

PDC ENERGY

**WELD COUNTY, COLORADO
NW SW SEC. 17 T5N R64W 6th P.M.
CECIL'S KERSEY FARM 17K-204**

**ORIGINAL WELLBORE
PROPOSAL #2**

Anticollision Report

16 September, 2015



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well CECIL'S KERSEY FARM 17K-204
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4636.0usft (Original Well Elev)
Reference Site:	NW SW SEC. 17 T5N R64W 6th P.M.	MD Reference:	KB-EST @ 4636.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	CECIL'S KERSEY FARM 17K-204	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 #2	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL #2		
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	16/09/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,914.3	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	1,250.0	1,250.0	75.0	69.6	13.981	CC, ES
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	1,400.0	1,399.1	79.1	73.1	13.194	SF
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,250.0	1,250.0	60.0	54.6	11.184	CC
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,279.5	1,279.5	60.1	54.6	10.939	ES
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	12,915.0	12,876.2	775.3	428.3	2.234	SF
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	1,037.2	1,037.2	105.0	100.6	23.821	CC
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	1,082.7	1,082.2	105.1	100.5	22.813	ES
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	8,300.0	6,527.6	1,220.7	1,157.0	19.162	SF
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	1,137.4	1,137.4	90.0	85.2	18.524	CC
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	1,200.0	1,199.8	90.1	84.9	17.555	ES
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	12,915.0	12,961.7	987.6	641.2	2.851	SF
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	1,250.0	1,250.0	15.0	9.6	2.796	CC
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	1,279.5	1,279.5	15.1	9.6	2.752	ES
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	7,050.0	7,384.6	104.3	58.8	2.294	SF
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	1,250.0	1,250.0	45.0	39.6	8.388	CC
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	1,279.5	1,279.5	45.1	39.6	8.210	ES
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	7,600.0	6,896.2	362.4	313.7	7.445	SF
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	1,250.0	1,250.0	30.0	24.6	5.592	CC
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	12,915.0	12,974.1	259.9	-75.6	0.775	Level 1, ES, SF
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	1,137.4	1,137.4	15.0	10.1	3.087	CC
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	1,181.1	1,181.0	15.1	10.1	2.990	ES
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	7,627.2	6,957.9	123.1	72.7	2.441	SF
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	1,037.1	1,037.1	30.0	25.6	6.808	CC
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	12,915.0	13,080.6	299.8	19.7	1.070	Level 2, ES, SF
EXIST VERT B&H #1 - Wellbore #1 - Design #1	12,551.0	6,708.3	740.0	442.6	2.488	CC, ES
EXIST VERT B&H #1 - Wellbore #1 - Design #1	12,600.0	6,708.3	741.6	442.8	2.482	SF
EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1	12,380.8	6,708.5	758.4	465.7	2.591	CC
EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1	12,401.5	6,708.5	758.7	465.4	2.587	ES, SF
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	11,197.1	6,706.6	976.7	717.0	3.761	CC
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	11,220.4	6,706.5	977.0	716.7	3.753	ES
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	11,300.0	6,706.5	982.1	719.6	3.741	SF
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #	1,978.5	1,967.9	296.2	252.4	6.763	CC
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #	2,100.0	2,086.2	297.4	250.8	6.382	ES
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #	7,300.0	6,708.9	489.2	331.7	3.105	SF
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Desig	1,959.4	1,942.3	536.0	492.7	12.383	CC
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Desig	2,200.0	2,176.6	538.7	489.8	11.019	ES
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Desig	6,692.9	6,514.3	1,013.2	864.9	6.834	SF

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

Anticollision Report



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Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4636.0usft (Original Well Elev)
Reference Site:	NW SW SEC. 17 T5N R64W 6th P.M.	MD Reference:	KB-EST @ 4636.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	CECIL'S KERSEY FARM 17K-204	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 #2	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
NW SW SEC. 17 T5N R64W 6th P.M.						
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des	6,098.5	5,983.8	642.1	507.4	4.767	CC
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des	6,102.3	5,987.6	642.1	500.2	4.525	ES
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des	6,150.0	6,035.2	643.6	501.0	4.512	SF
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #	8,611.1	6,704.8	869.7	680.9	4.606	CC, ES
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #	8,700.0	6,704.7	874.2	683.1	4.573	SF
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	9,929.4	6,713.9	954.9	863.1	10.397	CC
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	9,940.9	6,713.9	955.0	862.8	10.362	ES
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	10,200.0	6,713.5	992.5	893.2	9.994	SF
EXIST VERT H&S #1 - Wellbore #1 - Design #1	6,098.5	5,987.8	2,176.4	2,040.6	16.021	CC
EXIST VERT H&S #1 - Wellbore #1 - Design #1	6,102.3	5,991.6	2,176.4	2,035.3	15.420	ES
EXIST VERT H&S #1 - Wellbore #1 - Design #1	6,150.0	6,039.2	2,178.2	2,036.4	15.361	SF
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	8,598.6	6,708.8	459.0	270.4	2.435	CC
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	8,600.0	6,708.8	459.0	270.4	2.434	ES, SF
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Desig	9,923.0	6,701.7	576.9	352.5	2.571	CC
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Desig	9,940.9	6,701.7	577.2	352.3	2.567	ES, SF
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig	9,905.1	6,706.7	1,803.1	1,579.2	8.052	CC
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig	9,940.9	6,706.7	1,803.5	1,578.6	8.018	ES
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig	10,300.0	6,706.4	1,845.9	1,611.1	7.861	SF
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Desig	8,582.0	6,703.8	1,774.1	1,586.1	9.436	CC
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Desig	8,600.0	6,703.8	1,774.2	1,585.7	9.413	ES
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Desig	9,055.1	6,703.4	1,836.1	1,635.4	9.149	SF
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	6,098.5	5,985.8	2,067.8	1,927.1	14.695	CC, ES, SF
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	6,098.5	5,985.8	3,321.9	3,182.1	23.769	CC, ES, SF
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	3,852.2	3,781.1	2,676.3	2,662.2	189.824	CC
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	3,937.0	3,855.7	2,676.5	2,661.9	184.450	ES
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	12,914.3	6,582.9	8,528.0	8,353.3	48.806	SF
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	12,581.9	6,706.3	1,893.8	1,595.5	6.349	CC
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	12,600.0	6,706.3	1,893.9	1,595.1	6.338	ES
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	12,914.3	6,706.0	1,922.7	1,615.1	6.251	SF
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	11,036.0	6,709.7	1,945.1	1,689.8	7.620	CC
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	11,100.0	6,709.6	1,946.1	1,689.1	7.571	ES
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	11,417.3	6,709.4	1,982.1	1,716.2	7.456	SF
EXIST VERT MASON #1 - Wellbore #1 - Design #1	11,228.0	6,706.5	688.2	427.6	2.641	CC, ES
EXIST VERT MASON #1 - Wellbore #1 - Design #1	11,300.0	6,706.5	691.9	429.4	2.635	SF
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	0.0	0.0	1,102.6			
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	1,250.0	1,246.4	1,105.9	1,102.5	326.780	ES
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	12,400.0	6,684.5	5,403.9	5,243.6	33.701	SF
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	1,420.5	1,420.9	1,545.9	1,542.1	400.291	CC
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	1,476.4	1,475.7	1,546.0	1,542.0	385.851	ES
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	12,914.3	6,656.3	7,204.6	7,029.8	41.215	SF
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,127.7	6,697.6	837.9	683.2	5.416	CC
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,150.0	6,700.2	838.2	683.2	5.406	ES
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,200.0	6,703.6	841.0	685.2	5.396	SF
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	6,098.5	5,997.8	3,252.6	3,116.0	23.803	CC
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	6,102.3	6,001.6	3,252.6	3,111.9	23.117	ES
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	6,150.0	6,049.2	3,254.5	3,113.1	23.027	SF
EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1	5,892.8	5,737.8	3,749.7	3,727.0	164.694	CC
EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1	5,905.5	5,749.2	3,749.7	3,727.0	164.521	ES
EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1	12,915.0	6,500.0	9,951.4	9,778.2	57.460	SF
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	6,098.5	5,988.8	1,013.1	871.3	7.142	CC, ES, SF

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

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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 #2	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						
SE SE SEC. 18 T5N R64W 6th P.M.						
GILLHAM 18X-102 - ORIGINAL WELLBORE - PROPOS	6,397.6	8,681.1	1,332.1	1,252.5	16.730	SF
GILLHAM 18X-102 - ORIGINAL WELLBORE - PROPOS	6,700.0	8,502.7	1,299.7	1,225.6	17.531	ES
GILLHAM 18X-102 - ORIGINAL WELLBORE - PROPOS	6,791.2	8,430.6	1,298.5	1,226.4	17.988	CC
GILLHAM 18X-104 - ORIGINAL WELLBORE - PROPOS	12,915.0	11,859.3	1,200.0	883.0	3.785	CC, ES, SF
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	1,035.2	1,037.2	1,587.2	1,582.8	360.394	CC
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	1,082.7	1,072.6	1,587.3	1,582.8	346.106	ES
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	9,900.0	6,316.4	2,080.5	1,979.0	20.503	SF
GILLHAM 18X-234 - ORIGINAL WELLBORE - PROPOS	1,719.0	1,956.7	1,433.0	1,424.9	175.787	CC
GILLHAM 18X-234 - ORIGINAL WELLBORE - PROPOS	12,915.0	11,944.1	1,623.4	1,304.6	5.093	ES, SF
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	8,494.5	6,919.2	1,516.4	1,447.8	22.093	CC
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	8,600.0	6,830.2	1,517.3	1,446.6	21.472	ES
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	9,600.0	6,420.5	1,732.9	1,638.5	18.346	SF
GILLHAM 18X-334 - ORIGINAL WELLBORE - PROPOS	7,837.0	6,940.7	1,405.4	1,350.6	25.624	CC
GILLHAM 18X-334 - ORIGINAL WELLBORE - PROPOS	12,915.0	12,033.2	1,407.1	1,088.8	4.421	ES, SF
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	1,250.0	1,252.0	1,537.4	1,532.0	286.313	CC, ES
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	10,531.5	6,300.0	2,854.9	2,734.3	23.671	SF
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	1,250.0	1,252.0	1,524.9	1,519.5	283.987	CC, ES
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	12,915.0	12,002.8	2,155.3	1,836.2	6.755	SF
GILLHAM 18Y-312 - ORIGINAL WELLBORE - PROPOS	1,250.0	1,252.0	1,549.8	1,544.4	288.613	CC, ES
GILLHAM 18Y-312 - ORIGINAL WELLBORE - PROPOS	10,433.0	6,350.0	2,616.3	2,498.5	22.213	SF
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	1,250.0	1,252.0	1,512.5	1,507.1	281.669	CC, ES
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	12,915.0	12,055.4	1,956.7	1,637.9	6.139	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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-174.67	-74.7	-7.0	75.0				
98.4	98.4	98.4	98.4	0.1	0.1	-174.67	-74.7	-7.0	75.0	74.8	0.19	390.184	
100.0	100.0	100.0	100.0	0.1	0.1	-174.67	-74.7	-7.0	75.0	74.8	0.20	383.580	
196.8	196.8	196.8	196.8	0.3	0.3	-174.67	-74.7	-7.0	75.0	74.4	0.63	118.887	
200.0	200.0	200.0	200.0	0.3	0.3	-174.67	-74.7	-7.0	75.0	74.4	0.65	116.277	
295.3	295.3	295.3	295.3	0.5	0.5	-174.67	-74.7	-7.0	75.0	73.9	1.07	69.881	
300.0	300.0	300.0	300.0	0.5	0.5	-174.67	-74.7	-7.0	75.0	73.9	1.09	68.525	
393.7	393.7	393.7	393.7	0.8	0.8	-174.67	-74.7	-7.0	75.0	73.5	1.52	49.483	
400.0	400.0	400.0	400.0	0.8	0.8	-174.67	-74.7	-7.0	75.0	73.5	1.54	48.576	
492.1	492.1	492.1	492.1	1.0	1.0	-174.67	-74.7	-7.0	75.0	73.0	1.96	38.303	
500.0	500.0	500.0	500.0	1.0	1.0	-174.67	-74.7	-7.0	75.0	73.0	1.99	37.623	
590.5	590.5	590.5	590.5	1.2	1.2	-174.67	-74.7	-7.0	75.0	72.6	2.40	31.244	
600.0	600.0	600.0	600.0	1.2	1.2	-174.67	-74.7	-7.0	75.0	72.6	2.44	30.701	
689.0	689.0	689.0	689.0	1.4	1.4	-174.67	-74.7	-7.0	75.0	72.2	2.84	26.382	
700.0	700.0	700.0	700.0	1.4	1.4	-174.67	-74.7	-7.0	75.0	72.1	2.89	25.930	
787.4	787.4	787.4	787.4	1.6	1.6	-174.67	-74.7	-7.0	75.0	71.7	3.29	22.829	
800.0	800.0	800.0	800.0	1.7	1.7	-174.67	-74.7	-7.0	75.0	71.7	3.34	22.442	
885.8	885.8	885.8	885.8	1.9	1.9	-174.67	-74.7	-7.0	75.0	71.3	3.73	20.120	
900.0	900.0	900.0	900.0	1.9	1.9	-174.67	-74.7	-7.0	75.0	71.2	3.79	19.782	
984.2	984.2	984.2	984.2	2.1	2.1	-174.67	-74.7	-7.0	75.0	70.8	4.17	17.985	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-174.67	-74.7	-7.0	75.0	70.8	4.24	17.685	

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