

# **Northern Region - DJ Basin**

**Wells Ranch**

**BB Section 07**

**SLW Ranch State BB07-660**

**Original Drilling**

**Plan 1**

## **Anticollision Summary Report**

**26 September, 2017**

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well SLW Ranch State BB07-660
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4661.0ft
<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan 1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<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 10,000.0 ft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	9/26/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	17,949.8	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 12						
SLW Ranch B12-62-1HN - Original Drilling - As Drilled	6,813.2	10,779.0	3,283.6	3,147.0	24.029	CC, ES
SLW Ranch B12-62-1HN - Original Drilling - As Drilled	6,850.0	10,779.0	3,284.0	3,147.3	24.021	SF
SLW Ranch B12-63-1HN - Original Drilling - As Drilled	6,799.2	10,812.0	2,589.9	2,452.1	18.786	CC, ES, SF
SLW Ranch B12-64-1HN - Original Drilling - As Drilled	6,800.0	10,993.0	1,971.8	1,835.2	14.435	SF
SLW Ranch B12-64-1HN - Original Drilling - As Drilled	6,807.1	10,993.0	1,971.8	1,835.2	14.437	CC, ES
SLW Ranch B12-65-1HN - Original Drilling - As Drilled	6,770.1	10,974.0	1,295.6	1,215.8	16.222	CC, ES
SLW Ranch B12-65-1HN - Original Drilling - As Drilled	6,800.0	10,974.0	1,296.2	1,216.3	16.221	SF
SLW Ranch B12-65HN - Original Drilling - As Drilled	6,743.9	10,992.0	746.1	668.8	9.652	CC, ES, SF
SLW Ranch B12-66-1HN - Original Drilling - As Drilled	6,739.8	11,132.0	457.9	386.3	6.400	CC, ES
SLW Ranch B12-66-1HN - Original Drilling - As Drilled	6,750.0	11,132.0	458.1	386.4	6.396	SF
SLW Ranch B12-67-1HN - Original Drilling - Original Drill	6,709.2	11,248.0	360.3	246.2	3.159	CC, ES
SLW Ranch B12-67-1HN - Original Drilling - Original Drill	6,750.0	11,248.0	363.6	248.1	3.148	SF
SLW Ranch B12-79HN - Original Drilling - As Drilled	6,418.8	9,585.0	4,999.1	4,923.0	65.714	CC, ES
SLW Ranch B12-79HN - Original Drilling - As Drilled	6,550.0	9,585.0	5,017.2	4,940.5	65.475	SF
SLW Ranch B13-69HN - Original Drilling - As Drilled	6,821.5	10,833.0	3,507.3	3,369.9	25.519	CC, ES
SLW Ranch B13-69HN - Original Drilling - As Drilled	6,900.0	10,833.0	3,509.0	3,371.4	25.504	SF
Thomson B12-12 - Wellbore #1 - Wellbore #1	6,374.5	5,990.7	4,433.1	4,389.5	101.640	CC, ES
Thomson B12-12 - Wellbore #1 - Wellbore #1	6,600.0	6,177.6	4,479.8	4,435.0	99.967	SF
Trebor B12-05 - Wellbore #1 - As Drilled	6,380.3	6,143.0	3,921.1	3,875.8	86.499	CC, ES
Trebor B12-05 - Wellbore #1 - As Drilled	6,600.0	6,377.0	3,965.8	3,919.2	85.146	SF
Trebor B12-06 - Wellbore #1 - As Drilled	6,370.4	6,054.7	2,785.4	2,741.5	63.445	CC, ES
Trebor B12-06 - Wellbore #1 - As Drilled	6,600.0	6,328.7	2,835.2	2,789.8	62.466	SF
Trebor B12-07 - Wellbore #1 - As Drilled	6,376.0	6,072.8	1,606.6	1,562.7	36.597	CC, ES
Trebor B12-07 - Wellbore #1 - As Drilled	6,500.0	6,204.2	1,621.0	1,576.3	36.295	SF
Trebor B12-19 - Wellbore #1 - As Drilled	6,368.9	6,075.8	3,461.7	3,417.6	78.497	CC, ES
Trebor B12-19 - Wellbore #1 - As Drilled	6,600.0	6,289.0	3,512.5	3,467.1	77.401	SF
Trebor B12-8 - Wellbore #1 - As Drilled	6,423.5	6,147.2	248.4	204.0	5.599	CC, ES
Trebor B12-8 - Wellbore #1 - As Drilled	6,450.0	6,173.7	248.9	204.4	5.593	SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well SLW Ranch State BB07-660
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4661.0ft
<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
BB Section 07						
Skurich 11-07 - Original Drilling - Original Drilling - As Dri	1,158.7	1,109.0	940.6	933.0	123.419	CC
Skurich 11-07 - Original Drilling - Original Drilling - As Dri	1,800.0	1,745.4	942.8	930.6	77.663	ES
Skurich 11-07 - Original Drilling - Original Drilling - As Dri	7,900.0	6,638.2	1,284.3	1,231.9	24.526	SF
Skurich 13-07 - Original Drilling - Original Drilling - As Dri	7,722.5	6,608.3	1,540.2	1,488.1	29.589	CC, ES
Skurich 13-07 - Original Drilling - Original Drilling - As Dri	7,900.0	6,607.1	1,550.4	1,497.6	29.336	SF
Skurich 21-07 - Original Drilling - Original Drilling - As Dri	9,053.6	6,603.4	1,264.3	1,203.2	20.699	CC, ES
Skurich 33-07 - Original Drilling - Original Drilling - As Dri	9,200.0	6,606.5	1,272.7	1,210.4	20.424	SF
Skurich 23-07 - Original Drilling - Original Drilling - As Dri	9,055.9	6,622.0	1,420.3	1,249.7	8.323	CC, ES
Skurich 23-07 - Original Drilling - Original Drilling - As Dri	9,100.0	6,622.0	1,421.0	1,250.0	8.309	SF
Skurich 33-07 - Original Drilling - Original Drilling - As Dri	10,390.8	6,661.9	1,306.6	1,231.9	17.487	CC
Skurich 33-07 - Original Drilling - Original Drilling - As Dri	10,400.0	6,662.0	1,306.6	1,231.8	17.465	ES
Skurich 33-07 - Original Drilling - Original Drilling - As Dri	10,500.0	6,663.0	1,311.2	1,235.4	17.308	SF
Skurich 43-07 - Original Drilling - Original Drilling - As Drill	11,718.3	6,621.0	1,604.0	1,514.7	17.947	CC, ES
Skurich 43-07 - Original Drilling - Original Drilling - As Drill	11,900.0	6,626.1	1,614.3	1,523.2	17.712	SF
Skurich-SLW 7B - Original Drilling - Original Drilling - As	8,370.7	6,603.1	2,160.3	2,102.5	37.376	CC
Skurich-SLW 7B - Original Drilling - Original Drilling - As	8,400.0	6,603.5	2,160.5	2,102.5	37.243	ES
Skurich-SLW 7B - Original Drilling - Original Drilling - As	8,900.0	6,609.9	2,224.4	2,162.9	36.183	SF
Skurich-SLW 7D - Original Drilling - Original Drilling - As	8,554.1	6,625.0	547.9	381.5	3.293	CC, ES, SF
Skurich-SLW Ranch 7A - Original Drilling - Original Drilling	10,980.3	6,682.3	2,244.3	2,163.0	27.630	CC
Skurich-SLW Ranch 7A - Original Drilling - Original Drilling	11,000.0	6,681.5	2,244.4	2,162.9	27.558	ES
Skurich-SLW Ranch 7A - Original Drilling - Original Drilling	11,400.0	6,664.6	2,283.3	2,198.3	26.865	SF
SLW Ranch 12-07 - Original Drilling - Original Drilling - A	7,682.3	6,625.3	141.9	90.7	2.775	CC, ES, SF
SLW Ranch 14-07 - Original Drilling - Original Drilling - A	7,643.5	6,640.1	2,825.7	2,660.4	17.093	CC, ES
SLW Ranch 14-07 - Original Drilling - Original Drilling - A	7,900.0	6,642.3	2,837.4	2,670.8	17.030	SF
SLW Ranch 22-07 - Original Drilling - Original Drilling - A	8,971.3	6,629.8	60.5	0.1	1.002	Level 2, CC, ES, SF
SLW Ranch 24-07 - Original Drilling - Original Drilling - A	9,092.9	6,632.8	3,051.3	2,989.2	49.121	CC
SLW Ranch 24-07 - Original Drilling - Original Drilling - A	9,100.0	6,632.7	3,051.3	2,989.2	49.072	ES
SLW Ranch 24-07 - Original Drilling - Original Drilling - A	10,000.0	6,621.4	3,183.9	3,114.6	45.958	SF
SLW Ranch 31-07 - Original Drilling - Original Drilling - A	10,261.1	6,644.5	1,256.3	1,183.0	17.142	CC, ES
SLW Ranch 31-07 - Original Drilling - Original Drilling - A	10,400.0	6,643.2	1,263.9	1,189.4	16.962	SF
SLW Ranch 32-07 - Original Drilling - Original Drilling - A	10,096.9	6,639.9	54.2	-17.3	0.758	Level 1, CC, ES, SF
SLW Ranch 34-07 - Original Drilling - Original Drilling - A	10,436.0	6,679.4	3,001.5	2,926.2	39.891	CC, ES
SLW Ranch 34-07 - Original Drilling - Original Drilling - A	11,200.0	6,658.3	3,097.6	3,015.5	37.760	SF
SLW Ranch 41-07 - Original Drilling - Original Drilling - A	11,670.9	6,658.1	1,281.4	1,192.5	14.409	CC, ES
SLW Ranch 41-07 - Original Drilling - Original Drilling - A	11,800.0	6,657.7	1,287.9	1,197.8	14.297	SF
SLW Ranch 42-07 - Original Drilling - Original Drilling - A	11,615.5	6,651.1	82.6	-5.7	0.936	Level 1, CC, ES, SF
SLW Ranch 44-07 - Original Drilling - Original Drilling - A	11,660.1	6,676.9	3,075.8	2,986.9	34.605	CC
SLW Ranch 44-07 - Original Drilling - Original Drilling - A	11,700.0	6,675.9	3,076.0	2,986.7	34.434	ES
SLW Ranch 44-07 - Original Drilling - Original Drilling - A	12,400.0	6,658.1	3,163.9	3,068.3	33.099	SF
SLW Ranch BB07-79HNL - Original Drilling - APD - Rev	6,950.0	9,953.8	57.7	36.8	2.758	SF
SLW Ranch BB07-79HNL - Original Drilling - APD - Rev	6,992.8	9,952.7	40.6	29.3	3.594	CC, ES
SLW Ranch State BB06-690 - Original Drilling - Plan 1	2,000.0	2,001.0	113.0	99.1	8.142	CC, ES
SLW Ranch State BB06-690 - Original Drilling - Plan 1	2,200.0	2,195.6	117.6	102.4	7.704	SF
SLW Ranch State BB07-615 - Original Drilling - Plan 1	2,000.0	1,986.0	2,398.1	2,384.3	173.493	CC, ES
SLW Ranch State BB07-615 - Original Drilling - Plan 1	17,949.8	17,978.2	3,322.6	3,040.7	11.788	SF
SLW Ranch State BB07-621 - Original Drilling - Plan 1	2,200.0	2,186.0	2,377.5	2,362.2	155.835	CC, ES
SLW Ranch State BB07-621 - Original Drilling - Plan 1	17,949.8	17,808.9	2,970.0	2,688.6	10.551	SF
SLW Ranch State BB07-627 - Original Drilling - Plan 1	4,215.7	3,722.5	2,340.1	2,312.4	84.519	CC
SLW Ranch State BB07-627 - Original Drilling - Plan 1	17,949.8	17,892.1	2,569.8	2,288.3	9.130	ES, SF
SLW Ranch State BB07-633 - Original Drilling - Plan 1	7,152.2	6,908.9	2,046.2	1,996.0	40.762	CC
SLW Ranch State BB07-633 - Original Drilling - Plan 1	17,949.8	17,701.3	2,131.8	1,850.5	7.578	ES, SF
SLW Ranch State BB07-639 - Original Drilling - Plan 1	7,171.6	7,100.3	1,677.4	1,626.4	32.912	CC
SLW Ranch State BB07-639 - Original Drilling - Plan 1	17,949.8	17,875.1	1,785.0	1,503.5	6.341	ES, SF

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**Noble Energy, Inc.**  
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<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4661.0ft
<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<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 07						
SLW Ranch State BB07-646 - Original Drilling - Plan 1	7,221.3	7,009.6	1,233.2	1,182.1	24.157	CC
SLW Ranch State BB07-646 - Original Drilling - Plan 1	17,949.8	17,723.1	1,323.4	1,042.3	4.707	ES, SF
SLW Ranch State BB07-650 - Original Drilling - Plan 1	7,255.8	7,132.8	780.6	728.6	15.006	CC
SLW Ranch State BB07-650 - Original Drilling - Plan 1	17,949.8	17,821.5	907.1	625.7	3.223	ES, SF
SLW Ranch State BB07-653 - Original Drilling - Plan 1	2,200.0	2,199.0	21.9	6.6	1.428	Level 3, CC, ES
SLW Ranch State BB07-653 - Original Drilling - Plan 1	2,300.0	2,298.6	22.7	6.7	1.418	Level 3, SF
SLW Ranch State BB07-668 - Original Drilling - Plan 1	2,400.0	2,400.0	21.9	5.1	1.306	Level 3, CC
SLW Ranch State BB07-668 - Original Drilling - Plan 1	2,500.0	2,499.9	22.4	5.0	1.284	Level 3, ES, SF
SLW Ranch State BB07-673 - Original Drilling - Plan 1	2,400.0	2,400.0	43.7	27.0	2.611	CC
SLW Ranch State BB07-673 - Original Drilling - Plan 1	2,500.0	2,500.0	44.2	26.7	2.531	ES
SLW Ranch State BB07-673 - Original Drilling - Plan 1	2,600.0	2,599.8	45.8	27.7	2.526	SF
SLW Ranch State BB07-678 - Original Drilling - Plan 1	2,400.0	2,401.0	65.6	48.9	3.920	CC, ES
SLW Ranch State BB07-678 - Original Drilling - Plan 1	2,500.0	2,500.1	66.8	49.4	3.830	SF
SLW Ranch State BB07-685 - Original Drilling - Plan 1	2,200.0	2,201.0	91.1	75.8	5.951	CC, ES
SLW Ranch State BB07-685 - Original Drilling - Plan 1	2,300.0	2,298.3	92.6	76.6	5.784	SF

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Anticollision Summary Report

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<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<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 08						
State 11-08 - Original Drilling - Original Drilling - As Drille	12,986.7	6,667.0	1,328.9	1,114.5	6.197	CC
State 11-08 - Original Drilling - Original Drilling - As Drille	13,000.0	6,667.0	1,329.0	1,114.4	6.193	ES
State 11-08 - Original Drilling - Original Drilling - As Drille	13,100.0	6,667.0	1,333.8	1,118.3	6.190	SF
State 5519 08-34 - Original Drilling - Original Drilling - As	15,586.2	6,731.0	2,887.7	2,752.2	21.314	CC
State 5519 08-34 - Original Drilling - Original Drilling - As	15,600.0	6,731.2	2,887.7	2,752.0	21.288	ES
State 5519 08-34 - Original Drilling - Original Drilling - As	16,000.0	6,736.1	2,917.3	2,777.8	20.912	SF
State 5519 08-43 - Original Drilling - Original Drilling - As	16,943.8	6,664.4	1,764.5	1,612.8	11.632	CC, ES
State 5519 08-43 - Original Drilling - Original Drilling - As	17,100.0	6,670.7	1,771.4	1,618.1	11.558	SF
State 5519 12-08 - Original Drilling - Original Drilling - As	12,987.3	6,659.7	189.6	85.4	1.820	CC, ES, SF
State 5519 13-08 - Original Drilling - Original Drilling - As	12,871.0	6,662.0	1,504.7	1,291.7	7.064	CC
State 5519 13-08 - Original Drilling - Original Drilling - As	12,900.0	6,662.0	1,505.0	1,291.7	7.055	ES
State 5519 13-08 - Original Drilling - Original Drilling - As	13,000.0	6,662.0	1,510.2	1,296.0	7.048	SF
State 5519 14-08 - Original Drilling - Original Drilling - As	12,658.4	6,686.6	3,199.6	3,097.9	31.453	CC
State 5519 14-08 - Original Drilling - Original Drilling - As	12,700.0	6,685.9	3,199.9	3,097.7	31.310	ES
State 5519 14-08 - Original Drilling - Original Drilling - As	13,300.0	6,675.9	3,263.6	3,156.0	30.321	SF
State 5519 21-08 - Original Drilling - Original Drilling - As	14,142.7	6,730.8	945.6	827.4	8.003	CC, ES
State 5519 21-08 - Original Drilling - Original Drilling - As	14,200.0	6,730.3	947.3	828.7	7.985	SF
State 5519 23-08 - Original Drilling - Original Drilling - As	14,279.4	6,704.9	1,575.7	1,455.9	13.160	CC
State 5519 23-08 - Original Drilling - Original Drilling - As	14,300.0	6,704.8	1,575.8	1,455.8	13.134	ES
State 5519 23-08 - Original Drilling - Original Drilling - As	14,400.0	6,704.3	1,580.3	1,459.3	13.064	SF
State 5519 24-08 - Original Drilling - Original Drilling - As	13,700.0	13,700.0	3,232.1	3,095.7	23.700	SF
State 5519 24-08 - Original Drilling - Original Drilling - As	14,171.3	6,569.5	3,197.5	3,079.5	27.103	CC
State 5519 24-08 - Original Drilling - Original Drilling - As	14,200.0	6,571.0	3,197.6	3,079.3	27.023	ES
State 5519 31-08 - Original Drilling - Original Drilling - As	15,840.6	6,732.8	814.9	675.9	5.865	CC, ES, SF
State 5519 32-08 - Original Drilling - Original Drilling - As	15,562.6	6,735.7	281.6	146.4	2.083	CC, ES, SF
State 5519 33-08 - Original Drilling - Original Drilling - As	15,552.4	6,704.0	1,630.5	1,495.5	12.077	CC, ES
State 5519 33-08 - Original Drilling - Original Drilling - As	15,700.0	6,705.0	1,637.2	1,500.8	11.998	SF
State 5519 41-08 - Original Drilling - Original Drilling - As	16,911.5	6,700.6	1,327.9	1,176.4	8.767	CC, ES
State 5519 41-08 - Original Drilling - Original Drilling - As	17,000.0	6,700.4	1,330.8	1,178.6	8.745	SF
State 5519 42-08 - Original Drilling - Original Drilling - As	16,961.3	6,710.3	170.8	18.7	1.123	Level 2, CC, ES, SF
State 5519 44-08 - Original Drilling - Original Drilling - As	16,818.1	6,710.5	3,098.8	2,948.5	20.610	CC, ES
State 5519 44-08 - Original Drilling - Original Drilling - As	17,300.0	6,714.2	3,136.2	2,981.3	20.247	SF
State 5519 8A - Original Drilling - Original Drilling - As Dr	16,088.0	6,798.7	2,267.7	2,125.9	15.996	CC
State 5519 8A - Original Drilling - Original Drilling - As Dr	16,100.0	6,798.0	2,267.7	2,125.8	15.980	ES
State 5519 8A - Original Drilling - Original Drilling - As Dr	16,300.0	6,786.8	2,277.6	2,133.7	15.828	SF
State 5519 8D - Original Drilling - Original Drilling - As Dr	13,599.8	6,713.7	544.3	432.7	4.876	CC
State 5519 8D - Original Drilling - Original Drilling - As Dr	13,600.0	6,713.7	544.3	432.7	4.875	ES, SF
State Lease 5519 22-08 - Original Drilling - Original Drillin	14,360.1	6,714.6	164.7	44.1	1.365	Level 3, CC, ES, SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well SLW Ranch State BB07-660
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4661.0ft
<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<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 09						
70 Ranch 11-09 - Original Drilling - Original Drilling - As D	17,949.8	6,705.8	1,547.5	1,391.8	9.936	CC, ES, SF
70 Ranch 22-09 - Original Drilling - Original Drilling - As D	17,949.8	6,708.6	1,567.0	1,514.9	30.050	CC, ES, SF
70 Ranch 31-09 - Original Drilling - Original Drilling - As D	17,949.8	6,463.8	2,955.0	2,877.9	38.341	CC, ES, SF
70 Ranch 41-09 - Original Drilling - Original Drilling - As D	17,949.8	6,666.5	4,398.3	4,329.5	63.970	CC, ES, SF
70 Ranch 44-09 - Original Drilling - Original Drilling - As D	17,949.8	6,583.3	5,009.0	4,906.8	48.993	CC, ES, SF
70 Ranch USX BB09-05 - Original Drilling - Original Drilling	17,949.8	6,721.6	288.8	215.7	3.951	CC, ES, SF
70 Ranch USX BB09-07 - Original Drilling - Original Drilling	17,949.8	6,691.7	2,904.9	2,853.6	56.606	CC, ES, SF
70 Ranch USX BB09-08 - Original Drilling - Original Drilling	17,949.8	6,695.1	4,210.3	4,158.3	80.921	CC, ES, SF
70 Ranch USX BB09-09 - Original Drilling - Original Drilling	17,949.8	6,693.7	4,473.6	4,396.6	58.111	CC, ES, SF
70 Ranch USX BB09-10 - Original Drilling - Original Drilling	17,949.8	6,701.3	3,207.0	3,118.3	36.149	CC, ES, SF
70 Ranch USX BB09-11 - Original Drilling - Original Drilling	17,949.8	6,724.1	2,173.3	2,052.1	17.938	CC, ES, SF
70 Ranch USX BB09-15 - Original Drilling - Original Drilling	17,949.8	6,726.5	3,931.5	3,801.4	30.218	CC, ES, SF
70 Ranch USX BB09-63HN - Original Drilling - Original Drilling	17,900.0	10,829.0	2,360.0	2,108.2	9.374	SF
70 Ranch USX BB09-63HN - Original Drilling - Original Drilling	17,949.8	10,784.3	2,355.8	2,104.6	9.377	CC, ES
70 Ranch USX BB09-99HZ - Original Drilling - Original Drilling	17,949.8	7,167.8	1,508.3	1,381.4	11.887	CC, ES, SF
National Hog Farm 13-09 - Original Drilling - Original Drilling	17,949.8	6,780.5	1,420.5	1,257.8	8.733	CC, ES, SF
National Hog Farm 14-09 - Original Drilling - Original Drilling	17,707.3	6,590.9	3,448.4	3,287.6	21.454	CC
National Hog Farm 14-09 - Original Drilling - Original Drilling	17,900.0	17,900.0	3,453.5	3,251.1	17.059	ES, SF
National Hog Farm 21-09 - Original Drilling - Original Drilling	17,949.8	6,727.4	2,122.4	2,009.6	18.820	CC, ES, SF
National Hog Farm 24-09 - Original Drilling - Original Drilling	17,949.8	6,899.3	3,313.0	3,167.1	22.706	CC, ES, SF



# Noble Energy, Inc.

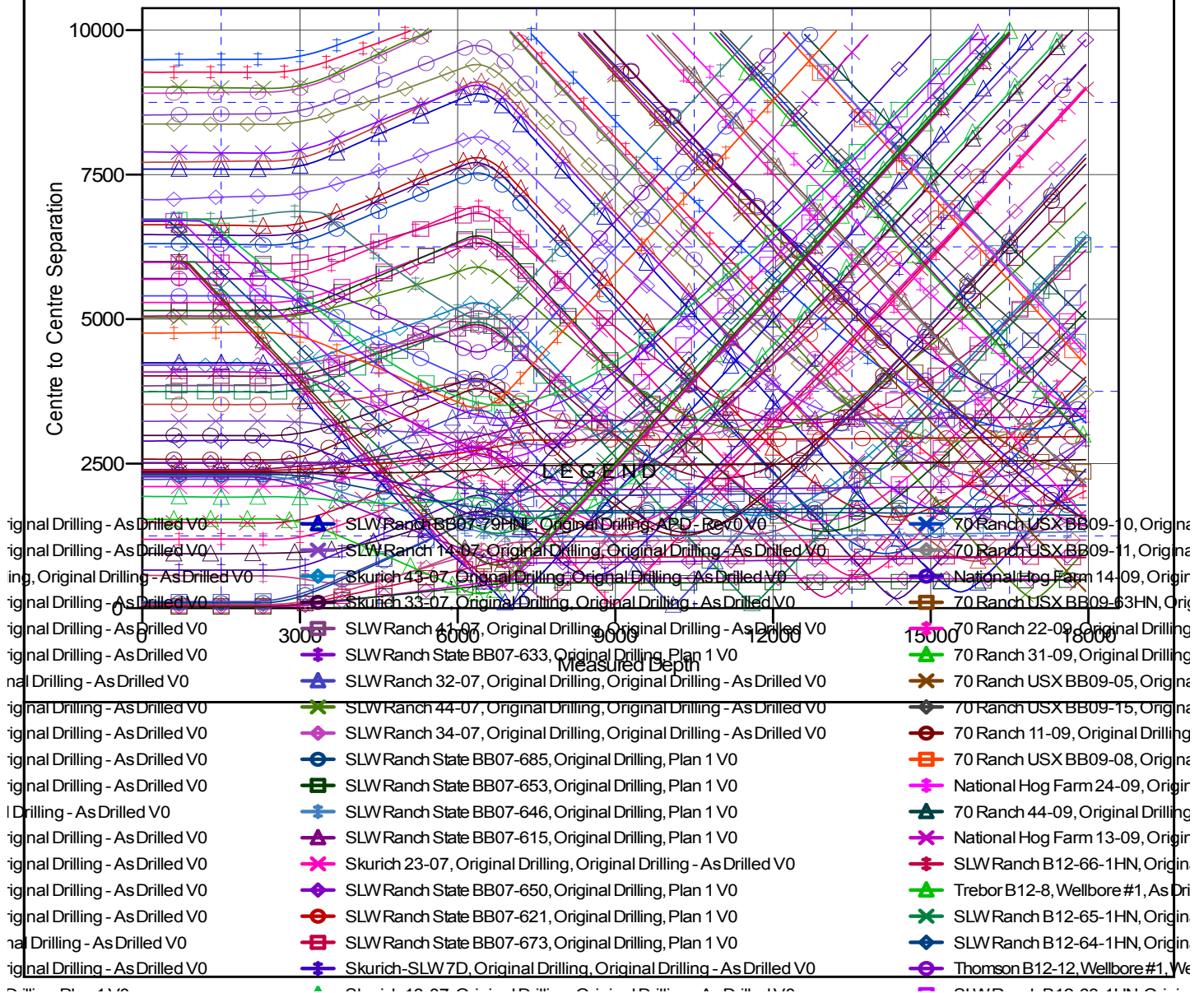
## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well SLW Ranch State BB07-660
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4661.0ft
<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4661.0ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: SLW Ranch State BB07-660  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.66°

### Ladder Plot



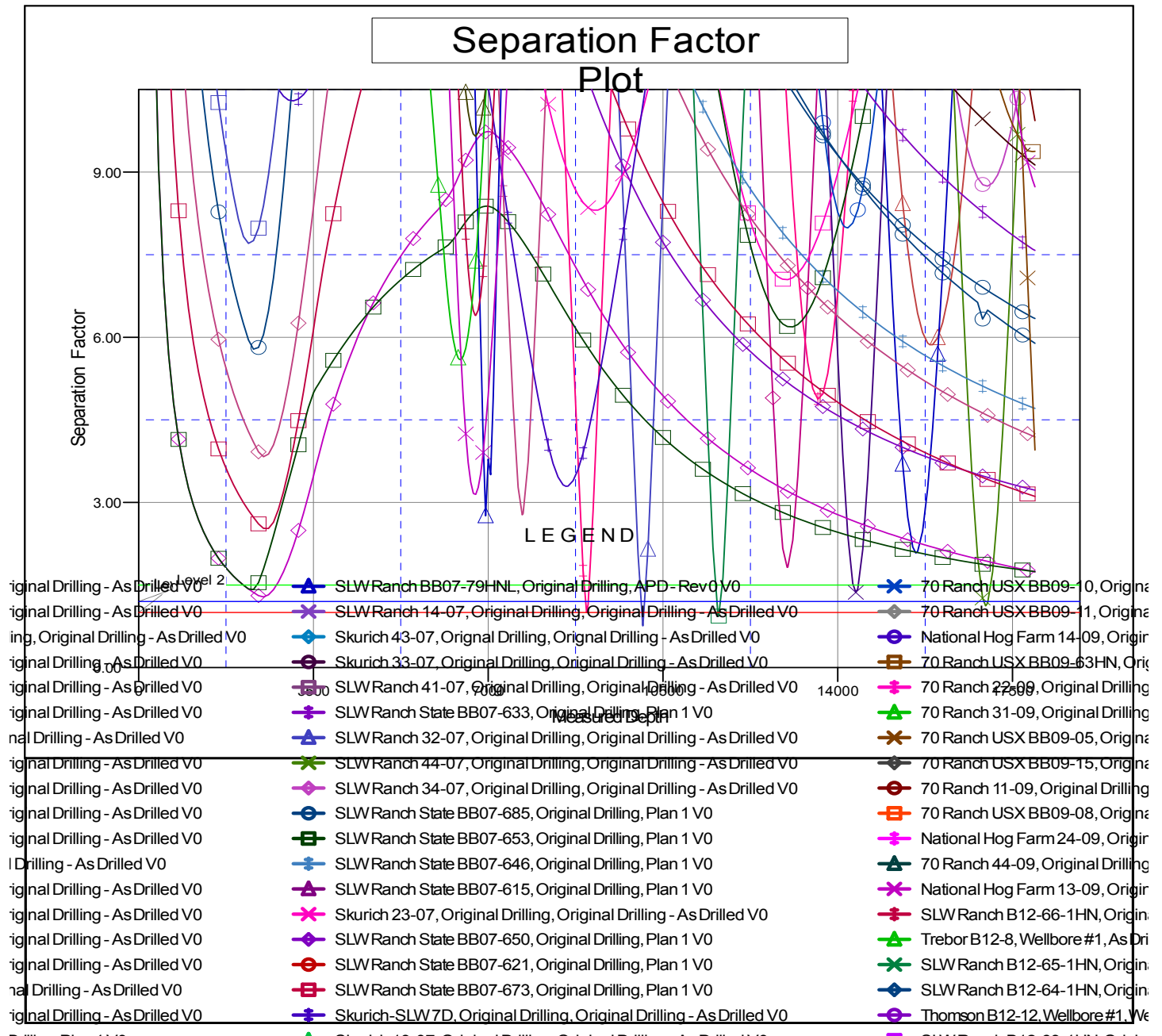
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well SLW Ranch State BB07-660
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	WELL @ 4661.0ft
<b>Reference Site:</b>	BB Section 07	<b>MD Reference:</b>	WELL @ 4661.0ft
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SLW Ranch State BB07-660	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Original Drilling	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4661.0ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: SLW Ranch State BB07-660  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.66°



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