

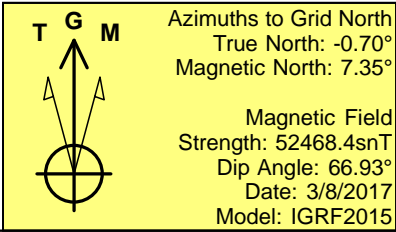
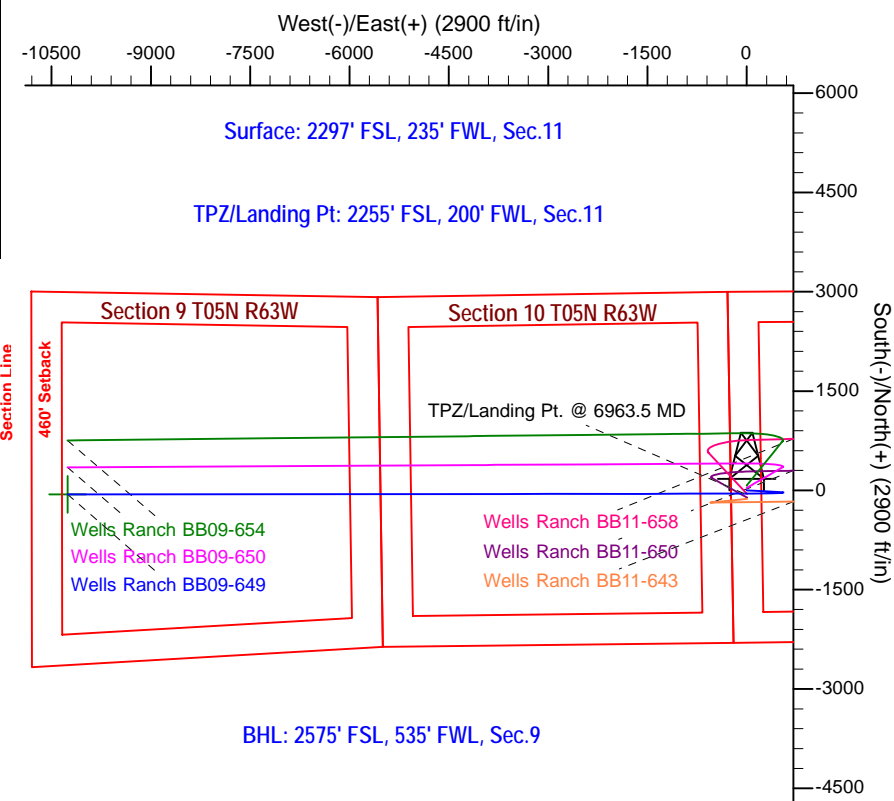
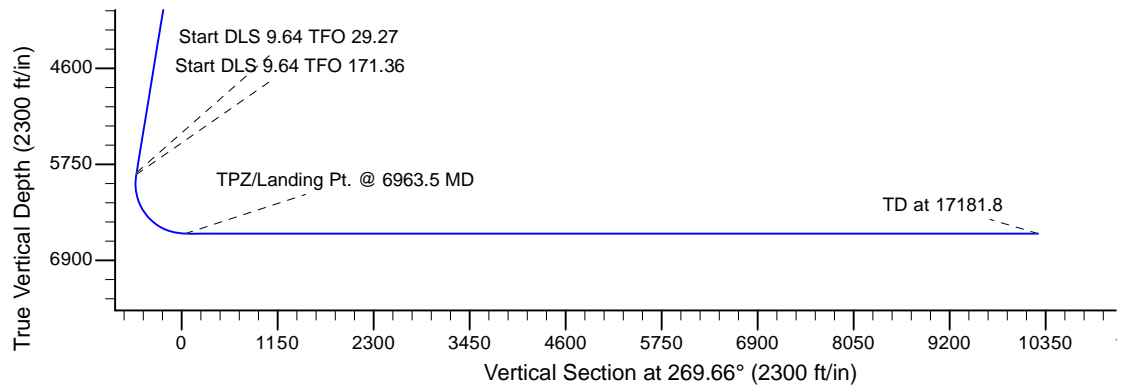
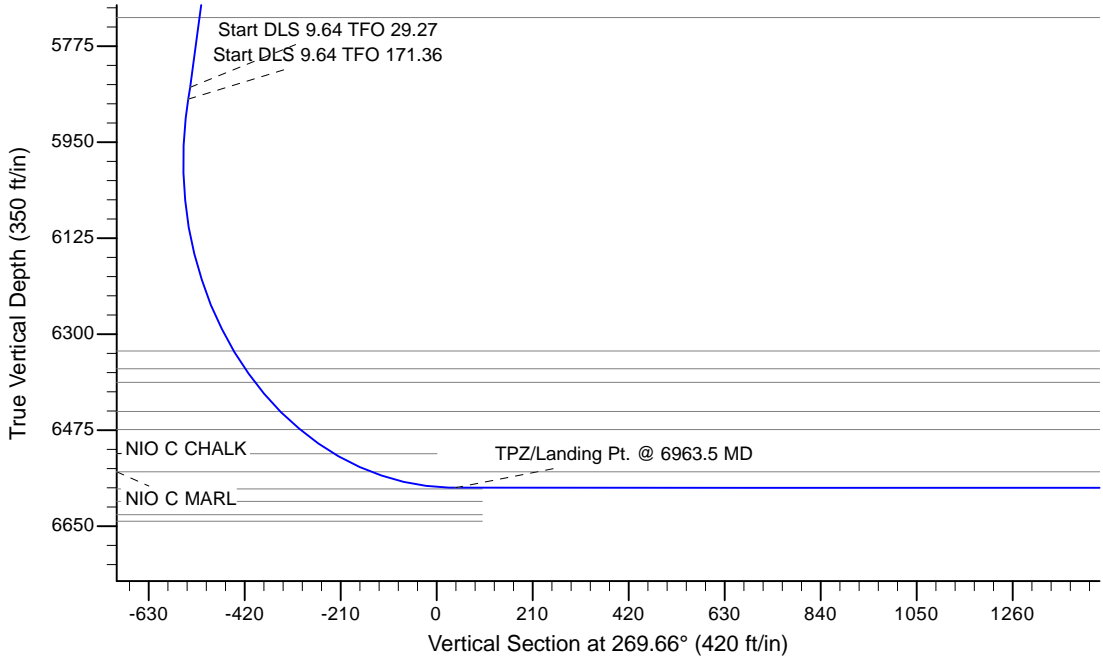
Project: Wells Ranch
Site: BB Section 11-T5N-R63W Weld County, CO
Well: Wells Ranch BB09-649
Wellbore: Original Drilling
Design: APD - Rev 0

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	2300.0	0.00	0.00	2300.0	0.0	0.0	0.00	0.00	0.0	
3	2762.5	9.25	93.00	2760.5	-1.9	37.2	2.00	93.00	-37.2	
4	5892.7	9.25	93.00	5850.0	-28.3	539.7	0.00	0.00	-539.5	
5	5914.9	11.16	98.41	5871.8	-28.7	543.6	9.64	29.27	-543.4	
6	6963.5	90.00	269.93	6580.0	-50.0	-40.0	9.64	171.36	40.3	
7	17181.8	90.00	269.94	6580.0	-61.7	-10258.4	0.00	90.00	10258.6	Wells Ranch BB09-649 BHL 2575'FSL, 535'FWL



WELL DETAILS: Wells Ranch BB09-649			
0.0	Northings 1395127.139482	Eastings 202775.6733366	Ground Elevation: 4668.0 Latitude 40.4129300 Longitude -104.4126400
Plan: APD - Rev 0 (Wells Ranch BB09-649/Original Drilling)			
Created By: Shailey Jewell		Date: 9:27, March 09 2017	
Checked: _____		Date: _____	
Reviewed: _____		Date: _____	
Approved: _____		Date: _____	

Northern Region - DJ Basin

Wells Ranch

BB Section 11

Wells Ranch BB09-649

Original Drilling

APD - Rev 0

Anticollision Summary Report

09 March, 2017

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Wells Ranch BB09-649
Project:	Wells Ranch	TVD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB09-649	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

Reference	APD - Rev 0		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,880.8 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.79 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	3/9/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,181.8	APD - Rev 0 (Original Drilling)	OWSG_Rev2_MWD+IFR1+M	OWSG MWD + IFR1 + Multi-Station Correction

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
BB Section 09						
70 Ranch 11-09 - Original Drilling - Original Drilling - As D						Out of range
70 Ranch 22-09 - Original Drilling - Original Drilling - As D	15,767.0	6,651.1	1,112.3	930.5	6.119	CC, ES
70 Ranch 22-09 - Original Drilling - Original Drilling - As D	15,800.0	6,650.6	1,112.8	930.5	6.106	SF
70 Ranch 31-09 - Original Drilling - Original Drilling - As D						Out of range
70 Ranch 41-09 - Original Drilling - Original Drilling - As D						Out of range
70 Ranch 44-09 - Original Drilling - Original Drilling - As D	13,082.4	6,594.0	1,549.8	1,415.8	11.567	CC
70 Ranch 44-09 - Original Drilling - Original Drilling - As D	13,100.0	6,593.4	1,549.9	1,415.6	11.543	ES
70 Ranch 44-09 - Original Drilling - Original Drilling - As D	13,200.0	6,590.6	1,554.2	1,418.6	11.461	SF
70 Ranch USX BB09-05 - Original Drilling - Original Drilling	17,060.9	6,636.8	1,014.2	812.8	5.036	CC, ES
70 Ranch USX BB09-05 - Original Drilling - Original Drilling	17,100.0	6,635.5	1,014.9	813.0	5.027	SF
70 Ranch USX BB09-07 - Original Drilling - Original Drilling	14,429.0	6,612.2	1,042.8	886.5	6.669	CC, ES
70 Ranch USX BB09-07 - Original Drilling - Original Drilling	14,500.0	6,611.6	1,045.3	888.0	6.648	SF
70 Ranch USX BB09-08 - Original Drilling - Original Drilling	13,126.0	6,600.5	932.0	797.5	6.927	CC, ES
70 Ranch USX BB09-08 - Original Drilling - Original Drilling	13,200.0	6,600.6	935.0	799.5	6.904	SF
70 Ranch USX BB09-09 - Original Drilling - Original Drilling	13,095.4	6,591.1	335.3	201.3	2.502	CC
70 Ranch USX BB09-09 - Original Drilling - Original Drilling	13,100.0	6,591.0	335.4	201.3	2.501	ES, SF
70 Ranch USX BB09-10 - Original Drilling - Original Drilling	14,418.8	6,606.8	240.0	83.6	1.535	CC, ES, SF
70 Ranch USX BB09-11 - Original Drilling - Original Drilling	15,720.2	6,634.8	357.7	179.4	2.006	CC, ES, SF
70 Ranch USX BB09-15 - Original Drilling - Original Drilling	14,677.9	6,620.0	1,801.4	1,640.6	11.204	CC
70 Ranch USX BB09-15 - Original Drilling - Original Drilling	14,700.0	6,619.8	1,801.5	1,640.4	11.180	ES
70 Ranch USX BB09-15 - Original Drilling - Original Drilling	14,900.0	6,618.6	1,815.0	1,651.6	11.102	SF
70 Ranch USX BB09-63HN - Original Drilling - Original Drilling	13,009.2	6,648.0	752.0	614.2	5.460	CC, ES
70 Ranch USX BB09-63HN - Original Drilling - Original Drilling	17,181.8	10,751.7	1,244.3	848.9	3.147	SF
70 Ranch USX BB09-99HZ - Original Drilling - Original Drilling	13,982.8	10,308.2	78.2	-62.3	0.556	Level 1, CC
70 Ranch USX BB09-99HZ - Original Drilling - Original Drilling	14,100.0	10,219.6	109.9	-126.2	0.465	Level 1, ES, SF
National Hog Farm 13-09 - Original Drilling - Original Drilling	17,082.5	6,630.3	304.4	102.9	1.511	CC, ES, SF
National Hog Farm 14-09 - Original Drilling - Original Drilling						Out of range
National Hog Farm 21-09 - Original Drilling - Original Drilling						Out of range
National Hog Farm 24-09 - Original Drilling - Original Drilling	15,598.1	6,709.4	1,731.7	1,555.1	9.810	CC
National Hog Farm 24-09 - Original Drilling - Original Drilling	15,600.0	6,709.4	1,731.7	1,555.1	9.809	ES
National Hog Farm 24-09 - Original Drilling - Original Drilling	15,800.0	6,715.8	1,743.4	1,564.5	9.744	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 Wells Ranch BB09-649
Project:	Wells Ranch	TVD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB09-649	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						
BB Section 10						
Wells Ranch 10A - Original Drilling - Original Drilling - As	11,188.0	6,532.2	1,683.6	1,581.3	16.446	CC
Wells Ranch 10A - Original Drilling - Original Drilling - As	11,200.0	6,532.1	1,683.7	1,581.1	16.416	ES
Wells Ranch 10A - Original Drilling - Original Drilling - As	11,400.0	6,530.3	1,696.9	1,591.8	16.133	SF
Wells Ranch 10B - Original Drilling - Original Drilling - As	10,974.0	6,566.9	1,111.7	1,012.5	11.207	CC
Wells Ranch 10B - Original Drilling - Original Drilling - As	11,000.0	6,566.9	1,112.0	1,012.4	11.166	ES
Wells Ranch 10B - Original Drilling - Original Drilling - As	11,100.0	6,566.8	1,118.8	1,018.1	11.105	SF
Wells Ranch 10C - Original Drilling - Original Drilling - As	8,392.6	6,619.6	1,849.7	1,787.5	29.738	CC
Wells Ranch 10C - Original Drilling - Original Drilling - As	8,400.0	6,619.6	1,849.8	1,787.5	29.695	ES
Wells Ranch 10C - Original Drilling - Original Drilling - As	8,700.0	6,619.8	1,875.1	1,809.4	28.534	SF
Wells Ranch 10F - Original Drilling - Original Drilling - As	12,305.6	6,494.8	1,598.6	1,478.1	13.262	CC, ES
Wells Ranch 10F - Original Drilling - Original Drilling - As	12,500.0	6,497.0	1,610.4	1,487.3	13.086	SF
Wells Ranch 10H - Original Drilling - Original Drilling - As	12,257.2	6,565.4	1,014.9	894.8	8.455	CC, ES
Wells Ranch 10H - Original Drilling - Original Drilling - As	12,300.0	6,564.9	1,015.8	895.1	8.419	SF
Wells Ranch 10J - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 10K - Original Drilling - Original Drilling - As	10,909.9	6,576.0	195.7	97.4	1.991	CC, ES, SF
Wells Ranch 11-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 12-10 - Original Drilling - Original Drilling - A	11,729.4	6,583.9	780.8	669.2	7.000	CC, ES
Wells Ranch 12-10 - Original Drilling - Original Drilling - A	11,800.0	6,584.5	783.9	671.6	6.978	SF
Wells Ranch 13-10 - Original Drilling - Original Drilling - A	11,871.5	6,574.7	492.0	377.7	4.306	CC, ES
Wells Ranch 13-10 - Original Drilling - Original Drilling - A	11,900.0	6,575.5	492.8	378.2	4.301	SF
Wells Ranch 14-10 - Original Drilling - Original Drilling - A	11,858.2	6,540.3	1,579.5	1,466.0	13.914	CC
Wells Ranch 14-10 - Original Drilling - Original Drilling - A	11,900.0	6,540.2	1,580.1	1,465.9	13.838	ES
Wells Ranch 14-10 - Original Drilling - Original Drilling - A	12,100.0	6,539.9	1,597.9	1,481.5	13.720	SF
Wells Ranch 21-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 22-10 - Original Drilling - Original Drilling - A	10,434.4	6,562.9	1,078.0	987.4	11.888	CC, ES
Wells Ranch 22-10 - Original Drilling - Original Drilling - A	10,600.0	6,563.7	1,090.7	998.2	11.788	SF
Wells Ranch 23-10 - Original Drilling - Original Drilling - A	10,537.4	6,566.3	426.9	334.5	4.622	CC, ES, SF
Wells Ranch 24-10 - Original Drilling - Original Drilling - A	10,324.9	6,523.3	1,671.4	1,582.4	18.764	CC, ES
Wells Ranch 24-10 - Original Drilling - Original Drilling - A	10,600.0	6,528.9	1,693.9	1,601.4	18.314	SF
Wells Ranch 31-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	8,888.8	6,575.9	1,032.8	958.3	13.861	CC
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	8,900.0	6,575.8	1,032.8	958.2	13.835	ES
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	9,000.0	6,574.8	1,038.7	962.9	13.705	SF
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	9,126.4	6,555.7	334.0	262.8	4.693	CC, ES, SF
Wells Ranch 34-10 - Original Drilling - Original Drilling - A	8,856.7	6,565.7	1,427.2	1,355.5	19.907	CC, ES
Wells Ranch 34-10 - Original Drilling - Original Drilling - A	9,100.0	6,562.6	1,447.7	1,373.3	19.440	SF
Wells Ranch 41-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	7,929.0	6,561.2	1,089.3	1,032.9	19.324	CC, ES
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	8,100.0	6,560.9	1,102.6	1,044.7	19.020	SF
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	7,817.4	6,540.9	291.3	236.0	5.269	CC, ES, SF
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	7,836.6	6,543.8	1,509.5	1,454.0	27.192	CC, ES
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	8,200.0	6,547.4	1,552.6	1,493.8	26.398	SF

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Wells Ranch BB09-649
Project:	Wells Ranch	TVD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB09-649	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
Offset Well - Wellbore - Design						
BB Section 11						
Wells 12-11 - Original Drilling - Original Drilling - As Drille	5,598.5	5,531.6	1,128.6	946.4	6.197	CC
Wells 12-11 - Original Drilling - Original Drilling - As Drille	6,200.0	6,125.8	1,138.3	936.7	5.645	ES
Wells 12-11 - Original Drilling - Original Drilling - As Drille	6,500.0	6,380.4	1,158.8	948.9	5.520	SF
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	6,479.2	6,345.0	257.8	210.6	5.470	CC, ES
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	6,500.0	6,359.8	258.2	211.0	5.469	SF
Wells Ranch 14-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	6,040.6	5,983.7	1,147.5	1,102.7	25.648	CC, ES
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	6,100.0	6,039.2	1,150.5	1,105.4	25.478	SF
Wells Ranch 24-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	6,372.7	6,348.8	1,246.5	1,183.9	19.893	CC
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	17,181.8	17,085.4	1,531.7	1,158.8	4.107	ES, SF
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	17,181.8	17,158.2	535.5	165.4	1.447	Level 3, CC, ES, SF
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	36.4	15.1	1.706	CC
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	2,300.0	2,299.3	37.3	15.0	1.670	ES
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	17,181.8	17,232.2	465.5	120.8	1.350	Level 3, SF
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	72.9	53.5	3.765	CC, ES
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	17,181.8	17,255.3	816.1	441.9	2.181	SF
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,439.7	2,441.7	1,500.8	1,477.0	63.238	CC
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,600.0	2,583.6	1,501.5	1,476.3	59.638	ES
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	6,600.0	7,108.0	1,614.6	1,548.2	24.296	SF
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	6,600.0	7,121.5	1,136.1	1,069.2	16.974	SF
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	6,671.9	7,060.1	1,135.4	1,068.6	16.998	CC, ES
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	6,788.5	7,106.3	659.4	591.4	9.704	CC, ES, SF
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	127.5	106.2	5.973	CC
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	6,652.0	7,089.6	127.6	61.0	1.915	ES, SF
Wells Ranch BB11-650 - Original Drilling - APD - Rev 0	2,577.8	2,581.1	101.3	76.3	4.043	CC
Wells Ranch BB11-650 - Original Drilling - APD - Rev 0	2,600.0	2,602.8	101.4	76.2	4.014	ES, SF
Wells Ranch BB11-658 - Original Drilling - APD - Rev 0	2,435.9	2,438.6	37.5	13.9	1.585	CC, ES, SF
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,000.0	2,008.0	1,373.4	1,354.0	70.822	CC
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,100.0	2,087.6	1,374.2	1,354.0	67.786	ES
Wells Ranch State BB09-617 - Original Drilling - APD - R	11,200.0	11,156.3	1,879.6	1,706.7	10.871	SF
Wells Ranch USX BB11-01 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-02 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-03 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-04 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-06 - Original Drilling - Original D	6,000.0	5,908.9	1,596.8	1,552.7	36.186	CC, ES
Wells Ranch USX BB11-06 - Original Drilling - Original D	6,200.0	6,089.9	1,620.5	1,575.1	35.669	SF
Wells Ranch USX BB11-07 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-08 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-09 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-10 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-15 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-16 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-17 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-23 - Original Drilling - Original D						Out of range

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Wells Ranch BB09-649
Project:	Wells Ranch	TVD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4698.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB09-649	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						
BB Section 12						
Wells Ranch 12D - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 33-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 34-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 43-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 44-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch BB12-01 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-02 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-03 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-04 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-05 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-06 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-07 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-08 - Original Drilling - Original Drilling						Out of range