

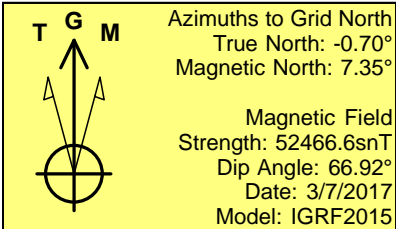
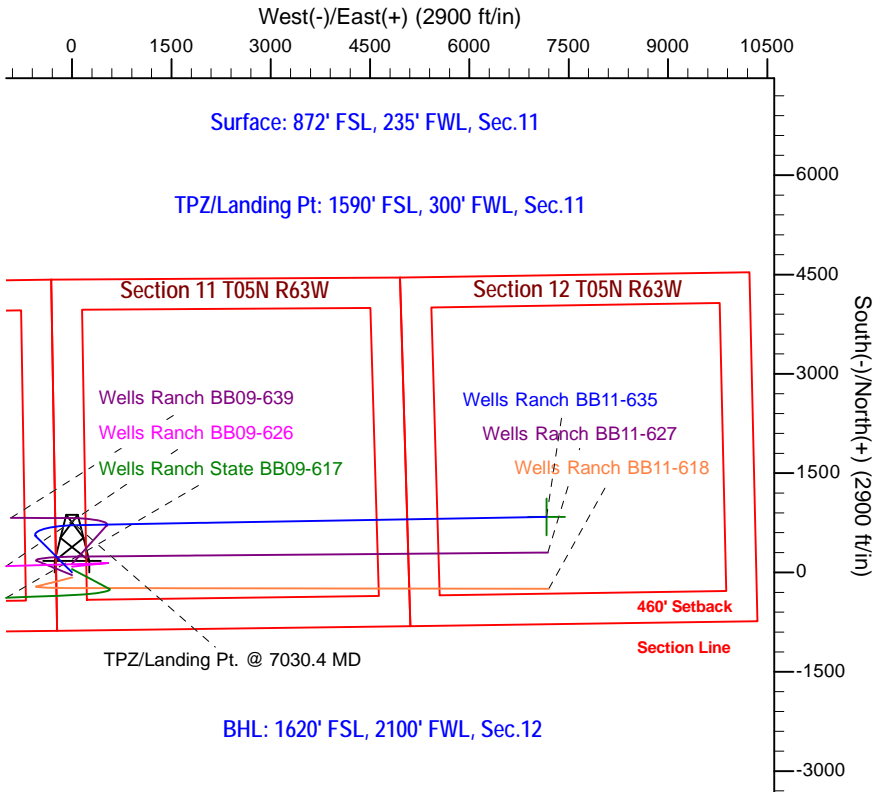
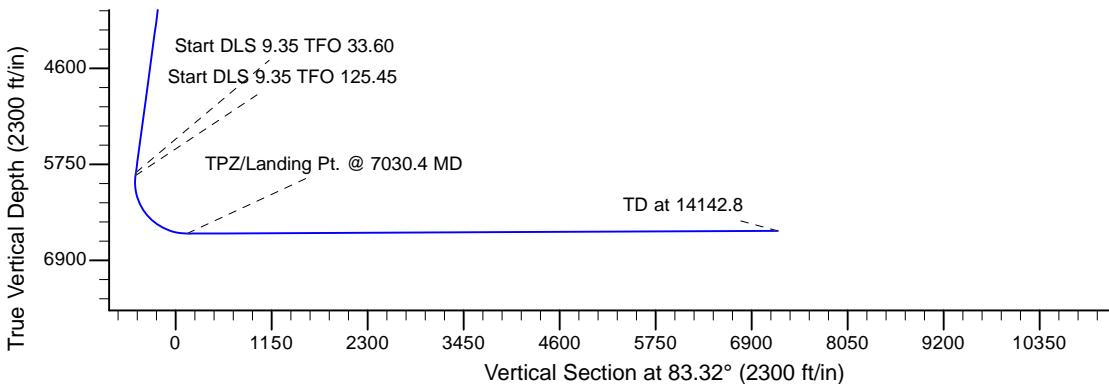
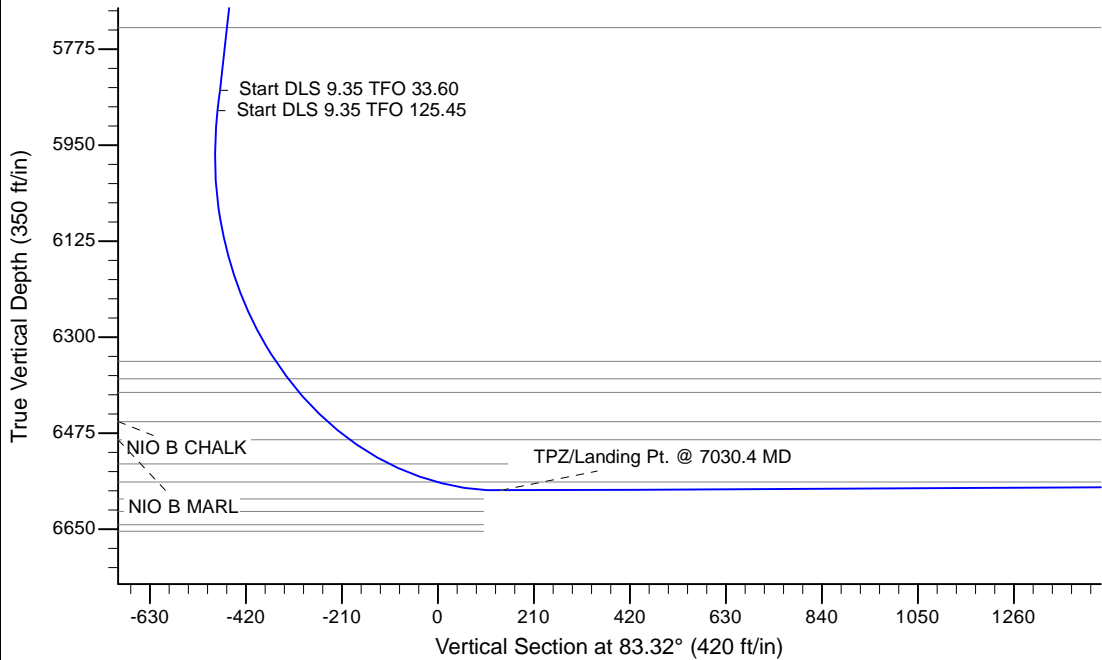
Project: Wells Ranch  
Site: BB Section 11-T5N-R63W Weld County, CO  
Well: Wells Ranch BB11-635  
Wellbore: Original Drilling  
Design: APD - Rev 0

# 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	2612.5	12.25	315.00	2607.8	46.1	-46.1	2.00	315.00	-40.4	
4	5930.2	12.25	315.00	5850.0	543.9	-543.9	0.00	0.00	-476.9	
5	5968.4	15.36	322.49	5887.1	550.8	-549.8	9.35	33.60	-482.0	
6	7030.4	90.25	88.99	6579.5	715.0	-55.0	9.35	125.45	137.8	
7	14142.8	90.25	89.00	6548.5	839.4	7166.3	0.00	92.09	7215.3	Wells Ranch BB11-635 BHL 1620'FSL, 2100'FWL



WELL DETAILS: Wells Ranch BB11-635				
Northing	Easting	Ground Elevation: 4676.0	Latitude	Longitude
0.0 1393700.9447369	3302801.4929830		40.4090200	-104.4126100
Plan: APD - Rev 0 (Wells Ranch BB11-635/Original Drilling)				
Created By: Shailey Jewell		Date: 9:47, March 08 2017		
Checked: _____		Date: _____		
Reviewed: _____		Date: _____		
Approved: _____		Date: _____		

# **Northern Region - DJ Basin**

**Wells Ranch**

**BB Section 11**

**Wells Ranch BB11-635**

**Original Drilling**

**APD - Rev 0**

## **Anticollision Summary Report**

**08 March, 2017**

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-635
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-635	<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

<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>	3/8/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	14,142.8	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
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 BB11-635
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-635	<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 Produccion
<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						Out of range
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						Out of range
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	6,107.4	5,998.3	1,745.5	1,700.5	38.816	CC, ES
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	6,300.0	6,209.5	1,773.6	1,727.4	38.345	SF
Wells Ranch 34-10 - Original Drilling - Original Drilling - A	6,019.5	5,937.8	1,538.7	1,494.2	34.522	CC, ES
Wells Ranch 34-10 - Original Drilling - Original Drilling - A	6,200.0	6,105.3	1,563.4	1,517.6	34.083	SF
Wells Ranch 41-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 42-10 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,236.5	6,105.0	613.5	567.5	13.340	CC, ES
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,300.0	6,163.8	616.0	569.7	13.282	SF
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	4,826.3	4,725.2	742.3	706.8	20.896	CC
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	4,900.0	4,797.0	742.5	706.4	20.575	ES
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	6,000.0	5,870.6	783.5	738.9	17.575	SF

# Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-635
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-635	<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 11						
Wells 12-11 - Original Drilling - Original Drilling - As Drille	7,532.9	6,541.3	1,801.8	1,581.8	8.189	CC, ES
Wells 12-11 - Original Drilling - Original Drilling - As Drille	7,700.0	6,540.6	1,809.6	1,588.1	8.173	SF
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	7,357.1	6,526.1	400.6	348.6	7.696	CC, ES, SF
Wells Ranch 14-11 - Original Drilling - Original Drilling - A	486.4	440.4	875.3	872.2	283.833	CC
Wells Ranch 14-11 - Original Drilling - Original Drilling - A	1,900.0	1,848.7	876.1	862.6	64.577	ES
Wells Ranch 14-11 - Original Drilling - Original Drilling - A	6,900.0	6,527.5	1,569.0	1,462.6	14.740	SF
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,656.5	6,527.4	639.6	574.5	9.828	CC, ES
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,700.0	6,526.8	641.1	575.4	9.752	SF
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,696.7	6,525.2	873.5	807.9	13.328	CC
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,700.0	6,525.2	873.5	807.9	13.321	ES
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,800.0	6,524.5	879.6	813.2	13.247	SF
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	2,571.7	2,567.8	61.9	36.9	2.476	CC, ES
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	2,600.0	2,595.0	62.3	37.0	2.465	SF
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	6,784.2	7,057.8	126.7	62.4	1.971	CC, ES, SF
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,000.0	2,001.0	76.5	57.1	3.952	CC, ES
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,100.0	2,101.0	77.8	57.4	3.820	SF
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	2,000.0	2,001.0	40.1	20.7	2.070	CC, ES
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	2,100.0	2,101.0	41.3	21.0	2.031	SF
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,299.4	2,298.7	40.6	18.4	1.826	CC
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,300.0	2,299.4	40.6	18.4	1.825	ES, 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	8,600.6	6,533.1	1,858.1	1,793.8	28.888	CC, ES
Wells Ranch USX BB11-06 - Original Drilling - Original D	8,800.0	6,536.9	1,868.8	1,801.9	27.933	SF
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,027.3	6,504.2	1,727.2	1,642.9	20.476	CC, ES
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,400.0	6,490.8	1,767.0	1,677.7	19.804	SF
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,303.5	6,515.5	1,675.1	1,570.8	16.062	CC, ES
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,600.0	6,514.1	1,701.1	1,592.8	15.711	SF
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,368.8	6,528.5	220.1	115.0	2.093	CC, ES, SF
Wells Ranch USX BB11-10 - Original Drilling - Original D	9,962.9	6,528.4	302.2	219.0	3.633	CC, ES, SF
Wells Ranch USX BB11-15 - Original Drilling - Original D	10,014.2	6,515.5	917.6	833.5	10.914	CC, ES
Wells Ranch USX BB11-15 - Original Drilling - Original D	10,100.0	6,514.7	921.6	836.7	10.858	SF
Wells Ranch USX BB11-16 - Original Drilling - Original D	11,382.9	6,537.0	903.6	798.0	8.558	CC
Wells Ranch USX BB11-16 - Original Drilling - Original D	11,400.0	6,536.2	903.8	798.0	8.543	ES, SF
Wells Ranch USX BB11-17 - Original Drilling - Original D						Out of range
Wells Ranch USX BB11-23 - Original Drilling - Original D	10,659.9	6,518.7	263.8	169.8	2.807	CC, ES, SF

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch BB11-635
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Reference Site:</b>	BB Section 11	<b>MD Reference:</b>	WELL @ 4706.0ft (Original Well Elev.)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch BB11-635	<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 12						
Wells Ranch 12D - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 33-12 - Original Drilling - Original Drilling - A	14,142.8	6,472.5	1,205.6	977.4	5.284	CC, ES, SF
Wells Ranch 34-12 - Original Drilling - Original Drilling - A	14,142.8	6,464.5	1,672.3	1,407.0	6.303	CC, ES, SF
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	12,731.6	6,531.2	1,501.5	1,374.0	11.772	CC, ES
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,900.0	6,531.3	1,510.9	1,381.0	11.628	SF
Wells Ranch BB12-06 - Original Drilling - Original Drilling	13,958.9	6,508.8	1,614.0	1,466.2	10.924	CC
Wells Ranch BB12-06 - Original Drilling - Original Drilling	14,000.0	6,508.1	1,614.5	1,466.0	10.875	ES
Wells Ranch BB12-06 - Original Drilling - Original Drilling	14,142.8	6,505.8	1,624.4	1,474.1	10.805	SF
Wells Ranch BB12-07 - Original Drilling - Original Drilling						Out of range
Wells Ranch BB12-08 - Original Drilling - Original Drilling						Out of range