

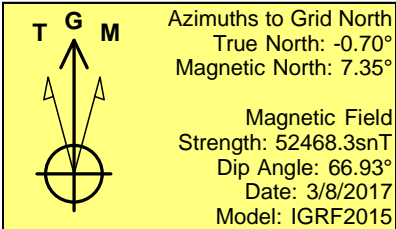
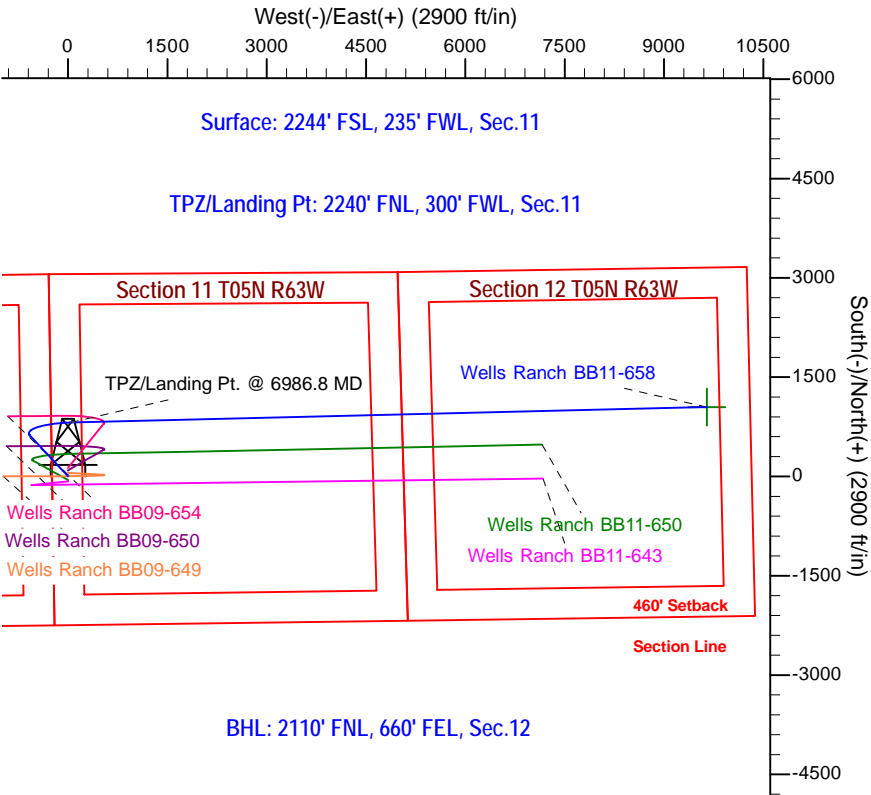
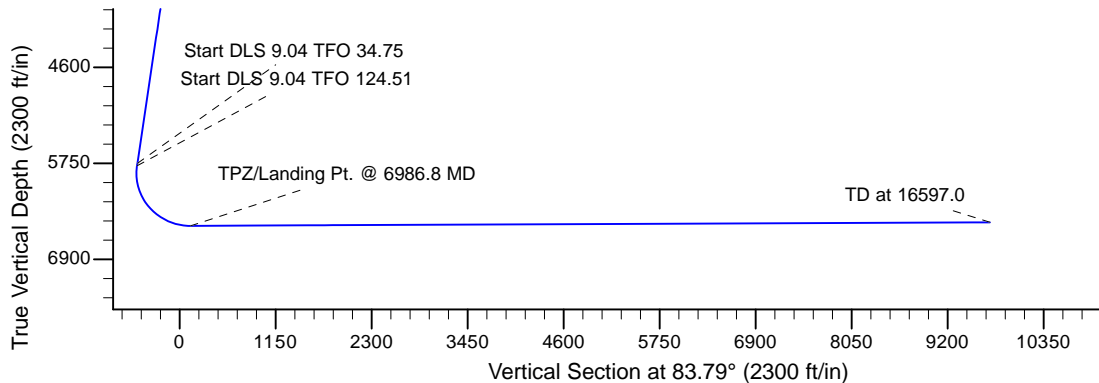
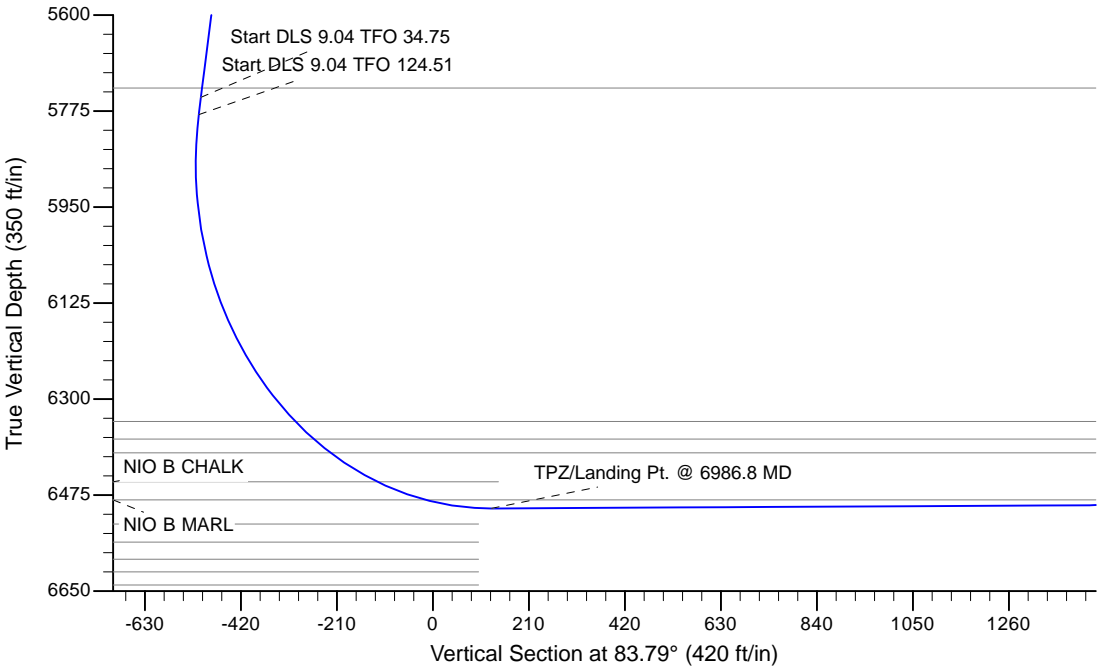
Project: Wells Ranch  
Site: BB Section 11-T5N-R63W Weld County, CO  
Well: Wells Ranch BB11-658  
Wellbore: Original Drilling  
Design: APD - Rev 0

# 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	2700.0	14.00	317.00	2693.1	62.2	-58.0	2.00	317.00	-51.0	
4	5850.5	14.00	317.00	5750.0	619.7	-577.8	0.00	0.00	-507.5	
5	5883.0	16.50	322.90	5781.3	626.2	-583.3	9.04	34.75	-512.2	
6	6986.8	90.25	88.60	6499.5	815.0	40.0	9.04	124.51	127.9	
7	16597.0	90.25	88.61	6457.6	1049.2	9647.2	0.00	93.27	9704.1	Wells Ranch BB11-658 BHL 2110'FNL, 660'FEL



WELL DETAILS: Wells Ranch BB11-658			
Northing	Easting	Ground Elevation: 4668.0	Latitude
0.0 139500205330470	3302779.1277601	40.4127800	-104.4126300
Plan: APD - Rev 0 (Wells Ranch BB11-658/Original Drilling)			
Created By: Shailey Jewell		Date: 9:34, March 09 2017	
Checked: _____		Date: _____	
Reviewed: _____		Date: _____	
Approved: _____		Date: _____	

# **Northern Region - DJ Basin**

**Wells Ranch**

**BB Section 11**

**Wells Ranch BB11-658**

**Original Drilling**

**APD - Rev 0**

## **Anticollision Summary Report**

**09 March, 2017**

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-658
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-658	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.79 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

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

<b>Survey Tool Program</b>	<b>Date</b>	3/9/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	16,597.0	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
Offset Well - Wellbore - Design						
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						Out of range
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						Out of range
70 Ranch USX BB09-05 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-07 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-08 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-09 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-10 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-11 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-15 - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-63HN - Original Drilling - Original Drilling						Out of range
70 Ranch USX BB09-99HZ - Original Drilling - Original Drilling						Out of range
National Hog Farm 13-09 - Original Drilling - Original Drilling						Out of range
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						Out of range

# Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-658
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-658	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.79 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Produccction
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	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						Out of range
Wells Ranch 10B - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 10C - Original Drilling - Original Drilling - As	6,174.2	6,045.7	1,471.8	1,425.9	32.063	CC, ES
Wells Ranch 10C - Original Drilling - Original Drilling - As	6,300.0	6,165.3	1,480.3	1,433.6	31.725	SF
Wells Ranch 10F - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 10H - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 10J - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 10K - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 11-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 12-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 13-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 14-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 21-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 22-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 23-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 24-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 31-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	6,040.8	5,945.3	1,435.3	1,390.7	32.173	CC, ES
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	6,200.0	6,091.5	1,455.4	1,409.7	31.851	SF
Wells Ranch 33-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 34-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 41-10 - Original Drilling - Original Drilling - A	6,450.0	6,284.3	1,661.4	1,613.1	34.408	CC, ES
Wells Ranch 41-10 - Original Drilling - Original Drilling - A	6,600.0	6,381.6	1,671.4	1,622.4	34.051	SF
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,132.7	5,994.9	596.0	550.8	13.165	CC, ES
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,200.0	6,057.8	599.1	553.4	13.106	SF
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	3,656.3	3,552.5	819.4	792.8	30.884	CC
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	3,700.0	3,592.9	819.5	792.6	30.514	ES
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	5,900.0	5,749.7	960.6	916.6	21.831	SF
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	0.0	0.0	1,742.6			
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	2,100.0	2,076.0	1,750.6	1,735.5	115.507	ES
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	3,900.0	3,859.2	1,872.5	1,843.9	65.335	SF

# Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-658
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-658	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.79 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Produccction
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	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	7,503.0	6,469.2	328.3	110.1	1.505	CC, ES, SF
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	2,011.8	1,965.8	481.8	467.3	33.269	CC, ES
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	7,400.0	6,443.6	1,074.2	1,021.8	20.516	SF
Wells Ranch 14-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,619.4	6,461.7	841.9	776.7	12.923	CC, ES
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,700.0	6,460.5	845.7	779.9	12.855	SF
Wells Ranch 24-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	2,000.0	2,009.0	1,282.3	1,262.9	66.108	CC, ES
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	4,900.0	4,758.8	1,874.8	1,827.1	39.295	SF
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	2,535.4	2,730.2	1,230.3	1,204.9	48.362	CC, ES
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	6,400.0	7,363.0	1,311.5	1,242.2	18.923	SF
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	2,438.6	2,435.9	37.5	13.9	1.585	CC, ES, SF
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	2,447.2	2,440.6	76.3	52.6	3.220	CC, ES
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	2,500.0	2,491.2	77.3	53.1	3.194	SF
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	7,240.3	6,672.8	81.0	11.1	1.159	Level 2, CC, ES, SF
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,000.0	2,007.0	1,446.3	1,426.9	74.598	CC, ES
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	4,300.0	4,209.8	1,859.9	1,817.9	44.297	SF
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	2,000.0	2,007.0	1,409.8	1,390.5	72.719	CC, ES
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	6,200.0	6,255.6	1,866.2	1,803.3	29.698	SF
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	2,592.4	2,809.1	1,354.1	1,328.0	51.828	CC
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	14,100.0	14,131.9	1,520.8	1,250.1	5.619	ES
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	14,200.0	14,142.8	1,524.1	1,252.4	5.611	SF
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	72.9	53.5	3.765	CC, ES
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	2,100.0	2,100.0	74.2	53.8	3.644	SF
Wells Ranch BB11-650 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	54.6	35.3	2.824	CC, ES
Wells Ranch BB11-650 - Original Drilling - APD - Rev 0	14,100.0	14,128.9	579.2	323.8	2.268	SF
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,000.0	2,008.0	1,318.8	1,299.4	68.004	CC, ES
Wells Ranch State BB09-617 - Original Drilling - APD - R	4,100.0	3,850.3	1,859.4	1,820.8	48.108	SF
Wells Ranch USX BB11-01 - Original Drilling - Original D	11,213.4	6,458.6	1,557.8	1,454.3	15.049	CC, ES
Wells Ranch USX BB11-01 - Original Drilling - Original D	11,500.0	6,458.9	1,584.0	1,476.6	14.753	SF
Wells Ranch USX BB11-02 - Original Drilling - Original D	9,872.1	6,444.6	1,563.8	1,480.6	18.817	CC
Wells Ranch USX BB11-02 - Original Drilling - Original D	9,900.0	6,444.3	1,564.0	1,480.4	18.716	ES
Wells Ranch USX BB11-02 - Original Drilling - Original D	10,200.0	6,441.4	1,597.7	1,510.3	18.263	SF
Wells Ranch USX BB11-03 - Original Drilling - Original D	8,646.2	6,479.6	1,655.2	1,589.5	25.217	CC, ES
Wells Ranch USX BB11-03 - Original Drilling - Original D	9,100.0	6,473.0	1,716.3	1,645.2	24.136	SF
Wells Ranch USX BB11-04 - Original Drilling - Original D	7,369.5	6,480.6	1,565.1	1,512.7	29.870	CC, ES
Wells Ranch USX BB11-04 - Original Drilling - Original D	7,700.0	6,481.0	1,599.6	1,544.6	29.078	SF
Wells Ranch USX BB11-06 - Original Drilling - Original D	8,569.5	6,463.2	377.2	312.8	5.853	CC, ES
Wells Ranch USX BB11-06 - Original Drilling - Original D	8,600.0	6,463.8	378.4	313.5	5.831	SF
Wells Ranch USX BB11-07 - Original Drilling - Original D	9,997.5	6,445.3	235.7	151.2	2.788	CC
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,000.0	6,445.2	235.7	151.1	2.786	ES, SF
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,272.9	6,461.6	174.9	70.3	1.673	CC, ES, SF
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,327.5	6,448.5	1,279.2	1,174.0	12.155	CC, ES
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,400.0	6,448.7	1,281.3	1,175.1	12.075	SF
Wells Ranch USX BB11-10 - Original Drilling - Original D	9,923.6	6,440.3	1,187.1	1,103.9	14.269	CC, ES
Wells Ranch USX BB11-10 - Original Drilling - Original D	10,100.0	6,438.1	1,200.2	1,115.3	14.143	SF
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	10,648.1	6,465.5	868.2	608.9	3.349	CC, ES
Wells Ranch USX BB11-17 - Original Drilling - Original D	10,700.0	6,465.3	869.7	609.6	3.344	SF
Wells Ranch USX BB11-23 - Original Drilling - Original D	10,616.1	6,468.3	1,759.5	1,665.5	18.705	CC, ES
Wells Ranch USX BB11-23 - Original Drilling - Original D	10,900.0	6,465.2	1,782.3	1,685.1	18.343	SF

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

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-658
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4698.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-658	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.79 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDM Production
<b>Reference Design:</b>	APD - Rev 0	<b>Offset TVD Reference:</b>	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	15,986.4	6,384.3	1,723.4	1,378.2	4.992	CC
Wells Ranch 12D - Original Drilling - Original Drilling - As	16,000.0	6,384.2	1,723.5	1,378.0	4.989	ES
Wells Ranch 12D - Original Drilling - Original Drilling - As	16,100.0	6,383.8	1,727.2	1,380.6	4.983	SF
Wells Ranch 33-12 - Original Drilling - Original Drilling - A	15,265.6	6,395.4	1,208.6	875.2	3.625	CC, ES
Wells Ranch 33-12 - Original Drilling - Original Drilling - A	15,300.0	6,395.3	1,209.1	875.3	3.622	SF
Wells Ranch 34-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 43-12 - Original Drilling - Original Drilling - A	16,597.0	6,383.6	1,184.1	828.5	3.330	CC, ES, SF
Wells Ranch 44-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch BB12-01 - Original Drilling - Original Drilling	16,582.0	6,420.2	1,358.5	1,165.9	7.052	CC
Wells Ranch BB12-01 - Original Drilling - Original Drilling	16,597.0	6,420.1	1,358.6	1,165.7	7.042	ES, SF
Wells Ranch BB12-02 - Original Drilling - Original Drilling	15,141.9	6,395.4	1,506.8	1,338.5	8.948	CC, ES
Wells Ranch BB12-02 - Original Drilling - Original Drilling	15,300.0	6,393.4	1,515.1	1,344.5	8.881	SF
Wells Ranch BB12-03 - Original Drilling - Original Drilling	13,888.6	6,451.9	1,585.1	1,437.8	10.761	CC
Wells Ranch BB12-03 - Original Drilling - Original Drilling	13,900.0	6,451.9	1,585.1	1,437.6	10.746	ES
Wells Ranch BB12-03 - Original Drilling - Original Drilling	14,100.0	6,451.0	1,599.1	1,449.0	10.651	SF
Wells Ranch BB12-04 - Original Drilling - Original Drilling	12,847.9	6,434.5	1,250.1	1,119.7	9.591	CC, ES
Wells Ranch BB12-04 - Original Drilling - Original Drilling	13,000.0	6,433.3	1,259.3	1,126.8	9.502	SF
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,699.5	6,448.1	7.2	-120.5	0.056	Level 1, CC, ES, SF
Wells Ranch BB12-06 - Original Drilling - Original Drilling	13,929.0	6,425.1	96.8	-51.2	0.654	Level 1, CC, ES, SF
Wells Ranch BB12-07 - Original Drilling - Original Drilling	15,332.8	6,410.7	344.4	173.0	2.009	CC, ES, SF
Wells Ranch BB12-08 - Original Drilling - Original Drilling	16,597.0	6,384.6	156.3	58.7	1.602	CC, ES, SF