

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 10-T1S-R68W**

**INTERCHANGE A S22-30-4C**

**ORIGINAL WELLBORE**

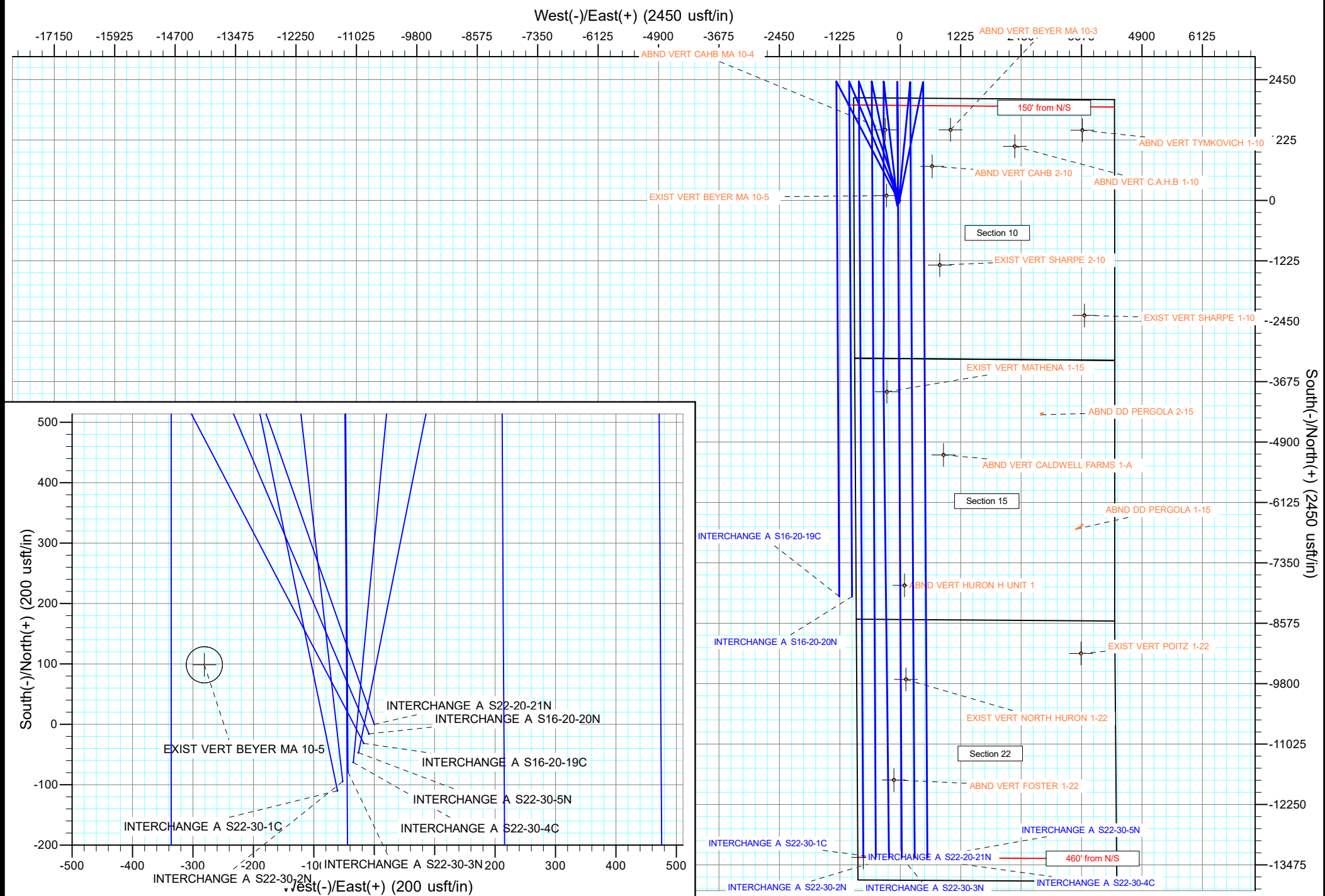
**PROPOSAL 1**

## **Anticollision Report**

**23 January, 2018**



Project: Broomfield County  
Site: Sec 10-T1S-R68W  
Well: INTERCHANGE A S22-20-21N  
ORIGINAL WELLBORE  
PROPOSAL 1



# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-4C
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE A S22-30-4C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL 1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 100.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 9,999.98 usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	1/23/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	24,111.38	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Sec 10-T1S-R68W						
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	9,356.10	8,067.00	811.24	605.89	3.951	CC, ES, SF
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	9,600.00	8,027.99	2,114.66	1,910.79	10.373	SF
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	9,698.48	8,027.99	2,112.36	1,908.77	10.375	CC, ES
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	10,093.48	8,064.99	434.41	230.13	2.127	CC, ES, SF
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	4,949.53	4,643.66	411.13	288.58	3.355	CC
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	5,000.00	4,689.95	411.62	287.79	3.324	ES
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	9,348.68	8,085.00	511.36	305.62	2.485	SF
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	5,647.07	5,180.00	3,568.79	3,515.74	67.264	CC, ES
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	6,500.00	5,180.00	3,669.30	3,611.38	63.345	SF
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	1,591.38	1,563.07	260.60	223.68	7.058	CC
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	1,700.00	1,665.82	262.97	223.41	6.648	ES
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	10,681.30	8,089.98	495.06	288.26	2.394	SF
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	13,133.28	8,019.96	3,504.47	3,272.49	15.107	CC
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	13,200.00	8,019.96	3,505.11	3,272.16	15.047	ES
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	13,800.00	8,019.96	3,567.33	3,326.49	14.812	SF
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	12,097.10	8,051.97	578.72	359.81	2.644	CC
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	12,100.00	8,051.97	578.73	359.78	2.643	ES, SF
INTERCHANGE A S16-20-19C - ORIGINAL WELLBORE	100.00	100.00	36.15	35.88	134.443	CC, ES
INTERCHANGE A S16-20-19C - ORIGINAL WELLBORE	18,900.00	18,885.49	1,501.78	1,171.89	4.552	SF
INTERCHANGE A S16-20-20N - ORIGINAL WELLBORE	200.00	200.00	54.05	53.07	54.832	CC, ES
INTERCHANGE A S16-20-20N - ORIGINAL WELLBORE	18,900.00	18,604.64	1,270.01	944.76	3.905	SF
INTERCHANGE A S22-20-21N - ORIGINAL WELLBORE	300.00	300.00	71.95	70.25	42.257	CC, ES
INTERCHANGE A S22-20-21N - ORIGINAL WELLBORE	24,111.38	23,868.06	1,073.76	572.79	2.143	SF
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	875.78	878.90	37.08	31.18	6.285	CC
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	900.00	903.02	37.20	31.12	6.115	ES
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	24,101.79	24,127.76	784.98	274.33	1.537	SF
INTERCHANGE A S22-30-2N - ORIGINAL WELLBORE	935.06	937.31	23.41	17.11	3.718	CC, ES
INTERCHANGE A S22-30-2N - ORIGINAL WELLBORE	24,104.96	23,873.37	581.14	111.06	1.236	Level 2, SF
INTERCHANGE A S22-30-3N - ORIGINAL WELLBORE	1,002.76	1,003.98	10.86	4.10	1.606	CC
INTERCHANGE A S22-30-3N - ORIGINAL WELLBORE	24,105.00	23,863.49	369.76	-32.60	0.919	Level 1, ES, SF
INTERCHANGE A S22-30-5N - ORIGINAL WELLBORE	1,139.09	1,137.70	9.61	1.88	1.243	Level 2, CC
INTERCHANGE A S22-30-5N - ORIGINAL WELLBORE	24,111.38	23,884.58	370.07	-35.51	0.912	Level 1, ES, SF

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

# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-4C
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Reference Site:</b>	Sec 10-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	INTERCHANGE A S22-30-4C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDT_32Bit_ODBC
<b>Reference Design:</b>	PROPOSAL 1	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Sec 15-T1S-R68W						
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,466.58	7,500.00	3,349.92	3,184.39	20.238	CC
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,500.00	7,500.00	3,350.09	3,183.97	20.167	ES
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	18,100.00	7,500.00	3,409.28	3,234.90	19.551	SF
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,142.72	7,500.00	2,676.51	2,549.96	21.149	CC
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,200.00	7,500.00	2,677.12	2,549.59	20.992	ES
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,700.00	7,500.00	2,733.91	2,599.66	20.365	SF
ABND VERT CALDWELL FARMS 1-A - Wellbore #1 - De	15,947.82	8,048.94	632.85	356.33	2.289	CC, ES, SF
ABND VERT HURON H UNIT 1 - Wellbore #1 - Design #	18,588.32	8,076.91	173.84	-147.69	0.541	Level 1, CC, ES, SF
EXIST VERT MATHENA 1-15 - Wellbore #1 - Design #1	14,660.61	8,071.95	508.54	252.39	1.985	CC, ES, SF
Sec 22-T1S-R68W						
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	22,534.31	8,032.88	409.40	20.56	1.053	Level 2, CC, ES, SF
EXIST VERT NORTH HURON 1-22 - Wellbore #1 - Desi	20,494.70	8,049.90	154.01	-199.75	0.435	Level 1, CC, ES, SF
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	19,988.40	8,014.90	3,396.82	3,052.50	9.865	CC
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	20,000.00	8,014.90	3,396.84	3,052.32	9.859	ES
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	20,400.00	8,014.90	3,421.67	3,071.30	9.766	SF

<b>Offset Design</b>													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)	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	35.16	1,494.27	1,052.49	1,828.10					
100.00	100.00	63.00	63.00	0.13	0.75	35.16	1,494.27	1,052.49	1,827.73	1,826.85	0.88	2,074.794		
200.00	200.00	163.00	163.00	0.49	2.63	35.16	1,494.27	1,052.49	1,827.73	1,824.60	3.12	585.407		
300.00	300.00	263.00	263.00	0.85	4.79	35.16	1,494.27	1,052.49	1,827.73	1,822.09	5.64	324.158		
400.00	400.00	363.00	363.00	1.21	6.84	35.16	1,494.27	1,052.49	1,827.73	1,819.67	8.05	226.975		
500.00	500.00	463.00	463.00	1.57	8.88	35.16	1,494.27	1,052.49	1,827.73	1,817.28	10.44	174.987		
600.00	600.00	563.00	563.00	1.93	10.90	35.16	1,494.27	1,052.49	1,827.73	1,814.90	12.83	142.473		
700.00	700.00	663.00	663.00	2.29	12.92	35.16	1,494.27	1,052.49	1,827.73	1,812.52	15.21	120.185		
800.00	799.98	762.98	762.98	2.64	14.94	29.74	1,494.27	1,052.49	1,826.21	1,808.63	17.58	103.858		
900.00	899.84	862.84	862.84	3.01	16.95	29.87	1,494.27	1,052.49	1,821.67	1,801.71	19.96	91.278		
1,000.00	999.45	962.45	962.45	3.37	18.96	30.08	1,494.27	1,052.49	1,814.11	1,791.78	22.33	81.254		
1,100.00	1,098.70	1,061.70	1,061.70	3.73	20.96	30.38	1,494.27	1,052.49	1,803.56	1,778.87	24.69	73.047		
1,200.00	1,197.47	1,160.47	1,160.47	4.12	22.95	30.77	1,494.27	1,052.49	1,790.05	1,763.00	27.05	66.180		
1,300.00	1,295.62	1,258.62	1,258.62	4.52	24.92	31.26	1,494.27	1,052.49	1,773.62	1,744.22	29.40	60.327		
1,400.00	1,393.06	1,356.06	1,356.06	4.96	26.89	31.84	1,494.27	1,052.49	1,754.31	1,722.57	31.75	55.262		
1,500.00	1,489.64	1,452.64	1,452.64	5.42	28.83	32.53	1,494.27	1,052.49	1,732.20	1,698.11	34.08	50.821		
1,600.00	1,585.27	1,548.27	1,548.27	5.91	30.75	33.34	1,494.27	1,052.49	1,707.34	1,670.92	36.42	46.882		
1,700.00	1,679.82	1,642.82	1,642.82	6.45	32.66	34.26	1,494.27	1,052.49	1,679.83	1,641.09	38.75	43.355		
1,800.00	1,773.17	1,736.17	1,736.17	7.02	34.54	35.30	1,494.27	1,052.49	1,649.76	1,608.69	41.07	40.170		
1,873.15	1,840.63	1,803.63	1,803.63	7.47	35.89	36.16	1,494.27	1,052.49	1,626.21	1,583.44	42.77	38.024		
1,900.00	1,865.27	1,828.27	1,828.27	7.64	36.39	36.37	1,494.27	1,052.49	1,617.34	1,573.95	43.39	37.273		
2,000.00	1,957.00	1,920.00	1,920.00	8.29	38.23	37.20	1,494.27	1,052.49	1,584.50	1,538.78	45.72	34.657		
2,100.00	2,048.73	2,011.73	2,011.73	8.95	40.08	38.06	1,494.27	1,052.49	1,552.00	1,503.93	48.07	32.288		
2,200.00	2,140.46	2,103.46	2,103.46	9.62	41.92	38.96	1,494.27	1,052.49	1,519.84	1,469.41	50.43	30.136		
2,300.00	2,232.19	2,204.81	2,204.81	10.30	43.96	39.89	1,494.27	1,052.49	1,488.05	1,435.04	53.01	28.072		
2,400.00	2,323.92	2,286.92	2,286.92	11.00	45.62	40.86	1,494.27	1,052.49	1,456.65	1,401.44	55.21	26.382		
2,500.00	2,415.66	2,378.66	2,378.66	11.69	47.46	41.87	1,494.27	1,052.49	1,425.68	1,368.05	57.63	24.738		

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