

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

UNITED A S16-20-9N

ORIGINAL WELLBORE

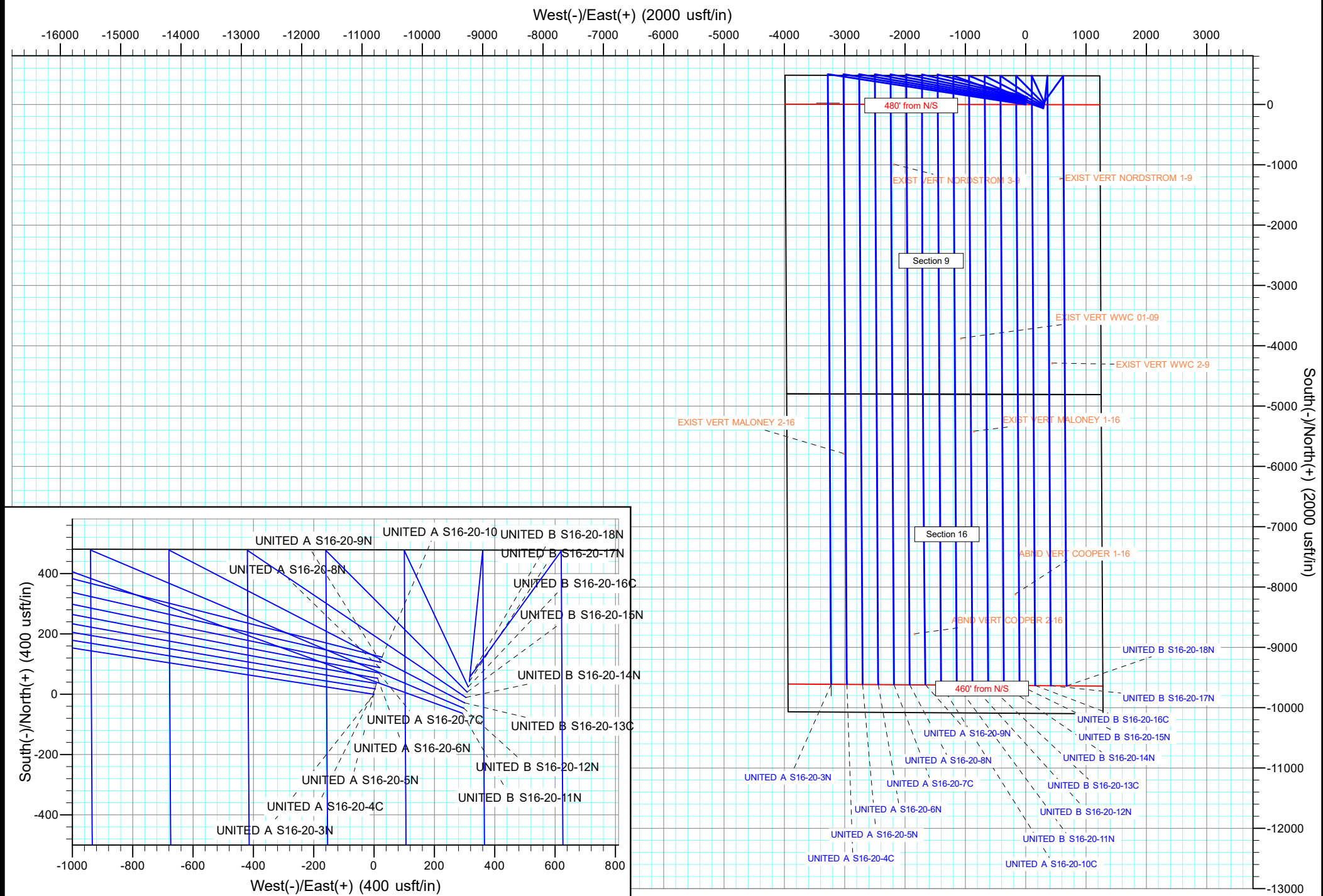
PROPOSAL 1

Anticollision Report

18 January, 2018



Project: Broomfield County
Site: Sec 9-T1S-R68W
Well: UNITED A S16-20-3N
ORIGINAL WELLBORE
PROPOSAL 1



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED A S16-20-9N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5282.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5282.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	UNITED A S16-20-9N	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	18,138.92	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 16-T1S-R68W						
ABND VERT COOPER 1-16 - Wellbore #1 - Design #1	16,648.00	7,926.00	1,508.20	1,198.20	4.865	CC, ES, SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,292.03	7,933.00	168.60	-152.72	0.525	Level 1, CC
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,300.00	7,933.00	168.79	-153.47	0.524	Level 1, ES, SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,940.42	7,923.00	843.14	579.72	3.201	CC, ES, SF
EXIST VERT NORDSTROM 2-16 - Wellbore #1 - Design #1	14,297.62	7,961.00	1,317.40	1,047.15	4.875	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,300.00	7,961.00	1,317.40	1,047.07	4.873	ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,400.00	7,961.00	1,321.38	1,048.17	4.837	SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,300.00	1,281.00	1,439.79	1,409.98	48.297	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,400.00	1,380.98	1,440.80	1,408.63	44.779	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	9,900.00	7,926.00	2,293.67	2,093.69	11.470	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,512.15	7,967.00	465.58	268.35	2.361	CC, ES, SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,397.07	7,934.00	635.76	397.83	2.672	CC, ES, SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,816.60	7,916.00	2,144.37	1,899.92	8.772	CC, ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,900.00	7,916.00	2,145.99	1,900.92	8.757	SF
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROPO	1,342.18	1,342.18	17.86	8.69	1.947	CC
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROPO	1,400.00	1,400.02	17.92	8.33	1.870	ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROPO	18,138.92	18,318.44	367.58	83.05	1.292	Level 3, SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	100.00	108.11	107.84	402.112	CC
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	300.00	299.21	108.76	107.06	63.956	ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	18,138.92	18,664.96	1,560.85	1,206.43	4.404	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.00	300.00	89.83	88.13	52.756	CC
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	500.00	499.34	90.48	87.35	28.954	ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	18,138.92	18,797.20	1,326.44	980.68	3.836	SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	500.00	500.00	71.97	68.84	22.946	CC
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	700.00	699.43	72.65	68.09	15.947	ES
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	18,138.92	18,471.69	1,040.57	686.17	2.936	SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	700.00	700.00	54.05	49.48	11.827	CC
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	900.00	899.54	54.76	48.77	9.145	ES
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	18,138.92	18,381.38	780.43	426.03	2.202	SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	900.00	900.00	35.78	29.77	5.959	CC
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	1,000.00	999.93	35.86	29.15	5.341	ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	18,100.00	19,514.28	581.18	249.05	1.750	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,101.16	1,101.16	17.92	10.47	2.406	CC
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	18,138.92	18,214.22	260.14	-94.29	0.734	Level 1, ES, SF
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROPO	2,152.24	2,188.51	59.33	41.77	3.378	CC

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

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED A S16-20-9N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5282.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5282.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	UNITED A S16-20-9N	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						
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	2,200.00	2,236.12	59.62	41.73	3.333	ES
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	18,138.92	18,016.46	520.00	167.79	1.476	Level 3, SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	1,910.02	1,949.03	106.30	92.77	7.852	CC, ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	18,138.92	17,967.87	780.14	428.04	2.216	SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	1,768.17	1,804.34	174.97	162.66	14.218	CC
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	1,800.00	1,836.14	175.15	162.61	13.972	ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,138.92	18,178.60	1,072.96	726.76	3.099	SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	1,672.68	1,704.57	223.88	212.29	19.324	CC
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	1,700.00	1,731.86	224.01	212.23	19.013	ES
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	18,138.92	17,889.53	1,300.38	948.06	3.691	SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	1,558.79	1,582.10	265.66	254.91	24.704	CC, ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,138.92	17,868.19	1,560.55	1,207.95	4.426	SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	1,437.99	1,449.62	292.25	282.37	29.583	CC, ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	18,138.92	18,111.14	1,839.57	1,488.50	5.240	SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	1,300.00	1,297.00	299.88	291.02	33.841	CC, ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	18,138.92	17,846.94	2,080.81	1,727.88	5.896	SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	97.00	300.27	300.01	1,133.874	CC, ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	18,138.92	17,839.28	2,340.85	1,987.95	6.633	SF

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-INC												Offset Well Error:	0.00 usft
Sec 16-T1S-R68W - ABND VERT COOPER 1-16 - Wellbore #1 - Design #1													
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 Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-178.65	-8,218.36	-193.13	8,220.65				
100.00	100.00	81.00	81.00	0.13	0.96	-178.65	-8,218.36	-193.13	8,220.63	8,219.54	1.09	7,512.895	
200.00	200.00	181.00	181.00	0.49	3.04	-178.65	-8,218.36	-193.13	8,220.63	8,217.10	3.53	2,325.618	
300.00	300.00	281.00	281.00	0.85	5.16	-178.65	-8,218.36	-193.13	8,220.63	8,214.62	6.01	1,367.254	
400.00	400.00	381.00	381.00	1.21	7.21	-178.65	-8,218.36	-193.13	8,220.63	8,212.21	8.42	976.307	
500.00	500.00	481.00	481.00	1.57	9.24	-178.65	-8,218.36	-193.13	8,220.63	8,209.82	10.81	760.453	
600.00	600.00	581.00	581.00	1.93	11.27	-178.65	-8,218.36	-193.13	8,220.63	8,207.44	13.19	623.123	
700.00	700.00	681.00	681.00	2.29	13.29	-178.65	-8,218.36	-193.13	8,220.63	8,205.06	15.57	527.943	
800.00	800.00	781.00	781.00	2.64	15.30	-178.65	-8,218.36	-193.13	8,220.63	8,202.68	17.95	458.048	
900.00	900.00	881.00	881.00	3.00	17.32	-178.65	-8,218.36	-193.13	8,220.63	8,200.31	20.32	404.528	
1,000.00	1,000.00	981.00	981.00	3.36	19.33	-178.65	-8,218.36	-193.13	8,220.63	8,197.94	22.69	362.223	
1,100.00	1,100.00	1,081.00	1,081.00	3.72	21.35	-178.65	-8,218.36	-193.13	8,220.63	8,195.56	25.07	327.938	
1,200.00	1,200.00	1,181.00	1,181.00	4.08	23.36	-178.65	-8,218.36	-193.13	8,220.63	8,193.19	27.44	299.589	
1,300.00	1,300.00	1,281.00	1,281.00	4.44	25.38	-178.65	-8,218.36	-193.13	8,220.63	8,190.82	29.81	275.755	
1,400.00	1,399.98	1,380.98	1,380.98	4.79	27.39	-101.42	-8,218.36	-193.13	8,220.98	8,188.80	32.18	255.500	
1,500.00	1,499.84	1,480.84	1,480.84	5.14	29.40	-101.44	-8,218.36	-193.13	8,222.02	8,187.48	34.53	238.081	
1,600.00	1,599.45	1,580.45	1,580.45	5.49	31.40	-101.46	-8,218.36	-193.13	8,223.75	8,186.86	36.89	222.904	
1,700.00	1,698.70	1,679.70	1,679.70	5.85	33.40	-101.50	-8,218.36	-193.13	8,226.20	8,186.94	39.25	209.563	
1,800.00	1,797.47	1,778.47	1,778.47	6.23	35.39	-101.54	-8,218.36	-193.13	8,229.36	8,187.74	41.62	197.740	
1,900.00	1,895.62	1,876.62	1,876.62	6.63	37.36	-101.59	-8,218.36	-193.13	8,233.25	8,189.27	43.99	187.182	
2,000.00	1,993.06	1,974.06	1,974.06	7.04	39.32	-101.65	-8,218.36	-193.13	8,237.90	8,191.54	46.36	177.688	
2,100.00	2,089.64	2,070.64	2,070.64	7.49	41.26	-101.72	-8,218.36	-193.13	8,243.32	8,194.57	48.75	169.097	
2,200.00	2,185.27	2,166.27	2,166.27	7.97	43.19	-101.78	-8,218.36	-193.13	8,249.54	8,198.38	51.15	161.276	
2,250.44	2,233.10	2,214.10	2,214.10	8.23	44.15	-101.82	-8,218.36	-193.13	8,252.98	8,200.61	52.37	157.590	
2,300.00	2,279.96	2,260.96	2,260.96	8.50	45.09	-101.92	-8,218.36	-193.13	8,256.48	8,202.91	53.57	154.120	
2,400.00	2,374.50	2,355.50	2,355.50	9.04	46.99	-102.13	-8,218.36	-193.13	8,263.65	8,207.63	56.01	147.528	

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