EXTRACTION OIL & GAS

Broomfield County
Sec 9-T1S-R68W
UNITED A S16-20-5N

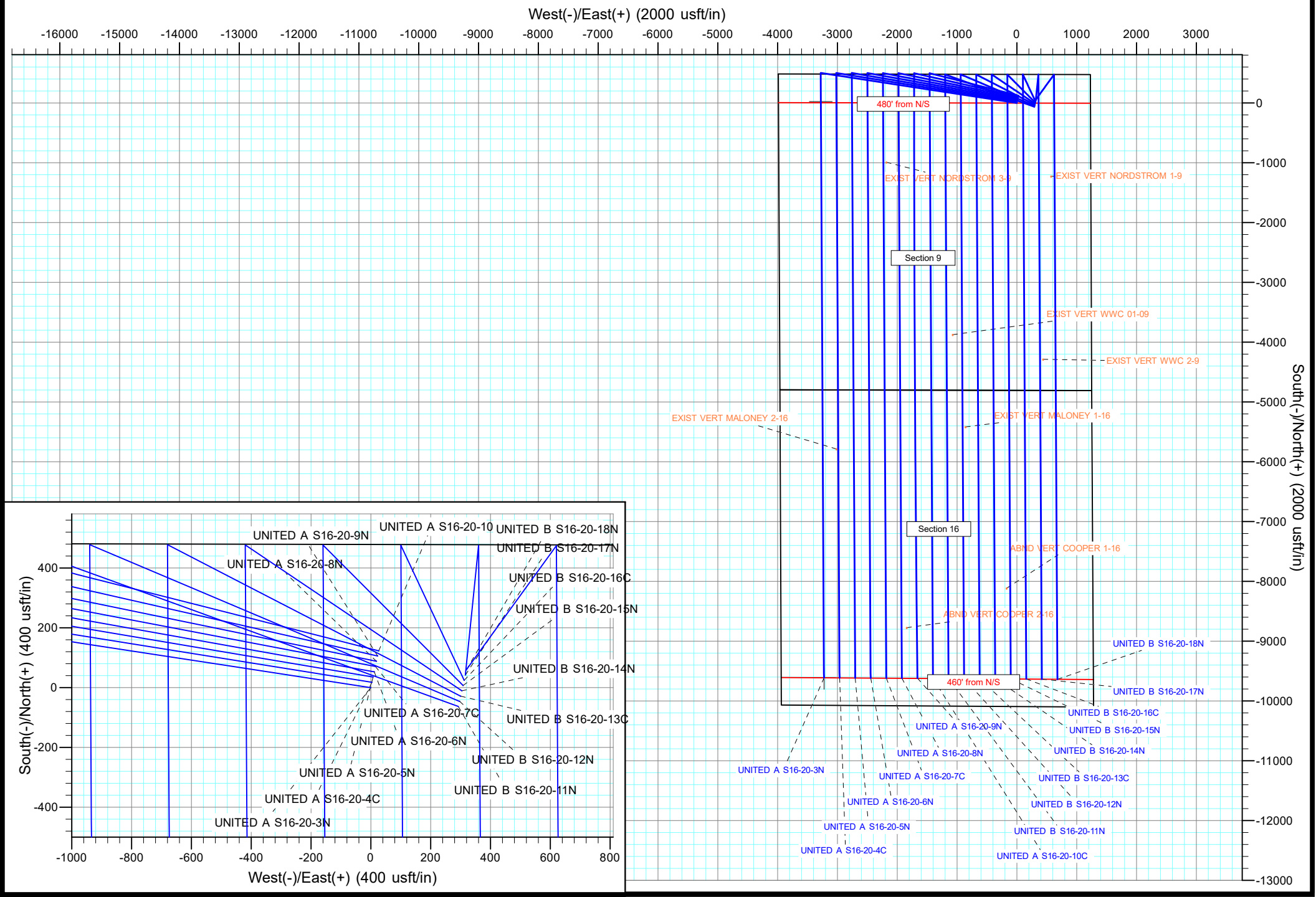
ORIGINAL WELLBORE
PROPOSAL 1

Anticollision Report

18 January, 2018

EXTRACTION Oil & Gas

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 S16-20-5N
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 S16-20-5N	**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	18,471.60	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 16-T1S-R68W						
ABND VERT COOPER 1-16 - Wellbore #1 - Design #1	16,985.85	7,925.87	2,541.66	2,231.55	8.196	CC
ABND VERT COOPER 1-16 - Wellbore #1 - Design #1	17,000.00	7,925.87	2,541.70	2,231.52	8.194	ES
ABND VERT COOPER 1-16 - Wellbore #1 - Design #1	17,100.00	7,925.87	2,544.22	2,233.60	8.191	SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,600.00	7,932.87	868.41	546.40	2.697	SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,636.57	7,932.86	867.64	546.13	2.699	CC, ES
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	14,283.53	7,922.92	1,870.27	1,606.36	7.087	CC, ES
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	14,300.00	7,922.92	1,870.34	1,606.40	7.086	SF
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,642.95	7,960.91	289.92	19.20	1.071	Level 2, CC, ES, SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	500.00	481.00	1,381.31	1,370.50	127.779	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	600.00	580.98	1,382.28	1,369.10	104.829	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	10,500.00	7,925.97	3,346.49	3,142.47	16.402	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,853.89	7,966.98	569.51	369.97	2.854	CC, ES, SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,741.48	7,933.94	1,663.07	1,424.34	6.966	CC, ES, SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,161.50	7,915.93	3,171.36	2,926.19	12.935	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,200.00	7,915.93	3,171.59	2,926.12	12.920	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,400.00	7,915.93	3,180.32	2,933.40	12.880	SF
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	500.00	500.00	89.83	86.70	28.640	CC
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	700.00	700.16	90.43	85.87	19.839	ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	18,471.69	18,311.59	1,326.13	974.18	3.768	SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	100.00	36.14	35.87	134.405	CC
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	200.00	199.89	36.28	35.30	36.952	ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	18,471.69	18,670.85	520.25	166.55	1.471	Level 3, SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.73	300.73	17.86	16.15	10.455	CC
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	400.00	399.93	18.02	15.61	7.466	ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	18,369.55	24,458.95	367.68	26.57	1.078	Level 2, SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	500.00	500.00	17.92	14.78	5.713	CC
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	18,471.69	18,377.31	260.11	-93.30	0.736	Level 1, ES, SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	500.00	500.00	36.20	33.06	11.540	CC
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	600.00	600.02	36.33	32.48	9.442	ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	18,471.69	18,531.12	581.62	247.20	1.739	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	500.00	500.00	54.05	50.92	17.233	CC
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	700.00	700.16	54.83	50.27	12.029	ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	18,471.69	18,206.15	780.31	426.62	2.206	SF
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	500.00	500.00	71.97	68.84	22.946	CC
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	700.00	700.16	72.65	68.09	15.938	ES

Anticollision Report

Company:	EXTRACTION OIL & GAS	**Local Co-ordinate Reference:**	Well UNITED A S16-20-5N
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 S16-20-5N	**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 Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 9-T1S-R68W						
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	18,471.69	18,122.09	1,040.43	687.12	2.945	SF
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	1,169.52	1,225.43	201.47	193.24	24.468	CC
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	1,200.00	1,255.88	201.64	193.17	23.821	ES
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	18,471.69	18,009.95	1,560.54	1,208.62	4.434	SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	1,067.33	1,119.87	256.29	248.93	34.832	CC
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	1,100.00	1,152.50	256.48	248.88	33.746	ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	18,471.69	17,961.77	1,820.68	1,468.83	5.175	SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	944.41	988.04	298.19	291.79	46.591	CC, ES
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	18,471.69	18,168.69	2,097.30	1,745.92	5.969	SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	500.00	503.00	300.55	297.40	95.493	CC, ES
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	18,471.69	17,880.93	2,340.91	1,988.90	6.650	SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	500.00	503.00	302.29	299.14	96.044	CC, ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,471.69	17,862.14	2,601.10	2,248.74	7.382	SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	500.00	503.00	304.79	301.64	96.839	CC, ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	18,471.69	18,091.92	2,873.28	2,521.15	8.160	SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	500.00	503.00	308.59	305.45	98.047	CC, ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	18,471.69	17,840.44	3,121.36	2,768.68	8.850	SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	97.00	313.11	312.85	1,182.346	CC, ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	18,471.69	17,828.76	3,381.36	3,028.83	9.592	SF

Offset Design Sec 16-T1S-R68W - ABND VERT COOPER 1-16 - Wellbore #1 - Design #1

Offset Site Error: 0.00 usft

Survey Program: 0-INC

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-178.75	-8,148.06	-177.71	8,150.02				
100.00	100.00	81.00	81.00	0.13	0.96	-178.75	-8,148.06	-177.71	8,150.00	8,148.90	1.09	7,448.340	
200.00	200.00	181.00	181.00	0.49	3.04	-178.75	-8,148.06	-177.71	8,150.00	8,146.46	3.53	2,305.635	
300.00	300.00	281.00	281.00	0.85	5.16	-178.75	-8,148.06	-177.71	8,150.00	8,143.98	6.01	1,355.506	
400.00	400.00	381.00	381.00	1.21	7.21	-178.75	-8,148.06	-177.71	8,150.00	8,141.58	8.42	967.918	
500.00	500.00	481.00	481.00	1.57	9.24	-178.75	-8,148.06	-177.71	8,150.00	8,139.19	10.81	753.918	
600.00	599.98	580.98	580.98	1.92	11.27	-98.33	-8,148.06	-177.71	8,150.25	8,137.06	13.19	618.097	
700.00	699.84	680.84	680.84	2.27	13.28	-98.35	-8,148.06	-177.71	8,151.01	8,135.45	15.56	524.009	
800.00	799.45	780.45	780.45	2.64	15.29	-98.39	-8,148.06	-177.71	8,152.28	8,134.36	17.93	454.736	
900.00	898.70	879.70	879.70	3.01	17.29	-98.44	-8,148.06	-177.71	8,154.08	8,133.77	20.31	401.556	
1,000.00	997.47	978.47	978.47	3.41	19.28	-98.50	-8,148.06	-177.71	8,156.41	8,133.72	22.69	359.395	
1,100.00	1,095.62	1,076.62	1,076.62	3.84	21.26	-98.57	-8,148.06	-177.71	8,159.29	8,134.20	25.10	325.106	
1,200.00	1,193.06	1,174.06	1,174.06	4.30	23.22	-98.65	-8,148.06	-177.71	8,162.75	8,135.23	27.52	296.637	
1,300.00	1,289.64	1,270.64	1,270.64	4.80	25.17	-98.75	-8,148.06	-177.71	8,166.80	8,136.84	29.96	272.595	
1,400.00	1,385.27	1,366.27	1,366.27	5.34	27.09	-98.85	-8,148.06	-177.71	8,171.47	8,139.05	32.43	252.002	
1,500.00	1,479.82	1,460.82	1,460.82	5.94	28.99	-98.96	-8,148.06	-177.71	8,176.80	8,141.87	34.92	234.151	
1,600.00	1,573.17	1,554.17	1,554.17	6.59	30.87	-99.07	-8,148.06	-177.71	8,182.80	8,145.35	37.45	218.520	
1,700.00	1,665.21	1,646.21	1,646.21	7.31	32.73	-99.19	-8,148.06	-177.71	8,189.52	8,149.52	40.00	204.715	
1,800.00	1,755.84	1,736.84	1,736.84	8.08	34.55	-99.30	-8,148.06	-177.71	8,196.99	8,154.40	42.60	192.432	
1,835.49	1,787.64	1,768.64	1,768.64	8.38	35.19	-99.35	-8,148.06	-177.71	8,199.83	8,156.31	43.52	188.397	
1,900.00	1,845.27	1,826.27	1,826.27	8.92	36.35	-99.52	-8,148.06	-177.71	8,205.14	8,159.92	45.22	181.452	
2,000.00	1,934.60	1,915.60	1,915.60	9.78	38.15	-99.80	-8,148.06	-177.71	8,213.55	8,165.69	47.86	171.606	
2,100.00	2,023.93	2,004.93	2,004.93	10.66	39.94	-100.08	-8,148.06	-177.71	8,222.20	8,171.68	50.52	162.750	
2,200.00	2,113.26	2,105.74	2,094.26	11.55	41.97	-100.35	-8,148.06	-177.71	8,231.09	8,177.67	53.42	154.085	
2,300.00	2,202.59	2,183.59	2,183.59	12.45	43.54	-100.63	-8,148.06	-177.71	8,240.22	8,184.35	55.86	147.506	

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