

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

NORTHWEST A S20-25-11C

ORIGINAL WELLBORE

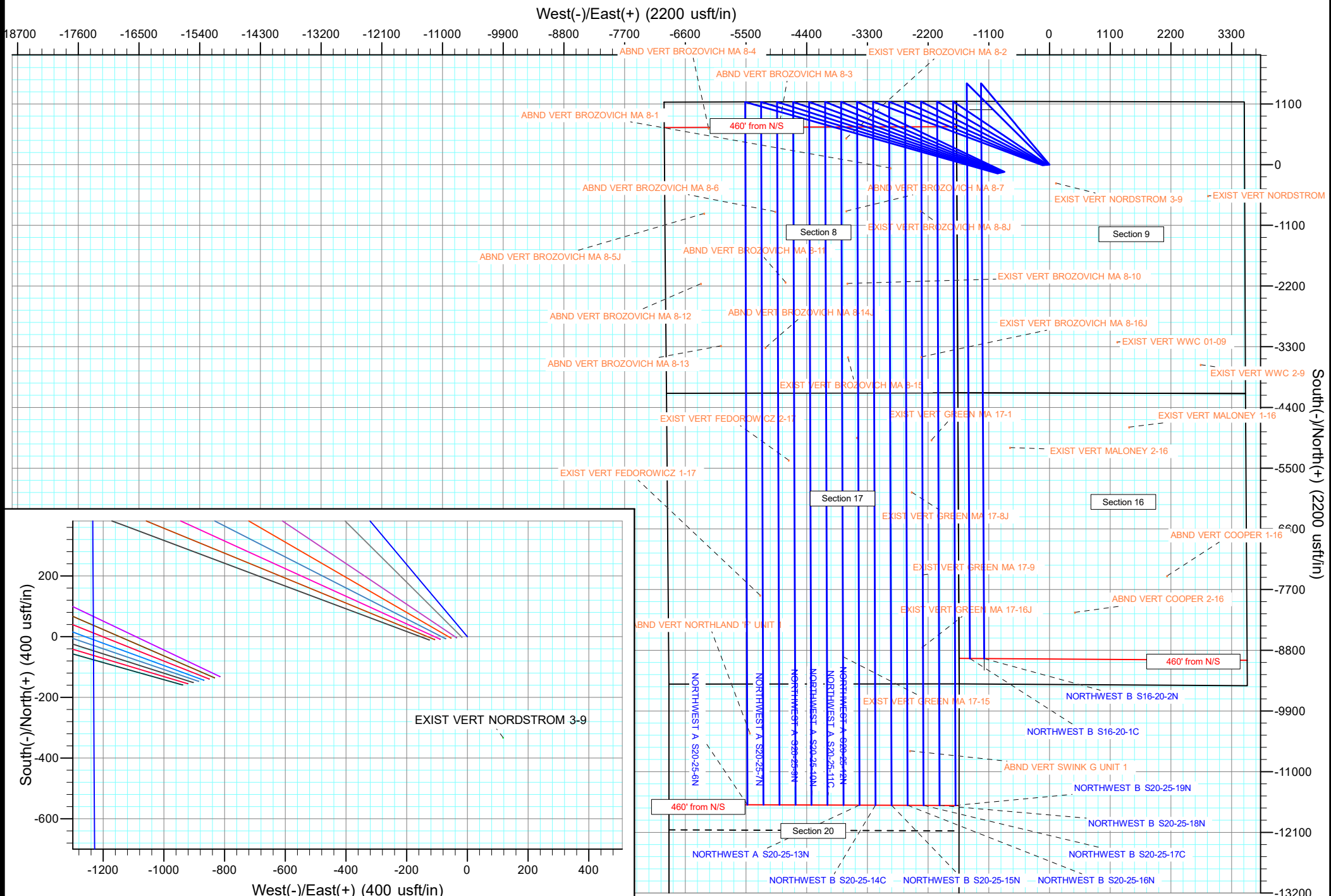
PROPOSAL 1

Anticollision Report

18 January, 2018



Project: Broomfield County
Site: Sec 9-T1S-R68W
Well: NORTHWEST B S16-20-2N
ORIGINAL WELLBORE
PROPOSAL 1



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-11C
Project:	Broomfield County	TVD Reference:	KB 25' @ 5318.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5318.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NORTHWEST A S20-25-11C	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 1	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	1/4/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	21,781.74	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 17-T1S-R68W						
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	17,977.49	8,270.95	1,205.44	889.44	3.815	CC
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	18,000.00	8,270.95	1,205.65	888.82	3.805	ES
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	18,100.00	8,270.95	1,211.65	891.63	3.786	SF
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,531.43	8,306.97	680.98	405.26	2.470	CC, ES
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,600.00	8,306.97	684.43	405.79	2.456	SF
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	15,172.57	8,267.97	1,907.27	1,638.22	7.089	CC, ES
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	15,200.00	8,267.97	1,907.46	1,638.27	7.086	SF
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	19,098.21	8,232.94	292.25	-42.20	0.874	Level 1, CC, ES, SF
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	18,931.27	8,216.95	1,728.92	1,397.67	5.219	CC, ES, SF
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	15,100.00	8,286.97	554.37	285.19	2.060	SF
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	15,127.80	8,286.97	553.68	284.98	2.061	CC, ES
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	16,118.44	8,251.96	1,545.24	1,260.95	5.436	CC, ES, SF
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	17,617.03	8,227.95	1,745.51	1,436.49	5.648	CC, ES, SF
Sec 20-T1S-R68W						
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,476.45	8,230.94	1,401.07	1,042.88	3.912	CC
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,500.00	8,230.94	1,401.27	1,042.24	3.903	ES
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,600.00	8,230.94	1,406.51	1,044.43	3.885	SF
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	20,800.00	8,203.07	1,499.31	1,135.95	4.126	SF
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	20,806.86	8,203.07	1,499.29	1,135.94	4.126	CC, ES

Anticollision Report

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Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5318.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NORTHWEST A S20-25-11C	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 8-T1S-R68W						
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	5,234.48	4,668.49	674.98	538.37	4.941	CC
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	5,300.00	4,721.58	676.07	537.60	4.882	ES
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	5,500.00	4,883.64	692.68	549.23	4.829	SF
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,307.43	8,308.98	728.39	501.66	3.213	CC, ES
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,400.00	8,308.98	734.25	505.30	3.207	SF
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	12,327.43	8,302.98	2,261.41	2,171.58	25.174	CC
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	12,400.00	8,302.98	2,262.58	2,171.57	24.863	ES
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	13,300.00	8,302.98	2,461.68	2,353.90	22.839	SF
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,454.35	8,405.02	1,901.15	1,656.34	7.766	CC
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,500.00	8,405.02	1,901.70	1,655.88	7.736	ES
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,800.00	8,405.02	1,932.31	1,679.87	7.655	SF
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,490.02	8,351.98	1,094.13	849.87	4.479	CC
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,500.00	8,351.98	1,094.17	849.64	4.475	ES
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,600.00	8,351.98	1,099.64	852.37	4.447	SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,400.00	8,237.55	860.36	646.98	4.032	SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,517.79	8,252.00	848.08	639.98	4.075	ES
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,549.44	8,252.00	847.49	640.72	4.099	CC
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,175.00	8,108.84	2,135.31	1,924.83	10.145	SF
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,475.00	8,207.08	2,113.15	1,906.50	10.226	ES
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,512.85	8,208.97	2,112.81	1,906.82	10.257	CC
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	11,053.43	8,255.99	2,196.84	1,984.88	10.365	CC, ES
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	11,300.00	8,255.99	2,210.63	1,996.71	10.334	SF
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	11,000.00	8,275.99	910.82	698.60	4.292	SF
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	11,025.26	8,275.99	910.47	698.34	4.292	CC, ES
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	11,018.16	8,280.99	380.31	168.14	1.793	CC, ES, SF
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,333.24	8,337.98	392.51	302.48	4.360	CC, ES, SF
EXIST VERT BROZOVICH MA 8-15 - Wellbore #1 - Des	13,668.70	8,311.98	398.75	152.59	1.620	CC, ES, SF
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	13,667.49	8,272.98	1,724.68	1,479.32	7.029	CC, ES
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	13,700.00	8,272.98	1,724.99	1,479.41	7.024	SF
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,699.50	8,264.00	382.13	175.36	1.848	CC
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,700.00	8,264.00	382.13	175.32	1.848	ES
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,800.00	8,264.00	395.13	179.46	1.832	SF
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	3,879.07	3,603.79	1,197.47	1,099.34	12.203	CC
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	4,000.00	3,705.80	1,199.57	1,097.91	11.800	ES
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	11,200.00	8,265.99	1,734.48	1,520.03	8.088	SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-11C
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Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5318.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NORTHWEST A S20-25-11C	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,100.00	1,045.00	3,747.07	3,722.72	153.931	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,200.00	1,144.98	3,748.75	3,722.04	140.356	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	13,000.00	8,208.02	7,283.66	7,052.39	31.494	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	1,100.00	1,086.00	987.16	962.00	39.222	CC
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	1,200.00	1,185.98	988.88	961.35	35.914	ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	11,400.00	8,232.99	4,269.76	4,053.08	19.705	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	1,100.00	1,053.00	3,710.54	3,686.04	151.428	CC
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	1,200.00	1,152.98	3,711.98	3,685.11	138.144	ES
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	14,600.00	8,200.03	5,411.72	5,158.25	21.350	SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	1,100.00	1,035.00	5,002.77	4,978.63	207.230	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	1,200.00	1,134.98	5,004.38	4,977.87	188.788	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	15,700.00	8,181.96	7,042.27	6,774.35	26.285	SF
NORTHWEST A S20-25-10N - ORIGINAL WELLBORE -	900.00	900.00	18.10	12.10	3.015	CC
NORTHWEST A S20-25-10N - ORIGINAL WELLBORE -	21,669.92	28,569.97	378.36	-73.08	0.838	Level 1, ES, SF
NORTHWEST A S20-25-12N - ORIGINAL WELLBORE -	1,100.00	1,100.00	18.10	10.66	2.434	CC, ES
NORTHWEST A S20-25-12N - ORIGINAL WELLBORE -	21,782.61	21,475.38	379.12	31.22	1.090	Level 2, SF
NORTHWEST A S20-25-13N - ORIGINAL WELLBORE -	1,100.00	1,100.00	35.93	28.49	4.831	CC, ES
NORTHWEST A S20-25-13N - ORIGINAL WELLBORE -	21,782.61	21,365.34	629.52	231.03	1.580	SF
NORTHWEST A S20-25-6N - ORIGINAL WELLBORE - P	100.00	100.00	89.89	89.62	334.346	CC, ES
NORTHWEST A S20-25-6N - ORIGINAL WELLBORE - P	21,782.61	22,182.19	1,470.93	1,038.53	3.402	SF
NORTHWEST A S20-25-7N - ORIGINAL WELLBORE - P	300.00	300.00	72.06	70.36	42.321	CC, ES
NORTHWEST A S20-25-7N - ORIGINAL WELLBORE - P	21,782.61	22,058.86	1,185.76	754.69	2.751	SF
NORTHWEST A S20-25-8C - ORIGINAL WELLBORE - P	500.00	500.00	53.96	50.82	17.202	CC, ES
NORTHWEST A S20-25-8C - ORIGINAL WELLBORE - P	21,782.61	22,119.12	870.20	437.94	2.013	SF
NORTHWEST A S20-25-9N - ORIGINAL WELLBORE - P	700.00	700.00	35.85	31.28	7.845	CC, ES
NORTHWEST A S20-25-9N - ORIGINAL WELLBORE - P	21,782.61	21,812.01	629.24	211.17	1.505	SF

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-INC													Offset Well Error:	0.00 usft
Reference														
Offset														
Semi Major Axis														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	24.00	24.00	0.00	0.28	-150.19	-7,663.55	-4,391.04	8,832.40					
100.00	100.00	124.00	124.00	0.13	1.71	-150.19	-7,663.55	-4,391.04	8,832.40	8,830.55	1.84	4,788.856		
200.00	200.00	224.00	224.00	0.49	3.96	-150.19	-7,663.55	-4,391.04	8,832.40	8,827.95	4.45	1,985.383		
300.00	300.00	324.00	324.00	0.85	6.03	-150.19	-7,663.55	-4,391.04	8,832.40	8,825.52	6.88	1,284.265		
400.00	400.00	424.00	424.00	1.21	8.07	-150.19	-7,663.55	-4,391.04	8,832.40	8,823.12	9.28	952.275		
500.00	500.00	524.00	524.00	1.57	10.09	-150.19	-7,663.55	-4,391.04	8,832.40	8,820.74	11.66	757.423		
600.00	600.00	624.00	624.00	1.93	12.11	-150.19	-7,663.55	-4,391.04	8,832.40	8,818.36	14.04	629.019		
700.00	700.00	724.00	724.00	2.29	14.13	-150.19	-7,663.55	-4,391.04	8,832.40	8,815.98	16.42	537.944		
800.00	800.00	824.00	824.00	2.64	16.15	-150.19	-7,663.55	-4,391.04	8,832.40	8,813.60	18.79	469.957		
900.00	900.00	924.00	924.00	3.00	18.17	-150.19	-7,663.55	-4,391.04	8,832.40	8,811.23	21.17	417.252		
1,000.00	1,000.00	1,024.00	1,024.00	3.36	20.18	-150.19	-7,663.55	-4,391.04	8,832.40	8,808.86	23.54	375.191		
1,100.00	1,100.00	1,124.00	1,124.00	3.72	22.19	-150.19	-7,663.55	-4,391.04	8,832.40	8,806.49	25.91	340.842		
1,200.00	1,199.98	1,223.98	1,223.98	4.07	24.21	-81.87	-7,663.55	-4,391.04	8,832.15	8,803.87	28.28	312.312		
1,300.00	1,299.84	1,323.84	1,323.84	4.42	26.22	-81.92	-7,663.55	-4,391.04	8,831.41	8,800.77	30.64	288.222		
1,400.00	1,399.45	1,423.45	1,423.45	4.78	28.22	-82.00	-7,663.55	-4,391.04	8,830.19	8,797.19	33.00	267.560		
1,500.00	1,498.70	1,522.70	1,522.70	5.15	30.22	-82.11	-7,663.55	-4,391.04	8,828.49	8,793.13	35.37	249.634		
1,600.00	1,597.47	1,621.47	1,621.47	5.53	32.21	-82.25	-7,663.55	-4,391.04	8,826.34	8,788.61	37.73	233.919		
1,700.00	1,695.62	1,719.62	1,719.62	5.93	34.18	-82.43	-7,663.55	-4,391.04	8,823.75	8,783.64	40.11	220.013		

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