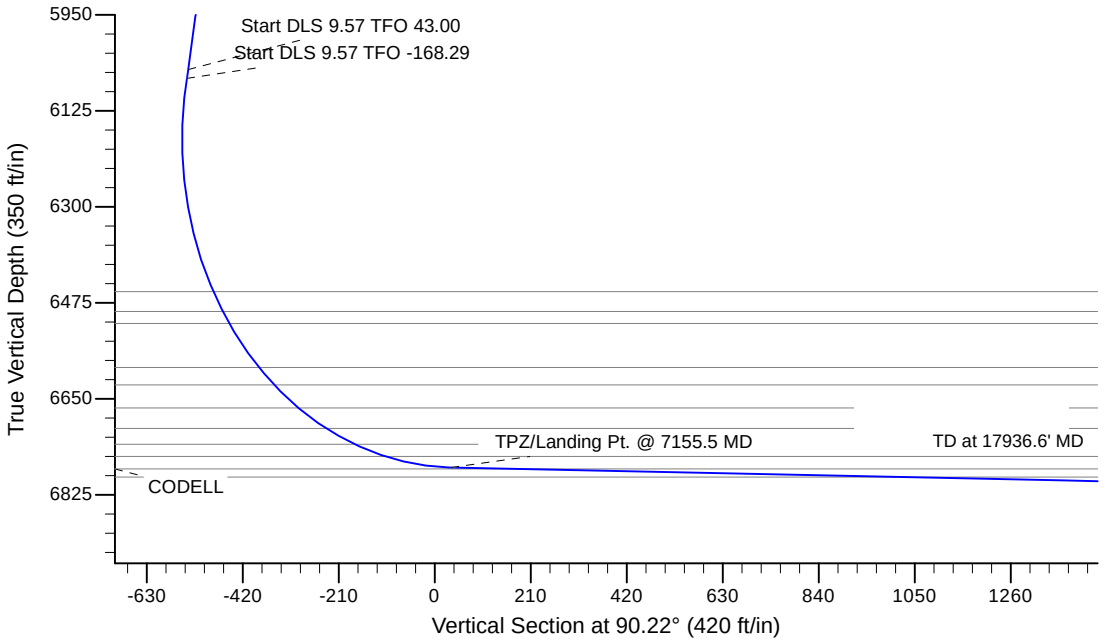
Project: Wells Ranch
Site: A Section 24-T6N-R64W Weld County, CO
Well: Larson AA19-624
Wellbore: Original Drilling
Design: APD - Rev 0

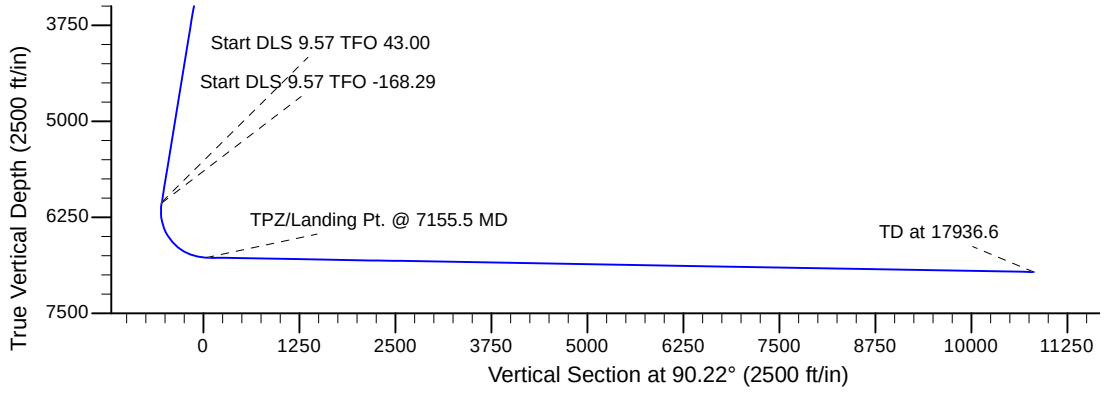
Northern Region - DJ Basin

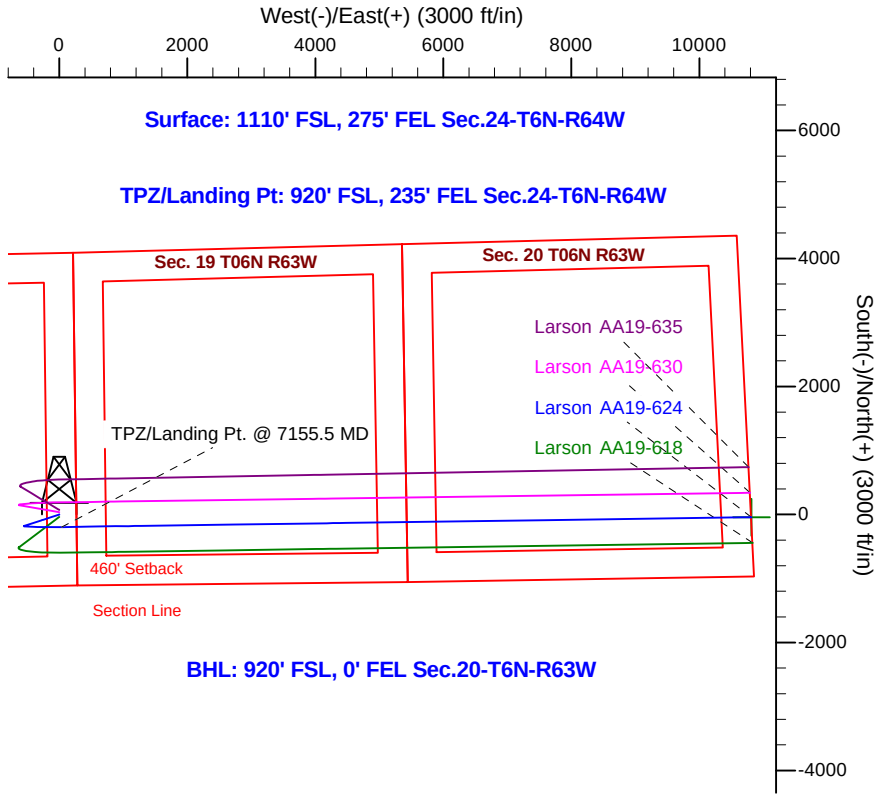
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	
3	2987.5	9.75	252.00	2985.2	-12.8	-39.4	2.00	252.00	-39.3	
4	6097.3	9.75	252.00	6050.0	-175.5	-540.2	0.00	0.00	-539.5	
5	6113.6	10.95	257.64	6066.1	-176.3	-543.1	9.57	43.00	-542.4	
6	7155.5	89.00	89.18	6775.5	-195.0	35.0	9.57	-168.29	35.8	
7	17936.6	89.00	89.19	6963.8	-42.0	10813.4	0.00	96.41	10813.4	Larson AA19-624 BHL 920'FSL, 0'FEL







Azimuths to Grid North
True North: -0.65°
Magnetic North: 7.46°

Magnetic Field
Strength: 52507.2snT
Dip Angle: 66.96°
Date: 1/9/2017
Model: IGRF2015

WELL DETAILS: Larson AA19-624

Ground Elevation: 4646.0

		Northing	Easting	Latitude	Longitude
0.0	0.0	1414864.65	3281074.79	40.4678100	-104.4897600

Plan: APD - Rev 0 (Larson AA19-624/Original Drilling)

Created By: Shailey Jewell Date: 10:04, January 09 2017

OK to submit with 2A as per Noble Drilling
1/9/2017 10:09

Northern Region - DJ Basin

Wells Ranch
A Section 24
Larson AA19-624

Original Drilling
APD - Rev 0

Anticollision Summary Report

09 January, 2017

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Larson AA19-624
Project:	Wells Ranch	**TVD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Reference Site:	A Section 24	**MD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Site Error:	0.0 ft	**North Reference:**	Grid
Reference Well:	Larson AA19-624	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
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 ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.79 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 1/9/2017

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,936.6	APD - Rev 0 (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 Section 23						
Cecil 23-13 - Original Drilling - Original Drilling - As Drille	6,227.3	6,273.7	7,168.8	7,132.4	196.662	CC, ES
Cecil 23-13 - Original Drilling - Original Drilling - As Drille	6,550.0	6,602.0	7,248.5	7,210.8	192.419	SF
Champlin 23-02 (PA) - Original Drilling - Original Drilling -	6,223.0	6,182.8	9,186.5	8,993.9	47.692	CC
Champlin 23-02 (PA) - Original Drilling - Original Drilling -	6,250.0	6,209.7	9,187.1	8,993.7	47.493	ES
Champlin 23-02 (PA) - Original Drilling - Original Drilling -	6,750.0	6,644.9	9,402.5	9,196.3	45.599	SF
Champlin 23-03 - Original Drilling - Original Drilling - As D	6,230.7	6,225.9	8,006.8	7,972.1	231.097	CC, ES
Champlin 23-03 - Original Drilling - Original Drilling - As D	6,700.0	6,700.0	8,181.6	8,145.0	223.764	SF
Champlin Amoco A 1 #308 - Original Drilling - Original Dr	6,226.5	6,161.2	8,169.0	7,977.5	42.661	CC
Champlin Amoco A 1 #308 - Original Drilling - Original Dr	6,250.0	6,184.7	8,169.5	7,977.3	42.505	ES
Champlin Amoco A 1 #308 - Original Drilling - Original Dr	6,750.0	6,619.9	8,383.6	8,178.5	40.879	SF
Cooper 23-1-17 - Orignal Drilling - Orignal Drilling - As Dr	6,214.2	6,186.0	6,997.6	6,960.2	186.970	CC, ES
Cooper 23-1-17 - Orignal Drilling - Orignal Drilling - As Dr	9,900.0	6,839.8	9,941.2	9,874.4	148.755	SF
Cooper 23-1-19 - Original Drilling - Original Drilling - As D	6,217.8	6,175.4	7,587.2	7,550.7	207.584	CC, ES
Cooper 23-1-19 - Original Drilling - Original Drilling - As D	9,100.0	6,854.6	9,957.4	9,907.5	199.453	SF
Cooper 23-12 - Original Drilling - Original Drilling - As Dri	6,218.7	6,226.6	7,323.9	7,286.8	197.297	CC, ES
Cooper 23-12 - Original Drilling - Original Drilling - As Dri	9,500.0	6,900.0	9,991.4	9,933.3	172.018	SF
Cooper 23-1-20 - Original Drilling - Original Drilling - As D	6,223.1	6,177.2	7,136.6	7,100.8	199.520	CC, ES
Cooper 23-1-20 - Original Drilling - Original Drilling - As D	6,650.0	6,587.8	7,278.5	7,241.2	195.192	SF
Cooper 23-15 - Original Drilling - Original Drilling - As Dri	6,215.7	6,165.0	6,483.8	6,447.0	176.072	CC, ES
Cooper 23-15 - Original Drilling - Original Drilling - As Dri	10,300.0	6,739.7	9,950.9	9,889.9	163.290	SF
Foss 41-23D - Original Drilling - Original Drilling - As Drill	351.7	332.7	6,173.0	6,171.4	3,812.995	CC
Foss 41-23D - Original Drilling - Original Drilling - As Drill	3,900.0	3,900.0	6,190.9	6,166.5	254.125	ES
Foss 41-23D - Original Drilling - Original Drilling - As Drill	10,800.0	7,181.6	9,999.0	9,919.3	125.604	SF
Foss 42-23 - Original Drilling - Original Drilling - As Drille	6,214.7	6,133.4	5,720.7	5,684.5	157.669	CC, ES
Foss 42-23 - Original Drilling - Original Drilling - As Drille	6,500.0	6,381.3	5,783.1	5,745.8	155.037	SF
J&L Farms 23-11 - Original Drilling - Original Drilling - As	6,213.6	6,127.6	9,880.9	9,844.7	272.958	CC, ES
J&L Farms 23-11 - Original Drilling - Original Drilling - As	6,550.0	6,459.6	9,966.1	9,928.7	266.258	SF
J&L Farms 23-12 - Original Drilling - Original Drilling - As	6,216.5	6,129.1	9,527.2	9,491.8	268.929	CC, ES
J&L Farms 23-12 - Original Drilling - Original Drilling - As	6,550.0	6,333.4	9,616.9	9,580.5	263.772	SF
J&L Farms 23-21 - Original Drilling - Original Drilling - As	6,219.0	6,233.3	8,495.6	8,458.7	230.217	CC, ES
J&L Farms 23-21 - Original Drilling - Original Drilling - As	8,200.0	6,858.1	9,985.5	9,940.3	220.829	SF
J&L Farms 23-22 - Original Drilling - Original Drilling - As	6,199.8	5,900.0	8,135.8	8,100.4	229.981	CC
J&L Farms 23-22 - Original Drilling - Original Drilling - As	6,200.0	5,900.0	8,135.8	8,100.4	229.976	ES
J&L Farms 23-22 - Original Drilling - Original Drilling - As	6,500.0	6,038.9	8,209.1	8,172.9	226.524	SF
McIntosh 33-23 - Original Drilling - Original Drilling - As D	6,233.3	6,266.7	6,471.8	6,436.5	183.210	CC, ES
McIntosh 33-23 - Original Drilling - Original Drilling - As D	6,500.0	6,400.0	6,532.4	6,496.3	180.642	SF
McIntosh 34-23 - Original Drilling - Original Drilling - As D	6,220.4	6,061.8	6,301.9	6,266.9	179.714	CC, ES

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Larson AA19-624
Project:	Wells Ranch	**TVD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Reference Site:	A Section 24	**MD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Site Error:	0.0 ft	**North Reference:**	Grid
Reference Well:	Larson AA19-624	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

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 Section 23						
McIntosh 34-23 - Original Drilling - Original Drilling - As D	6,550.0	6,412.9	6,389.3	6,352.7	174.726	SF
McIntosh 43-23 - Original Drilling - Original Drilling - As D	6,223.6	6,165.6	5,056.9	5,021.4	142.476	CC, ES
McIntosh 43-23 - Original Drilling - Original Drilling - As D	6,450.0	6,363.9	5,098.1	5,061.7	140.039	SF
McIntosh 44-23 - Original Drilling - Original Drilling - As D	6,218.6	6,055.8	4,879.9	4,845.6	142.226	CC, ES
McIntosh 44-23 - Original Drilling - Original Drilling - As D	6,450.0	6,228.4	4,924.9	4,889.7	139.872	SF
Schroeder 23-31 - Original Drilling - Original Drilling - As	6,229.8	6,260.8	7,623.8	7,588.6	216.653	CC, ES
Schroeder 23-31 - Original Drilling - Original Drilling - As	6,600.0	6,580.3	7,735.1	7,698.5	211.497	SF
Schroeder 23-33 - Original Drilling - Original Drilling - As	6,233.4	6,288.1	9,268.0	9,233.3	267.054	CC, ES
Schroeder 23-33 - Original Drilling - Original Drilling - As	6,600.0	6,634.2	9,375.9	9,339.7	258.954	SF
A Section 24						
Larson A23-622 - Original Drilling - APD - Rev 0	6,836.9	7,306.9	105.0	47.8	1.836	CC, ES, SF
Larson A23-627 - Original Drilling - APD - Rev 0	2,556.8	2,557.8	149.0	133.4	9.566	CC
Larson A23-627 - Original Drilling - APD - Rev 0	2,600.0	2,601.1	149.1	133.3	9.426	ES
Larson A23-627 - Original Drilling - APD - Rev 0	6,850.0	7,311.8	234.4	178.3	4.178	SF
Larson A23-633 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	171.2	157.8	12.788	CC
Larson A23-633 - Original Drilling - APD - Rev 0	2,300.0	2,298.1	171.8	157.8	12.271	ES
Larson A23-633 - Original Drilling - APD - Rev 0	6,700.0	7,386.2	575.8	516.7	9.757	SF
Larson A23-639 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	193.1	180.9	15.912	CC, ES
Larson A23-639 - Original Drilling - APD - Rev 0	2,400.0	2,381.0	211.3	196.8	14.554	SF
Larson AA19-618 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	36.4	24.3	3.002	CC
Larson AA19-618 - Original Drilling - APD - Rev 0	17,936.6	17,894.5	570.5	-60.0	0.905	Level 1, ES, SF
Larson AA19-630 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	36.4	23.0	2.721	CC
Larson AA19-630 - Original Drilling - APD - Rev 0	17,936.6	17,841.1	543.2	-88.6	0.860	Level 1, ES, SF
Larson AA19-635 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	72.9	60.7	6.005	CC
Larson AA19-635 - Original Drilling - APD - Rev 0	17,936.6	17,894.4	843.5	37.0	1.046	Level 2, ES, SF
Larson Farms 01-24 - Original Drilling - Original Drilling -	1,211.0	1,196.8	3,092.5	3,085.0	411.718	CC
Larson Farms 01-24 - Original Drilling - Original Drilling -	1,800.0	1,758.1	3,095.2	3,082.5	244.617	ES
Larson Farms 01-24 - Original Drilling - Original Drilling -	9,600.0	6,876.5	4,637.3	4,509.0	36.142	SF
Larson Farms 02-24 - Original Drilling - Original Drilling -	5,276.3	5,548.8	2,271.8	2,216.7	41.275	CC
Larson Farms 02-24 - Original Drilling - Original Drilling -	5,300.0	5,566.6	2,271.8	2,216.5	41.111	ES
Larson Farms 02-24 - Original Drilling - Original Drilling -	8,100.0	7,172.0	2,663.4	2,583.5	33.332	SF
Larson Farms 03-24 - Original Drilling - Original Drilling -	6,217.8	6,284.5	1,507.2	1,462.2	33.476	CC, ES
Larson Farms 03-24 - Original Drilling - Original Drilling -	6,300.0	6,353.9	1,511.8	1,466.4	33.341	SF
Larson Farms 04-24 - Original Drilling - Original Drilling -	5,161.8	5,687.2	966.4	886.0	12.019	CC
Larson Farms 04-24 - Original Drilling - Original Drilling -	5,300.0	5,822.3	967.4	885.1	11.757	ES
Larson Farms 04-24 - Original Drilling - Original Drilling -	6,000.0	6,487.1	1,001.5	913.4	11.376	SF
Larson Farms 05-24 - Original Drilling - Original Drilling -	6,219.2	6,530.9	653.9	607.3	14.045	CC, ES
Larson Farms 05-24 - Original Drilling - Original Drilling -	6,250.0	6,559.9	654.6	607.9	14.021	SF
Larson Farms 06-24 - Original Drilling - Original Drilling -	5,900.0	6,440.9	226.5	135.9	2.499	SF
Larson Farms 06-24 - Original Drilling - Original Drilling -	5,967.2	6,502.5	225.0	135.1	2.503	CC, ES
Larson Farms 07-24 - Original Drilling - Original Drilling -	6,237.0	6,581.4	1,179.7	1,110.9	17.145	CC, ES
Larson Farms 07-24 - Original Drilling - Original Drilling -	6,250.0	6,594.0	1,179.8	1,111.0	17.138	SF
Peppler 24-32 - Original Drilling - Original Drilling - As Dr	6,213.4	6,094.5	4,128.8	4,093.1	115.656	CC, ES
Peppler 24-32 - Original Drilling - Original Drilling - As Dr	6,500.0	6,536.9	4,187.9	4,150.7	112.584	SF
Roth 24-21 - Original Drilling - Original Drilling - As Drilled	6,184.5	6,069.8	4,325.6	4,287.1	112.361	CC, ES
Roth 24-21 - Original Drilling - Original Drilling - As Drilled	10,300.0	6,626.0	7,186.3	7,101.8	85.033	SF

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Larson AA19-624
Project:	Wells Ranch	**TVD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Reference Site:	A Section 24	**MD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Site Error:	0.0 ft	**North Reference:**	Grid
Reference Well:	Larson AA19-624	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

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
AA Section 19						
J&L Farms 31-19 - Original Drilling - Original Drilling - As	10,419.9	6,865.8	3,719.1	3,555.2	22.701	CC
J&L Farms 31-19 - Original Drilling - Original Drilling - As	10,600.0	6,869.5	3,723.4	3,552.9	21.840	ES
J&L Farms 31-19 - Original Drilling - Original Drilling - As	11,900.0	6,896.2	4,002.7	3,796.5	19.411	SF
J&L Farms 32-19 - Original Drilling - Original Drilling - As	10,242.8	6,825.0	2,062.4	1,910.8	13.601	CC
J&L Farms 32-19 - Original Drilling - Original Drilling - As	10,300.0	6,824.9	2,063.2	1,909.5	13.423	ES
J&L Farms 32-19 - Original Drilling - Original Drilling - As	10,800.0	6,824.6	2,136.3	1,969.3	12.792	SF
J&L Farms 41-19 - Original Drilling - Original Drilling - As	11,706.7	6,927.4	3,902.5	3,694.6	18.773	CC
J&L Farms 41-19 - Original Drilling - Original Drilling - As	11,800.0	6,933.3	3,903.6	3,692.3	18.470	ES
J&L Farms 41-19 - Original Drilling - Original Drilling - As	13,000.0	6,937.0	4,111.1	3,866.3	16.799	SF
J&L Farms 42-19 - Original Drilling - Original Drilling - As	12,085.8	6,871.8	2,135.4	1,912.9	9.596	CC
J&L Farms 42-19 - Original Drilling - Original Drilling - As	12,200.0	6,874.7	2,138.5	1,912.0	9.440	ES
J&L Farms 42-19 - Original Drilling - Original Drilling - As	12,500.0	6,882.3	2,175.2	1,941.1	9.293	SF
Larson A23-622 - Original Drilling - APD - Rev 0	6,836.9	7,306.9	105.0	47.8	1.836	CC, ES, SF
Larson A23-627 - Original Drilling - APD - Rev 0	2,556.8	2,557.8	149.0	133.4	9.566	CC
Larson A23-627 - Original Drilling - APD - Rev 0	2,600.0	2,601.1	149.1	133.3	9.426	ES
Larson A23-627 - Original Drilling - APD - Rev 0	6,850.0	7,311.8	234.4	178.3	4.178	SF
Larson A23-633 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	171.2	157.8	12.789	CC
Larson A23-633 - Original Drilling - APD - Rev 0	2,300.0	2,298.1	171.8	157.8	12.272	ES
Larson A23-633 - Original Drilling - APD - Rev 0	6,700.0	7,386.2	575.8	516.8	9.757	SF
Larson A23-639 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	193.1	180.9	15.912	CC, ES
Larson A23-639 - Original Drilling - APD - Rev 0	2,400.0	2,381.0	211.3	196.8	14.554	SF
Larson A23-645 - Original Drilling - APD - Rev 0	6,804.6	8,109.4	1,325.5	1,268.4	23.216	CC
Larson A23-645 - Original Drilling - APD - Rev 0	7,900.0	7,064.2	1,329.0	1,258.6	18.872	ES
Larson A23-645 - Original Drilling - APD - Rev 0	8,700.0	6,650.0	1,451.2	1,359.6	15.848	SF
Larson A23-651 - Original Drilling - APD - Rev 0	6,749.7	8,103.7	1,636.3	1,579.0	28.544	CC
Larson A23-651 - Original Drilling - APD - Rev 0	8,000.0	6,936.5	1,643.9	1,570.9	22.517	ES
Larson A23-651 - Original Drilling - APD - Rev 0	8,900.0	6,531.0	1,801.9	1,704.9	18.564	SF
Larson A23-656 - Original Drilling - APD - Rev 0	2,400.0	2,403.0	1,925.8	1,911.2	131.436	CC, ES
Larson A23-656 - Original Drilling - APD - Rev 0	9,200.0	6,425.1	2,250.4	2,144.1	21.163	SF
Larson A23-662 - Original Drilling - APD - Rev 0	2,000.0	2,003.0	1,945.7	1,933.5	160.222	CC, ES
Larson A23-662 - Original Drilling - APD - Rev 0	9,600.0	6,273.3	2,835.5	2,717.6	24.035	SF
Larson A23-668 - Original Drilling - APD - Rev 0	6,650.0	7,607.1	2,815.5	2,765.3	56.105	ES
Larson A23-668 - Original Drilling - APD - Rev 0	6,678.4	7,588.1	2,815.4	2,765.5	56.346	CC
Larson A23-668 - Original Drilling - APD - Rev 0	9,600.0	6,520.0	3,505.4	3,394.0	31.464	SF
Larson A23-672 - Original Drilling - APD - Rev 0	6,700.0	7,569.0	3,129.0	3,079.8	63.682	ES
Larson A23-672 - Original Drilling - APD - Rev 0	6,737.2	7,542.3	3,128.9	3,080.0	63.992	CC
Larson A23-672 - Original Drilling - APD - Rev 0	9,800.0	6,471.3	3,856.5	3,739.2	32.892	SF
Larson A23-678 - Original Drilling - APD - Rev 0	2,729.8	2,820.8	3,432.9	3,416.1	204.567	CC
Larson A23-678 - Original Drilling - APD - Rev 0	2,800.0	2,889.6	3,433.2	3,416.0	199.863	ES
Larson A23-678 - Original Drilling - APD - Rev 0	10,100.0	6,323.2	4,402.8	4,280.4	35.970	SF
Larson A23-683 - Original Drilling - APD - Rev 0	2,000.0	2,006.0	3,457.2	3,445.1	284.473	CC
Larson A23-683 - Original Drilling - APD - Rev 0	2,100.0	2,084.3	3,457.6	3,444.9	272.249	ES
Larson A23-683 - Original Drilling - APD - Rev 0	10,400.0	6,229.6	4,690.2	4,556.8	35.178	SF
Larson USX AA19-03 - Original Drilling - Original Drilling	9,477.6	7,001.0	3,426.2	3,302.9	27.784	CC
Larson USX AA19-03 - Original Drilling - Original Drilling	9,600.0	7,001.0	3,428.4	3,300.6	26.826	ES
Larson USX AA19-03 - Original Drilling - Original Drilling	11,000.0	7,001.0	3,749.2	3,582.7	22.514	SF
Larson USX AA19-04 - Original Drilling - Original Drilling	2,536.8	2,538.5	3,490.1	3,476.2	251.675	CC
Larson USX AA19-04 - Original Drilling - Original Drilling	8,400.0	6,826.4	3,509.0	3,426.3	42.469	ES
Larson USX AA19-04 - Original Drilling - Original Drilling	10,400.0	6,922.1	4,115.9	3,979.5	30.184	SF
Larson USX AA19-05 - Original Drilling - Original Drilling	1,705.4	1,678.6	2,176.4	2,167.2	236.752	CC
Larson USX AA19-05 - Original Drilling - Original Drilling	8,100.0	6,877.0	2,217.2	2,143.1	29.931	ES
Larson USX AA19-05 - Original Drilling - Original Drilling	9,100.0	6,892.0	2,464.6	2,363.6	24.388	SF
Larson USX AA19-06 - Original Drilling - Original Drilling	9,181.7	6,974.8	2,392.5	2,277.7	20.838	CC

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Larson AA19-624
Project:	Wells Ranch	**TVD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Reference Site:	A Section 24	**MD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Site Error:	0.0 ft	**North Reference:**	Grid
Reference Well:	Larson AA19-624	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

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
AA Section 19						
Larson USX AA19-06 - Original Drilling - Original Drilling	9,300.0	6,977.5	2,395.4	2,276.4	20.122	ES
Larson USX AA19-06 - Original Drilling - Original Drilling	10,100.0	6,995.7	2,562.6	2,422.2	18.245	SF
Thrall USX AA19-11 - Original Drilling - Original Drilling -	9,395.1	6,779.2	858.2	738.8	7.186	CC
Thrall USX AA19-11 - Original Drilling - Original Drilling -	9,400.0	6,779.3	858.2	738.6	7.176	ES
Thrall USX AA19-11 - Original Drilling - Original Drilling -	9,500.0	6,779.9	864.6	742.2	7.065	SF
Thrall USX AA19-12 - Original Drilling - Original Drilling -	7,818.8	6,762.2	1,162.0	1,099.5	18.607	CC, ES
Thrall USX AA19-12 - Original Drilling - Original Drilling -	8,200.0	6,769.2	1,222.9	1,150.4	16.872	SF
Thrall USX AA19-13 - Original Drilling - Original Drilling -	8,142.8	6,763.4	242.4	168.9	3.299	CC, ES, SF
Thrall USX AA19-14 - Original Drilling - Original Drilling -	9,156.0	6,777.9	492.6	382.1	4.458	CC, ES
Thrall USX AA19-14 - Original Drilling - Original Drilling -	9,200.0	6,779.1	494.6	382.6	4.418	SF
Thrall USX AA19-25 - Original Drilling - Original Drilling -	8,425.8	6,768.5	655.8	572.3	7.851	CC, ES
Thrall USX AA19-25 - Original Drilling - Original Drilling -	8,500.0	6,770.0	660.0	574.4	7.707	SF
Wells Ranch USX AA19-09 - Original Drilling - Original D	11,897.0	6,838.0	1,107.1	891.9	5.143	CC
Wells Ranch USX AA19-09 - Original Drilling - Original D	11,900.0	6,838.0	1,107.1	891.7	5.140	ES
Wells Ranch USX AA19-09 - Original Drilling - Original D	12,000.0	6,840.1	1,111.9	893.7	5.097	SF
Wells Ranch USX AA19-10 - Original Drilling - Original D	10,569.6	6,807.1	1,076.4	912.4	6.562	CC
Wells Ranch USX AA19-10 - Original Drilling - Original D	10,600.0	6,806.7	1,076.8	911.7	6.523	ES
Wells Ranch USX AA19-10 - Original Drilling - Original D	10,700.0	6,805.3	1,084.3	916.6	6.467	SF
Wells Ranch USX AA19-15 - Original Drilling - Original D	10,388.8	6,810.2	278.5	113.7	1.690	CC
Wells Ranch USX AA19-15 - Original Drilling - Original D	10,400.0	6,810.2	278.7	113.5	1.687	ES, SF
Wells Ranch USX AA19-16 - Original Drilling - Original D	11,974.7	6,850.2	367.8	149.8	1.687	CC, ES
Wells Ranch USX AA19-16 - Original Drilling - Original D	12,000.0	6,852.1	368.6	150.1	1.686	SF
Wells Ranch USX AA19-23 - Original Drilling - Original D	11,251.5	6,819.2	300.3	110.3	1.580	CC, ES, SF

Anticollision Summary Report

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Project:	Wells Ranch	**TVD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Reference Site:	A Section 24	**MD Reference:**	WELL @ 4676.0ft (Original Well Elev.)
Site Error:	0.0 ft	**North Reference:**	Grid
Reference Well:	Larson AA19-624	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

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
AA Section 20						
Cook 20D - Original Drilling - Original Drilling - As Drilled	16,558.6	6,891.0	638.3	244.2	1.620	CC, ES, SF
Cook 33-20 - Original Drilling - Original Drilling - As Drille	15,750.7	6,875.0	955.3	592.0	2.629	CC
Cook 33-20 - Original Drilling - Original Drilling - As Drille	15,800.0	6,875.0	956.6	592.0	2.623	ES, SF
Cook 34-20 - Orignal Drilling - Orignal Drilling - As Drilled	15,718.7	6,887.0	227.2	-132.1	0.632	Level 1, CC, ES, SF
Cook 43-20 - Original Drilling - Original Drilling - As Drille	17,324.3	6,879.0	946.9	523.4	2.236	CC, ES
Cook 43-20 - Original Drilling - Original Drilling - As Drille	17,400.0	6,879.0	950.0	525.0	2.235	SF
Cook 44-20 - Original Drilling - Original Drilling - As Drille	17,317.2	6,874.0	221.9	-178.9	0.554	Level 1, CC, ES, SF
J&L Farms 01-20 - Original Drilling - Original Drilling - As	17,190.0	6,990.0	3,775.3	3,352.8	8.936	CC
J&L Farms 01-20 - Original Drilling - Original Drilling - As	17,300.0	6,994.0	3,776.9	3,350.4	8.855	ES
J&L Farms 01-20 - Original Drilling - Original Drilling - As	17,800.0	6,976.0	3,824.3	3,384.1	8.688	SF
J&L Farms 02-20 - Original Drilling - Original Drilling - As	15,878.5	6,915.5	3,773.8	3,405.0	10.233	CC
J&L Farms 02-20 - Original Drilling - Original Drilling - As	16,000.0	6,917.7	3,775.8	3,402.6	10.117	ES
J&L Farms 02-20 - Original Drilling - Original Drilling - As	16,600.0	6,928.9	3,842.1	3,452.7	9.867	SF
J&L Farms 08-20 - Original Drilling - Original Drilling - As	17,208.3	6,947.1	2,406.4	1,809.4	4.031	CC
J&L Farms 08-20 - Original Drilling - Original Drilling - As	17,300.0	6,948.7	2,408.2	1,808.0	4.012	ES
J&L Farms 08-20 - Original Drilling - Original Drilling - As	17,400.0	6,950.4	2,414.0	1,811.0	4.003	SF
J&L Farms 11-20 - Original Drilling - Original Drilling - As	13,010.2	6,827.2	3,913.6	3,655.8	15.179	CC
J&L Farms 11-20 - Original Drilling - Original Drilling - As	13,100.0	6,827.5	3,914.6	3,653.5	14.989	ES
J&L Farms 11-20 - Original Drilling - Original Drilling - As	14,100.0	6,831.2	4,062.5	3,773.7	14.064	SF
J&L Farms 12-20 - Original Drilling - Original Drilling - As	12,977.2	6,872.7	2,218.8	1,962.2	8.647	CC
J&L Farms 12-20 - Original Drilling - Original Drilling - As	13,100.0	6,876.0	2,222.2	1,961.4	8.519	ES
J&L Farms 12-20 - Original Drilling - Original Drilling - As	13,300.0	6,881.4	2,242.2	1,976.0	8.425	SF
J&L Farms 22-20 - Original Drilling - Original Drilling - As	14,524.4	6,890.7	2,372.8	2,056.6	7.502	CC
J&L Farms 22-20 - Original Drilling - Original Drilling - As	14,600.0	6,892.1	2,374.0	2,055.1	7.443	ES
J&L Farms 22-20 - Original Drilling - Original Drilling - As	14,900.0	6,897.4	2,402.4	2,075.8	7.357	SF
J&L Farms 32-20 - Original Drilling - Original Drilling - As	15,922.9	6,905.8	2,378.4	2,006.0	6.387	CC
J&L Farms 32-20 - Original Drilling - Original Drilling - As	16,000.0	6,907.8	2,379.7	2,004.5	6.343	ES
J&L Farms 32-20 - Original Drilling - Original Drilling - As	16,200.0	6,913.0	2,394.5	2,014.0	6.293	SF
Wells Ranch 13-20 - Original Drilling - Original Drilling - A	13,221.2	6,868.0	879.8	613.7	3.306	CC, ES
Wells Ranch 13-20 - Original Drilling - Original Drilling - A	13,300.0	6,869.1	883.3	615.3	3.296	SF
Wells Ranch 14-20 - Original Drilling - Original Drilling - A	13,204.6	6,867.4	512.9	247.2	1.930	CC, ES, SF
Wells Ranch 23-20 - Original Drilling - Original Drilling - A	14,704.7	6,897.9	875.7	552.5	2.710	CC, ES, SF
Wells Ranch 24-20 - Original Drilling - Original Drilling - A	14,356.7	6,884.7	456.9	147.2	1.475	Level 3, CC, ES, SF

Anticollision Summary Report

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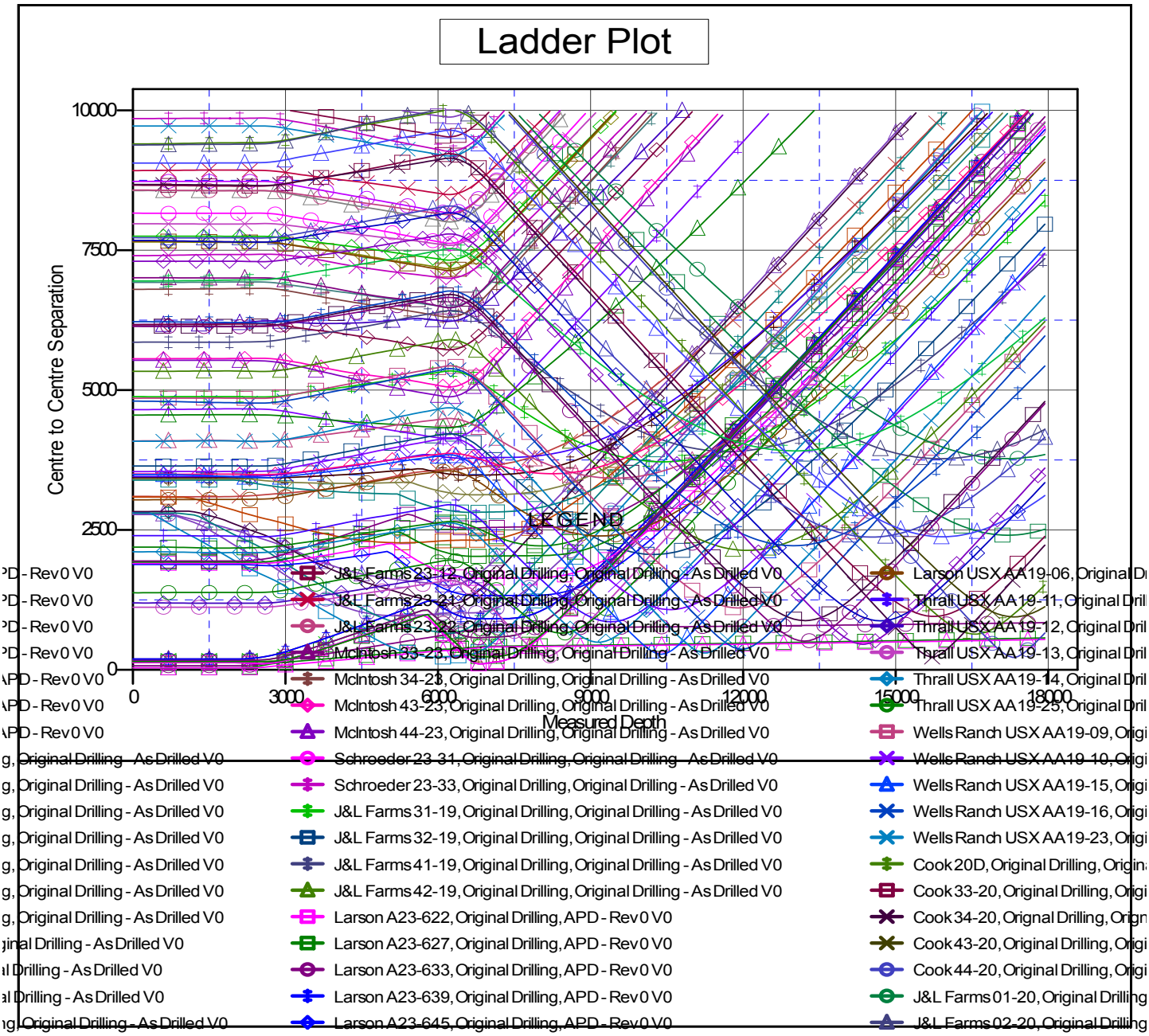
Site Error:	0.0 ft	**North Reference:**	Grid
Reference Well:	Larson AA19-624	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4676.0ft (Original Well Elev.	Coordinates are relative to: Larson AA19-624
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.5000000	Grid Convergence at Surface is: 0.65°



Anticollision Summary Report

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Well Error:	0.0 ft	**Output errors are at**	2.79 sigma
Reference Wellbore	Original Drilling	**Database:**	EDM Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4676.0ft (Original Well Elev.
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Larson AA19-624
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.65°