

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 Offset Well - Wellbore - Design	Reference	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
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

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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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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
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-Rothe 11-06 - Original Drilling - Original Drilling -	2,209.0	2,188.9	1,887.7	1,872.6	124.439	CC, ES
Skurich-Rothe 11-06 - Original Drilling - Original Drilling -	8,500.0	6,565.9	3,315.3	3,249.5	50.401	SF
Skurich-Rothe 12-06 - Original Drilling - Original Drilling -	285.3	261.3	763.7	762.2	499.407	CC
Skurich-Rothe 12-06 - Original Drilling - Original Drilling -	2,209.5	2,188.0	767.1	751.9	50.621	ES
Skurich-Rothe 12-06 - Original Drilling - Original Drilling -	7,900.0	6,546.2	1,924.2	1,873.6	37.999	SF
Skurich-Rothe 13-06 - Original Drilling - Original Drilling -	7,480.5	6,548.5	573.9	523.2	11.329	CC, ES
Skurich-Rothe 13-06 - Original Drilling - Original Drilling -	7,500.0	6,548.3	574.2	523.5	11.324	SF
Skurich-Rothe 14-06 - Original Drilling - Original Drilling -	7,555.4	6,554.1	760.2	711.0	15.464	CC, ES
Skurich-Rothe 14-06 - Original Drilling - Original Drilling -	7,600.0	6,556.1	761.5	712.1	15.414	SF
Skurich-Rothe 22-06 - Original Drilling - Original Drilling -	8,785.4	6,554.2	1,622.0	1,564.3	28.086	CC
Skurich-Rothe 22-06 - Original Drilling - Original Drilling -	8,800.0	6,554.1	1,622.1	1,564.2	28.036	ES
Skurich-Rothe 22-06 - Original Drilling - Original Drilling -	9,000.0	6,552.7	1,636.1	1,577.0	27.652	SF
Skurich-Rothe 31-06 - Original Drilling - Original Drilling -	10,023.7	6,716.4	3,136.9	3,066.0	44.245	CC, ES
Skurich-Rothe 31-06 - Original Drilling - Original Drilling -	10,900.0	6,710.1	3,256.9	3,179.2	41.880	SF
Skurich-Rothe 34-06 - Original Drilling - Original Drilling -	10,076.6	6,580.9	766.0	695.2	10.819	CC, ES
Skurich-Rothe 34-06 - Original Drilling - Original Drilling -	10,200.0	6,581.1	775.9	703.7	10.746	SF
Skurich-Rothe 41-06 - Original Drilling - Original Drilling -	11,380.3	6,651.1	3,151.2	3,065.6	36.836	CC
Skurich-Rothe 41-06 - Original Drilling - Original Drilling -	11,400.0	6,651.9	3,151.2	3,065.5	36.749	ES
Skurich-Rothe 41-06 - Original Drilling - Original Drilling -	12,100.0	6,682.8	3,232.1	3,140.5	35.283	SF
Skurich-Rothe 43-06 - Original Drilling - Original Drilling -	11,254.1	6,612.2	631.9	547.9	7.524	CC, ES, SF
Skurich-Rothe 44-06 - Original Drilling - Original Drilling -	11,388.7	6,609.8	666.5	581.2	7.811	CC
Skurich-Rothe 44-06 - Original Drilling - Original Drilling -	11,400.0	6,609.8	666.6	581.1	7.796	ES, SF
Skurich-Rothe 6A - Original Drilling - Original Drilling - As	10,796.4	6,595.2	67.4	-11.2	0.857	Level 1, CC
Skurich-Rothe 6A - Original Drilling - Original Drilling - As	10,800.0	6,595.2	67.5	-11.3	0.857	Level 1, ES, SF
Skurich-Rothe 32-06 - Original Drilling - Original Drilling -	10,055.8	6,585.0	1,880.9	1,701.5	10.485	CC, ES
Skurich-Rothe 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

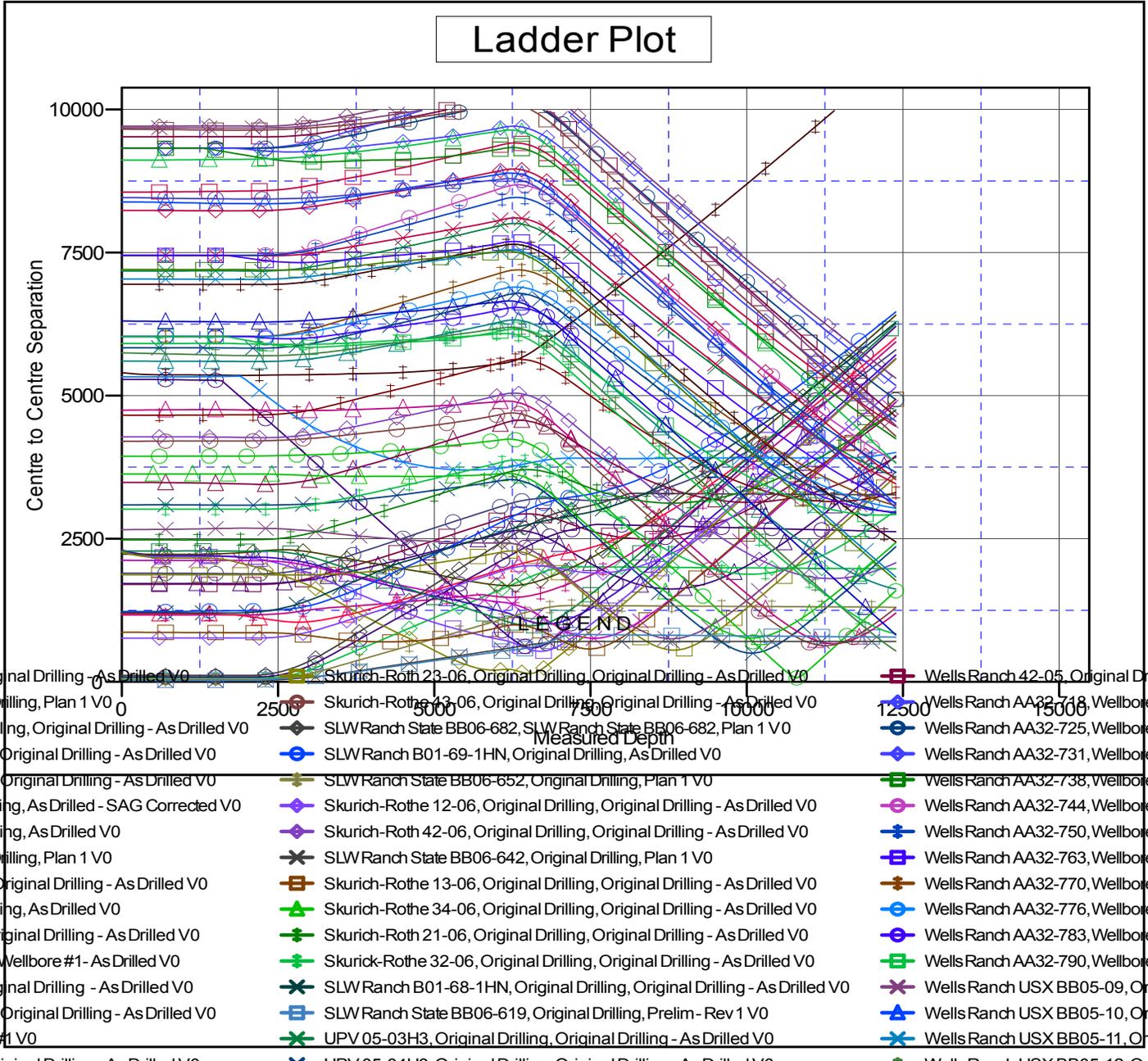
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Noble Energy, Inc.

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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.) Coordinates are relative to: SLW Ranch State BB06-631
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.5000000 Grid Convergence at Surface is: 0.65°



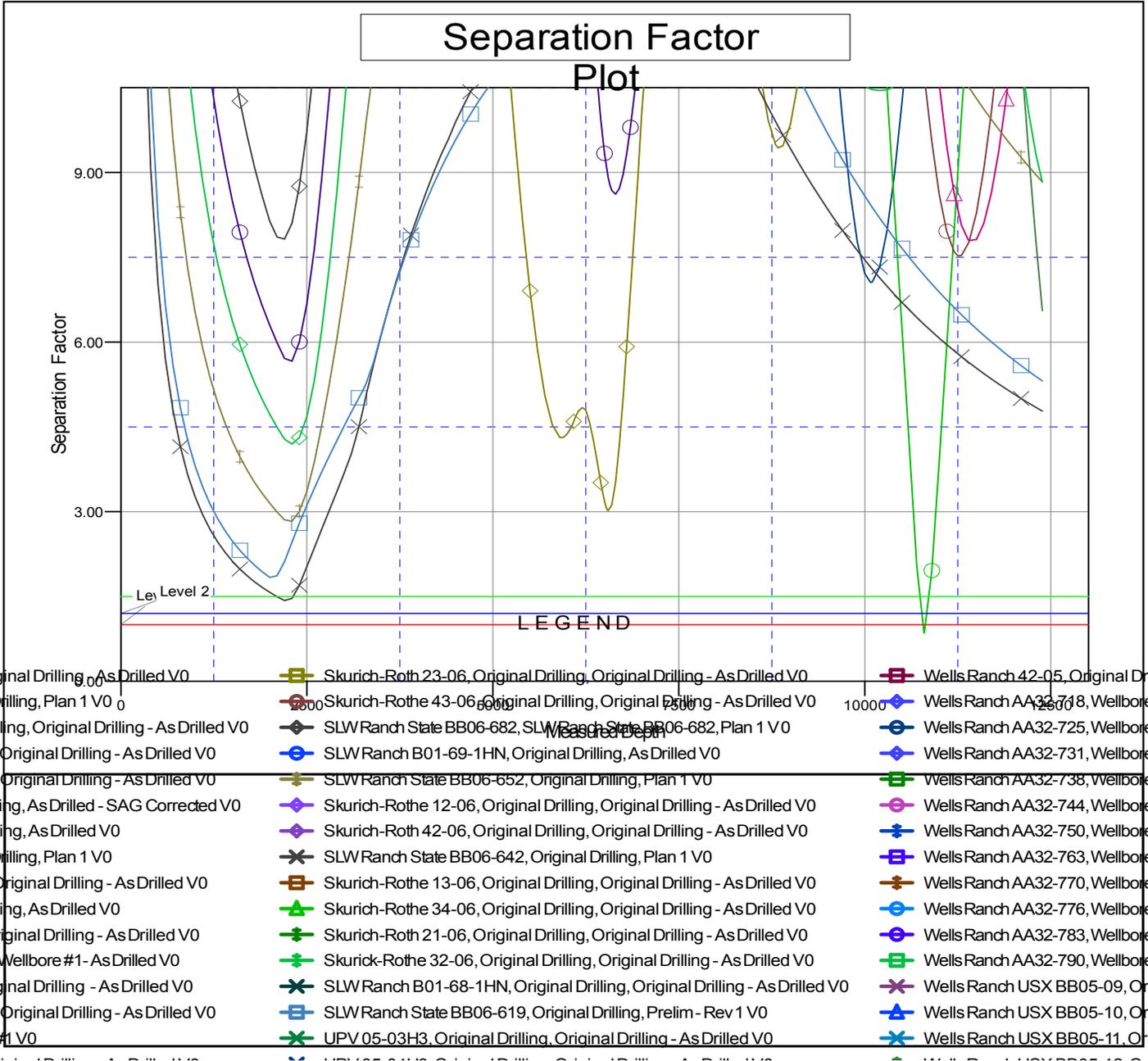
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 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.5000000 Grid Convergence at Surface is: 0.65°



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