

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

NORTHWEST A S20-25-12N

ORIGINAL WELLBORE

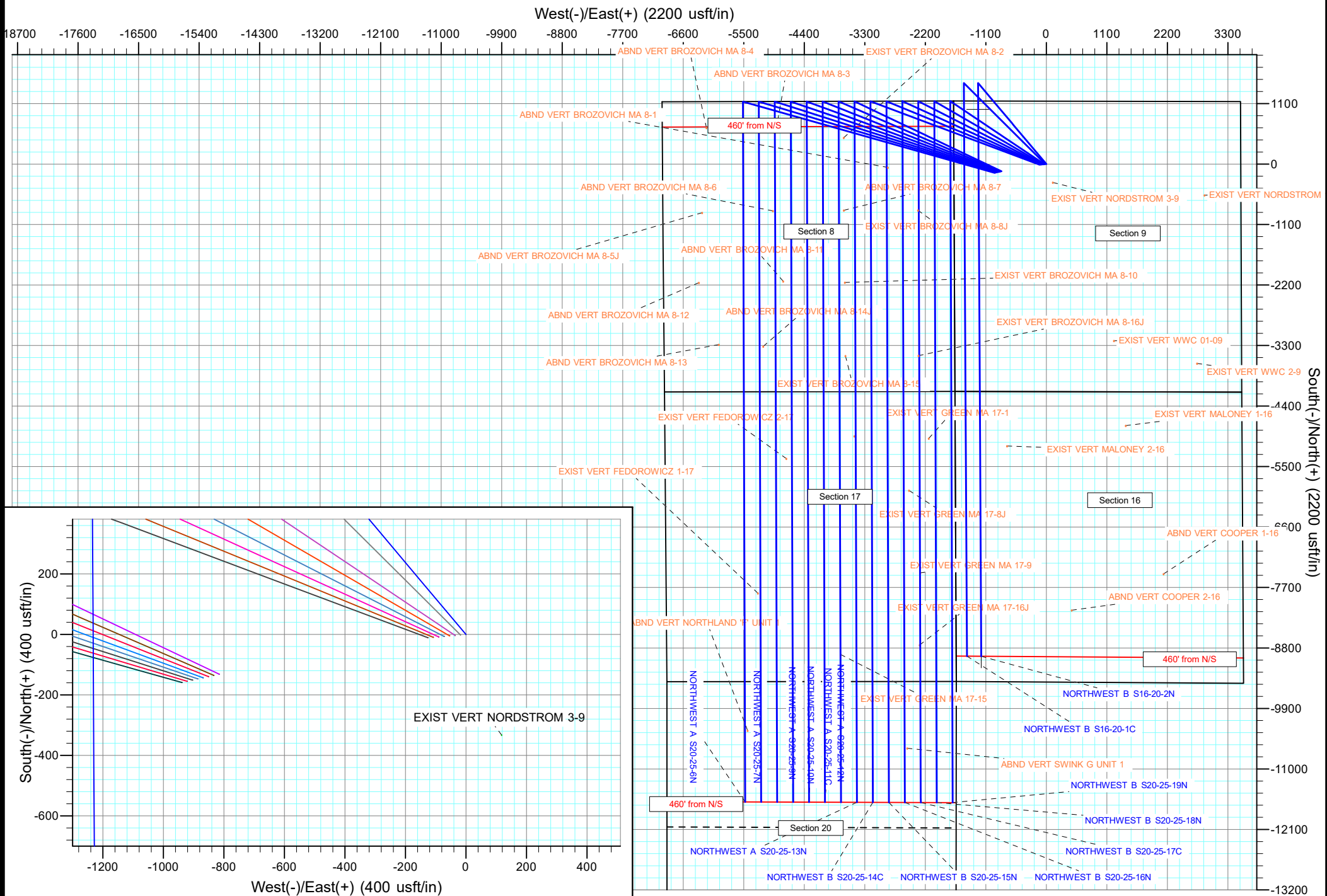
PROPOSAL 1

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 S20-25-12N
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 S20-25-12N	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	1/18/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	21,482.29	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	17,669.63	8,026.95	1,495.78	1,184.95	4.812	CC
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	17,710.28	8,026.95	1,496.33	1,184.23	4.794	ES
EXIST VERT FEDOROWICZ 1-17 - Wellbore #1 - Design	17,900.00	8,026.95	1,507.19	1,190.41	4.758	SF
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,223.59	8,062.96	971.23	700.82	3.592	CC, ES
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,300.00	8,062.96	974.23	701.28	3.569	SF
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	14,864.82	8,023.97	1,617.03	1,353.34	6.132	CC, ES
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	14,900.00	8,023.97	1,617.42	1,353.56	6.130	SF
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	18,796.61	7,988.95	83.83	-244.42	0.255	Level 1, CC, ES, SF
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	18,512.51	7,972.95	1,517.39	1,192.15	4.666	CC, ES
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	18,600.00	7,972.95	1,518.57	1,192.94	4.663	SF
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	14,800.00	8,042.97	264.20	-0.01	1.000	Level 1, ES, SF
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	14,820.00	8,042.97	263.44	0.10	1.000	Level 2, CC
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	15,810.67	8,007.96	1,254.97	975.95	4.498	CC, ES, SF
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	17,309.27	7,983.95	1,455.19	1,151.34	4.789	CC, ES, SF
Sec 20-T1S-R68W						
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,123.10	7,986.95	1,650.72	1,299.58	4.701	CC
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,200.00	7,986.95	1,652.51	1,298.78	4.672	ES
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,300.00	7,986.95	1,660.17	1,303.63	4.656	SF
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	20,500.00	7,952.95	1,238.92	880.92	3.461	SF
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	20,541.93	7,952.95	1,238.21	880.42	3.461	CC, ES

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	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	5,373.82	4,801.82	743.56	604.13	5.333	CC
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	5,400.00	4,819.15	743.72	603.60	5.308	ES
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	10,100.00	8,004.01	907.98	702.35	4.416	SF
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	11,999.58	8,064.98	1,018.51	797.56	4.610	CC
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,000.00	8,064.98	1,018.51	797.56	4.610	ES
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,100.00	8,064.98	1,023.45	800.53	4.591	SF
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	12,019.53	8,058.98	2,551.54	2,463.45	28.966	CC, ES
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	13,100.00	8,058.98	2,770.88	2,664.19	25.972	SF
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,146.45	8,150.98	2,191.32	1,952.27	9.167	CC
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,200.00	8,150.98	2,191.97	1,951.82	9.127	ES
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,500.00	8,150.97	2,219.65	1,973.36	9.012	SF
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,182.16	8,107.98	1,384.30	1,145.60	5.799	CC
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,200.00	8,107.98	1,384.41	1,145.28	5.789	ES
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,400.00	8,107.98	1,401.33	1,157.53	5.748	SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,050.00	7,981.35	1,153.04	946.85	5.592	SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,210.28	8,008.00	1,137.94	936.58	5.651	ES
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,241.59	8,008.00	1,137.51	937.09	5.676	CC
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	8,950.00	7,904.20	2,415.01	2,212.38	11.918	SF
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,175.00	7,963.70	2,403.02	2,202.93	12.010	ES
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,204.95	7,964.97	2,402.83	2,203.19	12.036	CC
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	10,745.53	8,011.99	2,486.92	2,281.07	12.081	CC, ES
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	11,200.00	8,011.99	2,528.10	2,317.69	12.015	SF
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	10,717.41	8,031.99	1,200.54	994.54	5.828	CC, ES, SF
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	10,710.36	8,036.99	90.23	-115.81	0.438	Level 1, CC, ES, SF
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,025.44	8,106.02	102.38	14.05	1.159	Level 2, CC, ES, SF
EXIST VERT BROZOVICH MA 8-15 - Wellbore #1 - Des	13,360.89	8,067.98	108.58	-132.06	0.451	Level 1, CC, ES, SF
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	13,359.73	8,028.98	1,434.50	1,194.66	5.981	CC, ES
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	13,400.00	8,028.98	1,435.07	1,195.00	5.978	SF
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,391.69	8,020.00	92.11	-108.32	0.460	Level 1, CC
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	9,400.00	8,020.00	92.48	-110.70	0.455	Level 1, ES, SF
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	4,021.35	3,740.96	1,241.67	1,140.92	12.324	CC
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	4,100.00	3,803.96	1,242.56	1,139.56	12.063	ES
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	10,900.00	8,021.99	1,447.19	1,238.53	6.936	SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	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 #	1,300.00	1,245.00	3,729.99	3,700.90	128.237	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,400.00	1,344.98	3,731.66	3,700.21	118.645	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	12,600.00	7,947.98	6,979.22	6,755.09	31.140	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	1,300.00	1,286.00	970.66	940.75	32.450	CC
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	1,400.00	1,385.98	972.37	940.09	30.125	ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	11,000.00	7,988.99	3,967.05	3,757.40	18.922	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	1,300.00	1,253.00	3,704.01	3,674.76	126.643	CC
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	1,400.00	1,352.98	3,705.48	3,673.86	117.211	ES
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	14,200.00	7,955.97	5,108.41	4,861.38	20.679	SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	1,300.00	1,235.00	4,992.92	4,964.03	172.853	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	1,400.00	1,334.98	4,994.55	4,963.30	159.818	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	15,300.00	7,937.96	6,737.96	6,476.37	25.758	SF
NORTHWEST A S20-25-10N - ORIGINAL WELLBORE -	900.00	900.00	36.21	30.20	6.030	CC, ES
NORTHWEST A S20-25-10N - ORIGINAL WELLBORE -	21,482.42	21,703.32	580.05	148.65	1.345	Level 3, SF
NORTHWEST A S20-25-11C - ORIGINAL WELLBORE -	1,100.00	1,100.00	18.10	10.66	2.434	CC, ES
NORTHWEST A S20-25-11C - ORIGINAL WELLBORE -	21,482.42	21,785.31	379.11	31.30	1.090	Level 2, SF
NORTHWEST A S20-25-13N - ORIGINAL WELLBORE -	1,300.00	1,300.00	17.83	8.96	2.010	CC
NORTHWEST A S20-25-13N - ORIGINAL WELLBORE -	21,482.42	21,367.58	290.16	-140.64	0.674	Level 1, ES, SF
NORTHWEST A S20-25-6N - ORIGINAL WELLBORE - P	100.00	100.00	107.99	107.72	401.680	CC, ES
NORTHWEST A S20-25-6N - ORIGINAL WELLBORE - P	21,482.42	22,182.19	1,740.71	1,308.69	4.029	SF
NORTHWEST A S20-25-7N - ORIGINAL WELLBORE - P	300.00	300.00	90.16	88.46	52.952	CC, ES
NORTHWEST A S20-25-7N - ORIGINAL WELLBORE - P	21,482.42	22,058.86	1,450.55	1,018.45	3.357	SF
NORTHWEST A S20-25-8C - ORIGINAL WELLBORE - P	500.00	500.00	72.06	68.92	22.973	CC, ES
NORTHWEST A S20-25-8C - ORIGINAL WELLBORE - P	21,482.42	22,116.84	1,185.73	765.18	2.819	SF
NORTHWEST A S20-25-9N - ORIGINAL WELLBORE - P	700.00	700.00	53.96	49.39	11.805	CC, ES
NORTHWEST A S20-25-9N - ORIGINAL WELLBORE - P	21,482.42	21,807.34	870.14	437.74	2.012	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	-150.10	-7,667.55	-4,408.70	8,844.66				
100.00	100.00	124.00	124.00	0.13	1.71	-150.10	-7,667.55	-4,408.70	8,844.66	8,842.82	1.84	4,795.505	
200.00	200.00	224.00	224.00	0.49	3.96	-150.10	-7,667.55	-4,408.70	8,844.66	8,840.21	4.45	1,988.140	
300.00	300.00	324.00	324.00	0.85	6.03	-150.10	-7,667.55	-4,408.70	8,844.66	8,837.79	6.88	1,286.048	
400.00	400.00	424.00	424.00	1.21	8.07	-150.10	-7,667.55	-4,408.70	8,844.66	8,835.39	9.28	953.597	
500.00	500.00	524.00	524.00	1.57	10.09	-150.10	-7,667.55	-4,408.70	8,844.66	8,833.00	11.66	758.475	
600.00	600.00	624.00	624.00	1.93	12.11	-150.10	-7,667.55	-4,408.70	8,844.66	8,830.62	14.04	629.892	
700.00	700.00	724.00	724.00	2.29	14.13	-150.10	-7,667.55	-4,408.70	8,844.66	8,828.24	16.42	538.691	
800.00	800.00	824.00	824.00	2.64	16.15	-150.10	-7,667.55	-4,408.70	8,844.66	8,825.87	18.79	470.609	
900.00	900.00	924.00	924.00	3.00	18.17	-150.10	-7,667.55	-4,408.70	8,844.66	8,823.49	21.17	417.831	
1,000.00	1,000.00	1,024.00	1,024.00	3.36	20.18	-150.10	-7,667.55	-4,408.70	8,844.66	8,821.12	23.54	375.712	
1,100.00	1,100.00	1,124.00	1,124.00	3.72	22.19	-150.10	-7,667.55	-4,408.70	8,844.66	8,818.75	25.91	341.315	
1,200.00	1,200.00	1,224.00	1,224.00	4.08	24.21	-150.10	-7,667.55	-4,408.70	8,844.66	8,816.38	28.29	312.694	
1,300.00	1,300.00	1,324.00	1,324.00	4.44	26.22	-150.10	-7,667.55	-4,408.70	8,844.66	8,814.01	30.66	288.505	
1,400.00	1,399.98	1,423.98	1,423.98	4.79	28.23	-83.53	-7,667.55	-4,408.70	8,844.47	8,811.44	33.02	267.829	
1,500.00	1,499.84	1,523.84	1,523.84	5.14	30.24	-83.57	-7,667.55	-4,408.70	8,843.88	8,808.49	35.38	249.944	
1,600.00	1,599.45	1,623.45	1,623.45	5.50	32.25	-83.65	-7,667.55	-4,408.70	8,842.90	8,805.16	37.74	234.288	
1,700.00	1,698.70	1,722.70	1,722.70	5.86	34.24	-83.75	-7,667.55	-4,408.70	8,841.56	8,801.45	40.10	220.461	

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