

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 7-T1S-R68W**

**LIVINGSTON S19-25-10N**

**ORIGINAL WELLBORE**

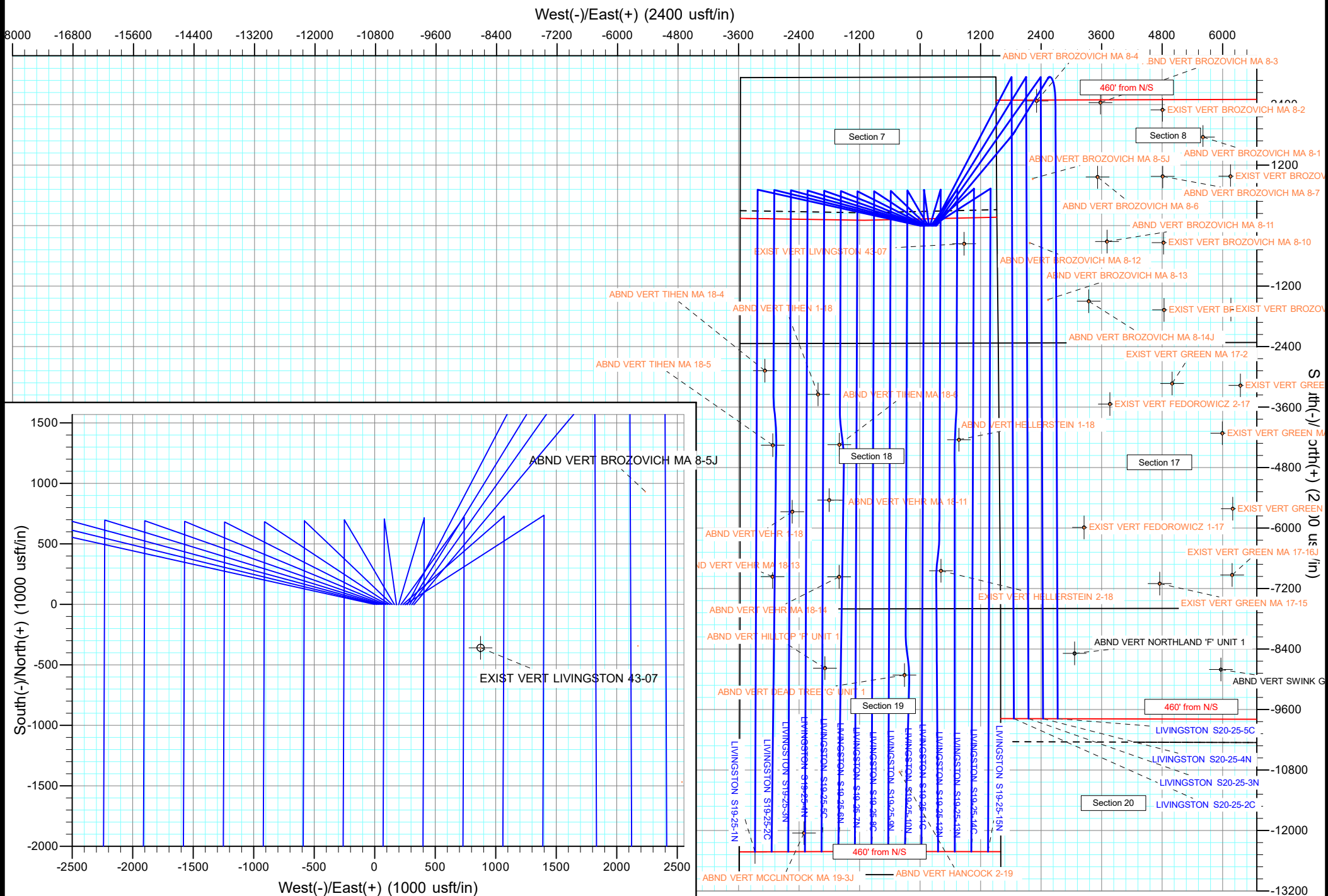
**PROPOSAL 1**

## **Anticollision Report**

**11 January, 2018**



Project: Broomfield County  
Site: Sec 7-T1S-R68W  
Well: LIVINGSTON S19-25-1N  
ORIGINAL WELLBORE  
PROPOSAL 1



# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-10N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Reference Site:</b>	Sec 7-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LIVINGSTON S19-25-10N	<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>	1/11/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	20,984.79	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
<b>Offet Well - Wellbore - Design</b>						
Sec 18-T1S-R68W						
ABND VERT HELLERSTEIN 1-18 - Wellbore #1 - Design	12,806.01	8,121.96	1,041.92	794.49	4.211	CC, ES, SF
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	11,917.02	8,083.97	1,756.24	1,524.09	7.565	CC, ES
ABND VERT TIHEN 1-18 - Wellbore #1 - Design #1	12,100.00	8,083.97	1,765.75	1,530.57	7.508	SF
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,451.09	8,016.97	2,811.85	2,588.41	12.585	CC
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,500.00	8,016.97	2,812.28	2,588.02	12.540	ES
ABND VERT TIHEN MA 18-4 - Wellbore #1 - Design #1	11,900.00	8,016.97	2,847.46	2,617.03	12.357	SF
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	12,929.44	8,048.96	2,649.34	2,401.33	10.683	CC
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,000.00	8,048.96	2,650.28	2,401.02	10.633	ES
ABND VERT TIHEN MA 18-5 - Wellbore #1 - Design #1	13,300.00	8,048.95	2,675.13	2,421.15	10.533	SF
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	12,913.51	8,114.96	1,329.22	1,080.15	5.337	CC, ES
ABND VERT TIHEN MA 18-6 - Wellbore #1 - Design #1	13,000.00	8,114.96	1,332.03	1,081.42	5.315	SF
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,246.64	8,084.95	2,257.56	2,120.08	16.421	CC
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,300.00	8,084.95	2,258.19	2,119.73	16.309	ES
ABND VERT VEHR 1-18 - Wellbore #1 - Design #1	14,600.00	8,084.94	2,285.05	2,142.15	15.991	SF
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,014.38	8,107.95	1,526.84	1,259.41	5.709	CC, ES
ABND VERT VEHR MA 18-11 - Wellbore #1 - Design #1	14,100.00	8,107.95	1,529.24	1,260.27	5.686	SF
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,537.63	8,139.93	2,645.14	2,485.34	16.553	CC
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	15,600.00	8,139.93	2,645.87	2,484.93	16.440	ES
ABND VERT VEHR MA 18-13 - Wellbore #1 - Design #1	16,000.00	8,139.93	2,685.25	2,518.67	16.120	SF
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,536.28	8,119.93	1,324.55	1,030.83	4.510	CC, ES
ABND VERT VEHR MA 18-14 - Wellbore #1 - Design #1	15,600.00	8,119.93	1,326.08	1,031.19	4.497	SF
EXIST VERT HELLERSTEIN 2-18 - Wellbore #1 - Design	15,407.56	8,049.94	694.96	404.86	2.396	CC, ES, SF
Sec 19-T1S-R68W						
ABND VERT DEAD TREE 'G' UNIT 1 - Wellbore #1 - De	17,480.80	8,052.92	93.26	-232.83	0.286	Level 1, CC, ES, SF
ABND VERT HANCOCK 2-19 - Wellbore #1 - Design #1	19,403.44	8,028.92	145.53	-213.66	0.405	Level 1, CC, ES, SF
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,089.84	8,064.92	1,654.07	1,336.98	5.216	CC
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,200.00	8,064.92	1,656.30	1,335.74	5.167	ES
ABND VERT HILLTOP 'F' UNIT 1 - Wellbore #1 - Design	17,400.00	8,064.92	1,668.27	1,343.18	5.132	SF
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,669.02	8,057.92	2,007.87	1,626.03	5.258	CC
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,700.00	8,057.92	2,008.11	1,625.76	5.252	ES
ABND VERT MCCLINTOCK MA 19-3J - Wellbore #1 - De	20,800.00	8,057.92	2,012.14	1,628.49	5.245	SF

# Anticollision Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-10N
<b>Project:</b>	Broomfield County	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Reference Site:</b>	Sec 7-T1S-R68W	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LIVINGSTON S19-25-10N	<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 7-T1S-R68W						
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	1,000.00	1,012.00	797.65	774.34	34.220	CC
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	1,100.00	1,111.98	799.12	773.44	31.118	ES
EXIST VERT LIVINGSTON 43-07 - Wellbore #1 - Design	8,918.11	8,070.00	1,129.29	936.00	5.843	SF
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	1,000.00	1,000.00	17.94	11.22	2.669	CC, ES
LIVINGSTON S19-25-11C - ORIGINAL WELLBORE - PR	20,984.79	21,215.68	410.40	26.31	1.069	Level 2, SF
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	1,000.00	1,000.00	35.87	29.15	5.337	CC, ES
LIVINGSTON S19-25-12N - ORIGINAL WELLBORE - PR	20,984.79	20,986.87	660.27	209.13	1.464	Level 3, SF
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	1,000.00	1,000.00	54.09	47.37	8.047	CC, ES
LIVINGSTON S19-25-13N - ORIGINAL WELLBORE - PR	20,984.79	21,019.04	990.31	539.13	2.195	SF
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	1,000.00	1,000.00	72.02	65.30	10.716	CC, ES
LIVINGSTON S19-25-14C - ORIGINAL WELLBORE - PR	20,984.79	21,309.97	1,342.95	897.96	3.018	SF
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	1,000.00	1,000.00	89.96	83.24	13.384	CC, ES
LIVINGSTON S19-25-15N - ORIGINAL WELLBORE - PR	20,984.79	21,136.91	1,650.61	1,199.71	3.661	SF
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	0.00	25.00	161.98			
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	100.00	123.69	162.08	161.73	456.207	ES
LIVINGSTON S19-25-1N - ORIGINAL WELLBORE - PR	20,984.79	21,728.04	2,971.54	2,518.94	6.565	SF
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	105.56	130.56	144.05	143.65	361.649	CC
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	200.00	223.83	144.15	143.08	134.610	ES
LIVINGSTON S19-25-2C - ORIGINAL WELLBORE - PR	20,984.79	21,795.02	2,650.04	2,200.01	5.889	SF
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	125.83	124.13	73.899	CC, ES
LIVINGSTON S19-25-3N - ORIGINAL WELLBORE - PR	20,984.79	21,466.06	2,311.15	1,859.13	5.113	SF
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	400.00	400.00	107.89	105.47	44.590	CC, ES
LIVINGSTON S19-25-4N - ORIGINAL WELLBORE - PR	20,984.79	21,360.10	1,980.90	1,529.08	4.384	SF
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	500.00	500.00	89.96	86.82	28.680	CC, ES
LIVINGSTON S19-25-5C - ORIGINAL WELLBORE - PR	20,984.79	21,484.83	1,668.82	1,222.23	3.737	SF
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	600.00	600.00	72.02	68.17	18.690	CC, ES
LIVINGSTON S19-25-6N - ORIGINAL WELLBORE - PR	20,984.79	21,150.92	1,320.45	869.23	2.926	SF
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	700.00	700.00	54.09	49.52	11.834	CC, ES
LIVINGSTON S19-25-7N - ORIGINAL WELLBORE - PR	20,900.00	24,453.47	991.94	483.04	1.949	SF
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	800.00	800.00	35.87	30.58	6.784	CC, ES
LIVINGSTON S19-25-8C - ORIGINAL WELLBORE - PR	20,984.79	21,265.24	703.92	276.34	1.646	SF
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	900.00	900.00	17.94	11.93	2.987	CC
LIVINGSTON S19-25-9N - ORIGINAL WELLBORE - PR	20,984.79	20,996.02	330.28	-120.94	0.732	Level 1, ES, SF
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	400.00	400.00	107.90	105.48	44.591	CC, ES
LIVINGSTON S20-25-2C - ORIGINAL WELLBORE - PR	18,500.00	21,633.46	2,117.62	1,740.85	5.620	SF
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	300.00	300.00	126.11	124.41	74.063	CC, ES
LIVINGSTON S20-25-3N - ORIGINAL WELLBORE - PR	18,500.00	21,479.55	2,392.95	2,013.74	6.310	SF
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	200.00	200.00	144.05	143.06	146.121	CC, ES
LIVINGSTON S20-25-4N - ORIGINAL WELLBORE - PR	18,500.00	21,546.10	2,682.53	2,303.38	7.075	SF
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	100.00	100.00	161.98	161.71	602.496	CC, ES
LIVINGSTON S20-25-5C - ORIGINAL WELLBORE - PR	18,600.00	21,756.63	2,991.51	2,612.22	7.887	SF

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.00 usft
Survey Program: 0-INC												<b>Offset Well Error:</b>	0.00 usft
Reference													
Measured Depth (usft)		Vertical Depth (usft)	Offset	Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Reference		Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset		+N/-S (usft)	+E/-W (usft)					
0.00		0.00	64.00	64.00	0.00	0.76	171.82	-4,245.23	610.47	4,288.90			
100.00		100.00	164.00	164.00	0.13	2.65	171.82	-4,245.23	610.47	4,288.90	4,286.11	2.79	1,539.114
200.00		200.00	264.00	264.00	0.49	4.81	171.82	-4,245.23	610.47	4,288.90	4,283.60	5.30	809.121
300.00		300.00	364.00	364.00	0.85	6.86	171.82	-4,245.23	610.47	4,288.90	4,281.18	7.71	555.954

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