

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 10-T1S-R68W**

**INTERCHANGE A S22-30-2N**

**ORIGINAL WELLBORE**

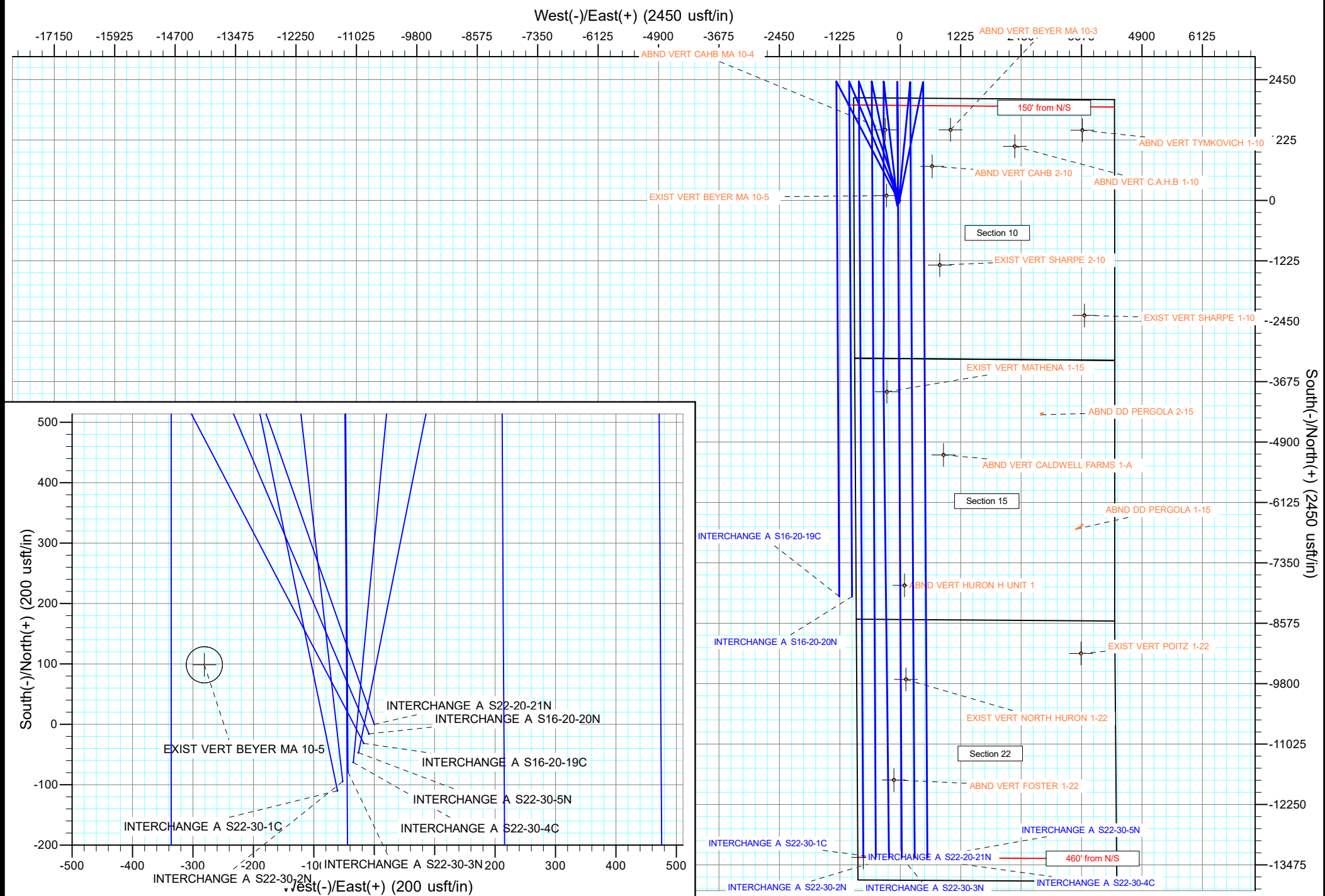
**PROPOSAL 1**

## **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 S22-30-2N
<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 S22-30-2N	<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	23,870.72	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

<b>Summary</b>						
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 10-T1S-R68W						
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,501.01	4,183.40	1,235.16	1,123.46	11.057	CC
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	4,700.00	4,364.92	1,237.85	1,121.02	10.596	ES
ABND VERT BEYER MA 10-3 - Wellbore #1 - Design #1	9,100.00	7,803.00	1,353.85	1,153.34	6.752	SF
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	3,329.53	3,075.73	2,492.07	2,411.55	30.948	CC
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	3,700.00	3,413.69	2,496.69	2,406.59	27.710	ES
ABND VERT C.A.H.B 1-10 - Wellbore #1 - Design #1	9,448.47	7,764.00	2,656.79	2,457.99	13.364	SF
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	2,810.09	2,638.88	781.44	713.63	11.523	CC
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	2,900.00	2,720.90	782.31	712.18	11.156	ES
ABND VERT CAHB 2-10 - Wellbore #1 - Design #1	9,852.78	7,801.00	981.05	781.55	4.918	SF
ABND VERT CAHB MA 10-4 - Wellbore #1 - Design #1	9,113.23	7,821.00	31.16	-169.69	0.155	Level 1, CC, ES, SF
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	3,747.72	3,452.22	3,890.56	3,856.17	113.154	CC
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	4,000.00	3,682.36	3,891.93	3,854.81	104.848	ES
ABND VERT TYMKOVICH 1-10 - Wellbore #1 - Design #	6,500.00	5,180.00	4,125.62	4,066.37	69.628	SF
EXIST VERT BEYER MA 10-5 - Wellbore #1 - Design #1	10,445.74	7,825.99	54.86	-147.20	0.271	Level 1, CC, ES, SF
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	12,875.50	7,755.98	4,067.93	3,841.09	17.934	CC
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	12,900.00	7,755.98	4,068.00	3,840.83	17.907	ES
EXIST VERT SHARPE 1-10 - Wellbore #1 - Design #1	13,615.26	7,755.98	4,134.65	3,898.33	17.496	SF
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	11,855.56	7,787.99	1,136.48	922.40	5.309	CC, ES
EXIST VERT SHARPE 2-10 - Wellbore #1 - Design #1	11,900.00	7,787.99	1,137.35	922.78	5.301	SF
INTERCHANGE A S16-20-19C - ORIGINAL WELLBORE	100.00	100.00	71.97	71.70	267.686	CC, ES
INTERCHANGE A S16-20-19C - ORIGINAL WELLBORE	18,600.00	18,885.49	985.23	665.86	3.085	SF
INTERCHANGE A S16-20-20N - ORIGINAL WELLBORE	200.00	200.00	89.88	88.89	91.171	CC, ES
INTERCHANGE A S16-20-20N - ORIGINAL WELLBORE	18,600.00	18,604.64	689.38	360.10	2.094	SF
INTERCHANGE A S22-20-21N - ORIGINAL WELLBORE	300.00	300.00	107.78	106.07	63.296	CC
INTERCHANGE A S22-20-21N - ORIGINAL WELLBORE	23,871.50	23,868.06	522.66	10.10	1.020	Level 2, ES, SF
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	754.83	755.76	12.99	8.00	2.604	CC
INTERCHANGE A S22-30-1C - ORIGINAL WELLBORE	23,870.72	24,128.21	375.62	-30.45	0.925	Level 1, ES, SF
INTERCHANGE A S22-30-3N - ORIGINAL WELLBORE	870.31	869.26	12.20	6.39	2.101	CC
INTERCHANGE A S22-30-3N - ORIGINAL WELLBORE	23,871.50	23,861.40	258.76	-252.13	0.506	Level 1, ES, SF
INTERCHANGE A S22-30-4C - ORIGINAL WELLBORE	937.31	935.06	23.41	17.11	3.718	CC, ES
INTERCHANGE A S22-30-4C - ORIGINAL WELLBORE	23,871.50	24,106.33	581.14	111.01	1.236	Level 2, SF
INTERCHANGE A S22-30-5N - ORIGINAL WELLBORE	1,005.06	1,001.46	34.03	27.23	5.004	CC, ES
INTERCHANGE A S22-30-5N - ORIGINAL WELLBORE	23,871.50	23,879.50	777.46	266.99	1.523	SF

# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<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 S22-30-2N	<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
Offset Well - Wellbore - Design						
Sec 15-T1S-R68W						
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,255.30	7,500.00	3,876.98	3,709.77	23.186	CC
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	17,300.00	7,500.00	3,877.24	3,709.31	23.089	ES
ABND DD PERGOLA 1-15 - Wellbore #1 - Wellbore #1	18,000.00	7,500.00	3,947.85	3,771.14	22.340	SF
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	14,927.26	7,500.00	3,205.98	3,077.68	24.987	CC
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,000.00	7,500.00	3,206.81	3,077.39	24.779	ES
ABND DD PERGOLA 2-15 - Wellbore #1 - Wellbore #1	15,600.00	7,500.00	3,275.81	3,139.16	23.973	SF
ABND VERT CALDWELL FARMS 1-A - Wellbore #1 - De	15,720.18	7,784.98	1,200.53	928.83	4.419	CC, ES
ABND VERT CALDWELL FARMS 1-A - Wellbore #1 - De	15,800.00	7,784.98	1,203.18	930.59	4.414	SF
ABND VERT HURON H UNIT 1 - Wellbore #1 - Design #	18,355.70	7,812.98	377.70	61.03	1.193	Level 2, CC, ES, SF
EXIST VERT MATHENA 1-15 - Wellbore #1 - Design #1	14,426.01	7,807.98	67.04	-184.16	0.267	Level 1, CC, ES, SF
Sec 22-T1S-R68W						
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	22,300.00	7,768.98	118.00	-266.03	0.307	Level 1, ES, SF
ABND VERT FOSTER 1-22 - Wellbore #1 - Design #1	22,300.18	7,768.98	118.00	-266.03	0.307	Level 1, CC
EXIST VERT NORTH HURON 1-22 - Wellbore #1 - Desi	20,262.16	7,785.98	385.87	36.94	1.106	Level 2, CC, ES, SF
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	19,777.60	7,750.98	3,939.73	3,599.87	11.592	CC
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	19,800.00	7,750.98	3,939.79	3,599.57	11.580	ES
EXIST VERT POITZ 1-22 - Wellbore #1 - Design #1	20,300.00	7,750.98	3,974.21	3,627.39	11.459	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						Warning	
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		
0.00	0.00	0.00	0.00	0.00	0.00	35.04	1,525.60	1,069.86	1,863.71					
100.00	100.00	63.00	63.00	0.13	0.75	35.04	1,525.60	1,069.86	1,863.35	1,862.47	0.88	2,115.230		
200.00	200.00	163.00	163.00	0.49	2.63	35.04	1,525.60	1,069.86	1,863.35	1,860.22	3.12	596.816		
300.00	300.00	263.00	263.00	0.85	4.79	35.04	1,525.60	1,069.86	1,863.35	1,857.71	5.64	330.476		
400.00	400.00	363.00	363.00	1.21	6.84	35.04	1,525.60	1,069.86	1,863.35	1,855.29	8.05	231.399		
500.00	500.00	463.00	463.00	1.57	8.88	35.04	1,525.60	1,069.86	1,863.35	1,852.90	10.44	178.397		
600.00	599.98	562.98	562.98	1.93	10.90	41.57	1,525.60	1,069.86	1,862.04	1,849.21	12.83	145.151		
700.00	699.84	662.84	662.84	2.29	12.92	41.73	1,525.60	1,069.86	1,858.13	1,842.92	15.21	122.189		
800.00	799.45	762.45	762.45	2.65	14.93	42.00	1,525.60	1,069.86	1,851.63	1,834.04	17.58	105.316		
900.00	898.70	861.70	861.70	3.03	16.93	42.37	1,525.60	1,069.86	1,842.57	1,822.61	19.95	92.345		
1,000.00	997.47	960.47	960.47	3.42	18.92	42.86	1,525.60	1,069.86	1,830.99	1,808.67	22.32	82.025		
1,100.00	1,095.62	1,058.62	1,058.62	3.83	20.90	43.46	1,525.60	1,069.86	1,816.95	1,792.26	24.69	73.587		
1,200.00	1,193.06	1,156.06	1,156.06	4.28	22.86	44.18	1,525.60	1,069.86	1,800.52	1,773.46	27.06	66.536		
1,300.00	1,289.64	1,252.64	1,252.64	4.76	24.80	45.02	1,525.60	1,069.86	1,781.77	1,752.34	29.43	60.538		
1,400.00	1,385.27	1,348.27	1,348.27	5.27	26.73	45.98	1,525.60	1,069.86	1,760.82	1,729.01	31.81	55.358		
1,500.00	1,479.82	1,442.82	1,442.82	5.83	28.63	47.08	1,525.60	1,069.86	1,737.77	1,703.58	34.19	50.827		
1,600.00	1,573.17	1,536.17	1,536.17	6.43	30.51	48.31	1,525.60	1,069.86	1,712.75	1,676.17	36.58	46.822		
1,700.00	1,665.21	1,628.21	1,628.21	7.08	32.36	49.68	1,525.60	1,069.86	1,685.92	1,646.94	38.98	43.249		
1,709.20	1,673.61	1,636.61	1,636.61	7.14	32.53	49.81	1,525.60	1,069.86	1,683.36	1,644.16	39.20	42.941		
1,800.00	1,756.44	1,719.44	1,719.44	7.75	34.20	50.74	1,525.60	1,069.86	1,658.32	1,616.92	41.40	40.059		
1,900.00	1,847.67	1,810.67	1,810.67	8.45	36.03	51.80	1,525.60	1,069.86	1,631.27	1,587.43	43.83	37.215		
2,000.00	1,938.89	1,901.89	1,901.89	9.16	37.87	52.88	1,525.60	1,069.86	1,604.81	1,558.51	46.29	34.666		
2,100.00	2,030.11	2,006.89	1,993.11	9.88	39.98	54.00	1,525.60	1,069.86	1,578.97	1,529.91	49.05	32.191		
2,200.00	2,121.34	2,084.34	2,084.34	10.60	41.54	55.15	1,525.60	1,069.86	1,553.78	1,502.50	51.27	30.304		
2,300.00	2,212.56	2,175.56	2,175.56	11.33	43.38	56.34	1,525.60	1,069.86	1,529.27	1,475.48	53.79	28.430		
2,400.00	2,303.78	2,266.78	2,266.78	12.07	45.21	57.56	1,525.60	1,069.86	1,505.48	1,449.15	56.33	26.727		

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