

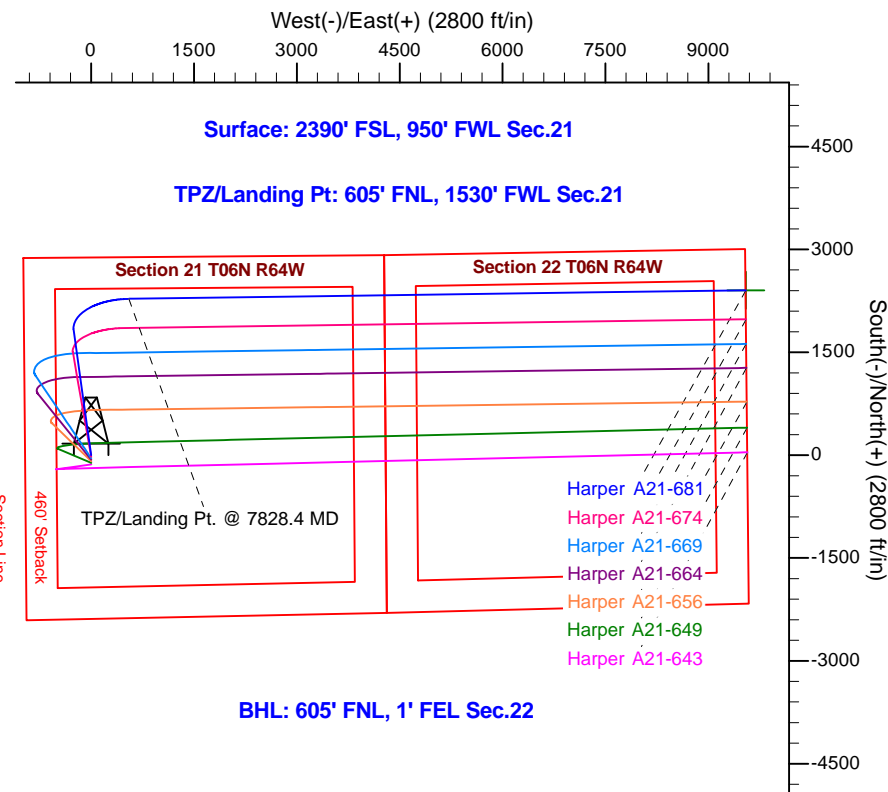
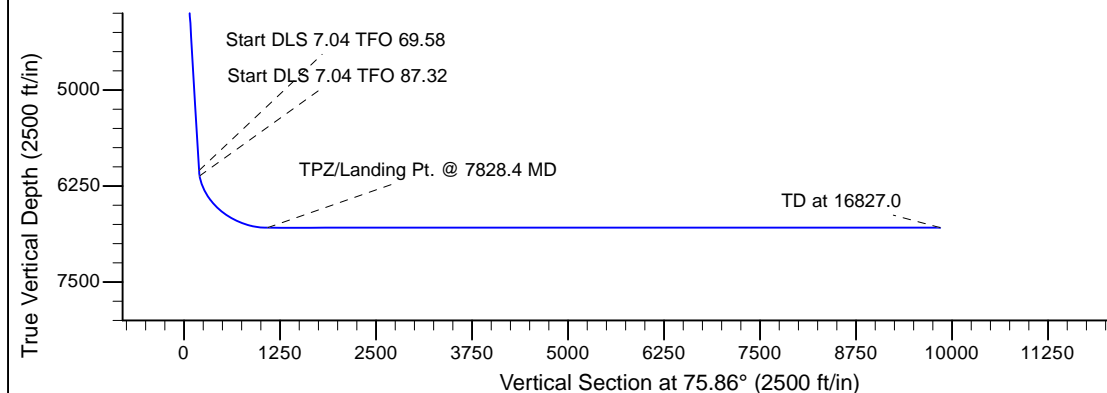
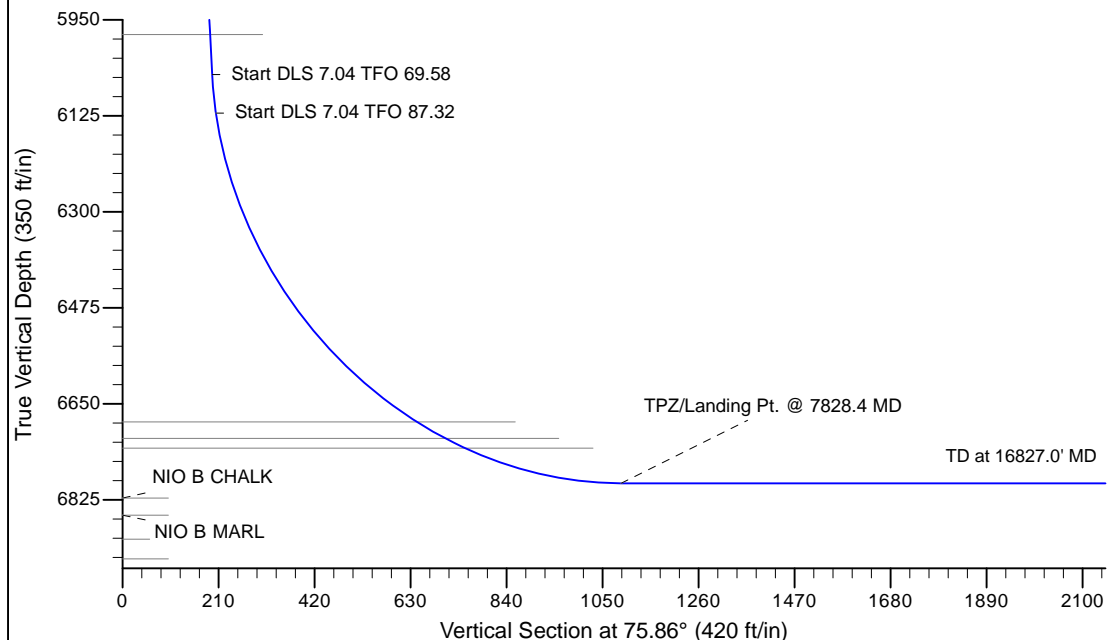
Project: Wells Ranch
 Site: A Section 21-T6N-R64W Weld County, CO
 Well: Harper A21-681
 Wellbore: Original Drilling
 Design: APD - Rev 0

Northern Region - DJ Basin

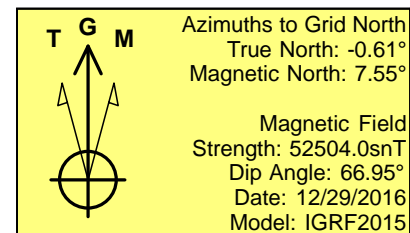
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	3450.0	29.00	352.00	3388.9	355.7	-50.0	2.00	352.00	38.4	
4	6492.6	29.00	352.00	6050.0	1816.4	-255.3	0.00	0.00	196.2	
5	6573.9	31.42	2.34	6120.3	1857.2	-257.2	7.04	69.58	204.4	
6	7828.4	90.00	89.20	6795.0	2280.0	550.0	7.04	87.32	1090.4	
7	16827.0	90.00	89.20	6795.0	2405.5	9547.7	0.00	0.00	9846.1	Harper A21-681 BHL 605'FNL, 1'FEL



BHL: 605' FNL, 1' FEL Sec.22



WELL DETAILS: Harper A21-681

Northing	Easting	Ground Elevation: 4744.0	Latitude	Longitude
0.0	0.0	1415739.15	3261195.89	40.4708100
				-104.5611700

Plan: APD - Rev 0 (Harper A21-681/Original Drilling)

Created By: Shailey Jewell Date: 10:29, January 03 2017

OK to submit with 2A as per Noble Drilling
 1/3/2017 10:33

Northern Region - DJ Basin

Wells Ranch

A Section 21

Harper A21-681

Original Drilling

APD - Rev 0

Anticollision Summary Report

03 January, 2017

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-681
Project:	Wells Ranch	TVD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-681	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Reference	APD - Rev 0		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.79 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	1/3/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	16,827.0	APD - Rev 0 (Original Drilling)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction

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 Section 19						
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,565.9	6,012.5	9,153.4	8,955.0	46.147	CC
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,600.0	6,041.6	9,154.1	8,954.7	45.911	ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	7,300.0	6,552.5	9,468.0	9,250.7	43.574	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,502.2	6,034.6	8,065.8	8,020.8	179.368	CC, ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	7,200.0	6,590.3	8,347.3	8,297.4	167.176	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,416.5	6,416.5	6,877.9	6,832.6	151.754	ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,494.6	6,033.9	6,877.6	6,832.6	153.101	CC
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	7,150.0	6,493.9	7,132.9	7,083.4	144.134	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D						Out of range
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	3,747.4	3,389.5	9,545.5	9,524.5	454.137	CC
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	4,300.0	3,959.0	9,546.1	9,520.4	371.451	ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,250.0	6,501.4	9,988.1	9,932.2	178.718	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	2,000.0	1,900.0	9,682.4	9,623.3	163.893	CC
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	3,100.0	2,973.2	9,696.9	9,604.2	104.681	ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,650.0	6,085.1	9,993.1	9,792.3	49.753	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	103.9	0.8	9,591.6	9,591.5	10,000.000	CC
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	400.0	240.8	9,592.0	9,590.5	6,297.285	ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	3,800.0	1,200.0	9,980.5	9,963.6	591.743	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	103.0	0.0	9,559.4	9,559.3	10,000.000	CC
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	200.0	61.2	9,559.6	9,559.1	10,000.000	ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,950.0	6,400.0	9,999.4	9,948.9	198.177	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	3,285.3	3,300.0	9,173.6	9,153.6	457.710	CC
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	3,300.0	3,300.0	9,173.6	9,153.5	456.287	ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	7,150.0	6,427.2	9,928.1	9,878.5	200.008	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	4,787.4	4,458.7	8,879.4	8,848.1	283.410	CC
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,200.0	5,948.8	8,887.5	8,843.7	202.832	ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	7,250.0	6,815.6	9,231.9	9,180.4	179.093	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill						Out of range
Roth A19-13 (PA) - Original Drilling - Original Drilling - As						Out of range
Weber 04-19 (PA) - Original Drilling - Original Drilling - As						Out of range
Winter 09-19 - Original Drilling - Original Drilling - As Drill	3,759.6	3,722.2	7,007.7	6,985.9	320.476	CC
Winter 09-19 - Original Drilling - Original Drilling - As Drill	3,900.0	3,813.6	7,008.4	6,985.5	306.253	ES
Winter 09-19 - Original Drilling - Original Drilling - As Drill	7,100.0	6,490.9	7,400.4	7,351.5	151.248	SF
Winter 15-19 - Original Drilling - Original Drilling - As Drill	2,000.0	1,900.0	8,568.8	8,509.7	145.043	CC
Winter 15-19 - Original Drilling - Original Drilling - As Drill	2,900.0	2,785.3	8,581.0	8,494.4	99.042	ES
Winter 15-19 - Original Drilling - Original Drilling - As Drill	7,200.0	6,497.8	9,262.7	9,048.2	43.182	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,000.0	1,902.0	8,579.5	8,520.4	145.088	CC

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

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-681
Project:	Wells Ranch	TVD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-681	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A Section 19						
Winter 15-19-0 (PA) - Original Drilling - Original Drilling - As Drilled	2,900.0	2,787.3	8,593.0	8,506.3	99.116	ES
Winter 15-19-0 (PA) - Original Drilling - Original Drilling - As Drilled	4,300.0	4,034.3	8,681.5	8,552.9	67.525	SF
Winters 10-19 - Original Drilling - Original Drilling - As Drilled	253.0	159.0	8,508.2	8,507.4	9,932.325	CC
Winters 10-19 - Original Drilling - Original Drilling - As Drilled	400.0	263.1	8,508.6	8,507.0	5,409.182	ES
Winters 10-19 - Original Drilling - Original Drilling - As Drilled	7,600.0	7,600.0	9,308.0	9,255.1	175.857	SF
A Section 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	2,042.6	2,001.4	2,399.8	2,388.9	218.374	CC, ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	6,750.0	6,215.8	3,951.6	3,908.8	92.295	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	532.0	478.0	2,920.3	2,917.8	1,159.540	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	600.0	532.6	2,920.4	2,917.6	1,019.694	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,750.0	6,192.0	3,698.6	3,653.5	82.072	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As Drilled	2,000.0	1,926.0	3,516.4	3,456.6	58.800	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As Drilled	2,200.0	2,125.8	3,519.5	3,453.5	53.324	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As Drilled	6,850.0	6,276.3	4,797.1	4,592.6	23.458	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	356.7	311.8	1,493.9	1,492.3	946.073	CC
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	800.0	748.1	1,495.9	1,491.9	373.377	ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,500.0	6,013.1	2,442.5	2,400.7	58.369	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drilled	356.4	283.4	7,331.6	7,330.1	4,916.590	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drilled	2,100.0	2,014.2	7,334.2	7,323.0	654.634	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drilled	7,500.0	6,727.8	8,312.2	8,247.9	129.398	SF
Simmons 42-20D - Original Drilling - Original Drilling - As Drilled	4,288.9	3,866.4	1,351.0	1,324.2	50.316	CC
Simmons 42-20D - Original Drilling - Original Drilling - As Drilled	4,300.0	3,874.4	1,351.0	1,324.1	50.146	ES
Simmons 42-20D - Original Drilling - Original Drilling - As Drilled	6,550.0	6,116.3	1,609.8	1,562.2	33.789	SF
Snider 1-20EG - Original Drilling - Original Drilling - As Drilled	1,321.8	1,249.8	4,623.4	4,616.4	662.886	CC
Snider 1-20EG - Original Drilling - Original Drilling - As Drilled	2,100.0	2,048.5	4,624.1	4,612.8	409.446	ES
Snider 1-20EG - Original Drilling - Original Drilling - As Drilled	7,500.0	7,500.0	6,045.3	5,995.5	121.463	SF
Stump A20-11 - Original Drilling - Original Drilling - As Drilled	100.0	34.8	4,490.1	4,489.9	10,000.000	CC
Stump A20-11 - Original Drilling - Original Drilling - As Drilled	3,100.0	3,059.8	4,491.0	4,474.0	263.962	ES
Stump A20-11 - Original Drilling - Original Drilling - As Drilled	6,850.0	6,329.2	4,943.7	4,896.7	105.191	SF
Stump A20-12 - Original Drilling - Original Drilling - As Drilled	3,508.2	3,333.0	5,424.7	5,405.1	276.573	CC
Stump A20-12 - Original Drilling - Original Drilling - As Drilled	3,700.0	3,516.4	5,425.3	5,404.2	257.713	ES
Stump A20-12 - Original Drilling - Original Drilling - As Drilled	7,250.0	6,719.0	5,958.9	5,909.1	119.568	SF
Stump A20-13 - Original Drilling - Original Drilling - As Drilled	2,300.9	2,350.3	5,866.6	5,854.0	463.860	CC
Stump A20-13 - Original Drilling - Original Drilling - As Drilled	2,400.0	2,469.8	5,866.8	5,853.6	442.604	ES
Stump A20-13 - Original Drilling - Original Drilling - As Drilled	7,000.0	6,381.0	6,674.4	6,626.9	140.695	SF
Winter 20-19 - Original Drilling - Original Drilling - As Drilled	452.7	382.8	7,391.9	7,389.8	3,602.808	CC
Winter 20-19 - Original Drilling - Original Drilling - As Drilled	1,100.0	1,000.0	7,392.5	7,386.8	1,308.723	ES
Winter 20-19 - Original Drilling - Original Drilling - As Drilled	7,150.0	6,680.2	8,006.1	7,956.1	159.913	SF
Winter 24-19 - Original Drilling - Original Drilling - As Drilled	5,457.6	5,570.6	7,168.5	7,121.2	151.721	CC
Winter 24-19 - Original Drilling - Original Drilling - As Drilled	5,700.0	5,786.1	7,169.0	7,119.8	145.736	ES
Winter 24-19 - Original Drilling - Original Drilling - As Drilled	7,000.0	6,741.8	7,367.9	7,309.3	125.860	SF
Winter 39-19 - Original Drilling - Original Drilling - As Drilled	3,709.3	4,200.0	6,474.7	6,450.2	263.864	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Drilled	7,000.0	6,527.2	6,997.3	6,948.3	142.615	SF
Winter 40-19 - Original Drilling - Original Drilling - As Drilled	5,462.1	5,800.0	6,160.6	6,115.2	135.466	CC
Winter 40-19 - Original Drilling - Original Drilling - As Drilled	5,600.0	5,876.7	6,161.4	6,114.9	132.661	ES
Winter 40-19 - Original Drilling - Original Drilling - As Drilled	6,950.0	6,776.2	6,365.8	6,310.2	114.603	SF

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

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-681
Project:	Wells Ranch	TVD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-681	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A Section 21						
Culbreath 23-21 - Original Drilling - Original Drilling - As D	2,029.5	1,993.4	1,326.5	1,315.5	119.759	CC
Culbreath 23-21 - Original Drilling - Original Drilling - As D	2,100.0	2,064.6	1,326.9	1,315.4	115.653	ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	9,300.0	6,736.4	2,726.0	2,665.0	44.746	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	2,000.0	1,944.0	2,346.9	2,286.6	38.917	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	2,300.0	2,243.5	2,351.9	2,282.3	33.797	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	9,800.0	6,739.0	2,739.4	2,495.3	11.223	SF
Harper A21-618 - Original Drilling - APD - Rev 0	2,000.0	1,983.0	1,538.4	1,526.3	127.337	CC, ES
Harper A21-618 - Original Drilling - APD - Rev 0	16,827.0	16,708.2	4,058.4	3,682.9	10.808	SF
Harper A21-626 - Original Drilling - APD - Rev 0	2,000.0	1,983.0	1,512.9	1,500.8	125.228	CC, ES
Harper A21-626 - Original Drilling - APD - Rev 0	16,827.0	16,776.3	3,534.8	3,158.8	9.402	SF
Harper A21-631 - Original Drilling - APD - Rev 0	2,000.0	1,983.0	1,491.0	1,479.0	123.420	CC, ES
Harper A21-631 - Original Drilling - APD - Rev 0	16,827.0	16,721.6	3,158.5	2,782.7	8.404	SF
Harper A21-637 - Original Drilling - APD - Rev 0	2,505.2	2,743.2	1,453.7	1,437.7	91.126	CC, ES
Harper A21-637 - Original Drilling - APD - Rev 0	16,827.0	16,571.3	2,784.3	2,411.3	7.463	SF
Harper A21-643 - Original Drilling - APD - Rev 0	2,000.0	1,997.0	134.8	122.7	11.117	CC, ES
Harper A21-643 - Original Drilling - APD - Rev 0	16,827.0	16,636.4	2,364.3	1,990.1	6.318	SF
Harper A21-649 - Original Drilling - APD - Rev 0	2,000.0	2,002.0	112.9	100.8	9.302	CC, ES
Harper A21-649 - Original Drilling - APD - Rev 0	16,827.0	16,731.8	2,005.6	1,630.3	5.345	SF
Harper A21-656 - Original Drilling - APD - Rev 0	2,000.0	2,002.0	87.4	75.3	7.202	CC, ES
Harper A21-656 - Original Drilling - APD - Rev 0	16,827.0	16,800.2	1,624.7	1,249.1	4.325	SF
Harper A21-664 - Original Drilling - APD - Rev 0	2,000.0	2,002.0	65.6	53.4	5.401	CC, ES
Harper A21-664 - Original Drilling - APD - Rev 0	16,827.0	17,316.7	1,240.5	873.8	3.383	SF
Harper A21-669 - Original Drilling - APD - Rev 0	2,000.0	2,001.0	43.7	31.6	3.601	CC, ES
Harper A21-669 - Original Drilling - APD - Rev 0	16,827.0	17,287.3	783.3	403.3	2.061	SF
Harper A21-674 - Original Drilling - APD - Rev 0	2,000.0	2,001.0	21.9	9.7	1.801	CC
Harper A21-674 - Original Drilling - APD - Rev 0	16,742.7	21,002.5	429.3	-20.3	0.955	Level 1, ES, SF
Kona A19-616 - Original Drilling - APD - Rev 0	1,900.0	1,879.0	1,540.3	1,528.8	134.622	CC
Kona A19-616 - Original Drilling - APD - Rev 0	2,000.0	1,958.1	1,540.8	1,528.8	128.571	ES
Kona A19-616 - Original Drilling - APD - Rev 0	10,400.0	6,250.0	4,961.6	4,890.7	69.956	SF
Kona A19-624 - Original Drilling - APD - Rev 0	2,000.0	1,979.0	1,518.4	1,506.4	125.819	CC, ES
Kona A19-624 - Original Drilling - APD - Rev 0	9,700.0	6,800.0	4,182.5	4,115.1	62.037	SF
Kona A19-630 - Original Drilling - APD - Rev 0	2,000.0	1,979.0	1,493.0	1,480.9	123.710	CC, ES
Kona A19-630 - Original Drilling - APD - Rev 0	6,550.0	7,368.8	3,016.7	2,965.9	59.334	SF
Kona A19-636 - Original Drilling - APD - Rev 0	2,402.4	2,608.4	1,463.4	1,448.1	96.069	CC, ES
Kona A19-636 - Original Drilling - APD - Rev 0	6,573.9	7,809.4	2,691.5	2,636.2	48.712	SF
Kona A19-640 - Original Drilling - APD - Rev 0	1,900.0	1,897.0	201.8	190.3	17.555	CC, ES
Kona A19-640 - Original Drilling - APD - Rev 0	2,100.0	2,084.4	209.2	196.5	16.559	SF
Kona A19-646 - Original Drilling - APD - Rev 0	2,000.0	2,002.0	187.9	175.8	15.481	CC, ES
Kona A19-646 - Original Drilling - APD - Rev 0	2,300.0	2,302.5	199.2	185.2	14.213	SF
Kona A19-652 - Original Drilling - APD - Rev 0	2,000.0	2,002.0	173.8	161.7	14.318	CC, ES
Kona A19-652 - Original Drilling - APD - Rev 0	2,300.0	2,302.5	183.8	169.8	13.115	SF
Kona A19-662 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	151.8	139.7	12.512	CC
Kona A19-662 - Original Drilling - APD - Rev 0	2,100.0	2,100.0	152.3	139.5	11.936	ES
Kona A19-662 - Original Drilling - APD - Rev 0	2,500.0	2,498.6	166.8	151.5	10.958	SF
Kona A19-670 - Original Drilling - APD - Rev 0	1,900.0	1,900.0	150.2	138.7	13.056	CC
Kona A19-670 - Original Drilling - APD - Rev 0	2,000.0	1,999.1	150.5	138.4	12.411	ES
Kona A19-670 - Original Drilling - APD - Rev 0	7,100.0	7,247.1	607.3	550.6	10.711	SF
Kona A19-679 - Original Drilling - APD - Rev 0	2,000.0	2,001.0	163.9	151.8	13.506	CC, ES
Kona A19-679 - Original Drilling - APD - Rev 0	7,464.4	7,985.3	228.9	163.2	3.487	SF
Kona A19-685 - Original Drilling - APD - Rev 0	8,048.7	7,588.8	21.9	-47.7	0.315	Level 1, CC, ES, SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	4,147.7	3,979.1	267.5	141.4	2.121	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	4,200.0	4,024.8	268.7	141.0	2.104	ES, SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	8,474.7	6,791.0	272.5	45.2	1.199	Level 2, CC, ES, SF

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

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-681
Project:	Wells Ranch	TVD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-681	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Produccion
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

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 Section 21						
McKee 22-21 - Original Drilling - Original Drilling - As Dril	3,922.9	3,764.6	1,136.6	1,113.7	49.622	CC
McKee 22-21 - Original Drilling - Original Drilling - As Dril	4,000.0	3,832.7	1,137.2	1,113.7	48.392	ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	8,500.0	6,776.7	1,488.4	1,434.6	27.667	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril	9,524.2	6,790.2	100.9	32.1	1.466	Level 3, CC, ES, SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	9,528.1	6,747.0	1,444.5	1,374.9	20.733	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	9,700.0	6,747.6	1,454.7	1,384.2	20.630	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril	10,819.6	6,761.5	38.7	-53.1	0.421	Level 1, CC, ES, SF
McKee 42-21 - Original Drilling - Original Drilling - As Dril	10,886.1	6,719.7	1,620.4	1,527.8	17.489	CC
McKee 42-21 - Original Drilling - Original Drilling - As Dril	10,900.0	6,719.7	1,620.5	1,527.7	17.469	ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	11,000.0	6,719.6	1,624.4	1,531.0	17.387	SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	10,839.2	6,731.0	2,500.7	2,237.6	9.506	CC, ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	11,100.0	6,731.0	2,514.3	2,248.6	9.462	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	100.0	54.8	687.5	687.3	3,761.742	CC
Wells Trust 13-21 - Original Drilling - Original Drilling - As	1,400.0	1,354.2	688.6	681.2	93.530	ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	3,000.0	2,939.6	837.2	820.8	50.961	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	2,031.2	1,989.9	1,863.3	1,852.3	169.169	CC, ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	9,400.0	6,745.7	4,845.2	4,788.8	85.923	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	2,011.7	1,948.8	1,766.4	1,755.6	163.934	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	10,100.0	6,835.6	4,681.6	4,616.5	71.950	SF

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-681
Project:	Wells Ranch	TVD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4774.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-681	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Produccction
Reference Design:	APD - Rev 0	Offset TVD Reference:	Offset Datum

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 Section 22						
Carpio 22-01 - Original Drilling - Original Drilling - As Dril	16,142.4	6,675.6	3,859.6	3,670.1	20.370	CC
Carpio 22-01 - Original Drilling - Original Drilling - As Dril	16,200.0	6,676.2	3,860.0	3,669.7	20.285	ES
Carpio 22-01 - Original Drilling - Original Drilling - As Dril	16,700.0	6,681.3	3,899.6	3,703.9	19.923	SF
Carpio 22-04-19 - Original Drilling - Original Drilling - As D	14,656.7	6,848.7	3,288.3	3,120.0	19.531	CC
Carpio 22-04-19 - Original Drilling - Original Drilling - As D	14,700.0	6,848.6	3,288.6	3,119.7	19.466	ES
Carpio 22-04-19 - Original Drilling - Original Drilling - As D	15,100.0	6,847.5	3,318.1	3,144.9	19.164	SF
Carpio 22-41 - Original Drilling - Original Drilling - As Dril	16,301.5	6,707.2	2,835.4	2,608.5	12.495	CC, ES
Carpio 22-41 - Original Drilling - Original Drilling - As Dril	16,600.0	6,706.0	2,851.1	2,621.3	12.407	SF
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	14,822.6	6,771.4	3,888.4	3,723.6	23.602	CC
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	14,900.0	6,772.4	3,889.1	3,723.3	23.451	ES
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	15,500.0	6,780.7	3,946.9	3,774.6	22.901	SF
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	15,792.9	6,802.0	3,442.2	3,259.1	18.793	CC
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	15,800.0	6,802.1	3,442.2	3,259.0	18.783	ES
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	16,300.0	6,807.8	3,479.4	3,290.9	18.462	SF
Eisenstat 22-11 (PA) - Original Drilling - Original Drilling -	16,170.1	6,745.0	143.5	-218.2	0.397	Level 1, CC, ES, SF
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	14,708.5	6,758.1	1,755.4	1,592.8	10.796	CC, ES
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	14,800.0	6,757.7	1,757.8	1,594.6	10.768	SF
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	15,500.0	6,766.3	525.0	347.0	2.950	SF
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	15,516.5	6,766.4	524.7	346.9	2.950	CC, ES
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	13,700.0	6,770.0	258.2	114.0	1.791	ES, SF
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	13,712.8	6,769.9	257.9	114.1	1.794	CC
Eisenstat 22-23 - Original Drilling - Original Drilling - As D	12,304.3	6,758.5	1,239.5	1,121.4	10.501	CC, ES, SF
Gill Land Assoc. 1 (PA) - Original Drilling - Original Drillin	16,164.1	6,746.0	1,375.3	1,013.6	3.803	CC, ES
Gill Land Assoc. 1 (PA) - Original Drilling - Original Drillin	16,200.0	6,746.0	1,375.7	1,013.9	3.802	SF
Gill Land Assoc. 22-02 (PA) - Original Drilling - Original D	13,488.5	6,756.0	1,412.6	1,100.7	4.529	CC
Gill Land Assoc. 22-02 (PA) - Original Drilling - Original D	13,500.0	6,756.0	1,412.6	1,100.6	4.528	ES, SF
Gill Land Assoc. 22-03 - Original Drilling - Original Drilling	12,199.4	6,765.8	125.3	8.8	1.076	Level 2, CC, ES, SF
Gill Land Assoc. 22-04 (PA) - Original Drilling - Original D	14,780.6	6,754.0	90.5	-245.4	0.269	Level 1, CC, ES, SF
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	12,143.2	6,724.0	2,690.0	2,575.1	23.405	CC
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	12,200.0	6,723.9	2,690.6	2,575.0	23.272	ES
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	12,600.0	6,723.4	2,728.5	2,609.2	22.873	SF
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	13,450.5	6,728.0	3,972.0	3,833.1	28.598	CC
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	13,500.0	6,727.0	3,972.3	3,832.7	28.457	ES
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	14,300.0	6,716.1	4,061.7	3,913.4	27.390	SF
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	13,468.0	6,740.5	2,673.7	2,534.5	19.204	CC
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	13,500.0	6,740.5	2,673.9	2,534.3	19.152	ES
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	13,800.0	6,740.4	2,694.3	2,551.8	18.915	SF
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	12,181.3	6,679.6	3,946.3	3,831.0	34.218	CC
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	12,200.0	6,679.8	3,946.3	3,830.7	34.140	ES
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	13,200.0	6,700.0	4,075.6	3,949.0	32.181	SF
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	12,794.4	6,741.1	3,417.7	3,290.6	26.881	CC
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	12,800.0	6,741.1	3,417.7	3,290.5	26.865	ES
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	13,500.0	6,743.8	3,489.8	3,355.3	25.944	SF
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	14,820.8	6,735.7	2,563.5	2,399.0	15.585	CC, ES
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	15,100.0	6,736.0	2,578.6	2,411.6	15.438	SF

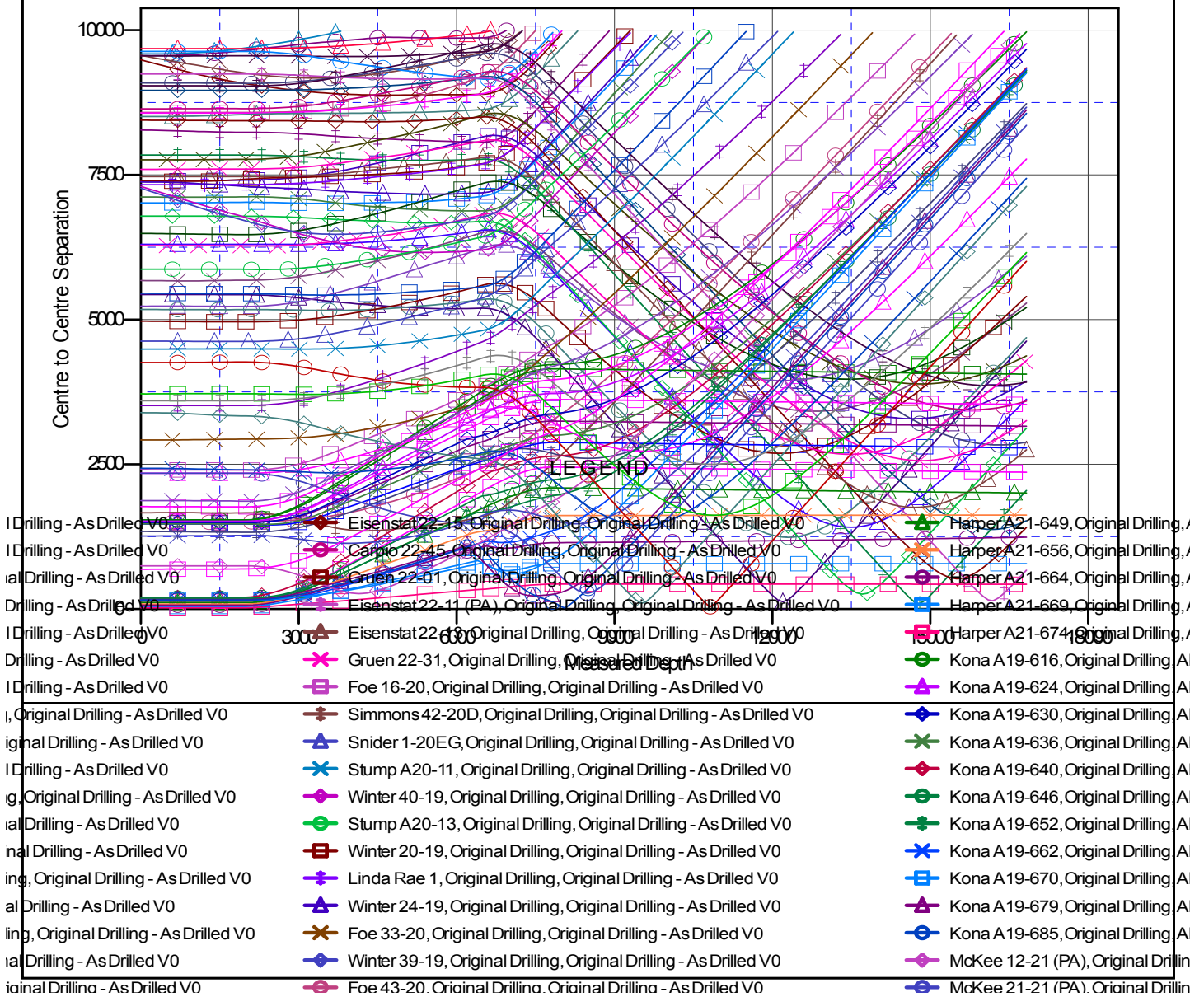
Anticollision Summary Report

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

Reference Depths are relative to WELL @ 4774.0ft (Original Well Elev.)
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Harper A21-681
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.61°

Ladder Plot



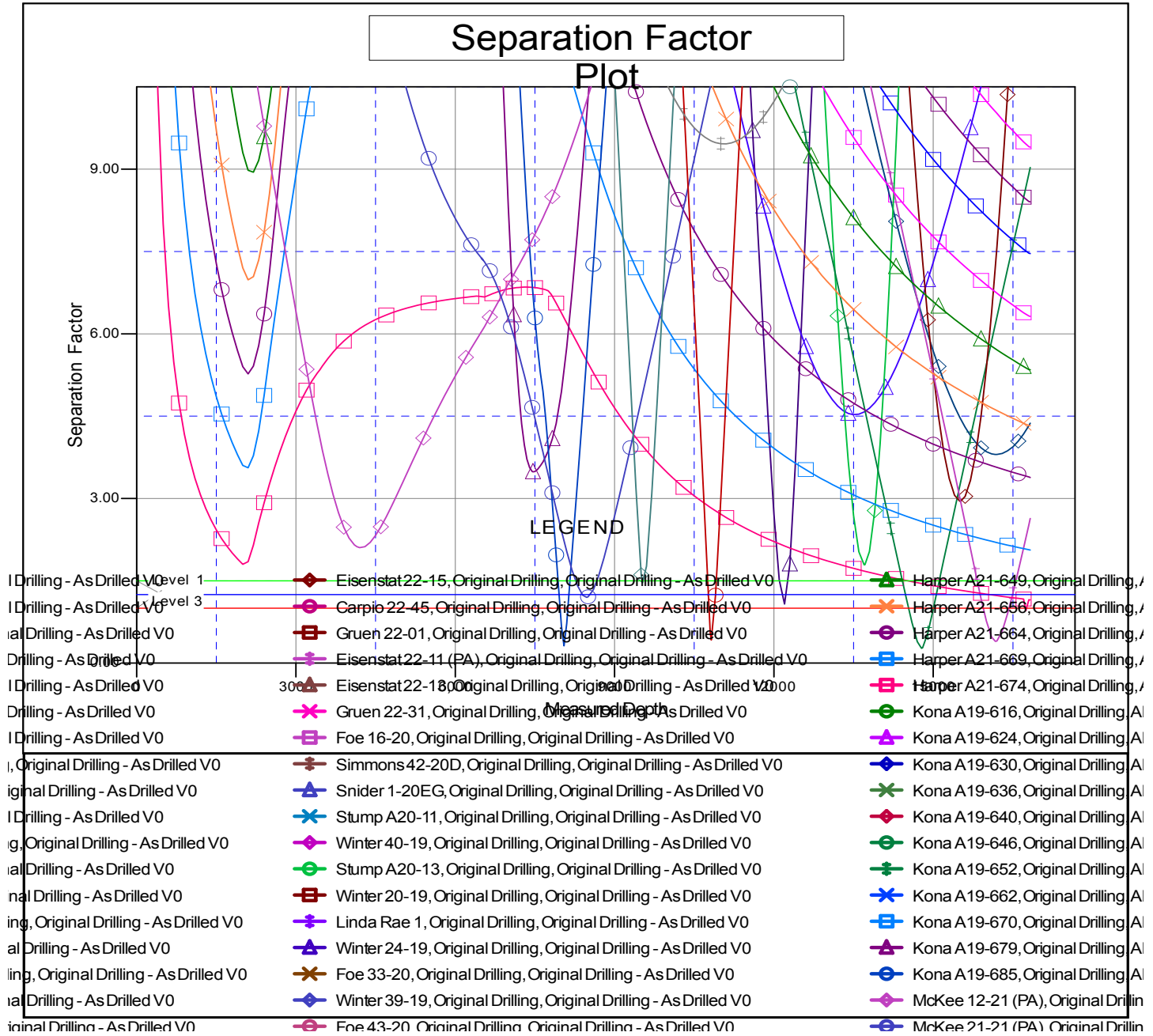
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