

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

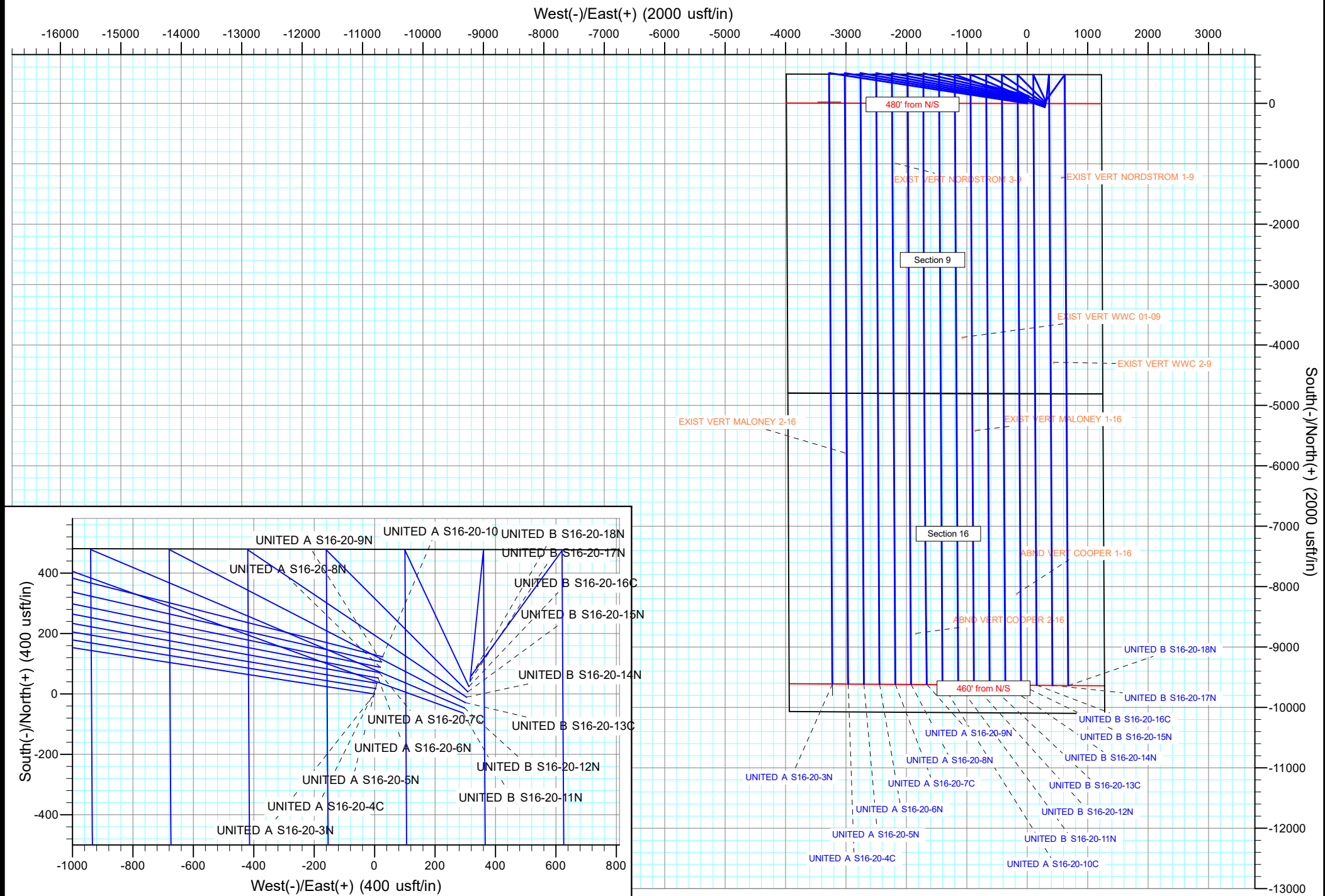
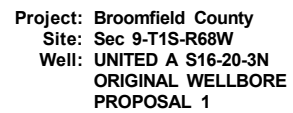
UNITED B S16-20-15N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

18 January, 2018



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well UNITED B S16-20-15N
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 S16-20-15N	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	17,881.03	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	16,364.01	7,928.87	59.56	-248.70	0.193	Level 1, CC, ES, SF
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,014.45	7,935.86	1,733.69	1,413.96	5.422	CC, ES
ABND VERT COOPER 2-16 - Wellbore #1 - Design #1	17,100.00	7,935.86	1,735.80	1,414.50	5.402	SF
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,661.58	7,925.91	730.51	468.91	2.792	CC, ES
EXIST VERT MALONEY 1-16 - Wellbore #1 - Design #1	13,700.00	7,925.91	731.52	469.12	2.788	SF
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,020.64	7,963.91	2,890.76	2,622.27	10.767	CC
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,100.00	7,963.91	2,891.85	2,621.89	10.712	ES
EXIST VERT MALONEY 2-16 - Wellbore #1 - Design #1	14,400.00	7,963.90	2,915.54	2,640.78	10.611	SF
Sec 9-T1S-R68W						
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	9,480.68	7,928.98	722.69	525.99	3.674	CC, ES
EXIST VERT NORDSTROM 1-9 - Wellbore #1 - Design #	9,500.00	7,928.98	722.95	526.12	3.673	SF
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,231.73	7,969.98	2,030.55	1,835.72	10.422	CC, ES
EXIST VERT NORDSTROM 3-9 - Wellbore #1 - Design #	9,500.00	7,969.98	2,048.19	1,850.18	10.344	SF
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,119.49	7,936.94	937.45	701.50	3.973	CC, ES
EXIST VERT WWC 01-09 - Wellbore #1 - Design #1	12,200.00	7,936.94	940.90	703.45	3.962	SF
EXIST VERT WWC 2-9 - Wellbore #1 - Design #1	12,539.76	7,918.93	570.77	328.22	2.353	CC, ES, SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROP	1,786.31	1,763.08	248.24	236.01	20.305	CC
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	1,800.00	1,775.66	248.27	235.95	20.159	ES
UNITED A S16-20-10C - ORIGINAL WELLBORE - PROP	17,881.19	18,321.76	1,325.88	979.44	3.827	SF
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	100.00	103.00	308.59	308.32	1,130.846	CC, ES
UNITED A S16-20-3N - ORIGINAL WELLBORE - PROPO	17,881.19	18,664.96	3,121.45	2,768.50	8.844	SF
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	300.00	303.00	304.79	303.07	177.875	CC, ES
UNITED A S16-20-4C - ORIGINAL WELLBORE - PROPO	17,881.19	18,797.20	2,872.82	2,522.05	8.190	SF
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	500.00	503.00	302.29	299.14	96.044	CC, ES
UNITED A S16-20-5N - ORIGINAL WELLBORE - PROPO	17,881.19	18,471.69	2,601.17	2,248.24	7.370	SF
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	700.00	703.00	300.55	295.97	65.604	CC, ES
UNITED A S16-20-6N - ORIGINAL WELLBORE - PROPO	17,881.19	18,381.38	2,341.02	1,988.09	6.633	SF
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	900.00	903.00	299.96	293.94	49.867	CC
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	1,100.00	1,083.70	300.62	293.28	40.930	ES
UNITED A S16-20-7C - ORIGINAL WELLBORE - PROPO	17,881.19	18,535.05	2,096.69	1,747.05	5.997	SF
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,378.28	1,354.88	283.53	274.24	30.521	CC
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	1,400.00	1,374.61	283.61	274.18	30.069	ES
UNITED A S16-20-8N - ORIGINAL WELLBORE - PROPO	17,881.19	18,214.22	1,820.74	1,467.81	5.159	SF
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	1,582.10	1,558.79	265.66	254.91	24.704	CC
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	1,600.00	1,575.15	265.71	254.84	24.440	ES
UNITED A S16-20-9N - ORIGINAL WELLBORE - PROPO	17,881.19	18,139.72	1,560.60	1,207.68	4.422	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 B S16-20-15N
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 S16-20-15N	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	333.27	333.53	71.34	69.39	36.563	CC
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	400.00	399.90	71.61	69.17	29.340	ES
UNITED B S16-20-11N - ORIGINAL WELLBORE - PROP	17,881.19	18,020.08	1,040.59	689.64	2.965	SF
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	539.57	539.85	53.12	49.69	15.530	CC
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	600.00	599.95	53.42	49.56	13.848	ES
UNITED B S16-20-12N - ORIGINAL WELLBORE - PROP	17,881.19	17,980.97	780.41	429.62	2.225	SF
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	729.95	730.20	34.99	30.21	7.320	CC, ES
UNITED B S16-20-13C - ORIGINAL WELLBORE - PROP	17,774.70	32,201.99	581.84	76.88	1.152	Level 2, SF
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	893.07	893.21	16.69	10.75	2.807	CC
UNITED B S16-20-14N - ORIGINAL WELLBORE - PROP	17,764.49	29,248.03	260.24	-287.15	0.475	Level 1, ES, SF
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	1,129.89	1,129.58	14.99	7.35	1.961	CC, ES
UNITED B S16-20-16C - ORIGINAL WELLBORE - PROP	17,881.19	18,123.53	367.78	93.00	1.338	Level 3, SF
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	1,237.81	1,237.05	30.30	21.88	3.597	CC, ES
UNITED B S16-20-17N - ORIGINAL WELLBORE - PROP	17,881.19	17,860.63	520.27	168.56	1.479	Level 3, SF
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	100.00	100.00	54.00	53.73	200.837	CC, ES
UNITED B S16-20-18N - ORIGINAL WELLBORE - PROP	17,881.19	17,858.99	780.37	428.53	2.218	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)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-176.63	-8,119.64	-478.76	8,133.76					
100.00	100.00	84.00	84.00	0.13	1.00	-176.63	-8,119.64	-478.76	8,133.74	8,132.61	1.13	7,199.594		
200.00	200.00	184.00	184.00	0.49	3.11	-176.63	-8,119.64	-478.76	8,133.74	8,130.14	3.60	2,257.120		
300.00	300.00	284.00	284.00	0.85	5.22	-176.63	-8,119.64	-478.76	8,133.74	8,127.67	6.07	1,338.916		
400.00	400.00	384.00	384.00	1.21	7.27	-176.63	-8,119.64	-478.76	8,133.74	8,125.26	8.48	959.009		
500.00	500.00	484.00	484.00	1.57	9.30	-176.63	-8,119.64	-478.76	8,133.74	8,122.87	10.87	748.202		
600.00	600.00	584.00	584.00	1.93	11.33	-176.63	-8,119.64	-478.76	8,133.74	8,120.49	13.25	613.714		
700.00	700.00	684.00	684.00	2.29	13.35	-176.63	-8,119.64	-478.76	8,133.74	8,118.11	15.63	520.338		
800.00	800.00	784.00	784.00	2.64	15.36	-176.63	-8,119.64	-478.76	8,133.74	8,115.74	18.01	451.684		
900.00	900.00	884.00	884.00	3.00	17.38	-176.63	-8,119.64	-478.76	8,133.74	8,113.36	20.38	399.064		
1,000.00	999.98	983.98	983.98	3.36	19.39	-131.72	-8,119.64	-478.76	8,134.90	8,112.15	22.75	357.531		
1,100.00	1,099.84	1,083.84	1,083.84	3.72	21.41	-131.70	-8,119.64	-478.76	8,138.39	8,113.27	25.12	323.967		
1,200.00	1,199.45	1,183.45	1,183.45	4.08	23.41	-131.66	-8,119.64	-478.76	8,144.20	8,116.71	27.49	296.286		
1,203.69	1,203.12	1,187.12	1,187.12	4.09	23.49	-131.66	-8,119.64	-478.76	8,144.46	8,116.88	27.57	295.357		
1,300.00	1,298.89	1,282.89	1,282.89	4.44	25.41	-131.71	-8,119.64	-478.76	8,151.25	8,121.40	29.85	273.038		
1,400.00	1,398.33	1,382.33	1,382.33	4.82	27.41	-131.76	-8,119.64	-478.76	8,158.32	8,126.10	32.22	253.190		
1,500.00	1,497.77	1,481.77	1,481.77	5.19	29.42	-131.82	-8,119.64	-478.76	8,165.39	8,130.80	34.59	236.044		
1,600.00	1,597.21	1,581.21	1,581.21	5.57	31.42	-131.88	-8,119.64	-478.76	8,172.48	8,135.51	36.97	221.086		
1,700.00	1,696.65	1,680.65	1,680.65	5.95	33.42	-131.93	-8,119.64	-478.76	8,179.56	8,140.23	39.34	207.924		
1,800.00	1,796.08	1,780.08	1,780.08	6.34	35.42	-131.98	-8,119.64	-478.76	8,186.66	8,144.95	41.71	196.255		
1,900.00	1,895.52	1,879.52	1,879.52	6.72	37.42	-132.04	-8,119.64	-478.76	8,193.76	8,149.67	44.09	185.840		
2,000.00	1,994.96	1,978.96	1,978.96	7.11	39.42	-132.09	-8,119.64	-478.76	8,200.88	8,154.41	46.47	176.486		
2,100.00	2,094.40	2,078.40	2,078.40	7.49	41.42	-132.15	-8,119.64	-478.76	8,207.99	8,159.15	48.85	168.041		
2,200.00	2,193.84	2,177.84	2,177.84	7.88	43.42	-132.20	-8,119.64	-478.76	8,215.12	8,163.90	51.22	160.378		
2,300.00	2,293.28	2,277.28	2,277.28	8.27	45.42	-132.26	-8,119.64	-478.76	8,222.25	8,168.65	53.60	153.393		
2,400.00	2,392.72	2,376.72	2,376.72	8.66	47.42	-132.31	-8,119.64	-478.76	8,229.40	8,173.41	55.98	147.002		
2,500.00	2,492.15	2,476.15	2,476.15	9.05	49.42	-132.37	-8,119.64	-478.76	8,236.54	8,178.18	58.36	141.130		

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