

# **PDC ENERGY**

**WELD COUNTY, COLORADO  
NW SW SEC. 17 T5N R64W 6th P.M.  
CECIL'S KERSEY FARM 17K-402**

**ORIGINAL WELLBORE  
PROPOSAL #2**

## **Anticollision Report**

**16 September, 2015**



# Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well CECIL'S KERSEY FARM 17K-402
<b>Project:</b>	WELD COUNTY, COLORADO	<b>TVD Reference:</b>	KB-EST @ 4636.0usft (Original Well Elev)
<b>Reference Site:</b>	NW SW SEC. 17 T5N R64W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4636.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	CECIL'S KERSEY FARM 17K-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL #2		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 98.4usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0 us	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b> 16/09/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,472.3	PROPOSAL #2 (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
NW SW SEC. 17 T5N R64W 6th P.M.						
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	1,150.0	1,150.0	90.0	85.1	18.311	CC
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	1,181.1	1,181.1	90.1	85.1	17.830	ES
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	11,472.7	11,233.7	995.0	743.8	3.960	SF
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,150.0	1,150.0	75.0	70.1	15.259	CC
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,181.1	1,181.1	75.1	70.1	14.862	ES
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,400.0	1,399.7	82.5	76.5	13.698	SF
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	1,037.2	1,037.2	120.0	115.6	27.224	CC
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	1,082.7	1,082.2	120.1	115.5	26.070	ES
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	11,472.7	11,322.7	1,208.5	955.7	4.781	SF
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	1,150.0	1,150.0	105.0	100.1	21.363	CC, ES
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	1,377.9	1,375.3	113.4	107.5	19.319	SF
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	1,150.0	1,150.0	15.0	10.1	3.052	CC
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	1,181.1	1,181.1	15.1	10.1	2.990	ES
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	6,950.0	7,633.5	123.2	72.3	2.422	SF
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	1,150.0	1,150.0	30.0	25.1	6.104	CC
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	1,181.1	1,181.1	30.1	25.1	5.958	ES
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	11,472.7	11,291.6	269.3	53.7	1.249	Level 2, SF
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	1,150.0	1,150.0	60.0	55.1	12.207	CC
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	1,181.1	1,181.1	60.1	55.1	11.894	ES
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	11,472.7	11,348.4	492.0	242.9	1.975	SF
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	1,150.0	1,150.0	45.0	40.1	9.155	CC
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	1,181.1	1,181.1	45.1	40.1	8.926	ES
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	6,950.0	7,692.7	382.8	331.1	7.403	SF
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	1,037.1	1,037.1	15.0	10.6	3.405	CC
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	1,082.7	1,082.5	15.2	10.6	3.291	ES
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	7,500.0	7,283.7	116.8	70.7	2.534	SF
EXIST VERT B&H #1 - Wellbore #1 - Design #1	6,294.0	6,139.8	4,717.1	4,574.5	33.073	CC
EXIST VERT B&H #1 - Wellbore #1 - Design #1	6,300.0	6,145.8	4,717.2	4,570.7	32.204	ES
EXIST VERT B&H #1 - Wellbore #1 - Design #1	6,350.0	6,195.8	4,719.3	4,572.2	32.093	SF
EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1	6,294.0	6,139.8	4,512.2	4,366.2	30.912	CC, ES, SF
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	6,294.0	6,136.8	3,392.7	3,245.7	23.090	CC, ES, SF
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #1	2,625.3	2,586.1	38.9	-20.7	0.653	Level 1, CC, ES, SF
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Design #1	1,150.0	1,140.0	549.1	524.1	21.900	CC
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Design #1	1,200.0	1,190.0	549.5	523.4	20.985	ES
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Design #1	8,169.3	6,838.9	1,141.1	965.0	6.481	SF
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1	8,649.9	6,833.0	469.2	281.3	2.498	CC
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1	8,661.4	6,832.9	469.3	281.2	2.495	ES, SF

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

# Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well CECIL'S KERSEY FARM 17K-402
<b>Project:</b>	WELD COUNTY, COLORADO	<b>TVD Reference:</b>	KB-EST @ 4636.0usft (Original Well Elev)
<b>Reference Site:</b>	NW SW SEC. 17 T5N R64W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4636.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	CECIL'S KERSEY FARM 17K-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	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
NW SW SEC. 17 T5N R64W 6th P.M.						
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #	6,294.0	6,132.8	1,021.7	872.5	6.850	CC, ES, SF
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	6,294.0	6,160.8	2,185.7	2,159.2	82.351	ES
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	6,303.7	6,170.3	2,185.7	2,166.6	114.558	CC
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	11,472.3	6,750.0	6,836.3	6,708.0	53.282	SF
EXIST VERT H&S #1 - Wellbore #1 - Design #1	10,189.4	6,824.4	762.7	534.0	3.335	CC
EXIST VERT H&S #1 - Wellbore #1 - Design #1	10,200.0	6,824.3	762.8	533.8	3.331	ES
EXIST VERT H&S #1 - Wellbore #1 - Design #1	10,236.2	6,824.0	764.1	534.1	3.322	SF
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,294.0	6,136.8	899.0	760.3	6.484	CC
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,300.0	6,142.8	899.0	749.7	6.022	ES
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,350.0	6,192.8	900.6	750.6	6.002	SF
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Design	6,294.0	6,130.8	2,127.9	1,986.9	15.093	CC
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Design	6,300.0	6,136.8	2,128.0	1,980.3	14.416	ES
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Design	6,350.0	6,186.8	2,130.0	1,981.8	14.370	SF
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design	6,294.0	6,135.8	2,770.7	2,632.2	20.000	CC
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design	6,300.0	6,141.8	2,770.7	2,621.4	18.555	ES
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design	6,397.6	6,239.1	2,776.1	2,625.6	18.442	SF
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Design	2,592.7	2,550.7	1,800.1	1,741.3	30.600	CC
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Design	3,200.0	3,134.8	1,807.8	1,734.0	24.481	ES
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Design	6,550.0	6,382.4	2,027.1	1,875.7	13.392	SF
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	9,981.2	6,824.1	755.0	532.0	3.385	CC
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	10,000.0	6,824.0	755.2	531.7	3.378	ES
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	10,039.3	6,823.6	757.2	532.6	3.371	SF
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,309.8	6,813.3	766.1	506.7	2.954	CC
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,318.9	6,813.2	766.2	506.5	2.951	ES
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,400.0	6,812.6	771.4	509.6	2.946	SF
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	9,994.0	6,772.5	2,131.6	2,043.2	24.099	CC
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	10,039.3	6,773.0	2,132.1	2,042.4	23.772	ES
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	11,417.3	6,788.9	2,563.1	2,435.4	20.080	SF
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	6,294.0	6,137.8	5,085.5	4,945.1	36.224	CC
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	6,300.0	6,143.8	5,085.5	4,937.3	34.324	ES
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	6,350.0	6,193.8	5,087.5	4,938.7	34.188	SF
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	6,294.0	6,139.8	3,745.3	3,606.2	26.920	CC
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	6,300.0	6,145.8	3,745.3	3,596.3	25.132	ES
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	6,397.6	6,243.1	3,751.5	3,601.6	25.017	SF
EXIST VERT MASON #1 - Wellbore #1 - Design #1	6,294.0	6,136.8	3,412.3	3,270.3	24.029	CC
EXIST VERT MASON #1 - Wellbore #1 - Design #1	6,300.0	6,142.8	3,412.3	3,265.4	23.224	ES
EXIST VERT MASON #1 - Wellbore #1 - Design #1	6,350.0	6,192.8	3,414.4	3,266.9	23.146	SF
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	0.0	0.0	1,117.5			
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	11,472.3	6,800.0	4,603.0	4,474.3	35.760	SF
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	1,162.5	1,163.3	1,555.6	1,552.4	487.030	CC, ES
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	10,728.3	6,800.0	2,841.4	2,733.0	26.219	SF
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,488.4	6,846.5	714.8	552.4	4.400	CC
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,500.0	6,846.4	714.9	552.3	4.397	ES
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,578.7	6,845.7	720.5	556.6	4.396	SF
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,304.4	6,825.4	731.2	471.9	2.819	CC
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,318.9	6,825.2	731.4	471.6	2.816	ES
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,400.0	6,824.6	737.4	475.5	2.815	SF
EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1	11,472.7	6,700.0	1,703.4	1,575.0	13.264	CC, ES, SF
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	8,650.1	6,838.0	733.4	545.5	3.904	CC
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	8,661.4	6,837.9	733.5	545.3	3.898	ES
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	8,700.0	6,837.6	735.1	546.0	3.886	SF

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

# Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well CECIL'S KERSEY FARM 17K-402
<b>Project:</b>	WELD COUNTY, COLORADO	<b>TVD Reference:</b>	KB-EST @ 4636.0usft (Original Well Elev)
<b>Reference Site:</b>	NW SW SEC. 17 T5N R64W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4636.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	CECIL'S KERSEY FARM 17K-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	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
SE SE SEC. 18 T5N R64W 6th P.M.						
GILLHAM 18X-102 - ORIGINAL WELLBORE - PROPOS	6,785.5	7,496.2	1,421.6	1,370.0	27.530	CC
GILLHAM 18X-102 - ORIGINAL WELLBORE - PROPOS	11,472.7	12,101.8	1,446.6	1,168.4	5.201	ES, SF
GILLHAM 18X-104 - ORIGINAL WELLBORE - PROPOS	3,885.0	4,037.2	1,130.8	1,104.5	42.966	CC
GILLHAM 18X-104 - ORIGINAL WELLBORE - PROPOS	3,937.0	4,084.6	1,131.0	1,104.3	42.258	ES
GILLHAM 18X-104 - ORIGINAL WELLBORE - PROPOS	6,650.0	6,738.4	1,319.0	1,277.6	31.899	SF
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	1,035.2	1,037.2	1,596.4	1,592.0	362.489	CC
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	11,472.7	12,190.4	1,864.7	1,582.7	6.612	ES, SF
GILLHAM 18X-234 - ORIGINAL WELLBORE - PROPOS	2,925.3	3,031.0	1,300.4	1,282.0	70.479	CC
GILLHAM 18X-234 - ORIGINAL WELLBORE - PROPOS	3,000.0	3,098.2	1,300.8	1,281.7	68.024	ES
GILLHAM 18X-234 - ORIGINAL WELLBORE - PROPOS	10,334.6	6,250.0	3,704.7	3,596.7	34.286	SF
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	1,132.6	1,134.6	1,584.1	1,579.2	327.145	CC
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	11,472.7	12,279.7	1,642.6	1,359.7	5.807	ES, SF
GILLHAM 18X-334 - ORIGINAL WELLBORE - PROPOS	3,405.0	3,528.1	1,231.6	1,209.4	55.481	CC
GILLHAM 18X-334 - ORIGINAL WELLBORE - PROPOS	3,444.9	3,564.4	1,231.7	1,209.1	54.632	ES
GILLHAM 18X-334 - ORIGINAL WELLBORE - PROPOS	9,645.6	6,350.0	2,996.5	2,905.6	32.955	SF
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	1,551.0	1,517.1	1,543.4	1,536.8	232.688	CC
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	1,574.8	1,532.6	1,543.5	1,536.7	229.648	ES
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	11,472.7	12,225.6	2,386.9	2,105.4	8.480	SF
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	2,483.0	2,526.4	1,479.3	1,465.6	107.946	CC
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	2,559.0	2,591.2	1,479.9	1,465.4	102.671	ES
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	11,472.3	6,250.0	4,936.7	4,794.8	34.782	SF
GILLHAM 18Y-312 - ORIGINAL WELLBORE - PROPOS	1,424.0	1,400.0	1,557.5	1,551.4	256.486	CC, ES
GILLHAM 18Y-312 - ORIGINAL WELLBORE - PROPOS	11,472.7	12,296.2	2,174.9	1,892.8	7.709	SF
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	2,637.8	2,703.7	1,434.2	1,418.8	93.530	CC
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	2,700.0	2,758.3	1,434.5	1,418.6	90.198	ES
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	11,472.3	6,300.0	4,835.9	4,694.1	34.110	SF

## Offset Design

Survey Program: 0-MWD

NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-174.67	-89.6	-8.4	90.0				
98.4	98.4	98.4	98.4	0.1	0.1	-174.67	-89.6	-8.4	90.0	89.8	0.19	468.221	
100.0	100.0	100.0	100.0	0.1	0.1	-174.67	-89.6	-8.4	90.0	89.8	0.20	460.296	
196.8	196.8	196.8	196.8	0.3	0.3	-174.67	-89.6	-8.4	90.0	89.4	0.63	142.664	
200.0	200.0	200.0	200.0	0.3	0.3	-174.67	-89.6	-8.4	90.0	89.4	0.65	139.532	
295.3	295.3	295.3	295.3	0.5	0.5	-174.67	-89.6	-8.4	90.0	88.9	1.07	83.857	
300.0	300.0	300.0	300.0	0.5	0.5	-174.67	-89.6	-8.4	90.0	88.9	1.09	82.229	
393.7	393.7	393.7	393.7	0.8	0.8	-174.67	-89.6	-8.4	90.0	88.5	1.52	59.380	
400.0	400.0	400.0	400.0	0.8	0.8	-174.67	-89.6	-8.4	90.0	88.5	1.54	58.291	
492.1	492.1	492.1	492.1	1.0	1.0	-174.67	-89.6	-8.4	90.0	88.1	1.96	45.964	
500.0	500.0	500.0	500.0	1.0	1.0	-174.67	-89.6	-8.4	90.0	88.0	1.99	45.147	
590.5	590.5	590.5	590.5	1.2	1.2	-174.67	-89.6	-8.4	90.0	87.6	2.40	37.493	
600.0	600.0	600.0	600.0	1.2	1.2	-174.67	-89.6	-8.4	90.0	87.6	2.44	36.841	
689.0	689.0	689.0	689.0	1.4	1.4	-174.67	-89.6	-8.4	90.0	87.2	2.84	31.658	
700.0	700.0	700.0	700.0	1.4	1.4	-174.67	-89.6	-8.4	90.0	87.1	2.89	31.116	
787.4	787.4	787.4	787.4	1.6	1.6	-174.67	-89.6	-8.4	90.0	86.7	3.29	27.395	
800.0	800.0	800.0	800.0	1.7	1.7	-174.67	-89.6	-8.4	90.0	86.7	3.34	26.931	
885.8	885.8	885.8	885.8	1.9	1.9	-174.67	-89.6	-8.4	90.0	86.3	3.73	24.144	

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