

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

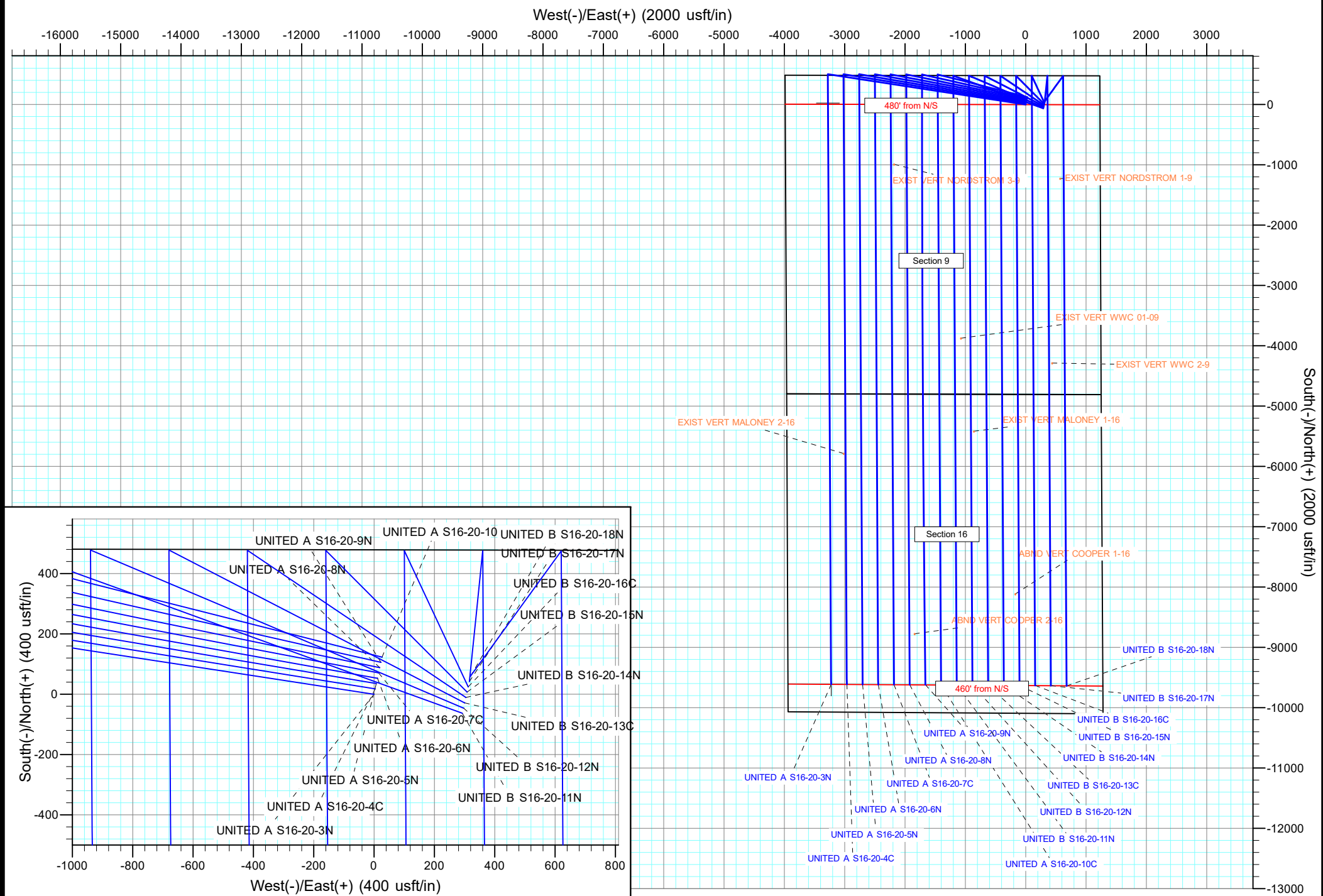
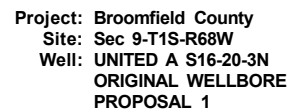
UNITED A S16-20-6N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

18 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED A S16-20-6N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5282.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5282.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	UNITED A S16-20-6N	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	18,381.33	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	16,892.57	7,925.88	2,281.77	1,971.71	7.359	CC
ABND VERT COOPER 1-16 - Wellbore #1 - Design #1	16,900.00	7,925.88	2,281.78	1,971.69	7.358	ES
ABND VERT COOPER 1-16 - Wellbore #1 - Design #1	17,000.00	7,925.87	2,284.30	1,973.81	7.357	SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,500.00	7,932.87	609.30	287.00	1.890	SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,543.32	7,932.87	607.76	286.28	1.891	CC, ES
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	14,190.27	7,922.92	1,610.33	1,346.56	6.105	CC, ES
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	14,200.00	7,922.92	1,610.36	1,346.58	6.105	SF
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,549.72	7,960.91	549.85	279.25	2.032	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,600.00	7,960.91	552.15	278.69	2.019	ES, SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	700.00	681.00	1,395.70	1,380.13	89.634	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	800.00	780.98	1,396.68	1,378.74	77.851	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	10,300.00	7,925.98	3,076.56	2,873.95	15.185	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,760.65	7,966.98	309.50	110.61	1.556	CC, ES, SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,648.22	7,933.94	1,403.11	1,164.61	5.883	CC, ES, SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,068.21	7,915.93	2,911.41	2,666.43	11.885	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,100.00	7,915.93	2,911.58	2,666.36	11.873	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,300.00	7,915.93	2,920.62	2,674.00	11.843	SF
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	700.00	700.00	71.91	67.34	15.734	CC
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	900.00	900.16	72.50	66.51	12.102	ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	18,381.38	18,313.49	1,072.25	722.62	3.067	SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	100.00	54.05	53.79	201.056	CC
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	200.00	199.84	54.19	53.21	55.204	ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	18,381.38	18,664.96	780.43	426.07	2.202	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.00	300.00	35.78	34.07	21.010	CC
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	18,269.60	38,059.19	581.23	-40.01	0.936	Level 1, ES, SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	500.00	500.00	17.92	14.78	5.713	CC
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	18,381.38	18,474.98	260.12	-93.60	0.735	Level 1, ES, SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	700.00	700.00	18.28	13.70	3.999	CC
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	800.00	800.02	18.43	13.15	3.489	ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	18,381.38	18,532.71	367.79	77.54	1.267	Level 3, SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	700.00	700.00	36.14	31.56	7.906	CC
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	800.00	800.02	36.24	30.96	6.862	ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	18,381.38	18,209.08	520.18	166.42	1.470	Level 3, SF
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	700.00	700.00	54.05	49.48	11.827	CC
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	900.00	900.16	54.76	48.77	9.142	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 A S16-20-6N
Project:	Broomfield County	TVD Reference:	KB 25' @ 5282.00usft
Reference Site:	Sec 9-T1S-R68W	MD Reference:	KB 25' @ 5282.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	UNITED A S16-20-6N	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 A S16-20-9N - ORIGINAL WELLBORE - PROPO	18,381.38	18,126.48	780.33	426.89	2.208	SF
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	1,379.28	1,430.30	156.57	146.82	16.054	CC
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	1,400.00	1,451.00	156.65	146.74	15.806	ES
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	18,381.38	18,011.76	1,300.41	948.43	3.695	SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	1,273.21	1,322.34	216.78	207.94	24.536	CC
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	1,300.00	1,349.10	216.91	207.87	24.011	ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	18,381.38	17,963.48	1,560.55	1,208.65	4.435	SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	1,148.74	1,209.52	266.57	258.64	33.627	CC, ES
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	18,381.38	18,171.35	1,839.52	1,488.61	5.242	SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	1,061.12	1,096.29	299.78	292.58	41.615	CC, ES
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	18,381.38	17,883.26	2,080.78	1,728.70	5.910	SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	700.00	703.00	300.55	295.97	65.604	CC, ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,381.38	17,863.84	2,340.96	1,988.56	6.643	SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	700.00	703.00	302.01	297.43	65.922	CC, ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	18,381.38	18,107.10	2,614.35	2,262.02	7.420	SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	700.00	703.00	304.77	300.19	66.526	CC, ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	18,381.38	17,842.25	2,861.22	2,508.49	8.112	SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	97.00	308.31	308.05	1,164.227	CC, ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	18,381.38	17,831.57	3,121.24	2,768.62	8.852	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	-178.73	-8,165.54	-181.64	8,167.59				
100.00	100.00	81.00	81.00	0.13	0.96	-178.73	-8,165.54	-181.64	8,167.56	8,166.47	1.09	7,464.395	
200.00	200.00	181.00	181.00	0.49	3.04	-178.73	-8,165.54	-181.64	8,167.56	8,164.03	3.53	2,310.605	
300.00	300.00	281.00	281.00	0.85	5.16	-178.73	-8,165.54	-181.64	8,167.56	8,161.55	6.01	1,358.427	
400.00	400.00	381.00	381.00	1.21	7.21	-178.73	-8,165.54	-181.64	8,167.56	8,159.14	8.42	970.004	
500.00	500.00	481.00	481.00	1.57	9.24	-178.73	-8,165.54	-181.64	8,167.56	8,156.75	10.81	755.543	
600.00	600.00	581.00	581.00	1.93	11.27	-178.73	-8,165.54	-181.64	8,167.56	8,154.37	13.19	619.100	
700.00	700.00	681.00	681.00	2.29	13.29	-178.73	-8,165.54	-181.64	8,167.56	8,151.99	15.57	524.535	
800.00	799.98	780.98	780.98	2.64	15.30	-98.87	-8,165.54	-181.64	8,167.83	8,149.89	17.94	455.278	
900.00	899.84	880.84	880.84	2.99	17.32	-98.89	-8,165.54	-181.64	8,168.64	8,148.34	20.30	402.320	
1,000.00	999.45	980.45	980.45	3.35	19.32	-98.92	-8,165.54	-181.64	8,170.00	8,147.32	22.67	360.385	
1,100.00	1,098.70	1,079.70	1,079.70	3.72	21.32	-98.97	-8,165.54	-181.64	8,171.90	8,146.86	25.04	326.335	
1,200.00	1,197.47	1,178.47	1,178.47	4.11	23.31	-99.02	-8,165.54	-181.64	8,174.38	8,146.96	27.42	298.112	
1,300.00	1,295.62	1,276.62	1,276.62	4.52	25.29	-99.09	-8,165.54	-181.64	8,177.44	8,147.63	29.81	274.310	
1,400.00	1,393.06	1,374.06	1,374.06	4.97	27.25	-99.17	-8,165.54	-181.64	8,181.10	8,148.89	32.22	253.942	
1,500.00	1,489.64	1,470.64	1,470.64	5.45	29.19	-99.26	-8,165.54	-181.64	8,185.39	8,150.75	34.64	236.293	
1,600.00	1,585.27	1,566.27	1,566.27	5.98	31.12	-99.36	-8,165.54	-181.64	8,190.33	8,153.24	37.09	220.835	
1,700.00	1,679.82	1,660.82	1,660.82	6.55	33.02	-99.46	-8,165.54	-181.64	8,195.95	8,156.39	39.56	207.173	
1,800.00	1,773.17	1,754.17	1,754.17	7.18	34.90	-99.56	-8,165.54	-181.64	8,202.28	8,160.22	42.06	195.000	
1,900.00	1,865.21	1,846.21	1,846.21	7.87	36.75	-99.67	-8,165.54	-181.64	8,209.36	8,164.76	44.60	184.081	
1,950.78	1,911.42	1,907.58	1,892.42	8.25	37.98	-99.73	-8,165.54	-181.64	8,213.25	8,167.05	46.20	177.777	
2,000.00	1,956.02	1,937.02	1,937.02	8.62	38.58	-99.86	-8,165.54	-181.64	8,217.14	8,169.98	47.16	174.238	
2,100.00	2,046.64	2,027.64	2,027.64	9.40	40.40	-100.12	-8,165.54	-181.64	8,225.21	8,175.46	49.75	165.333	
2,200.00	2,137.26	2,118.26	2,118.26	10.20	42.22	-100.39	-8,165.54	-181.64	8,233.49	8,181.13	52.36	157.261	
2,300.00	2,227.88	2,208.88	2,208.88	11.01	44.05	-100.65	-8,165.54	-181.64	8,241.98	8,187.00	54.97	149.923	

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