

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

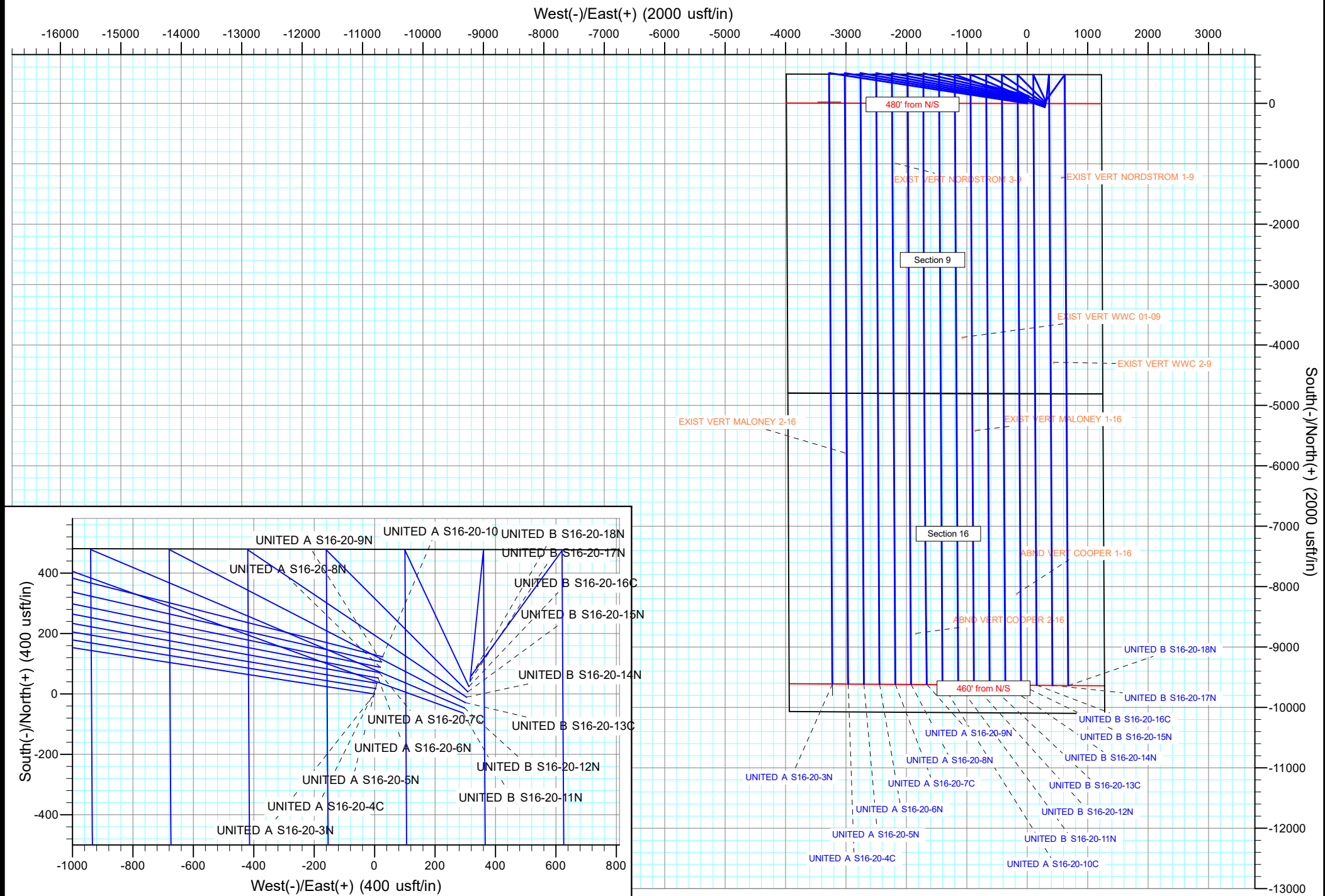
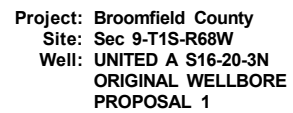
UNITED B S16-20-17N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

18 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED B S16-20-17N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5279.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5279.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	UNITED B S16-20-17N	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	17,865.66	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	16,341.13	7,928.87	579.69	271.08	1.878	CC, ES, SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	16,991.56	7,935.86	2,253.82	1,933.74	7.041	CC
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,000.00	7,935.86	2,253.84	1,933.62	7.038	ES
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,200.00	7,935.85	2,263.44	1,940.45	7.008	SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,638.70	7,925.91	1,250.62	988.70	4.775	CC, ES
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,700.00	7,925.91	1,252.12	989.30	4.764	SF
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	13,997.74	7,963.91	3,410.87	3,142.06	12.689	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,100.00	7,963.90	3,412.40	3,141.90	12.615	ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,500.00	7,963.90	3,447.65	3,171.47	12.484	SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	9,457.81	7,928.98	202.63	5.86	1.030	Level 2, CC, ES, SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,208.83	7,969.98	2,550.61	2,355.77	13.091	CC, ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,600.00	7,969.98	2,580.43	2,381.42	12.967	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,096.61	7,936.94	1,457.54	1,221.32	6.170	CC
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,100.00	7,936.94	1,457.55	1,221.27	6.169	ES
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,200.00	7,936.94	1,461.21	1,223.48	6.147	SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,516.89	7,918.93	50.67	-192.16	0.209	Level 1, CC, ES, SF
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	1,529.78	1,529.46	299.30	288.78	28.467	CC, ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	17,865.66	18,321.76	1,839.08	1,489.04	5.254	SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	103.00	318.89	318.62	1,168.590	CC, ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	17,865.66	18,664.96	3,641.74	3,288.38	10.306	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.00	303.00	313.11	311.40	182.732	CC, ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	17,865.66	18,797.20	3,391.35	3,039.52	9.639	SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	500.00	503.00	308.59	305.45	98.047	CC, ES
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	17,865.66	18,471.69	3,121.46	2,768.13	8.834	SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	700.00	703.00	304.77	300.19	66.526	CC, ES
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	17,865.66	18,381.38	2,861.32	2,507.98	8.098	SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	900.00	903.00	302.01	295.99	50.208	CC, ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	17,865.66	18,535.05	2,613.84	2,262.61	7.442	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,100.00	1,103.00	300.55	293.10	40.348	CC, ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	17,865.66	18,214.22	2,341.04	1,987.70	6.626	SF
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	1,300.00	1,303.00	299.88	290.99	33.759	CC, ES
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	17,865.66	18,139.72	2,080.90	1,727.58	5.890	SF
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	387.52	388.00	107.14	104.79	45.560	CC
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	400.00	400.42	107.15	104.70	43.854	ES
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	17,865.66	18,020.08	1,560.89	1,209.54	4.443	SF

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 B S16-20-17N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5279.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5279.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	UNITED B S16-20-17N	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 S16-20-12N - ORIGINAL WELLBORE - PROP	610.33	610.94	88.60	84.66	22.503	CC, ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	17,865.66	17,973.71	1,300.74	949.50	3.703	SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	827.11	827.83	69.86	64.37	12.731	CC, ES
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	17,865.66	18,191.09	1,072.58	730.27	3.133	SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	1,037.62	1,038.41	50.23	43.23	7.181	CC, ES
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	17,865.66	17,912.45	780.39	428.64	2.219	SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	1,237.05	1,237.81	30.30	21.88	3.597	CC, ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	17,865.66	17,885.99	520.27	168.39	1.479	Level 3, SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	1,372.77	1,373.35	11.91	2.52	1.268	Level 3, CC
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	1,400.00	1,400.54	12.09	2.50	1.261	Level 3, ES, SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	100.00	17.86	17.59	66.432	CC
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	17,865.66	17,866.03	260.12	-92.32	0.738	Level 1, ES, 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		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	-176.59	-8,154.98	-486.33	8,169.48									
100.00	100.00	84.00	84.00	0.13	1.00	-176.59	-8,154.98	-486.33	8,169.46	8,168.33	1.13	7,231.212						
200.00	200.00	184.00	184.00	0.49	3.11	-176.59	-8,154.98	-486.33	8,169.46	8,165.86	3.60	2,267.032						
300.00	300.00	284.00	284.00	0.85	5.22	-176.59	-8,154.98	-486.33	8,169.46	8,163.39	6.07	1,344.796						
400.00	400.00	384.00	384.00	1.21	7.27	-176.59	-8,154.98	-486.33	8,169.46	8,160.98	8.48	963.221						
500.00	500.00	484.00	484.00	1.57	9.30	-176.59	-8,154.98	-486.33	8,169.46	8,158.59	10.87	751.488						
600.00	600.00	584.00	584.00	1.93	11.33	-176.59	-8,154.98	-486.33	8,169.46	8,156.21	13.25	616.409						
700.00	700.00	684.00	684.00	2.29	13.35	-176.59	-8,154.98	-486.33	8,169.46	8,153.83	15.63	522.624						
800.00	800.00	784.00	784.00	2.64	15.36	-176.59	-8,154.98	-486.33	8,169.46	8,151.46	18.01	453.668						
900.00	900.00	884.00	884.00	3.00	17.38	-176.59	-8,154.98	-486.33	8,169.46	8,149.08	20.38	400.817						
1,000.00	1,000.00	984.00	984.00	3.36	19.39	-176.59	-8,154.98	-486.33	8,169.46	8,146.71	22.76	359.012						
1,100.00	1,100.00	1,084.00	1,084.00	3.72	21.41	-176.59	-8,154.98	-486.33	8,169.46	8,144.34	25.13	325.113						
1,200.00	1,200.00	1,184.00	1,184.00	4.08	23.42	-176.59	-8,154.98	-486.33	8,169.46	8,141.96	27.50	297.070						
1,300.00	1,300.00	1,284.00	1,284.00	4.44	25.44	-176.59	-8,154.98	-486.33	8,169.46	8,139.59	29.87	273.484						
1,400.00	1,399.98	1,383.98	1,383.98	4.79	27.45	177.57	-8,154.98	-486.33	8,171.21	8,138.96	32.24	253.428						
1,500.00	1,499.84	1,483.84	1,483.84	5.15	29.46	177.57	-8,154.98	-486.33	8,176.44	8,141.82	34.61	236.232						
1,510.22	1,510.03	1,505.97	1,494.03	5.19	29.90	177.57	-8,154.98	-486.33	8,177.17	8,142.07	35.10	233.000						
1,600.00	1,599.57	1,583.57	1,583.57	5.51	31.46	177.57	-8,154.98	-486.33	8,183.74	8,146.76	36.98	221.316						
1,700.00	1,699.30	1,683.30	1,683.30	5.87	33.47	177.57	-8,154.98	-486.33	8,191.07	8,151.73	39.34	208.201						
1,800.00	1,799.03	1,783.03	1,783.03	6.23	35.48	177.57	-8,154.98	-486.33	8,198.39	8,156.69	41.71	196.572						
1,900.00	1,898.76	1,882.76	1,882.76	6.60	37.48	177.58	-8,154.98	-486.33	8,205.72	8,161.65	44.07	186.190						
2,000.00	1,998.49	1,982.49	1,982.49	6.96	39.49	177.58	-8,154.98	-486.33	8,213.04	8,166.61	46.44	176.865						
2,100.00	2,098.22	2,082.22	2,082.22	7.33	41.50	177.58	-8,154.98	-486.33	8,220.37	8,171.57	48.80	168.442						
2,200.00	2,197.96	2,181.96	2,181.96	7.70	43.50	177.58	-8,154.98	-486.33	8,227.69	8,176.52	51.17	160.798						
2,300.00	2,297.69	2,281.69	2,281.69	8.06	45.51	177.58	-8,154.98	-486.33	8,235.02	8,181.48	53.53	153.830						
2,400.00	2,397.42	2,381.42	2,381.42	8.43	47.52	177.59	-8,154.98	-486.33	8,242.34	8,186.44	55.90	147.450						
2,500.00	2,497.15	2,481.15	2,481.15	8.80	49.52	177.59	-8,154.98	-486.33	8,249.67	8,191.40	58.26	141.589						
2,600.00	2,596.88	2,580.88	2,580.88	9.17	51.53	177.59	-8,154.98	-486.33	8,256.99	8,196.36	60.63	136.184						
2,700.00	2,696.61	2,680.61	2,680.61	9.54	53.53	177.59	-8,154.98	-486.33	8,264.32	8,201.32	63.00	131.186						
2,800.00	2,796.34	2,780.34	2,780.34	9.91	55.54	177.59	-8,154.98	-486.33	8,271.64	8,206.28	65.36	126.549						
2,900.00	2,896.07	2,880.07	2,880.07	10.28	57.55	177.60	-8,154.98	-486.33	8,278.97	8,211.24	67.73	122.236						

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