

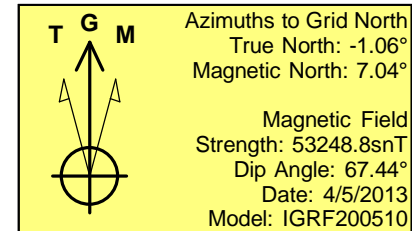
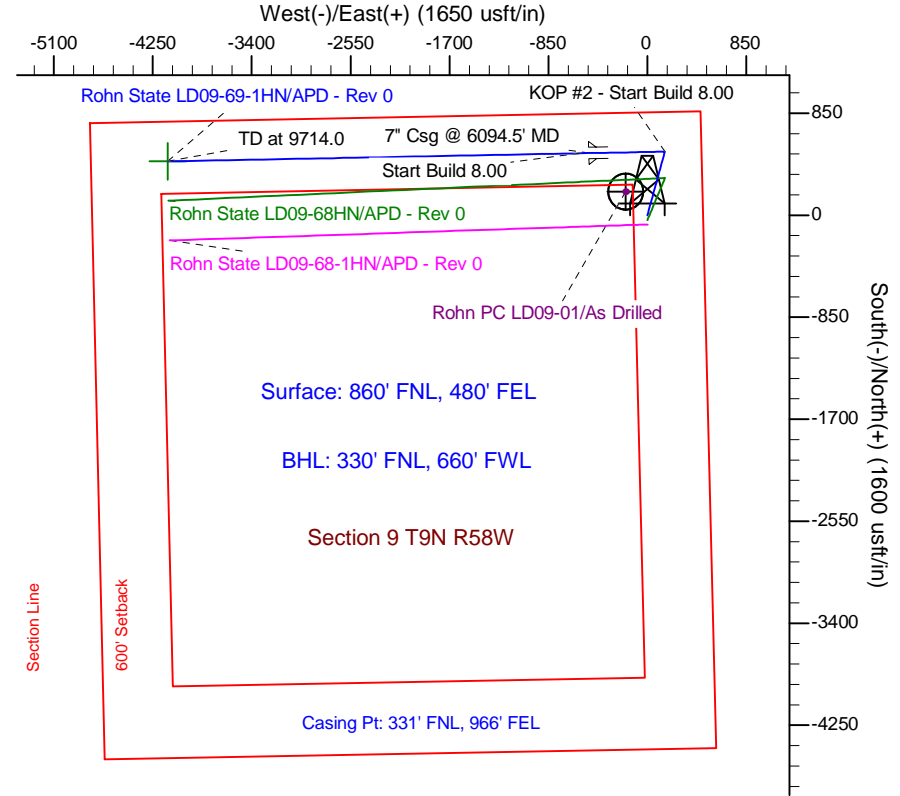
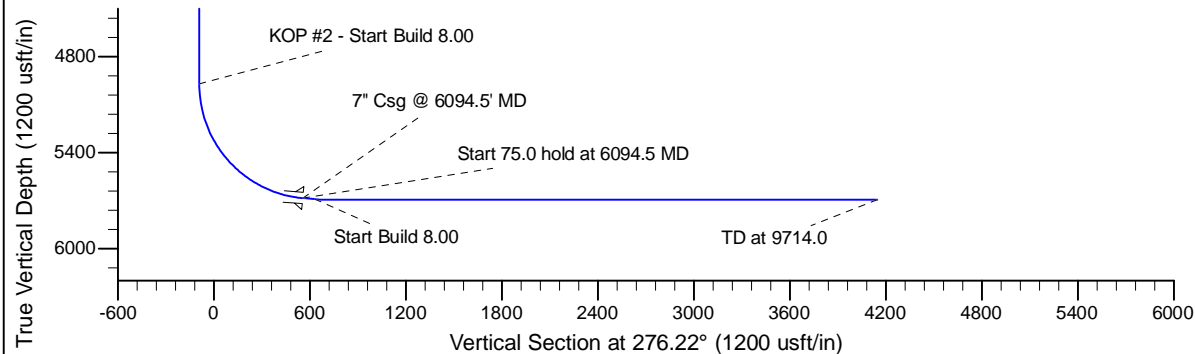
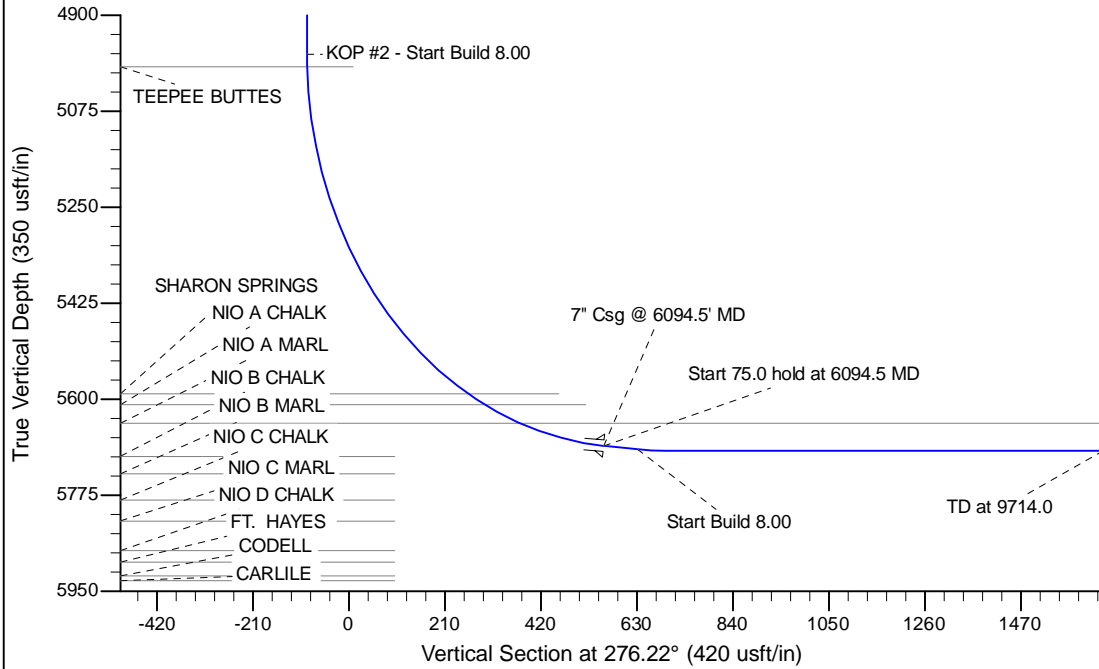
Project: Wattenberg Field
Site: LD (Sec.9-T09N-R58W) Weld County, CO
Well: Rohn State LD09-69-1HN
Wellbore: Original Drilling
Design: APD - Rev 0

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	Vsect	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	2201.2	14.02	15.80	2194.2	82.2	23.3	2.00	15.80	-14.2	
4	3769.5	14.02	15.80	3715.8	447.8	126.7	0.00	0.00	-77.5	
5	4470.7	0.00	0.00	4410.0	530.0	150.0	2.00	180.00	-91.7	
6	5032.0	0.00	0.00	4971.3	530.0	150.0	0.00	0.00	-91.7	
7	6094.5	85.00	268.91	5684.7	517.6	-503.7	8.00	268.91	556.7	
8	6169.5	85.00	268.91	5691.3	516.2	-578.4	0.00	0.00	630.8	
9	6232.0	90.00	268.91	5694.0	515.0	-640.8	8.00	0.00	692.8	
10	9714.0	90.00	268.91	5694.0	448.9	-4122.2	0.00	0.00	4146.5	Rohn State LD09-69-1HN BHL 330'FNL, 660'FWL



WELL DETAILS: Rohn State LD09-69-1HN			
Ground Level:	4740.0	Latitude	40.770800
Northing	1527839.92	Easting	3453761.91
		Longitude	-103.861700
Plan: APD - Rev 0 (Rohn State LD09-69-1HN/Original Drilling)			
Created By: Carrie Willers	Date: 17:04, April 05 2013		
Checked: _____	Date: _____		
Reviewed: _____	Date: _____		
Approved: _____	Date: _____		

Northern Region Drilling

Wattenberg Field

LD (09N-58W)

Rohn State LD09-69-1HN

Original Drilling

Plan: APD - Rev 0

Standard Planning Report

05 April, 2013

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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	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 LD09-69-1HN			
Well Position	+N/-S	4,282.8 usft	Northing:	1,527,839.93 usft
	+E/-W	4,420.7 usft	Easting:	3,453,761.90 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	Ground Level: 4,740.0 usft

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

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	276.22

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	
2,201.2	14.02	15.80	2,194.2	82.2	23.3	2.00	2.00	0.00	15.80	
3,769.5	14.02	15.80	3,715.8	447.8	126.7	0.00	0.00	0.00	0.00	
4,470.7	0.00	0.00	4,410.0	530.0	150.0	2.00	-2.00	0.00	180.00	
5,032.0	0.00	0.00	4,971.3	530.0	150.0	0.00	0.00	0.00	0.00	
6,094.5	85.00	268.91	5,684.7	517.6	-503.7	8.00	8.00	0.00	268.91	
6,169.5	85.00	268.91	5,691.3	516.2	-578.4	0.00	0.00	0.00	0.00	
6,232.0	90.00	268.91	5,694.0	515.0	-640.8	8.00	8.00	0.00	0.00	
9,714.0	90.00	268.91	5,694.0	448.9	-4,122.2	0.00	0.00	0.00	0.00	Rohn State LD09-69-

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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
1,082.0	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
KOP - Start Build 2.00									
1,550.0	1.00	15.80	1,550.0	0.4	0.1	-0.1	2.00	2.00	0.00
1,600.0	2.00	15.80	1,600.0	1.7	0.5	-0.3	2.00	2.00	0.00
1,650.0	3.00	15.80	1,649.9	3.8	1.1	-0.7	2.00	2.00	0.00
1,700.0	4.00	15.80	1,699.8	6.7	1.9	-1.2	2.00	2.00	0.00
1,750.0	5.00	15.80	1,749.7	10.5	3.0	-1.8	2.00	2.00	0.00
1,800.0	6.00	15.80	1,799.5	15.1	4.3	-2.6	2.00	2.00	0.00
1,850.0	7.00	15.80	1,849.1	20.5	5.8	-3.6	2.00	2.00	0.00
1,900.0	8.00	15.80	1,898.7	26.8	7.6	-4.6	2.00	2.00	0.00
1,950.0	9.00	15.80	1,948.2	33.9	9.6	-5.9	2.00	2.00	0.00
2,000.0	10.00	15.80	1,997.5	41.9	11.9	-7.2	2.00	2.00	0.00
2,050.0	11.00	15.80	2,046.6	50.6	14.3	-8.8	2.00	2.00	0.00
2,100.0	12.00	15.80	2,095.6	60.2	17.0	-10.4	2.00	2.00	0.00
2,150.0	13.00	15.80	2,144.4	70.6	20.0	-12.2	2.00	2.00	0.00
2,200.0	14.00	15.80	2,193.1	81.9	23.2	-14.2	2.00	2.00	0.00
2,201.2	14.02	15.80	2,194.2	82.2	23.3	-14.2	2.00	2.00	0.00
2,250.0	14.02	15.80	2,241.6	93.5	26.5	-16.2	0.00	0.00	0.00
2,300.0	14.02	15.80	2,290.1	105.2	29.8	-18.2	0.00	0.00	0.00
2,350.0	14.02	15.80	2,338.6	116.9	33.1	-20.2	0.00	0.00	0.00
2,400.0	14.02	15.80	2,387.1	128.5	36.4	-22.2	0.00	0.00	0.00
2,450.0	14.02	15.80	2,435.6	140.2	39.7	-24.3	0.00	0.00	0.00

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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)
2,500.0	14.02	15.80	2,484.1	151.8	43.0	-26.3	0.00	0.00	0.00
2,550.0	14.02	15.80	2,532.6	163.5	46.3	-28.3	0.00	0.00	0.00
2,600.0	14.02	15.80	2,581.1	175.1	49.6	-30.3	0.00	0.00	0.00
2,650.0	14.02	15.80	2,629.6	186.8	52.9	-32.3	0.00	0.00	0.00
2,700.0	14.02	15.80	2,678.2	198.5	56.2	-34.4	0.00	0.00	0.00
2,750.0	14.02	15.80	2,726.7	210.1	59.5	-36.4	0.00	0.00	0.00
2,800.0	14.02	15.80	2,775.2	221.8	62.8	-38.4	0.00	0.00	0.00
2,850.0	14.02	15.80	2,823.7	233.4	66.1	-40.4	0.00	0.00	0.00
2,900.0	14.02	15.80	2,872.2	245.1	69.4	-42.4	0.00	0.00	0.00
2,950.0	14.02	15.80	2,920.7	256.8	72.7	-44.4	0.00	0.00	0.00
3,000.0	14.02	15.80	2,969.2	268.4	76.0	-46.5	0.00	0.00	0.00
3,050.0	14.02	15.80	3,017.7	280.1	79.3	-48.5	0.00	0.00	0.00
3,100.0	14.02	15.80	3,066.2	291.7	82.6	-50.5	0.00	0.00	0.00
3,150.0	14.02	15.80	3,114.7	303.4	85.9	-52.5	0.00	0.00	0.00
3,200.0	14.02	15.80	3,163.2	315.0	89.2	-54.5	0.00	0.00	0.00
3,226.5	14.02	15.80	3,189.0	321.2	90.9	-55.6	0.00	0.00	0.00
PARKMAN									
3,250.0	14.02	15.80	3,211.8	326.7	92.5	-56.6	0.00	0.00	0.00
3,300.0	14.02	15.80	3,260.3	338.4	95.8	-58.6	0.00	0.00	0.00
3,350.0	14.02	15.80	3,308.8	350.0	99.1	-60.6	0.00	0.00	0.00
3,400.0	14.02	15.80	3,357.3	361.7	102.4	-62.6	0.00	0.00	0.00
3,450.0	14.02	15.80	3,405.8	373.3	105.7	-64.6	0.00	0.00	0.00
3,500.0	14.02	15.80	3,454.3	385.0	109.0	-66.6	0.00	0.00	0.00
3,550.0	14.02	15.80	3,502.8	396.7	112.3	-68.7	0.00	0.00	0.00
3,600.0	14.02	15.80	3,551.3	408.3	115.6	-70.7	0.00	0.00	0.00
3,650.0	14.02	15.80	3,599.8	420.0	118.9	-72.7	0.00	0.00	0.00
3,668.7	14.02	15.80	3,618.0	424.3	120.1	-73.5	0.00	0.00	0.00
SUSSEX									
3,700.0	14.02	15.80	3,648.3	431.6	122.2	-74.7	0.00	0.00	0.00
3,750.0	14.02	15.80	3,696.9	443.3	125.5	-76.7	0.00	0.00	0.00
3,769.5	14.02	15.80	3,715.8	447.8	126.7	-77.5	0.00	0.00	0.00
Start Drop -2.00									
3,800.0	13.41	15.80	3,745.4	454.8	128.7	-78.7	2.00	-2.00	0.00
3,850.0	12.41	15.80	3,794.1	465.6	131.8	-80.6	2.00	-2.00	0.00
3,900.0	11.41	15.80	3,843.1	475.5	134.6	-82.3	2.00	-2.00	0.00
3,950.0	10.41	15.80	3,892.2	484.6	137.1	-83.9	2.00	-2.00	0.00
4,000.0	9.41	15.80	3,941.4	492.9	139.5	-85.3	2.00	-2.00	0.00
4,050.0	8.41	15.80	3,990.8	500.3	141.6	-86.6	2.00	-2.00	0.00
4,100.0	7.41	15.80	4,040.3	507.0	143.5	-87.7	2.00	-2.00	0.00
4,150.0	6.41	15.80	4,090.0	512.7	145.1	-88.8	2.00	-2.00	0.00
4,200.0	5.41	15.80	4,139.7	517.7	146.5	-89.6	2.00	-2.00	0.00
4,250.0	4.41	15.80	4,189.5	521.8	147.7	-90.3	2.00	-2.00	0.00
4,300.0	3.41	15.80	4,239.4	525.1	148.6	-90.9	2.00	-2.00	0.00
4,350.0	2.41	15.80	4,289.3	527.6	149.3	-91.3	2.00	-2.00	0.00
4,365.7	2.10	15.80	4,305.0	528.1	149.5	-91.4	2.00	-2.00	0.00
SHANNON									
4,400.0	1.41	15.80	4,339.3	529.2	149.8	-91.6	2.00	-2.00	0.00
4,450.0	0.41	15.80	4,389.3	529.9	150.0	-91.7	2.00	-2.00	0.00
4,470.7	0.00	0.00	4,410.0	530.0	150.0	-91.7	2.00	-2.00	0.00
4,500.0	0.00	0.00	4,439.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,550.0	0.00	0.00	4,489.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,600.0	0.00	0.00	4,539.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,650.0	0.00	0.00	4,589.3	530.0	150.0	-91.7	0.00	0.00	0.00

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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)
4,700.0	0.00	0.00	4,639.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,750.0	0.00	0.00	4,689.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,800.0	0.00	0.00	4,739.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,850.0	0.00	0.00	4,789.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,839.3	530.0	150.0	-91.7	0.00	0.00	0.00
4,950.0	0.00	0.00	4,889.3	530.0	150.0	-91.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,939.3	530.0	150.0	-91.7	0.00	0.00	0.00
5,032.0	0.00	0.00	4,971.3	530.0	150.0	-91.7	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
5,050.0	1.44	268.91	4,989.3	530.0	149.8	-91.5	8.01	8.01	0.00
5,054.7	1.82	268.91	4,994.0	530.0	149.6	-91.4	8.00	8.00	0.00
TEEPEE BUTTES									
5,100.0	5.44	268.91	5,039.2	529.9	146.8	-88.5	8.00	8.00	0.00
5,150.0	9.44	268.91	5,088.8	529.8	140.3	-82.1	8.00	8.00	0.00
5,200.0	13.44	268.91	5,137.8	529.6	130.4	-72.3	8.00	8.00	0.00
5,250.0	17.44	268.91	5,185.9	529.4	117.1	-59.1	8.00	8.00	0.00
5,300.0	21.44	268.91	5,233.1	529.1	100.4	-42.6	8.00	8.00	0.00
5,350.0	25.44	268.91	5,278.9	528.7	80.6	-22.8	8.00	8.00	0.00
5,400.0	29.44	268.91	5,323.3	528.2	57.5	0.0	8.00	8.00	0.00
5,450.0	33.44	268.91	5,366.0	527.7	31.4	25.9	8.00	8.00	0.00
5,500.0	37.44	268.91	5,406.7	527.2	2.5	54.6	8.00	8.00	0.00
5,550.0	41.44	268.91	5,445.3	526.6	-29.3	86.1	8.00	8.00	0.00
5,600.0	45.44	268.91	5,481.6	525.9	-63.7	120.2	8.00	8.00	0.00
5,650.0	49.44	268.91	5,515.4	525.2	-100.5	156.7	8.00	8.00	0.00
5,700.0	53.44	268.91	5,546.6	524.5	-139.6	195.5	8.00	8.00	0.00
5,750.0	57.44	268.91	5,574.9	523.7	-180.7	236.4	8.00	8.00	0.00
5,779.0	59.76	268.91	5,590.0	523.3	-205.4	260.9	8.00	8.00	0.00
SHARON SPRINGS									
5,800.0	61.44	268.91	5,600.3	522.9	-223.8	279.1	8.00	8.00	0.00
5,820.8	63.11	268.91	5,610.0	522.6	-242.2	297.3	8.00	8.00	0.00
NIO A CHALK									
5,850.0	65.44	268.91	5,622.7	522.1	-268.5	323.4	8.00	8.00	0.00
5,900.0	69.44	268.91	5,641.9	521.2	-314.6	369.2	8.00	8.00	0.00
5,906.2	69.94	268.91	5,644.0	521.1	-320.4	374.9	8.00	8.00	0.00
NIO A MARL									
5,939.1	72.57	268.91	5,654.6	520.5	-351.6	405.9	8.00	8.00	0.00
Rohn PC LD09-01 (Existing)									
5,950.0	73.44	268.91	5,657.8	520.3	-362.0	416.2	8.00	8.00	0.00
6,000.0	77.44	268.91	5,670.3	519.4	-410.4	464.2	8.00	8.00	0.00
6,050.0	81.44	268.91	5,679.5	518.4	-459.5	512.9	8.00	8.00	0.00
6,094.5	85.00	268.91	5,684.7	517.6	-503.7	556.8	7.99	7.99	0.00
Start 75.0 hold at 6094.5 MD - 7" Csg @ 6094.5' MD									
6,100.0	85.00	268.91	5,685.2	517.5	-509.2	562.2	0.00	0.00	0.00
6,150.0	85.00	268.91	5,689.6	516.5	-559.0	611.6	0.00	0.00	0.00
6,169.5	85.00	268.91	5,691.3	516.2	-578.4	630.9	0.00	0.00	0.00
Start Build 8.00									
6,200.0	87.44	268.91	5,693.3	515.6	-608.8	661.1	8.01	8.01	0.00
6,232.0	90.00	268.91	5,694.0	515.0	-640.8	692.8	8.00	8.00	0.00
6,250.0	90.00	268.91	5,694.0	514.6	-658.8	710.6	0.00	0.00	0.00
6,300.0	90.00	268.91	5,694.0	513.7	-708.8	760.2	0.00	0.00	0.00
6,350.0	90.00	268.91	5,694.0	512.8	-758.8	809.8	0.00	0.00	0.00
6,400.0	90.00	268.91	5,694.0	511.8	-808.8	859.4	0.00	0.00	0.00
6,450.0	90.00	268.91	5,694.0	510.9	-858.8	909.0	0.00	0.00	0.00

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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)
6,500.0	90.00	268.91	5,694.0	509.9	-908.7	958.6	0.00	0.00	0.00
6,550.0	90.00	268.91	5,694.0	509.0	-958.7	1,008.2	0.00	0.00	0.00
6,600.0	90.00	268.91	5,694.0	508.0	-1,008.7	1,057.8	0.00	0.00	0.00
6,650.0	90.00	268.91	5,694.0	507.1	-1,058.7	1,107.4	0.00	0.00	0.00
6,700.0	90.00	268.91	5,694.0	506.1	-1,108.7	1,157.0	0.00	0.00	0.00
6,750.0	90.00	268.91	5,694.0	505.2	-1,158.7	1,206.6	0.00	0.00	0.00
6,800.0	90.00	268.91	5,694.0	504.2	-1,208.7	1,256.2	0.00	0.00	0.00
6,850.0	90.00	268.91	5,694.0	503.3	-1,258.7	1,305.8	0.00	0.00	0.00
6,900.0	90.00	268.91	5,694.0	502.3	-1,308.7	1,355.4	0.00	0.00	0.00
6,950.0	90.00	268.91	5,694.0	501.4	-1,358.7	1,405.0	0.00	0.00	0.00
7,000.0	90.00	268.91	5,694.0	500.4	-1,408.7	1,454.6	0.00	0.00	0.00
7,050.0	90.00	268.91	5,694.0	499.5	-1,458.7	1,504.2	0.00	0.00	0.00
7,100.0	90.00	268.91	5,694.0	498.5	-1,508.6	1,553.7	0.00	0.00	0.00
7,150.0	90.00	268.91	5,694.0	497.6	-1,558.6	1,603.3	0.00	0.00	0.00
7,200.0	90.00	268.91	5,694.0	496.6	-1,608.6	1,652.9	0.00	0.00	0.00
7,250.0	90.00	268.91	5,694.0	495.7	-1,658.6	1,702.5	0.00	0.00	0.00
7,300.0	90.00	268.91	5,694.0	494.7	-1,708.6	1,752.1	0.00	0.00	0.00
7,350.0	90.00	268.91	5,694.0	493.8	-1,758.6	1,801.7	0.00	0.00	0.00
7,400.0	90.00	268.91	5,694.0	492.8	-1,808.6	1,851.3	0.00	0.00	0.00
7,450.0	90.00	268.91	5,694.0	491.9	-1,858.6	1,900.9	0.00	0.00	0.00
7,500.0	90.00	268.91	5,694.0	490.9	-1,908.6	1,950.5	0.00	0.00	0.00
7,550.0	90.00	268.91	5,694.0	490.0	-1,958.6	2,000.1	0.00	0.00	0.00
7,600.0	90.00	268.91	5,694.0	489.0	-2,008.6	2,049.7	0.00	0.00	0.00
7,650.0	90.00	268.91	5,694.0	488.1	-2,058.5	2,099.3	0.00	0.00	0.00
7,700.0	90.00	268.91	5,694.0	487.1	-2,108.5	2,148.9	0.00	0.00	0.00
7,750.0	90.00	268.91	5,694.0	486.2	-2,158.5	2,198.5	0.00	0.00	0.00
7,800.0	90.00	268.91	5,694.0	485.2	-2,208.5	2,248.1	0.00	0.00	0.00
7,850.0	90.00	268.91	5,694.0	484.3	-2,258.5	2,297.7	0.00	0.00	0.00
7,900.0	90.00	268.91	5,694.0	483.3	-2,308.5	2,347.3	0.00	0.00	0.00
7,950.0	90.00	268.91	5,694.0	482.4	-2,358.5	2,396.9	0.00	0.00	0.00
8,000.0	90.00	268.91	5,694.0	481.4	-2,408.5	2,446.4	0.00	0.00	0.00
8,050.0	90.00	268.91	5,694.0	480.5	-2,458.5	2,496.0	0.00	0.00	0.00
8,100.0	90.00	268.91	5,694.0	479.5	-2,508.5	2,545.6	0.00	0.00	0.00
8,150.0	90.00	268.91	5,694.0	478.6	-2,558.5	2,595.2	0.00	0.00	0.00
8,200.0	90.00	268.91	5,694.0	477.6	-2,608.4	2,644.8	0.00	0.00	0.00
8,250.0	90.00	268.91	5,694.0	476.7	-2,658.4	2,694.4	0.00	0.00	0.00
8,300.0	90.00	268.91	5,694.0	475.7	-2,708.4	2,744.0	0.00	0.00	0.00
8,350.0	90.00	268.91	5,694.0	474.8	-2,758.4	2,793.6	0.00	0.00	0.00
8,400.0	90.00	268.91	5,694.0	473.9	-2,808.4	2,843.2	0.00	0.00	0.00
8,450.0	90.00	268.91	5,694.0	472.9	-2,858.4	2,892.8	0.00	0.00	0.00
8,500.0	90.00	268.91	5,694.0	472.0	-2,908.4	2,942.4	0.00	0.00	0.00
8,550.0	90.00	268.91	5,694.0	471.0	-2,958.4	2,992.0	0.00	0.00	0.00
8,600.0	90.00	268.91	5,694.0	470.1	-3,008.4	3,041.6	0.00	0.00	0.00
8,650.0	90.00	268.91	5,694.0	469.1	-3,058.4	3,091.2	0.00	0.00	0.00
8,700.0	90.00	268.91	5,694.0	468.2	-3,108.4	3,140.8	0.00	0.00	0.00
8,750.0	90.00	268.91	5,694.0	467.2	-3,158.3	3,190.4	0.00	0.00	0.00
8,800.0	90.00	268.91	5,694.0	466.3	-3,208.3	3,240.0	0.00	0.00	0.00
8,850.0	90.00	268.91	5,694.0	465.3	-3,258.3	3,289.6	0.00	0.00	0.00
8,900.0	90.00	268.91	5,694.0	464.4	-3,308.3	3,339.1	0.00	0.00	0.00
8,950.0	90.00	268.91	5,694.0	463.4	-3,358.3	3,388.7	0.00	0.00	0.00
9,000.0	90.00	268.91	5,694.0	462.5	-3,408.3	3,438.3	0.00	0.00	0.00
9,050.0	90.00	268.91	5,694.0	461.5	-3,458.3	3,487.9	0.00	0.00	0.00
9,100.0	90.00	268.91	5,694.0	460.6	-3,508.3	3,537.5	0.00	0.00	0.00
9,150.0	90.00	268.91	5,694.0	459.6	-3,558.3	3,587.1	0.00	0.00	0.00

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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)	
9,200.0	90.00	268.91	5,694.0	458.7	-3,608.3	3,636.7	0.00	0.00	0.00	
9,250.0	90.00	268.91	5,694.0	457.7	-3,658.3	3,686.3	0.00	0.00	0.00	
9,300.0	90.00	268.91	5,694.0	456.8	-3,708.2	3,735.9	0.00	0.00	0.00	
9,350.0	90.00	268.91	5,694.0	455.8	-3,758.2	3,785.5	0.00	0.00	0.00	
9,400.0	90.00	268.91	5,694.0	454.9	-3,808.2	3,835.1	0.00	0.00	0.00	
9,450.0	90.00	268.91	5,694.0	453.9	-3,858.2	3,884.7	0.00	0.00	0.00	
9,500.0	90.00	268.91	5,694.0	453.0	-3,908.2	3,934.3	0.00	0.00	0.00	
9,550.0	90.00	268.91	5,694.0	452.0	-3,958.2	3,983.9	0.00	0.00	0.00	
9,600.0	90.00	268.91	5,694.0	451.1	-4,008.2	4,033.5	0.00	0.00	0.00	
9,650.0	90.00	268.91	5,694.0	450.1	-4,058.2	4,083.1	0.00	0.00	0.00	
9,700.0	90.00	268.91	5,694.0	449.2	-4,108.2	4,132.7	0.00	0.00	0.00	
9,714.0	90.00	268.91	5,694.0	448.9	-4,122.2	4,146.5	0.00	0.00	0.00	
TD at 9714.0 - Rohn State LD09-69-1HN BHL 330'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 LD09-69-1H	0.00	0.00	5,694.0	448.9	-4,122.2	1,528,288.84	3,449,639.74	40.772240	-103.876550
- plan hits target center									
- Point									
Rohn PC LD09-01 (Exis'	0.00	0.00	6,135.0	197.0	-186.5	1,528,036.90	3,453,575.42	40.771350	-103.862360
- plan misses target center by 602.3usft at 5939.1usft MD (5654.6 TVD, 520.5 N, -351.6 E)									
- Circle (radius 150.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,094.5	5,684.7	7" Csg @ 6094.5' MD	7	8-3/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,082.0	1,082.0	PIERRE		0.00		
3,226.5	3,189.0	PARKMAN		0.00		
3,668.7	3,618.0	SUSSEX		0.00		
4,365.7	4,305.0	SHANNON		0.00		
5,054.7	4,994.0	TEEPEE BUTTES		0.00		
5,779.0	5,590.0	SHARON SPRINGS		0.00		
5,820.8	5,610.0	NIO A CHALK		0.00		
5,906.2	5,644.0	NIO A MARL		0.00		

Planning Report

Database:	EDM Production	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Company:	Northern Region Drilling	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site:	LD (09N-58W)	North Reference:	Grid
Well:	Rohn State LD09-69-1HN	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)	
1,500.0	1,500.0	0.0	0.0	KOP - Start Build 2.00
3,769.5	3,715.8	447.8	126.7	Start Drop -2.00
5,032.0	4,971.3	530.0	150.0	KOP #2 - Start Build 8.00
6,094.5	5,684.7	517.6	-503.7	Start 75.0 hold at 6094.5 MD
6,169.5	5,691.3	516.2	-578.4	Start Build 8.00
9,714.0	5,694.0	448.9	-4,122.2	TD at 9714.0

Northern Region Drilling

Wattenberg Field

LD (09N-58W)

Rohn State LD09-69-1HN

Original Drilling

APD - Rev 0

Anticollision Summary Report

05 April, 2013

Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Reference Site:	LD (09N-58W)	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rohn State LD09-69-1HN	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	4/5/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	9,714.0	APD - Rev 0 (Original Drilling)	MWD	MWD - Standard

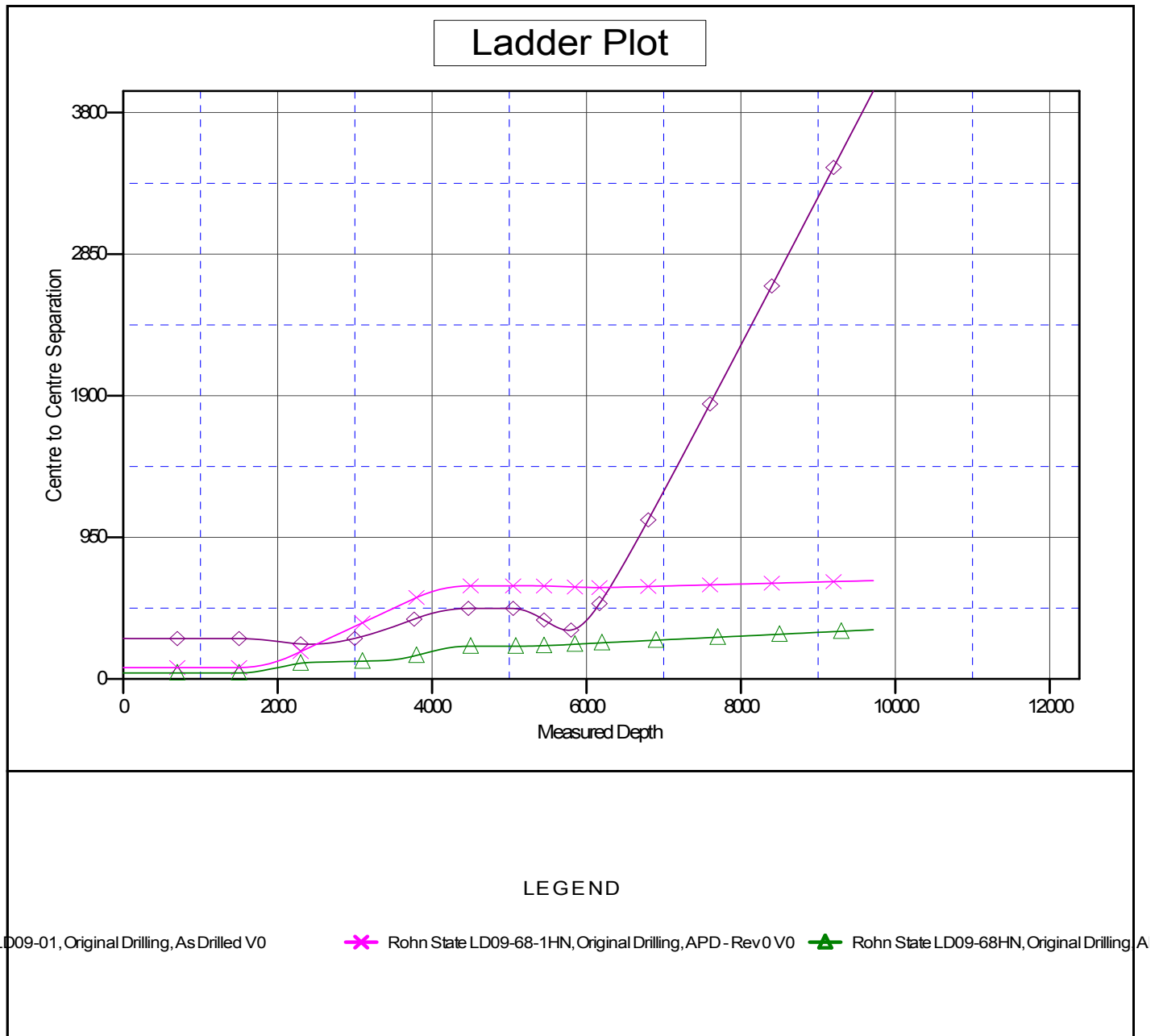
Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
LD (09N-58W)						
Rohn PC LD09-01 - Original Drilling - As Drilled	2,421.4	2,381.8	233.1	179.6	4.361	CC
Rohn PC LD09-01 - Original Drilling - As Drilled	2,500.0	2,458.1	233.9	178.6	4.232	ES
Rohn PC LD09-01 - Original Drilling - As Drilled	5,800.0	5,574.3	328.1	202.2	2.606	SF
Rohn State LD09-68-1HN - Original Drilling - APD - Rev	1,500.0	1,499.0	76.5	70.1	11.865	CC, ES
Rohn State LD09-68-1HN - Original Drilling - APD - Rev	9,714.0	9,450.6	660.2	430.3	2.871	SF
Rohn State LD09-68HN - Original Drilling - APD - Rev 0	1,500.0	1,500.0	40.1	33.6	6.213	CC, ES
Rohn State LD09-68HN - Original Drilling - APD - Rev 0	9,714.0	9,724.7	330.5	98.9	1.427	Level 3, SF

Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Reference Site:	LD (09N-58W)	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rohn State LD09-69-1HN	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 @ 4770.0usft (Original Well Ele)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Rohn State LD09-69-1HN
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.06°



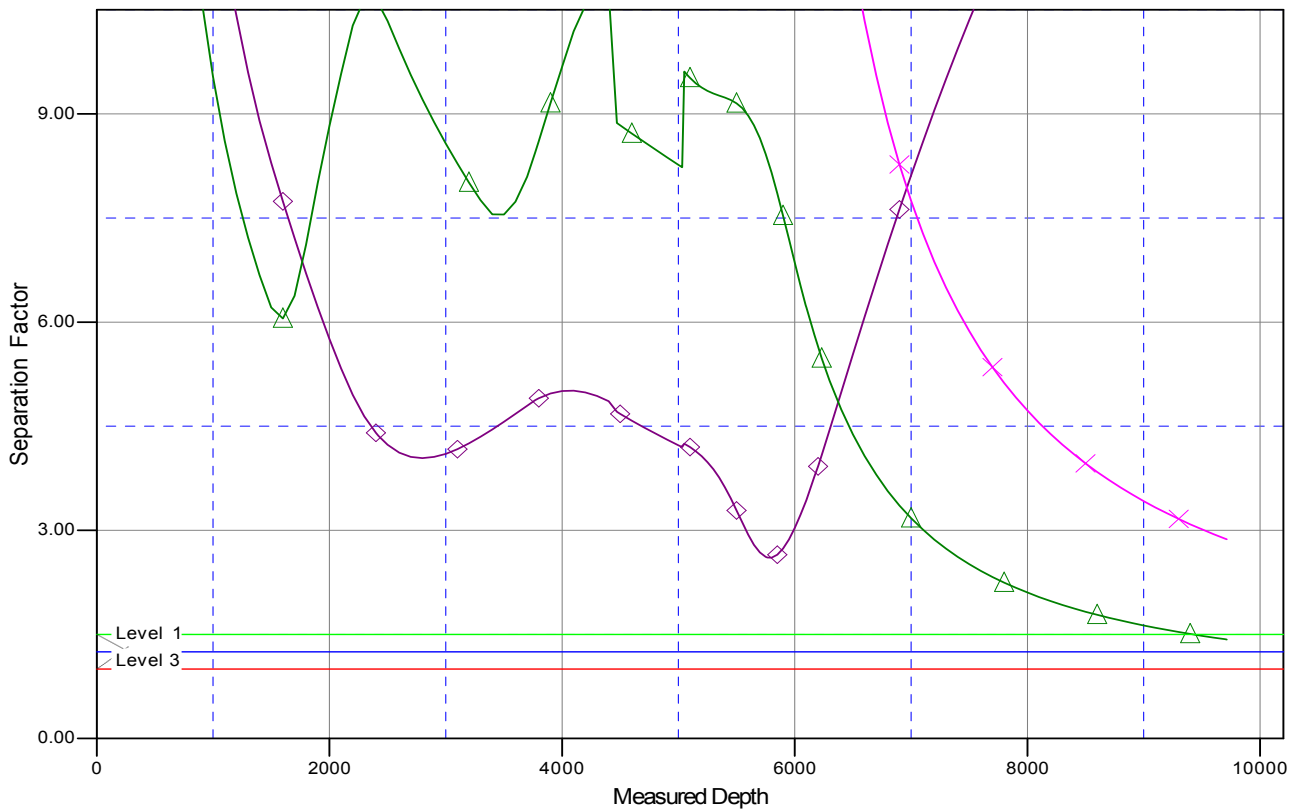
Anticollision Summary Report

Company:	Northern Region Drilling	Local Co-ordinate Reference:	Well Rohn State LD09-69-1HN
Project:	Wattenberg Field	TVD Reference:	WELL @ 4770.0usft (Original Well Elev)
Reference Site:	LD (09N-58W)	MD Reference:	WELL @ 4770.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rohn State LD09-69-1HN	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 @ 4770.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Rohn State LD09-69-1HN
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 LD09-68HN, Original Drilling A