

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

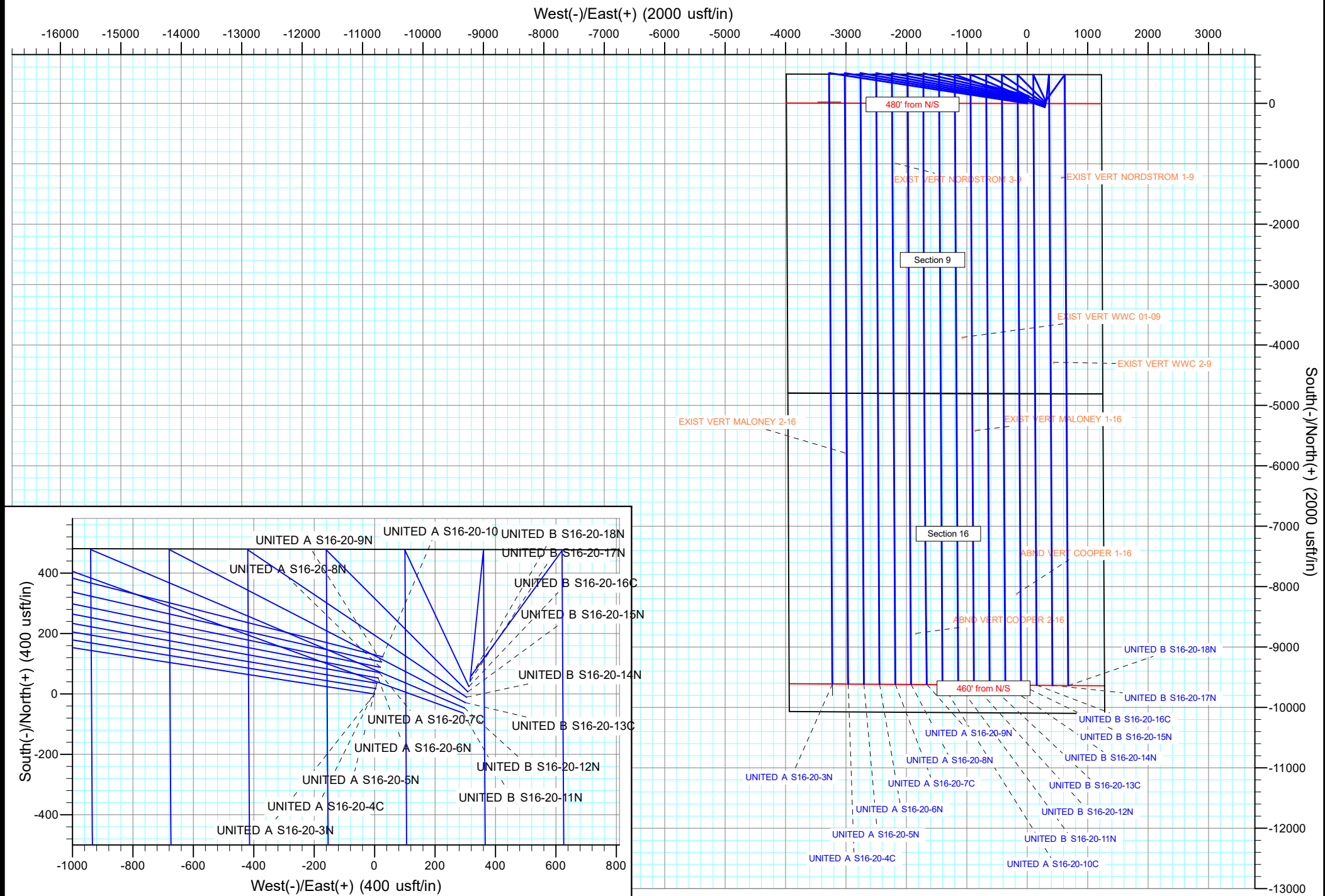
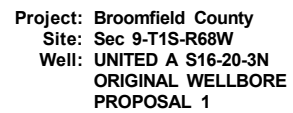
UNITED B S16-20-11N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

18 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED B S16-20-11N
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 S16-20-11N	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	18,020.08	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	16,517.51	7,928.87	981.09	673.14	3.186	CC, ES, SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,168.12	7,935.86	692.98	373.58	2.170	CC
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,200.00	7,935.86	693.71	373.14	2.164	ES, SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,800.00	7,925.92	310.23	48.32	1.185	Level 2, ES, SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,815.15	7,925.92	309.86	48.38	1.185	Level 2, CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,174.43	7,963.91	1,850.35	1,582.00	6.895	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,200.00	7,963.91	1,850.52	1,581.53	6.879	ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,400.00	7,963.91	1,864.05	1,590.62	6.817	SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	100.00	84.00	1,194.86	1,193.73	1,057.629	CC
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	200.00	183.98	1,195.82	1,192.22	332.049	ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	9,700.00	7,928.98	1,763.88	1,565.71	8.901	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,385.43	7,969.98	990.61	794.54	5.052	CC
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,400.00	7,969.98	990.72	794.42	5.047	ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,500.00	7,969.98	997.22	799.17	5.035	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,273.08	7,936.94	102.77	-133.29	0.435	Level 1, CC, ES, SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,693.20	7,918.93	1,611.03	1,368.45	6.641	CC
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,700.00	7,918.93	1,611.04	1,368.42	6.640	ES
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,800.00	7,918.93	1,614.57	1,371.41	6.640	SF
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	3,411.38	3,381.11	52.33	22.94	1.781	CC
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	3,500.00	3,469.63	52.51	22.66	1.759	ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	18,020.08	18,322.24	365.68	96.64	1.359	Level 3, SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	823.59	757.97	293.58	288.29	55.398	CC, ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	18,020.08	18,664.96	2,080.86	1,728.44	5.905	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	1,023.70	962.95	247.15	240.40	36.607	CC, ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	17,900.00	28,193.72	1,838.69	1,331.93	3.628	SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	1,225.43	1,169.52	201.47	193.24	24.468	CC, ES
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	18,020.08	18,471.69	1,560.58	1,208.18	4.428	SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	1,430.30	1,379.28	156.57	146.82	16.054	CC, ES
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	18,020.08	18,381.38	1,300.43	948.04	3.690	SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	1,642.14	1,595.99	114.16	102.75	10.007	CC, ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	18,020.08	18,535.05	1,071.57	730.49	3.142	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,872.11	1,830.79	78.04	64.43	5.734	CC
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,900.00	1,858.05	78.16	64.36	5.664	ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	18,020.08	18,214.22	780.15	427.72	2.214	SF
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	2,188.81	2,152.54	59.30	41.73	3.375	CC

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 S16-20-11N
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 S16-20-11N	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	2,200.00	2,163.60	59.31	41.67	3.361	ES
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	18,020.08	18,139.72	520.01	167.59	1.476	Level 3, SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	214.34	214.31	17.77	16.69	16.358	CC
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	18,020.08	17,971.28	260.14	-89.94	0.743	Level 1, ES, SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	266.31	266.22	35.45	33.99	24.258	CC
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	300.00	300.16	35.52	33.81	20.827	ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,020.08	18,183.90	581.60	255.93	1.786	SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	303.60	303.43	53.57	51.84	30.949	CC
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	400.00	400.55	54.23	51.79	22.203	ES
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	18,020.08	17,894.19	780.39	430.03	2.227	SF
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	333.53	333.27	71.34	69.39	36.563	CC
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	400.00	400.55	71.61	69.17	29.311	ES
UNITED B S16-20-15N - ORIGINAL WELLBORE - PROP	18,020.08	17,871.57	1,040.55	689.94	2.968	SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	362.94	362.57	89.02	86.85	41.072	CC
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	400.00	400.55	89.10	86.65	36.464	ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	18,020.08	18,114.32	1,326.41	979.60	3.825	SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	388.00	387.51	107.14	104.79	45.561	CC
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	400.00	400.55	107.14	104.70	43.848	ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	18,020.08	17,850.55	1,560.82	1,209.86	4.447	SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	100.00	125.97	125.70	468.542	CC, ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	18,020.08	17,844.89	1,820.87	1,469.90	5.188	SF

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-INC												Offset Well Error:	0.00 usft
Sec 16-T1S-R68W - ABND VERT COOPER 1-16 - Wellbore #1 - Design #1													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-176.71	-8,049.34	-463.34	8,062.68				
100.00	100.00	84.00	84.00	0.13	1.00	-176.71	-8,049.34	-463.34	8,062.66	8,061.53	1.13	7,136.676	
200.00	199.98	183.98	183.98	0.49	3.11	-106.67	-8,049.34	-463.34	8,063.16	8,059.56	3.60	2,239.271	
300.00	299.84	283.84	283.84	0.86	5.22	-106.67	-8,049.34	-463.34	8,064.67	8,058.59	6.07	1,327.570	
400.00	399.45	383.45	383.45	1.23	7.26	-106.69	-8,049.34	-463.34	8,067.18	8,058.68	8.49	949.828	
500.00	498.70	482.70	482.70	1.63	9.28	-106.70	-8,049.34	-463.34	8,070.70	8,059.79	10.91	739.962	
600.00	597.47	581.47	581.47	2.06	11.28	-106.72	-8,049.34	-463.34	8,075.25	8,061.92	13.33	605.873	
700.00	695.62	679.62	679.62	2.51	13.26	-106.74	-8,049.34	-463.34	8,080.84	8,065.07	15.76	512.615	
770.11	764.01	748.01	748.01	2.86	14.64	-106.75	-8,049.34	-463.34	8,085.38	8,067.90	17.48	462.498	
800.00	793.09	777.09	777.09	3.01	15.22	-106.80	-8,049.34	-463.34	8,087.43	8,069.21	18.22	443.955	
900.00	890.37	874.37	874.37	3.52	17.19	-106.95	-8,049.34	-463.34	8,094.33	8,073.65	20.68	391.393	
1,000.00	987.65	971.65	971.65	4.04	19.15	-107.11	-8,049.34	-463.34	8,101.29	8,078.14	23.15	349.941	
1,100.00	1,084.92	1,068.92	1,068.92	4.57	21.11	-107.26	-8,049.34	-463.34	8,108.31	8,082.69	25.62	316.439	
1,200.00	1,182.20	1,166.20	1,166.20	5.09	23.06	-107.41	-8,049.34	-463.34	8,115.40	8,087.30	28.10	288.814	
1,300.00	1,279.48	1,263.48	1,263.48	5.62	25.02	-107.56	-8,049.34	-463.34	8,122.54	8,091.96	30.58	265.651	
1,400.00	1,376.75	1,360.75	1,360.75	6.16	26.98	-107.71	-8,049.34	-463.34	8,129.74	8,096.68	33.05	245.955	
1,500.00	1,474.03	1,458.03	1,458.03	6.69	28.94	-107.87	-8,049.34	-463.34	8,137.00	8,101.47	35.53	229.003	
1,600.00	1,571.31	1,555.31	1,555.31	7.22	30.90	-108.02	-8,049.34	-463.34	8,144.32	8,106.31	38.01	214.261	
1,700.00	1,668.58	1,652.58	1,652.58	7.76	32.85	-108.17	-8,049.34	-463.34	8,151.70	8,111.21	40.49	201.324	
1,800.00	1,765.86	1,749.86	1,749.86	8.30	34.81	-108.32	-8,049.34	-463.34	8,159.14	8,116.17	42.97	189.882	
1,900.00	1,863.14	1,847.14	1,847.14	8.83	36.77	-108.47	-8,049.34	-463.34	8,166.64	8,121.19	45.45	179.689	
2,000.00	1,960.41	1,944.41	1,944.41	9.37	38.73	-108.62	-8,049.34	-463.34	8,174.19	8,126.26	47.93	170.552	

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