

PDC ENERGY

**WELD COUNTY, COLORADO
SE SE SEC. 7 T6N R64W 6th P.M.
ELVERA 7D-314**

**ORIGINAL WELLBORE
PROPOSAL #1**

Anticollision Report

03 March, 2016



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well ELVERA 7D-314
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4748.0usft
Reference Site:	SE SE SEC. 7 T6N R64W 6th P.M.	MD Reference:	KB-EST @ 4748.0usft
Site Error:	0.0 usft	North Reference:	True
Reference Well:	ELVERA 7D-314	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
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 98.4usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 us	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 03/03/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,307.2	PROPOSAL #1 (ORIGINAL WELLBORE)	MWD	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						
NE NE SEC. 7 T6N R64W 6th P.M.						
BISHOP 7C-204 - ORIGINAL WELLBORE - PROPOSAL	6,445.1	6,443.0	2,035.9	1,999.1	55.397	CC
BISHOP 7C-204 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,236.9	2,036.7	1,745.9	7.002	ES, SF
BISHOP 7C-232 - ORIGINAL WELLBORE - PROPOSAL	7,100.0	7,719.5	2,086.9	2,026.2	34.434	ES
BISHOP 7C-232 - ORIGINAL WELLBORE - PROPOSAL	7,256.8	7,584.7	2,085.3	2,027.9	36.307	CC
BISHOP 7C-232 - ORIGINAL WELLBORE - PROPOSAL	10,334.6	6,400.0	3,021.4	2,919.4	29.621	SF
BISHOP 7C-332 - ORIGINAL WELLBORE - PROPOSAL	7,250.0	7,687.8	1,883.7	1,826.0	32.638	ES
BISHOP 7C-332 - ORIGINAL WELLBORE - PROPOSAL	7,666.3	7,280.3	1,882.2	1,830.7	36.541	CC
BISHOP 7C-332 - ORIGINAL WELLBORE - PROPOSAL	9,940.9	6,500.0	2,594.5	2,502.2	28.084	SF
BISHOP 7C-334 - ORIGINAL WELLBORE - PROPOSAL	6,447.2	6,448.1	1,830.0	1,770.1	30.559	CC
BISHOP 7C-334 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,332.8	1,830.3	1,539.8	6.301	ES, SF
BISHOP 7C-402 - ORIGINAL WELLBORE - PROPOSAL	7,300.0	7,662.4	2,307.3	2,250.7	40.788	ES
BISHOP 7C-402 - ORIGINAL WELLBORE - PROPOSAL	7,853.4	7,102.8	2,303.9	2,253.1	45.338	CC
BISHOP 7C-402 - ORIGINAL WELLBORE - PROPOSAL	11,220.4	6,450.0	3,803.0	3,676.1	29.973	SF
BISHOP 7C-404 - ORIGINAL WELLBORE - PROPOSAL	6,525.2	6,504.6	2,255.4	2,196.4	38.193	CC
BISHOP 7C-404 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,356.2	2,259.4	1,969.3	7.788	ES, SF
BISHOP 7S-214 - ORIGINAL WELLBORE - PROPOSAL	6,452.3	6,494.3	1,567.7	1,507.4	26.004	CC
BISHOP 7S-214 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,290.0	1,568.6	1,278.0	5.399	ES, SF

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Company:	PDC ENERGY	Local Co-ordinate Reference:	Well ELVERA 7D-314
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4748.0usft
Reference Site:	SE SE SEC. 7 T6N R64W 6th P.M.	MD Reference:	KB-EST @ 4748.0usft
Site Error:	0.0 usft	North Reference:	True
Reference Well:	ELVERA 7D-314	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
NE SE SEC. 7 T6N R64W 6th P.M.						
CARLSON 7S-202 - ORIGINAL WELLBORE - PROPOS	1,134.6	1,147.6	1,094.4	1,089.5	225.497	CC
CARLSON 7S-202 - ORIGINAL WELLBORE - PROPOS	6,750.0	7,940.6	1,173.9	1,108.7	18.029	SF
CARLSON 7S-202 - ORIGINAL WELLBORE - PROPOS	7,150.0	7,681.6	1,127.0	1,067.6	18.998	ES
CARLSON 7S-204 - ORIGINAL WELLBORE - PROPOS	5,445.2	5,272.6	1,069.2	1,018.7	21.201	CC
CARLSON 7S-204 - ORIGINAL WELLBORE - PROPOS	12,308.1	12,203.7	1,078.0	788.4	3.722	ES, SF
CARLSON 7S-212 - ORIGINAL WELLBORE - PROPOS	1,696.5	1,615.1	1,090.3	1,083.1	151.482	CC
CARLSON 7S-212 - ORIGINAL WELLBORE - PROPOS	1,771.6	1,669.0	1,090.6	1,083.0	144.517	ES
CARLSON 7S-212 - ORIGINAL WELLBORE - PROPOS	6,550.0	8,094.6	1,701.9	1,633.7	24.955	SF
CARLSON 7S-312 - ORIGINAL WELLBORE - PROPOS	1,435.4	1,400.0	1,094.5	1,088.4	180.398	CC
CARLSON 7S-312 - ORIGINAL WELLBORE - PROPOS	1,476.4	1,428.5	1,094.6	1,088.3	175.866	ES
CARLSON 7S-312 - ORIGINAL WELLBORE - PROPOS	6,650.0	8,110.6	1,471.3	1,404.8	22.119	SF
CARLSON 7S-314 - ORIGINAL WELLBORE - PROPOS	2,108.4	1,947.8	1,093.2	1,083.6	113.715	CC
CARLSON 7S-314 - ORIGINAL WELLBORE - PROPOS	12,308.1	12,305.7	1,325.8	1,036.0	4.576	ES, SF
CARLSON 7S-404 - ORIGINAL WELLBORE - PROPOS	6,320.6	6,231.0	800.8	744.7	14.268	CC
CARLSON 7S-404 - ORIGINAL WELLBORE - PROPOS	12,308.1	12,291.2	809.9	523.6	2.829	ES, SF
CARLSON 7S-432 - ORIGINAL WELLBORE - PROPOS	7,100.0	7,844.1	785.1	727.3	13.577	SF
CARLSON 7S-432 - ORIGINAL WELLBORE - PROPOS	7,858.2	7,105.5	752.6	701.7	14.786	CC
CARLSON 7S-432 - ORIGINAL WELLBORE - PROPOS	7,874.0	7,091.6	752.6	701.7	14.764	ES

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Reference Well:	ELVERA 7D-314	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
SE SE SEC. 7 T6N R64W 6th P.M.						
ABDN VERT DYER #42-7 - Wellbore #1 - Design #1	8,231.9	6,917.0	1,630.7	1,452.2	9.134	CC
ABDN VERT DYER #42-7 - Wellbore #1 - Design #1	8,267.7	6,917.0	1,631.1	1,451.9	9.101	ES
ABDN VERT DYER #42-7 - Wellbore #1 - Design #1	8,563.0	6,917.0	1,664.0	1,478.6	8.975	SF
ABDN VERT EHRlich #3 - Wellbore #1 - Design #1	10,486.1	6,895.0	275.9	42.3	1.181	Level 2, CC
ABDN VERT EHRlich #3 - Wellbore #1 - Design #1	10,500.0	6,895.0	276.3	42.2	1.180	Level 2, ES, SF
ABDN VERT GRADY #1 - Wellbore #1 - Design #1	6,446.0	6,237.8	1,642.2	1,498.1	11.396	CC
ABDN VERT GRADY #1 - Wellbore #1 - Design #1	6,600.0	6,390.6	1,643.4	1,486.5	10.470	ES
ABDN VERT GRADY #1 - Wellbore #1 - Design #1	6,900.0	6,662.0	1,657.9	1,496.9	10.300	SF
ELVERA 7D-212 - ORIGINAL WELLBORE - PROPOSAL	1,161.0	1,160.0	75.1	70.2	15.201	CC
ELVERA 7D-212 - ORIGINAL WELLBORE - PROPOSAL	1,181.1	1,180.1	75.2	70.1	14.946	ES
ELVERA 7D-212 - ORIGINAL WELLBORE - PROPOSAL	7,200.0	7,643.6	236.6	176.2	3.920	SF
ELVERA 7D-312 - ORIGINAL WELLBORE - PROPOSAL	7,480.3	7,436.8	47.8	-7.5	0.864	Level 1, ES, SF
ELVERA 7D-312 - ORIGINAL WELLBORE - PROPOSAL	7,580.3	7,337.0	47.4	-6.4	0.880	Level 1, CC
ELVERA 7D-402 - ORIGINAL WELLBORE - PROPOSAL	1,166.2	1,165.3	44.9	40.0	9.055	CC
ELVERA 7D-402 - ORIGINAL WELLBORE - PROPOSAL	1,181.1	1,180.2	45.0	39.9	8.945	ES
ELVERA 7D-402 - ORIGINAL WELLBORE - PROPOSAL	7,400.0	7,561.3	296.4	241.5	5.400	SF
ELVERA 7D-404 - ORIGINAL WELLBORE - PROPOSAL	1,045.3	1,045.3	15.0	10.6	3.397	CC
ELVERA 7D-404 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,356.9	247.1	-27.6	0.900	Level 1, ES, SF
ELVERA 7S-234 - ORIGINAL WELLBORE - PROPOSAL	1,161.0	1,161.0	15.0	10.1	3.039	CC
ELVERA 7S-234 - ORIGINAL WELLBORE - PROPOSAL	1,181.1	1,181.1	15.1	10.1	2.998	ES
ELVERA 7S-234 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,285.2	300.1	19.5	1.070	Level 2, SF
ELVERA 7S-332 - ORIGINAL WELLBORE - PROPOSAL	1,161.0	1,160.0	90.1	85.2	18.241	CC
ELVERA 7S-332 - ORIGINAL WELLBORE - PROPOSAL	1,181.1	1,180.1	90.2	85.2	17.933	ES
ELVERA 7S-332 - ORIGINAL WELLBORE - PROPOSAL	7,250.0	7,729.5	496.2	437.7	8.479	SF
ELVERA 7S-334 - ORIGINAL WELLBORE - PROPOSAL	1,161.0	1,160.0	30.0	25.1	6.080	CC
ELVERA 7S-334 - ORIGINAL WELLBORE - PROPOSAL	1,181.1	1,180.1	30.1	25.1	5.987	ES
ELVERA 7S-334 - ORIGINAL WELLBORE - PROPOSAL	12,308.1	12,436.6	543.9	253.7	1.874	SF
EXIST VERT CARLSON #33-7 - Wellbore #1 - Design #1	9,072.7	6,882.0	379.7	182.7	1.928	CC, ES
EXIST VERT CARLSON #33-7 - Wellbore #1 - Design #1	9,100.0	6,882.0	380.7	183.0	1.926	SF
EXIST VERT CARLSON #34-7 - Wellbore #1 - Design #1	9,286.9	6,895.0	993.8	791.4	4.910	CC
EXIST VERT CARLSON #34-7 - Wellbore #1 - Design #1	9,300.0	6,895.0	993.9	791.1	4.903	ES
EXIST VERT CARLSON #34-7 - Wellbore #1 - Design #1	9,400.0	6,895.0	1,000.2	795.0	4.873	SF
EXIST VERT CARLSON #44-7 - Wellbore #1 - Design #1	1,704.7	1,691.5	418.6	381.4	11.274	CC
EXIST VERT CARLSON #44-7 - Wellbore #1 - Design #1	1,870.1	1,852.9	420.1	379.2	10.263	ES
EXIST VERT CARLSON #44-7 - Wellbore #1 - Design #1	8,100.0	6,913.0	886.9	710.9	5.038	SF
EXIST VERT DYER #41-7 - Wellbore #1 - Design #1	7,960.2	6,920.0	2,951.8	2,777.7	16.964	CC
EXIST VERT DYER #41-7 - Wellbore #1 - Design #1	8,000.0	6,920.0	2,952.0	2,777.4	16.905	ES
EXIST VERT DYER #41-7 - Wellbore #1 - Design #1	9,251.9	6,920.0	3,222.0	3,020.0	15.949	SF
EXIST VERT EHRlich #1 - Wellbore #1 - Design #1	11,750.9	6,891.0	390.8	122.9	1.459	Level 3, CC, ES, SF
EXIST VERT EHRlich #2 - Wellbore #1 - Design #1	11,698.3	6,882.0	1,084.6	818.2	4.071	CC
EXIST VERT EHRlich #2 - Wellbore #1 - Design #1	11,712.6	6,882.0	1,084.7	817.9	4.065	ES
EXIST VERT EHRlich #2 - Wellbore #1 - Design #1	11,811.0	6,882.0	1,090.5	821.0	4.046	SF
EXIST VERT EHRlich #22-7 - Wellbore #1 - Design #1	10,841.4	6,899.0	1,057.4	814.2	4.347	CC, ES
EXIST VERT EHRlich #22-7 - Wellbore #1 - Design #1	11,000.0	6,899.0	1,069.3	821.7	4.319	SF
EXIST VERT EHRlich #24-7 - Wellbore #1 - Design #1	10,569.1	6,885.0	1,004.6	768.8	4.260	CC
EXIST VERT EHRlich #24-7 - Wellbore #1 - Design #1	10,600.0	6,885.0	1,005.1	768.5	4.248	ES
EXIST VERT EHRlich #24-7 - Wellbore #1 - Design #1	10,700.0	6,885.0	1,013.1	773.8	4.233	SF
EXIST VERT EHRlich #32-7 - Wellbore #1 - Design #1	9,078.2	6,902.0	1,454.4	1,257.1	7.371	CC
EXIST VERT EHRlich #32-7 - Wellbore #1 - Design #1	9,100.0	6,902.0	1,454.6	1,256.7	7.352	ES
EXIST VERT EHRlich #32-7 - Wellbore #1 - Design #1	9,350.4	6,902.0	1,479.7	1,275.6	7.251	SF
EXIST VERT EHRlich #4 - Wellbore #1 - Design #1	11,689.6	6,896.0	1,604.0	1,337.7	6.023	CC
EXIST VERT EHRlich #4 - Wellbore #1 - Design #1	11,712.6	6,896.0	1,604.2	1,337.2	6.009	ES
EXIST VERT EHRlich #4 - Wellbore #1 - Design #1	12,000.0	6,896.0	1,633.8	1,358.9	5.944	SF

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

Anticollision Report



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Summary

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Offset Well - Wellbore - Design						
SE SE SEC. 7 T6N R64W 6th P.M.						
EXIST VERT ERICKSON A #8-1 - Wellbore #1 - Design	5,899.5	4,843.0	5,290.0	5,179.2	47.747	CC
EXIST VERT ERICKSON A #8-1 - Wellbore #1 - Design	5,905.5	4,843.0	5,290.0	5,179.1	47.729	ES
EXIST VERT ERICKSON A #8-1 - Wellbore #1 - Design	6,416.0	4,843.0	5,359.4	5,234.1	42.771	SF
EXIST VERT ERICKSON A #8-17 - Wellbore #1 - Design	6,446.0	6,307.8	4,428.3	4,273.2	28.545	CC, ES, SF
EXIST VERT ERICKSON A #8-2 - Wellbore #1 - Design	6,446.0	6,282.8	4,151.6	3,998.6	27.148	CC, ES, SF
EXIST VERT ERICKSON A #8-7 - Wellbore #1 - Design	6,446.0	6,281.8	3,488.8	3,333.7	22.498	CC, ES, SF
EXIST VERT ERICKSON A #8-8 - Wellbore #1 - Design	6,446.0	6,319.8	4,698.1	4,542.3	30.161	CC, ES, SF
EXIST VERT FRANCEN #23-8 - Wellbore #1 - Design #1	6,446.0	6,253.8	1,399.8	1,244.3	9.003	CC, ES, SF
EXIST VERT FRANCEN #24-8 - Wellbore #1 - Design #1	5,445.0	4,645.0	2,195.6	2,081.6	19.272	CC, ES
EXIST VERT FRANCEN #24-8 - Wellbore #1 - Design #1	5,700.0	4,645.0	2,217.6	2,101.5	19.100	SF
EXIST VERT FRANCIS #11-8 - Wellbore #1 - Design #1	6,446.0	6,228.8	3,152.3	3,009.1	22.010	CC
EXIST VERT FRANCIS #11-8 - Wellbore #1 - Design #1	6,750.0	6,523.7	3,153.6	2,993.7	19.726	ES
EXIST VERT FRANCIS #11-8 - Wellbore #1 - Design #1	7,480.3	6,939.3	3,220.0	3,051.7	19.134	SF
EXIST VERT FRANCIS #21-8 - Wellbore #1 - Design #1	6,446.0	6,248.8	3,482.6	3,333.4	23.343	CC
EXIST VERT FRANCIS #21-8 - Wellbore #1 - Design #1	6,496.0	6,298.8	3,483.3	3,332.2	23.051	ES
EXIST VERT FRANCIS #21-8 - Wellbore #1 - Design #1	7,480.3	6,959.3	3,775.0	3,607.1	22.481	SF
EXIST VERT FRANCIS #22-8 - Wellbore #1 - Design #1	6,446.0	6,253.8	2,036.8	1,883.2	13.263	CC, ES, SF
EXIST VERT KREPS #1 - Wellbore #1 - Design #1	9,184.9	6,903.0	3,002.8	2,802.6	15.000	CC
EXIST VERT KREPS #1 - Wellbore #1 - Design #1	9,251.9	6,903.0	3,003.5	2,801.7	14.880	ES
EXIST VERT KREPS #1 - Wellbore #1 - Design #1	10,400.0	6,903.0	3,239.3	3,007.6	13.981	SF
EXIST VERT KREPS #11-7 - Wellbore #1 - Design #1	11,775.6	6,916.0	2,981.1	2,712.0	11.077	CC
EXIST VERT KREPS #11-7 - Wellbore #1 - Design #1	11,900.0	6,916.0	2,983.7	2,711.2	10.948	ES
EXIST VERT KREPS #11-7 - Wellbore #1 - Design #1	12,308.1	6,916.0	3,028.3	2,744.6	10.672	SF
EXIST VERT KREPS #21-7 - Wellbore #1 - Design #1	10,632.6	6,920.0	3,042.9	2,804.8	12.780	CC
EXIST VERT KREPS #21-7 - Wellbore #1 - Design #1	10,728.3	6,920.0	3,044.4	2,803.8	12.649	ES
EXIST VERT KREPS #21-7 - Wellbore #1 - Design #1	11,700.0	6,920.0	3,224.7	2,957.6	12.073	SF
EXIST VERT MHS #8-33 - Wellbore #1 - Design #1	5,570.6	5,368.6	783.6	647.4	5.755	CC
EXIST VERT MHS #8-33 - Wellbore #1 - Design #1	6,500.0	6,285.7	793.7	637.0	5.063	ES
EXIST VERT MHS #8-33 - Wellbore #1 - Design #1	6,650.0	6,433.0	799.5	640.2	5.018	SF
EXIST VERT MILE HIGH SHEEP #8-32 - Wellbore #1 - I	6,446.0	6,239.8	161.3	15.0	1.103	Level 2, CC
EXIST VERT MILE HIGH SHEEP #8-32 - Wellbore #1 - I	6,496.0	6,289.8	161.7	8.3	1.054	Level 2, ES, SF
EXIST VERT MILE HIGH SHEEP #8-35 - Wellbore #1 - I	6,446.0	6,249.8	700.8	551.4	4.691	CC
EXIST VERT MILE HIGH SHEEP #8-35 - Wellbore #1 - I	6,450.0	6,253.8	700.9	550.8	4.671	ES
EXIST VERT MILE HIGH SHEEP #8-35 - Wellbore #1 - I	6,496.0	6,299.8	702.4	551.8	4.663	SF
EXIST VERT ROY CARLSON #43-7 - Wellbore #1 - Des	7,921.3	6,925.0	328.7	155.5	1.898	CC, ES, SF
EXIST VERT UHRICH #33-8 - Wellbore #1 - Design #1	6,446.0	6,273.8	2,910.0	2,757.6	19.096	CC, ES, SF
EXIST VERT UHRICH #34-8 - Wellbore #1 - Design #1	6,446.0	6,243.8	3,153.7	3,005.3	21.248	CC, ES, SF
EXIST VERT UHRICH #43-8 - Wellbore #1 - Design #1	6,446.0	6,298.8	4,438.4	4,285.8	29.100	CC, ES, SF
EXIST VERT UHRICH #44-8 - Wellbore #1 - Design #1	6,446.0	6,271.8	4,381.7	4,232.6	29.374	CC, ES, SF

Offset Design NE NE SEC. 7 T6N R64W 6th P.M. - BISHOP 7C-204 - ORIGINAL WELLBORE - PROPOSAL #1											
Survey Program: 0-MWD											
Reference											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)
0.0	0.0	9.0	9.0	0.0	0.0	1.43	2,973.6	74.3	2,974.5		
98.4	98.4	107.4	107.4	0.1	0.1	1.43	2,973.6	74.3	2,974.5	2,974.3	0.19
100.0	100.0	109.0	109.0	0.1	0.1	1.43	2,973.6	74.3	2,974.5	2,974.3	0.19
196.8	196.8	205.8	205.8	0.3	0.3	1.43	2,973.6	74.3	2,974.5	2,973.9	0.63
200.0	200.0	209.0	209.0	0.3	0.3	1.43	2,973.6	74.3	2,974.5	2,973.9	0.64
295.3	295.3	304.3	304.3	0.5	0.5	1.43	2,973.6	74.3	2,974.5	2,973.4	1.07
											2,776.986

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