

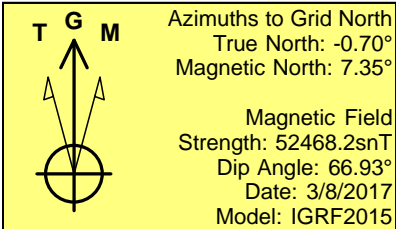
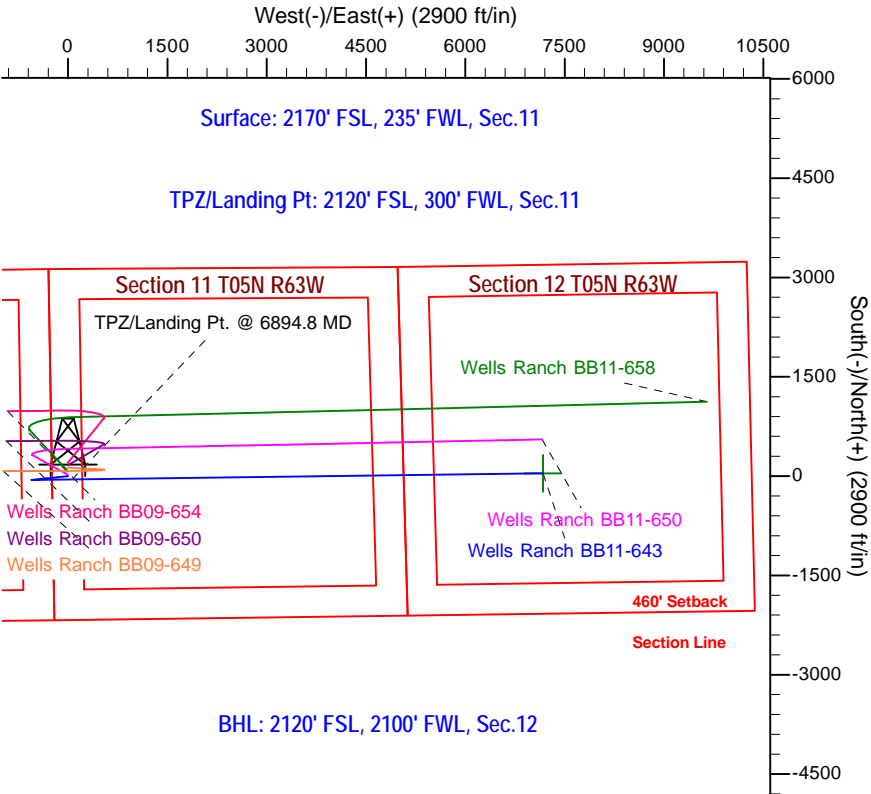
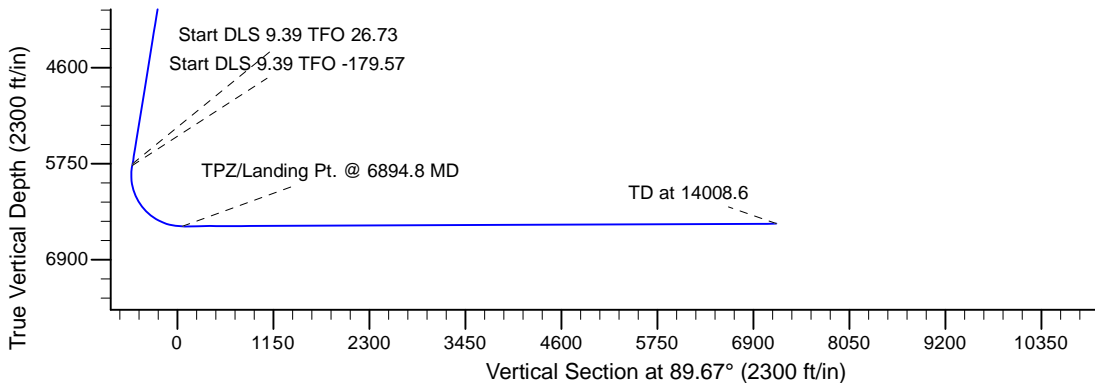
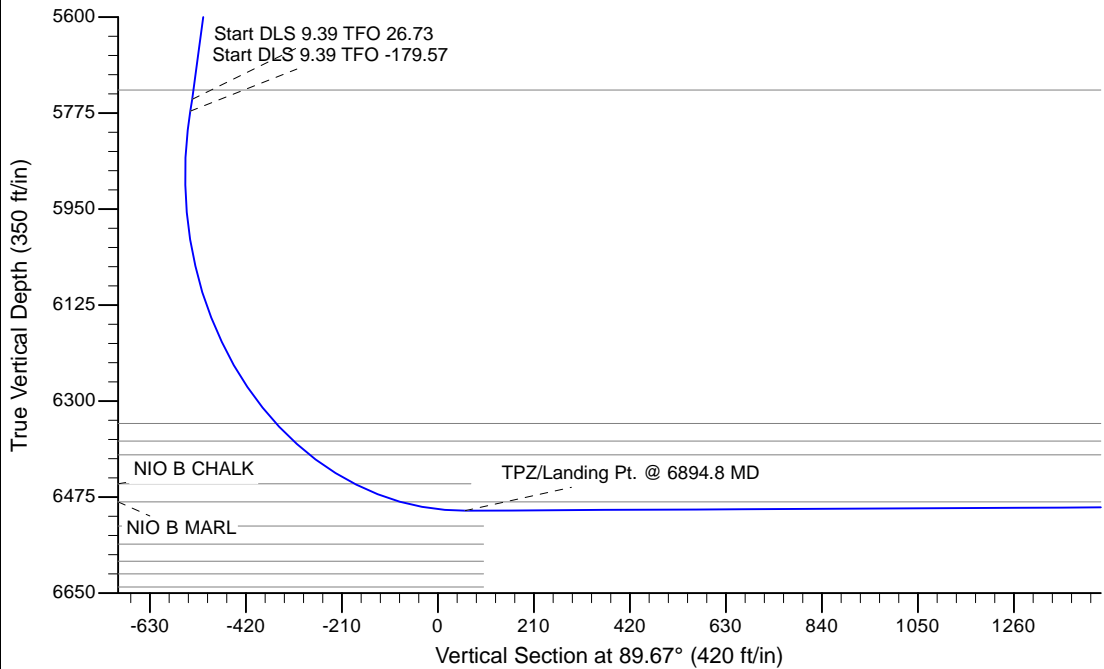
Project: Wells Ranch
Site: BB Section 11-T5N-R63W Weld County, CO
Well: Wells Ranch BB11-643
Wellbore: Original Drilling
Design: APD - Rev 0

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	2662.5	9.25	264.00	2660.5	-3.9	-37.0	2.00	264.00	-37.1	
4	5792.7	9.25	264.00	5750.0	-56.5	-537.5	0.00	0.00	-537.8	
5	5814.9	11.15	268.84	5771.8	-56.7	-541.4	9.39	26.73	-541.7	
6	6894.8	90.25	89.26	6500.0	-50.0	60.0	9.39	-179.57	59.7	
7	14008.6	90.25	89.26	6468.7	41.7	7173.2	0.00	40.47	7173.3	Wells Ranch BB11-643 BHL 2120'FSL, 2100'FWL



WELL DETAILS: Wells Ranch BB11-643			
Northing	Easting	Ground Elevation: 4668.0	Latitude
0.0 0.0 1394999.6789435	3302780.0211741	40.4125800	-104.4126300
Plan: APD - Rev 0 (Wells Ranch BB11-643/Original Drilling)			
Created By: Shailey Jewell		Date: 9:58, March 09 2017	
Checked: _____		Date: _____	
Reviewed: _____		Date: _____	
Approved: _____		Date: _____	

Northern Region - DJ Basin

Wells Ranch

BB Section 11

Wells Ranch BB11-643

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 BB11-643
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 BB11-643	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:	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	14,008.6	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

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Wells Ranch BB11-643
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 BB11-643	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						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	5,944.5	5,920.2	1,842.5	1,798.5	41.953	CC, ES
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	6,100.0	6,068.3	1,857.9	1,812.9	41.321	SF
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	5,926.5	5,835.9	1,679.0	1,635.8	38.792	CC, ES
Wells Ranch 33-10 - Original Drilling - Original Drilling - A	6,100.0	6,045.2	1,702.1	1,657.7	38.268	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	5,931.2	5,860.6	1,307.0	1,263.3	29.887	CC, ES
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,200.0	6,121.1	1,327.9	1,282.4	29.180	SF
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	5,928.9	5,845.8	375.2	331.9	8.665	CC, ES
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,000.0	5,916.7	379.0	335.2	8.653	SF
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	5,900.0	5,804.7	1,413.6	1,370.2	32.605	CC, ES
Wells Ranch 44-10 - Original Drilling - Original Drilling - A	6,300.0	6,185.7	1,450.8	1,404.9	31.593	SF

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Wells Ranch BB11-643
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 BB11-643	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	7,398.4	6,469.8	1,272.3	1,055.5	5.868	CC
Wells 12-11 - Original Drilling - Original Drilling - As Drille	7,400.0	6,469.8	1,272.3	1,055.5	5.868	ES
Wells 12-11 - Original Drilling - Original Drilling - As Drille	7,500.0	6,469.4	1,276.3	1,058.7	5.865	SF
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	7,228.8	6,450.3	129.1	78.4	2.548	CC, ES, SF
Wells Ranch 14-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,528.2	6,458.2	115.0	51.0	1.796	CC, ES, SF
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	8,574.9	6,453.5	1,398.0	1,333.4	21.654	CC
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,600.0	6,453.4	1,398.2	1,333.3	21.552	ES
Wells Ranch 24-11 - Original Drilling - Original Drilling - A	8,800.0	6,452.2	1,416.0	1,348.9	21.104	SF
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	7,019.6	6,657.2	1,120.7	1,054.5	16.927	CC, ES
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0	7,100.0	6,591.4	1,121.4	1,055.1	16.912	SF
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	6,700.0	7,026.9	422.3	355.2	6.291	ES, SF
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0	6,711.1	7,016.3	422.3	355.2	6.293	CC
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	127.5	106.2	5.973	CC
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	7,089.6	6,652.0	127.6	61.0	1.915	ES, SF
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	2,200.0	2,200.0	164.0	142.6	7.678	CC, ES
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	2,500.0	2,489.1	174.7	150.6	7.226	SF
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	200.4	181.0	10.355	CC, ES
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	2,300.0	2,283.8	212.1	189.9	9.559	SF
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	2,520.8	2,515.2	1,372.5	1,348.0	56.128	CC
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0	14,008.6	13,984.0	1,584.2	1,315.0	5.886	ES, SF
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	6,872.9	6,866.1	1,007.0	940.3	15.098	CC
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0	14,008.6	13,997.0	1,038.2	768.8	3.855	ES, SF
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0	14,008.6	14,137.2	504.3	235.1	1.873	CC, ES, SF
Wells Ranch BB11-650 - 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	72.9	53.5	3.765	CC, ES
Wells Ranch BB11-658 - Original Drilling - APD - Rev 0	2,100.0	2,098.1	74.1	53.8	3.646	SF
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,000.0	2,008.0	1,245.9	1,226.5	64.247	CC
Wells Ranch State BB09-617 - Original Drilling - APD - R	2,100.0	2,089.2	1,246.7	1,226.4	61.473	ES
Wells Ranch State BB09-617 - Original Drilling - APD - R	7,600.0	6,272.5	1,587.4	1,519.2	23.285	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	8,464.3	6,461.7	1,333.5	1,270.3	21.109	CC, ES
Wells Ranch USX BB11-06 - Original Drilling - Original D	8,700.0	6,466.4	1,354.1	1,288.3	20.582	SF
Wells Ranch USX BB11-07 - Original Drilling - Original D	9,894.1	6,433.1	1,208.4	1,125.0	14.489	CC
Wells Ranch USX BB11-07 - Original Drilling - Original D	9,900.0	6,433.0	1,208.4	1,124.9	14.473	ES
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,100.0	6,428.9	1,225.8	1,140.0	14.290	SF
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,169.9	6,452.1	1,162.3	1,058.7	11.220	CC
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,200.0	6,451.8	1,162.6	1,058.6	11.175	ES
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,300.0	6,451.0	1,169.5	1,064.3	11.119	SF
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,241.1	6,453.8	291.1	186.5	2.782	CC, ES, SF
Wells Ranch USX BB11-10 - Original Drilling - Original D	9,836.2	6,451.3	215.3	132.8	2.610	CC, ES, SF
Wells Ranch USX BB11-15 - Original Drilling - Original D	9,892.8	6,441.4	1,436.3	1,352.9	17.234	CC
Wells Ranch USX BB11-15 - Original Drilling - Original D	9,900.0	6,441.3	1,436.3	1,352.8	17.212	ES
Wells Ranch USX BB11-15 - Original Drilling - Original D	10,100.0	6,439.7	1,451.1	1,365.2	16.890	SF
Wells Ranch USX BB11-16 - Original Drilling - Original D	11,263.4	6,521.7	1,417.0	1,311.8	13.476	CC
Wells Ranch USX BB11-16 - Original Drilling - Original D	11,300.0	6,523.3	1,417.4	1,311.7	13.408	ES
Wells Ranch USX BB11-16 - Original Drilling - Original D	11,400.0	6,476.4	1,423.6	1,316.7	13.320	SF
Wells Ranch USX BB11-17 - Original Drilling - Original D	10,537.1	6,466.0	1,848.3	1,590.2	7.160	CC, ES
Wells Ranch USX BB11-17 - Original Drilling - Original D	10,700.0	6,465.3	1,855.5	1,595.0	7.124	SF
Wells Ranch USX BB11-23 - Original Drilling - Original D	10,535.5	6,454.8	779.7	686.4	8.355	CC, ES

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 Wells Ranch BB11-643
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 BB11-643	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 Ranch USX BB11-23 - Original Drilling - Original D	10,600.0	6,454.1	782.4	688.2	8.313	SF
BB Section 12						
Wells Ranch 12D - Original Drilling - Original Drilling - As						Out of range
Wells Ranch 33-12 - Original Drilling - Original Drilling - A	14,008.6	6,400.7	1,182.5	964.4	5.422	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						Out of range
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,598.4	6,456.0	996.5	869.5	7.844	CC
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,600.0	6,456.0	996.5	869.5	7.843	ES
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,700.0	6,456.2	1,001.7	873.6	7.818	SF
Wells Ranch BB12-06 - Original Drilling - Original Drilling	13,826.5	6,434.9	1,114.6	967.3	7.566	CC, ES
Wells Ranch BB12-06 - Original Drilling - Original Drilling	13,900.0	6,434.0	1,117.1	968.8	7.533	SF
Wells Ranch BB12-07 - Original Drilling - Original Drilling	14,008.6	6,417.4	1,840.0	1,721.0	15.453	CC, ES, SF
Wells Ranch BB12-08 - Original Drilling - Original Drilling						Out of range