

Northern Region - DJ Basin

Wells Ranch

BB Section 06

SLW Ranch State BB06-631

Original Drilling

Plan 1

Anticollision Summary Report

26 September, 2017

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well SLW Ranch State BB06-631
Project:	Wells Ranch	TVD Reference:	WELL @ 4639.0ft (Original Well Elev.)
Reference Site:	BB Section 06	MD Reference:	WELL @ 4639.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	SLW Ranch State BB06-631	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference	Plan 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	9/26/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,386.9	Plan 1 (Original Drilling)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

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						
B Section 01						
Lucci B01-69HNL - Original Drilling - Original Drilling - As	5,551.1	10,872.8	3,700.0	3,590.4	33.775	CC
Lucci B01-69HNL - Original Drilling - Original Drilling - As	5,600.0	10,862.0	3,700.3	3,590.4	33.665	ES
Lucci B01-69HNL - Original Drilling - Original Drilling - As	11,800.0	15,648.0	3,921.2	3,651.5	14.535	SF
Lucci B01-99HZ - Original Drilling - Original Drilling - As	6,575.2	11,600.0	593.6	525.9	8.774	CC, ES
Lucci B01-99HZ - Original Drilling - Original Drilling - As	6,650.0	11,600.0	602.7	532.8	8.616	SF
Lucci B03-69HNL - Original Drilling - Original Drilling - As	1,942.9	1,945.0	5,353.7	5,342.4	475.298	CC
Lucci B03-69HNL - Original Drilling - Original Drilling - As	2,000.0	1,968.1	5,353.9	5,342.4	463.635	ES
Lucci B03-69HNL - Original Drilling - Original Drilling - As	6,450.0	5,646.0	5,693.9	5,652.6	138.078	SF
Lucci BC B1-16 - Wellbore #1 - Wellbore #1	6,545.8	6,269.7	980.2	935.2	21.748	CC
Lucci BC B1-16 - Wellbore #1 - Wellbore #1	6,550.0	6,273.0	980.3	935.2	21.736	ES
Lucci BC B1-16 - Wellbore #1 - Wellbore #1	6,650.0	6,349.1	987.5	941.9	21.635	SF
SLW Ranch B01-62-1HN - Original Drilling - As Drilled	6,793.4	6,504.0	1,010.8	958.7	19.391	CC
SLW Ranch B01-62-1HN - Original Drilling - As Drilled	6,800.0	6,504.3	1,010.8	958.7	19.378	ES
SLW Ranch B01-62-1HN - Original Drilling - As Drilled	6,850.0	6,505.4	1,013.0	960.6	19.323	SF
SLW Ranch B01-63-1HN - Original Drilling - As Drilled	6,698.4	6,491.0	533.6	483.2	10.577	CC, ES, SF
SLW Ranch B01-64-1HN - Original Drilling - As Drilled	6,526.9	6,451.5	144.4	97.3	3.063	CC, ES
SLW Ranch B01-64-1HN - Original Drilling - As Drilled	6,550.0	6,464.9	145.6	97.3	3.015	SF
SLW Ranch B01-66-1HN - Original Drilling - Original Drill	700.0	697.0	1,168.2	1,164.7	335.724	CC
SLW Ranch B01-66-1HN - Original Drilling - Original Drill	2,100.0	2,091.3	1,172.5	1,159.0	87.160	ES
SLW Ranch B01-66-1HN - Original Drilling - Original Drill	6,500.0	6,744.7	1,499.3	1,452.9	32.335	SF
SLW Ranch B01-67-1HN - Original Drilling - As Drilled - S	2,833.0	3,021.0	1,041.9	1,022.8	54.687	CC, ES
SLW Ranch B01-67-1HN - Original Drilling - As Drilled - S	6,800.0	6,800.0	2,172.5	2,125.9	46.688	SF
SLW Ranch B01-68-1HN - Original Drilling - Original Drill	1,773.6	1,772.4	1,204.2	1,192.9	106.879	CC
SLW Ranch B01-68-1HN - Original Drilling - Original Drill	1,800.0	1,789.4	1,204.3	1,192.9	105.435	ES
SLW Ranch B01-68-1HN - Original Drilling - Original Drill	6,550.0	6,541.1	2,759.5	2,714.2	60.924	SF
SLW Ranch B01-69-1HN - Original Drilling - As Drilled	818.8	819.1	1,229.2	1,224.8	277.077	CC
SLW Ranch B01-69-1HN - Original Drilling - As Drilled	900.0	883.2	1,229.7	1,224.8	248.375	ES
SLW Ranch B01-69-1HN - Original Drilling - As Drilled	7,500.0	7,500.0	3,281.4	3,230.9	64.954	SF
SLW Ranch B12-69-1HN - Wellbore #1 - Wellbore #1- As	6,193.8	6,165.6	1,679.5	1,634.7	37.537	CC, ES
SLW Ranch B12-69-1HN - Wellbore #1 - Wellbore #1- As	6,250.0	6,210.0	1,681.8	1,636.7	37.273	SF

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

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well SLW Ranch State BB06-631
Project:	Wells Ranch	TVD Reference:	WELL @ 4639.0ft (Original Well Elev.)
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Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	SLW Ranch State BB06-631	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	Plan 1	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 05						
UPV 05-03H3 - Original Drilling - Original Drilling - As Dri	12,386.9	6,539.2	3,574.2	3,482.7	39.078	CC, ES, SF
UPV 05-04H3 - Original Drilling - Original Drilling - As Dri	12,386.9	6,659.5	2,946.7	2,849.3	30.245	CC, ES, SF
UPV 05-05H3 - Original Drilling - Original Drilling - As Dri	12,386.9	6,625.8	1,620.1	1,523.8	16.828	CC, ES, SF
UPV 05-06H3 - Original Drilling - Original Drilling - As Dri	12,386.9	6,534.7	2,447.0	2,365.0	29.853	CC, ES, SF
Well Ranch AA32-757 - Wellbore #1 - Plan 1	12,386.9	6,150.0	3,461.2	3,375.6	40.405	CC, ES, SF
Wells Ranch 31-05 - Original Drilling - Original Drilling - A	12,386.9	6,621.9	4,463.0	4,381.4	54.750	CC, ES, SF
Wells Ranch 32-05 - Original Drilling - Original Drilling - A	12,386.9	6,591.8	3,534.7	3,464.0	49.988	CC, ES, SF
Wells Ranch 41-05 - Original Drilling - Original Drilling - A	12,386.9	6,540.1	5,306.7	5,233.3	72.269	CC, ES, SF
Wells Ranch 42-05 - Original Drilling - Original Drilling - A	12,386.9	6,596.7	4,634.1	4,570.7	73.069	CC, ES, SF
Wells Ranch AA32-718 - Wellbore #1 - Plan 1	12,386.9	6,150.0	5,179.5	5,108.9	73.398	CC, ES, SF
Wells Ranch AA32-725 - Wellbore #1 - Plan 1	12,386.9	6,250.0	4,927.9	4,855.5	68.042	CC, ES, SF
Wells Ranch AA32-731 - Wellbore #1 - Plan 1	12,386.9	6,270.0	4,554.8	4,480.4	61.227	CC, ES, SF
Wells Ranch AA32-738 - Wellbore #1 - Plan 1	12,386.9	6,450.0	4,249.2	4,171.3	54.592	CC, ES, SF
Wells Ranch AA32-744 - Wellbore #1 - Plan 1	12,386.9	6,100.0	3,837.6	3,755.6	46.806	CC, ES, SF
Wells Ranch AA32-750 - Wellbore #1 - Plan 1	12,386.9	6,200.0	3,661.0	3,577.4	43.749	CC, ES, SF
Wells Ranch AA32-763 - Wellbore #1 - Plan 1	12,386.9	6,350.0	3,124.3	3,035.0	35.009	CC, ES, SF
Wells Ranch AA32-770 - Wellbore #1 - Plan 1	12,386.9	6,200.0	3,081.2	2,988.3	33.167	CC, ES, SF
Wells Ranch AA32-776 - Wellbore #1 - Plan 1	12,386.9	6,250.0	3,033.2	2,939.3	32.309	CC, ES, SF
Wells Ranch AA32-783 - Wellbore #1 - Plan 1	12,386.9	6,175.6	2,966.8	2,873.3	31.749	CC, ES, SF
Wells Ranch AA32-790 - Wellbore #1 - Plan 1	12,124.1	6,250.0	2,913.1	2,821.6	31.843	CC, ES
Wells Ranch AA32-790 - Wellbore #1 - Plan 1	12,386.9	6,250.0	2,924.9	2,830.8	31.079	SF
Wells Ranch BB01-611 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-611 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-615 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-615 - Original Drilling - Option 2						Out of range
Wells Ranch BB01-615 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-624 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-624 - Original Drilling - As Drilled - 1						Out of range
Wells Ranch BB01-624 - Original Drilling - New Plan						Out of range
Wells Ranch BB01-624 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-624 - Original Drilling - Original Plan						Out of range
Wells Ranch BB01-624 - Original Drilling - ST01 - ST01 -						Out of range
Wells Ranch BB01-638 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-638 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-649 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-649 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-655 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-655 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-669 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-669 - Original Drilling - Original Drillin						Out of range
Wells Ranch BB01-675 - Original Drilling - APD - Rev 2						Out of range
Wells Ranch BB01-675 - Original Drilling - Original Drillin						Out of range
Wells Ranch State BB01-690 - Original Drilling - APD - R						Out of range
Wells Ranch State BB01-690 - Original Drilling - Original						Out of range
Wells Ranch USX BB05-09 - Original Drilling - Original D	12,386.9	6,600.2	4,476.3	4,424.1	85.813	CC, ES, SF
Wells Ranch USX BB05-10 - Original Drilling - Original D	12,386.9	6,607.1	3,103.2	3,051.2	59.689	CC, ES, SF
Wells Ranch USX BB05-11 - Original Drilling - Original D	12,386.9	6,728.8	1,832.0	1,769.1	29.128	CC, ES, SF
Wells Ranch USX BB05-12 - Original Drilling - Original D	12,386.9	6,619.7	541.5	458.9	6.556	CC, ES, SF
Wells Ranch USX BB05-13 - Original Drilling - Original D	12,386.9	6,658.4	840.9	745.6	8.830	CC, ES, SF
Wells Ranch USX BB05-14 - Original Drilling - Original D	12,386.9	6,715.3	1,772.4	1,714.4	30.556	CC, ES, SF
Wells Ranch USX BB05-15 - Original Drilling - Original D	12,386.9	6,495.9	3,041.2	2,989.7	59.018	CC, ES, SF
Wells Ranch USX BB05-16 - Original Drilling - Original D	12,386.9	6,566.0	4,291.0	4,241.6	86.761	CC, ES, SF
Wells Ranch USX BB05-23 - Original Drilling - Original D	12,386.9	6,642.2	3,821.2	3,772.3	78.051	CC, ES, SF

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Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well SLW Ranch State BB06-631
Project:	Wells Ranch	TVD Reference:	WELL @ 4639.0ft (Original Well Elev.)
Reference Site:	BB Section 06	MD Reference:	WELL @ 4639.0ft (Original Well Elev.)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	SLW Ranch State BB06-631	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	Plan 1	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 05						
Wells Ranch USX BB05-25 - Original Drilling - Original D	12,386.9	6,663.5	820.2	770.4	16.462	CC, ES, SF
BB Section 06						
Skurich-Roth 21-06 - Original Drilling - Original Drilling - A	1,427.0	1,399.1	2,479.8	2,470.2	258.467	CC
Skurich-Roth 21-06 - Original Drilling - Original Drilling - A	1,600.0	1,553.4	2,480.5	2,469.8	230.694	ES
Skurich-Roth 21-06 - Original Drilling - Original Drilling - A	9,800.0	6,572.8	3,277.9	3,212.5	50.121	SF
Skurich-Roth 23-06 - Original Drilling - Original Drilling - A	8,835.9	6,613.8	553.7	495.0	9.435	CC, ES, SF
Skurich-Roth 24-06 - Original Drilling - Original Drilling - A	8,795.7	6,585.9	751.8	693.8	12.969	CC
Skurich-Roth 24-06 - Original Drilling - Original Drilling - A	8,800.0	6,585.9	751.8	693.8	12.957	ES
Skurich-Roth 24-06 - Original Drilling - Original Drilling - A	8,900.0	6,586.4	759.0	699.9	12.845	SF
Skurich-Roth 33-06 - Original Drilling - Original Drilling - A	10,077.3	6,591.4	500.3	429.4	7.056	CC, ES, SF
Skurich-Roth 42-06 - Original Drilling - Original Drilling - A	11,349.8	6,621.5	1,804.6	1,719.6	21.218	CC, ES
Skurich-Roth 42-06 - Original Drilling - Original Drilling - A	11,600.0	6,626.7	1,821.9	1,735.0	20.962	SF
Skurich-Roth 6D - Original Drilling - Original Drilling - As	2,008.4	1,982.4	1,700.1	1,686.4	123.972	CC
Skurich-Roth 6D - Original Drilling - Original Drilling - As	2,200.0	2,160.5	1,701.0	1,685.9	113.230	ES
Skurich-Roth 6D - Original Drilling - Original Drilling - As	9,000.0	6,488.4	2,582.9	2,524.9	44.508	SF
Skurich-Roth 11-06 - Original Drilling - Original Drilling -	2,209.0	2,188.9	1,887.7	1,872.6	124.439	CC, ES
Skurich-Roth 11-06 - Original Drilling - Original Drilling -	8,500.0	6,565.9	3,315.3	3,249.5	50.401	SF
Skurich-Roth 12-06 - Original Drilling - Original Drilling -	285.3	261.3	763.7	762.2	499.407	CC
Skurich-Roth 12-06 - Original Drilling - Original Drilling -	2,209.5	2,188.0	767.1	751.9	50.621	ES
Skurich-Roth 12-06 - Original Drilling - Original Drilling -	7,900.0	6,546.2	1,924.2	1,873.6	37.999	SF
Skurich-Roth 13-06 - Original Drilling - Original Drilling -	7,480.5	6,548.5	573.9	523.2	11.329	CC, ES
Skurich-Roth 13-06 - Original Drilling - Original Drilling -	7,500.0	6,548.3	574.2	523.5	11.324	SF
Skurich-Roth 14-06 - Original Drilling - Original Drilling -	7,555.4	6,554.1	760.2	711.0	15.464	CC, ES
Skurich-Roth 14-06 - Original Drilling - Original Drilling -	7,600.0	6,556.1	761.5	712.1	15.414	SF
Skurich-Roth 22-06 - Original Drilling - Original Drilling -	8,785.4	6,554.2	1,622.0	1,564.3	28.086	CC
Skurich-Roth 22-06 - Original Drilling - Original Drilling -	8,800.0	6,554.1	1,622.1	1,564.2	28.036	ES
Skurich-Roth 22-06 - Original Drilling - Original Drilling -	9,000.0	6,552.7	1,636.1	1,577.0	27.652	SF
Skurich-Roth 31-06 - Original Drilling - Original Drilling -	10,023.7	6,716.4	3,136.9	3,066.0	44.245	CC, ES
Skurich-Roth 31-06 - Original Drilling - Original Drilling -	10,900.0	6,710.1	3,256.9	3,179.2	41.880	SF
Skurich-Roth 34-06 - Original Drilling - Original Drilling -	10,076.6	6,580.9	766.0	695.2	10.819	CC, ES
Skurich-Roth 34-06 - Original Drilling - Original Drilling -	10,200.0	6,581.1	775.9	703.7	10.746	SF
Skurich-Roth 41-06 - Original Drilling - Original Drilling -	11,380.3	6,651.1	3,151.2	3,065.6	36.836	CC
Skurich-Roth 41-06 - Original Drilling - Original Drilling -	11,400.0	6,651.9	3,151.2	3,065.5	36.749	ES
Skurich-Roth 41-06 - Original Drilling - Original Drilling -	12,100.0	6,682.8	3,232.1	3,140.5	35.283	SF
Skurich-Roth 43-06 - Original Drilling - Original Drilling -	11,254.1	6,612.2	631.9	547.9	7.524	CC, ES, SF
Skurich-Roth 44-06 - Original Drilling - Original Drilling -	11,388.7	6,609.8	666.5	581.2	7.811	CC
Skurich-Roth 44-06 - Original Drilling - Original Drilling -	11,400.0	6,609.8	666.6	581.1	7.796	ES, SF
Skurich-Roth 6A - Original Drilling - Original Drilling - As	10,796.4	6,595.2	67.4	-11.2	0.857	Level 1, CC
Skurich-Roth 6A - Original Drilling - Original Drilling - As	10,800.0	6,595.2	67.5	-11.3	0.857	Level 1, ES, SF
Skurich-Roth 32-06 - Original Drilling - Original Drilling -	10,055.8	6,585.0	1,880.9	1,701.5	10.485	CC, ES
Skurich-Roth 32-06 - Original Drilling - Original Drilling -	10,200.0	6,585.0	1,886.4	1,705.8	10.447	SF
SLW Ranch State BB06-619 - Original Drilling - Prelim -	2,000.0	2,000.0	25.5	11.6	1.838	CC, ES, SF
SLW Ranch State BB06-642 - Original Drilling - Plan 1	2,200.0	2,200.0	21.9	6.6	1.428	Level 3, CC, ES, SF
SLW Ranch State BB06-652 - Original Drilling - Plan 1	2,200.0	2,200.0	43.7	28.4	2.856	CC, ES
SLW Ranch State BB06-652 - Original Drilling - Plan 1	2,300.0	2,300.0	45.3	29.3	2.831	SF
SLW Ranch State BB06-662 - Original Drilling - Plan 1	2,200.0	2,200.0	65.6	50.3	4.284	CC, ES
SLW Ranch State BB06-662 - Original Drilling - Plan 1	2,300.0	2,300.0	67.2	51.2	4.196	SF
SLW Ranch State BB06-672 - Original Drilling - Plan 1	2,200.0	2,201.0	87.4	72.1	5.711	CC, ES
SLW Ranch State BB06-672 - Original Drilling - Plan 1	2,300.0	2,298.2	90.6	74.6	5.663	SF
SLW Ranch State BB06-682 - SLW Ranch State BB06-6	2,000.0	2,000.0	112.9	99.1	8.141	CC, ES
SLW Ranch State BB06-682 - SLW Ranch State BB06-6	2,200.0	2,192.5	119.3	104.0	7.821	SF

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

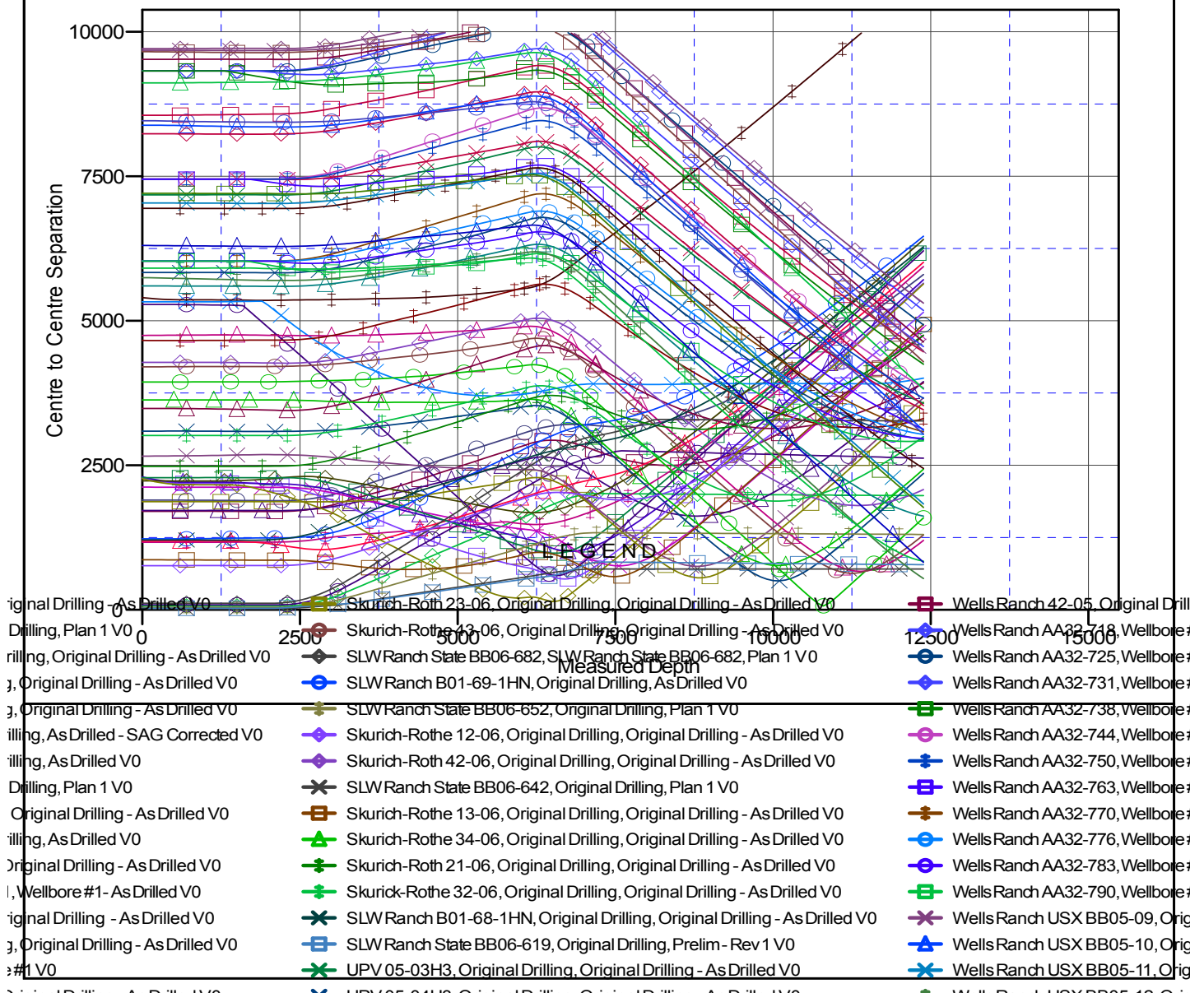
Noble Energy, Inc.
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Project:	Wells Ranch	TVD Reference:	WELL @ 4639.0ft (Original Well Elev.)
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Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4639.0ft (Original Well Elev.)
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: SLW Ranch State BB06-631
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.65°

Ladder Plot



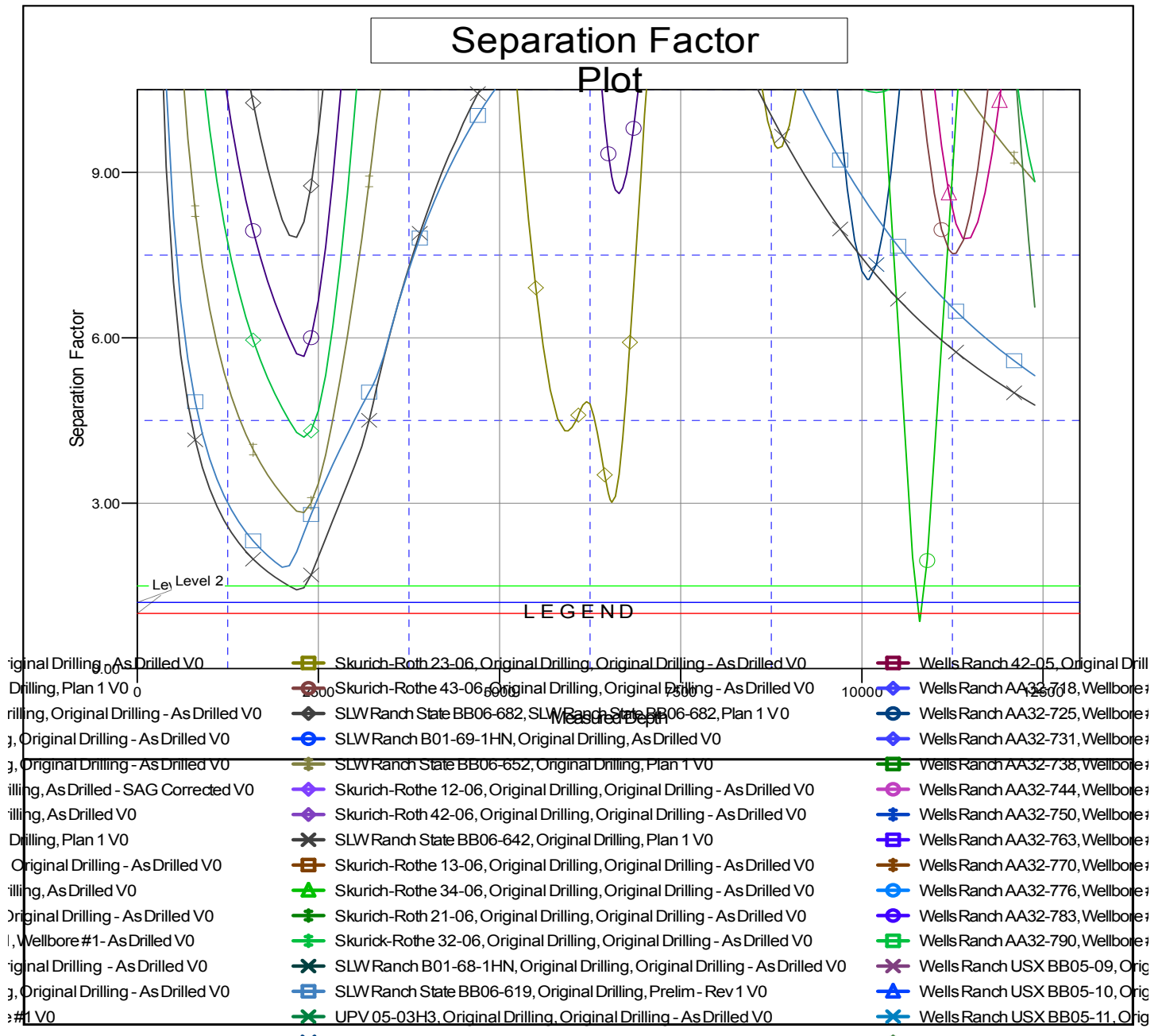
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Coordinates are relative to: SLW Ranch State BB06-631
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Grid Convergence at Surface is: 0.65°



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