

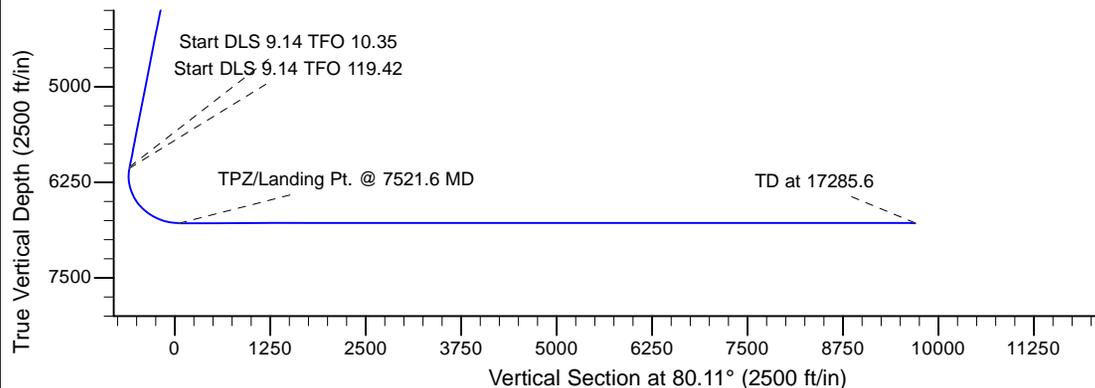
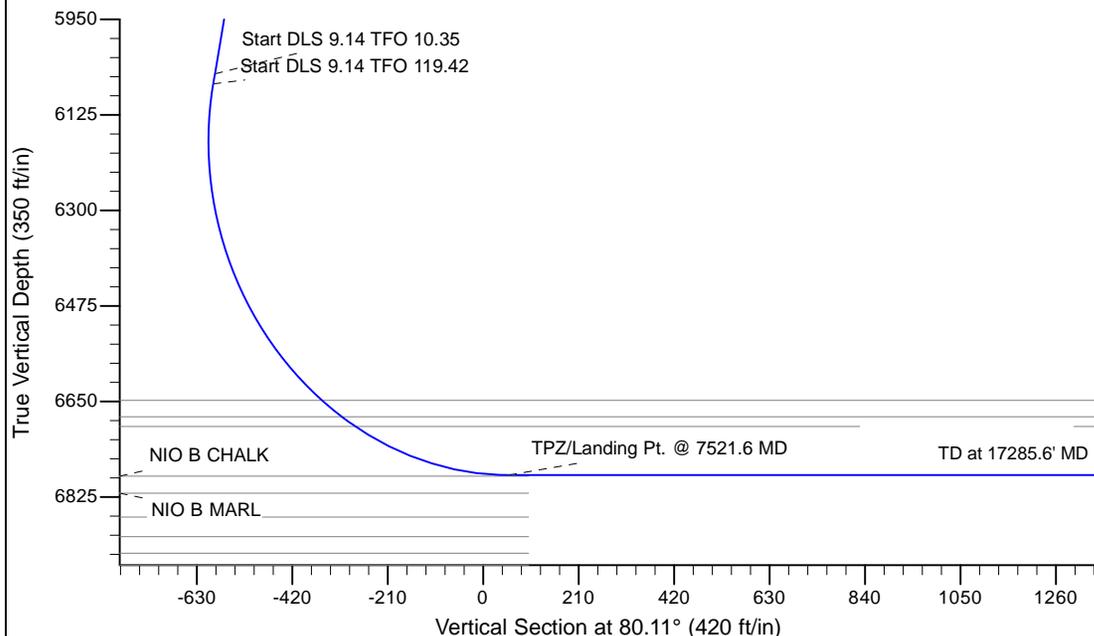
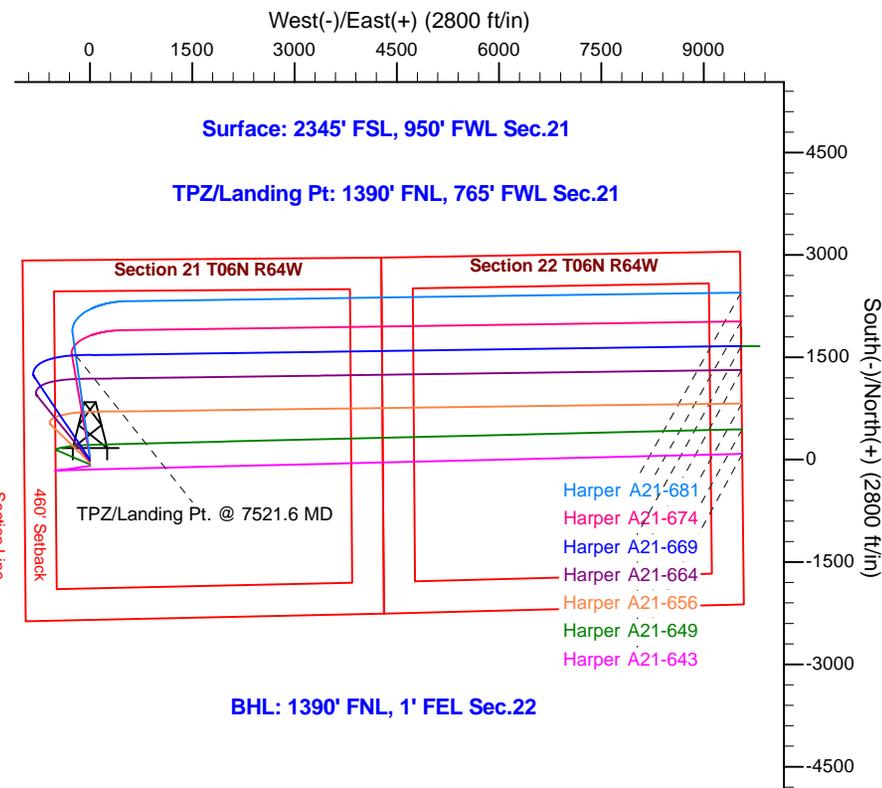
Project: Wells Ranch
 Site: A Section 21-T6N-R64W Weld County, CO
 Well: Harper A21-669
 Wellbore: Original Drilling
 Design: APD - Rev 0

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	V Sect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2400.0	0.00	0.00	2400.0	0.0	0.0	0.00	0.00	0.0	
3	3687.5	25.75	326.00	3644.6	235.8	-159.1	2.00	326.00	-116.2	
4	6358.1	25.75	326.00	6050.0	1197.7	-807.9	0.00	0.00	-590.1	
5	6378.7	27.61	326.73	6068.4	1205.4	-813.0	9.14	10.35	-593.8	
6	7521.6	90.00	89.20	6785.0	1530.0	-210.0	9.14	119.42	56.0	
7	17285.6	90.00	89.20	6785.0	1666.0	9553.1	0.00	0.00	9697.3	Harper A21-669 BHL 1390'FNL, 1'FEL



T G M

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 A21-669					
Northing	Easting	Ground Elevation: 4743.0	Latitude	Longitude	
0.0	0.0	1415695.44	3261196.35	40.4706900	-104.5611700
Plan: APD - Rev 0 (Harper A21-669/Original Drilling)					
Created By: Shailey Jewell			Date: 16:27, December 29 2016		
OK to submit with 2A as per Noble Drilling					
12/29/2016 4:30					

Northern Region - DJ Basin

Wells Ranch

A Section 21

Harper A21-669

Original Drilling

APD - Rev 0

Anticollision Summary Report

29 December, 2016

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Harper A21-669
Project:	Wells Ranch	TVD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-669	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	12/29/2016		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,285.6	APD - Rev 0 (Original Drilling)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Summary						
Offset Well - Wellbore - Design						
A Section 19						
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,564.7	6,137.1	8,616.3	8,419.0	43.671	CC
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,600.0	6,169.3	8,617.3	8,418.9	43.442	ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	7,100.0	6,560.2	8,832.6	8,621.7	41.891	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,529.2	6,178.6	7,431.7	7,390.2	178.900	CC, ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	7,000.0	6,583.2	7,601.7	7,557.5	172.243	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,520.3	6,100.0	6,240.2	6,198.8	150.913	CC, ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,950.0	6,491.2	6,383.2	6,339.3	145.557	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D						Out of range
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	6,488.2	6,146.7	8,931.0	8,888.2	208.658	CC, ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,300.0	6,633.0	9,382.3	9,329.2	176.535	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,450.4	6,033.7	9,202.8	9,007.2	47.044	CC, ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,050.0	6,531.3	9,457.5	9,246.1	44.748	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	6,480.6	6,180.2	9,577.8	9,535.0	223.511	CC, ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	6,950.0	6,474.8	9,745.3	9,700.1	215.651	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,509.5	6,144.6	9,219.0	9,175.3	211.241	CC, ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,950.0	6,527.7	9,367.3	9,321.2	203.469	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,464.3	6,080.0	8,897.6	8,855.1	209.570	CC, ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,950.0	6,429.3	9,073.6	9,028.6	201.672	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,507.4	6,269.8	8,215.9	8,172.8	190.560	CC, ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	7,000.0	6,747.3	8,398.0	8,352.1	183.005	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,503.4	6,232.6	9,873.7	9,831.6	234.620	CC, ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,900.0	6,533.0	9,995.5	9,951.3	225.898	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As						Out of range
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,562.0	6,140.6	9,898.9	9,701.4	50.137	CC, ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,900.0	6,431.5	9,988.3	9,781.5	48.294	SF
Winter 09-19 - Original Drilling - Original Drilling - As Drill	6,458.7	6,018.1	6,391.7	6,349.9	152.972	CC, ES
Winter 09-19 - Original Drilling - Original Drilling - As Drill	7,300.0	7,300.0	6,856.7	6,809.9	146.512	SF
Winter 15-19 - Original Drilling - Original Drilling - As Drill	6,439.0	6,023.4	8,131.5	7,936.1	41.618	CC
Winter 15-19 - Original Drilling - Original Drilling - As Drill	6,450.0	6,033.4	8,131.6	7,935.8	41.547	ES
Winter 15-19 - Original Drilling - Original Drilling - As Drill	7,050.0	6,531.3	8,392.0	8,180.5	39.691	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,200.0	4,009.2	8,399.8	8,273.9	66.687	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	5,049.5	3,700.0	8,362.5	8,241.3	69.025	CC
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	5,100.0	3,700.0	8,362.6	8,241.3	68.904	ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,488.1	6,018.7	7,936.8	7,895.1	190.347	CC, ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	7,450.0	7,450.0	8,535.8	8,488.8	181.573	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 A21-669
Project:	Wells Ranch	TVD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-669	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 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	2,507.7	2,464.5	2,364.3	2,350.7	173.847	CC
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	2,600.0	2,556.7	2,364.6	2,350.4	167.543	ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	6,600.0	6,216.8	3,105.8	3,063.7	73.750	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	5,656.1	5,385.5	2,713.8	2,677.9	75.608	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	5,800.0	5,506.8	2,714.6	2,677.6	73.206	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,600.0	6,200.8	2,785.1	2,741.6	64.056	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,940.8	2,864.6	3,492.3	3,403.4	39.278	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	3,700.0	3,582.9	3,500.5	3,388.7	31.315	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,750.0	6,329.8	3,894.7	3,689.6	18.992	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	4,509.9	4,353.1	1,371.6	1,345.0	51.527	CC
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	4,600.0	4,436.8	1,372.3	1,344.9	50.195	ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,400.0	6,044.1	1,608.3	1,567.0	38.903	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,432.4	6,098.5	6,903.0	6,856.8	149.253	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,450.0	6,114.4	6,903.2	6,856.6	147.982	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	7,250.0	6,716.9	7,333.2	7,273.3	122.312	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	6,462.0	6,161.5	804.3	759.1	17.792	CC, ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,550.0	6,242.4	811.0	765.0	17.647	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	5,166.1	4,895.3	4,506.0	4,474.3	142.255	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	5,900.0	5,668.7	4,507.5	4,469.3	118.224	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,650.0	6,074.0	4,594.4	4,551.1	106.137	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,428.4	6,131.1	4,008.5	3,966.2	94.625	CC, ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,750.0	6,372.1	4,085.0	4,040.7	92.161	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,464.9	6,120.0	4,817.6	4,775.5	114.461	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,800.0	6,382.1	4,904.7	4,860.6	111.212	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,380.7	5,987.4	5,605.3	5,563.3	133.367	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,800.0	6,364.2	5,724.8	5,680.2	128.365	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,444.8	6,037.1	6,940.1	6,897.6	163.143	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,450.0	6,042.1	6,940.2	6,897.6	162.991	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,950.0	6,648.6	7,119.9	7,074.2	155.794	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,496.9	6,455.1	6,503.9	6,451.9	124.992	CC
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,500.0	6,457.6	6,503.9	6,451.9	124.945	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,800.0	6,720.0	6,576.2	6,522.5	122.554	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,423.3	6,168.2	5,983.2	5,939.9	138.159	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,800.0	6,515.2	6,085.5	6,039.9	133.465	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,477.9	6,465.1	5,477.7	5,427.6	109.228	CC, ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,800.0	6,783.0	5,557.4	5,505.5	107.161	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 A21-669
Project:	Wells Ranch	TVD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-669	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						
Offset Well - Wellbore - Design						
Culbreath 23-21 - Original Drilling - Original Drilling - As D	2,385.9	2,345.1	1,312.7	1,299.6	100.530	CC
Culbreath 23-21 - Original Drilling - Original Drilling - As D	2,400.0	2,358.8	1,312.7	1,299.5	99.943	ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	9,400.0	6,732.7	1,873.9	1,809.6	29.116	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	10,012.5	6,730.0	1,944.8	1,696.6	7.836	CC, ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	10,200.0	6,730.0	1,953.8	1,703.3	7.799	SF
Harper A21-618 - Original Drilling - APD - Rev 0	2,000.0	1,984.0	1,494.7	1,482.6	123.689	CC
Harper A21-618 - Original Drilling - APD - Rev 0	2,100.0	2,065.2	1,495.2	1,482.6	118.363	ES
Harper A21-618 - Original Drilling - APD - Rev 0	17,285.6	16,708.2	3,275.2	2,891.0	8.526	SF
Harper A21-626 - Original Drilling - APD - Rev 0	2,400.0	2,384.0	1,469.2	1,454.6	100.681	CC, ES
Harper A21-626 - Original Drilling - APD - Rev 0	17,285.6	16,776.3	2,752.1	2,367.5	7.157	SF
Harper A21-631 - Original Drilling - APD - Rev 0	2,758.0	2,888.2	1,428.8	1,411.6	82.897	CC
Harper A21-631 - Original Drilling - APD - Rev 0	2,800.0	2,930.0	1,429.1	1,411.6	81.632	ES
Harper A21-631 - Original Drilling - APD - Rev 0	17,285.6	16,721.6	2,375.3	1,990.8	6.177	SF
Harper A21-637 - Original Drilling - APD - Rev 0	3,017.8	3,241.8	1,332.0	1,312.7	69.255	CC, ES
Harper A21-637 - Original Drilling - APD - Rev 0	17,285.6	16,571.3	2,001.9	1,620.1	5.244	SF
Harper A21-643 - Original Drilling - APD - Rev 0	2,000.0	1,998.0	91.1	79.0	7.510	CC
Harper A21-643 - Original Drilling - APD - Rev 0	2,100.0	2,097.6	91.3	78.6	7.171	ES
Harper A21-643 - Original Drilling - APD - Rev 0	17,285.6	16,636.4	1,581.1	1,198.1	4.129	SF
Harper A21-649 - Original Drilling - APD - Rev 0	2,400.0	2,401.0	69.2	54.6	4.726	CC, ES
Harper A21-649 - Original Drilling - APD - Rev 0	17,285.6	16,731.8	1,224.2	840.6	3.191	SF
Harper A21-656 - Original Drilling - APD - Rev 0	2,400.0	2,401.0	43.7	29.1	2.985	CC, ES
Harper A21-656 - Original Drilling - APD - Rev 0	17,285.6	16,805.9	841.5	456.9	2.188	SF
Harper A21-664 - Original Drilling - APD - Rev 0	2,400.0	2,401.0	21.9	7.2	1.492	Level 3, CC, ES, SF
Harper A21-674 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	21.9	8.5	1.632	CC
Harper A21-674 - Original Drilling - APD - Rev 0	17,285.6	16,776.9	370.5	1.8	1.005	Level 2, ES, SF
Harper A21-681 - Original Drilling - APD - Rev 0	2,000.0	2,001.0	43.7	31.6	3.601	CC, ES
Harper A21-681 - Original Drilling - APD - Rev 0	17,285.6	16,826.5	783.3	403.4	2.062	SF
Kona A19-616 - Original Drilling - APD - Rev 0	1,900.0	1,880.0	1,496.6	1,485.2	130.773	CC, ES
Kona A19-616 - Original Drilling - APD - Rev 0	10,000.0	6,300.0	3,861.3	3,790.0	54.209	SF
Kona A19-624 - Original Drilling - APD - Rev 0	2,400.0	2,380.0	1,474.8	1,460.2	101.154	CC, ES
Kona A19-624 - Original Drilling - APD - Rev 0	9,500.0	6,783.7	3,191.5	3,123.4	46.804	SF
Kona A19-630 - Original Drilling - APD - Rev 0	2,649.7	2,743.9	1,428.9	1,412.5	86.892	CC, ES
Kona A19-630 - Original Drilling - APD - Rev 0	6,550.0	7,954.2	2,398.9	2,342.2	42.243	SF
Kona A19-636 - Original Drilling - APD - Rev 0	2,798.2	2,967.9	1,364.2	1,346.4	76.901	CC
Kona A19-636 - Original Drilling - APD - Rev 0	2,800.0	2,969.6	1,364.2	1,346.4	76.850	ES
Kona A19-636 - Original Drilling - APD - Rev 0	6,600.0	8,371.9	2,074.7	2,013.4	33.821	SF
Kona A19-640 - Original Drilling - APD - Rev 0	1,900.0	1,898.0	175.7	164.2	15.276	CC, ES
Kona A19-640 - Original Drilling - APD - Rev 0	2,100.0	2,086.4	182.1	169.4	14.411	SF
Kona A19-646 - Original Drilling - APD - Rev 0	2,400.0	2,401.0	165.4	150.8	11.294	CC, ES
Kona A19-646 - Original Drilling - APD - Rev 0	2,600.0	2,601.2	171.4	155.5	10.786	SF
Kona A19-652 - Original Drilling - APD - Rev 0	2,400.0	2,401.0	156.5	141.8	10.684	CC, ES
Kona A19-652 - Original Drilling - APD - Rev 0	2,600.0	2,601.2	161.8	146.0	10.187	SF
Kona A19-662 - Original Drilling - APD - Rev 0	2,100.0	2,101.0	151.8	139.1	11.894	CC, ES
Kona A19-662 - Original Drilling - APD - Rev 0	7,729.2	7,150.0	492.3	437.2	8.947	SF
Kona A19-670 - Original Drilling - APD - Rev 0	7,777.0	7,135.8	68.2	10.1	1.174	Level 2, CC, ES, SF
Kona A19-679 - Original Drilling - APD - Rev 0	2,400.0	2,400.0	151.8	137.2	10.368	CC, ES
Kona A19-679 - Original Drilling - APD - Rev 0	8,700.0	7,126.2	427.8	356.7	6.018	SF
Kona A19-685 - Original Drilling - APD - Rev 0	2,300.0	2,300.0	150.2	136.2	10.719	CC, ES
Kona A19-685 - Original Drilling - APD - Rev 0	8,900.0	7,053.8	672.0	596.5	8.904	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	4,829.5	4,654.2	89.4	-58.3	0.605	Level 1, CC, ES, SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	8,938.4	6,782.0	510.5	278.1	2.197	CC, ES, SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	8,747.2	6,764.6	689.6	632.1	12.006	CC, ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	8,800.0	6,765.0	691.6	633.8	11.967	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 A21-669
Project:	Wells Ranch	TVD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-669	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						
McKee 31-21 - Original Drilling - Original Drilling - As Dril	9,987.4	6,814.9	883.6	807.6	11.618	CC
McKee 31-21 - Original Drilling - Original Drilling - As Dril	10,000.0	6,814.6	883.7	807.4	11.573	ES
McKee 31-21 - Original Drilling - Original Drilling - As Dril	10,100.0	6,812.3	890.8	812.4	11.358	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	9,991.7	6,745.1	661.5	584.8	8.625	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	10,000.0	6,745.1	661.5	584.8	8.620	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril	11,283.0	6,730.7	821.2	721.7	8.255	CC
McKee 41-21 - Original Drilling - Original Drilling - As Dril	11,300.0	6,730.8	821.3	721.4	8.219	ES
McKee 41-21 - Original Drilling - Original Drilling - As Dril	11,400.0	6,731.6	829.4	727.5	8.137	SF
McKee 42-21 - Original Drilling - Original Drilling - As Dril	11,349.8	6,722.8	837.4	736.8	8.325	CC, ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	11,400.0	6,722.8	838.9	738.0	8.313	SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	11,302.8	6,722.0	1,717.7	1,447.0	6.346	CC, ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	11,400.0	6,722.0	1,720.4	1,448.6	6.328	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	100.0	56.0	651.1	650.9	3,533.942	CC
Wells Trust 13-21 - Original Drilling - Original Drilling - As	1,400.0	1,355.6	652.1	644.7	88.539	ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	3,600.0	3,519.5	788.5	768.6	39.625	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	2,418.3	2,366.9	1,818.6	1,805.4	137.765	CC, ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	9,100.0	6,735.9	3,777.1	3,721.1	67.541	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	2,438.2	2,390.6	1,720.6	1,707.4	130.096	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	9,600.0	6,748.7	3,526.6	3,463.1	55.512	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 A21-669
Project:	Wells Ranch	TVD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-669	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

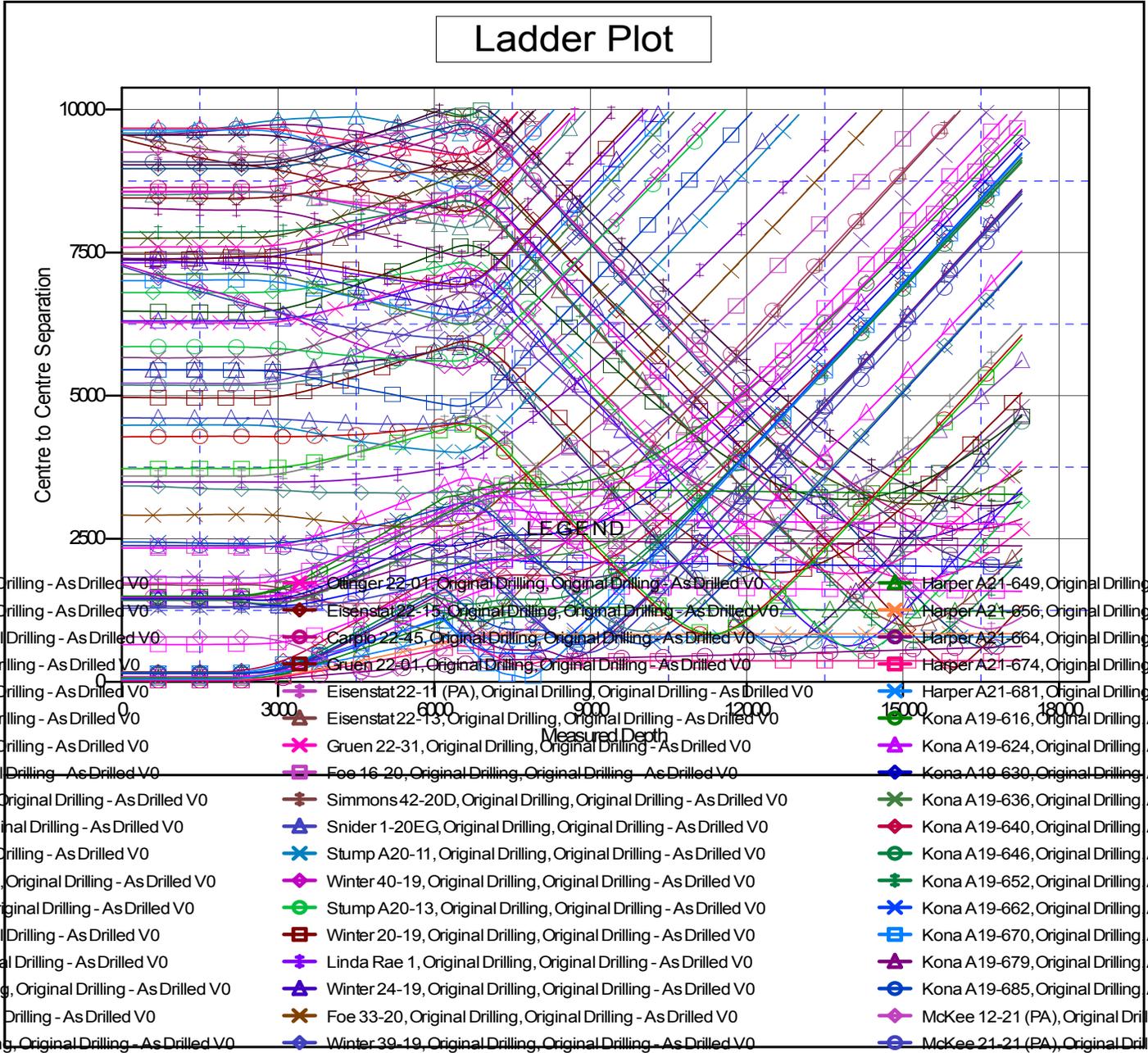
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A Section 22						
Offset Well - Wellbore - Design						
Carpio 22-01 - Original Drilling - Original Drilling - As Dril	16,606.1	6,675.4	3,076.5	2,878.3	15.525	CC, ES
Carpio 22-01 - Original Drilling - Original Drilling - As Dril	17,000.0	6,679.6	3,101.6	2,898.6	15.280	SF
Carpio 22-04-19 - Original Drilling - Original Drilling - As D	15,120.5	6,819.0	2,505.8	2,329.4	14.207	CC, ES
Carpio 22-04-19 - Original Drilling - Original Drilling - As D	15,400.0	6,818.3	2,521.4	2,341.6	14.028	SF
Carpio 22-41 - Original Drilling - Original Drilling - As Dril	16,765.2	6,701.5	2,052.3	1,816.9	8.716	CC
Carpio 22-41 - Original Drilling - Original Drilling - As Dril	16,800.0	6,701.3	2,052.6	1,816.7	8.699	ES
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	16,900.0	6,700.9	2,056.8	1,819.7	8.677	SF
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	15,286.1	6,761.6	3,105.4	2,932.1	17.921	CC
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	15,300.0	6,761.8	3,105.4	2,931.9	17.899	ES
Carpio 22-43 - Original Drilling - Original Drilling - As Dril	15,800.0	6,768.4	3,147.6	2,968.2	17.546	SF
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	16,256.3	6,777.2	2,659.5	2,467.9	13.877	CC
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	16,300.0	6,777.7	2,659.9	2,467.6	13.831	ES
Carpio 22-45 - Original Drilling - Original Drilling - As Dril	16,600.0	6,781.2	2,681.6	2,486.1	13.713	SF
Eisenstat 22-11 (PA) - Original Drilling - Original Drilling -	16,633.8	6,736.0	926.5	556.4	2.503	CC, ES
Eisenstat 22-11 (PA) - Original Drilling - Original Drilling -	16,700.0	6,736.0	928.9	557.4	2.500	SF
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	15,172.2	6,747.8	972.4	801.3	5.683	CC, ES
Eisenstat 22-13 - Original Drilling - Original Drilling - As D	15,200.0	6,747.7	972.8	801.5	5.678	SF
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	15,980.1	6,748.7	258.2	71.8	1.385	Level 3, CC, ES
Eisenstat 22-15 - Original Drilling - Original Drilling - As D	16,000.0	6,748.8	258.9	72.0	1.385	Level 3, SF
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	14,176.5	6,771.8	525.2	372.9	3.449	CC
Eisenstat 22-21 - Original Drilling - Original Drilling - As D	14,200.0	6,771.7	525.7	372.7	3.437	ES, SF
Eisenstat 22-23 - Original Drilling - Original Drilling - As D	12,767.9	6,749.5	456.4	330.2	3.615	CC, ES, SF
Gill Land Assoc. 1 (PA) - Original Drilling - Original Drillin	16,627.8	6,737.0	592.2	222.2	1.600	CC, ES, SF
Gill Land Assoc. 22-02 (PA) - Original Drilling - Original D	13,952.1	6,747.0	629.6	309.4	1.967	CC, ES, SF
Gill Land Assoc. 22-03 - Original Drilling - Original Drilling	12,663.1	6,755.7	657.7	533.0	5.274	CC, ES
Gill Land Assoc. 22-03 - Original Drilling - Original Drilling	12,700.0	6,755.6	658.7	533.1	5.242	SF
Gill Land Assoc. 22-04 (PA) - Original Drilling - Original D	15,244.3	6,745.0	692.5	348.3	2.012	CC, ES
Gill Land Assoc. 22-04 (PA) - Original Drilling - Original D	15,300.0	6,745.0	694.8	349.3	2.011	SF
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	12,606.9	6,721.4	1,907.0	1,783.8	15.481	CC, ES
Gruen 22-01 - Original Drilling - Original Drilling - As Drill	12,800.0	6,721.1	1,916.7	1,791.3	15.280	SF
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	13,914.3	6,725.6	3,188.9	3,041.6	21.641	CC
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	14,000.0	6,723.6	3,190.1	3,041.4	21.458	ES
Gruen 22-02 - Original Drilling - Original Drilling - As Drill	14,500.0	6,718.6	3,242.2	3,087.7	20.985	SF
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	13,931.7	6,738.2	1,890.7	1,743.0	12.802	CC, ES
Gruen 22-31 - Original Drilling - Original Drilling - As Drill	14,100.0	6,738.2	1,898.1	1,748.6	12.690	SF
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	12,645.1	6,681.4	3,163.2	3,039.6	25.588	CC
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	12,700.0	6,682.1	3,163.7	3,039.2	25.415	ES
Gruen 22-33 - Original Drilling - Original Drilling - As Drill	13,300.0	6,690.1	3,230.3	3,098.5	24.513	SF
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	13,257.9	6,718.5	2,635.0	2,499.7	19.466	CC
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	13,300.0	6,718.7	2,635.4	2,499.4	19.378	ES
Gruen 22-35 - Original Drilling - Original Drilling - As Drill	13,700.0	6,720.2	2,671.8	2,531.3	19.013	SF
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	15,284.4	6,731.7	1,780.4	1,607.3	10.288	CC
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	15,300.0	6,731.7	1,780.5	1,607.2	10.276	ES
Ottinger 22-01 - Original Drilling - Original Drilling - As Dr	15,400.0	6,731.8	1,784.1	1,609.8	10.233	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 A21-669
Project:	Wells Ranch	TVD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Reference Site:	A Section 21	MD Reference:	WELL @ 4773.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Harper A21-669	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 Depths are relative to WELL @ 4773.0ft (Original Well Elev.) Coordinates are relative to: Harper A21-669
 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 convergent point, SF - min separation factor, ES - min ellipse separation

