

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

NORTHWEST A S20-25-8C

ORIGINAL WELLBORE

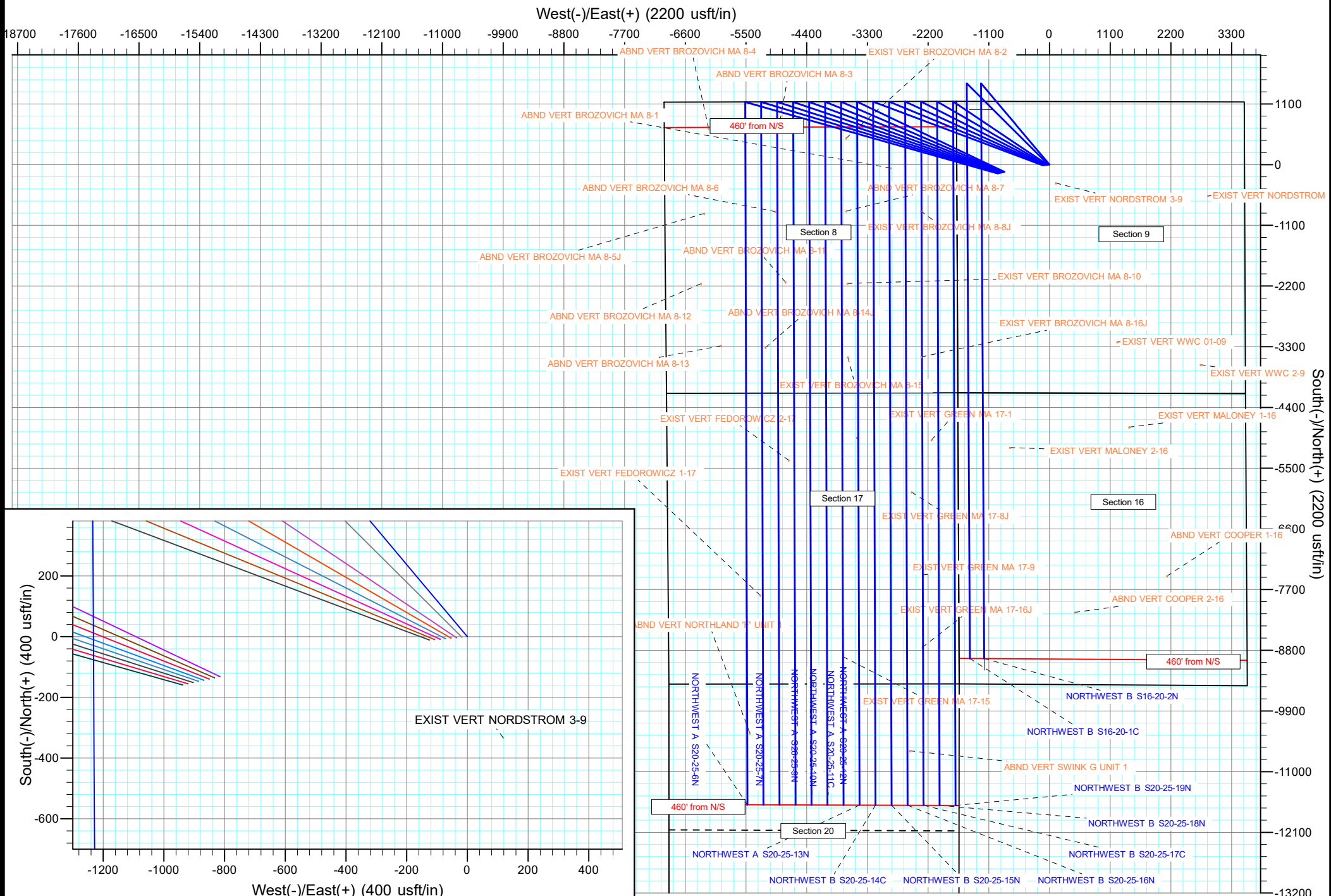
PROPOSAL 1

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 S20-25-8C
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 S20-25-8C	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	22,124.51	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	18,325.04	8,270.95	335.66	18.95	1.060	Level 2, CC, ES, SF
EXIST VERT FEDOROWICZ 2-17 - Wellbore #1 - Design	15,879.00	8,306.96	188.88	-87.84	0.683	Level 1, CC, ES, SF
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	15,520.22	8,267.97	2,777.15	2,507.04	10.282	CC, ES
EXIST VERT GREEN MA 17-1 - Wellbore #1 - Design #1	15,700.00	8,267.97	2,782.96	2,511.58	10.255	SF
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	19,400.00	8,232.94	1,162.90	827.46	3.467	SF
EXIST VERT GREEN MA 17-15 - Wellbore #1 - Design #	19,445.81	8,232.94	1,162.00	826.93	3.468	CC, ES
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	19,278.92	8,216.94	2,598.68	2,266.78	7.830	CC
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	19,300.00	8,216.94	2,598.76	2,266.77	7.828	ES
EXIST VERT GREEN MA 17-16J - Wellbore #1 - Design	19,400.00	8,216.94	2,601.50	2,269.15	7.828	SF
EXIST VERT GREEN MA 17-2 - Wellbore #1 - Design #1	15,475.41	8,286.97	1,423.56	1,153.79	5.277	CC, ES, SF
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	16,466.08	8,251.96	2,415.08	2,129.89	8.468	CC, ES
EXIST VERT GREEN MA 17-8J - Wellbore #1 - Design #	16,600.00	8,251.96	2,418.79	2,132.96	8.462	SF
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	17,964.67	8,227.95	2,615.31	2,305.54	8.443	CC, ES
EXIST VERT GREEN MA 17-9 - Wellbore #1 - Design #1	18,100.00	8,227.95	2,618.81	2,308.42	8.437	SF
Sec 20-T1S-R68W						
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,823.99	8,230.94	531.37	172.64	1.481	Level 3, CC, ES
ABND VERT NORTHLAND 'F' UNIT 1 - Wellbore #1 - De	20,900.00	8,230.94	536.78	173.58	1.478	Level 3, SF
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	21,154.50	8,203.07	2,368.98	2,005.10	6.510	CC, ES
ABND VERT SWINK G UNIT 1 - Wellbore #1 - Design #1	21,200.00	8,203.07	2,369.42	2,005.43	6.510	SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-8C
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 S20-25-8C	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	4,465.77	3,859.42	513.59	393.53	4.278	CC
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	4,500.00	3,885.96	514.04	392.99	4.246	ES
ABND VERT BROZOVICH MA 8-1 - Wellbore #1 - Desig	4,600.00	3,963.53	520.53	396.93	4.211	SF
ABND VERT BROZOVICH MA 8-11 - Wellbore #1 - Desi	12,654.99	8,308.98	141.59	-86.99	0.619	Level 1, CC, ES, SF
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	12,674.95	8,302.98	1,391.44	1,299.77	15.180	CC
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	12,700.00	8,302.98	1,391.66	1,299.58	15.114	ES
ABND VERT BROZOVICH MA 8-12 - Wellbore #1 - Desi	13,300.00	8,302.98	1,525.38	1,417.80	14.178	SF
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,801.87	8,405.02	1,031.21	784.96	4.188	CC, ES
ABND VERT BROZOVICH MA 8-13 - Wellbore #1 - Desi	13,900.00	8,405.02	1,035.87	786.62	4.156	SF
ABND VERT BROZOVICH MA 8-14J - Wellbore #1 - Des	13,837.58	8,351.98	224.19	-21.50	0.913	Level 1, CC, ES, SF
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,864.82	8,252.00	39.31	-192.94	0.169	Level 1, ES
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,897.00	8,252.00	22.58	-186.89	0.108	Level 1, CC
ABND VERT BROZOVICH MA 8-3 - Wellbore #1 - Desig	9,900.00	8,252.00	22.78	-192.89	0.106	Level 1, SF
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,525.00	8,106.90	1,280.20	1,059.89	5.811	SF
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,825.00	8,207.34	1,243.25	1,033.26	5.921	ES
ABND VERT BROZOVICH MA 8-4 - Wellbore #1 - Desig	9,860.37	8,208.98	1,242.74	1,034.05	5.955	CC
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	11,300.00	8,255.99	1,330.65	1,115.56	6.186	SF
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	11,400.00	8,255.99	1,326.82	1,112.48	6.190	ES
ABND VERT BROZOVICH MA 8-5J - Wellbore #1 - Desi	11,400.95	8,255.99	1,326.82	1,112.48	6.190	CC
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	11,372.82	8,275.99	40.45	-174.07	0.189	Level 1, CC, SF
ABND VERT BROZOVICH MA 8-6 - Wellbore #1 - Desig	11,400.00	8,275.99	48.73	-177.13	0.216	Level 1, ES
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	11,365.76	8,280.99	1,250.33	1,035.75	5.827	CC
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	11,400.00	8,280.99	1,250.79	1,035.54	5.811	ES
ABND VERT BROZOVICH MA 8-7 - Wellbore #1 - Desig	11,600.00	8,280.99	1,272.08	1,051.89	5.777	SF
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,680.85	8,337.98	1,262.48	1,170.62	13.743	CC
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,700.00	8,337.98	1,262.63	1,170.59	13.719	ES
EXIST VERT BROZOVICH MA 8-10 - Wellbore #1 - Des	12,900.00	8,337.98	1,281.36	1,186.96	13.573	SF
EXIST VERT BROZOVICH MA 8-15 - Wellbore #1 - Des	14,016.30	8,311.98	1,268.68	1,021.13	5.125	CC, ES, SF
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	14,015.13	8,272.98	2,594.61	2,347.86	10.515	CC, ES
EXIST VERT BROZOVICH MA 8-16J - Wellbore #1 - De	14,200.00	8,272.97	2,601.19	2,352.86	10.475	SF
EXIST VERT BROZOVICH MA 8-2 - Wellbore #1 - Desig	5,937.11	5,024.66	243.14	78.84	1.480	Level 3, CC, ES, SF
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	3,267.64	2,956.08	1,089.84	1,004.76	12.809	CC
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	3,300.00	2,981.18	1,090.03	1,004.00	12.670	ES
EXIST VERT BROZOVICH MA 8-8J - Wellbore #1 - Desi	4,000.00	3,524.14	1,183.82	1,079.31	11.327	SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-8C
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 S20-25-8C	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 #	500.00	445.00	3,798.12	3,788.04	376.809	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	600.00	544.98	3,799.83	3,787.38	304.993	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	14,000.00	8,208.02	8,319.27	8,078.02	34.485	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	500.00	486.00	1,036.78	1,025.87	95.016	CC
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	600.00	585.98	1,038.51	1,025.23	78.154	ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	12,200.00	8,232.99	5,220.72	4,995.97	23.229	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	500.00	453.00	3,730.72	3,720.48	364.256	CC
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	600.00	552.98	3,732.11	3,719.49	295.710	ES
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	15,300.00	8,200.03	6,339.65	6,080.51	24.464	SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	500.00	435.00	5,032.64	5,022.76	509.541	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	600.00	534.98	5,034.21	5,021.95	410.731	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	16,500.00	8,181.96	8,003.75	7,729.32	29.165	SF
NORTHWEST A S20-25-10N - ORIGINAL WELLBORE -	500.00	500.00	35.85	32.72	11.431	CC, ES
NORTHWEST A S20-25-10N - ORIGINAL WELLBORE -	22,124.54	21,700.84	629.54	231.38	1.581	SF
NORTHWEST A S20-25-11C - ORIGINAL WELLBORE -	500.00	500.00	53.96	50.82	17.202	CC, ES
NORTHWEST A S20-25-11C - ORIGINAL WELLBORE -	22,124.54	21,774.59	870.18	438.89	2.018	SF
NORTHWEST A S20-25-12N - ORIGINAL WELLBORE -	500.00	500.00	72.06	68.92	22.973	CC, ES
NORTHWEST A S20-25-12N - ORIGINAL WELLBORE -	22,124.54	21,470.82	1,185.74	765.78	2.823	SF
NORTHWEST A S20-25-13N - ORIGINAL WELLBORE -	500.00	500.00	89.89	86.75	28.658	CC, ES
NORTHWEST A S20-25-13N - ORIGINAL WELLBORE -	22,124.54	21,358.56	1,470.88	1,047.98	3.478	SF
NORTHWEST A S20-25-6N - ORIGINAL WELLBORE - P	100.00	100.00	35.93	35.67	133.659	CC, ES
NORTHWEST A S20-25-6N - ORIGINAL WELLBORE - P	22,124.54	22,186.67	629.52	208.70	1.496	Level 3, SF
NORTHWEST A S20-25-7N - ORIGINAL WELLBORE - P	300.00	300.00	18.10	16.40	10.633	CC
NORTHWEST A S20-25-7N - ORIGINAL WELLBORE - P	22,124.54	22,063.70	379.09	-3.01	0.992	Level 1, ES, SF
NORTHWEST A S20-25-9N - ORIGINAL WELLBORE - P	500.00	500.00	18.10	14.97	5.772	CC
NORTHWEST A S20-25-9N - ORIGINAL WELLBORE - P	6,800.00	6,854.23	97.45	-28.22	0.775	Level 1, ES, SF

Offset Design													Offset Site Error:		0.00 usft
Survey Program: 0-INC													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	24.00	24.00	0.00	0.28	-150.45	-7,651.90	-4,338.34	8,796.18						
100.00	100.00	124.00	124.00	0.13	1.71	-150.45	-7,651.90	-4,338.34	8,796.18	8,794.34	1.84	4,769.220			
200.00	200.00	224.00	224.00	0.49	3.96	-150.45	-7,651.90	-4,338.34	8,796.18	8,791.74	4.45	1,977.243			
300.00	300.00	324.00	324.00	0.85	6.03	-150.45	-7,651.90	-4,338.34	8,796.18	8,789.31	6.88	1,278.999			
400.00	400.00	424.00	424.00	1.21	8.07	-150.45	-7,651.90	-4,338.34	8,796.18	8,786.91	9.28	948.371			
500.00	500.00	524.00	524.00	1.57	10.09	-150.45	-7,651.90	-4,338.34	8,796.18	8,784.52	11.66	754.317			
600.00	599.98	623.98	623.98	1.92	12.11	-78.16	-7,651.90	-4,338.34	8,795.83	8,781.79	14.04	626.665			
700.00	699.84	723.84	723.84	2.28	14.13	-78.22	-7,651.90	-4,338.34	8,794.75	8,778.35	16.40	536.103			
800.00	799.45	823.45	823.45	2.64	16.14	-78.31	-7,651.90	-4,338.34	8,792.97	8,774.20	18.78	468.295			
900.00	898.70	922.70	922.70	3.02	18.14	-78.43	-7,651.90	-4,338.34	8,790.50	8,769.35	21.15	415.557			
1,000.00	997.47	1,021.47	1,021.47	3.42	20.13	-78.59	-7,651.90	-4,338.34	8,787.35	8,763.81	23.54	373.303			
1,100.00	1,095.62	1,119.62	1,119.62	3.84	22.11	-78.79	-7,651.90	-4,338.34	8,783.54	8,757.60	25.94	338.632			
1,200.00	1,193.06	1,217.06	1,217.06	4.30	24.07	-79.02	-7,651.90	-4,338.34	8,779.10	8,750.74	28.35	309.625			
1,300.00	1,289.64	1,313.64	1,313.64	4.80	26.01	-79.28	-7,651.90	-4,338.34	8,774.06	8,743.27	30.79	284.961			
1,400.00	1,385.27	1,409.27	1,409.27	5.34	27.94	-79.57	-7,651.90	-4,338.34	8,768.45	8,735.20	33.25	263.701			
1,500.00	1,479.82	1,503.82	1,503.82	5.94	29.84	-79.88	-7,651.90	-4,338.34	8,762.32	8,726.58	35.74	245.165			
1,600.00	1,573.17	1,602.83	1,597.17	6.59	31.83	-80.23	-7,651.90	-4,338.34	8,755.71	8,717.33	38.37	228.164			
1,700.00	1,665.21	1,689.21	1,689.21	7.30	33.57	-80.60	-7,651.90	-4,338.34	8,748.66	8,707.85	40.81	214.351			

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