

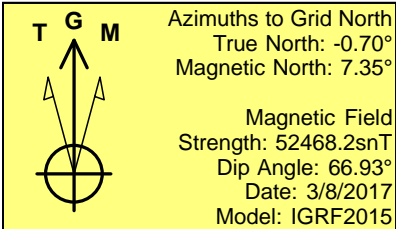
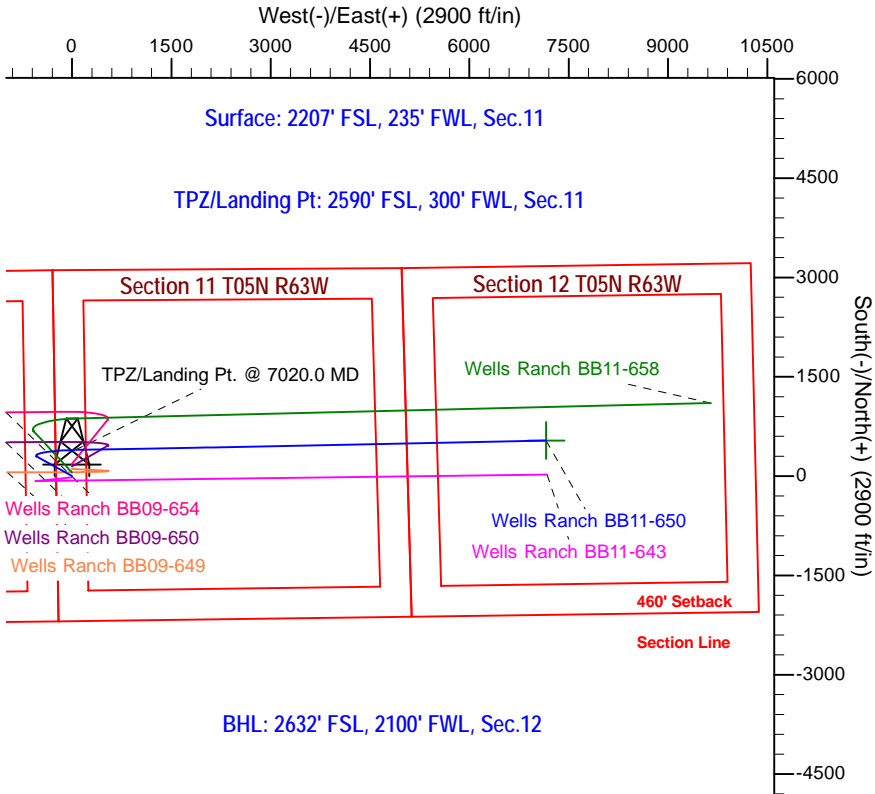
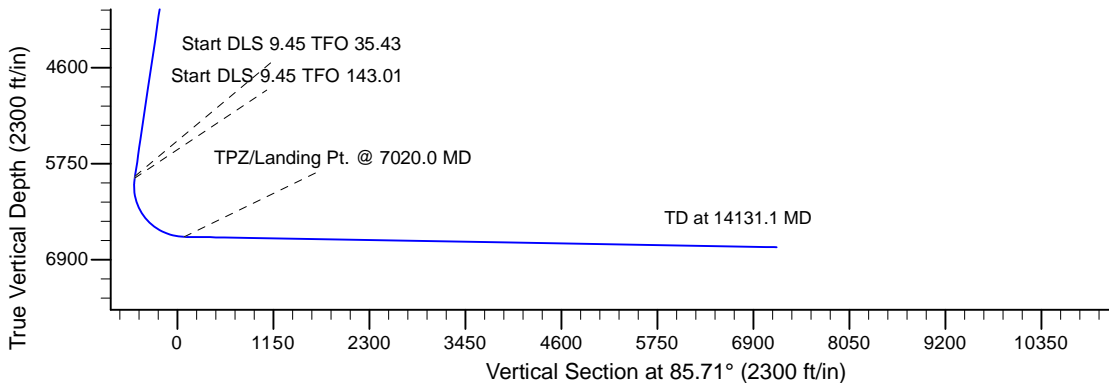
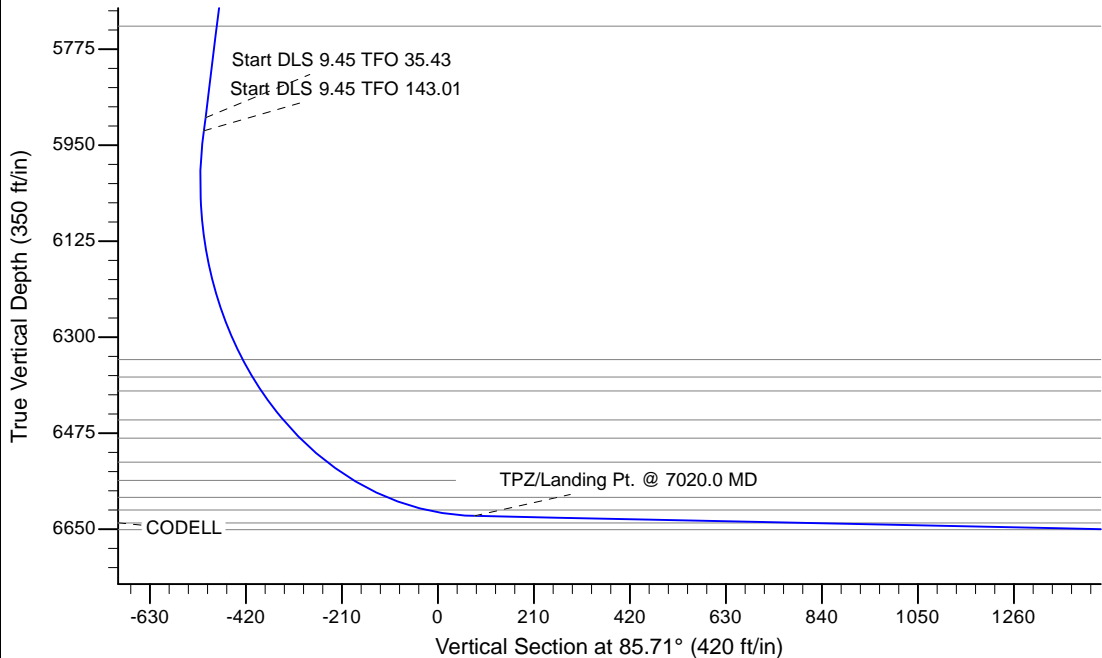
Project: Wells Ranch  
Site: BB Section 11-T5N-R63W Weld County, CO  
Well: Wells Ranch BB11-650  
Wellbore: Original Drilling  
Design: APD - Rev 0

# 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	2200.0	0.00	0.00	2200.0	0.0	0.0	0.00	0.00	0.0	
3	2700.0	10.00	299.00	2697.5	21.1	-38.1	2.00	299.00	-36.4	
4	5951.9	10.00	299.00	5900.0	294.9	-532.0	0.00	0.00	-508.4	
5	5976.3	11.95	305.47	5924.0	297.4	-535.9	9.45	35.43	-512.1	
6	7020.0	89.00	88.95	6626.0	395.0	50.0	9.45	143.01	79.4	
7	14131.1	89.00	88.76	6750.0	537.0	7158.6	0.00	-89.48	7178.7	Wells Ranch BB11-650 BHL 2632'FSL, 2100'FWL



WELL DETAILS: Wells Ranch BB11-650			
Northing	Easting	Ground Elevation: 4668.0	Latitude
0.0	0.01395017.8924691	3302779.7978206	40.4126300
Longitude			
-104.4126300			
Plan: APD - Rev 0 (Wells Ranch BB11-650/Original Drilling)			
Created By: Shailey Jewell		Date: 9:45, March 09 2017	
Checked: _____		Date: _____	
Reviewed: _____		Date: _____	
Approved: _____		Date: _____	

# **Northern Region - DJ Basin**

**Wells Ranch**

**BB Section 11**

**Wells Ranch BB11-650**

**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 BB11-650
<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 BB11-650	<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	14,130.4	APD - Rev 0 (Original Drilling)	OWSG_Rev2_MWD+IFR1+M	OWSG MWD + IFR1 + Multi-Station Correction

<b>Summary</b>						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
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 BB11-650
<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 BB11-650	<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 Producction
<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	6,203.5	6,138.0	1,842.2	1,796.0	39.921	CC, ES
Wells Ranch 10C - Original Drilling - Original Drilling - As	6,400.0	6,326.9	1,859.2	1,811.8	39.270	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	6,127.9	6,084.3	1,629.4	1,584.2	36.066	CC, ES
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	6,500.0	6,420.6	1,729.5	1,678.4	33.869	SF
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	6,053.0	5,973.0	1,776.0	1,731.5	39.921	CC, ES
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	6,200.0	6,152.8	1,791.1	1,745.6	39.312	SF
Wells Ranch 34-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 41-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,210.3	6,127.8	952.5	906.7	20.785	CC, ES
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,300.0	6,214.4	956.1	909.7	20.604	SF
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	5,920.2	5,825.2	635.9	592.2	14.553	CC
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,000.0	5,903.6	636.3	592.0	14.358	ES
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,100.0	6,003.0	645.0	599.9	14.310	SF
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	4,043.8	4,020.8	1,694.9	1,665.3	57.210	CC
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	4,100.0	4,070.9	1,695.0	1,665.0	56.426	ES
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	6,400.0	6,277.1	1,854.5	1,807.4	39.351	SF

# Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-650
<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 BB11-650	<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	7,532.5	6,606.9	806.1	584.5	3.638	CC, ES, SF
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	2,208.1	2,161.6	455.0	439.0	28.460	CC, ES
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	7,400.0	6,582.1	597.0	544.8	11.445	SF
Wells Ranch 14-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,654.1	6,639.2	357.2	291.9	5.476	CC, ES, SF
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,692.8	6,626.5	1,869.8	1,804.2	28.526	CC
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,700.0	6,626.6	1,869.8	1,804.2	28.489	ES
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,800.0	6,627.9	1,872.8	1,806.0	28.034	SF
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	2,200.0	2,209.0	1,227.7	1,206.3	57.375	CC
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	2,300.0	2,309.0	1,228.6	1,206.2	54.866	ES
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	6,400.0	7,279.9	1,562.3	1,495.1	23.242	SF
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	6,455.3	7,327.5	855.8	787.1	12.466	CC, ES, SF
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	2,581.1	2,577.8	101.3	76.3	4.043	CC
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	2,600.0	2,596.1	101.4	76.2	4.018	ES, SF
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	7,040.1	6,900.3	120.9	52.6	1.771	CC, ES, SF
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	182.2	162.8	9.413	CC, ES
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	7,200.0	6,751.0	573.9	504.9	8.318	SF
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,200.0	2,207.0	1,391.6	1,370.2	65.066	CC
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,300.0	2,307.0	1,392.5	1,370.1	62.215	ES
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	6,300.0	6,215.7	1,878.6	1,816.4	30.234	SF
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	2,354.2	2,397.6	1,355.1	1,332.0	58.726	CC
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	14,131.1	13,985.5	1,577.2	1,312.2	5.953	ES, SF
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	7,004.8	7,013.3	996.8	928.4	14.573	CC
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	14,131.1	14,130.1	1,034.2	770.3	3.919	ES, SF
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	18.2	-3.1	0.853	Level 1, CC, ES, SF
Wells Ranch BB11-658 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	54.6	35.3	2.824	CC, ES
Wells Ranch BB11-658 - Original Drilling - APD - Rev 0	14,131.1	14,094.7	579.2	323.8	2.267	SF
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,000.0	2,008.0	1,264.1	1,244.7	65.186	CC
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,100.0	2,089.0	1,264.9	1,244.7	62.374	ES
Wells Ranch State BB09-617 - Original Drilling - APD - R	5,000.0	4,744.8	1,877.3	1,829.6	39.413	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	8,603.1	6,623.6	861.3	796.9	13.377	CC, ES
Wells Ranch USX BB11-06 - Original Drilling - Original D	8,700.0	6,627.6	866.7	801.1	13.220	SF
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,026.7	6,630.1	729.4	643.4	8.481	CC, ES
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,100.0	6,630.7	733.1	646.1	8.425	SF
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,304.7	6,675.3	674.1	569.5	6.446	CC, ES, SF
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,367.4	6,670.8	783.9	678.4	7.433	CC, ES
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,400.0	6,671.7	784.5	678.7	7.412	SF
Wells Ranch USX BB11-10 - Original Drilling - Original D	9,959.8	6,636.5	698.5	615.2	8.385	CC, ES
Wells Ranch USX BB11-10 - Original Drilling - Original D	10,000.0	6,636.9	699.7	615.9	8.355	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	10,676.8	6,671.8	1,362.1	1,097.7	5.151	CC
Wells Ranch USX BB11-17 - Original Drilling - Original D	10,700.0	6,672.2	1,362.3	1,097.5	5.144	ES
Wells Ranch USX BB11-17 - Original Drilling - Original D	10,800.0	6,673.9	1,367.7	1,101.4	5.136	SF
Wells Ranch USX BB11-23 - Original Drilling - Original D	10,655.7	6,664.6	1,263.1	1,169.0	13.418	CC, ES
Wells Ranch USX BB11-23 - Original Drilling - Original D	10,800.0	6,666.3	1,271.4	1,175.5	13.270	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 BB11-650
<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 BB11-650	<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 Producction
<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)		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	14,131.1	6,682.0	1,364.4	1,099.5	5.151	CC, ES, SF
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	12,875.5	6,688.4	1,757.2	1,626.9	13.486	CC
Wells Ranch BB12-04 - Original Drilling - Original Drilling	12,900.0	6,688.8	1,757.4	1,626.7	13.444	ES
Wells Ranch BB12-04 - Original Drilling - Original Drilling	13,100.0	6,692.3	1,771.5	1,638.1	13.278	SF
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,734.2	6,702.8	492.9	364.9	3.851	CC, ES, SF
Wells Ranch BB12-06 - Original Drilling - Original Drilling	13,959.2	6,706.6	600.3	452.1	4.050	CC, ES
Wells Ranch BB12-06 - Original Drilling - Original Drilling	14,000.0	6,706.8	601.7	453.0	4.046	SF
Wells Ranch BB12-07 - Original Drilling - Original Drilling	14,131.1	6,690.7	1,501.7	1,403.4	15.278	CC, ES, SF
Wells Ranch BB12-08 - Original Drilling - Original Drilling						Out of range