

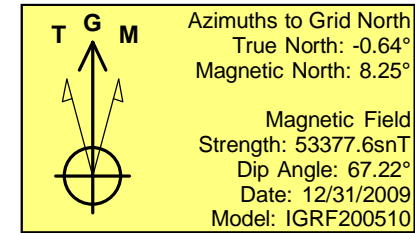
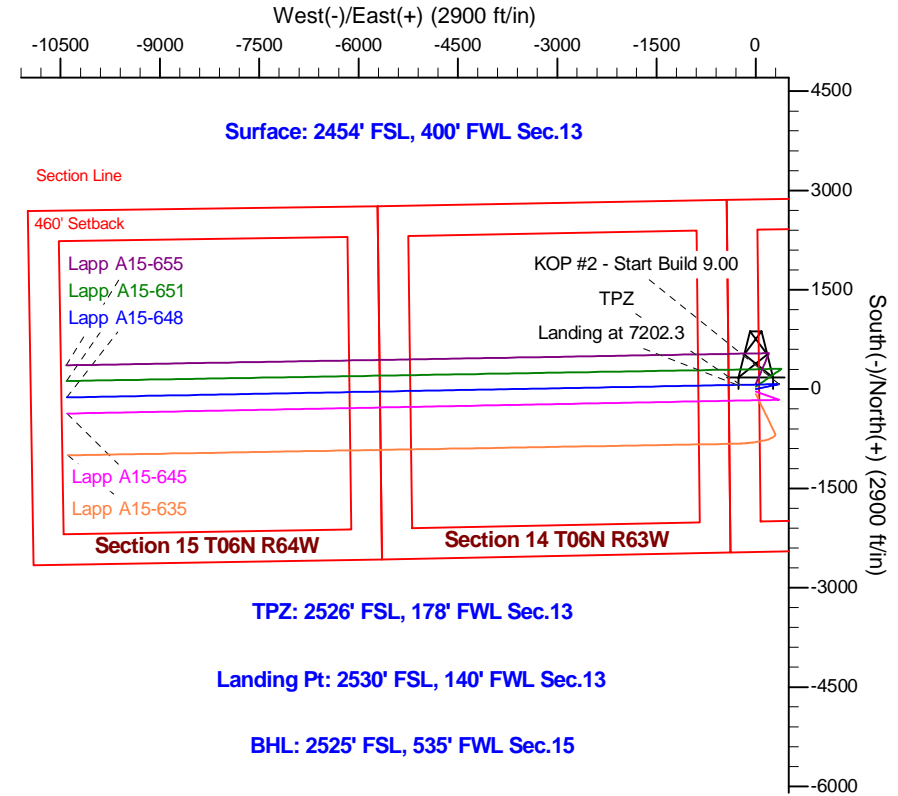
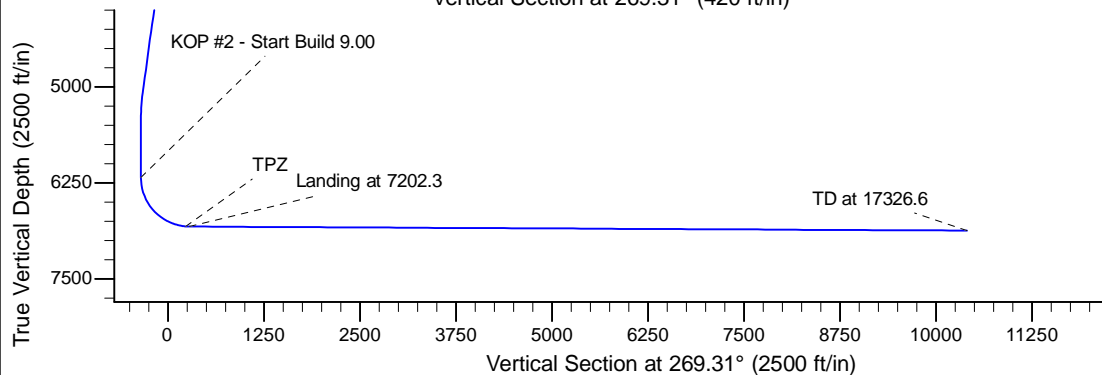
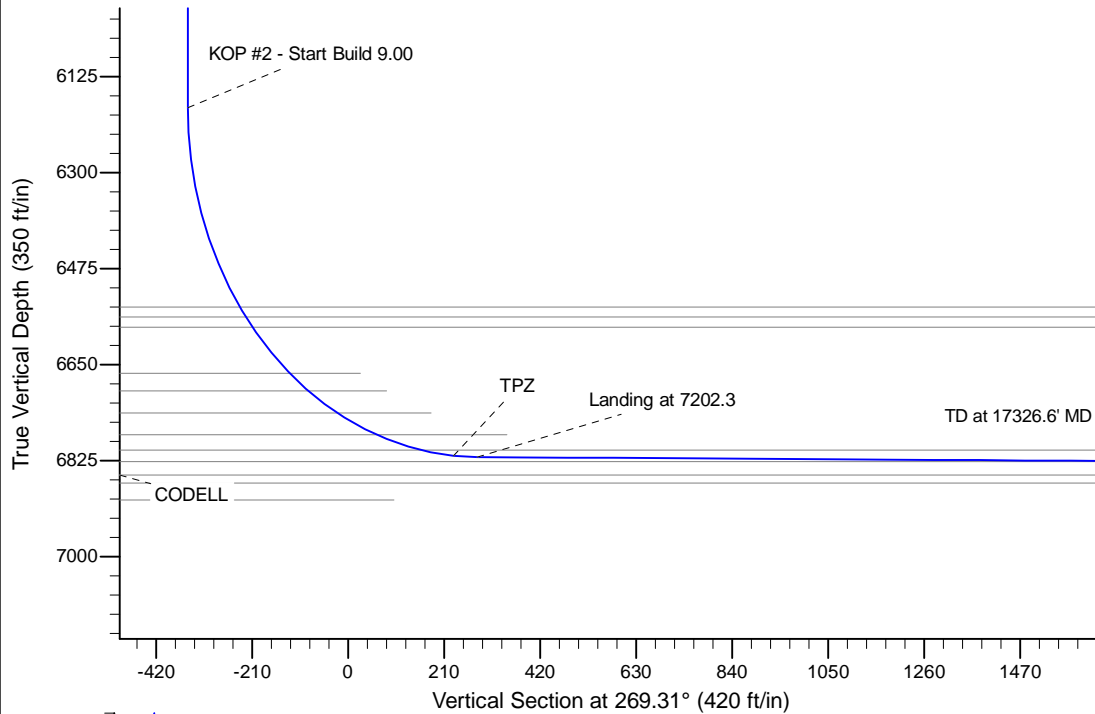
Project: Wattenberg Field
Site: A (Sec.13-T06N-R63W) Weld County, CO
Well: Lapp A15-648
Wellbore: Original Drilling
Design: APD - Rev 2

Northern Region Drilling - Working

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	
3	2901.4	8.03	77.91	2900.1	5.9	27.5	2.00	77.91	-27.5	
4	5062.4	8.03	77.91	5039.9	69.1	322.5	0.00	0.00	-323.4	
5	5463.8	0.00	0.00	5440.0	75.0	350.0	2.00	180.00	-350.9	
6	6205.7	0.00	0.00	6181.9	75.0	350.0	0.00	0.00	-350.9	
7	7202.3	89.70	268.93	6818.5	63.2	-283.2	9.00	268.93	282.4	
8	17326.6	89.70	268.93	6871.5	-125.3	-10405.5	0.00	0.00	10406.3	Lapp A15-648 BHL 2525'FSL, 535'FWL



WELL DETAILS: Lapp A15-648					
Ground Level: 4668.0					
0.0	0.0	Northing	Easting	Latitude	Longitude
		1421318.43	3276375.19	40.485670	-104.506390
Plan: APD - Rev 2 (Lapp A15-648/Original Drilling)					
Created By: Shailey Jewell			Date: 15:29, May 26 2016		
Checked: _____			Date: _____		
Reviewed: _____			Date: _____		
Approved: _____			Date: _____		

Northern Region Drilling - Working

Wattenberg Field

A (06N-64W)

Lapp A15-648

Original Drilling

Plan: APD - Rev 2

Standard Planning Report

26 May, 2016

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

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		A (06N-64W)			
Site Position:		Northing:	1,408,077.93 usft	Latitude:	40.449320
From:	Lat/Long	Easting:	3,276,618.19 usft	Longitude:	-104.506050
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.64 °

Well	Lapp A15-648					
Well Position	+N/-S	13,241.0 ft	Northing:	1,421,318.43 usft	Latitude:	40.485670
	+E/-W	-243.0 ft	Easting:	3,276,375.19 usft	Longitude:	-104.506390
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,668.0 ft

Wellbore	Original Drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	8.89	67.22	53,378

Design	APD - Rev 2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	269.31

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,901.4	8.03	77.91	2,900.1	5.9	27.5	2.00	2.00	0.00	77.91	
5,062.4	8.03	77.91	5,039.9	69.1	322.5	0.00	0.00	0.00	0.00	
5,463.8	0.00	0.00	5,440.0	75.0	350.0	2.00	-2.00	0.00	180.00	
6,205.7	0.00	0.00	6,181.9	75.0	350.0	0.00	0.00	0.00	0.00	
7,202.3	89.70	268.93	6,818.5	63.2	-283.2	9.00	9.00	0.00	268.93	
17,326.6	89.70	268.93	6,871.5	-125.3	-10,405.5	0.00	0.00	0.00	0.00	Lapp A15-648 BHL 25'

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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
1,550.0	0.00	0.00	1,550.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,650.0	0.00	0.00	1,650.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,750.0	0.00	0.00	1,750.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,850.0	0.00	0.00	1,850.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,950.0	0.00	0.00	1,950.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,050.0	0.00	0.00	2,050.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,150.0	0.00	0.00	2,150.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,250.0	0.00	0.00	2,250.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,350.0	0.00	0.00	2,350.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,450.0	0.00	0.00	2,450.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,550.0	1.00	77.91	2,550.0	0.1	0.4	-0.4	2.00	2.00	0.00
2,600.0	2.00	77.91	2,600.0	0.4	1.7	-1.7	2.00	2.00	0.00
2,650.0	3.00	77.91	2,649.9	0.8	3.8	-3.8	2.00	2.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,700.0	4.00	77.91	2,699.8	1.5	6.8	-6.8	2.00	2.00	0.00
2,750.0	5.00	77.91	2,749.7	2.3	10.7	-10.7	2.00	2.00	0.00
2,800.0	6.00	77.91	2,799.5	3.3	15.3	-15.4	2.00	2.00	0.00
2,850.0	7.00	77.91	2,849.1	4.5	20.9	-20.9	2.00	2.00	0.00
2,900.0	8.00	77.91	2,898.7	5.8	27.3	-27.3	2.00	2.00	0.00
2,901.4	8.03	77.91	2,900.1	5.9	27.5	-27.5	2.00	2.00	0.00
2,950.0	8.03	77.91	2,948.2	7.3	34.1	-34.2	0.00	0.00	0.00
3,000.0	8.03	77.91	2,997.7	8.8	40.9	-41.0	0.00	0.00	0.00
3,050.0	8.03	77.91	3,047.2	10.2	47.7	-47.9	0.00	0.00	0.00
3,100.0	8.03	77.91	3,096.7	11.7	54.6	-54.7	0.00	0.00	0.00
3,150.0	8.03	77.91	3,146.3	13.2	61.4	-61.6	0.00	0.00	0.00
3,200.0	8.03	77.91	3,195.8	14.6	68.2	-68.4	0.00	0.00	0.00
3,250.0	8.03	77.91	3,245.3	16.1	75.1	-75.2	0.00	0.00	0.00
3,300.0	8.03	77.91	3,294.8	17.5	81.9	-82.1	0.00	0.00	0.00
3,350.0	8.03	77.91	3,344.3	19.0	88.7	-88.9	0.00	0.00	0.00
3,400.0	8.03	77.91	3,393.8	20.5	95.5	-95.8	0.00	0.00	0.00
3,450.0	8.03	77.91	3,443.3	21.9	102.4	-102.6	0.00	0.00	0.00
3,500.0	8.03	77.91	3,492.8	23.4	109.2	-109.5	0.00	0.00	0.00
3,550.0	8.03	77.91	3,542.3	24.9	116.0	-116.3	0.00	0.00	0.00
3,600.0	8.03	77.91	3,591.8	26.3	122.8	-123.2	0.00	0.00	0.00
3,650.0	8.03	77.91	3,641.4	27.8	129.7	-130.0	0.00	0.00	0.00
3,700.0	8.03	77.91	3,690.9	29.3	136.5	-136.8	0.00	0.00	0.00
3,750.0	8.03	77.91	3,740.4	30.7	143.3	-143.7	0.00	0.00	0.00
3,800.0	8.03	77.91	3,789.9	32.2	150.2	-150.5	0.00	0.00	0.00
3,850.0	8.03	77.91	3,839.4	33.6	157.0	-157.4	0.00	0.00	0.00
3,900.0	8.03	77.91	3,888.9	35.1	163.8	-164.2	0.00	0.00	0.00
3,950.0	8.03	77.91	3,938.4	36.6	170.6	-171.1	0.00	0.00	0.00
4,000.0	8.03	77.91	3,987.9	38.0	177.5	-177.9	0.00	0.00	0.00
4,050.0	8.03	77.91	4,037.4	39.5	184.3	-184.8	0.00	0.00	0.00
4,100.0	8.03	77.91	4,086.9	41.0	191.1	-191.6	0.00	0.00	0.00
4,150.0	8.03	77.91	4,136.5	42.4	198.0	-198.5	0.00	0.00	0.00
4,200.0	8.03	77.91	4,186.0	43.9	204.8	-205.3	0.00	0.00	0.00
4,250.0	8.03	77.91	4,235.5	45.3	211.6	-212.1	0.00	0.00	0.00
4,300.0	8.03	77.91	4,285.0	46.8	218.4	-219.0	0.00	0.00	0.00
4,350.0	8.03	77.91	4,334.5	48.3	225.3	-225.8	0.00	0.00	0.00
4,400.0	8.03	77.91	4,384.0	49.7	232.1	-232.7	0.00	0.00	0.00
4,450.0	8.03	77.91	4,433.5	51.2	238.9	-239.5	0.00	0.00	0.00
4,500.0	8.03	77.91	4,483.0	52.7	245.7	-246.4	0.00	0.00	0.00
4,550.0	8.03	77.91	4,532.5	54.1	252.6	-253.2	0.00	0.00	0.00
4,600.0	8.03	77.91	4,582.0	55.6	259.4	-260.1	0.00	0.00	0.00
4,650.0	8.03	77.91	4,631.6	57.0	266.2	-266.9	0.00	0.00	0.00
4,700.0	8.03	77.91	4,681.1	58.5	273.1	-273.7	0.00	0.00	0.00
4,750.0	8.03	77.91	4,730.6	60.0	279.9	-280.6	0.00	0.00	0.00
4,800.0	8.03	77.91	4,780.1	61.4	286.7	-287.4	0.00	0.00	0.00
4,850.0	8.03	77.91	4,829.6	62.9	293.5	-294.3	0.00	0.00	0.00
4,900.0	8.03	77.91	4,879.1	64.4	300.4	-301.1	0.00	0.00	0.00
4,950.0	8.03	77.91	4,928.6	65.8	307.2	-308.0	0.00	0.00	0.00
5,000.0	8.03	77.91	4,978.1	67.3	314.0	-314.8	0.00	0.00	0.00
5,050.0	8.03	77.91	5,027.6	68.8	320.9	-321.7	0.00	0.00	0.00
5,062.4	8.03	77.91	5,039.9	69.1	322.5	-323.4	0.00	0.00	0.00
5,100.0	7.28	77.91	5,077.2	70.2	327.4	-328.3	2.00	-2.00	0.00
5,150.0	6.28	77.91	5,126.8	71.4	333.2	-334.0	2.00	-2.00	0.00
5,200.0	5.28	77.91	5,176.6	72.5	338.1	-339.0	2.00	-2.00	0.00
5,250.0	4.28	77.91	5,226.4	73.3	342.2	-343.1	2.00	-2.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.0	3.28	77.91	5,276.3	74.0	345.4	-346.3	2.00	-2.00	0.00
5,350.0	2.28	77.91	5,326.2	74.5	347.8	-348.7	2.00	-2.00	0.00
5,400.0	1.28	77.91	5,376.2	74.9	349.3	-350.2	2.00	-2.00	0.00
5,450.0	0.28	77.91	5,426.2	75.0	350.0	-350.8	2.00	-2.00	0.00
5,463.8	0.00	0.00	5,440.0	75.0	350.0	-350.9	2.00	-2.00	0.00
5,500.0	0.00	0.00	5,476.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,550.0	0.00	0.00	5,526.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,576.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,650.0	0.00	0.00	5,626.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,676.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,750.0	0.00	0.00	5,726.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,776.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,850.0	0.00	0.00	5,826.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,876.2	75.0	350.0	-350.9	0.00	0.00	0.00
5,950.0	0.00	0.00	5,926.2	75.0	350.0	-350.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,976.2	75.0	350.0	-350.9	0.00	0.00	0.00
6,050.0	0.00	0.00	6,026.2	75.0	350.0	-350.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,076.2	75.0	350.0	-350.9	0.00	0.00	0.00
6,150.0	0.00	0.00	6,126.2	75.0	350.0	-350.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,176.2	75.0	350.0	-350.9	0.00	0.00	0.00
6,205.7	0.00	0.00	6,181.9	75.0	350.0	-350.9	0.00	0.00	0.00
6,250.0	3.99	268.93	6,226.2	75.0	348.5	-349.3	9.00	9.00	0.00
6,300.0	8.49	268.93	6,275.9	74.9	343.0	-343.9	9.00	9.00	0.00
6,350.0	12.99	268.93	6,325.0	74.7	333.7	-334.6	9.00	9.00	0.00
6,400.0	17.49	268.93	6,373.2	74.5	320.6	-321.5	9.00	9.00	0.00
6,450.0	21.99	268.93	6,420.2	74.1	303.7	-304.6	9.00	9.00	0.00
6,500.0	26.49	268.93	6,465.8	73.8	283.2	-284.0	9.00	9.00	0.00
6,550.0	30.99	268.93	6,509.7	73.3	259.1	-260.0	9.00	9.00	0.00
6,600.0	35.49	268.93	6,551.5	72.8	231.8	-232.6	9.00	9.00	0.00
6,650.0	39.99	268.93	6,591.0	72.2	201.2	-202.0	9.00	9.00	0.00
6,700.0	44.49	268.93	6,628.0	71.6	167.6	-168.4	9.00	9.00	0.00
6,750.0	48.99	268.93	6,662.3	70.9	131.2	-132.0	9.00	9.00	0.00
6,800.0	53.49	268.93	6,693.6	70.2	92.2	-93.0	9.00	9.00	0.00
6,850.0	57.99	268.93	6,721.7	69.4	50.9	-51.7	9.00	9.00	0.00
6,900.0	62.49	268.93	6,746.5	68.6	7.5	-8.3	9.00	9.00	0.00
6,950.0	66.99	268.93	6,767.8	67.8	-37.7	36.9	9.00	9.00	0.00
7,000.0	71.49	268.93	6,785.6	66.9	-84.4	83.6	9.00	9.00	0.00
7,050.0	75.99	268.93	6,799.6	66.0	-132.4	131.6	9.00	9.00	0.00
7,100.0	80.49	268.93	6,809.7	65.1	-181.3	180.5	9.00	9.00	0.00
7,150.0	84.99	268.93	6,816.1	64.2	-230.9	230.1	9.00	9.00	0.00
7,200.0	89.49	268.93	6,818.5	63.3	-280.8	280.0	9.00	9.00	0.00
7,202.3	89.70	268.93	6,818.5	63.2	-283.2	282.4	9.00	9.00	0.00
7,250.0	89.70	268.93	6,818.7	62.3	-330.8	330.0	0.00	0.00	0.00
7,300.0	89.70	268.93	6,819.0	61.4	-380.8	380.0	0.00	0.00	0.00
7,350.0	89.70	268.93	6,819.3	60.5	-430.8	430.0	0.00	0.00	0.00
7,400.0	89.70	268.93	6,819.5	59.5	-480.8	480.0	0.00	0.00	0.00
7,450.0	89.70	268.93	6,819.8	58.6	-530.8	530.0	0.00	0.00	0.00
7,500.0	89.70	268.93	6,820.0	57.7	-580.8	580.0	0.00	0.00	0.00
7,550.0	89.70	268.93	6,820.3	56.7	-630.8	630.0	0.00	0.00	0.00
7,600.0	89.70	268.93	6,820.6	55.8	-680.8	680.0	0.00	0.00	0.00
7,650.0	89.70	268.93	6,820.8	54.9	-730.7	730.0	0.00	0.00	0.00
7,700.0	89.70	268.93	6,821.1	53.9	-780.7	780.0	0.00	0.00	0.00
7,750.0	89.70	268.93	6,821.4	53.0	-830.7	830.0	0.00	0.00	0.00
7,800.0	89.70	268.93	6,821.6	52.1	-880.7	880.0	0.00	0.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,850.0	89.70	268.93	6,821.9	51.1	-930.7	930.0	0.00	0.00	0.00
7,900.0	89.70	268.93	6,822.1	50.2	-980.7	980.0	0.00	0.00	0.00
7,950.0	89.70	268.93	6,822.4	49.3	-1,030.7	1,030.0	0.00	0.00	0.00
8,000.0	89.70	268.93	6,822.7	48.4	-1,080.7	1,080.0	0.00	0.00	0.00
8,050.0	89.70	268.93	6,822.9	47.4	-1,130.7	1,130.0	0.00	0.00	0.00
8,100.0	89.70	268.93	6,823.2	46.5	-1,180.7	1,180.0	0.00	0.00	0.00
8,150.0	89.70	268.93	6,823.5	45.6	-1,230.7	1,230.0	0.00	0.00	0.00
8,200.0	89.70	268.93	6,823.7	44.6	-1,280.6	1,280.0	0.00	0.00	0.00
8,250.0	89.70	268.93	6,824.0	43.7	-1,330.6	1,330.0	0.00	0.00	0.00
8,300.0	89.70	268.93	6,824.2	42.8	-1,380.6	1,380.0	0.00	0.00	0.00
8,350.0	89.70	268.93	6,824.5	41.8	-1,430.6	1,430.0	0.00	0.00	0.00
8,400.0	89.70	268.93	6,824.8	40.9	-1,480.6	1,480.0	0.00	0.00	0.00
8,450.0	89.70	268.93	6,825.0	40.0	-1,530.6	1,530.0	0.00	0.00	0.00
8,500.0	89.70	268.93	6,825.3	39.0	-1,580.6	1,580.0	0.00	0.00	0.00
8,550.0	89.70	268.93	6,825.5	38.1	-1,630.6	1,630.0	0.00	0.00	0.00
8,600.0	89.70	268.93	6,825.8	37.2	-1,680.6	1,680.0	0.00	0.00	0.00
8,650.0	89.70	268.93	6,826.1	36.2	-1,730.6	1,730.0	0.00	0.00	0.00
8,700.0	89.70	268.93	6,826.3	35.3	-1,780.5	1,780.0	0.00	0.00	0.00
8,750.0	89.70	268.93	6,826.6	34.4	-1,830.5	1,830.0	0.00	0.00	0.00
8,800.0	89.70	268.93	6,826.9	33.5	-1,880.5	1,880.0	0.00	0.00	0.00
8,850.0	89.70	268.93	6,827.1	32.5	-1,930.5	1,930.0	0.00	0.00	0.00
8,900.0	89.70	268.93	6,827.4	31.6	-1,980.5	1,980.0	0.00	0.00	0.00
8,950.0	89.70	268.93	6,827.6	30.7	-2,030.5	2,030.0	0.00	0.00	0.00
9,000.0	89.70	268.93	6,827.9	29.7	-2,080.5	2,080.0	0.00	0.00	0.00
9,050.0	89.70	268.93	6,828.2	28.8	-2,130.5	2,130.0	0.00	0.00	0.00
9,100.0	89.70	268.93	6,828.4	27.9	-2,180.5	2,180.0	0.00	0.00	0.00
9,150.0	89.70	268.93	6,828.7	26.9	-2,230.5	2,230.0	0.00	0.00	0.00
9,200.0	89.70	268.93	6,828.9	26.0	-2,280.5	2,280.0	0.00	0.00	0.00
9,250.0	89.70	268.93	6,829.2	25.1	-2,330.4	2,330.0	0.00	0.00	0.00
9,300.0	89.70	268.93	6,829.5	24.1	-2,380.4	2,380.0	0.00	0.00	0.00
9,350.0	89.70	268.93	6,829.7	23.2	-2,430.4	2,430.0	0.00	0.00	0.00
9,400.0	89.70	268.93	6,830.0	22.3	-2,480.4	2,480.0	0.00	0.00	0.00
9,450.0	89.70	268.93	6,830.3	21.3	-2,530.4	2,530.0	0.00	0.00	0.00
9,500.0	89.70	268.93	6,830.5	20.4	-2,580.4	2,580.0	0.00	0.00	0.00
9,550.0	89.70	268.93	6,830.8	19.5	-2,630.4	2,630.0	0.00	0.00	0.00
9,600.0	89.70	268.93	6,831.0	18.6	-2,680.4	2,680.0	0.00	0.00	0.00
9,650.0	89.70	268.93	6,831.3	17.6	-2,730.4	2,730.0	0.00	0.00	0.00
9,700.0	89.70	268.93	6,831.6	16.7	-2,780.4	2,780.0	0.00	0.00	0.00
9,750.0	89.70	268.93	6,831.8	15.8	-2,830.4	2,830.0	0.00	0.00	0.00
9,800.0	89.70	268.93	6,832.1	14.8	-2,880.3	2,880.0	0.00	0.00	0.00
9,850.0	89.70	268.93	6,832.4	13.9	-2,930.3	2,930.0	0.00	0.00	0.00
9,900.0	89.70	268.93	6,832.6	13.0	-2,980.3	2,980.0	0.00	0.00	0.00
9,950.0	89.70	268.93	6,832.9	12.0	-3,030.3	3,030.0	0.00	0.00	0.00
10,000.0	89.70	268.93	6,833.1	11.1	-3,080.3	3,079.9	0.00	0.00	0.00
10,050.0	89.70	268.93	6,833.4	10.2	-3,130.3	3,129.9	0.00	0.00	0.00
10,100.0	89.70	268.93	6,833.7	9.2	-3,180.3	3,179.9	0.00	0.00	0.00
10,150.0	89.70	268.93	6,833.9	8.3	-3,230.3	3,229.9	0.00	0.00	0.00
10,200.0	89.70	268.93	6,834.2	7.4	-3,280.3	3,279.9	0.00	0.00	0.00
10,250.0	89.70	268.93	6,834.4	6.5	-3,330.3	3,329.9	0.00	0.00	0.00
10,300.0	89.70	268.93	6,834.7	5.5	-3,380.3	3,379.9	0.00	0.00	0.00
10,350.0	89.70	268.93	6,835.0	4.6	-3,430.2	3,429.9	0.00	0.00	0.00
10,400.0	89.70	268.93	6,835.2	3.7	-3,480.2	3,479.9	0.00	0.00	0.00
10,450.0	89.70	268.93	6,835.5	2.7	-3,530.2	3,529.9	0.00	0.00	0.00
10,500.0	89.70	268.93	6,835.8	1.8	-3,580.2	3,579.9	0.00	0.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,550.0	89.70	268.93	6,836.0	0.9	-3,630.2	3,629.9	0.00	0.00	0.00
10,600.0	89.70	268.93	6,836.3	-0.1	-3,680.2	3,679.9	0.00	0.00	0.00
10,650.0	89.70	268.93	6,836.5	-1.0	-3,730.2	3,729.9	0.00	0.00	0.00
10,700.0	89.70	268.93	6,836.8	-1.9	-3,780.2	3,779.9	0.00	0.00	0.00
10,750.0	89.70	268.93	6,837.1	-2.9	-3,830.2	3,829.9	0.00	0.00	0.00
10,800.0	89.70	268.93	6,837.3	-3.8	-3,880.2	3,879.9	0.00	0.00	0.00
10,850.0	89.70	268.93	6,837.6	-4.7	-3,930.1	3,929.9	0.00	0.00	0.00
10,900.0	89.70	268.93	6,837.9	-5.7	-3,980.1	3,979.9	0.00	0.00	0.00
10,950.0	89.70	268.93	6,838.1	-6.6	-4,030.1	4,029.9	0.00	0.00	0.00
11,000.0	89.70	268.93	6,838.4	-7.5	-4,080.1	4,079.9	0.00	0.00	0.00
11,050.0	89.70	268.93	6,838.6	-8.4	-4,130.1	4,129.9	0.00	0.00	0.00
11,100.0	89.70	268.93	6,838.9	-9.4	-4,180.1	4,179.9	0.00	0.00	0.00
11,150.0	89.70	268.93	6,839.2	-10.3	-4,230.1	4,229.9	0.00	0.00	0.00
11,200.0	89.70	268.93	6,839.4	-11.2	-4,280.1	4,279.9	0.00	0.00	0.00
11,250.0	89.70	268.93	6,839.7	-12.2	-4,330.1	4,329.9	0.00	0.00	0.00
11,300.0	89.70	268.93	6,839.9	-13.1	-4,380.1	4,379.9	0.00	0.00	0.00
11,350.0	89.70	268.93	6,840.2	-14.0	-4,430.1	4,429.9	0.00	0.00	0.00
11,400.0	89.70	268.93	6,840.5	-15.0	-4,480.0	4,479.9	0.00	0.00	0.00
11,450.0	89.70	268.93	6,840.7	-15.9	-4,530.0	4,529.9	0.00	0.00	0.00
11,500.0	89.70	268.93	6,841.0	-16.8	-4,580.0	4,579.9	0.00	0.00	0.00
11,550.0	89.70	268.93	6,841.3	-17.8	-4,630.0	4,629.9	0.00	0.00	0.00
11,600.0	89.70	268.93	6,841.5	-18.7	-4,680.0	4,679.9	0.00	0.00	0.00
11,650.0	89.70	268.93	6,841.8	-19.6	-4,730.0	4,729.9	0.00	0.00	0.00
11,700.0	89.70	268.93	6,842.0	-20.6	-4,780.0	4,779.9	0.00	0.00	0.00
11,750.0	89.70	268.93	6,842.3	-21.5	-4,830.0	4,829.9	0.00	0.00	0.00
11,800.0	89.70	268.93	6,842.6	-22.4	-4,880.0	4,879.9	0.00	0.00	0.00
11,850.0	89.70	268.93	6,842.8	-23.3	-4,930.0	4,929.9	0.00	0.00	0.00
11,900.0	89.70	268.93	6,843.1	-24.3	-4,980.0	4,979.9	0.00	0.00	0.00
11,950.0	89.70	268.93	6,843.3	-25.2	-5,029.9	5,029.9	0.00	0.00	0.00
12,000.0	89.70	268.93	6,843.6	-26.1	-5,079.9	5,079.9	0.00	0.00	0.00
12,050.0	89.70	268.93	6,843.9	-27.1	-5,129.9	5,129.9	0.00	0.00	0.00
12,100.0	89.70	268.93	6,844.1	-28.0	-5,179.9	5,179.9	0.00	0.00	0.00
12,150.0	89.70	268.93	6,844.4	-28.9	-5,229.9	5,229.9	0.00	0.00	0.00
12,200.0	89.70	268.93	6,844.7	-29.9	-5,279.9	5,279.9	0.00	0.00	0.00
12,250.0	89.70	268.93	6,844.9	-30.8	-5,329.9	5,329.9	0.00	0.00	0.00
12,300.0	89.70	268.93	6,845.2	-31.7	-5,379.9	5,379.9	0.00	0.00	0.00
12,350.0	89.70	268.93	6,845.4	-32.7	-5,429.9	5,429.9	0.00	0.00	0.00
12,400.0	89.70	268.93	6,845.7	-33.6	-5,479.9	5,479.9	0.00	0.00	0.00
12,450.0	89.70	268.93	6,846.0	-34.5	-5,529.8	5,529.9	0.00	0.00	0.00
12,500.0	89.70	268.93	6,846.2	-35.4	-5,579.8	5,579.9	0.00	0.00	0.00
12,550.0	89.70	268.93	6,846.5	-36.4	-5,629.8	5,629.9	0.00	0.00	0.00
12,600.0	89.70	268.93	6,846.8	-37.3	-5,679.8	5,679.9	0.00	0.00	0.00
12,650.0	89.70	268.93	6,847.0	-38.2	-5,729.8	5,729.9	0.00	0.00	0.00
12,700.0	89.70	268.93	6,847.3	-39.2	-5,779.8	5,779.9	0.00	0.00	0.00
12,750.0	89.70	268.93	6,847.5	-40.1	-5,829.8	5,829.9	0.00	0.00	0.00
12,800.0	89.70	268.93	6,847.8	-41.0	-5,879.8	5,879.9	0.00	0.00	0.00
12,850.0	89.70	268.93	6,848.1	-42.0	-5,929.8	5,929.8	0.00	0.00	0.00
12,900.0	89.70	268.93	6,848.3	-42.9	-5,979.8	5,979.8	0.00	0.00	0.00
12,950.0	89.70	268.93	6,848.6	-43.8	-6,029.8	6,029.8	0.00	0.00	0.00
13,000.0	89.70	268.93	6,848.8	-44.8	-6,079.7	6,079.8	0.00	0.00	0.00
13,050.0	89.70	268.93	6,849.1	-45.7	-6,129.7	6,129.8	0.00	0.00	0.00
13,100.0	89.70	268.93	6,849.4	-46.6	-6,179.7	6,179.8	0.00	0.00	0.00
13,150.0	89.70	268.93	6,849.6	-47.6	-6,229.7	6,229.8	0.00	0.00	0.00
13,200.0	89.70	268.93	6,849.9	-48.5	-6,279.7	6,279.8	0.00	0.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,250.0	89.70	268.93	6,850.2	-49.4	-6,329.7	6,329.8	0.00	0.00	0.00
13,300.0	89.70	268.93	6,850.4	-50.3	-6,379.7	6,379.8	0.00	0.00	0.00
13,350.0	89.70	268.93	6,850.7	-51.3	-6,429.7	6,429.8	0.00	0.00	0.00
13,400.0	89.70	268.93	6,850.9	-52.2	-6,479.7	6,479.8	0.00	0.00	0.00
13,450.0	89.70	268.93	6,851.2	-53.1	-6,529.7	6,529.8	0.00	0.00	0.00
13,500.0	89.70	268.93	6,851.5	-54.1	-6,579.7	6,579.8	0.00	0.00	0.00
13,550.0	89.70	268.93	6,851.7	-55.0	-6,629.6	6,629.8	0.00	0.00	0.00
13,600.0	89.70	268.93	6,852.0	-55.9	-6,679.6	6,679.8	0.00	0.00	0.00
13,650.0	89.70	268.93	6,852.2	-56.9	-6,729.6	6,729.8	0.00	0.00	0.00
13,700.0	89.70	268.93	6,852.5	-57.8	-6,779.6	6,779.8	0.00	0.00	0.00
13,750.0	89.70	268.93	6,852.8	-58.7	-6,829.6	6,829.8	0.00	0.00	0.00
13,800.0	89.70	268.93	6,853.0	-59.7	-6,879.6	6,879.8	0.00	0.00	0.00
13,850.0	89.70	268.93	6,853.3	-60.6	-6,929.6	6,929.8	0.00	0.00	0.00
13,900.0	89.70	268.93	6,853.6	-61.5	-6,979.6	6,979.8	0.00	0.00	0.00
13,950.0	89.70	268.93	6,853.8	-62.5	-7,029.6	7,029.8	0.00	0.00	0.00
14,000.0	89.70	268.93	6,854.1	-63.4	-7,079.6	7,079.8	0.00	0.00	0.00
14,050.0	89.70	268.93	6,854.3	-64.3	-7,129.5	7,129.8	0.00	0.00	0.00
14,100.0	89.70	268.93	6,854.6	-65.2	-7,179.5	7,179.8	0.00	0.00	0.00
14,150.0	89.70	268.93	6,854.9	-66.2	-7,229.5	7,229.8	0.00	0.00	0.00
14,200.0	89.70	268.93	6,855.1	-67.1	-7,279.5	7,279.8	0.00	0.00	0.00
14,250.0	89.70	268.93	6,855.4	-68.0	-7,329.5	7,329.8	0.00	0.00	0.00
14,300.0	89.70	268.93	6,855.7	-69.0	-7,379.5	7,379.8	0.00	0.00	0.00
14,350.0	89.70	268.93	6,855.9	-69.9	-7,429.5	7,429.8	0.00	0.00	0.00
14,400.0	89.70	268.93	6,856.2	-70.8	-7,479.5	7,479.8	0.00	0.00	0.00
14,450.0	89.70	268.93	6,856.4	-71.8	-7,529.5	7,529.8	0.00	0.00	0.00
14,500.0	89.70	268.93	6,856.7	-72.7	-7,579.5	7,579.8	0.00	0.00	0.00
14,550.0	89.70	268.93	6,857.0	-73.6	-7,629.5	7,629.8	0.00	0.00	0.00
14,600.0	89.70	268.93	6,857.2	-74.6	-7,679.4	7,679.8	0.00	0.00	0.00
14,650.0	89.70	268.93	6,857.5	-75.5	-7,729.4	7,729.8	0.00	0.00	0.00
14,700.0	89.70	268.93	6,857.7	-76.4	-7,779.4	7,779.8	0.00	0.00	0.00
14,750.0	89.70	268.93	6,858.0	-77.3	-7,829.4	7,829.8	0.00	0.00	0.00
14,800.0	89.70	268.93	6,858.3	-78.3	-7,879.4	7,879.8	0.00	0.00	0.00
14,850.0	89.70	268.93	6,858.5	-79.2	-7,929.4	7,929.8	0.00	0.00	0.00
14,900.0	89.70	268.93	6,858.8	-80.1	-7,979.4	7,979.8	0.00	0.00	0.00
14,950.0	89.70	268.93	6,859.1	-81.1	-8,029.4	8,029.8	0.00	0.00	0.00
15,000.0	89.70	268.93	6,859.3	-82.0	-8,079.4	8,079.8	0.00	0.00	0.00
15,050.0	89.70	268.93	6,859.6	-82.9	-8,129.4	8,129.8	0.00	0.00	0.00
15,100.0	89.70	268.93	6,859.8	-83.9	-8,179.4	8,179.8	0.00	0.00	0.00
15,150.0	89.70	268.93	6,860.1	-84.8	-8,229.3	8,229.8	0.00	0.00	0.00
15,200.0	89.70	268.93	6,860.4	-85.7	-8,279.3	8,279.8	0.00	0.00	0.00
15,250.0	89.70	268.93	6,860.6	-86.7	-8,329.3	8,329.8	0.00	0.00	0.00
15,300.0	89.70	268.93	6,860.9	-87.6	-8,379.3	8,379.8	0.00	0.00	0.00
15,350.0	89.70	268.93	6,861.2	-88.5	-8,429.3	8,429.8	0.00	0.00	0.00
15,400.0	89.70	268.93	6,861.4	-89.5	-8,479.3	8,479.8	0.00	0.00	0.00
15,450.0	89.70	268.93	6,861.7	-90.4	-8,529.3	8,529.8	0.00	0.00	0.00
15,500.0	89.70	268.93	6,861.9	-91.3	-8,579.3	8,579.8	0.00	0.00	0.00
15,550.0	89.70	268.93	6,862.2	-92.2	-8,629.3	8,629.8	0.00	0.00	0.00
15,600.0	89.70	268.93	6,862.5	-93.2	-8,679.3	8,679.8	0.00	0.00	0.00
15,650.0	89.70	268.93	6,862.7	-94.1	-8,729.2	8,729.7	0.00	0.00	0.00
15,700.0	89.70	268.93	6,863.0	-95.0	-8,779.2	8,779.7	0.00	0.00	0.00
15,750.0	89.70	268.93	6,863.2	-96.0	-8,829.2	8,829.7	0.00	0.00	0.00
15,800.0	89.70	268.93	6,863.5	-96.9	-8,879.2	8,879.7	0.00	0.00	0.00
15,850.0	89.70	268.93	6,863.8	-97.8	-8,929.2	8,929.7	0.00	0.00	0.00
15,900.0	89.70	268.93	6,864.0	-98.8	-8,979.2	8,979.7	0.00	0.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,950.0	89.70	268.93	6,864.3	-99.7	-9,029.2	9,029.7	0.00	0.00	0.00
16,000.0	89.70	268.93	6,864.6	-100.6	-9,079.2	9,079.7	0.00	0.00	0.00
16,050.0	89.70	268.93	6,864.8	-101.6	-9,129.2	9,129.7	0.00	0.00	0.00
16,100.0	89.70	268.93	6,865.1	-102.5	-9,179.2	9,179.7	0.00	0.00	0.00
16,150.0	89.70	268.93	6,865.3	-103.4	-9,229.2	9,229.7	0.00	0.00	0.00
16,200.0	89.70	268.93	6,865.6	-104.4	-9,279.1	9,279.7	0.00	0.00	0.00
16,250.0	89.70	268.93	6,865.9	-105.3	-9,329.1	9,329.7	0.00	0.00	0.00
16,300.0	89.70	268.93	6,866.1	-106.2	-9,379.1	9,379.7	0.00	0.00	0.00
16,350.0	89.70	268.93	6,866.4	-107.1	-9,429.1	9,429.7	0.00	0.00	0.00
16,400.0	89.70	268.93	6,866.6	-108.1	-9,479.1	9,479.7	0.00	0.00	0.00
16,450.0	89.70	268.93	6,866.9	-109.0	-9,529.1	9,529.7	0.00	0.00	0.00
16,500.0	89.70	268.93	6,867.2	-109.9	-9,579.1	9,579.7	0.00	0.00	0.00
16,550.0	89.70	268.93	6,867.4	-110.9	-9,629.1	9,629.7	0.00	0.00	0.00
16,600.0	89.70	268.93	6,867.7	-111.8	-9,679.1	9,679.7	0.00	0.00	0.00
16,650.0	89.70	268.93	6,868.0	-112.7	-9,729.1	9,729.7	0.00	0.00	0.00
16,700.0	89.70	268.93	6,868.2	-113.7	-9,779.1	9,779.7	0.00	0.00	0.00
16,750.0	89.70	268.93	6,868.5	-114.6	-9,829.0	9,829.7	0.00	0.00	0.00
16,800.0	89.70	268.93	6,868.7	-115.5	-9,879.0	9,879.7	0.00	0.00	0.00
16,850.0	89.70	268.93	6,869.0	-116.5	-9,929.0	9,929.7	0.00	0.00	0.00
16,900.0	89.70	268.93	6,869.3	-117.4	-9,979.0	9,979.7	0.00	0.00	0.00
16,950.0	89.70	268.93	6,869.5	-118.3	-10,029.0	10,029.7	0.00	0.00	0.00
17,000.0	89.70	268.93	6,869.8	-119.2	-10,079.0	10,079.7	0.00	0.00	0.00
17,050.0	89.70	268.93	6,870.1	-120.2	-10,129.0	10,129.7	0.00	0.00	0.00
17,100.0	89.70	268.93	6,870.3	-121.1	-10,179.0	10,179.7	0.00	0.00	0.00
17,150.0	89.70	268.93	6,870.6	-122.0	-10,229.0	10,229.7	0.00	0.00	0.00
17,200.0	89.70	268.93	6,870.8	-123.0	-10,279.0	10,279.7	0.00	0.00	0.00
17,250.0	89.70	268.93	6,871.1	-123.9	-10,328.9	10,329.7	0.00	0.00	0.00
17,300.0	89.70	268.93	6,871.4	-124.8	-10,378.9	10,379.7	0.00	0.00	0.00
17,326.6	89.70	268.93	6,871.5	-125.3	-10,405.5	10,406.3	0.00	0.00	0.00

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
Lapp A15-620 Unit Line	0.00	0.00	3.0	-1,322.3	-10,924.0	1,419,996.17	3,265,451.60	40.482370	-104.545710
- plan misses target center by 6991.3ft at 17326.6ft MD (6871.5 TVD, -125.3 N, -10405.5 E)									
- Polygon									
Point 1			3.0	0.0	0.0	1,419,996.17	3,265,451.60		
Point 2			3.0	21.5	1,318.4	1,420,017.67	3,266,769.95		
Point 3			3.0	43.1	2,636.9	1,420,039.27	3,268,088.40		
Point 4			3.0	64.7	3,952.5	1,420,060.87	3,269,403.95		
Point 5			3.0	86.4	5,268.1	1,420,082.57	3,270,719.50		
Point 6			3.0	111.8	6,583.7	1,420,107.97	3,272,035.06		
Point 7			3.0	137.3	7,899.3	1,420,133.47	3,273,350.61		
Point 8			3.0	166.5	9,217.7	1,420,162.67	3,274,668.96		
Point 9			3.0	192.2	10,536.1	1,420,188.37	3,275,987.31		
Point 10			3.0	214.3	11,860.0	1,420,210.47	3,277,311.16		
Point 11			3.0	-1,115.4	11,875.0	1,418,880.82	3,277,326.16		
Point 12			3.0	-1,137.5	10,550.9	1,418,858.72	3,276,002.11		
Point 13			3.0	-1,166.8	9,232.5	1,418,829.42	3,274,683.76		
Point 14			3.0	-1,192.4	7,914.1	1,418,803.82	3,273,365.41		
Point 15			3.0	-1,217.8	6,601.2	1,418,778.42	3,272,052.55		
Point 16			3.0	-1,246.9	5,285.6	1,418,749.32	3,270,737.00		
Point 17			3.0	-1,272.2	3,969.9	1,418,724.02	3,269,421.35		
Point 18			3.0	-1,297.5	2,654.2	1,418,698.72	3,268,105.70		
Point 19			3.0	-1,315.4	1,338.5	1,418,680.82	3,266,790.05		
Point 20			3.0	-1,336.9	22.7	1,418,659.32	3,265,474.30		
Lapp A15-648 BHL 2525	0.00	0.00	6,871.5	-125.3	-10,405.5	1,421,193.10	3,265,970.03	40.485640	-104.543800
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
436.0	436.0	PIERRE		0.00		
456.0	456.0	UPPER PIERRE AQUIFER TOP		0.00		
1,498.0	1,498.0	UPPER PIERRE AQUIFER BASE		0.00		
3,523.4	3,516.0	PARKMAN		0.00		
4,067.7	4,055.0	SUSSEX		0.00		
4,844.4	4,824.0	SHANNON		0.00		
5,916.8	5,893.0	TEEPEE BUTTES		0.00		
6,592.1	6,545.0	SHARON SPRINGS		0.00		
6,614.3	6,563.0	NIO A CHALK		0.00		
6,638.3	6,582.0	NIO A MARL		0.00		
6,755.7	6,666.0	NIO B CHALK		0.00		
6,807.5	6,698.0	NIO B MARL		0.00		
6,882.1	6,738.0	NIO C CHALK		0.00		
6,977.4	6,778.0	NIO C MARL		0.00		
7,079.3	6,806.0	NIO D CHALK		0.00		
8,827.7	6,827.0	FT. HAYES		0.00		
13,411.4	6,851.0	CODELL		0.00		
16,276.2	6,866.0	CARLILE		0.00		

Planning Report

Database:	EDM01P	Local Co-ordinate Reference:	Well Lapp A15-648
Company:	Northern Region Drilling - Working	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Project:	Wattenberg Field	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site:	A (06N-64W)	North Reference:	Grid
Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,500.0	2,500.0	0.0	0.0	KOP - Start Build 2.00
5,062.4	5,039.9	69.1	322.5	Start Drop -2.00
6,205.7	6,181.9	75.0	350.0	KOP #2 - Start Build 9.00
7,150.0	6,816.1	64.2	-230.9	TPZ
7,202.3	6,818.5	63.2	-283.1	Landing at 7202.3
17,326.6	6,871.5	-125.3	-10,405.5	TD at 17326.6

Northern Region Drilling - Working

**Wattenberg Field
A (06N-64W)
Lapp A15-648**

**Original Drilling
APD - Rev 2**

Anticollision Summary Report

26 May, 2016

Anticollision Summary Report

Company:	Northern Region Drilling - Working	Local Co-ordinate Reference:	Well Lapp A15-648
Project:	Wattenberg Field	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Reference Site:	A (06N-64W)	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDM01P
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference	APD - Rev 2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	5/26/2016		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,326.5	APD - Rev 2 (Original Drilling)	MWD	MWD - Standard

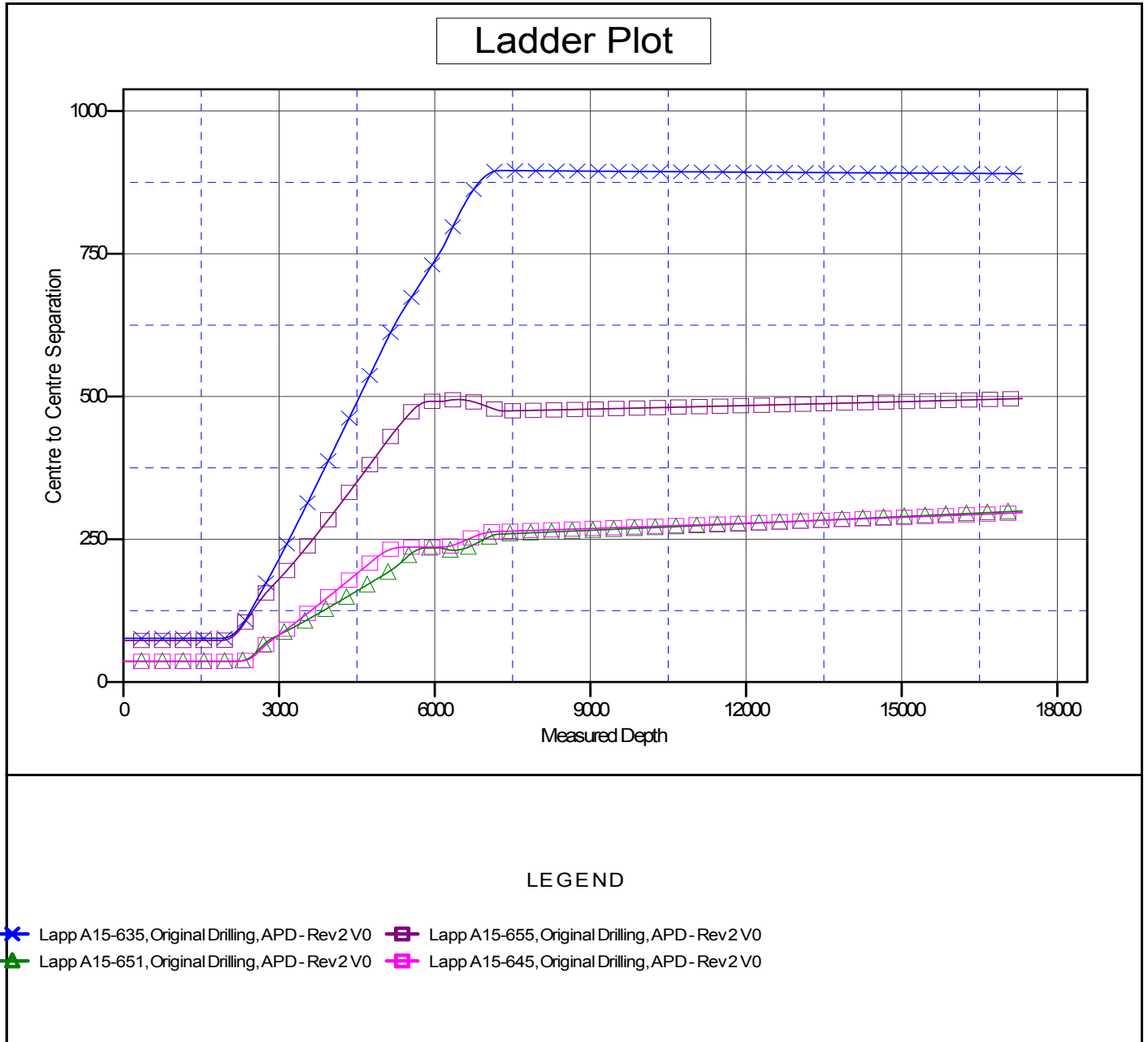
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A (06N-64W)						
Lapp A15-635 - Original Drilling - APD - Rev 2	1,900.0	1,900.0	76.5	68.2	9.260	CC, ES
Lapp A15-635 - Original Drilling - APD - Rev 2	17,326.6	17,184.7	890.4	456.7	2.053	SF
Lapp A15-645 - Original Drilling - APD - Rev 2	2,200.0	2,200.0	36.4	26.8	3.791	CC
Lapp A15-645 - Original Drilling - APD - Rev 2	17,326.6	17,207.7	296.6	-199.2	0.598	Level 1, ES, SF
Lapp A15-651 - Original Drilling - APD - Rev 2	2,183.0	2,184.0	36.4	26.9	3.820	CC
Lapp A15-651 - Original Drilling - APD - Rev 2	17,326.6	17,265.4	299.6	-200.7	0.599	Level 1, ES, SF
Lapp A15-655 - Original Drilling - APD - Rev 2	1,900.0	1,900.0	72.9	64.6	8.819	CC
Lapp A15-655 - Original Drilling - APD - Rev 2	17,326.6	17,139.1	496.5	-81.2	0.859	Level 1, ES, SF

Anticollision Summary Report

Company:	Northern Region Drilling - Working	Local Co-ordinate Reference:	Well Lapp A15-648
Project:	Wattenberg Field	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Reference Site:	A (06N-64W)	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDM01P
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4692.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Lapp A15-648
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.64°



Anticollision Summary Report

Company:	Northern Region Drilling - Working	Local Co-ordinate Reference:	Well Lapp A15-648
Project:	Wattenberg Field	TVD Reference:	WELL @ 4692.0ft (Original Well Elev)
Reference Site:	A (06N-64W)	MD Reference:	WELL @ 4692.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Lapp A15-648	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDM01P
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4692.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000

Coordinates are relative to: Lapp A15-648
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.64°

