427	Level 3, SF

## Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Reference Site:</b>	LD (09N-58W)	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.54 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4770.0usft (Original Well Ele)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000

Coordinates are relative to: Rohn State LD09-68HN  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 1.06°



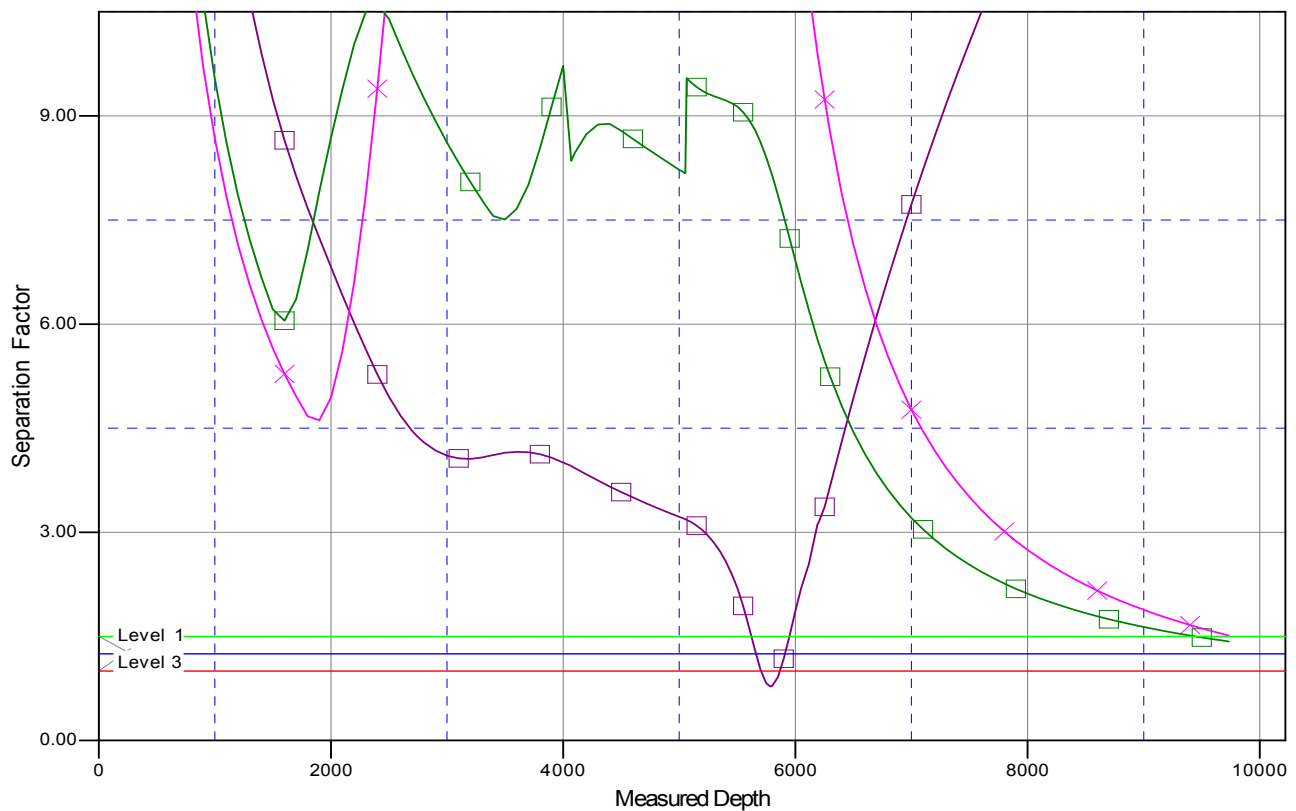
## Anticollision Summary Report

<b>Company:</b>	Northern Region Drilling	<b>Local Co-ordinate Reference:</b>	Well Rohn State LD09-68HN
<b>Project:</b>	Wattenberg Field	<b>TVD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Reference Site:</b>	LD (09N-58W)	<b>MD Reference:</b>	WELL @ 4770.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rohn State LD09-68HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.54 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4770.0usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Rohn State LD09-68HN  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.06°

### Separation Factor Plot



### LEGEND

LD09-01, Original Drilling, As Drilled V0

✕ Rohn State LD09-68-1HN, Original Drilling, APD - Rev0 V0

■ Rohn State LD09-69-1HN, Original Drilling,