

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

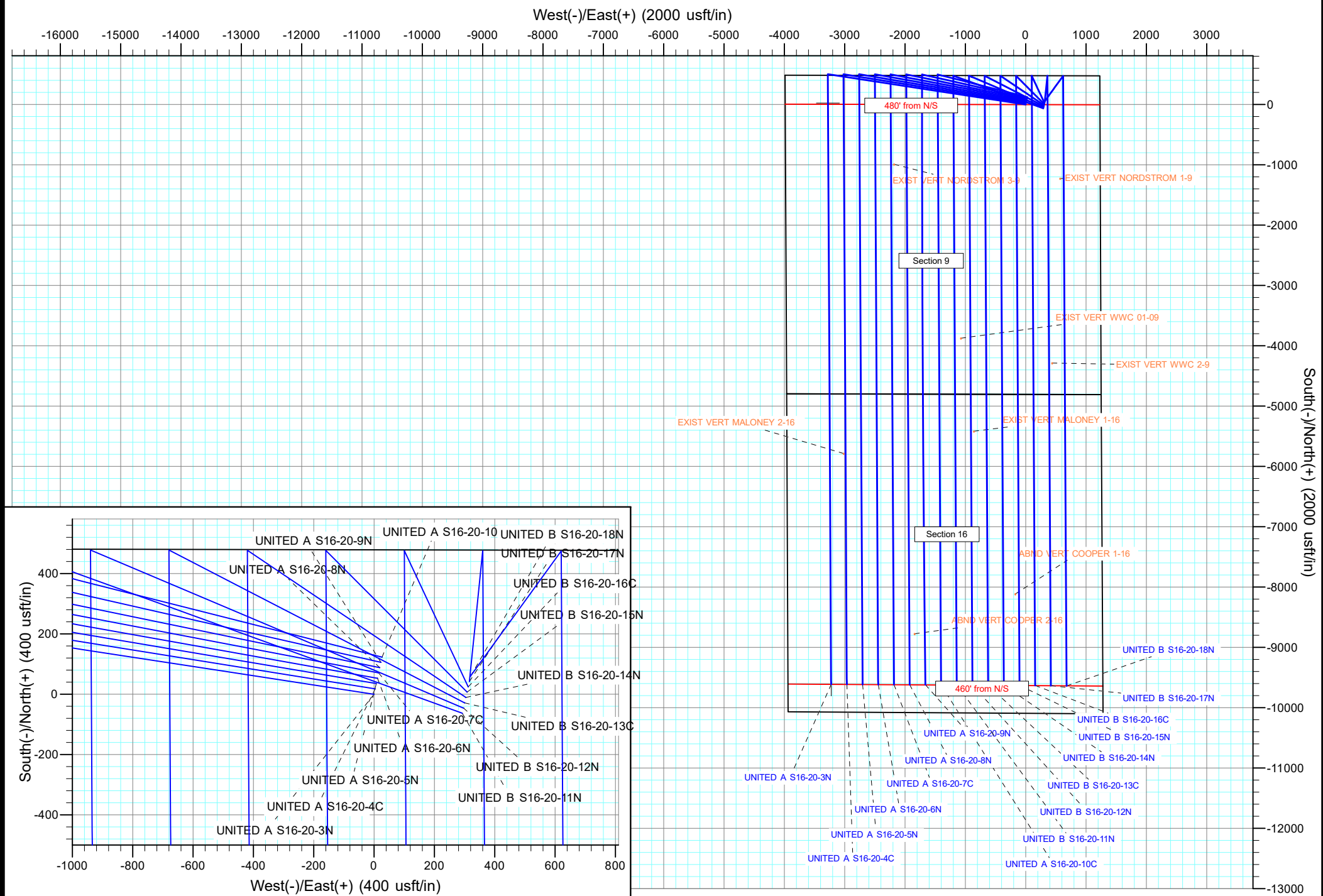
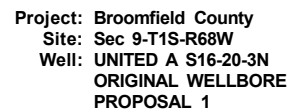
UNITED A S16-20-10C

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

18 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED A S16-20-10C
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 S16-20-10C	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	18,321.10	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	16,822.46	8,185.87	1,241.18	925.78	3.935	CC, ES, SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,473.10	8,207.14	432.87	105.74	1.323	Level 3, CC
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,500.00	8,207.14	433.71	105.34	1.321	Level 3, ES, SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	14,100.00	8,182.92	570.25	301.17	2.119	SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	14,120.11	8,182.92	569.90	301.00	2.119	CC, ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,479.44	8,220.91	1,590.30	1,314.54	5.767	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,500.00	8,220.91	1,590.44	1,314.12	5.756	ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,700.00	8,220.91	1,605.53	1,324.69	5.717	SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,500.00	1,481.00	1,454.60	1,420.04	42.097	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	1,600.00	1,580.98	1,455.63	1,418.71	39.429	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	10,100.00	8,185.98	2,028.99	1,823.39	9.869	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,690.42	8,226.98	730.67	527.99	3.605	CC
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,700.00	8,226.98	730.74	527.85	3.602	ES, SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,578.05	8,206.06	362.77	119.12	1.489	Level 3, CC, ES, SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,998.13	8,175.93	1,871.04	1,621.09	7.486	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,000.00	8,175.93	1,871.04	1,621.08	7.485	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	13,100.00	8,175.93	1,873.81	1,623.14	7.475	SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	100.00	125.97	125.70	468.542	CC
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	300.00	299.15	126.58	124.88	74.445	ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	18,321.76	18,664.96	1,839.18	1,484.76	5.189	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.00	300.00	107.69	105.99	63.245	CC
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	500.00	499.28	108.28	105.16	34.655	ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	18,200.00	37,062.49	1,560.52	891.32	2.332	SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	500.00	500.00	89.83	86.70	28.640	CC
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	700.00	699.39	90.43	85.87	19.851	ES
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	18,321.76	18,471.69	1,326.17	973.73	3.763	SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	700.00	700.00	71.91	67.34	15.734	CC
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	900.00	899.50	72.49	66.51	12.107	ES
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	18,321.76	18,381.38	1,072.29	722.21	3.063	SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	900.00	900.00	53.64	47.64	8.933	CC
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	1,100.00	1,099.59	54.24	46.82	7.309	ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	18,321.76	18,535.05	780.15	425.55	2.200	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,100.10	1,100.10	35.78	28.34	4.810	CC
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,300.00	1,299.65	36.52	27.66	4.124	ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	18,321.76	18,214.22	581.38	249.76	1.753	SF

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 S16-20-10C
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 S16-20-10C	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	1,341.78	1,341.78	17.86	8.69	1.948	CC
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	1,400.00	1,399.97	17.92	8.33	1.870	ES
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	18,321.76	18,139.72	367.60	82.84	1.291	Level 3, SF
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	3,381.11	3,411.38	52.33	22.94	1.781	CC
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	3,500.00	3,530.12	52.66	22.66	1.756	ES
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	18,321.76	18,019.84	365.68	96.63	1.359	Level 3, SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	2,141.93	2,177.61	78.62	62.96	5.022	CC, ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	18,321.76	17,969.75	580.29	260.71	1.816	SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	1,977.60	2,011.94	146.63	132.81	10.609	CC
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	2,000.00	2,034.32	146.72	132.73	10.493	ES
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	18,321.76	18,181.32	780.39	428.11	2.215	SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	1,878.72	1,909.70	199.43	186.37	15.263	CC
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	1,900.00	1,930.95	199.51	186.29	15.092	ES
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	18,321.76	17,891.88	1,071.80	729.35	3.130	SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	1,763.08	1,786.31	248.24	236.01	20.305	CC
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	1,800.00	1,823.18	248.48	235.99	19.896	ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,321.76	17,870.01	1,325.84	979.75	3.831	SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	1,641.34	1,653.47	283.03	271.68	24.955	CC, ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	18,321.76	18,113.84	1,560.83	1,207.75	4.421	SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	1,529.46	1,529.78	299.30	288.78	28.467	CC, ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	18,321.76	17,849.00	1,839.00	1,489.37	5.260	SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	97.00	299.88	299.61	1,132.377	CC
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	200.00	193.05	300.51	299.55	312.558	ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	18,321.76	17,842.30	2,096.81	1,746.34	5.983	SF

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-INC													Offset Well Error:	0.00 usft
Reference														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis 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	-178.63	-8,235.85	-196.77	8,238.22					
100.00	100.00	81.00	81.00	0.13	0.96	-178.63	-8,235.85	-196.77	8,238.20	8,237.10	1.09	7,528.949		
200.00	200.00	181.00	181.00	0.49	3.04	-178.63	-8,235.85	-196.77	8,238.20	8,234.66	3.53	2,330.587		
300.00	300.00	281.00	281.00	0.85	5.16	-178.63	-8,235.85	-196.77	8,238.20	8,232.19	6.01	1,370.175		
400.00	400.00	381.00	381.00	1.21	7.21	-178.63	-8,235.85	-196.77	8,238.20	8,229.78	8.42	978.393		
500.00	500.00	481.00	481.00	1.57	9.24	-178.63	-8,235.85	-196.77	8,238.20	8,227.39	10.81	762.078		
600.00	600.00	581.00	581.00	1.93	11.27	-178.63	-8,235.85	-196.77	8,238.20	8,225.01	13.19	624.454		
700.00	700.00	681.00	681.00	2.29	13.29	-178.63	-8,235.85	-196.77	8,238.20	8,222.63	15.57	529.071		
800.00	800.00	781.00	781.00	2.64	15.30	-178.63	-8,235.85	-196.77	8,238.20	8,220.25	17.95	459.027		
900.00	900.00	881.00	881.00	3.00	17.32	-178.63	-8,235.85	-196.77	8,238.20	8,217.88	20.32	405.392		
1,000.00	1,000.00	981.00	981.00	3.36	19.33	-178.63	-8,235.85	-196.77	8,238.20	8,215.50	22.69	362.997		
1,100.00	1,100.00	1,081.00	1,081.00	3.72	21.35	-178.63	-8,235.85	-196.77	8,238.20	8,213.13	25.07	328.639		
1,200.00	1,200.00	1,181.00	1,181.00	4.08	23.36	-178.63	-8,235.85	-196.77	8,238.20	8,210.76	27.44	300.229		
1,300.00	1,300.00	1,281.00	1,281.00	4.44	25.38	-178.63	-8,235.85	-196.77	8,238.20	8,208.39	29.81	276.344		
1,400.00	1,400.00	1,381.00	1,381.00	4.79	27.39	-178.63	-8,235.85	-196.77	8,238.20	8,206.02	32.18	255.982		
1,500.00	1,500.00	1,481.00	1,481.00	5.15	29.40	-178.63	-8,235.85	-196.77	8,238.20	8,203.64	34.55	238.417		
1,600.00	1,599.98	1,580.98	1,580.98	5.51	31.41	-102.84	-8,235.85	-196.77	8,238.59	8,201.67	36.92	223.158		
1,700.00	1,699.84	1,680.84	1,680.84	5.85	33.42	-102.86	-8,235.85	-196.77	8,239.75	8,200.48	39.28	209.790		
1,800.00	1,799.45	1,780.45	1,780.45	6.21	35.43	-102.88	-8,235.85	-196.77	8,241.70	8,200.07	41.63	197.954		
1,900.00	1,898.70	1,879.70	1,879.70	6.57	37.42	-102.91	-8,235.85	-196.77	8,244.44	8,200.45	43.99	187.404		

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