

Northern Region - DJ Basin

Wells Ranch

BB Section 07

SLW Ranch State BB07-615

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 BB07-615
Project:	Wells Ranch	TVD Reference:	WELL @ 4647.0ft
Reference Site:	BB Section 07	MD Reference:	WELL @ 4647.0ft
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	SLW Ranch State BB07-615	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 03						
Wells Ranch 12-03 - Original Drilling - Original Drilling - A						Out of range
Wells Ranch State BB05-613 - Original Drilling - APD - R	17,978.2	11,949.1	5,369.0	5,228.1	38.089	CC, ES, SF
Wells Ranch State BB05-617 - Original Drilling - APD - R	17,978.2	11,861.6	5,645.7	5,504.8	40.071	CC, ES, SF
Wells Ranch State BB05-625 - Original Drilling - APD - R	17,978.2	11,717.6	6,195.8	6,054.9	43.953	CC, ES, SF
Wells Ranch State BB05-630 - Original Drilling - APD - R	17,978.2	11,878.6	6,466.2	6,325.3	45.895	CC, ES, SF
Wells Ranch State BB05-635 - Original Drilling - APD - R	17,978.2	11,926.1	6,823.9	6,682.9	48.411	CC, ES, SF
Wells Ranch State BB05-644 - Original Drilling - APD - R	17,978.2	11,829.5	7,453.1	7,312.2	52.896	CC, ES, SF
Wells Ranch State BB05-650 - Original Drilling - APD - R	17,978.2	11,949.4	7,783.8	7,642.8	55.219	CC, ES, SF
Wells Ranch State BB05-656 - Original Drilling - APD - R	17,900.0	11,608.9	8,185.6	7,977.1	39.255	ES, SF
Wells Ranch State BB05-656 - Original Drilling - APD - R	17,978.2	11,512.9	8,185.6	7,977.2	39.282	CC
Wells Ranch State BB05-665 - Original Drilling - APD - R	12,884.9	17,030.1	8,871.2	8,791.8	111.742	CC
Wells Ranch State BB05-665 - Original Drilling - APD - R	17,978.2	11,936.8	8,871.3	8,730.5	62.967	ES, SF
Wells Ranch State BB05-669 - Original Drilling - APD - R	12,891.1	17,137.3	9,206.2	9,126.6	115.636	CC
Wells Ranch State BB05-669 - Original Drilling - APD - R	17,978.2	12,053.0	9,206.7	9,065.7	65.299	ES, SF
Wells Ranch State BB05-678 - Original Drilling - APD - R	12,889.1	17,118.5	9,544.5	9,465.0	120.059	CC
Wells Ranch State BB05-678 - Original Drilling - APD - R	17,978.2	12,029.4	9,547.0	9,406.1	67.738	ES, SF
Wells Ranch State BB05-685 - Original Drilling - APD - R						Out of range
Wells Ranch State BB05-690 - Original Drilling - APD - R						Out of range
Wells Ranch USX BB03-04 - Original Drilling - Original D						Out of range
Wells Ranch USX BB03-12 - Original Drilling - Original D	17,978.2	6,708.5	9,005.9	8,866.2	64.472	CC, ES, SF
Wells Ranch USX BB03-13 - Original Drilling - Original D	17,978.2	6,879.0	8,156.1	8,024.9	62.123	CC, ES, SF
Wells Ranch USX BB03-25 PA - Original Drilling - Gyro S	17,978.2	6,600.0	9,042.5	8,914.2	70.506	CC, ES, SF

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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						
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Offset Well - Wellbore - Design						
BB Section 07						
SLW Ranch State BB07-627 - Original Drilling - Plan 1	17,978.2	17,887.5	760.1	478.8	2.702	SF
SLW Ranch State BB07-633 - Original Drilling - Plan 1	2,000.0	2,001.0	69.2	55.3	4.988	CC, ES
SLW Ranch State BB07-633 - Original Drilling - Plan 1	17,978.2	17,690.4	1,191.9	910.9	4.241	SF
SLW Ranch State BB07-639 - Original Drilling - Plan 1	2,000.0	2,001.0	91.1	77.2	6.566	CC, ES
SLW Ranch State BB07-639 - Original Drilling - Plan 1	17,978.2	17,865.2	1,545.8	1,264.3	5.492	SF
SLW Ranch State BB07-646 - Original Drilling - Plan 1	2,000.0	2,000.0	113.0	99.1	8.143	CC, ES
SLW Ranch State BB07-646 - Original Drilling - Plan 1	17,978.2	17,709.8	2,000.5	1,719.1	7.111	SF
SLW Ranch State BB07-650 - Original Drilling - Plan 1	2,000.0	2,000.0	134.8	120.9	9.718	CC, ES
SLW Ranch State BB07-650 - Original Drilling - Plan 1	17,978.2	17,802.1	2,415.4	2,134.1	8.587	SF
SLW Ranch State BB07-653 - Original Drilling - Plan 1	2,841.0	3,558.4	2,376.2	2,354.6	109.974	CC, ES
SLW Ranch State BB07-653 - Original Drilling - Plan 1	17,978.2	17,868.4	2,838.3	2,557.7	10.114	SF
SLW Ranch State BB07-660 - Original Drilling - Plan 1	2,000.0	2,014.0	2,398.1	2,384.2	172.243	CC, ES
SLW Ranch State BB07-660 - Original Drilling - Plan 1	17,978.2	17,872.9	3,321.7	3,040.9	11.829	SF
SLW Ranch State BB07-668 - Original Drilling - Plan 1	2,000.0	2,014.0	2,418.8	2,404.9	173.727	CC, ES
SLW Ranch State BB07-668 - Original Drilling - Plan 1	17,978.2	17,831.6	3,807.3	3,525.9	13.528	SF
SLW Ranch State BB07-673 - Original Drilling - Plan 1	2,000.0	2,014.0	2,439.5	2,425.6	175.212	CC, ES
SLW Ranch State BB07-673 - Original Drilling - Plan 1	17,978.2	17,843.1	4,196.5	3,915.8	14.949	SF
SLW Ranch State BB07-678 - Original Drilling - Plan 1	2,000.0	2,015.0	2,461.1	2,447.2	176.718	CC, ES
SLW Ranch State BB07-678 - Original Drilling - Plan 1	17,978.2	17,802.5	4,498.7	4,218.4	16.048	SF
SLW Ranch State BB07-685 - Original Drilling - Plan 1	2,000.0	2,015.0	2,485.3	2,471.3	178.454	CC, ES
SLW Ranch State BB07-685 - Original Drilling - Plan 1	17,978.2	17,176.5	4,926.8	4,654.5	18.094	SF

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Reference Well:	SLW Ranch State BB07-615	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						
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Offset Well - Wellbore - Design						
BB Section 09						
70 Ranch 11-09 - Original Drilling - Original Drilling - As D	17,400.0	17,400.0	4,909.0	4,716.8	25.551	SF
70 Ranch 11-09 - Original Drilling - Original Drilling - As D	17,978.2	6,666.6	4,809.0	4,645.4	29.396	CC, ES
70 Ranch 22-09 - Original Drilling - Original Drilling - As D	17,978.2	6,763.0	3,683.3	3,528.5	23.800	CC, ES, SF
70 Ranch 31-09 - Original Drilling - Original Drilling - As D	17,978.2	6,432.9	5,179.0	5,035.0	35.978	CC, ES, SF
70 Ranch 41-09 - Original Drilling - Original Drilling - As D	17,978.2	6,601.9	6,198.5	6,068.8	47.766	CC, ES, SF
70 Ranch 44-09 - Original Drilling - Original Drilling - As D	17,978.2	6,561.5	4,302.2	4,241.3	70.692	CC, ES, SF
70 Ranch USX BB09-05 - Original Drilling - Original Drilling	17,978.2	6,700.0	3,249.8	3,085.8	19.820	CC, ES, SF
70 Ranch USX BB09-07 - Original Drilling - Original Drilling	17,978.2	6,717.5	4,368.9	4,236.5	33.002	CC, ES, SF
70 Ranch USX BB09-08 - Original Drilling - Original Drilling	17,978.2	6,688.1	5,257.3	5,144.1	46.417	CC, ES, SF
70 Ranch USX BB09-09 - Original Drilling - Original Drilling	17,978.2	6,668.4	4,637.6	4,548.7	52.160	CC, ES, SF
70 Ranch USX BB09-10 - Original Drilling - Original Drilling	17,978.2	6,674.7	3,524.1	3,415.6	32.499	CC, ES, SF
70 Ranch USX BB09-11 - Original Drilling - Original Drilling	17,978.2	6,692.4	2,466.0	2,332.6	18.486	CC, ES, SF
70 Ranch USX BB09-15 - Original Drilling - Original Drilling	17,978.2	6,686.3	2,686.6	2,625.0	43.632	CC, ES, SF
70 Ranch USX BB09-63HN - Original Drilling - Original Drilling	17,978.2	10,902.0	986.2	736.5	3.950	CC, ES, SF
70 Ranch USX BB09-99HZ - Original Drilling - Original Drilling	17,978.2	9,402.8	3,911.9	3,734.0	21.996	CC, ES, SF
National Hog Farm 13-09 - Original Drilling - Original Drilling	17,978.2	6,672.5	1,937.0	1,773.7	11.865	CC, ES, SF
National Hog Farm 14-09 - Original Drilling - Original Drilling	17,815.4	6,718.9	129.3	-33.0	0.797	Level 1, CC, ES, SF
National Hog Farm 21-09 - Original Drilling - Original Drilling	17,978.2	6,818.7	4,935.5	4,777.6	31.254	CC, ES, SF
National Hog Farm 24-09 - Original Drilling - Original Drilling	17,978.2	6,753.1	1,801.1	1,727.2	24.362	CC, ES, SF
BB Section 17						
70 Ranch State BB18-689 - Original Drilling - As Drilled -	7,646.6	15,851.1	412.7	270.8	2.909	SF
70 Ranch State BB18-689 - Original Drilling - As Drilled -	10,914.4	12,576.0	392.1	258.8	2.941	CC, ES

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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 18						
SLW Ranch State B14-667 - Original Drilling - Prelim - R	7,900.0	6,350.0	1,918.4	1,867.1	37.450	SF
SLW Ranch State B14-672 - Original Drilling - Plan 1	7,217.5	6,905.3	1,494.1	1,444.3	30.042	CC, ES
SLW Ranch State B14-672 - Original Drilling - Plan 1	7,800.0	6,461.5	1,522.5	1,471.4	29.796	SF
SLW Ranch State B14-672 - Original Drilling - Prelim - R	7,211.2	6,856.5	1,508.4	1,458.8	30.389	CC, ES
SLW Ranch State B14-672 - Original Drilling - Prelim - R	7,700.0	6,486.7	1,532.1	1,481.5	30.265	SF
SLW Ranch State B14-679 - Original Drilling - Plan 1	7,050.0	7,113.0	1,019.3	968.9	20.213	SF
SLW Ranch State B14-679 - Original Drilling - Plan 1	7,150.0	7,015.6	1,016.9	966.6	20.232	ES
SLW Ranch State B14-679 - Original Drilling - Plan 1	7,157.5	7,008.2	1,016.9	966.6	20.237	CC
SLW Ranch State B14-679 - Original Drilling - Prelim - R	7,100.0	7,056.9	1,105.3	1,055.0	21.976	SF
SLW Ranch State B14-679 - Original Drilling - Prelim - R	7,159.1	6,998.7	1,104.6	1,054.4	22.004	CC, ES
SLW Ranch State B14-685 - Original Drilling - Plan 1	7,206.5	7,046.5	699.9	649.3	13.838	CC, ES, SF
SLW Ranch State B14-685 - Original Drilling - Prelim - R	7,150.0	7,393.1	741.0	689.5	14.399	SF
SLW Ranch State B14-685 - Original Drilling - Prelim - R	7,217.8	7,325.6	739.8	688.5	14.416	CC, ES
SLW State PC BB18-65HN - Original Drilling - Original D	7,601.0	6,705.0	2,804.1	2,753.6	55.629	CC
SLW State PC BB18-65HN - Original Drilling - Original D	9,400.0	9,400.0	2,825.1	2,714.2	25.477	ES
SLW State PC BB18-65HN - Original Drilling - Original D	12,300.0	10,986.0	2,956.0	2,770.8	15.958	SF
SLW State PC BB18-65HN - Original Drilling - Plan A - R	7,599.5	6,664.1	2,791.7	2,764.6	103.338	CC
SLW State PC BB18-65HN - Original Drilling - Plan A - R	7,600.0	6,664.5	2,791.7	2,764.6	103.331	ES
SLW State PC BB18-65HN - Original Drilling - Plan A - R	12,700.0	10,948.7	3,046.1	2,970.2	40.119	SF
SLW State PC BB18-67HN - Original Drilling - Original D	7,713.5	6,738.2	1,710.8	1,658.6	32.760	CC
SLW State PC BB18-67HN - Original Drilling - Original D	11,900.0	10,895.0	1,800.0	1,620.4	10.025	ES
SLW State PC BB18-67HN - Original Drilling - Original D	12,000.0	10,895.0	1,804.9	1,624.5	10.003	SF
SLW State PC BB18-67HN - Original Drilling - Plan B - R	7,761.2	6,766.2	1,723.4	1,695.5	61.724	CC
SLW State PC BB18-67HN - Original Drilling - Plan B - R	7,800.0	6,798.0	1,723.5	1,695.4	61.302	ES
SLW State PC BB18-67HN - Original Drilling - Plan B - R	12,200.0	10,870.1	1,836.6	1,765.2	25.732	SF
State 18-01 - Original Drilling - Original Drilling - As Drille	9,122.4	6,581.3	1,046.8	985.9	17.199	CC, ES
State 18-01 - Original Drilling - Original Drilling - As Drille	9,300.0	6,577.6	1,061.7	999.1	16.940	SF
State SLW 18-24 - Original Drilling - Original Drilling - As	9,074.4	6,580.4	2,299.7	2,239.4	38.132	CC
State SLW 18-24 - Original Drilling - Original Drilling - As	9,100.0	6,579.1	2,299.8	2,239.2	37.968	ES
State SLW 18-24 - Original Drilling - Original Drilling - As	9,700.0	6,546.8	2,383.0	2,316.9	36.015	SF
Vince State B13-63HN - Original Drilling - Original Drilling	6,600.0	9,346.2	4,255.8	4,155.2	42.285	SF
Vince State B13-63HN - Original Drilling - Original Drilling	9,458.5	6,620.0	4,030.4	3,966.8	63.315	CC
Vince State B13-63HN - Original Drilling - Original Drilling	9,500.0	6,620.0	4,030.6	3,966.5	62.894	ES
Vince State B13-63HN - Original Drilling - Plan A - Rev 1	9,338.0	6,682.5	4,125.9	4,085.6	102.411	CC
Vince State B13-63HN - Original Drilling - Plan A - Rev 1	9,500.0	6,566.0	4,126.9	4,084.9	98.276	ES
Vince State B13-63HN - Original Drilling - Plan A - Rev 1	11,800.0	6,003.9	4,627.0	4,563.7	73.078	SF

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

Noble Energy, Inc.

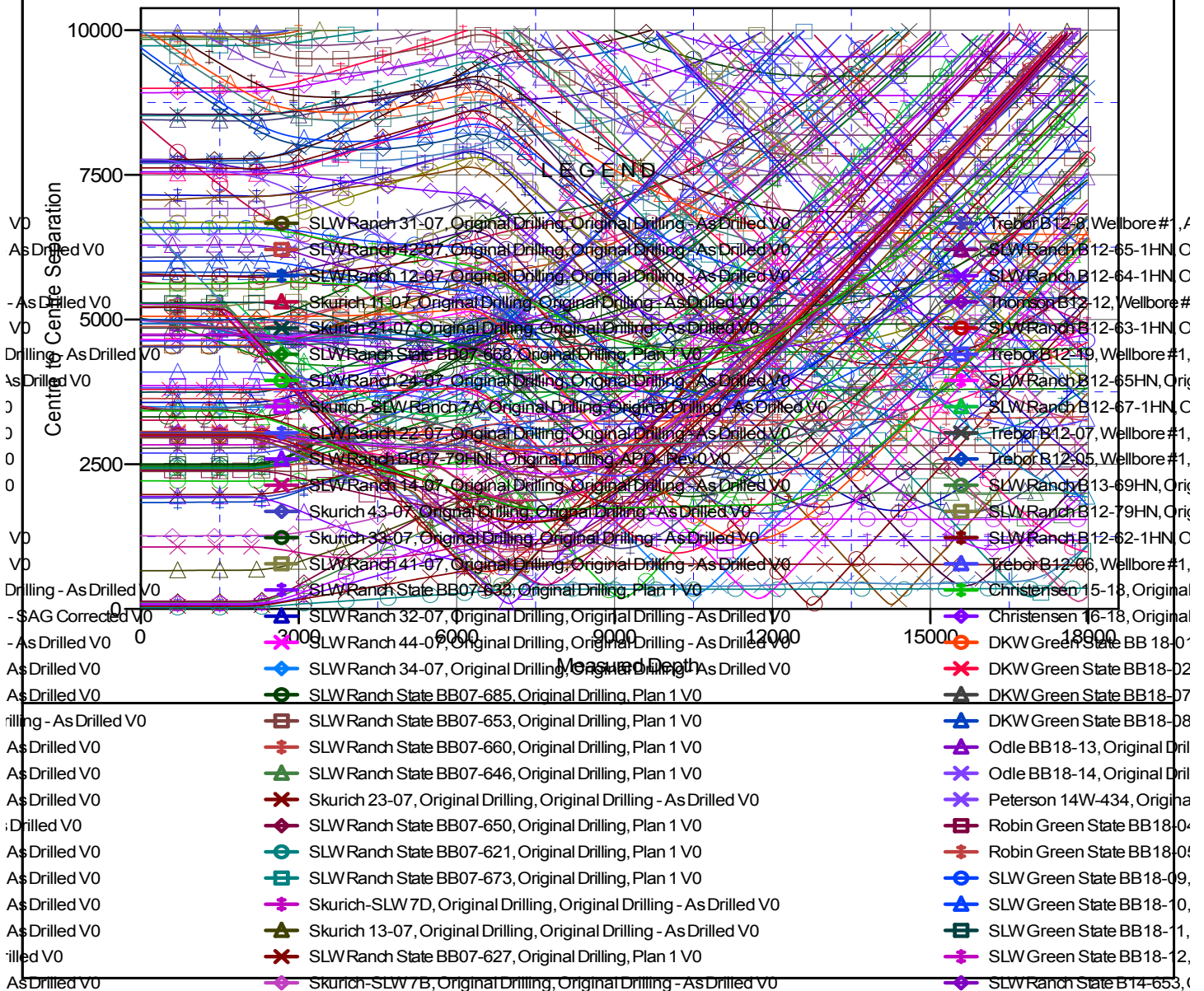
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well SLW Ranch State BB07-615
Project:	Wells Ranch	TVD Reference:	WELL @ 4647.0ft
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Reference Well:	SLW Ranch State BB07-615	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 Depths are relative to WELL @ 4647.0ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: SLW Ranch State BB07-615
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.65°

Ladder Plot



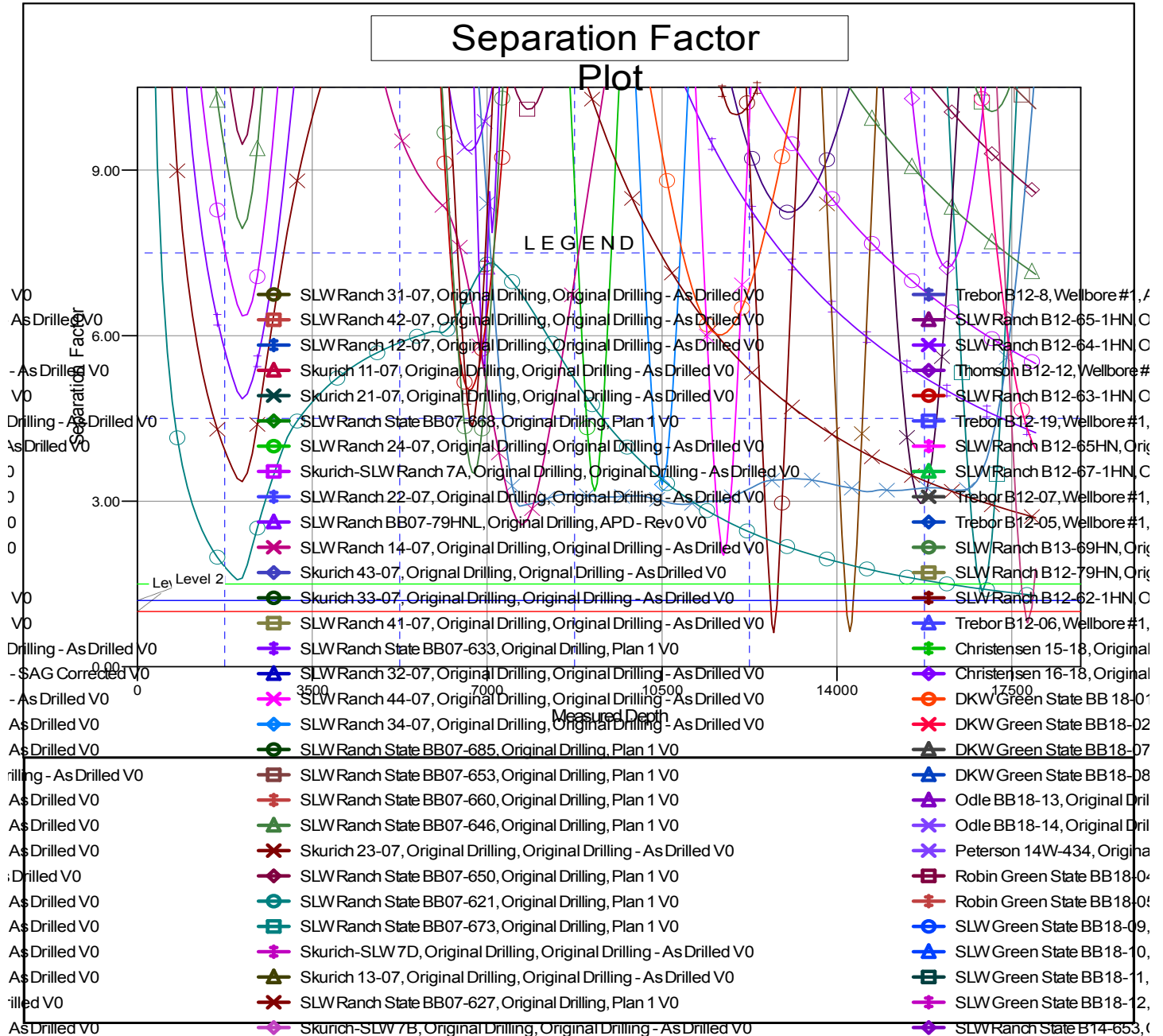
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