

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

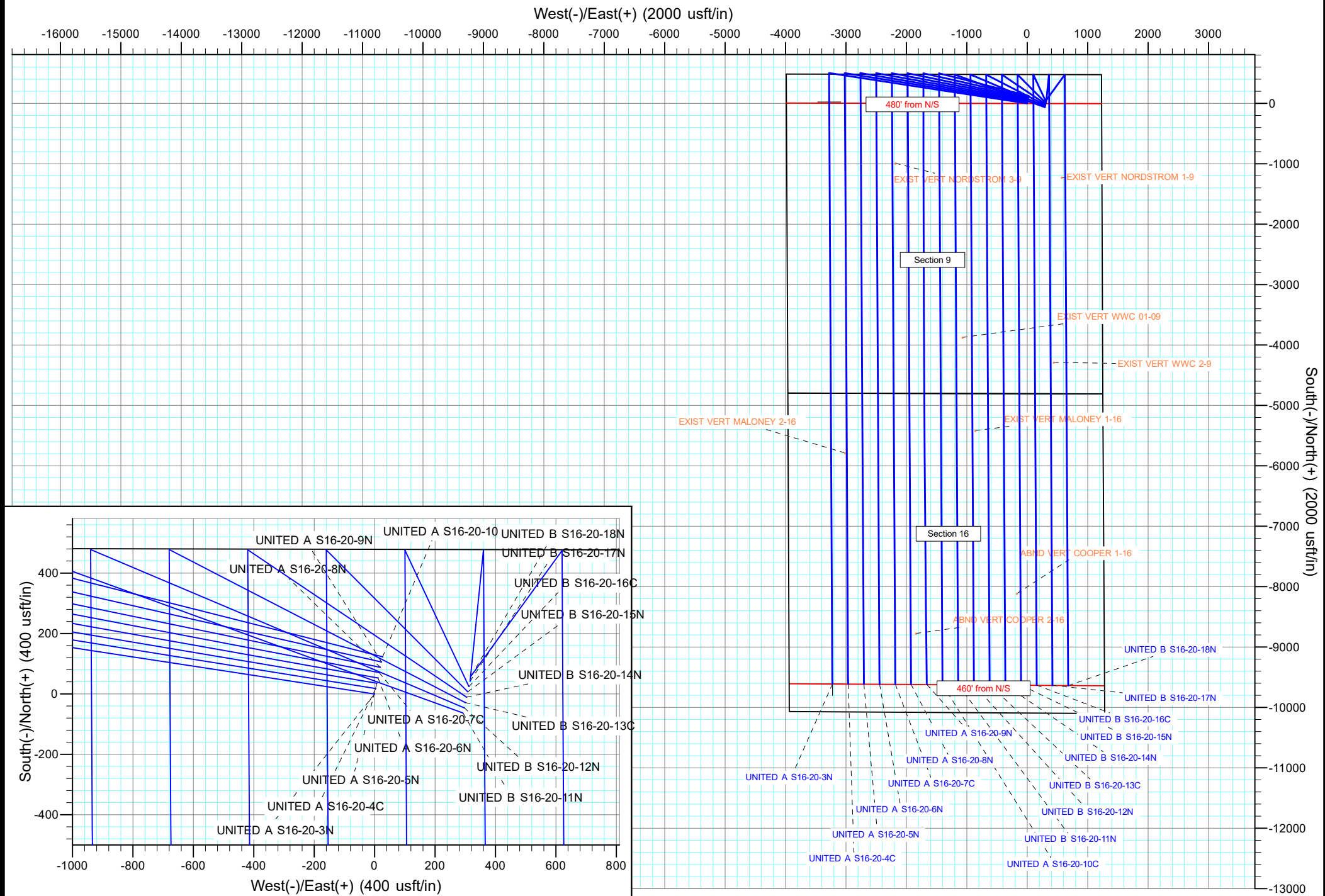
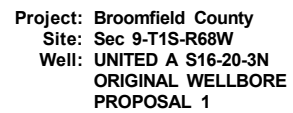
UNITED B S16-20-14N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

18 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED B S16-20-14N
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 S16-20-14N	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	17,903.07	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	16,389.81	7,928.87	200.67	-107.45	0.651	Level 1, CC, ES, SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,040.30	7,935.86	1,473.44	1,153.85	4.610	CC
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,100.00	7,935.86	1,474.65	1,153.80	4.596	ES, SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,687.41	7,925.91	470.35	208.85	1.799	CC
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,700.00	7,925.91	470.52	208.62	1.797	ES, SF
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,046.52	7,963.91	2,630.58	2,362.20	9.802	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,100.00	7,963.91	2,631.13	2,361.69	9.765	ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,400.00	7,963.90	2,654.23	2,379.65	9.667	SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	9,506.47	7,928.98	982.75	785.94	4.993	CC, ES, SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,257.59	7,969.98	1,770.49	1,575.52	9.081	CC
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,300.00	7,969.98	1,771.00	1,575.51	9.059	ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,500.00	7,969.98	1,787.01	1,588.96	9.023	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,145.32	7,936.94	677.33	441.44	2.871	CC, ES
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,200.00	7,936.94	679.53	442.34	2.865	SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,565.55	7,918.93	830.90	588.43	3.427	CC, ES, SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	1,909.69	1,878.72	199.43	186.37	15.263	CC, ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROPO	17,903.33	18,321.76	1,071.86	728.97	3.126	SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	103.00	304.78	304.50	1,116.857	CC, ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	17,903.33	18,664.96	2,861.30	2,508.53	8.111	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.00	303.00	302.01	300.30	176.253	CC, ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	17,903.33	18,797.20	2,613.82	2,263.67	7.465	SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	500.00	503.00	300.55	297.40	95.493	CC, ES
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	17,903.33	18,471.69	2,341.02	1,988.27	6.637	SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	1,093.45	1,058.72	299.78	292.60	41.717	CC
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	1,100.00	1,064.63	299.79	292.56	41.470	ES
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	17,903.33	18,381.38	2,080.88	1,728.12	5.899	SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	1,296.65	1,262.86	274.18	265.54	31.725	CC
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	1,300.00	1,265.91	274.19	265.52	31.644	ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	17,903.33	18,535.05	1,838.78	1,490.26	5.276	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,500.25	1,467.39	249.01	238.91	24.631	CC, ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	17,903.33	18,214.22	1,560.60	1,207.83	4.424	SF
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	1,704.58	1,672.68	223.88	212.29	19.324	CC, ES
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	17,903.33	18,139.72	1,300.45	947.71	3.687	SF
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	303.43	303.60	53.57	51.84	30.949	CC
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	400.00	399.66	54.23	51.80	22.233	ES

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 S16-20-14N
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 S16-20-14N	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 S16-20-11N - ORIGINAL WELLBORE - PROP	17,903.33	18,020.08	780.44	429.66	2.225	SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	497.60	497.76	35.49	32.37	11.394	CC
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	500.00	500.15	35.49	32.35	11.332	ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	17,903.33	17,978.55	520.27	169.71	1.484	Level 3, SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	664.13	664.22	17.66	13.35	4.100	CC
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	700.00	700.00	17.81	13.24	3.902	ES
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	17,903.33	18,194.02	367.79	98.98	1.368	Level 3, SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	893.21	893.07	16.69	10.75	2.807	CC
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	17,903.05	17,878.51	259.89	-91.21	0.740	Level 1, ES, SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	975.73	975.30	33.23	26.69	5.081	CC
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	1,000.00	1,000.55	33.32	26.60	4.959	ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	17,903.04	18,120.94	581.46	257.63	1.796	SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	1,038.50	1,037.72	50.23	43.23	7.180	CC, ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	17,903.05	17,857.83	780.16	428.70	2.220	SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	100.00	71.91	71.65	267.486	CC, ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	17,903.02	17,855.16	1,040.25	688.69	2.959	SF

Offset Design													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)	+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	-176.65	-8,102.16	-474.84	8,116.07					
100.00	100.00	84.00	84.00	0.13	1.00	-176.65	-8,102.16	-474.84	8,116.06	8,114.93	1.13	7,183.940		
200.00	200.00	184.00	184.00	0.49	3.11	-176.65	-8,102.16	-474.84	8,116.06	8,112.45	3.60	2,252.212		
300.00	300.00	284.00	284.00	0.85	5.22	-176.65	-8,102.16	-474.84	8,116.06	8,109.98	6.07	1,336.005		
400.00	400.00	384.00	384.00	1.21	7.27	-176.65	-8,102.16	-474.84	8,116.06	8,107.58	8.48	956.924		
500.00	500.00	484.00	484.00	1.57	9.30	-176.65	-8,102.16	-474.84	8,116.06	8,105.19	10.87	746.575		
600.00	600.00	584.00	584.00	1.93	11.33	-176.65	-8,102.16	-474.84	8,116.06	8,102.80	13.25	612.379		
700.00	700.00	684.00	684.00	2.29	13.35	-176.65	-8,102.16	-474.84	8,116.06	8,100.43	15.63	519.207		
800.00	799.98	783.98	783.98	2.64	15.36	-120.60	-8,102.16	-474.84	8,116.95	8,098.94	18.00	450.840		
900.00	899.84	883.84	883.84	3.00	17.38	-120.59	-8,102.16	-474.84	8,119.61	8,099.24	20.37	398.553		
1,000.00	999.45	983.45	983.45	3.36	19.38	-120.56	-8,102.16	-474.84	8,124.06	8,101.32	22.74	357.232		
1,091.77	1,090.55	1,074.55	1,074.55	3.70	21.22	-120.53	-8,102.16	-474.84	8,129.71	8,104.79	24.92	326.271		
1,100.00	1,098.70	1,082.70	1,082.70	3.73	21.38	-120.54	-8,102.16	-474.84	8,130.28	8,105.17	25.11	323.751		
1,200.00	1,197.77	1,181.77	1,181.77	4.12	23.38	-120.62	-8,102.16	-474.84	8,137.27	8,109.78	27.49	296.049		
1,300.00	1,296.84	1,280.84	1,280.84	4.51	25.37	-120.70	-8,102.16	-474.84	8,144.27	8,114.40	29.87	272.701		
1,400.00	1,395.90	1,379.90	1,379.90	4.90	27.37	-120.78	-8,102.16	-474.84	8,151.28	8,119.03	32.25	252.767		
1,500.00	1,494.97	1,478.97	1,478.97	5.31	29.36	-120.87	-8,102.16	-474.84	8,158.32	8,123.68	34.63	235.555		
1,600.00	1,594.04	1,578.04	1,578.04	5.71	31.35	-120.95	-8,102.16	-474.84	8,165.37	8,128.34	37.02	220.548		
1,700.00	1,693.10	1,677.10	1,677.10	6.12	33.35	-121.03	-8,102.16	-474.84	8,172.43	8,133.02	39.41	207.350		
1,800.00	1,792.17	1,776.17	1,776.17	6.53	35.34	-121.11	-8,102.16	-474.84	8,179.52	8,137.71	41.81	195.654		
1,900.00	1,891.23	1,875.23	1,875.23	6.94	37.33	-121.19	-8,102.16	-474.84	8,186.62	8,142.42	44.20	185.220		
2,000.00	1,990.30	1,974.30	1,974.30	7.35	39.33	-121.27	-8,102.16	-474.84	8,193.74	8,147.14	46.59	175.853		
2,100.00	2,089.37	2,073.37	2,073.37	7.77	41.32	-121.35	-8,102.16	-474.84	8,200.87	8,151.88	48.99	167.400		
2,200.00	2,188.43	2,172.43	2,172.43	8.18	43.31	-121.43	-8,102.16	-474.84	8,208.02	8,156.63	51.39	159.734		
2,300.00	2,287.50	2,271.50	2,271.50	8.60	45.31	-121.51	-8,102.16	-474.84	8,215.19	8,161.40	53.78	152.749		
2,400.00	2,386.57	2,370.57	2,370.57	9.01	47.30	-121.59	-8,102.16	-474.84	8,222.37	8,166.19	56.18	146.359		
2,500.00	2,485.63	2,469.63	2,469.63	9.43	49.29	-121.67	-8,102.16	-474.84	8,229.57	8,170.99	58.58	140.491		

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