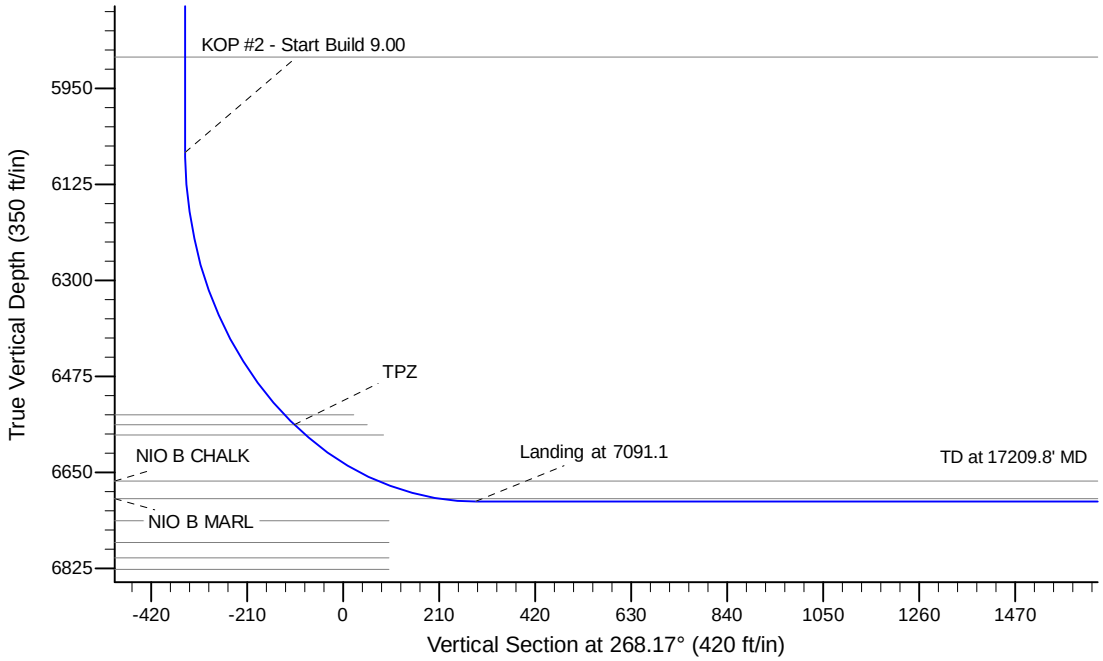
Project: Wattenberg Field
Site: A (Sec.13-T06N-R63W) Weld County, CO
Well: Lapp A15-645
Wellbore: Original Drilling
Design: APD - Rev 2

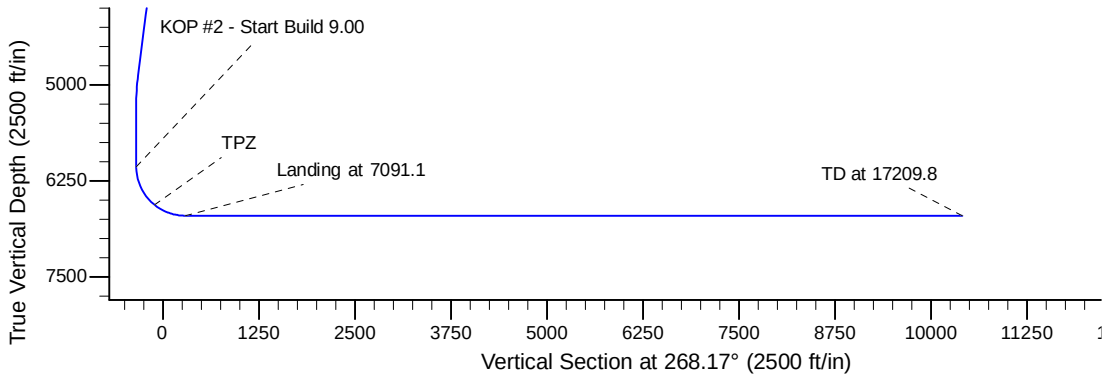
Northern Region Drilling - Working

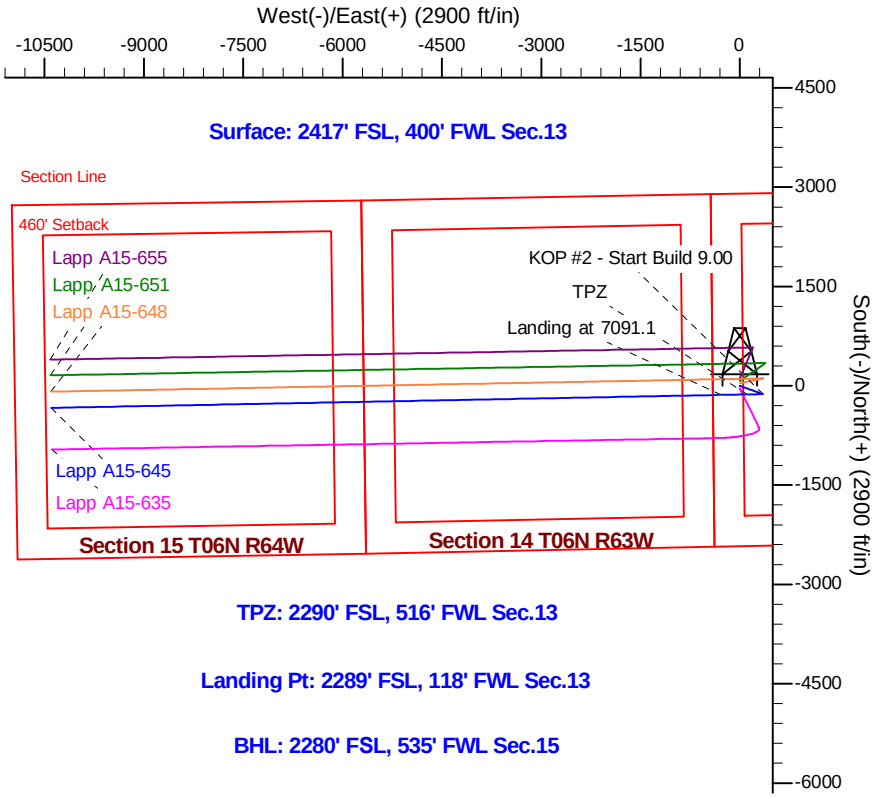
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

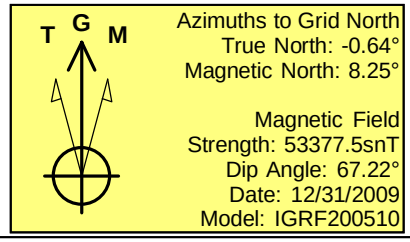
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2200.0	0.00	0.00	2200.0	0.0	0.0	0.00	0.00	0.0	
3	2600.9	8.02	109.65	2599.6	-9.4	26.4	2.00	109.65	-26.1	
4	4863.8	8.02	109.65	4840.4	-115.6	323.6	0.00	0.00	-319.8	
5	5264.7	0.00	0.00	5240.0	-125.0	350.0	2.00	180.00	-345.8	
6	6091.1	0.00	0.00	6066.4	-125.0	350.0	0.00	0.00	-345.8	
7	7091.1	90.00	268.89	6703.0	-137.3	-286.5	9.00	268.89	290.7	
8	17209.8	90.00	268.89	6703.0	-333.0	-10403.3	0.00	0.00	10408.6	Lapp A15-645 BHL 2280'FSL, 535'FWL









WELL DETAILS: Lapp A15-645

Ground Level: 4668.0

		Northing	Easting	Latitude	Longitude
0.0	0.0	1421282.00	3276375.59	40.485570	-104.506390

Plan: APD - Rev 2 (Lapp A15-645/Original Drilling)

Created By: Shailey Jewell Date: 14:16, May 26 2016

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

Northern Region Drilling - Working

Wattenberg Field
A (06N-64W)
Lapp A15-645

Original Drilling

Plan: APD - Rev 2

Standard Planning Report

26 May, 2016

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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 A15-645					
Well Position	**+N/-S**	13,204.6 ft	**Northing:**	1,421,282.00 usft	**Latitude:**	40.485570
	+E/-W	-242.6 ft	**Easting:**	3,276,375.60 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	268.17

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	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,600.9	8.02	109.65	2,599.6	-9.4	26.4	2.00	2.00	0.00	109.65	
4,863.8	8.02	109.65	4,840.4	-115.6	323.6	0.00	0.00	0.00	0.00	
5,264.7	0.00	0.00	5,240.0	-125.0	350.0	2.00	-2.00	0.00	180.00	
6,091.1	0.00	0.00	6,066.4	-125.0	350.0	0.00	0.00	0.00	0.00	
7,091.1	90.00	268.89	6,703.0	-137.3	-286.5	9.00	9.00	0.00	268.89	
17,209.8	90.00	268.89	6,703.0	-333.0	-10,403.3	0.00	0.00	0.00	0.00	Lapp A15-645 BHL 22

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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	1.00	109.65	2,250.0	-0.1	0.4	-0.4	2.00	2.00	0.00
2,300.0	2.00	109.65	2,300.0	-0.6	1.6	-1.6	2.00	2.00	0.00
2,350.0	3.00	109.65	2,349.9	-1.3	3.7	-3.7	2.00	2.00	0.00
2,400.0	4.00	109.65	2,399.8	-2.3	6.6	-6.5	2.00	2.00	0.00
2,450.0	5.00	109.65	2,449.7	-3.7	10.3	-10.1	2.00	2.00	0.00
2,500.0	6.00	109.65	2,499.5	-5.3	14.8	-14.6	2.00	2.00	0.00
2,550.0	7.00	109.65	2,549.1	-7.2	20.1	-19.9	2.00	2.00	0.00
2,600.0	8.00	109.65	2,598.7	-9.4	26.3	-25.9	2.00	2.00	0.00
2,600.9	8.02	109.65	2,599.6	-9.4	26.4	-26.1	2.00	2.00	0.00

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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)
2,650.0	8.02	109.65	2,648.2	-11.7	32.8	-32.4	0.00	0.00	0.00
2,700.0	8.02	109.65	2,697.7	-14.1	39.4	-38.9	0.00	0.00	0.00
2,750.0	8.02	109.65	2,747.2	-16.4	46.0	-45.4	0.00	0.00	0.00
2,800.0	8.02	109.65	2,796.7	-18.8	52.5	-51.9	0.00	0.00	0.00
2,850.0	8.02	109.65	2,846.3	-21.1	59.1	-58.4	0.00	0.00	0.00
2,900.0	8.02	109.65	2,895.8	-23.5	65.7	-64.9	0.00	0.00	0.00
2,950.0	8.02	109.65	2,945.3	-25.8	72.2	-71.4	0.00	0.00	0.00
3,000.0	8.02	109.65	2,994.8	-28.1	78.8	-77.9	0.00	0.00	0.00
3,050.0	8.02	109.65	3,044.3	-30.5	85.4	-84.3	0.00	0.00	0.00
3,100.0	8.02	109.65	3,093.8	-32.8	91.9	-90.8	0.00	0.00	0.00
3,150.0	8.02	109.65	3,143.3	-35.2	98.5	-97.3	0.00	0.00	0.00
3,200.0	8.02	109.65	3,192.8	-37.5	105.1	-103.8	0.00	0.00	0.00
3,250.0	8.02	109.65	3,242.3	-39.9	111.6	-110.3	0.00	0.00	0.00
3,300.0	8.02	109.65	3,291.9	-42.2	118.2	-116.8	0.00	0.00	0.00
3,350.0	8.02	109.65	3,341.4	-44.6	124.8	-123.3	0.00	0.00	0.00
3,400.0	8.02	109.65	3,390.9	-46.9	131.3	-129.8	0.00	0.00	0.00
3,450.0	8.02	109.65	3,440.4	-49.3	137.9	-136.3	0.00	0.00	0.00
3,500.0	8.02	109.65	3,489.9	-51.6	144.5	-142.8	0.00	0.00	0.00
3,550.0	8.02	109.65	3,539.4	-53.9	151.0	-149.2	0.00	0.00	0.00
3,600.0	8.02	109.65	3,588.9	-56.3	157.6	-155.7	0.00	0.00	0.00
3,650.0	8.02	109.65	3,638.4	-58.6	164.2	-162.2	0.00	0.00	0.00
3,700.0	8.02	109.65	3,687.9	-61.0	170.7	-168.7	0.00	0.00	0.00
3,750.0	8.02	109.65	3,737.5	-63.3	177.3	-175.2	0.00	0.00	0.00
3,800.0	8.02	109.65	3,787.0	-65.7	183.9	-181.7	0.00	0.00	0.00
3,850.0	8.02	109.65	3,836.5	-68.0	190.5	-188.2	0.00	0.00	0.00
3,900.0	8.02	109.65	3,886.0	-70.4	197.0	-194.7	0.00	0.00	0.00
3,950.0	8.02	109.65	3,935.5	-72.7	203.6	-201.2	0.00	0.00	0.00
4,000.0	8.02	109.65	3,985.0	-75.1	210.2	-207.6	0.00	0.00	0.00
4,050.0	8.02	109.65	4,034.5	-77.4	216.7	-214.1	0.00	0.00	0.00
4,100.0	8.02	109.65	4,084.0	-79.7	223.3	-220.6	0.00	0.00	0.00
4,150.0	8.02	109.65	4,133.5	-82.1	229.9	-227.1	0.00	0.00	0.00
4,200.0	8.02	109.65	4,183.1	-84.4	236.4	-233.6	0.00	0.00	0.00
4,250.0	8.02	109.65	4,232.6	-86.8	243.0	-240.1	0.00	0.00	0.00
4,300.0	8.02	109.65	4,282.1	-89.1	249.6	-246.6	0.00	0.00	0.00
4,350.0	8.02	109.65	4,331.6	-91.5	256.1	-253.1	0.00	0.00	0.00
4,400.0	8.02	109.65	4,381.1	-93.8	262.7	-259.6	0.00	0.00	0.00
4,450.0	8.02	109.65	4,430.6	-96.2	269.3	-266.1	0.00	0.00	0.00
4,500.0	8.02	109.65	4,480.1	-98.5	275.8	-272.5	0.00	0.00	0.00
4,550.0	8.02	109.65	4,529.6	-100.9	282.4	-279.0	0.00	0.00	0.00
4,600.0	8.02	109.65	4,579.2	-103.2	289.0	-285.5	0.00	0.00	0.00
4,650.0	8.02	109.65	4,628.7	-105.5	295.5	-292.0	0.00	0.00	0.00
4,700.0	8.02	109.65	4,678.2	-107.9	302.1	-298.5	0.00	0.00	0.00
4,750.0	8.02	109.65	4,727.7	-110.2	308.7	-305.0	0.00	0.00	0.00
4,800.0	8.02	109.65	4,777.2	-112.6	315.2	-311.5	0.00	0.00	0.00
4,850.0	8.02	109.65	4,826.7	-114.9	321.8	-318.0	0.00	0.00	0.00
4,863.8	8.02	109.65	4,840.4	-115.6	323.6	-319.8	0.00	0.00	0.00
4,900.0	7.29	109.65	4,876.2	-117.2	328.2	-324.2	2.00	-2.00	0.00
4,950.0	6.29	109.65	4,925.9	-119.2	333.7	-329.8	2.00	-2.00	0.00
5,000.0	5.29	109.65	4,975.6	-120.9	338.5	-334.4	2.00	-2.00	0.00
5,050.0	4.29	109.65	5,025.5	-122.3	342.4	-338.3	2.00	-2.00	0.00
5,100.0	3.29	109.65	5,075.4	-123.4	345.5	-341.4	2.00	-2.00	0.00
5,150.0	2.29	109.65	5,125.3	-124.2	347.8	-343.7	2.00	-2.00	0.00
5,200.0	1.29	109.65	5,175.3	-124.8	349.3	-345.1	2.00	-2.00	0.00
5,250.0	0.29	109.65	5,225.3	-125.0	350.0	-345.8	2.00	-2.00	0.00

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Well:	Lapp A15-645	**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)
5,264.7	0.00	0.00	5,240.0	-125.0	350.0	-345.8	2.00	-2.00	0.00
5,300.0	0.00	0.00	5,275.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,350.0	0.00	0.00	5,325.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,400.0	0.00	0.00	5,375.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,450.0	0.00	0.00	5,425.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,500.0	0.00	0.00	5,475.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,550.0	0.00	0.00	5,525.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,600.0	0.00	0.00	5,575.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,650.0	0.00	0.00	5,625.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,700.0	0.00	0.00	5,675.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,750.0	0.00	0.00	5,725.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,775.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,850.0	0.00	0.00	5,825.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,875.3	-125.0	350.0	-345.8	0.00	0.00	0.00
5,950.0	0.00	0.00	5,925.3	-125.0	350.0	-345.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,975.3	-125.0	350.0	-345.8	0.00	0.00	0.00
6,050.0	0.00	0.00	6,025.3	-125.0	350.0	-345.8	0.00	0.00	0.00
6,091.1	0.00	0.00	6,066.4	-125.0	350.0	-345.8	0.00	0.00	0.00
6,100.0	0.80	268.89	6,075.3	-125.0	349.9	-345.8	9.00	9.00	0.00
6,150.0	5.30	268.89	6,125.2	-125.1	347.3	-343.1	9.00	9.00	0.00
6,200.0	9.80	268.89	6,174.7	-125.2	340.7	-336.5	9.00	9.00	0.00
6,250.0	14.30	268.89	6,223.6	-125.4	330.3	-326.1	9.00	9.00	0.00
6,300.0	18.80	268.89	6,271.5	-125.7	316.0	-311.9	9.00	9.00	0.00
6,350.0	23.30	268.89	6,318.2	-126.0	298.1	-293.9	9.00	9.00	0.00
6,400.0	27.80	268.89	6,363.3	-126.4	276.5	-272.4	9.00	9.00	0.00
6,450.0	32.30	268.89	6,406.6	-126.9	251.5	-247.3	9.00	9.00	0.00
6,500.0	36.80	268.89	6,447.7	-127.5	223.2	-219.0	9.00	9.00	0.00
6,550.0	41.30	268.89	6,486.5	-128.1	191.7	-187.5	9.00	9.00	0.00
6,600.0	45.80	268.89	6,522.8	-128.7	157.2	-153.0	9.00	9.00	0.00
6,650.0	50.30	268.89	6,556.2	-129.4	120.1	-115.9	9.00	9.00	0.00
6,700.0	54.80	268.89	6,586.6	-130.2	80.4	-76.2	9.00	9.00	0.00
6,750.0	59.30	268.89	6,613.8	-131.0	38.5	-34.3	9.00	9.00	0.00
6,800.0	63.80	268.89	6,637.6	-131.9	-5.5	9.7	9.00	9.00	0.00
6,850.0	68.30	268.89	6,657.9	-132.8	-51.2	55.4	9.00	9.00	0.00
6,900.0	72.80	268.89	6,674.5	-133.7	-98.3	102.5	9.00	9.00	0.00
6,950.0	77.30	268.89	6,687.4	-134.6	-146.6	150.8	9.00	9.00	0.00
7,000.0	81.80	268.89	6,696.5	-135.6	-195.7	199.9	9.00	9.00	0.00
7,050.0	86.30	268.89	6,701.7	-136.5	-245.4	249.7	9.00	9.00	0.00
7,091.1	90.00	268.89	6,703.0	-137.3	-286.5	290.7	9.00	9.00	0.00
7,100.0	90.00	268.89	6,703.0	-137.5	-295.4	299.6	0.00	0.00	0.00
7,150.0	90.00	268.89	6,703.0	-138.4	-345.4	349.6	0.00	0.00	0.00
7,200.0	90.00	268.89	6,703.0	-139.4	-395.4	399.6	0.00	0.00	0.00
7,250.0	90.00	268.89	6,703.0	-140.4	-445.4	449.6	0.00	0.00	0.00
7,300.0	90.00	268.89	6,703.0	-141.3	-495.3	499.6	0.00	0.00	0.00
7,350.0	90.00	268.89	6,703.0	-142.3	-545.3	549.6	0.00	0.00	0.00
7,400.0	90.00	268.89	6,703.0	-143.3	-595.3	599.6	0.00	0.00	0.00
7,450.0	90.00	268.89	6,703.0	-144.3	-645.3	649.6	0.00	0.00	0.00
7,500.0	90.00	268.89	6,703.0	-145.2	-695.3	699.6	0.00	0.00	0.00
7,550.0	90.00	268.89	6,703.0	-146.2	-745.3	749.6	0.00	0.00	0.00
7,600.0	90.00	268.89	6,703.0	-147.2	-795.3	799.6	0.00	0.00	0.00
7,650.0	90.00	268.89	6,703.0	-148.1	-845.3	849.6	0.00	0.00	0.00
7,700.0	90.00	268.89	6,703.0	-149.1	-895.3	899.6	0.00	0.00	0.00
7,750.0	90.00	268.89	6,703.0	-150.1	-945.3	949.6	0.00	0.00	0.00
7,800.0	90.00	268.89	6,703.0	-151.0	-995.3	999.6	0.00	0.00	0.00

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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	90.00	268.89	6,703.0	-152.0	-1,045.2	1,049.6	0.00	0.00	0.00
7,900.0	90.00	268.89	6,703.0	-153.0	-1,095.2	1,099.6	0.00	0.00	0.00
7,950.0	90.00	268.89	6,703.0	-153.9	-1,145.2	1,149.6	0.00	0.00	0.00
8,000.0	90.00	268.89	6,703.0	-154.9	-1,195.2	1,199.6	0.00	0.00	0.00
8,050.0	90.00	268.89	6,703.0	-155.9	-1,245.2	1,249.6	0.00	0.00	0.00
8,100.0	90.00	268.89	6,703.0	-156.8	-1,295.2	1,299.6	0.00	0.00	0.00
8,150.0	90.00	268.89	6,703.0	-157.8	-1,345.2	1,349.5	0.00	0.00	0.00
8,200.0	90.00	268.89	6,703.0	-158.8	-1,395.2	1,399.5	0.00	0.00	0.00
8,250.0	90.00	268.89	6,703.0	-159.7	-1,445.2	1,449.5	0.00	0.00	0.00
8,300.0	90.00	268.89	6,703.0	-160.7	-1,495.2	1,499.5	0.00	0.00	0.00
8,350.0	90.00	268.89	6,703.0	-161.7	-1,545.1	1,549.5	0.00	0.00	0.00
8,400.0	90.00	268.89	6,703.0	-162.6	-1,595.1	1,599.5	0.00	0.00	0.00
8,450.0	90.00	268.89	6,703.0	-163.6	-1,645.1	1,649.5	0.00	0.00	0.00
8,500.0	90.00	268.89	6,703.0	-164.6	-1,695.1	1,699.5	0.00	0.00	0.00
8,550.0	90.00	268.89	6,703.0	-165.5	-1,745.1	1,749.5	0.00	0.00	0.00
8,600.0	90.00	268.89	6,703.0	-166.5	-1,795.1	1,799.5	0.00	0.00	0.00
8,650.0	90.00	268.89	6,703.0	-167.5	-1,845.1	1,849.5	0.00	0.00	0.00
8,700.0	90.00	268.89	6,703.0	-168.4	-1,895.1	1,899.5	0.00	0.00	0.00
8,750.0	90.00	268.89	6,703.0	-169.4	-1,945.1	1,949.5	0.00	0.00	0.00
8,800.0	90.00	268.89	6,703.0	-170.4	-1,995.1	1,999.5	0.00	0.00	0.00
8,850.0	90.00	268.89	6,703.0	-171.3	-2,045.1	2,049.5	0.00	0.00	0.00
8,900.0	90.00	268.89	6,703.0	-172.3	-2,095.0	2,099.5	0.00	0.00	0.00
8,950.0	90.00	268.89	6,703.0	-173.3	-2,145.0	2,149.5	0.00	0.00	0.00
9,000.0	90.00	268.89	6,703.0	-174.2	-2,195.0	2,199.5	0.00	0.00	0.00
9,050.0	90.00	268.89	6,703.0	-175.2	-2,245.0	2,249.5	0.00	0.00	0.00
9,100.0	90.00	268.89	6,703.0	-176.2	-2,295.0	2,299.5	0.00	0.00	0.00
9,150.0	90.00	268.89	6,703.0	-177.1	-2,345.0	2,349.5	0.00	0.00	0.00
9,200.0	90.00	268.89	6,703.0	-178.1	-2,395.0	2,399.5	0.00	0.00	0.00
9,250.0	90.00	268.89	6,703.0	-179.1	-2,445.0	2,449.5	0.00	0.00	0.00
9,300.0	90.00	268.89	6,703.0	-180.0	-2,495.0	2,499.5	0.00	0.00	0.00
9,350.0	90.00	268.89	6,703.0	-181.0	-2,545.0	2,549.5	0.00	0.00	0.00
9,400.0	90.00	268.89	6,703.0	-182.0	-2,595.0	2,599.4	0.00	0.00	0.00
9,450.0	90.00	268.89	6,703.0	-182.9	-2,644.9	2,649.4	0.00	0.00	0.00
9,500.0	90.00	268.89	6,703.0	-183.9	-2,694.9	2,699.4	0.00	0.00	0.00
9,550.0	90.00	268.89	6,703.0	-184.9	-2,744.9	2,749.4	0.00	0.00	0.00
9,600.0	90.00	268.89	6,703.0	-185.8	-2,794.9	2,799.4	0.00	0.00	0.00
9,650.0	90.00	268.89	6,703.0	-186.8	-2,844.9	2,849.4	0.00	0.00	0.00
9,700.0	90.00	268.89	6,703.0	-187.8	-2,894.9	2,899.4	0.00	0.00	0.00
9,750.0	90.00	268.89	6,703.0	-188.7	-2,944.9	2,949.4	0.00	0.00	0.00
9,800.0	90.00	268.89	6,703.0	-189.7	-2,994.9	2,999.4	0.00	0.00	0.00
9,850.0	90.00	268.89	6,703.0	-190.7	-3,044.9	3,049.4	0.00	0.00	0.00
9,900.0	90.00	268.89	6,703.0	-191.6	-3,094.9	3,099.4	0.00	0.00	0.00
9,950.0	90.00	268.89	6,703.0	-192.6	-3,144.9	3,149.4	0.00	0.00	0.00
10,000.0	90.00	268.89	6,703.0	-193.6	-3,194.8	3,199.4	0.00	0.00	0.00
10,050.0	90.00	268.89	6,703.0	-194.5	-3,244.8	3,249.4	0.00	0.00	0.00
10,100.0	90.00	268.89	6,703.0	-195.5	-3,294.8	3,299.4	0.00	0.00	0.00
10,150.0	90.00	268.89	6,703.0	-196.5	-3,344.8	3,349.4	0.00	0.00	0.00
10,200.0	90.00	268.89	6,703.0	-197.4	-3,394.8	3,399.4	0.00	0.00	0.00
10,250.0	90.00	268.89	6,703.0	-198.4	-3,444.8	3,449.4	0.00	0.00	0.00
10,300.0	90.00	268.89	6,703.0	-199.4	-3,494.8	3,499.4	0.00	0.00	0.00
10,350.0	90.00	268.89	6,703.0	-200.3	-3,544.8	3,549.4	0.00	0.00	0.00
10,400.0	90.00	268.89	6,703.0	-201.3	-3,594.8	3,599.4	0.00	0.00	0.00
10,450.0	90.00	268.89	6,703.0	-202.3	-3,644.8	3,649.4	0.00	0.00	0.00
10,500.0	90.00	268.89	6,703.0	-203.2	-3,694.7	3,699.4	0.00	0.00	0.00

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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	90.00	268.89	6,703.0	-204.2	-3,744.7	3,749.4	0.00	0.00	0.00
10,600.0	90.00	268.89	6,703.0	-205.2	-3,794.7	3,799.4	0.00	0.00	0.00
10,650.0	90.00	268.89	6,703.0	-206.1	-3,844.7	3,849.3	0.00	0.00	0.00
10,700.0	90.00	268.89	6,703.0	-207.1	-3,894.7	3,899.3	0.00	0.00	0.00
10,750.0	90.00	268.89	6,703.0	-208.1	-3,944.7	3,949.3	0.00	0.00	0.00
10,800.0	90.00	268.89	6,703.0	-209.0	-3,994.7	3,999.3	0.00	0.00	0.00
10,850.0	90.00	268.89	6,703.0	-210.0	-4,044.7	4,049.3	0.00	0.00	0.00
10,900.0	90.00	268.89	6,703.0	-211.0	-4,094.7	4,099.3	0.00	0.00	0.00
10,950.0	90.00	268.89	6,703.0	-211.9	-4,144.7	4,149.3	0.00	0.00	0.00
11,000.0	90.00	268.89	6,703.0	-212.9	-4,194.7	4,199.3	0.00	0.00	0.00
11,050.0	90.00	268.89	6,703.0	-213.9	-4,244.6	4,249.3	0.00	0.00	0.00
11,100.0	90.00	268.89	6,703.0	-214.8	-4,294.6	4,299.3	0.00	0.00	0.00
11,150.0	90.00	268.89	6,703.0	-215.8	-4,344.6	4,349.3	0.00	0.00	0.00
11,200.0	90.00	268.89	6,703.0	-216.8	-4,394.6	4,399.3	0.00	0.00	0.00
11,250.0	90.00	268.89	6,703.0	-217.7	-4,444.6	4,449.3	0.00	0.00	0.00
11,300.0	90.00	268.89	6,703.0	-218.7	-4,494.6	4,499.3	0.00	0.00	0.00
11,350.0	90.00	268.89	6,703.0	-219.7	-4,544.6	4,549.3	0.00	0.00	0.00
11,400.0	90.00	268.89	6,703.0	-220.6	-4,594.6	4,599.3	0.00	0.00	0.00
11,450.0	90.00	268.89	6,703.0	-221.6	-4,644.6	4,649.3	0.00	0.00	0.00
11,500.0	90.00	268.89	6,703.0	-222.6	-4,694.6	4,699.3	0.00	0.00	0.00
11,550.0	90.00	268.89	6,703.0	-223.5	-4,744.6	4,749.3	0.00	0.00	0.00
11,600.0	90.00	268.89	6,703.0	-224.5	-4,794.5	4,799.3	0.00	0.00	0.00
11,650.0	90.00	268.89	6,703.0	-225.5	-4,844.5	4,849.3	0.00	0.00	0.00
11,700.0	90.00	268.89	6,703.0	-226.4	-4,894.5	4,899.3	0.00	0.00	0.00
11,750.0	90.00	268.89	6,703.0	-227.4	-4,944.5	4,949.3	0.00	0.00	0.00
11,800.0	90.00	268.89	6,703.0	-228.4	-4,994.5	4,999.3	0.00	0.00	0.00
11,850.0	90.00	268.89	6,703.0	-229.3	-5,044.5	5,049.2	0.00	0.00	0.00
11,900.0	90.00	268.89	6,703.0	-230.3	-5,094.5	5,099.2	0.00	0.00	0.00
11,950.0	90.00	268.89	6,703.0	-231.3	-5,144.5	5,149.2	0.00	0.00	0.00
12,000.0	90.00	268.89	6,703.0	-232.2	-5,194.5	5,199.2	0.00	0.00	0.00
12,050.0	90.00	268.89	6,703.0	-233.2	-5,244.5	5,249.2	0.00	0.00	0.00
12,100.0	90.00	268.89	6,703.0	-234.2	-5,294.4	5,299.2	0.00	0.00	0.00
12,150.0	90.00	268.89	6,703.0	-235.1	-5,344.4	5,349.2	0.00	0.00	0.00
12,200.0	90.00	268.89	6,703.0	-236.1	-5,394.4	5,399.2	0.00	0.00	0.00
12,250.0	90.00	268.89	6,703.0	-237.1	-5,444.4	5,449.2	0.00	0.00	0.00
12,300.0	90.00	268.89	6,703.0	-238.0	-5,494.4	5,499.2	0.00	0.00	0.00
12,350.0	90.00	268.89	6,703.0	-239.0	-5,544.4	5,549.2	0.00	0.00	0.00
12,400.0	90.00	268.89	6,703.0	-240.0	-5,594.4	5,599.2	0.00	0.00	0.00
12,450.0	90.00	268.89	6,703.0	-240.9	-5,644.4	5,649.2	0.00	0.00	0.00
12,500.0	90.00	268.89	6,703.0	-241.9	-5,694.4	5,699.2	0.00	0.00	0.00
12,550.0	90.00	268.89	6,703.0	-242.9	-5,744.4	5,749.2	0.00	0.00	0.00
12,600.0	90.00	268.89	6,703.0	-243.8	-5,794.4	5,799.2	0.00	0.00	0.00
12,650.0	90.00	268.89	6,703.0	-244.8	-5,844.3	5,849.2	0.00	0.00	0.00
12,700.0	90.00	268.89	6,703.0	-245.8	-5,894.3	5,899.2	0.00	0.00	0.00
12,750.0	90.00	268.89	6,703.0	-246.7	-5,944.3	5,949.2	0.00	0.00	0.00
12,800.0	90.00	268.89	6,703.0	-247.7	-5,994.3	5,999.2	0.00	0.00	0.00
12,850.0	90.00	268.89	6,703.0	-248.7	-6,044.3	6,049.2	0.00	0.00	0.00
12,900.0	90.00	268.89	6,703.0	-249.6	-6,094.3	6,099.2	0.00	0.00	0.00
12,950.0	90.00	268.89	6,703.0	-250.6	-6,144.3	6,149.2	0.00	0.00	0.00
13,000.0	90.00	268.89	6,703.0	-251.6	-6,194.3	6,199.2	0.00	0.00	0.00
13,050.0	90.00	268.89	6,703.0	-252.5	-6,244.3	6,249.2	0.00	0.00	0.00
13,100.0	90.00	268.89	6,703.0	-253.5	-6,294.3	6,299.1	0.00	0.00	0.00
13,150.0	90.00	268.89	6,703.0	-254.5	-6,344.3	6,349.1	0.00	0.00	0.00
13,200.0	90.00	268.89	6,703.0	-255.4	-6,394.2	6,399.1	0.00	0.00	0.00

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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	90.00	268.89	6,703.0	-256.4	-6,444.2	6,449.1	0.00	0.00	0.00
13,300.0	90.00	268.89	6,703.0	-257.4	-6,494.2	6,499.1	0.00	0.00	0.00
13,350.0	90.00	268.89	6,703.0	-258.3	-6,544.2	6,549.1	0.00	0.00	0.00
13,400.0	90.00	268.89	6,703.0	-259.3	-6,594.2	6,599.1	0.00	0.00	0.00
13,450.0	90.00	268.89	6,703.0	-260.3	-6,644.2	6,649.1	0.00	0.00	0.00
13,500.0	90.00	268.89	6,703.0	-261.2	-6,694.2	6,699.1	0.00	0.00	0.00
13,550.0	90.00	268.89	6,703.0	-262.2	-6,744.2	6,749.1	0.00	0.00	0.00
13,600.0	90.00	268.89	6,703.0	-263.2	-6,794.2	6,799.1	0.00	0.00	0.00
13,650.0	90.00	268.89	6,703.0	-264.1	-6,844.2	6,849.1	0.00	0.00	0.00
13,700.0	90.00	268.89	6,703.0	-265.1	-6,894.1	6,899.1	0.00	0.00	0.00
13,750.0	90.00	268.89	6,703.0	-266.1	-6,944.1	6,949.1	0.00	0.00	0.00
13,800.0	90.00	268.89	6,703.0	-267.0	-6,994.1	6,999.1	0.00	0.00	0.00
13,850.0	90.00	268.89	6,703.0	-268.0	-7,044.1	7,049.1	0.00	0.00	0.00
13,900.0	90.00	268.89	6,703.0	-269.0	-7,094.1	7,099.1	0.00	0.00	0.00
13,950.0	90.00	268.89	6,703.0	-269.9	-7,144.1	7,149.1	0.00	0.00	0.00
14,000.0	90.00	268.89	6,703.0	-270.9	-7,194.1	7,199.1	0.00	0.00	0.00
14,050.0	90.00	268.89	6,703.0	-271.9	-7,244.1	7,249.1	0.00	0.00	0.00
14,100.0	90.00	268.89	6,703.0	-272.8	-7,294.1	7,299.1	0.00	0.00	0.00
14,150.0	90.00	268.89	6,703.0	-273.8	-7,344.1	7,349.1	0.00	0.00	0.00
14,200.0	90.00	268.89	6,703.0	-274.8	-7,394.1	7,399.1	0.00	0.00	0.00
14,250.0	90.00	268.89	6,703.0	-275.7	-7,444.0	7,449.1	0.00	0.00	0.00
14,300.0	90.00	268.89	6,703.0	-276.7	-7,494.0	7,499.1	0.00	0.00	0.00
14,350.0	90.00	268.89	6,703.0	-277.7	-7,544.0	7,549.0	0.00	0.00	0.00
14,400.0	90.00	268.89	6,703.0	-278.6	-7,594.0	7,599.0	0.00	0.00	0.00
14,450.0	90.00	268.89	6,703.0	-279.6	-7,644.0	7,649.0	0.00	0.00	0.00
14,500.0	90.00	268.89	6,703.0	-280.6	-7,694.0	7,699.0	0.00	0.00	0.00
14,550.0	90.00	268.89	6,703.0	-281.5	-7,744.0	7,749.0	0.00	0.00	0.00
14,600.0	90.00	268.89	6,703.0	-282.5	-7,794.0	7,799.0	0.00	0.00	0.00
14,650.0	90.00	268.89	6,703.0	-283.5	-7,844.0	7,849.0	0.00	0.00	0.00
14,700.0	90.00	268.89	6,703.0	-284.4	-7,894.0	7,899.0	0.00	0.00	0.00
14,750.0	90.00	268.89	6,703.0	-285.4	-7,944.0	7,949.0	0.00	0.00	0.00
14,800.0	90.00	268.89	6,703.0	-286.4	-7,993.9	7,999.0	0.00	0.00	0.00
14,850.0	90.00	268.89	6,703.0	-287.3	-8,043.9	8,049.0	0.00	0.00	0.00
14,900.0	90.00	268.89	6,703.0	-288.3	-8,093.9	8,099.0	0.00	0.00	0.00
14,950.0	90.00	268.89	6,703.0	-289.3	-8,143.9	8,149.0	0.00	0.00	0.00
15,000.0	90.00	268.89	6,703.0	-290.2	-8,193.9	8,199.0	0.00	0.00	0.00
15,050.0	90.00	268.89	6,703.0	-291.2	-8,243.9	8,249.0	0.00	0.00	0.00
15,100.0	90.00	268.89	6,703.0	-292.2	-8,293.9	8,299.0	0.00	0.00	0.00
15,150.0	90.00	268.89	6,703.0	-293.1	-8,343.9	8,349.0	0.00	0.00	0.00
15,200.0	90.00	268.89	6,703.0	-294.1	-8,393.9	8,399.0	0.00	0.00	0.00
15,250.0	90.00	268.89	6,703.0	-295.1	-8,443.9	8,449.0	0.00	0.00	0.00
15,300.0	90.00	268.89	6,703.0	-296.0	-8,493.9	8,499.0	0.00	0.00	0.00
15,350.0	90.00	268.89	6,703.0	-297.0	-8,543.8	8,549.0	0.00	0.00	0.00
15,400.0	90.00	268.89	6,703.0	-298.0	-8,593.8	8,599.0	0.00	0.00	0.00
15,450.0	90.00	268.89	6,703.0	-298.9	-8,643.8	8,649.0	0.00	0.00	0.00
15,500.0	90.00	268.89	6,703.0	-299.9	-8,693.8	8,699.0	0.00	0.00	0.00
15,550.0	90.00	268.89	6,703.0	-300.9	-8,743.8	8,749.0	0.00	0.00	0.00
15,600.0	90.00	268.89	6,703.0	-301.9	-8,793.8	8,798.9	0.00	0.00	0.00
15,650.0	90.00	268.89	6,703.0	-302.8	-8,843.8	8,848.9	0.00	0.00	0.00
15,700.0	90.00	268.89	6,703.0	-303.8	-8,893.8	8,898.9	0.00	0.00	0.00
15,750.0	90.00	268.89	6,703.0	-304.8	-8,943.8	8,948.9	0.00	0.00	0.00
15,800.0	90.00	268.89	6,703.0	-305.7	-8,993.8	8,998.9	0.00	0.00	0.00
15,850.0	90.00	268.89	6,703.0	-306.7	-9,043.7	9,048.9	0.00	0.00	0.00
15,900.0	90.00	268.89	6,703.0	-307.7	-9,093.7	9,098.9	0.00	0.00	0.00

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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	90.00	268.89	6,703.0	-308.6	-9,143.7	9,148.9	0.00	0.00	0.00
16,000.0	90.00	268.89	6,703.0	-309.6	-9,193.7	9,198.9	0.00	0.00	0.00
16,050.0	90.00	268.89	6,703.0	-310.6	-9,243.7	9,248.9	0.00	0.00	0.00
16,100.0	90.00	268.89	6,703.0	-311.5	-9,293.7	9,298.9	0.00	0.00	0.00
16,150.0	90.00	268.89	6,703.0	-312.5	-9,343.7	9,348.9	0.00	0.00	0.00
16,200.0	90.00	268.89	6,703.0	-313.5	-9,393.7	9,398.9	0.00	0.00	0.00
16,250.0	90.00	268.89	6,703.0	-314.4	-9,443.7	9,448.9	0.00	0.00	0.00
16,300.0	90.00	268.89	6,703.0	-315.4	-9,493.7	9,498.9	0.00	0.00	0.00
16,350.0	90.00	268.89	6,703.0	-316.4	-9,543.7	9,548.9	0.00	0.00	0.00
16,400.0	90.00	268.89	6,703.0	-317.3	-9,593.6	9,598.9	0.00	0.00	0.00
16,450.0	90.00	268.89	6,703.0	-318.3	-9,643.6	9,648.9	0.00	0.00	0.00
16,500.0	90.00	268.89	6,703.0	-319.3	-9,693.6	9,698.9	0.00	0.00	0.00
16,550.0	90.00	268.89	6,703.0	-320.2	-9,743.6	9,748.9	0.00	0.00	0.00
16,600.0	90.00	268.89	6,703.0	-321.2	-9,793.6	9,798.9	0.00	0.00	0.00
16,650.0	90.00	268.89	6,703.0	-322.2	-9,843.6	9,848.9	0.00	0.00	0.00
16,700.0	90.00	268.89	6,703.0	-323.1	-9,893.6	9,898.9	0.00	0.00	0.00
16,750.0	90.00	268.89	6,703.0	-324.1	-9,943.6	9,948.9	0.00	0.00	0.00
16,800.0	90.00	268.89	6,703.0	-325.1	-9,993.6	9,998.9	0.00	0.00	0.00
16,850.0	90.00	268.89	6,703.0	-326.0	-10,043.6	10,048.8	0.00	0.00	0.00
16,900.0	90.00	268.89	6,703.0	-327.0	-10,093.6	10,098.8	0.00	0.00	0.00
16,950.0	90.00	268.89	6,703.0	-328.0	-10,143.5	10,148.8	0.00	0.00	0.00
17,000.0	90.00	268.89	6,703.0	-328.9	-10,193.5	10,198.8	0.00	0.00	0.00
17,050.0	90.00	268.89	6,703.0	-329.9	-10,243.5	10,248.8	0.00	0.00	0.00
17,100.0	90.00	268.89	6,703.0	-330.9	-10,293.5	10,298.8	0.00	0.00	0.00
17,150.0	90.00	268.89	6,703.0	-331.8	-10,343.5	10,348.8	0.00	0.00	0.00
17,200.0	90.00	268.89	6,703.0	-332.8	-10,393.5	10,398.8	0.00	0.00	0.00
17,209.8	90.00	268.89	6,703.0	-333.0	-10,403.3	10,408.6	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Lapp A15-645 BHL 228(- plan hits target center - Point	0.00	0.01	6,703.0	-333.0	-10,403.3	1,420,949.03	3,265,972.66	40.484970	-104.543800

Database:	EDM01P	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Drilling		
Design:	APD - Rev 2		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
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	
3,526.4	3,516.0	PARKMAN		0.00	
4,070.7	4,055.0	SUSSEX		0.00	
4,847.3	4,824.0	SHANNON		0.00	
5,917.7	5,893.0	TEEPEE BUTTES		0.00	
6,632.8	6,545.0	SHARON SPRINGS		0.00	
6,660.8	6,563.0	NIO A CHALK		0.00	
6,692.1	6,582.0	NIO A MARL		0.00	
6,873.0	6,666.0	NIO B CHALK		0.00	
7,011.3	6,698.0	NIO B MARL		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,200.0	2,200.0	0.0	0.0	KOP - Start Build 2.00
4,863.8	4,840.4	-115.6	323.6	Start Drop -2.00
6,091.1	6,066.4	-125.0	350.0	KOP #2 - Start Build 9.00
6,660.8	6,563.0	-129.6	111.7	TPZ
7,091.1	6,703.0	-137.3	-286.5	Landing at 7091.1
17,209.8	6,703.0	-333.0	-10,403.3	TD at 17209.8

Northern Region Drilling - Working

Wattenberg Field
A (06N-64W)
Lapp A15-645

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 A15-645
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 A15-645	**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	17,209.7	APD - Rev 2 (Original Drilling)	MWD	MWD - Standard

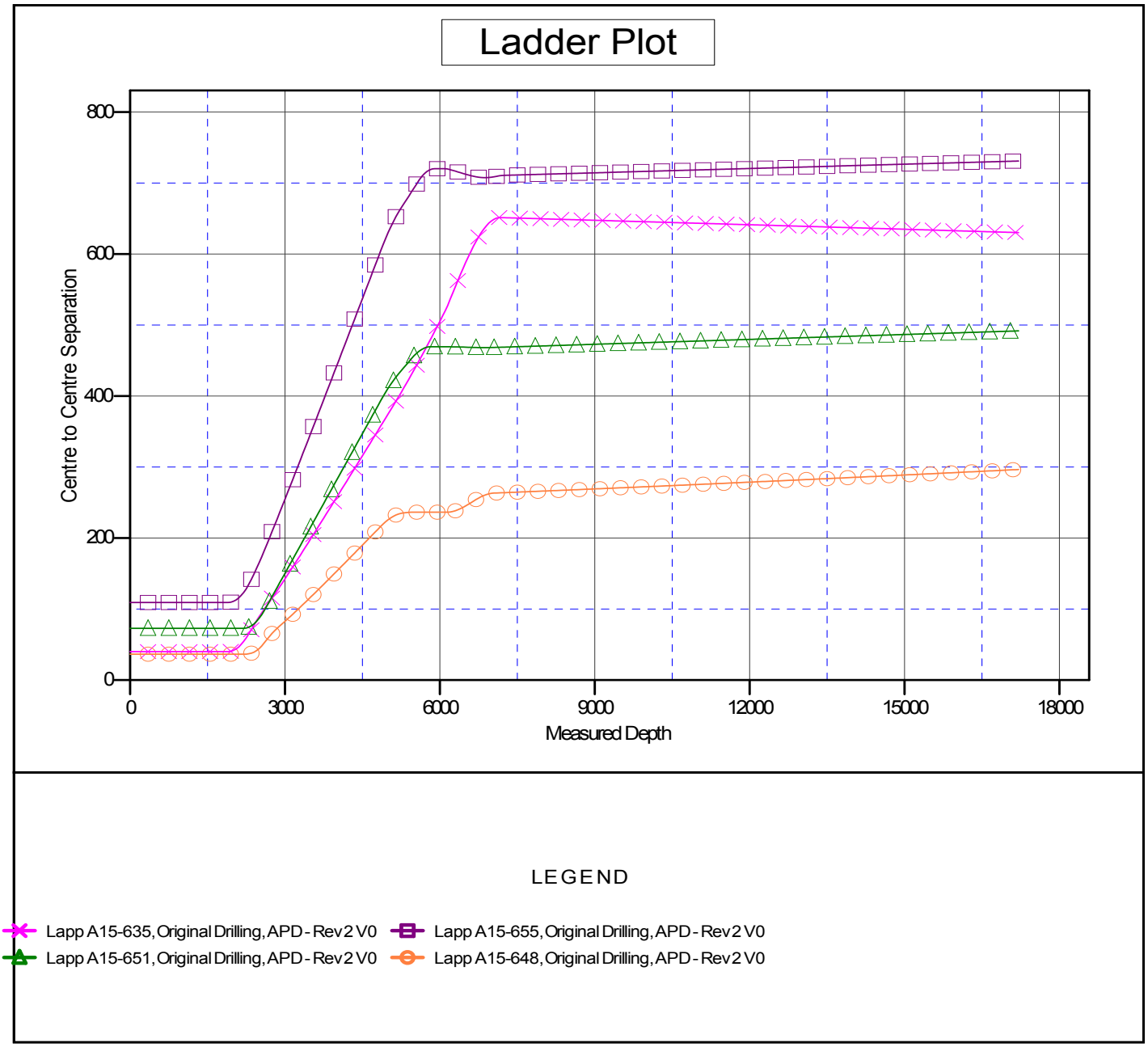
Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A (06N-64W)						
Lapp A15-635 - Original Drilling - APD - Rev 2	1,900.0	1,900.0	40.1	31.8	4.850	CC, ES
Lapp A15-635 - Original Drilling - APD - Rev 2	17,210.2	17,186.7	630.3	189.9	1.431	Level 2, SF
Lapp A15-648 - Original Drilling - APD - Rev 2	2,200.0	2,200.0	36.4	26.8	3.791	CC
Lapp A15-648 - Original Drilling - APD - Rev 2	17,210.2	17,326.6	296.6	-199.2	0.598	Level 1, ES, SF
Lapp A15-651 - Original Drilling - APD - Rev 2	2,183.0	2,184.0	72.9	63.3	7.640	CC
Lapp A15-651 - Original Drilling - APD - Rev 2	17,210.2	17,266.6	491.8	-102.4	0.828	Level 1, ES, SF
Lapp A15-655 - Original Drilling - APD - Rev 2	1,900.0	1,900.0	109.3	101.0	13.228	CC, ES
Lapp A15-655 - Original Drilling - APD - Rev 2	17,210.2	17,139.1	731.1	142.6	1.242	Level 2, SF

Company:	Northern Region Drilling - Working	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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 A15-645
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.64°



Company:	Northern Region Drilling - Working	**Local Co-ordinate Reference:**	Well Lapp A15-645
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 A15-645	**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 A15-645
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.64°