

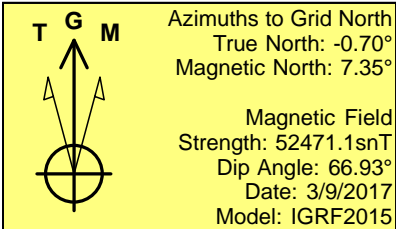
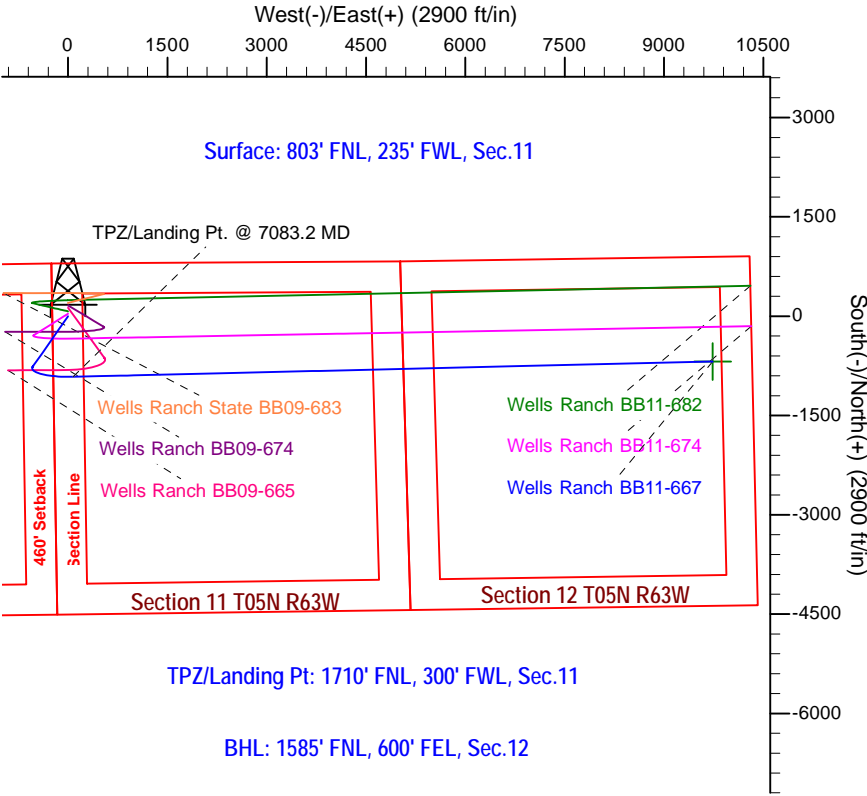
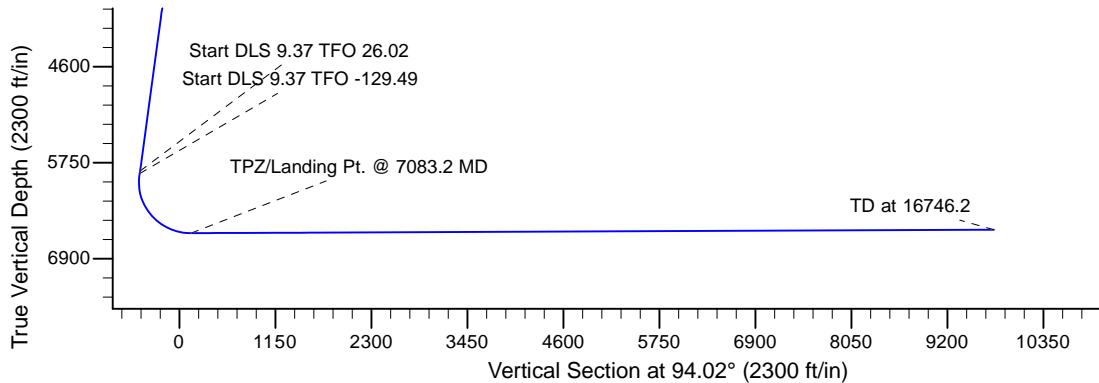
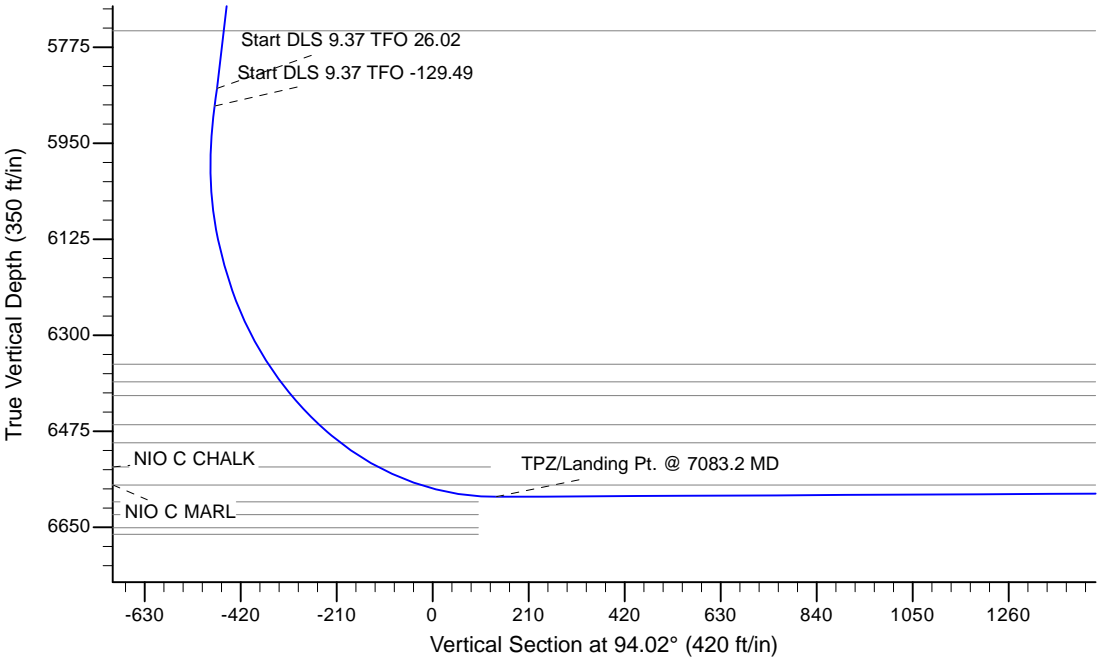
Project: Wells Ranch
Site: BB Section 11-T5N-R63W Weld County, CO
Well: Wells Ranch BB11-667
Wellbore: Original Drilling
Design: APD - Rev 0

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	2737.5	14.75	215.00	2729.4	-77.3	-54.1	2.00	215.00	-48.6	
4	5964.5	14.75	215.00	5850.0	-750.3	-525.4	0.00	0.00	-471.5	
5	5997.9	17.61	219.54	5882.1	-757.7	-531.0	9.37	26.02	-476.6	
6	7083.2	90.25	88.63	6594.5	-915.0	75.0	9.37	-129.49	138.9	
7	16746.2	90.25	88.63	6552.4	-683.9	9735.1	0.00	0.00	9759.1	Wells Ranch BB11-667 BHL 1585'FNL, 660'FEL



WELL DETAILS: Wells Ranch BB11-667			
Northing	Easting	Ground Elevation: 4685.0	Longitude
0.00.0	1397330.8411659	3302737.5113353	40.4189800
Latitude			
-104.4126800			
Plan: APD - Rev 0 (Wells Ranch BB11-667/Original Drilling)			
Created By: Shailey Jewell		Date: 14:39, March 09 2017	
Checked: _____		Date: _____	
Reviewed: _____		Date: _____	
Approved: _____		Date: _____	

Northern Region - DJ Basin

Wells Ranch

BB Section 11

Wells Ranch BB11-667

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 BB11-667
Project:	Wells Ranch	TVD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB11-667	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	16,746.2	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 BB11-667
Project:	Wells Ranch	TVD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB11-667	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Producction
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	6,050.2	5,900.7	962.8	917.7	21.357	CC, ES
Wells Ranch 10C - Original Drilling - Original Drilling - As	6,200.0	6,046.3	980.2	934.0	21.205	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	6,041.1	5,906.3	1,862.9	1,817.6	41.112	CC, ES
Wells Ranch 31-10 - Original Drilling - Original Drilling - A	6,100.0	5,964.0	1,865.5	1,819.7	40.745	SF
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	6,163.0	6,025.4	1,456.2	1,410.7	32.039	CC, ES
Wells Ranch 32-10 - Original Drilling - Original Drilling - A	6,500.0	6,335.6	1,546.2	1,496.4	31.024	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	4,330.1	4,257.5	802.6	770.5	24.981	CC
Wells Ranch 41-10 - Original Drilling - Original Drilling - A	4,500.0	4,428.1	803.1	769.6	23.978	ES
Wells Ranch 41-10 - Original Drilling - Original Drilling - A	6,000.0	5,856.0	911.4	866.2	20.184	SF
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,228.2	6,060.3	560.8	515.2	12.291	CC, ES
Wells Ranch 42-10 - Original Drilling - Original Drilling - A	6,300.0	6,127.9	564.7	518.6	12.238	SF
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,519.8	6,286.9	1,730.2	1,682.8	36.487	CC, ES
Wells Ranch 43-10 - Original Drilling - Original Drilling - A	6,700.0	6,411.3	1,744.3	1,696.1	36.135	SF
Wells Ranch 44-10 - Original Drilling - Original Drilling - A						Out of range

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Wells Ranch BB11-667
Project:	Wells Ranch	TVD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB11-667	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	7,593.3	6,547.3	199.8	-20.0	0.909	Level 1, CC, ES, SF
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	7,408.7	6,514.1	1,599.8	1,548.1	30.977	CC, ES
Wells Ranch 13-11 - Original Drilling - Original Drilling - A	7,800.0	6,514.8	1,647.0	1,592.3	30.156	SF
Wells Ranch 14-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	8,709.4	6,541.7	1,369.0	1,304.4	21.191	CC, ES
Wells Ranch 23-11 - Original Drilling - Original Drilling - A	9,000.0	6,537.7	1,399.5	1,331.4	20.540	SF
Wells Ranch 24-11 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch BB09-626 - Original Drilling - APD - Rev 0						Out of range
Wells Ranch BB09-639 - Original Drilling - APD - Rev 0						Out of range
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	7,034.7	6,931.2	1,337.9	1,270.5	19.842	CC, ES
Wells Ranch BB09-649 - Original Drilling - APD - Rev 0	7,500.0	6,528.2	1,355.3	1,286.5	19.697	SF
Wells Ranch BB09-650 - Original Drilling - APD - Rev 0	7,047.7	6,968.7	882.7	814.8	13.008	CC, ES, SF
Wells Ranch BB09-654 - Original Drilling - APD - Rev 0	7,033.9	7,002.8	425.1	356.6	6.203	CC, ES, SF
Wells Ranch BB09-665 - Original Drilling - APD - Rev 0	7,166.2	6,931.9	111.1	41.9	1.605	CC, ES, SF
Wells Ranch BB09-674 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	163.9	144.6	8.471	CC, ES
Wells Ranch BB09-674 - Original Drilling - APD - Rev 0	2,300.0	2,302.5	176.1	153.8	7.916	SF
Wells Ranch BB11-618 - Original Drilling - APD - Rev 0						Out of range
Wells Ranch BB11-627 - Original Drilling - APD - Rev 0						Out of range
Wells Ranch BB11-635 - Original Drilling - APD - Rev 0						Out of range
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	7,064.1	6,869.9	1,468.2	1,400.7	21.735	CC
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	14,200.0	14,002.1	1,546.8	1,277.4	5.740	ES
Wells Ranch BB11-643 - Original Drilling - APD - Rev 0	14,300.0	14,008.6	1,550.8	1,279.8	5.723	SF
Wells Ranch BB11-650 - Original Drilling - APD - Rev 0	7,082.6	7,020.4	1,004.0	935.7	14.698	CC
Wells Ranch BB11-650 - Original Drilling - APD - Rev 0	14,200.0	14,131.1	1,051.1	785.0	3.950	ES, SF
Wells Ranch BB11-658 - Original Drilling - APD - Rev 0	16,697.2	16,606.6	529.6	177.7	1.505	CC, ES, SF
Wells Ranch BB11-674 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	36.4	17.1	1.882	CC, ES
Wells Ranch BB11-674 - Original Drilling - APD - Rev 0	16,746.2	16,563.9	526.9	174.6	1.496	Level 3, SF
Wells Ranch BB11-682 - Original Drilling - APD - Rev 0	2,000.0	2,000.0	72.9	53.5	3.765	CC, ES
Wells Ranch BB11-682 - Original Drilling - APD - Rev 0	16,746.2	16,666.4	1,158.3	807.1	3.298	SF
Wells Ranch State BB09-617 - Original Drilling - APD - R						Out of range
Wells Ranch State BB09-683 - Original Drilling - APD - R	2,000.0	2,000.0	200.4	181.0	10.353	CC, ES
Wells Ranch State BB09-683 - Original Drilling - APD - R	2,200.0	2,196.0	207.9	186.6	9.786	SF
Wells Ranch USX BB11-01 - Original Drilling - Original D	11,303.5	6,538.6	1,032.2	929.4	10.032	CC, ES
Wells Ranch USX BB11-01 - Original Drilling - Original D	11,400.0	6,538.7	1,036.7	932.9	9.986	SF
Wells Ranch USX BB11-02 - Original Drilling - Original D	9,961.3	6,528.6	1,038.1	955.7	12.599	CC, ES
Wells Ranch USX BB11-02 - Original Drilling - Original D	10,100.0	6,527.4	1,047.3	963.6	12.518	SF
Wells Ranch USX BB11-03 - Original Drilling - Original D	8,735.0	6,555.2	1,127.8	1,062.7	17.321	CC, ES
Wells Ranch USX BB11-03 - Original Drilling - Original D	8,900.0	6,552.8	1,139.8	1,073.2	17.105	SF
Wells Ranch USX BB11-04 - Original Drilling - Original D	302.8	269.8	439.7	437.9	251.987	CC
Wells Ranch USX BB11-04 - Original Drilling - Original D	2,000.0	1,966.6	443.1	428.7	30.850	ES
Wells Ranch USX BB11-04 - Original Drilling - Original D	7,600.0	6,558.9	1,046.6	993.7	19.792	SF
Wells Ranch USX BB11-06 - Original Drilling - Original D	8,661.6	6,542.0	150.2	86.2	2.348	CC, ES, SF
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,086.9	6,530.6	289.9	205.7	3.442	CC, ES
Wells Ranch USX BB11-07 - Original Drilling - Original D	10,100.0	6,530.5	290.2	205.7	3.435	SF
Wells Ranch USX BB11-08 - Original Drilling - Original D	11,363.1	6,545.7	350.3	246.4	3.371	CC, ES, SF
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,419.1	6,520.5	1,805.8	1,701.0	17.232	CC, ES
Wells Ranch USX BB11-09 - Original Drilling - Original D	11,700.0	6,521.9	1,827.5	1,718.7	16.789	SF
Wells Ranch USX BB11-10 - Original Drilling - Original D	10,014.1	6,513.2	1,714.8	1,632.0	20.709	CC, ES
Wells Ranch USX BB11-10 - Original Drilling - Original D	10,400.0	6,508.7	1,757.6	1,669.7	19.980	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	10,738.1	6,543.6	341.7	81.0	1.311	Level 3, CC, ES, SF
Wells Ranch USX BB11-23 - Original Drilling - Original D						Out of range

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 BB11-667
Project:	Wells Ranch	TVD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Reference Site:	BB Section 11	MD Reference:	WELL @ 4715.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Wells Ranch BB11-667	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	15,356.5	6,473.4	1,733.0	1,398.1	5.176	CC
Wells Ranch 33-12 - Original Drilling - Original Drilling - A	15,400.0	6,473.2	1,733.5	1,397.9	5.165	ES
Wells Ranch 33-12 - Original Drilling - Original Drilling - A	15,500.0	6,472.8	1,738.9	1,401.8	5.159	SF
Wells Ranch 34-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch 43-12 - Original Drilling - Original Drilling - A	16,688.0	6,461.6	1,707.9	1,350.8	4.783	CC
Wells Ranch 43-12 - Original Drilling - Original Drilling - A	16,700.0	6,461.5	1,708.0	1,350.7	4.780	ES
Wells Ranch 43-12 - Original Drilling - Original Drilling - A	16,746.2	6,461.4	1,709.0	1,350.9	4.773	SF
Wells Ranch 44-12 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch BB12-01 - Original Drilling - Original Drilling	16,671.9	6,490.4	834.2	641.9	4.340	CC, ES
Wells Ranch BB12-01 - Original Drilling - Original Drilling	16,700.0	6,490.3	834.6	642.2	4.336	SF
Wells Ranch BB12-02 - Original Drilling - Original Drilling	15,231.0	6,478.8	984.1	816.5	5.871	CC, ES
Wells Ranch BB12-02 - Original Drilling - Original Drilling	15,300.0	6,478.0	986.5	818.3	5.866	SF
Wells Ranch BB12-03 - Original Drilling - Original Drilling	13,978.3	6,526.0	1,059.5	912.6	7.215	CC
Wells Ranch BB12-03 - Original Drilling - Original Drilling	14,000.0	6,525.9	1,059.7	912.6	7.204	ES, SF
Wells Ranch BB12-04 - Original Drilling - Original Drilling	12,937.2	6,524.2	726.3	596.8	5.607	CC, ES, SF
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,790.3	6,522.2	533.3	406.0	4.189	CC
Wells Ranch BB12-05 - Original Drilling - Original Drilling	12,800.0	6,522.2	533.4	405.9	4.183	ES, SF
Wells Ranch BB12-06 - Original Drilling - Original Drilling	14,018.5	6,498.7	428.8	281.3	2.907	CC, ES, SF
Wells Ranch BB12-07 - Original Drilling - Original Drilling	15,423.6	6,483.6	180.6	9.5	1.055	Level 2, CC, ES, SF
Wells Ranch BB12-08 - Original Drilling - Original Drilling	16,746.2	6,468.6	462.5	272.6	2.435	CC, ES, SF