1625 Broadway
Suite 2200
Denver, Colorado 80202

Tel: 303.228.4000
Fax: 303.228.4280

noble energy

January 23, 2017

PDC Energy, Inc.
Attn: Mr. Nick Lebsock
1775 Sherman Street, Suite 3000
Denver, CO 80203

RE: **Statewide Fracture Stimulation Setback Waiver – COGCC Rule 317(s)**
Harper A21-681 Horizontal Well
Township 6 North, Range 64 West, 6th P.M.
Section 21: NW/4SW/4
Weld County, Colorado

Dear Mr. Lebsock:

Noble Energy Inc. ("Noble") plans to drill the Harper A21-681 Horizontal Well (the "Well"), with a wellbore lateral as depicted on the enclosed plat.

Our records indicate that PDC Energy, Inc. operates the following well(s) which are located within 150' from our proposed horizontal wellbore lateral:

McKee 31-21 – located 101 feet from the proposed subject well
McKee 41-21 – located 39 feet from the proposed subject well

Colorado Oil and Gas Conservation Commission ("COGCC") Rule 317(s) provides that no portion of a proposed wellbore's treated interval shall be located less than one hundred fifty (150') feet from any existing or permitted oil or gas wellbore, but this requirement may be waived in writing by the operator of the encroached upon well.

Noble respectfully requests that PDC Energy, Inc. waive this requirement and allow Noble to drill the Well as proposed. Accordingly, by executing this letter, PDC Energy, Inc. waives COGCC Rule 317(s) and grants its consent to allow Noble to drill the Well within the 150' minimum intra-well distance provided for in said rule.

If you have any questions or need any additional information, please call me at **(720) 587-2036**.

Very truly yours,
NOBLE ENERGY, INC.

Robert Lee
Landman

Enclosures

PDC Energy, Inc.

By: Erik Roach

Printed Name: ERIK ROACH

Title: PRD MANAGER

Date: 2/1/17

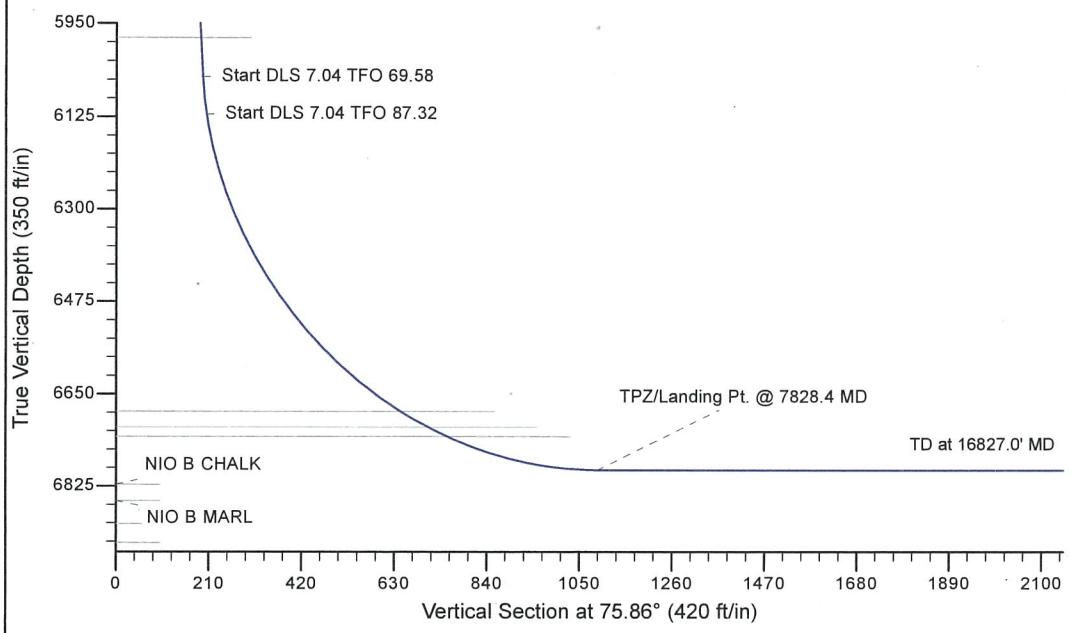
Project: Wells Ranch
Site: A Section 21-T6N-R64W Weld County, CO
Well: Harper A21-681
Wellbore: Original Drilling
Design: APD - Rev 0

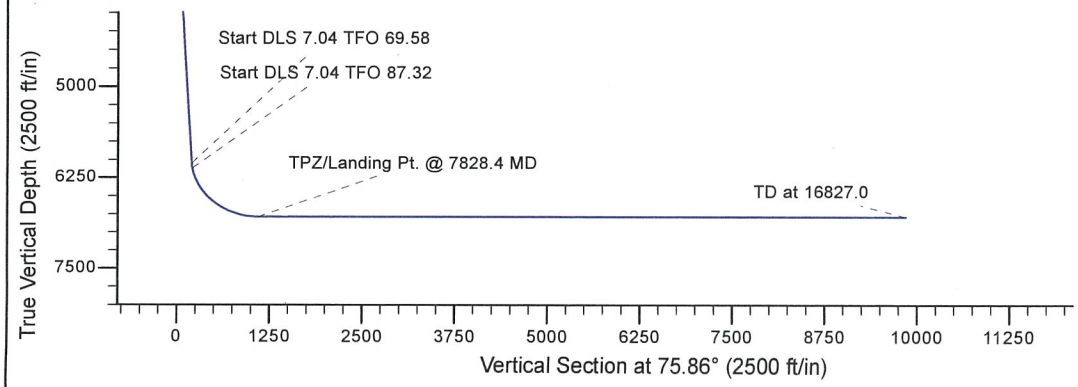
Northern Region - DJ Basin

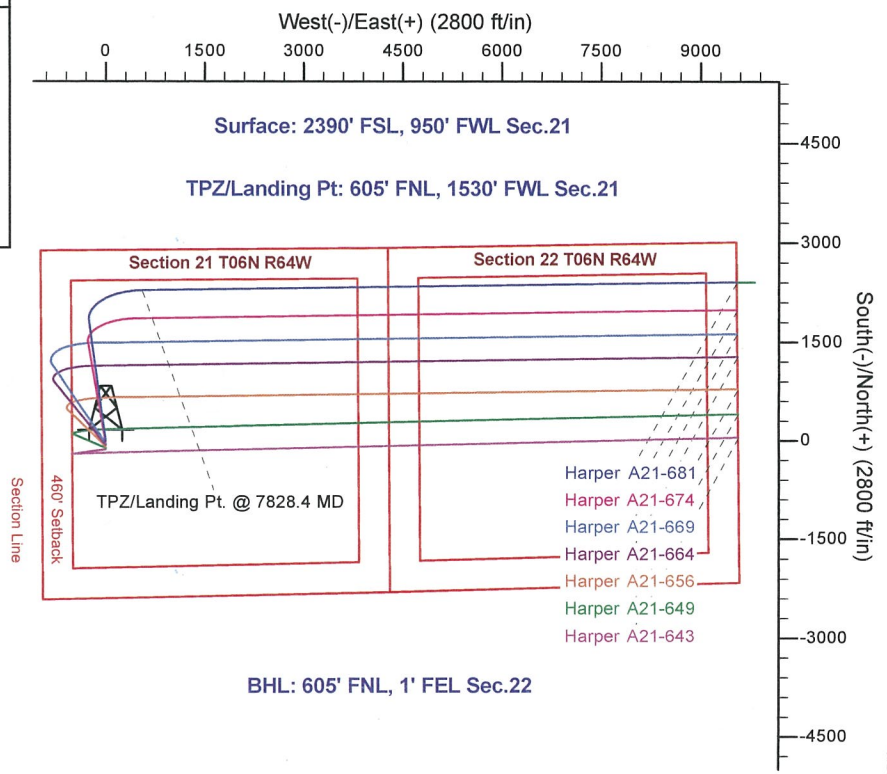
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

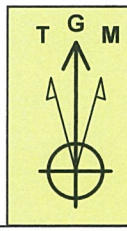
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	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









Azimuths to Grid North
True North: -0.61°
Magnetic North: 7.55°

Magnetic Field
Strength: 52504.0snT
Dip Angle: 66.95°
Date: 12/29/2016
Model: IGRF2015

WELL DETAILS: Harper A21-681

Ground Elevation: 4744.0

		Northing	Easting	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 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** 1/3/2017

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 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 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 Dril	3,759.6	3,722.2	7,007.7	6,985.9	320.476	CC
Winter 09-19 - Original Drilling - Original Drilling - As Dril	3,900.0	3,813.6	7,008.4	6,985.5	306.253	ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	7,100.0	6,490.9	7,400.4	7,351.5	151.248	SF
Winter 15-19 - Original Drilling - Original Drilling - As Dril	2,000.0	1,900.0	8,568.8	8,509.7	145.043	CC
Winter 15-19 - Original Drilling - Original Drilling - As Dril	2,900.0	2,785.3	8,581.0	8,494.4	99.042	ES
Winter 15-19 - Original Drilling - Original Drilling - As Dril	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 covergent 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 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 19						
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,900.0	2,787.3	8,593.0	8,506.3	99.116	ES
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,300.0	4,034.3	8,681.5	8,552.9	67.525	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	253.0	159.0	8,508.2	8,507.4	9,932.325	CC
Winters 10-19 - Original Drilling - Original Drilling - As Dr	400.0	263.1	8,508.6	8,507.0	5,409.182	ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	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 D	2,000.0	1,926.0	3,516.4	3,456.6	58.800	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,200.0	2,125.8	3,519.5	3,453.5	53.324	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	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 Drille	356.4	283.4	7,331.6	7,330.1	4,916.590	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	2,100.0	2,014.2	7,334.2	7,323.0	654.634	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	7,500.0	6,727.8	8,312.2	8,247.9	129.398	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	4,288.9	3,866.4	1,351.0	1,324.2	50.316	CC
Simmons 42-20D - Original Drilling - Original Drilling - As	4,300.0	3,874.4	1,351.0	1,324.1	50.146	ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,550.0	6,116.3	1,609.8	1,562.2	33.789	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	1,321.8	1,249.8	4,623.4	4,616.4	662.886	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	2,100.0	2,048.5	4,624.1	4,612.8	409.446	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	7,500.0	7,500.0	6,045.3	5,995.5	121.463	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	100.0	34.8	4,490.1	4,489.9	10,000.000	CC
Stump A20-11 - Original Drilling - Original Drilling - As Dr	3,100.0	3,059.8	4,491.0	4,474.0	263.962	ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,850.0	6,329.2	4,943.7	4,896.7	105.191	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	3,508.2	3,333.0	5,424.7	5,405.1	276.573	CC
Stump A20-12 - Original Drilling - Original Drilling - As Dr	3,700.0	3,516.4	5,425.3	5,404.2	257.713	ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	7,250.0	6,719.0	5,958.9	5,909.1	119.568	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	2,300.9	2,350.3	5,866.6	5,854.0	463.860	CC
Stump A20-13 - Original Drilling - Original Drilling - As Dr	2,400.0	2,469.8	5,866.8	5,853.6	442.604	ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	7,000.0	6,381.0	6,674.4	6,626.9	140.695	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	452.7	382.8	7,391.9	7,389.8	3,602.808	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	1,100.0	1,000.0	7,392.5	7,386.8	1,308.723	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	7,150.0	6,680.2	8,006.1	7,956.1	159.913	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	5,457.6	5,570.6	7,168.5	7,121.2	151.721	CC
Winter 24-19 - Original Drilling - Original Drilling - As Dril	5,700.0	5,786.1	7,169.0	7,119.8	145.736	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	7,000.0	6,741.8	7,367.9	7,309.3	125.860	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	3,709.3	4,200.0	6,474.7	6,450.2	263.864	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	7,000.0	6,527.2	6,997.3	6,948.3	142.615	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	5,462.1	5,800.0	6,160.6	6,115.2	135.466	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	5,600.0	5,876.7	6,161.4	6,114.9	132.661	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,950.0	6,776.2	6,365.8	6,310.2	114.603	SF

Anticollision Summary Report

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Project:	Wells Ranch	**TVD Reference:**	WELL @ 4774.0ft (Original Well Elev.)
Reference Site:	A Section 21	**MD Reference:**	WELL @ 4774.0ft (Original Well Elev.)
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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 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 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 covergent 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 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 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 Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

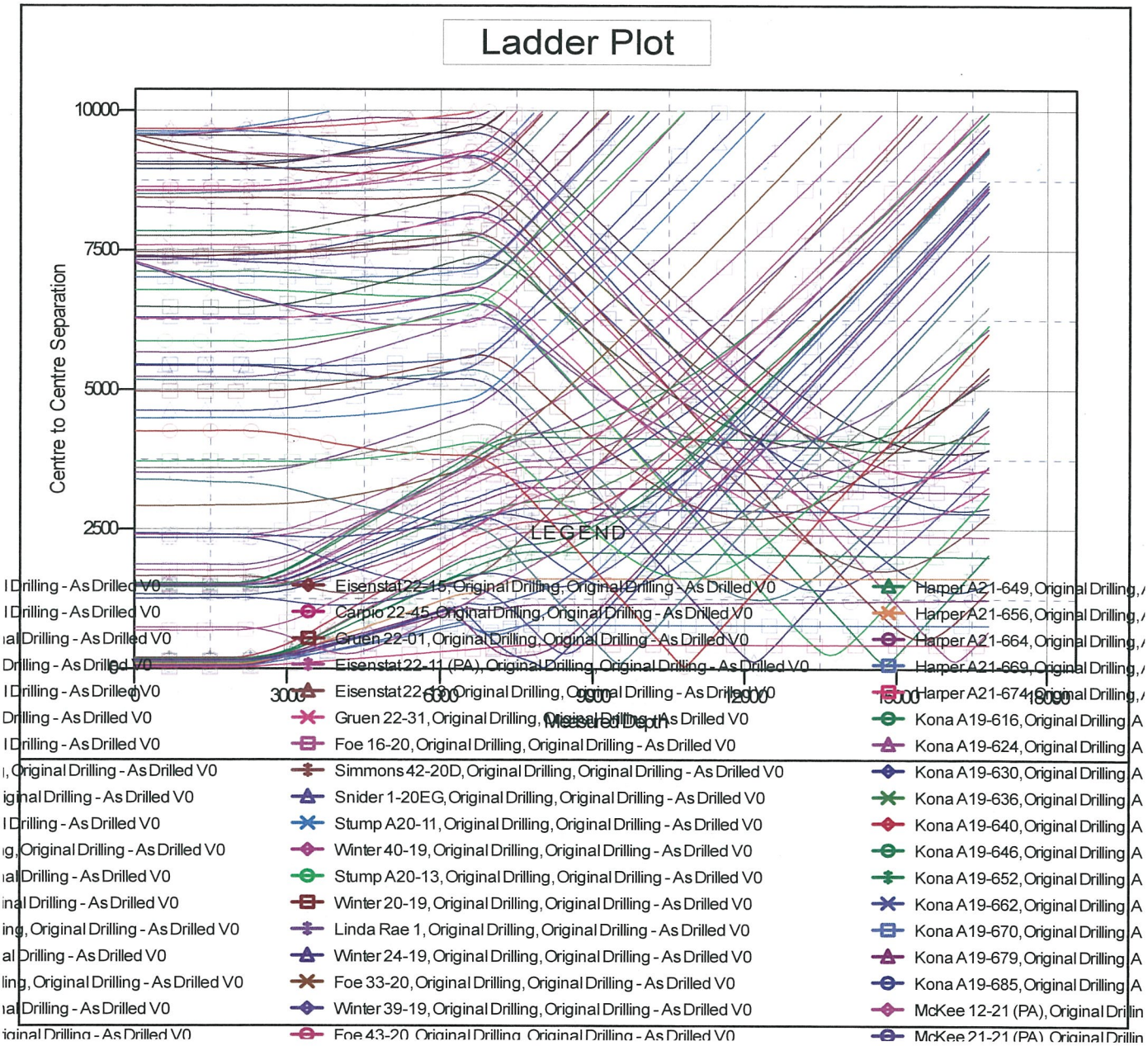
Summary

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 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

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 Producction
Reference Design:	APD - Rev 0	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4774.0ft (Original Well Elev.	Coordinates are relative to: Harper A21-681
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: 0.61°



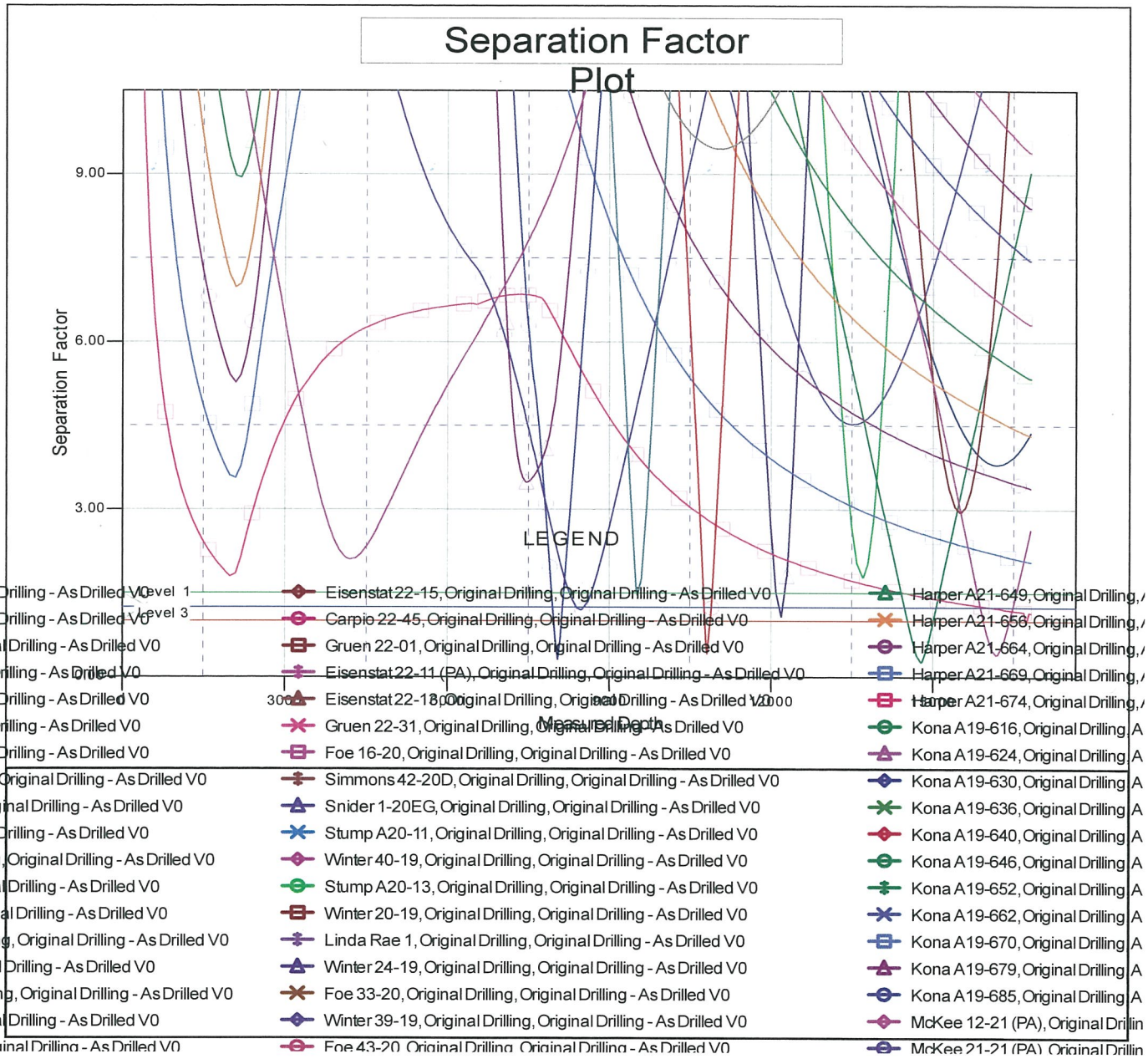
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well 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 Producction
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°



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

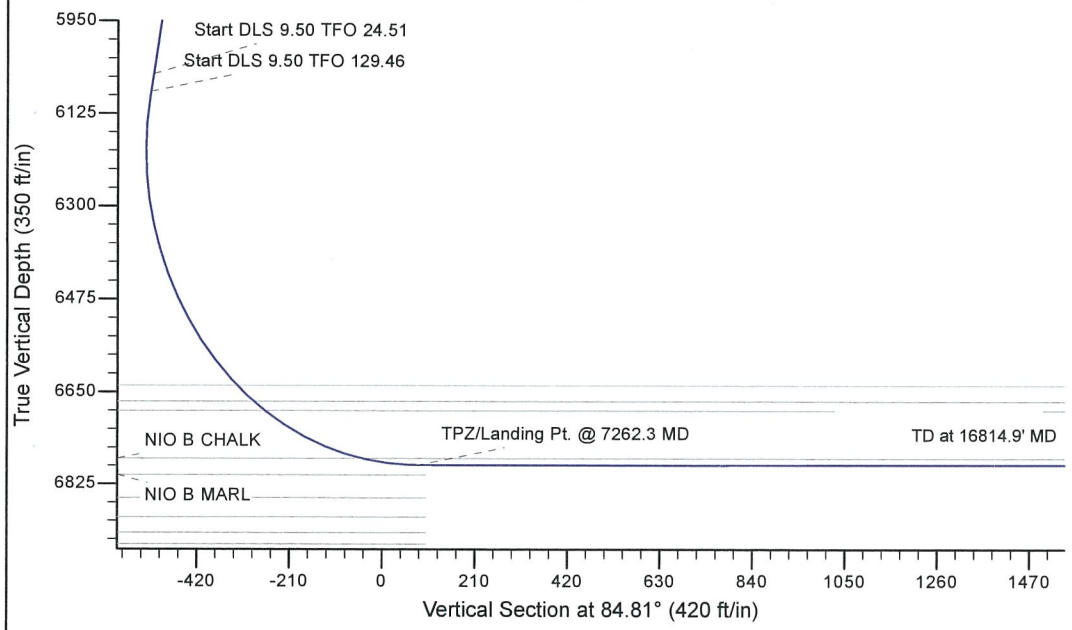
Project: Wells Ranch
Site: A Section 21-T6N-R64W Weld County, CO
Well: Harper A21-656
Wellbore: Original Drilling
Design: APD - Rev 0

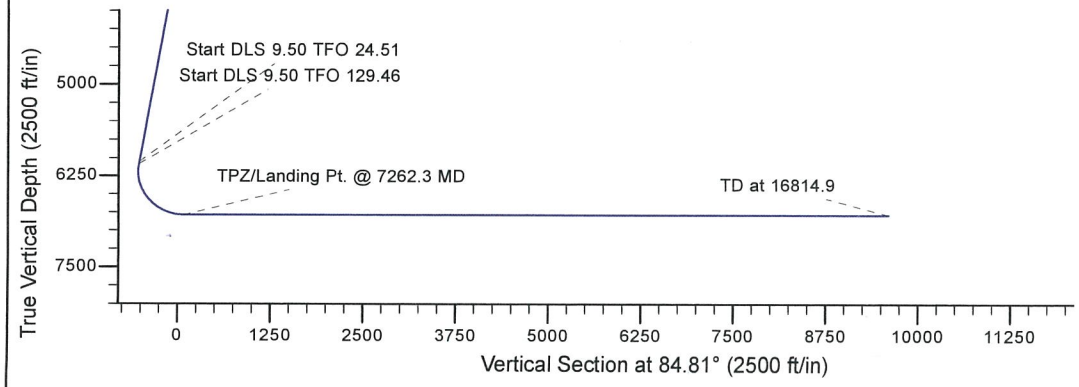
Northern Region - DJ Basin

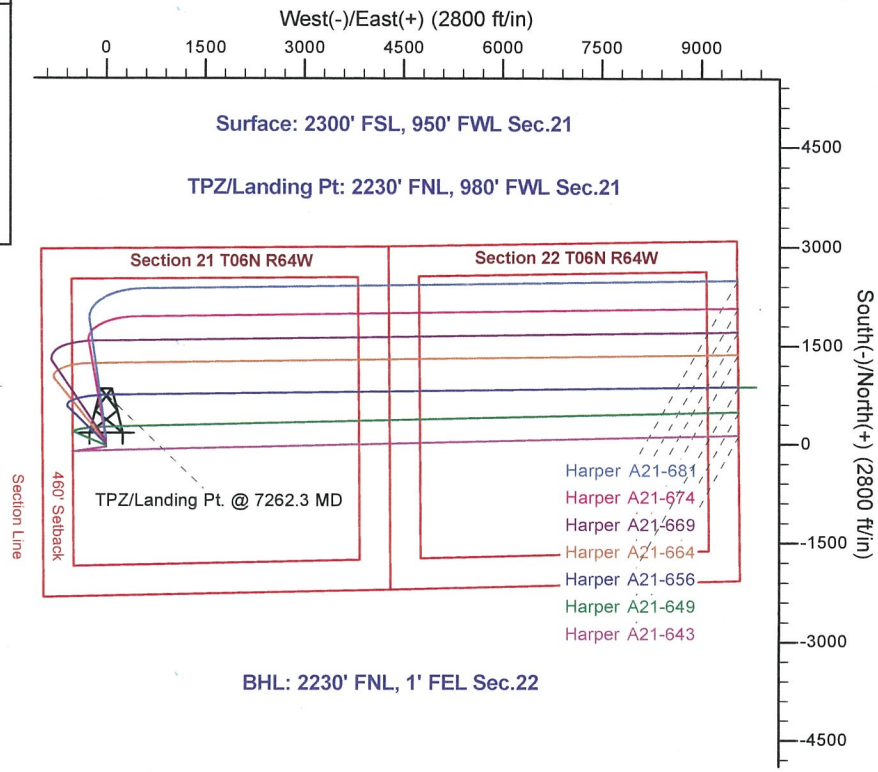
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

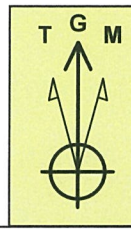
SECTION DETAILS

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	2800.0	0.00	0.00	2800.0	0.0	0.0	0.00	0.00	0.0	
3	3575.0	15.50	314.00	3565.6	72.4	-74.9	2.00	314.00	-68.1	
4	6153.2	15.50	314.00	6050.0	551.0	-570.6	0.00	0.00	-518.4	
5	6187.9	18.55	318.30	6083.2	558.3	-577.6	9.50	24.51	-524.7	
6	7262.3	90.00	89.26	6790.0	745.0	10.0	9.50	129.46	77.3	
7	16814.9	90.00	89.26	6790.0	868.2	9561.8	0.00	0.00	9601.2	Harper A21-656 BHL 2230'FNL, 1'FEL









Azimuths to Grid North
True North: -0.61°
Magnetic North: 7.55°

Magnetic Field
Strength: 52503.9snT
Dip Angle: 66.95°
Date: 12/29/2016
Model: IGRF2015

WELL DETAILS: Harper A21-656

Ground Elevation: 4742.0

		Northing	Easting	Latitude	Longitude
0.0	0.0	1415651.72	3261196.81	40.4705700	-104.5611700

Plan: APD - Rev 0 (Harper A21-656/Original Drilling)

Created By: Shailey Jewell Date: 16:11, December 29 2016

OK to submit with 2A as per Noble Drilling
12/29/2016 4:14