

# **PDC ENERGY**

**WELD COUNTY, COLORADO  
NW SW SEC. 17 T5N R64W 6th P.M.  
CECIL'S KERSEY FARM 17B-302**

**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 17B-302
<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 17B-302	<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	11,329.6	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	1,050.0	1,050.0	30.0	25.5	6.718	CC
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	11,329.9	11,239.4	222.6	-27.1	0.892	Level 1, ES, SF
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,050.0	1,050.0	45.0	40.5	10.077	CC
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	1,082.7	1,082.7	45.1	40.5	9.783	ES
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	6,850.0	7,553.9	310.8	262.0	6.366	SF
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	1,050.0	1,050.0	15.0	10.5	3.359	CC
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	1,082.7	1,082.7	15.1	10.5	3.271	ES
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	7,381.9	7,131.1	96.5	51.8	2.160	SF
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	1,050.0	1,050.0	105.0	100.5	23.513	CC
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	1,082.7	1,082.7	105.1	100.5	22.808	ES
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	1,377.9	1,372.7	115.7	109.9	19.756	SF
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	1,050.0	1,050.0	90.0	85.5	20.154	CC
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	1,082.7	1,082.7	90.1	85.5	19.552	ES
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	11,329.9	11,293.7	979.1	725.6	3.862	SF
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	1,050.0	1,050.0	60.0	55.5	13.436	CC
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	1,082.7	1,082.7	60.1	55.5	13.040	ES
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	11,329.9	11,352.0	722.1	468.2	2.845	SF
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	1,050.0	1,050.0	75.0	70.5	16.795	CC
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	1,082.7	1,082.7	75.1	70.5	16.296	ES
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	1,377.9	1,377.2	83.7	77.8	14.266	SF
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	1,050.0	1,050.0	120.0	115.5	26.872	CC
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	1,082.7	1,082.7	120.1	115.5	26.064	ES
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	11,329.9	11,472.7	1,208.5	955.5	4.777	SF
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	1,050.0	1,050.0	135.0	130.6	30.233	CC, ES
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	8,800.0	6,550.0	1,636.9	1,562.9	22.122	SF
EXIST VERT B&H #1 - Wellbore #1 - Design #1	6,149.9	6,066.9	4,655.2	4,513.5	32.857	CC, ES, SF
EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1	6,149.9	6,066.9	4,836.1	4,696.1	34.534	CC, ES, SF
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	6,149.9	6,063.9	3,879.7	3,740.8	27.930	CC
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	6,200.0	6,113.9	3,881.2	3,740.6	27.607	ES
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	6,250.0	6,163.7	3,885.7	3,744.8	27.583	SF
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #	1,638.3	1,631.2	391.5	355.4	10.856	CC
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #	1,870.1	1,857.9	394.4	353.0	9.518	ES
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Design #	7,250.0	6,778.6	595.6	437.0	3.754	SF
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Desig	7,851.7	6,764.3	76.2	-93.6	0.449	Level 1, CC, ES, SF
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des	8,500.7	6,753.5	735.6	550.2	3.967	CC, ES
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des	8,563.0	6,752.6	738.2	551.2	3.948	SF
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #	6,149.9	6,059.9	2,074.0	1,938.3	15.285	CC

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 17B-302
<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 17B-302	<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)	Between Ellipses (usft)	Separation Factor	Warning
NW SW SEC. 17 T5N R64W 6th P.M.						
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #	6,200.0	6,109.9	2,074.6	1,931.3	14.473	ES
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #	6,400.0	6,304.9	2,089.0	1,942.9	14.290	SF
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	6,168.4	6,131.0	2,877.4	2,856.2	135.659	CC, ES
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	11,329.9	6,731.3	7,090.6	6,962.1	55.214	SF
EXIST VERT H&S #1 - Wellbore #1 - Design #1	10,040.3	6,736.5	442.1	215.8	1.954	CC, ES, SF
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,149.9	6,063.9	929.6	791.8	6.748	CC
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,200.0	6,113.9	930.9	789.2	6.570	ES
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,200.8	6,114.7	930.9	789.3	6.570	SF
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Desig	6,149.9	6,057.9	2,076.9	1,936.1	14.752	CC, ES, SF
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig	6,149.9	6,062.9	2,123.0	1,980.7	14.912	CC, ES, SF
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Desig	6,149.9	6,058.9	966.0	825.0	6.852	CC, ES, SF
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	9,832.1	6,737.4	1,959.8	1,739.2	8.882	CC
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	9,900.0	6,736.5	1,961.0	1,738.5	8.814	ES
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	10,300.0	6,731.0	2,014.9	1,781.5	8.635	SF
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,160.7	6,719.3	1,970.9	1,714.0	7.673	CC
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,220.4	6,718.5	1,971.8	1,713.3	7.628	ES
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,329.9	6,717.0	1,978.1	1,716.6	7.564	SF
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	9,843.7	6,714.5	925.0	837.2	10.535	CC, ES
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	10,100.0	6,715.8	959.8	865.0	10.123	SF
EXIST VERT HOWARD #14-18 - Wellbore #1 - Design #	6,149.9	6,064.9	4,743.6	4,601.3	33.331	CC, ES, SF
EXIST VERT HOWARD #24-18 - Wellbore #1 - Design #	6,149.9	6,066.9	3,244.6	3,102.2	22.782	CC, ES, SF
EXIST VERT MASON #1 - Wellbore #1 - Design #1	6,149.9	6,063.9	3,342.8	3,201.4	23.629	CC, ES, SF
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	7,151.7	6,764.0	745.1	721.9	32.111	CC, ES
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	7,775.6	6,770.2	970.7	936.7	28.563	SF
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	8,520.7	6,751.5	754.1	701.8	14.437	CC, ES
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	8,800.0	6,751.6	804.1	744.6	13.513	SF
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	1,050.0	1,042.0	1,685.5	1,662.7	73.745	CC
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	1,279.5	1,271.3	1,688.0	1,660.0	60.439	ES
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De	7,874.0	6,766.0	1,992.7	1,822.4	11.704	SF
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,155.4	6,731.4	473.6	216.7	1.844	CC, ES
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,200.0	6,730.8	475.7	217.6	1.843	SF
EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1	11,329.9	6,700.0	496.7	368.4	3.872	CC, ES, SF
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	8,500.9	6,758.5	1,938.2	1,752.7	10.450	CC
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	8,563.0	6,757.6	1,939.2	1,752.1	10.367	ES
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	9,055.1	6,750.9	2,015.9	1,816.0	10.086	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 17B-302
<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 17B-302	<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	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	6,740.9	7,569.6	216.8	164.8	4.164	CC
GILLHAM 18X-102 - ORIGINAL WELLBORE - PROPOS	11,329.9	12,108.9	276.4	49.3	1.217	Level 2, ES, SF
GILLHAM 18X-104 - ORIGINAL WELLBORE - PROPOS	6,593.1	6,694.8	113.9	74.0	2.853	CC, ES, SF
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	6,908.4	7,792.7	651.9	596.3	11.726	CC
GILLHAM 18X-232 - ORIGINAL WELLBORE - PROPOS	11,329.9	12,197.6	656.5	375.1	2.333	ES, SF
GILLHAM 18X-234 - ORIGINAL WELLBORE - PROPOS	6,679.9	6,712.1	541.9	502.5	13.739	CC, ES, SF
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	7,151.1	8,109.0	434.8	371.5	6.867	CC
GILLHAM 18X-332 - ORIGINAL WELLBORE - PROPOS	11,329.9	12,287.0	435.0	151.8	1.536	ES, SF
GILLHAM 18X-334 - ORIGINAL WELLBORE - PROPOS	6,743.3	6,740.7	323.8	284.0	8.142	CC, ES, SF
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	6,908.3	7,828.0	1,175.7	1,120.9	21.465	CC
GILLHAM 18Y-202 - ORIGINAL WELLBORE - PROPOS	11,329.9	12,232.8	1,178.4	896.9	4.186	ES, SF
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	4,123.5	4,054.9	930.9	903.3	33.712	CC
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	4,200.0	4,123.9	931.4	903.1	32.880	ES
GILLHAM 18Y-214 - ORIGINAL WELLBORE - PROPOS	6,650.0	6,771.6	1,074.4	1,033.5	26.299	SF
GILLHAM 18Y-312 - ORIGINAL WELLBORE - PROPOS	7,149.9	8,124.2	967.8	905.5	15.525	CC
GILLHAM 18Y-312 - ORIGINAL WELLBORE - PROPOS	11,329.9	12,303.5	968.0	685.8	3.430	ES, SF
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	4,410.9	4,358.0	807.2	777.3	26.968	CC
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	4,429.1	4,374.6	807.2	777.2	26.822	ES
GILLHAM 18Y-314 - ORIGINAL WELLBORE - PROPOS	6,745.4	6,762.5	873.8	833.5	21.642	SF

<b>Offset Design</b> NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P													<b>Offset Site Error:</b>	0.0 usft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		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	5.33	29.9	2.8	30.0					
98.4	98.4	98.4	98.4	0.1	0.1	5.33	29.9	2.8	30.0	29.8	0.19	156.074		
100.0	100.0	100.0	100.0	0.1	0.1	5.33	29.9	2.8	30.0	29.8	0.20	153.432		
196.8	196.8	196.8	196.8	0.3	0.3	5.33	29.9	2.8	30.0	29.4	0.63	47.555		
200.0	200.0	200.0	200.0	0.3	0.3	5.33	29.9	2.8	30.0	29.4	0.65	46.511		
295.3	295.3	295.3	295.3	0.5	0.5	5.33	29.9	2.8	30.0	28.9	1.07	27.952		
300.0	300.0	300.0	300.0	0.5	0.5	5.33	29.9	2.8	30.0	28.9	1.09	27.410		
393.7	393.7	393.7	393.7	0.8	0.8	5.33	29.9	2.8	30.0	28.5	1.52	19.793		
400.0	400.0	400.0	400.0	0.8	0.8	5.33	29.9	2.8	30.0	28.5	1.54	19.430		
492.1	492.1	492.1	492.1	1.0	1.0	5.33	29.9	2.8	30.0	28.0	1.96	15.321		
500.0	500.0	500.0	500.0	1.0	1.0	5.33	29.9	2.8	30.0	28.0	1.99	15.049		
590.5	590.5	590.5	590.5	1.2	1.2	5.33	29.9	2.8	30.0	27.6	2.40	12.498		
600.0	600.0	600.0	600.0	1.2	1.2	5.33	29.9	2.8	30.0	27.6	2.44	12.280		
689.0	689.0	689.0	689.0	1.4	1.4	5.33	29.9	2.8	30.0	27.2	2.84	10.553		
700.0	700.0	700.0	700.0	1.4	1.4	5.33	29.9	2.8	30.0	27.1	2.89	10.372		
787.4	787.4	787.4	787.4	1.6	1.6	5.33	29.9	2.8	30.0	26.7	3.29	9.132		
800.0	800.0	800.0	800.0	1.7	1.7	5.33	29.9	2.8	30.0	26.7	3.34	8.977		
885.8	885.8	885.8	885.8	1.9	1.9	5.33	29.9	2.8	30.0	26.3	3.73	8.048		
900.0	900.0	900.0	900.0	1.9	1.9	5.33	29.9	2.8	30.0	26.2	3.79	7.913		
984.2	984.2	984.2	984.2	2.1	2.1	5.33	29.9	2.8	30.0	25.8	4.17	7.194		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	5.33	29.9	2.8	30.0	25.8	4.24	7.074		
1,050.0	1,050.0	1,050.0	1,050.0	2.2	2.2	5.33	29.9	2.8	30.0	25.5	4.47	6.718	CC	
1,082.7	1,082.7	1,082.7	1,082.7	2.3	2.3	111.83	29.9	2.8	30.1	25.5	4.61	6.527		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	112.27	29.9	2.8	30.2	25.5	4.68	6.443		
1,181.1	1,181.1	1,181.1	1,181.1	2.5	2.5	116.60	29.9	2.8	31.2	26.2	5.02	6.219		

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