PDC ENERGY

WELD COUNTY, COLORADO
SW NW SEC. 17 T5N R64W 6th P.M.
SCHAUMBERG 17F-202ST

JOB #2016-52-135 - SIDETRACK
PROPOSAL #3 - SIDETRACK

Anticollision Report

26 May, 2016

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Reference PROPOSAL #3 - SIDETRACK

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.0usft	**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** 26/05/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
261.0	5,412.0	FINAL SURVEYS (JOB #2016-52-135 - O	MWD	MWD - Standard
5,412.0	12,035.9	PROPOSAL #3 - SIDETRACK (JOB #201	MWD	MWD - Standard

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.						
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	0.0	3.0	2,021.5			
CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC	12,036.2	11,227.2	2,239.2	1,971.3	8.357	ES, SF
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	0.0	3.0	2,006.5			
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	200.0	203.0	2,006.9	2,006.4	3,719.256	ES
CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC	10,600.0	6,250.0	2,940.3	2,823.9	25.262	SF
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	0.0	3.0	2,051.5			
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	200.0	203.0	2,051.9	2,051.3	3,802.550	ES
CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC	12,036.2	11,318.2	2,458.7	2,190.8	9.179	SF
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	0.0	3.0	2,036.5			
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	200.0	203.0	2,036.9	2,036.3	3,774.785	ES
CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC	10,900.0	6,300.0	3,278.8	3,153.2	26.112	SF
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	6,600.0	8,445.0	1,412.6	1,332.2	17.577	SF
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	6,925.0	8,247.8	1,378.1	1,304.4	18.710	ES
CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC	7,113.8	8,072.7	1,376.4	1,307.7	20.028	CC
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	10,278.9	9,528.2	1,480.3	1,308.1	8.597	CC
CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC	12,036.2	11,285.5	1,480.3	1,212.0	5.516	ES, SF
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	7,683.4	6,979.3	1,736.1	1,682.8	32.569	CC
CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC	12,036.2	11,344.0	1,736.9	1,468.5	6.472	ES, SF
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	6,600.0	8,504.7	1,674.1	1,593.6	20.817	SF
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	7,000.0	8,240.7	1,630.5	1,558.6	22.701	ES
CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC	8,303.6	6,928.4	1,626.7	1,564.8	26.264	CC
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	7,563.7	6,963.0	1,253.3	1,201.3	24.084	CC
CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC	12,036.2	11,466.9	1,262.2	995.0	4.725	ES, SF
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	6,700.0	8,567.5	1,197.8	1,118.8	15.160	SF
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	8,392.9	6,927.8	1,136.8	1,072.7	17.736	CC
CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC	8,400.0	6,922.1	1,136.8	1,072.5	17.699	ES
EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1	6,167.1	5,862.5	4,615.0	4,592.2	202.115	CC
EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1	6,318.8	6,034.3	4,616.7	4,588.3	162.708	ES
EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1	12,036.2	6,690.5	9,658.6	9,515.5	67.495	SF
EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1	6,318.8	6,115.9	3,959.5	3,807.4	26.028	CC
EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1	6,444.4	6,241.6	3,959.5	3,804.7	25.584	ES, SF
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	6,318.8	6,112.9	2,756.3	2,604.2	18.115	CC
EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1	6,444.4	6,238.6	2,756.3	2,601.5	17.806	ES, SF
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore	1,115.4	1,108.3	1,706.9	1,702.7	401.506	CC
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore	1,200.0	1,192.0	1,707.2	1,702.4	353.713	ES
EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore	11,000.0	6,681.3	3,613.8	3,499.0	31.469	SF

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**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 #17B - Wellbore #1 - Wellb	134.5	133.2	2,243.1	2,242.8	8,864.183	CC, ES
EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellb	11,800.0	6,700.0	4,014.7	3,878.1	29.384	SF
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wel	9,219.8	6,660.9	1,774.0	1,706.4	26.256	CC
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wel	9,300.0	6,659.1	1,775.8	1,706.2	25.513	ES
EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wel	10,500.0	6,630.0	2,187.5	2,086.3	21.617	SF
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1	5,814.4	5,606.0	515.7	374.5	3.651	CC
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1	6,475.0	6,265.1	526.3	370.5	3.378	ES
EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1	6,525.0	6,314.8	527.9	371.3	3.371	SF
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	6,318.7	6,109.4	1,518.8	1,498.4	74.473	CC
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	6,444.4	6,233.4	1,518.9	1,488.4	49.814	ES
EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We	12,036.2	6,672.7	6,791.7	6,649.5	47.766	SF
EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1	10,799.2	6,633.8	2,064.9	1,955.3	18.837	CC
EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1	10,900.0	6,634.2	2,067.3	1,955.0	18.400	ES
EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1	11,900.0	6,638.5	2,340.0	2,200.3	16.749	SF
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	4,734.3	4,556.2	1,821.0	1,705.2	15.725	CC
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	5,800.0	5,595.6	1,822.3	1,680.8	12.878	ES
EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1	6,800.0	6,562.2	1,853.0	1,692.5	11.539	SF
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbo	5,886.5	5,646.9	2,494.4	2,466.5	89.325	CC
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbo	5,900.0	5,662.4	2,494.4	2,466.5	89.215	ES
EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbo	12,036.2	6,692.3	7,149.1	7,005.9	49.924	SF
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Wellbo	5,902.3	5,747.8	3,466.5	3,436.6	115.917	CC, ES
EXIST VERT HETTINGER #34-18 - Wellbore #1 - Wellbo	12,036.2	6,722.4	7,487.1	7,343.8	52.271	SF
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbo	5,705.6	5,513.3	3,059.4	3,028.3	98.499	CC, ES
EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbo	12,036.2	6,696.4	6,284.2	6,140.5	43.739	SF
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	10,551.7	6,676.9	498.3	263.3	2.121	CC, ES
EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #	10,600.0	6,676.4	500.6	264.4	2.119	SF
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,880.3	6,664.5	487.2	216.3	1.798	CC
EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #	11,900.0	6,664.3	487.6	216.1	1.796	ES, SF
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	10,562.1	6,616.4	3,381.0	3,277.7	32.734	CC
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	10,700.0	6,616.6	3,383.8	3,276.8	31.621	ES
EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb	12,036.2	6,619.1	3,688.4	3,544.9	25.698	SF
EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore	6,444.4	6,276.2	5,260.5	5,234.3	200.476	ES
EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore	6,448.4	6,280.4	5,260.5	5,234.6	203.356	CC
EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore	12,000.0	6,786.9	9,971.2	9,828.9	70.112	SF
EXIST VERT MASON #1 - Wellbore #1 - Design #1	6,318.8	6,112.9	3,445.3	3,298.0	23.402	CC
EXIST VERT MASON #1 - Wellbore #1 - Design #1	6,444.4	6,238.6	3,445.3	3,295.4	22.986	ES, SF
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	0.0	0.0	3,044.6			
EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1	12,036.2	6,668.6	5,252.5	5,109.4	36.689	SF
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	0.0	0.0	3,172.2			
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	9,300.0	6,646.7	3,211.7	3,141.9	46.037	ES
EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1	12,036.2	6,618.0	4,257.9	4,114.6	29.716	SF
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - We	869.3	858.3	375.2	372.5	138.368	CC
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - We	900.0	887.8	375.3	372.4	129.884	ES
EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - We	8,200.0	6,600.0	548.9	505.7	12.692	SF
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,875.0	6,676.5	1,984.5	1,713.6	7.325	CC
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	11,900.0	6,676.3	1,984.7	1,713.1	7.307	ES
EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1	12,036.2	6,675.0	1,991.1	1,715.7	7.231	SF
EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1	12,036.2	6,600.0	2,950.2	2,807.0	20.609	CC, ES, SF
EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1	9,220.7	6,692.3	519.9	319.7	2.597	CC, ES, SF

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Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**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
SW NW SEC. 17 T5N R64W 6th P.M.						
EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1	6,444.4	6,229.6	4,107.5	3,952.2	26.446	CC, ES, SF
EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Desig	6,444.4	6,237.6	3,266.8	3,111.6	21.044	CC, ES, SF
EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1	6,309.6	6,085.7	2,908.4	2,890.1	159.346	CC
EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1	6,318.8	6,094.0	2,908.4	2,876.7	91.769	ES
EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1	12,036.2	6,632.8	8,152.3	8,009.8	57.199	SF
EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1	6,444.4	6,225.6	1,643.5	1,489.5	10.672	CC, ES, SF
EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #	6,444.4	6,223.6	789.9	647.2	5.535	CC
EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #	6,500.0	6,279.0	790.6	635.4	5.094	ES
EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #	6,575.0	6,352.5	793.5	637.2	5.077	SF
EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #	10,651.9	6,672.9	714.9	477.5	3.011	CC, ES
EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #	10,700.0	6,672.5	716.5	477.8	3.002	SF
EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #	11,779.9	6,659.4	715.0	447.1	2.669	CC
EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #	11,800.0	6,659.2	715.3	446.8	2.664	ES, SF
EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1	6,444.4	6,238.6	790.9	635.7	5.094	CC, ES, SF
EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbor	7,952.7	6,694.3	714.5	675.7	18.419	CC, ES
EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbor	8,200.0	6,694.4	756.1	712.5	17.347	SF
EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbc	9,345.5	6,520.0	662.9	593.0	9.483	CC, ES
EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbc	9,500.0	6,520.0	680.6	606.9	9.228	SF
SCHAUMBERG 17F-202ST - JOB #2016-52-135 - ORIG	5,412.0	5,412.0	0.0	0.0	10,000.000	CC
SCHAUMBERG 17F-202ST - JOB #2016-52-135 - ORIG	5,464.6	5,464.6	0.0	-0.3	0.003	Level 1, SF
SCHAUMBERG 17F-202ST - JOB #2016-52-135 - ORIG	12,000.0	11,830.5	25.0	-195.2	0.114	Level 1, ES
SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PR	7,125.0	7,406.8	73.7	14.3	1.240	Level 2, ES, SF
SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PR	7,169.0	7,363.0	73.6	14.9	1.255	Level 3, CC
SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PR	263.2	263.2	30.0	29.2	40.050	CC, ES
SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PR	12,036.2	11,970.4	465.0	181.6	1.641	SF
SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PR	263.5	263.5	104.9	104.1	139.927	CC, ES
SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PR	6,950.0	7,576.4	369.3	306.0	5.834	SF
SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PR	262.9	262.9	14.9	14.2	19.993	CC
SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PR	12,036.2	12,026.1	269.1	-2.8	0.990	Level 1, ES, SF
SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PR	263.5	263.5	75.1	74.3	100.204	CC, ES
SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PR	7,711.9	6,869.2	149.4	97.6	2.883	SF
SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PR	263.5	263.5	60.0	59.3	80.137	CC, ES
SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PR	12,036.2	12,057.1	1,019.1	735.7	3.597	SF
SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PR	263.5	263.5	135.0	134.2	180.058	CC, ES
SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PR	6,675.0	7,822.7	941.5	872.5	13.636	SF
SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PR	263.4	263.4	45.0	44.2	60.072	CC, ES
SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PR	12,036.2	12,077.9	784.9	503.1	2.785	SF
SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PR	263.5	263.5	119.9	119.2	159.992	CC, ES
SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PR	6,850.0	7,758.7	690.7	626.1	10.696	SF

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

Survey Program: 0-MWD

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.61	-2,019.7	-84.4	2,021.5				
100.0	100.0	103.0	103.0	0.1	0.1	171.79	-2,019.7	-84.4	2,021.6	2,021.4	0.20	9,986.372	
200.0	200.0	203.0	203.0	0.2	0.3	171.79	-2,019.7	-84.4	2,021.9	2,021.3	0.54	3,747.020	
261.0	261.0	264.0	264.0	0.3	0.5	171.80	-2,019.7	-84.4	2,022.2	2,021.4	0.75	2,713.302	
300.0	300.0	303.0	303.0	0.4	0.6	-110.00	-2,019.7	-84.4	2,022.4	2,021.4	0.92	2,191.491	
400.0	399.9	402.9	402.9	0.6	0.8	-95.55	-2,019.7	-84.4	2,022.9	2,021.5	1.38	1,468.035	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
500.0	499.7	502.7	502.7	0.8	1.0	-93.35	-2,019.7	-84.4	2,023.4	2,021.6	1.83	1,104.096	
538.0	537.5	540.5	540.5	0.9	1.1	-92.99	-2,019.7	-84.4	2,023.6	2,021.6	2.01	1,009.169	
600.0	599.1	602.1	602.1	1.1	1.2	-93.94	-2,019.7	-84.4	2,024.0	2,021.7	2.36	858.309	
700.0	697.9	700.9	700.9	1.5	1.4	-95.06	-2,019.7	-84.4	2,025.3	2,022.3	2.93	692.072	
800.0	796.0	799.0	799.0	1.8	1.7	-95.99	-2,019.7	-84.4	2,027.2	2,023.7	3.49	580.417	
818.0	813.5	816.5	816.5	1.9	1.7	-96.15	-2,019.7	-84.4	2,027.6	2,024.0	3.59	564.119	
900.0	893.1	896.1	896.1	2.3	1.9	-95.82	-2,019.7	-84.4	2,029.7	2,025.5	4.23	479.524	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.76	-2,019.7	-84.4	2,032.6	2,027.6	5.01	405.891	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-95.98	-2,019.7	-84.4	2,036.1	2,030.3	5.78	352.364	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-95.99	-2,019.7	-84.4	2,036.2	2,030.4	5.81	350.527	
1,200.0	1,177.9	1,180.9	1,180.9	4.1	2.5	-97.54	-2,019.7	-84.4	2,040.3	2,033.7	6.62	308.050	
1,300.0	1,272.0	1,275.1	1,275.1	4.8	2.7	-99.16	-2,019.7	-84.5	2,045.5	2,038.1	7.47	274.011	
1,391.0	1,357.8	1,362.2	1,362.2	5.3	2.9	-100.59	-2,019.9	-86.6	2,051.0	2,042.8	8.22	249.644	
1,400.0	1,366.3	1,370.9	1,370.9	5.4	2.9	-100.49	-2,019.9	-86.9	2,051.6	2,043.3	8.28	247.641	
1,458.0	1,421.2	1,427.6	1,427.5	5.7	3.0	-99.73	-2,020.0	-89.9	2,055.0	2,046.3	8.73	235.365	
1,500.0	1,461.0	1,469.1	1,468.9	6.0	3.1	-100.21	-2,020.2	-92.8	2,057.3	2,048.3	9.06	227.156	
1,600.0	1,556.1	1,569.2	1,568.6	6.6	3.4	-101.30	-2,020.7	-102.1	2,063.1	2,053.2	9.84	209.561	
1,676.0	1,628.3	1,646.3	1,645.0	7.0	3.5	-102.07	-2,021.3	-111.7	2,067.6	2,057.2	10.46	197.673	
1,700.0	1,651.1	1,670.8	1,669.3	7.2	3.6	-101.66	-2,021.5	-115.2	2,069.1	2,058.4	10.66	194.117	
1,800.0	1,746.4	1,773.7	1,770.8	7.7	3.9	-99.83	-2,022.4	-132.1	2,074.1	2,062.6	11.51	180.139	
1,900.0	1,841.8	1,876.3	1,871.4	8.3	4.2	-97.80	-2,023.5	-152.4	2,077.7	2,065.3	12.41	167.474	
1,963.0	1,902.0	1,939.1	1,932.8	8.7	4.4	-96.46	-2,024.3	-165.4	2,079.2	2,066.3	12.98	160.171	
2,000.0	1,937.4	1,975.9	1,968.8	8.9	4.5	-96.53	-2,024.7	-173.0	2,080.0	2,066.7	13.32	156.211	
2,100.0	2,033.1	2,075.6	2,066.3	9.5	4.9	-96.73	-2,025.9	-193.7	2,082.0	2,067.8	14.23	146.290	
2,200.0	2,129.0	2,175.3	2,163.8	10.0	5.3	-96.91	-2,027.0	-214.4	2,083.9	2,068.8	15.16	137.423	
2,250.0	2,177.1	2,225.2	2,212.6	10.3	5.5	-96.99	-2,027.6	-224.8	2,084.9	2,069.3	15.64	133.342	
2,300.0	2,225.1	2,275.0	2,261.4	10.6	5.7	-98.18	-2,028.2	-235.1	2,086.0	2,069.9	16.11	129.476	
2,400.0	2,321.2	2,374.7	2,358.9	11.2	6.1	-100.50	-2,029.3	-255.8	2,089.0	2,071.9	17.07	122.404	
2,500.0	2,417.0	2,474.4	2,456.4	11.7	6.5	-102.76	-2,030.5	-276.5	2,093.2	2,075.2	18.03	116.115	
2,537.0	2,452.5	2,511.2	2,492.4	11.9	6.6	-103.59	-2,030.9	-284.1	2,095.0	2,076.6	18.38	113.967	
2,600.0	2,512.8	2,573.9	2,553.7	12.3	6.9	-106.43	-2,031.7	-297.2	2,098.8	2,079.8	19.00	110.447	
2,700.0	2,608.2	2,673.3	2,650.9	12.9	7.3	-110.71	-2,032.8	-317.8	2,106.8	2,086.8	19.98	105.450	
2,800.0	2,703.3	2,772.4	2,747.9	13.5	7.7	-114.68	-2,034.0	-338.4	2,117.3	2,096.4	20.94	101.092	
2,824.0	2,726.1	2,796.2	2,771.1	13.7	7.8	-115.59	-2,034.3	-343.3	2,120.2	2,099.0	21.17	100.134	
2,900.0	2,798.2	2,871.4	2,844.7	14.1	8.2	-113.48	-2,035.1	-358.9	2,128.9	2,107.0	21.95	97.002	
3,000.0	2,893.6	2,970.7	2,941.8	14.7	8.6	-110.40	-2,036.3	-379.5	2,138.5	2,115.5	22.96	93.132	
3,100.0	2,989.4	3,070.2	3,039.2	15.3	9.0	-106.96	-2,037.4	-400.2	2,145.8	2,121.9	23.97	89.515	
3,112.0	3,000.9	3,082.1	3,050.8	15.4	9.1	-106.52	-2,037.6	-402.6	2,146.6	2,122.5	24.09	89.097	
3,200.0	3,085.5	3,169.8	3,136.6	15.9	9.5	-105.79	-2,038.6	-420.8	2,151.6	2,126.6	24.93	86.298	
3,300.0	3,181.9	3,269.6	3,234.2	16.4	9.9	-104.89	-2,039.8	-441.5	2,156.6	2,130.7	25.89	83.306	
3,400.0	3,278.4	3,369.4	3,331.8	16.9	10.4	-103.90	-2,040.9	-462.2	2,160.9	2,134.1	26.84	80.496	
3,500.0	3,374.7	3,469.1	3,429.4	17.5	10.8	-104.10	-2,042.1	-482.9	2,165.2	2,137.4	27.85	77.733	
3,600.0	3,470.3	3,568.7	3,526.7	18.1	11.3	-104.34	-2,043.3	-503.6	2,170.2	2,141.4	28.86	75.199	
3,687.0	3,552.8	3,655.0	3,611.2	18.6	11.6	-104.58	-2,044.3	-521.5	2,175.2	2,145.4	29.73	73.164	
3,700.0	3,565.1	3,667.9	3,623.8	18.7	11.7	-104.39	-2,044.4	-524.2	2,175.9	2,146.1	29.87	72.846	
3,800.0	3,659.5	3,767.1	3,720.8	19.4	12.1	-102.91	-2,045.6	-544.8	2,181.4	2,150.4	30.95	70.486	
3,900.0	3,753.9	3,866.2	3,817.8	20.0	12.6	-101.48	-2,046.7	-565.4	2,185.9	2,153.9	32.02	68.266	
3,974.0	3,823.6	3,939.6	3,889.6	20.5	12.9	-100.45	-2,047.6	-580.6	2,188.6	2,155.8	32.81	66.706	
4,000.0	3,848.1	3,965.4	3,914.8	20.7	13.0	-100.74	-2,047.9	-586.0	2,189.5	2,156.5	33.07	66.202	
4,100.0	3,942.9	4,064.7	4,012.0	21.3	13.5	-101.93	-2,049.0	-606.6	2,193.0	2,158.9	34.09	64.329	
4,200.0	4,038.5	4,164.3	4,109.4	21.9	13.9	-103.20	-2,050.2	-627.2	2,196.5	2,161.4	35.11	62.557	
4,263.0	4,099.0	4,227.1	4,170.8	22.3	14.2	-104.05	-2,050.9	-640.3	2,198.7	2,163.0	35.76	61.487	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
4,300.0	4,134.7	4,264.0	4,206.9	22.5	14.4	-105.15	-2,051.4	-647.9	2,200.1	2,164.0	36.10	60.937	
4,400.0	4,231.2	4,363.8	4,304.5	23.0	14.9	-108.26	-2,052.5	-668.7	2,204.6	2,167.5	37.04	59.525	
4,500.0	4,328.0	4,463.6	4,402.2	23.5	15.3	-111.55	-2,053.7	-689.4	2,210.1	2,172.1	37.96	58.214	
4,549.0	4,375.5	4,512.5	4,450.0	23.8	15.5	-113.24	-2,054.2	-699.5	2,213.2	2,174.7	38.42	57.606	
4,600.0	4,425.0	4,563.4	4,499.7	24.0	15.8	-113.44	-2,054.8	-710.1	2,216.5	2,177.6	38.89	57.001	
4,700.0	4,521.9	4,663.2	4,597.3	24.5	16.2	-113.83	-2,056.0	-730.8	2,223.3	2,183.5	39.80	55.861	
4,800.0	4,618.8	4,762.9	4,694.9	25.0	16.7	-114.21	-2,057.2	-751.5	2,230.2	2,189.5	40.71	54.776	
4,837.0	4,654.7	4,799.8	4,731.0	25.2	16.8	-114.35	-2,057.6	-759.1	2,232.8	2,191.8	41.05	54.389	
4,900.0	4,715.7	4,862.6	4,792.4	25.5	17.1	-114.80	-2,058.3	-772.2	2,237.4	2,195.8	41.64	53.736	
5,000.0	4,812.4	4,962.3	4,889.9	26.0	17.6	-115.49	-2,059.5	-792.9	2,245.2	2,202.6	42.56	52.752	
5,100.0	4,908.9	5,061.9	4,987.3	26.6	18.0	-116.16	-2,060.6	-813.5	2,253.6	2,210.1	43.48	51.829	
5,125.0	4,932.9	5,086.8	5,011.7	26.7	18.2	-116.32	-2,060.9	-818.7	2,255.8	2,212.1	43.71	51.607	
5,200.0	5,005.4	5,157.7	5,081.1	27.0	18.5	-113.84	-2,061.8	-833.3	2,261.8	2,217.4	44.38	50.962	
5,300.0	5,102.4	5,246.0	5,167.9	27.5	18.8	-109.95	-2,062.7	-849.4	2,268.0	2,222.8	45.15	50.233	
5,400.0	5,199.9	5,334.1	5,255.0	28.0	19.0	-105.25	-2,063.4	-862.8	2,272.2	2,226.4	45.84	49.572	
5,412.0	5,211.7	5,344.7	5,265.5	28.1	19.0	-104.62	-2,063.5	-864.2	2,272.6	2,226.7	45.92	49.495	
5,500.0	5,297.9	5,422.1	5,342.3	28.4	19.2	-102.21	-2,064.0	-873.5	2,274.9	2,228.5	46.42	49.004	
5,581.0	5,377.7	5,493.1	5,413.0	28.7	19.4	-99.39	-2,064.4	-880.2	2,276.3	2,229.5	46.84	48.599	
5,600.0	5,396.4	5,509.7	5,429.6	28.8	19.4	-100.59	-2,064.5	-881.5	2,276.6	2,229.7	46.93	48.507	
5,700.0	5,495.3	5,600.0	5,519.7	29.1	19.6	-108.58	-2,064.8	-886.9	2,279.2	2,231.8	47.38	48.100	
5,800.0	5,594.6	5,684.3	5,603.9	29.4	19.7	-120.48	-2,064.9	-889.5	2,283.5	2,235.8	47.73	47.845	
5,900.0	5,694.1	5,777.5	5,697.1	29.6	19.8	-138.14	-2,064.9	-889.8	2,289.5	2,241.5	48.00	47.696	
5,917.0	5,711.1	5,794.4	5,714.1	29.7	19.8	-141.77	-2,064.9	-889.8	2,290.7	2,242.6	48.04	47.678	
6,000.0	5,793.7	5,877.1	5,796.7	29.8	19.9	-141.88	-2,064.9	-889.8	2,296.4	2,248.1	48.29	47.557	
6,067.0	5,860.5	5,943.9	5,863.5	30.0	20.0	-141.97	-2,064.9	-889.8	2,301.0	2,252.6	48.48	47.461	
6,100.0	5,893.4	5,976.7	5,896.4	30.0	20.1	-142.04	-2,064.9	-889.8	2,303.2	2,254.6	48.59	47.404	
6,200.0	5,993.2	6,066.2	5,985.8	30.2	20.2	-142.18	-2,064.9	-889.8	2,307.8	2,259.0	48.86	47.239	
6,300.0	6,093.2	6,127.6	6,047.2	30.3	20.2	-142.30	-2,064.9	-887.2	2,310.9	2,261.9	48.98	47.176	
6,318.8	6,111.9	6,138.0	6,057.5	30.3	20.3	165.71	-2,064.9	-886.2	2,311.4	2,278.6	32.74	70.595	
6,400.0	6,193.2	6,182.6	6,101.7	30.4	20.2	165.57	-2,064.9	-880.4	2,314.0	2,281.1	32.94	70.240	
6,444.4	6,237.6	6,200.0	6,118.9	30.4	20.2	165.49	-2,064.9	-877.3	2,316.1	2,283.0	33.05	70.086	
6,450.0	6,243.2	6,200.0	6,118.9	30.4	20.2	75.46	-2,064.9	-877.3	2,316.4	2,267.3	49.07	47.209	
6,475.0	6,268.1	6,223.0	6,141.4	30.4	20.2	75.24	-2,064.9	-872.7	2,317.4	2,268.4	49.00	47.289	
6,500.0	6,293.0	6,236.5	6,154.5	30.4	20.2	75.09	-2,064.9	-869.6	2,318.3	2,269.4	48.94	47.366	
6,525.0	6,317.8	6,250.0	6,167.6	30.4	20.2	74.98	-2,064.9	-866.3	2,319.0	2,270.1	48.87	47.451	
6,550.0	6,342.3	6,263.5	6,180.7	30.4	20.2	74.90	-2,064.9	-862.8	2,319.4	2,270.7	48.78	47.548	
6,575.0	6,366.5	6,277.1	6,193.7	30.3	20.2	74.86	-2,064.9	-859.0	2,319.7	2,271.0	48.68	47.650	
6,600.0	6,390.4	6,300.0	6,215.5	30.2	20.1	74.86	-2,064.9	-852.0	2,319.8	2,271.2	48.56	47.768	
6,625.0	6,413.9	6,300.0	6,215.5	30.2	20.1	74.88	-2,064.9	-852.0	2,319.5	2,271.1	48.47	47.858	
6,650.0	6,436.9	6,317.7	6,232.2	30.1	20.1	74.95	-2,064.9	-846.1	2,319.1	2,270.8	48.34	47.974	
6,675.0	6,459.3	6,331.2	6,244.8	30.0	20.1	75.06	-2,064.9	-841.3	2,318.5	2,270.3	48.22	48.082	
6,700.0	6,481.1	6,350.0	6,262.3	29.9	20.0	75.21	-2,064.9	-834.3	2,317.7	2,269.6	48.09	48.192	
6,725.0	6,502.3	6,350.0	6,262.3	29.7	20.0	75.33	-2,064.9	-834.3	2,316.6	2,268.7	47.99	48.278	
6,750.0	6,522.7	6,371.6	6,282.0	29.6	20.0	75.58	-2,064.9	-825.7	2,315.4	2,267.5	47.86	48.379	
6,775.0	6,542.4	6,384.9	6,294.1	29.5	20.0	75.82	-2,064.9	-820.0	2,313.9	2,266.2	47.75	48.462	
6,800.0	6,561.2	6,400.0	6,307.7	29.4	19.9	76.11	-2,064.9	-813.4	2,312.3	2,264.6	47.64	48.534	
6,825.0	6,579.1	6,411.5	6,317.9	29.3	19.9	76.40	-2,064.9	-808.1	2,310.5	2,262.9	47.55	48.593	
6,850.0	6,596.1	6,424.7	6,329.6	29.1	19.9	76.74	-2,064.9	-801.9	2,308.5	2,261.0	47.46	48.637	
6,875.0	6,612.1	6,437.9	6,341.0	29.0	19.9	77.11	-2,064.9	-795.5	2,306.3	2,258.9	47.39	48.666	
6,900.0	6,627.1	6,450.0	6,351.5	28.9	19.8	77.49	-2,064.9	-789.4	2,304.0	2,256.7	47.33	48.678	
6,925.0	6,641.0	6,463.9	6,363.4	28.8	19.8	77.92	-2,064.9	-782.2	2,301.5	2,254.3	47.29	48.671	
6,950.0	6,653.8	6,476.7	6,374.2	28.7	19.8	78.37	-2,064.9	-775.3	2,299.0	2,251.7	47.26	48.647	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,975.0	6,665.5	6,489.5	6,384.9	28.7	19.8	78.84	-2,064.9	-768.3	2,296.3	2,249.0	47.24	48.604	
7,000.0	6,676.0	6,500.0	6,393.6	28.6	19.7	79.31	-2,064.9	-762.4	2,293.5	2,246.2	47.25	48.543	
7,025.0	6,685.3	6,514.6	6,405.5	28.6	19.7	79.84	-2,064.9	-754.0	2,290.6	2,243.3	47.27	48.462	
7,050.0	6,693.4	6,526.9	6,415.4	28.5	19.7	80.37	-2,064.9	-746.6	2,287.6	2,240.3	47.30	48.364	
7,075.0	6,700.2	6,539.1	6,425.1	28.5	19.7	80.91	-2,064.9	-739.3	2,284.6	2,237.2	47.35	48.252	
7,100.0	6,705.8	6,550.0	6,433.7	28.5	19.6	81.45	-2,064.9	-732.5	2,281.5	2,234.1	47.41	48.125	
7,125.0	6,710.0	6,562.9	6,443.6	28.5	19.6	82.03	-2,064.9	-724.3	2,278.4	2,230.9	47.49	47.981	
7,150.0	6,713.0	6,574.5	6,452.5	28.6	19.6	82.60	-2,064.9	-716.9	2,275.3	2,227.8	47.58	47.826	
7,175.0	6,714.7	6,585.9	6,461.1	28.6	19.6	83.17	-2,064.9	-709.4	2,272.3	2,224.6	47.67	47.663	
7,198.8	6,715.0	6,600.0	6,471.6	28.6	19.6	83.78	-2,064.9	-699.9	2,269.4	2,221.6	47.78	47.500	
7,200.0	6,715.0	6,600.0	6,471.6	28.6	19.6	83.78	-2,064.9	-699.9	2,269.2	2,221.4	47.78	47.494	
7,300.0	6,714.1	6,650.0	6,507.1	29.0	19.5	84.69	-2,064.9	-664.7	2,258.6	2,210.4	48.21	46.851	
7,400.0	6,713.2	6,700.0	6,540.1	29.7	19.5	85.54	-2,064.9	-627.2	2,250.8	2,201.9	48.93	46.000	
7,500.0	6,712.3	6,760.8	6,576.5	30.6	19.6	86.48	-2,064.9	-578.5	2,245.4	2,195.5	49.97	44.936	
7,600.0	6,711.3	6,831.5	6,613.6	31.7	19.8	87.44	-2,064.9	-518.3	2,242.1	2,190.7	51.35	43.660	
7,700.0	6,710.4	6,911.0	6,647.9	33.0	20.2	88.33	-2,064.9	-446.6	2,240.3	2,187.1	53.12	42.173	
7,800.0	6,709.5	7,000.0	6,676.6	34.5	20.9	89.09	-2,064.9	-362.5	2,239.4	2,184.1	55.33	40.474	
7,900.0	6,708.5	7,093.0	6,695.3	36.2	21.8	89.58	-2,064.9	-271.4	2,239.2	2,181.2	57.98	38.619	
8,000.0	6,707.6	7,191.1	6,702.0	38.0	23.1	89.78	-2,064.9	-173.7	2,239.1	2,178.1	61.05	36.680	
8,100.0	6,706.7	7,291.1	6,701.6	39.9	24.6	89.79	-2,064.9	-73.7	2,239.1	2,174.7	64.48	34.725	
8,200.0	6,705.8	7,391.1	6,701.3	41.9	26.3	89.81	-2,064.9	26.3	2,239.1	2,170.9	68.22	32.821	
8,300.0	6,704.8	7,491.1	6,700.9	44.0	28.2	89.82	-2,064.9	126.3	2,239.1	2,166.9	72.23	31.001	
8,400.0	6,703.9	7,591.1	6,700.6	46.2	30.2	89.84	-2,064.9	226.3	2,239.1	2,162.7	76.45	29.289	
8,500.0	6,703.0	7,691.1	6,700.2	48.5	32.4	89.85	-2,064.9	326.3	2,239.1	2,158.3	80.85	27.694	
8,600.0	6,702.1	7,791.1	6,699.8	50.8	34.7	89.87	-2,064.9	426.3	2,239.1	2,153.7	85.40	26.218	
8,700.0	6,701.1	7,891.1	6,699.5	53.1	37.0	89.88	-2,064.9	526.3	2,239.1	2,149.1	90.08	24.856	
8,800.0	6,700.2	7,991.1	6,699.1	55.5	39.4	89.90	-2,064.9	626.3	2,239.1	2,144.3	94.87	23.603	
8,900.0	6,699.3	8,091.1	6,698.7	57.9	41.8	89.91	-2,064.9	726.3	2,239.1	2,139.4	99.74	22.449	
9,000.0	6,698.3	8,191.1	6,698.4	60.4	44.3	89.92	-2,064.9	826.3	2,239.1	2,134.4	104.69	21.388	
9,100.0	6,697.4	8,291.1	6,698.0	62.9	46.8	89.94	-2,064.9	926.3	2,239.1	2,129.4	109.71	20.410	
9,177.0	6,696.7	8,368.1	6,697.7	64.8	48.8	89.95	-2,064.9	1,003.3	2,239.1	2,125.5	113.62	19.708	
9,200.0	6,696.5	8,391.1	6,697.6	65.4	49.4	89.95	-2,064.9	1,026.3	2,239.1	2,124.4	114.78	19.508	
9,300.0	6,695.5	8,491.0	6,697.3	68.0	51.9	89.97	-2,064.9	1,126.3	2,239.1	2,119.2	119.90	18.674	
9,400.0	6,694.6	8,591.0	6,696.9	70.5	54.6	89.98	-2,064.9	1,226.3	2,239.1	2,114.1	125.07	17.903	
9,500.0	6,693.7	8,691.0	6,696.5	73.1	57.2	90.00	-2,064.9	1,326.3	2,239.1	2,108.9	130.27	17.188	
9,600.0	6,692.8	8,791.0	6,696.2	75.7	59.8	90.01	-2,064.9	1,426.3	2,239.1	2,103.6	135.51	16.524	
9,700.0	6,691.8	8,891.0	6,695.8	78.3	62.5	90.02	-2,064.9	1,526.3	2,239.1	2,098.4	140.78	15.905	
9,800.0	6,690.9	8,991.0	6,695.4	80.9	65.1	90.04	-2,064.9	1,626.3	2,239.1	2,093.1	146.07	15.329	
9,900.0	6,690.0	9,091.0	6,695.0	83.6	67.8	90.05	-2,064.9	1,726.3	2,239.1	2,087.8	151.39	14.791	
10,000.0	6,689.0	9,191.0	6,694.7	86.2	70.5	90.07	-2,064.9	1,826.3	2,239.1	2,082.4	156.73	14.287	
10,100.0	6,688.1	9,291.0	6,694.3	88.9	73.2	90.08	-2,064.9	1,926.3	2,239.1	2,077.1	162.08	13.815	
10,200.0	6,687.2	9,391.0	6,693.9	91.6	75.9	90.10	-2,064.9	2,026.2	2,239.1	2,071.7	167.46	13.371	
10,300.0	6,686.2	9,491.0	6,693.6	94.2	78.6	90.11	-2,064.9	2,126.2	2,239.1	2,066.3	172.85	12.955	
10,400.0	6,685.3	9,591.0	6,693.2	96.9	81.3	90.13	-2,064.9	2,226.2	2,239.1	2,060.9	178.25	12.562	
10,500.0	6,684.4	9,691.0	6,692.8	99.6	84.1	90.14	-2,064.9	2,326.2	2,239.2	2,055.5	183.67	12.191	
10,600.0	6,683.4	9,791.0	6,692.4	102.3	86.8	90.15	-2,064.9	2,426.2	2,239.2	2,050.1	189.10	11.841	
10,700.0	6,682.5	9,891.0	6,692.1	105.0	89.5	90.17	-2,064.9	2,526.2	2,239.2	2,044.6	194.54	11.510	
10,800.0	6,681.6	9,991.0	6,691.7	107.7	92.3	90.18	-2,064.9	2,626.2	2,239.2	2,039.2	199.98	11.197	
10,900.0	6,680.6	10,091.0	6,691.3	110.4	95.0	90.20	-2,064.9	2,726.2	2,239.2	2,033.7	205.44	10.899	
11,000.0	6,679.7	10,191.0	6,691.0	113.1	97.8	90.21	-2,064.9	2,826.2	2,239.2	2,028.3	210.91	10.617	
11,100.0	6,678.8	10,291.0	6,690.6	115.9	100.5	90.23	-2,064.9	2,926.2	2,239.2	2,022.8	216.38	10.348	
11,200.0	6,677.8	10,391.0	6,690.2	118.6	103.3	90.24	-2,064.9	3,026.2	2,239.2	2,017.3	221.87	10.092	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
11,300.0	6,676.9	10,491.0	6,689.8	121.3	106.0	90.25	-2,064.9	3,126.2	2,239.2	2,011.8	227.36	9.849	
11,400.0	6,676.0	10,591.0	6,689.4	124.1	108.8	90.27	-2,065.0	3,226.2	2,239.2	2,006.3	232.85	9.616	
11,500.0	6,675.0	10,691.0	6,689.1	126.8	111.6	90.28	-2,065.0	3,326.2	2,239.2	2,000.8	238.35	9.394	
11,600.0	6,674.1	10,791.0	6,688.7	129.5	114.3	90.30	-2,065.0	3,426.2	2,239.2	1,995.3	243.86	9.182	
11,700.0	6,673.1	10,891.0	6,688.3	132.3	117.1	90.31	-2,065.0	3,526.2	2,239.2	1,989.8	249.37	8.979	
11,800.0	6,672.2	10,991.0	6,687.9	135.0	119.9	90.33	-2,065.0	3,626.2	2,239.2	1,984.3	254.88	8.785	
11,900.0	6,671.3	11,091.0	6,687.6	137.8	122.6	90.34	-2,065.0	3,726.2	2,239.2	1,978.8	260.40	8.599	
12,000.0	6,670.3	11,191.0	6,687.2	140.5	125.4	90.35	-2,065.0	3,826.2	2,239.2	1,973.3	265.93	8.420	
12,036.2	6,670.0	11,227.2	6,687.0	141.5	126.4	90.36	-2,065.0	3,862.4	2,239.2	1,971.3	267.93	8.357	ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.63	-2,004.8	-83.0	2,006.5				
100.0	100.0	103.0	103.0	0.1	0.1	171.77	-2,004.8	-83.0	2,006.6	2,006.4	0.20	9,912.365	
200.0	200.0	203.0	203.0	0.2	0.3	171.77	-2,004.8	-83.0	2,006.9	2,006.4	0.54	3,719.256	ES
261.0	261.0	264.0	264.0	0.3	0.5	171.77	-2,004.8	-83.0	2,007.2	2,006.4	0.75	2,693.200	
300.0	300.0	303.0	303.0	0.4	0.6	-110.02	-2,004.8	-83.0	2,007.4	2,006.5	0.92	2,175.256	
400.0	399.9	402.9	402.9	0.6	0.8	-95.57	-2,004.8	-83.0	2,007.9	2,006.5	1.38	1,457.164	
500.0	499.7	502.7	502.7	0.8	1.0	-93.37	-2,004.8	-83.0	2,008.4	2,006.6	1.83	1,095.924	
538.0	537.5	540.5	540.5	0.9	1.1	-93.02	-2,004.8	-83.0	2,008.6	2,006.6	2.01	1,001.702	
600.0	599.1	602.1	602.1	1.1	1.2	-93.97	-2,004.8	-83.0	2,009.1	2,006.7	2.36	851.961	
700.0	697.9	700.9	700.9	1.5	1.4	-95.09	-2,004.8	-83.0	2,010.3	2,007.4	2.93	686.960	
800.0	796.0	799.0	799.0	1.8	1.7	-96.02	-2,004.8	-83.0	2,012.2	2,008.7	3.49	576.139	
818.0	813.5	816.5	816.5	1.9	1.7	-96.18	-2,004.8	-83.0	2,012.7	2,009.1	3.59	559.963	
900.0	893.1	896.1	896.1	2.3	1.9	-95.86	-2,004.8	-83.0	2,014.8	2,010.6	4.23	475.999	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.81	-2,004.8	-83.0	2,017.7	2,012.7	5.01	402.919	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-96.03	-2,004.8	-83.0	2,021.2	2,015.4	5.78	349.797	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-96.04	-2,004.8	-83.0	2,021.3	2,015.5	5.81	347.974	
1,200.0	1,177.9	1,180.9	1,180.9	4.1	2.5	-97.60	-2,004.8	-83.0	2,025.5	2,018.8	6.62	305.820	
1,300.0	1,272.0	1,275.0	1,275.0	4.8	2.7	-99.22	-2,004.8	-83.0	2,030.7	2,023.2	7.47	271.914	
1,391.0	1,357.8	1,360.8	1,360.8	5.3	2.9	-100.70	-2,004.8	-83.0	2,036.3	2,028.1	8.23	247.290	
1,400.0	1,366.3	1,369.3	1,369.3	5.4	3.0	-100.61	-2,004.8	-83.0	2,036.9	2,028.6	8.30	245.266	
1,458.0	1,421.2	1,424.2	1,424.2	5.7	3.1	-99.91	-2,004.8	-83.0	2,040.4	2,031.6	8.76	232.982	
1,500.0	1,461.0	1,464.0	1,464.0	6.0	3.2	-100.46	-2,004.8	-83.0	2,042.8	2,033.8	9.08	224.862	
1,600.0	1,556.1	1,559.1	1,559.1	6.6	3.4	-101.77	-2,004.8	-83.0	2,049.2	2,039.3	9.86	207.795	
1,676.0	1,628.3	1,631.3	1,631.3	7.0	3.5	-102.76	-2,004.8	-83.0	2,054.4	2,044.0	10.45	196.608	
1,700.0	1,651.1	1,653.9	1,653.9	7.2	3.6	-102.43	-2,004.8	-83.0	2,056.1	2,045.5	10.64	193.321	
1,800.0	1,746.4	1,743.3	1,743.3	7.7	3.8	-100.99	-2,004.7	-81.5	2,062.7	2,051.3	11.39	181.176	
1,900.0	1,841.8	1,830.9	1,830.7	8.3	4.0	-99.51	-2,004.5	-77.3	2,068.8	2,056.7	12.12	170.642	
1,963.0	1,902.0	1,885.1	1,884.9	8.7	4.1	-98.55	-2,004.4	-73.4	2,072.4	2,059.8	12.59	164.652	
2,000.0	1,937.4	1,916.6	1,916.2	8.9	4.1	-98.87	-2,004.2	-70.6	2,074.5	2,061.7	12.85	161.409	
2,100.0	2,033.1	2,000.0	1,999.1	9.5	4.3	-99.75	-2,003.8	-61.7	2,080.9	2,067.3	13.57	153.349	
2,200.0	2,129.0	2,082.6	2,081.0	10.0	4.5	-100.67	-2,003.3	-50.4	2,088.3	2,074.0	14.30	146.084	
2,250.0	2,177.1	2,123.0	2,120.8	10.3	4.6	-101.13	-2,003.0	-44.1	2,092.4	2,077.7	14.66	142.732	
2,300.0	2,225.1	2,162.8	2,160.0	10.6	4.7	-102.68	-2,002.7	-37.3	2,096.9	2,081.9	15.03	139.551	
2,400.0	2,321.2	2,240.7	2,236.5	11.2	4.9	-105.76	-2,002.0	-22.4	2,107.9	2,092.1	15.76	133.760	
2,500.0	2,417.0	2,327.3	2,321.2	11.7	5.2	-108.92	-2,001.2	-4.4	2,121.2	2,104.7	16.53	128.362	
2,537.0	2,452.5	2,359.8	2,353.0	11.9	5.3	-110.07	-2,000.9	2.3	2,126.7	2,109.9	16.81	126.506	
2,600.0	2,512.8	2,415.0	2,407.0	12.3	5.5	-113.48	-2,000.3	13.8	2,137.0	2,119.7	17.30	123.505	
2,700.0	2,608.2	2,502.3	2,492.4	12.9	5.8	-118.65	-1,999.5	31.9	2,156.0	2,137.9	18.07	119.295	
2,800.0	2,703.3	2,589.2	2,577.4	13.5	6.1	-123.49	-1,998.7	50.0	2,178.4	2,159.6	18.83	115.705	
2,824.0	2,726.1	2,610.0	2,597.7	13.7	6.2	-124.61	-1,998.5	54.3	2,184.3	2,165.3	19.01	114.931	
2,900.0	2,798.2	2,675.9	2,662.2	14.1	6.4	-123.13	-1,997.9	68.0	2,202.8	2,183.2	19.62	112.301	
3,000.0	2,893.6	2,763.2	2,747.6	14.7	6.8	-120.88	-1,997.0	86.1	2,225.9	2,205.5	20.41	109.062	
3,100.0	2,989.4	2,851.1	2,833.6	15.3	7.1	-118.26	-1,996.2	104.3	2,247.5	2,226.3	21.19	106.051	
3,112.0	3,000.9	2,861.7	2,843.9	15.4	7.2	-117.92	-1,996.1	106.5	2,250.0	2,228.7	21.29	105.704	
3,200.0	3,085.5	2,939.4	2,920.0	15.9	7.5	-117.95	-1,995.4	122.7	2,268.2	2,246.3	21.93	103.439	
3,300.0	3,181.9	3,028.2	3,006.8	16.4	7.8	-117.90	-1,994.5	141.1	2,288.9	2,266.2	22.65	101.037	
3,400.0	3,278.4	3,117.2	3,093.9	16.9	8.2	-117.76	-1,993.7	159.6	2,309.5	2,286.1	23.38	98.801	
3,500.0	3,374.7	3,205.8	3,180.6	17.5	8.6	-118.54	-1,992.8	178.0	2,331.0	2,306.8	24.16	96.461	
3,600.0	3,470.3	3,293.3	3,266.1	18.1	8.9	-119.29	-1,992.0	196.1	2,354.5	2,329.5	24.94	94.394	
3,687.0	3,552.8	3,368.3	3,339.5	18.6	9.2	-119.93	-1,991.3	211.7	2,376.6	2,351.0	25.61	92.800	
3,700.0	3,565.1	3,379.5	3,350.4	18.7	9.3	-119.81	-1,991.2	214.0	2,380.0	2,354.3	25.72	92.547	
3,800.0	3,659.5	3,465.0	3,434.1	19.4	9.6	-118.90	-1,990.3	231.8	2,406.3	2,379.8	26.53	90.688	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,550.5	3,517.7	20.0	10.0	-118.02	-1,989.5	249.5	2,432.7	2,405.4	27.34	88.982	
3,974.0	3,823.6	3,613.5	3,579.4	20.5	10.3	-117.38	-1,988.9	262.6	2,452.3	2,424.4	27.93	87.810	
4,000.0	3,848.1	3,635.7	3,601.1	20.7	10.4	-117.92	-1,988.7	267.2	2,459.2	2,431.1	28.10	87.517	
4,100.0	3,942.9	3,721.9	3,685.3	21.3	10.7	-120.08	-1,987.9	285.1	2,485.7	2,457.0	28.76	86.437	
4,200.0	4,038.5	3,809.2	3,770.8	21.9	11.1	-122.32	-1,987.1	303.3	2,512.3	2,482.9	29.41	85.417	
4,263.0	4,099.0	3,864.8	3,825.2	22.3	11.4	-123.80	-1,986.5	314.8	2,528.9	2,499.1	29.82	84.798	
4,300.0	4,134.7	3,897.7	3,857.3	22.5	11.5	-125.23	-1,986.2	321.6	2,538.7	2,508.7	30.03	84.532	
4,400.0	4,231.2	3,986.7	3,944.4	23.0	11.9	-129.23	-1,985.4	340.1	2,566.0	2,535.4	30.59	83.874	
4,500.0	4,328.0	4,076.3	4,032.0	23.5	12.3	-133.42	-1,984.5	358.7	2,594.3	2,563.1	31.14	83.297	
4,549.0	4,375.5	4,120.3	4,075.1	23.8	12.5	-135.54	-1,984.1	367.8	2,608.4	2,577.0	31.41	83.040	
4,600.0	4,425.0	4,166.2	4,119.9	24.0	12.7	-136.07	-1,983.7	377.4	2,623.4	2,591.7	31.71	82.740	
4,700.0	4,521.9	4,256.1	4,207.9	24.5	13.1	-137.10	-1,982.8	396.0	2,653.1	2,620.8	32.28	82.197	
4,800.0	4,618.8	4,345.9	4,295.8	25.0	13.5	-138.12	-1,981.9	414.7	2,683.4	2,650.6	32.84	81.708	
4,837.0	4,654.7	4,379.2	4,328.3	25.2	13.6	-138.49	-1,981.6	421.6	2,694.8	2,661.7	33.05	81.540	
4,900.0	4,715.7	4,435.7	4,383.6	25.5	13.9	-139.30	-1,981.1	433.3	2,714.4	2,681.0	33.41	81.256	
5,000.0	4,812.4	4,543.0	4,488.6	26.0	14.3	-140.67	-1,980.1	455.4	2,746.4	2,712.4	33.98	80.822	
5,100.0	4,908.9	4,763.0	4,705.7	26.6	15.0	-142.62	-1,978.5	490.5	2,776.8	2,742.2	34.58	80.302	
5,125.0	4,932.9	8,275.1	6,711.1	26.7	47.1	-115.60	-1,977.5	-1,300.7	2,764.5	2,692.6	71.88	38.459	
5,200.0	5,005.4	8,294.1	6,711.1	27.0	47.6	-112.12	-1,977.5	-1,319.7	2,722.0	2,649.0	72.99	37.294	
5,300.0	5,102.4	8,317.8	6,711.0	27.5	48.2	-106.91	-1,977.5	-1,343.4	2,665.6	2,591.2	74.38	35.838	
5,400.0	5,199.9	8,339.6	6,711.0	28.0	48.8	-100.88	-1,977.5	-1,365.2	2,609.6	2,534.0	75.67	34.487	
5,412.0	5,211.7	8,342.1	6,711.0	28.1	48.9	-100.09	-1,977.5	-1,367.7	2,602.9	2,527.1	75.82	34.332	
5,500.0	5,297.9	8,359.4	6,711.0	28.4	49.3	-96.28	-1,977.5	-1,385.0	2,554.5	2,477.6	76.85	33.242	
5,581.0	5,377.7	8,373.6	6,711.0	28.7	49.7	-92.22	-1,977.5	-1,399.2	2,510.9	2,433.2	77.68	32.322	
5,600.0	5,396.4	8,376.7	6,711.0	28.8	49.8	-93.09	-1,977.5	-1,402.2	2,500.9	2,423.0	77.88	32.112	
5,700.0	5,495.3	8,391.2	6,711.0	29.1	50.1	-99.44	-1,977.5	-1,416.8	2,450.6	2,371.8	78.79	31.103	
5,800.0	5,594.6	8,402.9	6,711.0	29.4	50.5	-109.90	-1,977.5	-1,428.5	2,405.0	2,325.5	79.49	30.254	
5,900.0	5,694.1	8,411.7	6,711.0	29.6	50.7	-126.29	-1,977.5	-1,437.2	2,364.3	2,284.3	80.00	29.554	
5,917.0	5,711.1	8,412.9	6,711.0	29.7	50.7	-129.72	-1,977.5	-1,438.4	2,357.9	2,277.8	80.07	29.449	
6,000.0	5,793.7	8,418.6	6,711.0	29.8	50.9	-129.57	-1,977.5	-1,444.1	2,328.2	2,247.9	80.39	28.963	
6,067.0	5,860.5	8,423.1	6,710.9	30.0	51.0	-129.45	-1,977.5	-1,448.7	2,306.2	2,225.6	80.65	28.597	
6,100.0	5,893.4	8,425.2	6,710.9	30.0	51.0	-129.23	-1,977.5	-1,450.8	2,295.9	2,215.1	80.80	28.414	
6,200.0	5,993.2	8,429.8	6,710.9	30.2	51.2	-128.62	-1,977.5	-1,455.3	2,265.9	2,184.7	81.16	27.917	
6,300.0	6,093.2	8,431.6	6,710.9	30.3	51.2	-128.11	-1,977.5	-1,457.1	2,237.8	2,156.4	81.37	27.502	
6,318.8	6,111.9	8,431.6	6,710.9	30.3	51.2	-179.99	-1,977.5	-1,457.2	2,232.7	2,202.2	30.48	73.254	
6,400.0	6,193.2	8,431.6	6,710.9	30.4	51.2	-179.99	-1,977.5	-1,457.1	2,212.4	2,181.8	30.61	72.285	
6,444.4	6,237.6	8,431.5	6,710.9	30.4	51.2	-179.99	-1,977.5	-1,457.1	2,202.5	2,171.8	30.68	71.795	
6,450.0	6,243.2	8,431.5	6,710.9	30.4	51.2	90.16	-1,977.5	-1,457.0	2,201.3	2,119.8	81.51	27.008	
6,475.0	6,268.1	8,430.5	6,710.9	30.4	51.2	90.76	-1,977.5	-1,456.1	2,196.2	2,114.7	81.51	26.943	
6,500.0	6,293.0	8,428.2	6,710.9	30.4	51.1	91.29	-1,977.5	-1,453.8	2,191.3	2,109.9	81.46	26.902	
6,525.0	6,317.8	8,424.7	6,710.9	30.4	51.0	91.75	-1,977.5	-1,450.2	2,186.8	2,105.4	81.34	26.884	
6,550.0	6,342.3	8,419.8	6,711.0	30.4	50.9	92.14	-1,977.5	-1,445.4	2,182.5	2,101.4	81.17	26.887	
6,575.0	6,366.5	8,413.7	6,711.0	30.3	50.7	92.46	-1,977.5	-1,439.2	2,178.6	2,097.7	80.95	26.912	
6,600.0	6,390.4	8,406.3	6,711.0	30.2	50.5	92.71	-1,977.5	-1,431.8	2,175.0	2,094.3	80.69	26.957	
6,625.0	6,413.9	8,397.6	6,711.0	30.2	50.3	92.90	-1,977.5	-1,423.2	2,171.7	2,091.3	80.37	27.021	
6,650.0	6,436.9	8,387.8	6,711.0	30.1	50.1	93.02	-1,977.5	-1,413.3	2,168.7	2,088.7	80.02	27.103	
6,675.0	6,459.3	8,376.7	6,711.0	30.0	49.8	93.08	-1,977.5	-1,402.3	2,166.0	2,086.4	79.62	27.203	
6,700.0	6,481.1	8,364.5	6,711.0	29.9	49.4	93.08	-1,977.5	-1,390.1	2,163.6	2,084.4	79.19	27.321	
6,725.0	6,502.3	8,351.2	6,711.0	29.7	49.1	93.04	-1,977.5	-1,376.7	2,161.5	2,082.8	78.73	27.456	
6,750.0	6,522.7	8,336.8	6,711.0	29.6	48.7	92.95	-1,977.5	-1,362.3	2,159.7	2,081.4	78.23	27.607	
6,775.0	6,542.4	8,321.3	6,711.0	29.5	48.3	92.82	-1,977.5	-1,346.9	2,158.1	2,080.4	77.70	27.773	
6,800.0	6,561.2	8,304.8	6,711.0	29.4	47.9	92.65	-1,977.5	-1,330.4	2,156.7	2,079.5	77.15	27.955	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	8,287.4	6,711.1	29.3	47.4	92.46	-1,977.5	-1,313.0	2,155.6	2,079.0	76.58	28.149	
6,850.0	6,596.1	8,269.1	6,711.1	29.1	47.0	92.24	-1,977.5	-1,294.6	2,154.6	2,078.6	75.98	28.356	
6,875.0	6,612.1	8,249.9	6,711.1	29.0	46.5	92.01	-1,977.5	-1,275.4	2,153.8	2,078.5	75.37	28.576	
6,900.0	6,627.1	8,229.8	6,711.1	28.9	45.9	91.76	-1,977.5	-1,255.4	2,153.2	2,078.5	74.75	28.807	
6,925.0	6,641.0	8,209.1	6,711.1	28.8	45.4	91.51	-1,977.5	-1,234.6	2,152.7	2,078.6	74.11	29.048	
6,950.0	6,653.8	8,187.6	6,711.1	28.7	44.8	91.26	-1,977.5	-1,213.1	2,152.4	2,078.9	73.47	29.297	
6,975.0	6,665.5	8,165.5	6,711.2	28.7	44.3	91.02	-1,977.5	-1,191.0	2,152.1	2,079.3	72.82	29.552	
7,000.0	6,676.0	8,142.8	6,711.2	28.6	43.7	90.79	-1,977.5	-1,168.3	2,151.9	2,079.8	72.18	29.814	
7,025.0	6,685.3	8,119.6	6,711.2	28.6	43.1	90.57	-1,977.5	-1,145.1	2,151.8	2,080.3	71.53	30.082	
7,050.0	6,693.4	8,095.9	6,711.2	28.5	42.5	90.38	-1,977.5	-1,121.4	2,151.7	2,080.9	70.89	30.353	
7,075.0	6,700.2	8,071.8	6,711.2	28.5	41.9	90.21	-1,977.5	-1,097.4	2,151.7	2,081.4	70.26	30.624	
7,100.0	6,705.8	8,047.5	6,711.3	28.5	41.3	90.07	-1,977.5	-1,073.0	2,151.7	2,082.1	69.64	30.897	
7,113.7	6,708.2	8,034.0	6,711.3	28.5	40.9	90.00	-1,977.5	-1,059.6	2,151.7	2,082.4	69.31	31.046	
7,125.0	6,710.0	8,022.8	6,711.3	28.5	40.6	89.95	-1,977.5	-1,048.4	2,151.7	2,082.7	69.03	31.171	
7,150.0	6,713.0	7,998.0	6,711.3	28.6	40.0	89.88	-1,977.5	-1,023.6	2,151.7	2,083.3	68.43	31.444	
7,175.0	6,714.7	7,973.1	6,711.3	28.6	39.4	89.83	-1,977.5	-998.6	2,151.7	2,083.9	67.85	31.712	
7,198.8	6,715.0	7,949.2	6,711.4	28.6	38.8	89.82	-1,977.5	-974.8	2,151.7	2,084.4	67.31	31.966	
7,200.0	6,715.0	7,948.1	6,711.4	28.6	38.7	89.82	-1,977.5	-973.6	2,151.7	2,084.4	67.29	31.979	
7,300.0	6,714.1	7,848.1	6,711.4	29.0	36.3	89.85	-1,977.5	-873.6	2,151.7	2,086.5	65.21	32.995	
7,400.0	6,713.2	7,748.1	6,711.5	29.7	33.8	89.88	-1,977.5	-773.6	2,151.7	2,088.2	63.45	33.910	
7,500.0	6,712.3	7,648.1	6,711.6	30.6	31.5	89.90	-1,977.5	-673.6	2,151.7	2,089.7	62.00	34.702	
7,600.0	6,711.3	7,548.1	6,711.7	31.7	29.2	89.93	-1,977.5	-573.6	2,151.7	2,090.8	60.86	35.355	
7,700.0	6,710.4	7,448.1	6,711.8	33.0	27.0	89.96	-1,977.5	-473.6	2,151.7	2,091.7	60.02	35.851	
7,794.9	6,709.5	7,353.2	6,711.9	34.4	25.1	89.98	-1,977.5	-378.7	2,151.7	2,092.2	59.50	36.161	
7,800.0	6,709.5	7,348.1	6,711.9	34.5	25.0	89.98	-1,977.5	-373.7	2,151.7	2,092.2	59.48	36.175	
7,900.0	6,708.5	7,248.1	6,711.9	36.2	23.1	90.01	-1,977.5	-273.7	2,151.7	2,092.4	59.26	36.311	
8,000.0	6,707.6	7,148.1	6,711.3	38.0	21.4	90.02	-1,977.5	-173.6	2,151.7	2,092.4	59.34	36.260	
8,018.9	6,707.4	7,129.2	6,710.3	38.3	21.1	90.00	-1,977.5	-154.8	2,151.7	2,092.3	59.41	36.218	
8,100.0	6,706.7	7,049.1	6,700.3	39.9	19.9	89.75	-1,977.5	-75.4	2,151.7	2,091.9	59.79	35.990	
8,200.0	6,705.8	6,954.7	6,677.2	41.9	18.7	89.16	-1,977.5	16.1	2,152.0	2,091.3	60.64	35.485	
8,300.0	6,704.8	6,867.4	6,645.3	44.0	17.9	88.33	-1,977.5	97.3	2,152.8	2,090.9	61.92	34.766	
8,400.0	6,703.9	6,788.8	6,608.4	46.2	17.4	87.36	-1,977.5	166.6	2,154.8	2,091.2	63.54	33.910	
8,500.0	6,703.0	6,719.3	6,569.5	48.5	17.2	86.34	-1,977.5	224.3	2,158.4	2,093.0	65.44	32.986	
8,600.0	6,702.1	6,658.3	6,531.0	50.8	17.0	85.34	-1,977.5	271.5	2,164.3	2,096.8	67.50	32.063	
8,700.0	6,701.1	6,600.0	6,490.5	53.1	16.9	84.28	-1,977.5	313.4	2,172.7	2,103.1	69.67	31.187	
8,800.0	6,700.2	6,559.1	6,460.1	55.5	16.9	83.48	-1,977.5	340.8	2,184.1	2,112.2	71.95	30.358	
8,900.0	6,699.3	6,518.9	6,428.8	57.9	17.0	82.67	-1,977.5	366.0	2,198.7	2,124.5	74.26	29.610	
9,000.0	6,698.3	6,483.8	6,400.3	60.4	17.0	81.93	-1,977.5	386.5	2,216.7	2,140.1	76.60	28.938	
9,100.0	6,697.4	6,450.0	6,372.0	62.9	17.0	81.20	-1,977.5	405.0	2,238.2	2,159.2	78.96	28.344	
9,200.0	6,696.5	6,425.9	6,351.3	65.4	17.0	80.66	-1,977.5	417.3	2,263.2	2,181.8	81.37	27.813	
9,300.0	6,695.5	6,400.0	6,328.5	68.0	17.1	80.08	-1,977.5	429.7	2,291.7	2,207.9	83.78	27.355	
9,400.0	6,694.6	6,380.6	6,311.2	70.5	17.1	79.63	-1,977.5	438.5	2,323.7	2,237.5	86.21	26.953	
9,500.0	6,693.7	6,350.0	6,283.5	73.1	17.1	78.92	-1,977.5	451.4	2,359.2	2,270.6	88.60	26.629	
9,600.0	6,692.8	6,350.0	6,283.5	75.7	17.1	78.92	-1,977.5	451.4	2,398.0	2,306.8	91.15	26.308	
9,700.0	6,691.8	6,328.9	6,264.0	78.3	17.2	78.42	-1,977.5	459.6	2,439.9	2,346.3	93.59	26.071	
9,800.0	6,690.9	6,300.0	6,237.0	80.9	17.2	77.74	-1,977.5	469.8	2,485.1	2,389.2	95.97	25.896	
9,900.0	6,690.0	6,300.0	6,237.0	83.6	17.2	77.74	-1,977.5	469.8	2,533.0	2,434.5	98.55	25.703	
10,000.0	6,689.0	6,300.0	6,237.0	86.2	17.2	77.74	-1,977.5	469.8	2,583.9	2,482.8	101.14	25.548	
10,100.0	6,688.1	6,279.9	6,218.0	88.9	17.2	77.26	-1,977.5	476.4	2,637.4	2,533.8	103.58	25.463	
10,200.0	6,687.2	6,270.1	6,208.7	91.6	17.2	77.02	-1,977.5	479.3	2,693.4	2,587.3	106.10	25.386	
10,300.0	6,686.2	6,250.0	6,189.4	94.2	17.2	76.54	-1,977.5	485.0	2,751.9	2,643.4	108.53	25.357	
10,400.0	6,685.3	6,250.0	6,189.4	96.9	17.2	76.54	-1,977.5	485.0	2,812.6	2,701.4	111.14	25.306	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,250.0	6,189.4	99.6	17.2	76.54	-1,977.5	485.0	2,875.4	2,761.6	113.76	25.275	
10,600.0	6,683.4	6,250.0	6,189.4	102.3	17.2	76.54	-1,977.5	485.0	2,940.3	2,823.9	116.39	25.262	SF
10,700.0	6,682.5	6,231.1	6,171.2	105.0	17.2	76.08	-1,977.5	489.9	3,006.8	2,888.0	118.82	25.307	
10,800.0	6,681.6	6,224.9	6,165.1	107.7	17.2	75.93	-1,977.5	491.4	3,075.2	2,953.9	121.38	25.336	
10,900.0	6,680.6	6,200.0	6,140.8	110.4	17.2	75.32	-1,977.5	496.9	3,145.5	3,021.8	123.72	25.426	
11,000.0	6,679.7	6,200.0	6,140.8	113.1	17.2	75.32	-1,977.5	496.9	3,217.0	3,090.7	126.35	25.461	
11,100.0	6,678.8	6,200.0	6,140.8	115.9	17.2	75.32	-1,977.5	496.9	3,290.0	3,161.0	128.99	25.506	
11,200.0	6,677.8	6,200.0	6,140.8	118.6	17.2	75.32	-1,977.5	496.9	3,364.4	3,232.7	131.63	25.559	
11,300.0	6,676.9	6,200.0	6,140.8	121.3	17.2	75.32	-1,977.5	496.9	3,440.0	3,305.8	134.28	25.619	
11,400.0	6,676.0	6,200.0	6,140.8	124.1	17.2	75.32	-1,977.5	496.9	3,516.9	3,380.0	136.93	25.684	
11,500.0	6,675.0	6,200.0	6,140.8	126.8	17.2	75.32	-1,977.5	496.9	3,594.9	3,455.3	139.58	25.755	
11,600.0	6,674.1	6,200.0	6,140.8	129.5	17.2	75.32	-1,977.5	496.9	3,674.0	3,531.8	142.24	25.830	
11,700.0	6,673.1	6,200.0	6,140.8	132.3	17.2	75.32	-1,977.5	496.9	3,754.1	3,609.2	144.90	25.909	
11,800.0	6,672.2	6,200.0	6,140.8	135.0	17.2	75.32	-1,977.5	496.9	3,835.1	3,687.5	147.56	25.990	
11,900.0	6,671.3	6,176.4	6,117.6	137.8	17.2	74.74	-1,977.5	501.3	3,916.6	3,766.7	149.85	26.137	
12,000.0	6,670.3	6,173.2	6,114.5	140.5	17.2	74.67	-1,977.5	501.8	3,999.2	3,846.7	152.46	26.231	
12,036.2	6,670.0	6,172.1	6,113.4	141.5	17.2	74.64	-1,977.5	502.0	4,029.3	3,875.9	153.40	26.266	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.56	-2,049.6	-87.2	2,051.5				
100.0	100.0	103.0	103.0	0.1	0.1	171.84	-2,049.6	-87.2	2,051.6	2,051.4	0.20	N/A	
200.0	200.0	203.0	203.0	0.2	0.3	171.84	-2,049.6	-87.2	2,051.9	2,051.3	0.54	3,802.550 ES	
261.0	261.0	264.0	264.0	0.3	0.5	171.84	-2,049.6	-87.2	2,052.1	2,051.4	0.75	2,753.507	
300.0	300.0	303.0	303.0	0.4	0.6	-109.95	-2,049.6	-87.2	2,052.3	2,051.4	0.92	2,223.961	
400.0	399.9	402.9	402.9	0.6	0.8	-95.50	-2,049.6	-87.2	2,052.8	2,051.5	1.38	1,489.778	
500.0	499.7	502.7	502.7	0.8	1.0	-93.30	-2,049.6	-87.2	2,053.3	2,051.5	1.83	1,120.440	
538.0	537.5	540.5	540.5	0.9	1.1	-92.95	-2,049.6	-87.2	2,053.5	2,051.5	2.01	1,024.105	
600.0	599.1	602.1	602.1	1.1	1.2	-93.89	-2,049.6	-87.2	2,054.0	2,051.6	2.36	871.006	
700.0	697.9	700.9	700.9	1.5	1.4	-95.00	-2,049.6	-87.2	2,055.2	2,052.3	2.93	702.296	
800.0	796.0	799.0	799.0	1.8	1.7	-95.92	-2,049.6	-87.2	2,057.1	2,053.6	3.49	588.975	
818.0	813.5	816.5	816.5	1.9	1.7	-96.08	-2,049.6	-87.2	2,057.5	2,053.9	3.59	572.433	
900.0	893.1	896.1	896.1	2.3	1.9	-95.75	-2,049.6	-87.2	2,059.6	2,055.4	4.23	486.574	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.68	-2,049.6	-87.2	2,062.5	2,057.5	5.01	411.836	
1,100.0	1,083.9	1,081.2	1,081.2	3.5	2.3	-95.83	-2,049.7	-87.3	2,065.9	2,060.2	5.76	358.636	
1,104.0	1,087.6	1,084.4	1,084.4	3.5	2.3	-95.83	-2,049.7	-87.4	2,066.1	2,060.3	5.79	356.873	
1,200.0	1,177.9	1,161.6	1,161.6	4.1	2.5	-97.20	-2,050.2	-89.3	2,070.7	2,064.1	6.55	315.904	
1,300.0	1,272.0	1,243.5	1,243.3	4.8	2.6	-98.58	-2,051.4	-93.5	2,076.9	2,069.5	7.36	282.341	
1,391.0	1,357.8	1,319.1	1,318.7	5.3	2.8	-99.80	-2,053.1	-99.3	2,083.8	2,075.7	8.09	257.463	
1,400.0	1,366.3	1,326.6	1,326.2	5.4	2.8	-99.68	-2,053.3	-100.0	2,084.5	2,076.3	8.16	255.390	
1,458.0	1,421.2	1,375.5	1,374.8	5.7	2.9	-98.81	-2,054.7	-104.9	2,089.0	2,080.4	8.60	242.791	
1,500.0	1,461.0	1,411.2	1,410.2	6.0	3.0	-99.21	-2,055.9	-109.0	2,092.3	2,083.4	8.93	234.356	
1,600.0	1,556.1	1,500.0	1,498.2	6.6	3.2	-100.12	-2,059.4	-121.1	2,100.7	2,091.0	9.72	216.073	
1,676.0	1,628.3	1,562.3	1,559.6	7.0	3.4	-100.75	-2,062.3	-131.1	2,107.8	2,097.4	10.33	203.948	
1,700.0	1,651.1	1,583.1	1,580.0	7.2	3.5	-100.30	-2,063.4	-134.7	2,110.1	2,099.5	10.53	200.325	
1,800.0	1,746.4	1,672.8	1,667.9	7.7	3.7	-98.35	-2,068.4	-151.9	2,119.2	2,107.8	11.40	185.952	
1,900.0	1,841.8	1,772.0	1,764.9	8.3	4.1	-96.30	-2,074.1	-171.7	2,127.1	2,114.8	12.32	172.657	
1,963.0	1,902.0	1,834.6	1,826.2	8.7	4.3	-94.97	-2,077.7	-184.2	2,131.5	2,118.6	12.91	165.090	
2,000.0	1,937.4	1,871.3	1,862.1	8.9	4.5	-95.05	-2,079.9	-191.5	2,133.9	2,120.7	13.25	160.991	
2,100.0	2,033.1	1,970.8	1,959.4	9.5	4.9	-95.27	-2,085.6	-211.4	2,140.4	2,126.2	14.19	150.795	
2,200.0	2,129.0	2,070.2	2,056.7	10.0	5.3	-95.47	-2,091.4	-231.2	2,146.8	2,131.7	15.15	141.744	
2,250.0	2,177.1	2,120.0	2,105.4	10.3	5.5	-95.56	-2,094.3	-241.2	2,150.0	2,134.4	15.63	137.598	
2,300.0	2,225.1	2,169.8	2,154.0	10.6	5.7	-96.75	-2,097.1	-251.1	2,153.4	2,137.3	16.11	133.678	
2,400.0	2,321.2	2,269.2	2,251.3	11.2	6.1	-99.06	-2,102.9	-271.0	2,160.9	2,143.9	17.08	126.537	
2,500.0	2,417.0	2,368.5	2,348.5	11.7	6.5	-101.32	-2,108.6	-290.8	2,169.6	2,151.6	18.05	120.210	
2,537.0	2,452.5	2,405.3	2,384.4	11.9	6.7	-102.14	-2,110.8	-298.1	2,173.1	2,154.7	18.41	118.055	
2,600.0	2,512.8	2,467.7	2,445.5	12.3	6.9	-104.98	-2,114.4	-310.6	2,179.7	2,160.7	19.03	114.526	
2,700.0	2,608.2	2,566.6	2,542.2	12.9	7.4	-109.25	-2,120.1	-330.4	2,192.2	2,172.2	20.01	109.533	
2,800.0	2,703.3	2,665.1	2,638.5	13.5	7.8	-113.21	-2,125.8	-350.0	2,207.2	2,186.2	20.98	105.194	
2,824.0	2,726.1	2,688.7	2,661.6	13.7	7.9	-114.12	-2,127.2	-354.7	2,211.1	2,189.9	21.21	104.241	
2,900.0	2,798.2	2,763.4	2,734.7	14.1	8.2	-112.03	-2,131.5	-369.7	2,223.3	2,201.3	22.00	101.077	
3,000.0	2,893.6	2,862.2	2,831.3	14.7	8.7	-108.97	-2,137.2	-389.4	2,237.3	2,214.3	23.03	97.168	
3,100.0	2,989.4	2,961.2	2,928.2	15.3	9.1	-105.55	-2,143.0	-409.2	2,249.2	2,225.1	24.05	93.519	
3,112.0	3,000.9	2,973.1	2,939.8	15.4	9.2	-105.11	-2,143.7	-411.5	2,250.4	2,226.3	24.17	93.097	
3,200.0	3,085.5	3,060.5	3,025.3	15.9	9.6	-104.40	-2,148.7	-429.0	2,259.4	2,234.4	25.02	90.303	
3,300.0	3,181.9	3,159.9	3,122.5	16.4	10.0	-103.51	-2,154.5	-448.8	2,269.0	2,243.0	25.99	87.319	
3,400.0	3,278.4	3,259.3	3,219.8	16.9	10.5	-102.54	-2,160.2	-468.7	2,277.9	2,250.9	26.95	84.517	
3,500.0	3,374.7	3,358.8	3,317.1	17.5	10.9	-102.67	-2,166.0	-488.5	2,286.7	2,258.8	27.97	81.764	
3,600.0	3,470.3	3,458.0	3,414.1	18.1	11.4	-102.84	-2,171.7	-508.4	2,296.2	2,267.3	28.98	79.236	
3,687.0	3,552.8	3,544.0	3,498.3	18.6	11.8	-103.02	-2,176.7	-525.5	2,305.0	2,275.2	29.86	77.201	
3,700.0	3,565.1	3,556.9	3,510.8	18.7	11.8	-102.82	-2,177.5	-528.1	2,306.4	2,276.4	30.00	76.879	
3,800.0	3,659.5	3,655.7	3,607.5	19.4	12.3	-101.31	-2,183.2	-547.8	2,316.2	2,285.1	31.10	74.485	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,754.5	3,704.2	20.0	12.7	-99.86	-2,188.9	-567.6	2,325.1	2,292.9	32.19	72.232	
3,974.0	3,823.6	3,827.7	3,775.7	20.5	13.0	-98.80	-2,193.1	-582.2	2,331.1	2,298.1	33.00	70.647	
4,000.0	3,848.1	3,853.4	3,800.9	20.7	13.2	-99.11	-2,194.6	-587.3	2,333.1	2,299.8	33.26	70.140	
4,100.0	3,942.9	3,952.5	3,897.8	21.3	13.6	-100.34	-2,200.4	-607.1	2,341.0	2,306.7	34.29	68.264	
4,200.0	4,038.5	4,051.8	3,994.9	21.9	14.1	-101.66	-2,206.1	-626.9	2,348.9	2,313.6	35.33	66.493	
4,263.0	4,099.0	4,114.5	4,056.2	22.3	14.4	-102.55	-2,209.7	-639.5	2,354.0	2,318.0	35.98	65.428	
4,300.0	4,134.7	4,151.3	4,092.2	22.5	14.5	-103.66	-2,211.9	-646.8	2,357.1	2,320.7	36.32	64.888	
4,400.0	4,231.2	4,250.8	4,189.6	23.0	15.0	-106.79	-2,217.6	-666.7	2,366.1	2,328.8	37.26	63.505	
4,500.0	4,328.0	4,350.2	4,286.8	23.5	15.4	-110.12	-2,223.4	-686.5	2,376.2	2,338.0	38.19	62.225	
4,549.0	4,375.5	4,398.9	4,334.4	23.8	15.7	-111.82	-2,226.2	-696.3	2,381.5	2,342.9	38.64	61.634	
4,600.0	4,425.0	4,449.6	4,384.0	24.0	15.9	-112.02	-2,229.2	-706.4	2,387.3	2,348.2	39.11	61.041	
4,700.0	4,521.9	4,548.9	4,481.2	24.5	16.4	-112.40	-2,234.9	-726.2	2,398.6	2,358.6	40.03	59.922	
4,800.0	4,618.8	4,648.2	4,578.3	25.0	16.8	-112.78	-2,240.7	-746.0	2,410.2	2,369.2	40.95	58.859	
4,837.0	4,654.7	4,684.9	4,614.2	25.2	17.0	-112.92	-2,242.8	-753.4	2,414.5	2,373.2	41.29	58.479	
4,900.0	4,715.7	4,747.5	4,675.4	25.5	17.3	-113.36	-2,246.4	-765.9	2,422.0	2,380.1	41.87	57.840	
5,000.0	4,812.4	4,846.7	4,772.4	26.0	17.7	-114.03	-2,252.1	-785.7	2,434.4	2,391.6	42.80	56.876	
5,100.0	4,908.9	4,945.8	4,869.4	26.6	18.2	-114.67	-2,257.9	-805.5	2,447.4	2,403.6	43.73	55.971	
5,125.0	4,932.9	4,970.5	4,893.6	26.7	18.3	-114.83	-2,259.3	-810.4	2,450.7	2,406.7	43.96	55.753	
5,200.0	5,005.4	5,044.9	4,966.3	27.0	18.7	-112.38	-2,263.6	-825.3	2,460.1	2,415.4	44.69	55.053	
5,300.0	5,102.4	5,148.1	5,067.4	27.5	19.1	-108.48	-2,269.5	-845.4	2,470.5	2,424.9	45.59	54.189	
5,400.0	5,199.9	5,255.2	5,172.9	28.0	19.4	-103.78	-2,274.6	-863.0	2,478.2	2,431.8	46.39	53.424	
5,412.0	5,211.7	5,268.0	5,185.6	28.1	19.4	-103.15	-2,275.1	-864.8	2,478.9	2,432.4	46.48	53.335	
5,500.0	5,297.9	5,362.1	5,278.8	28.4	19.7	-100.76	-2,278.6	-876.7	2,483.5	2,436.5	47.06	52.776	
5,581.0	5,377.7	5,448.5	5,364.8	28.7	19.8	-97.96	-2,281.0	-885.1	2,486.5	2,439.0	47.53	52.319	
5,600.0	5,396.4	5,468.8	5,385.0	28.8	19.9	-99.18	-2,281.4	-886.7	2,487.1	2,439.5	47.63	52.217	
5,700.0	5,495.3	5,575.0	5,491.0	29.1	20.1	-107.20	-2,283.2	-892.8	2,490.8	2,442.7	48.11	51.775	
5,800.0	5,594.6	5,680.9	5,596.9	29.4	20.2	-119.15	-2,283.9	-895.2	2,495.6	2,447.1	48.48	51.476	
5,900.0	5,694.1	5,781.2	5,697.1	29.6	20.3	-136.83	-2,283.9	-895.2	2,501.5	2,452.8	48.77	51.288	
5,917.0	5,711.1	5,798.1	5,714.1	29.7	20.4	-140.45	-2,283.9	-895.2	2,502.7	2,453.8	48.82	51.265	
6,000.0	5,793.7	5,880.8	5,796.7	29.8	20.5	-140.55	-2,283.9	-895.2	2,508.3	2,459.2	49.06	51.125	
6,067.0	5,860.5	5,947.5	5,863.5	30.0	20.6	-140.64	-2,283.9	-895.2	2,512.8	2,463.6	49.26	51.012	
6,100.0	5,893.4	5,980.4	5,896.4	30.0	20.6	-140.70	-2,283.9	-895.2	2,514.9	2,465.6	49.37	50.941	
6,200.0	5,993.2	6,080.2	5,996.2	30.2	20.7	-140.85	-2,283.9	-895.2	2,519.5	2,469.8	49.67	50.729	
6,300.0	6,093.2	6,166.9	6,082.9	30.3	20.8	-140.91	-2,283.9	-895.0	2,521.4	2,471.6	49.88	50.549	
6,318.8	6,111.9	6,177.4	6,093.4	30.3	20.8	167.12	-2,283.9	-894.7	2,521.6	2,489.2	32.41	77.799	
6,400.0	6,193.2	6,222.7	6,138.5	30.4	20.9	167.05	-2,283.9	-891.5	2,522.9	2,490.3	32.61	77.368	
6,444.4	6,237.6	6,250.0	6,165.7	30.4	20.9	166.98	-2,283.9	-888.2	2,524.1	2,491.4	32.72	77.133	
6,450.0	6,243.2	6,250.0	6,165.7	30.4	20.9	76.96	-2,283.9	-888.2	2,524.3	2,474.2	50.03	50.456	
6,475.0	6,268.1	6,264.1	6,179.6	30.4	20.9	76.85	-2,283.9	-886.1	2,524.9	2,474.9	50.01	50.490	
6,500.0	6,293.0	6,277.9	6,193.2	30.4	20.9	76.77	-2,283.9	-883.8	2,525.3	2,475.4	49.97	50.536	
6,525.0	6,317.8	6,300.0	6,214.9	30.4	20.8	76.72	-2,283.9	-879.5	2,525.6	2,475.7	49.91	50.600	
6,550.0	6,342.3	6,300.0	6,214.9	30.4	20.8	76.72	-2,283.9	-879.5	2,525.7	2,475.8	49.85	50.661	
6,575.0	6,366.5	6,319.3	6,233.7	30.3	20.8	76.74	-2,283.9	-875.2	2,525.6	2,475.8	49.76	50.753	
6,600.0	6,390.4	6,333.1	6,247.1	30.2	20.8	76.79	-2,283.9	-871.9	2,525.3	2,475.6	49.66	50.846	
6,625.0	6,413.9	6,350.0	6,263.4	30.2	20.8	76.88	-2,283.9	-867.4	2,524.8	2,475.2	49.56	50.948	
6,650.0	6,436.9	6,350.0	6,263.4	30.1	20.8	76.96	-2,283.9	-867.4	2,524.1	2,474.7	49.45	51.043	
6,675.0	6,459.3	6,374.4	6,286.7	30.0	20.8	77.14	-2,283.9	-860.3	2,523.2	2,473.9	49.31	51.167	
6,700.0	6,481.1	6,388.1	6,299.7	29.9	20.7	77.31	-2,283.9	-855.9	2,522.2	2,473.0	49.19	51.279	
6,725.0	6,502.3	6,400.0	6,310.9	29.7	20.7	77.51	-2,283.9	-852.0	2,521.0	2,471.9	49.06	51.389	
6,750.0	6,522.7	6,415.4	6,325.3	29.6	20.7	77.76	-2,283.9	-846.5	2,519.6	2,470.7	48.92	51.504	
6,775.0	6,542.4	6,429.0	6,337.9	29.5	20.7	78.03	-2,283.9	-841.5	2,518.0	2,469.3	48.79	51.612	
6,800.0	6,561.2	6,450.0	6,357.3	29.4	20.6	78.37	-2,283.9	-833.2	2,516.4	2,467.7	48.65	51.720	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,450.0	6,357.3	29.3	20.6	78.59	-2,283.9	-833.2	2,514.5	2,466.0	48.54	51.799	
6,850.0	6,596.1	6,469.3	6,374.8	29.1	20.6	78.99	-2,283.9	-825.2	2,512.5	2,464.1	48.42	51.889	
6,875.0	6,612.1	6,482.5	6,386.7	29.0	20.6	79.35	-2,283.9	-819.3	2,510.5	2,462.1	48.31	51.961	
6,900.0	6,627.1	6,500.0	6,402.2	28.9	20.5	79.79	-2,283.9	-811.3	2,508.3	2,460.0	48.21	52.024	
6,925.0	6,641.0	6,500.0	6,402.2	28.8	20.5	80.06	-2,283.9	-811.3	2,506.0	2,457.8	48.14	52.056	
6,950.0	6,653.8	6,521.7	6,421.2	28.7	20.5	80.59	-2,283.9	-800.8	2,503.5	2,455.5	48.06	52.093	
6,975.0	6,665.5	6,534.6	6,432.3	28.7	20.4	81.04	-2,283.9	-794.3	2,501.1	2,453.1	48.00	52.106	
7,000.0	6,676.0	6,550.0	6,445.5	28.6	20.4	81.54	-2,283.9	-786.3	2,498.5	2,450.6	47.95	52.104	
7,025.0	6,685.3	6,559.8	6,453.8	28.6	20.4	81.98	-2,283.9	-781.1	2,496.0	2,448.0	47.93	52.080	
7,050.0	6,693.4	6,572.2	6,464.1	28.5	20.4	82.47	-2,283.9	-774.3	2,493.3	2,445.4	47.91	52.041	
7,075.0	6,700.2	6,584.4	6,474.2	28.5	20.3	82.96	-2,283.9	-767.4	2,490.7	2,442.8	47.91	51.986	
7,100.0	6,705.8	6,600.0	6,486.9	28.5	20.3	83.52	-2,283.9	-758.3	2,488.1	2,440.1	47.92	51.919	
7,125.0	6,710.0	6,600.0	6,486.9	28.5	20.3	83.83	-2,283.9	-758.3	2,485.5	2,437.5	47.96	51.823	
7,150.0	6,713.0	6,619.7	6,502.7	28.6	20.3	84.47	-2,283.9	-746.5	2,482.8	2,434.8	48.00	51.727	
7,175.0	6,714.7	6,631.1	6,511.6	28.6	20.2	84.97	-2,283.9	-739.6	2,480.3	2,432.2	48.06	51.613	
7,198.8	6,715.0	6,641.6	6,519.8	28.6	20.2	85.44	-2,283.9	-732.9	2,477.9	2,429.8	48.12	51.495	
7,200.0	6,715.0	6,642.1	6,520.2	28.6	20.2	85.45	-2,283.9	-732.6	2,477.8	2,429.7	48.12	51.490	
7,300.0	6,714.1	6,689.3	6,555.7	29.0	20.1	86.28	-2,283.9	-701.5	2,469.4	2,420.9	48.50	50.920	
7,400.0	6,713.2	6,744.4	6,594.4	29.7	20.1	87.19	-2,283.9	-662.3	2,463.6	2,414.5	49.15	50.127	
7,500.0	6,712.3	6,808.7	6,635.6	30.6	20.0	88.16	-2,283.9	-613.0	2,460.1	2,410.0	50.10	49.106	
7,600.0	6,711.3	6,883.3	6,677.7	31.7	20.1	89.15	-2,283.9	-551.3	2,458.5	2,407.1	51.38	47.848	
7,688.8	6,710.5	6,958.9	6,713.5	32.9	20.3	90.00	-2,283.9	-484.8	2,458.1	2,405.2	52.85	46.507	
7,700.0	6,710.4	6,969.0	6,717.8	33.0	20.4	90.10	-2,283.9	-475.6	2,458.1	2,405.0	53.06	46.328	
7,800.0	6,709.5	7,065.5	6,751.7	34.5	21.0	90.91	-2,283.9	-385.5	2,458.4	2,403.2	55.21	44.527	
7,900.0	6,708.5	7,170.6	6,774.5	36.2	21.9	91.46	-2,283.9	-282.9	2,458.9	2,401.0	57.90	42.467	
8,000.0	6,707.6	7,280.8	6,782.0	38.0	23.2	91.66	-2,283.9	-173.1	2,459.1	2,398.1	61.08	40.259	
8,100.0	6,706.7	7,381.2	6,780.7	39.9	24.7	91.65	-2,283.9	-72.7	2,459.1	2,394.6	64.52	38.112	
8,200.0	6,705.8	7,481.2	6,779.3	41.9	26.4	91.64	-2,283.9	27.3	2,459.1	2,390.9	68.26	36.028	
8,300.0	6,704.8	7,581.2	6,778.0	44.0	28.3	91.63	-2,283.9	127.3	2,459.1	2,386.9	72.25	34.036	
8,400.0	6,703.9	7,681.2	6,776.6	46.2	30.3	91.62	-2,283.9	227.3	2,459.1	2,382.6	76.46	32.160	
8,500.0	6,703.0	7,781.2	6,775.3	48.5	32.4	91.61	-2,283.9	327.3	2,459.1	2,378.2	80.86	30.412	
8,600.0	6,702.1	7,881.2	6,773.9	50.8	34.7	91.60	-2,283.9	427.2	2,459.1	2,373.7	85.41	28.793	
8,700.0	6,701.1	7,981.2	6,772.5	53.1	37.0	91.59	-2,283.9	527.2	2,459.1	2,369.0	90.08	27.299	
8,800.0	6,700.2	8,081.2	6,771.2	55.5	39.4	91.58	-2,283.9	627.2	2,459.0	2,364.2	94.86	25.924	
8,900.0	6,699.3	8,181.2	6,769.8	57.9	41.8	91.57	-2,283.9	727.2	2,459.0	2,359.3	99.73	24.658	
9,000.0	6,698.3	8,281.2	6,768.5	60.4	44.3	91.56	-2,283.9	827.2	2,459.0	2,354.4	104.67	23.493	
9,100.0	6,697.4	8,381.2	6,767.1	62.9	46.8	91.55	-2,283.9	927.2	2,459.0	2,349.3	109.68	22.419	
9,200.0	6,696.5	8,481.2	6,765.7	65.4	49.4	91.54	-2,283.9	1,027.2	2,459.0	2,344.2	114.75	21.429	
9,300.0	6,695.5	8,581.2	6,764.4	68.0	52.0	91.53	-2,283.9	1,127.2	2,459.0	2,339.1	119.87	20.513	
9,400.0	6,694.6	8,681.2	6,763.0	70.5	54.6	91.52	-2,283.9	1,227.2	2,459.0	2,333.9	125.03	19.666	
9,500.0	6,693.7	8,781.2	6,761.7	73.1	57.2	91.51	-2,283.9	1,327.2	2,459.0	2,328.7	130.24	18.881	
9,600.0	6,692.8	8,881.2	6,760.3	75.7	59.8	91.50	-2,283.9	1,427.1	2,459.0	2,323.5	135.47	18.151	
9,700.0	6,691.8	8,981.2	6,758.9	78.3	62.5	91.49	-2,283.9	1,527.1	2,458.9	2,318.2	140.73	17.472	
9,800.0	6,690.9	9,081.2	6,757.6	80.9	65.1	91.48	-2,283.9	1,627.1	2,458.9	2,312.9	146.02	16.839	
9,900.0	6,690.0	9,181.2	6,756.2	83.6	67.8	91.47	-2,283.9	1,727.1	2,458.9	2,307.6	151.34	16.248	
10,000.0	6,689.0	9,281.2	6,754.9	86.2	70.5	91.46	-2,283.9	1,827.1	2,458.9	2,302.2	156.67	15.695	
10,100.0	6,688.1	9,381.2	6,753.5	88.9	73.2	91.45	-2,283.9	1,927.1	2,458.9	2,296.9	162.03	15.176	
10,200.0	6,687.2	9,481.2	6,752.1	91.6	75.9	91.44	-2,283.9	2,027.1	2,458.9	2,291.5	167.40	14.689	
10,300.0	6,686.2	9,581.2	6,750.8	94.2	78.6	91.43	-2,283.9	2,127.1	2,458.9	2,286.1	172.79	14.231	
10,400.0	6,685.3	9,681.2	6,749.4	96.9	81.3	91.42	-2,283.9	2,227.1	2,458.9	2,280.7	178.19	13.799	
10,500.0	6,684.4	9,781.2	6,748.1	99.6	84.1	91.41	-2,283.9	2,327.1	2,458.9	2,275.3	183.60	13.392	
10,600.0	6,683.4	9,881.2	6,746.7	102.3	86.8	91.40	-2,283.9	2,427.0	2,458.9	2,269.8	189.03	13.008	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	9,981.2	6,745.3	105.0	89.5	91.39	-2,283.9	2,527.0	2,458.8	2,264.4	194.47	12.644	
10,800.0	6,681.6	10,081.2	6,744.0	107.7	92.3	91.38	-2,283.9	2,627.0	2,458.8	2,258.9	199.92	12.299	
10,900.0	6,680.6	10,181.2	6,742.6	110.4	95.0	91.38	-2,283.9	2,727.0	2,458.8	2,253.4	205.37	11.973	
11,000.0	6,679.7	10,281.2	6,741.3	113.1	97.8	91.37	-2,283.9	2,827.0	2,458.8	2,248.0	210.84	11.662	
11,100.0	6,678.8	10,381.2	6,739.9	115.9	100.5	91.36	-2,283.9	2,927.0	2,458.8	2,242.5	216.31	11.367	
11,200.0	6,677.8	10,481.2	6,738.6	118.6	103.3	91.35	-2,283.9	3,027.0	2,458.8	2,237.0	221.79	11.086	
11,300.0	6,676.9	10,581.2	6,737.2	121.3	106.0	91.34	-2,283.9	3,127.0	2,458.8	2,231.5	227.28	10.818	
11,400.0	6,676.0	10,681.2	6,735.8	124.1	108.8	91.33	-2,283.9	3,227.0	2,458.8	2,226.0	232.77	10.563	
11,500.0	6,675.0	10,781.2	6,734.5	126.8	111.5	91.32	-2,283.9	3,327.0	2,458.8	2,220.5	238.27	10.319	
11,600.0	6,674.1	10,881.2	6,733.1	129.5	114.3	91.31	-2,283.9	3,426.9	2,458.8	2,215.0	243.78	10.086	
11,700.0	6,673.1	10,981.2	6,731.8	132.3	117.1	91.30	-2,283.9	3,526.9	2,458.7	2,209.5	249.29	9.863	
11,800.0	6,672.2	11,081.2	6,730.4	135.0	119.8	91.29	-2,283.9	3,626.9	2,458.7	2,203.9	254.80	9.650	
11,900.0	6,671.3	11,181.2	6,729.0	137.8	122.6	91.28	-2,283.9	3,726.9	2,458.7	2,198.4	260.32	9.445	
12,000.0	6,670.3	11,281.2	6,727.7	140.5	125.4	91.27	-2,283.9	3,826.9	2,458.7	2,192.9	265.85	9.249	
12,036.2	6,670.0	11,318.2	6,727.2	141.5	126.4	91.26	-2,283.9	3,864.0	2,458.7	2,190.8	267.87	9.179	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.59	-2,034.7	-85.8	2,036.5				
100.0	100.0	103.0	103.0	0.1	0.1	171.81	-2,034.7	-85.8	2,036.6	2,036.4	0.20	N/A	
200.0	200.0	203.0	203.0	0.2	0.3	171.82	-2,034.7	-85.8	2,036.9	2,036.3	0.54	3,774.785	ES
261.0	261.0	264.0	264.0	0.3	0.5	171.82	-2,034.7	-85.8	2,037.2	2,036.4	0.75	2,733.405	
300.0	300.0	303.0	303.0	0.4	0.6	-109.98	-2,034.7	-85.8	2,037.4	2,036.4	0.92	2,207.726	
400.0	399.9	402.9	402.9	0.6	0.8	-95.52	-2,034.7	-85.8	2,037.9	2,036.5	1.38	1,478.907	
500.0	499.7	502.7	502.7	0.8	1.0	-93.32	-2,034.7	-85.8	2,038.4	2,036.5	1.83	1,112.268	
538.0	537.5	540.5	540.5	0.9	1.1	-92.97	-2,034.7	-85.8	2,038.6	2,036.6	2.01	1,016.637	
600.0	599.1	602.1	602.1	1.1	1.2	-93.91	-2,034.7	-85.8	2,039.0	2,036.7	2.36	864.658	
700.0	697.9	700.9	700.9	1.5	1.4	-95.03	-2,034.7	-85.8	2,040.2	2,037.3	2.93	697.184	
800.0	796.0	799.0	799.0	1.8	1.7	-95.96	-2,034.7	-85.8	2,042.1	2,038.7	3.49	584.696	
818.0	813.5	816.5	816.5	1.9	1.7	-96.11	-2,034.7	-85.8	2,042.6	2,039.0	3.59	568.276	
900.0	893.1	896.1	896.1	2.3	1.9	-95.78	-2,034.7	-85.8	2,044.7	2,040.4	4.23	483.049	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.72	-2,034.7	-85.8	2,047.6	2,042.5	5.01	408.863	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-95.93	-2,034.7	-85.8	2,051.0	2,045.2	5.78	354.932	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-95.95	-2,034.7	-85.8	2,051.1	2,045.3	5.81	353.081	
1,200.0	1,177.9	1,175.6	1,175.6	4.1	2.5	-97.44	-2,034.7	-85.7	2,055.2	2,048.6	6.61	311.040	
1,300.0	1,272.0	1,252.6	1,252.6	4.8	2.7	-98.94	-2,035.1	-84.0	2,061.0	2,053.6	7.40	278.661	
1,391.0	1,357.8	1,321.4	1,321.3	5.3	2.8	-100.33	-2,035.9	-80.8	2,067.9	2,059.8	8.11	255.028	
1,400.0	1,366.3	1,328.1	1,328.0	5.4	2.8	-100.24	-2,036.0	-80.4	2,068.6	2,060.5	8.17	253.083	
1,458.0	1,421.2	1,371.4	1,371.2	5.7	2.9	-99.53	-2,036.8	-77.5	2,073.4	2,064.8	8.59	241.284	
1,500.0	1,461.0	1,400.0	1,399.7	6.0	3.0	-100.04	-2,037.4	-75.2	2,077.0	2,068.1	8.89	233.606	
1,600.0	1,556.1	1,475.5	1,474.8	6.6	3.1	-101.36	-2,039.2	-67.9	2,086.7	2,077.1	9.62	216.843	
1,676.0	1,628.3	1,529.9	1,528.8	7.0	3.3	-102.36	-2,040.9	-61.4	2,095.4	2,085.2	10.18	205.881	
1,700.0	1,651.1	1,546.9	1,545.7	7.2	3.3	-102.04	-2,041.4	-59.2	2,098.3	2,087.9	10.36	202.630	
1,800.0	1,746.4	1,616.9	1,614.8	7.7	3.5	-100.65	-2,044.0	-49.0	2,110.6	2,099.5	11.09	190.227	
1,900.0	1,841.8	1,685.4	1,682.2	8.3	3.7	-99.18	-2,047.0	-37.5	2,123.3	2,111.4	11.84	179.311	
1,963.0	1,902.0	1,727.8	1,723.8	8.7	3.8	-98.22	-2,049.0	-29.5	2,131.5	2,119.2	12.31	173.097	
2,000.0	1,937.4	1,753.2	1,748.7	8.9	3.9	-98.54	-2,050.3	-24.5	2,136.5	2,124.0	12.59	169.716	
2,100.0	2,033.1	1,841.0	1,834.6	9.5	4.2	-99.66	-2,054.8	-6.8	2,150.8	2,137.4	13.40	160.564	
2,200.0	2,129.0	1,929.2	1,920.9	10.0	4.5	-100.75	-2,059.3	11.0	2,166.0	2,151.7	14.21	152.467	
2,250.0	2,177.1	1,973.4	1,964.1	10.3	4.7	-101.29	-2,061.6	19.9	2,173.8	2,159.2	14.61	148.755	
2,300.0	2,225.1	2,017.6	2,007.4	10.6	4.8	-102.90	-2,063.8	28.8	2,182.0	2,167.0	15.02	145.245	
2,400.0	2,321.2	2,105.8	2,093.7	11.2	5.2	-106.06	-2,068.3	46.6	2,199.9	2,184.0	15.84	138.886	
2,500.0	2,417.0	2,193.8	2,179.8	11.7	5.5	-109.14	-2,072.9	64.3	2,219.7	2,203.1	16.65	133.308	
2,537.0	2,452.5	2,226.3	2,211.5	11.9	5.7	-110.26	-2,074.5	70.9	2,227.6	2,210.6	16.95	131.419	
2,600.0	2,512.8	2,281.5	2,265.5	12.3	5.9	-113.62	-2,077.4	82.0	2,241.8	2,224.4	17.46	128.380	
2,700.0	2,608.2	2,368.7	2,350.8	12.9	6.2	-118.69	-2,081.8	99.5	2,267.1	2,248.8	18.26	124.175	
2,800.0	2,703.3	2,455.3	2,435.5	13.5	6.6	-123.45	-2,086.3	117.0	2,295.4	2,276.4	19.03	120.646	
2,824.0	2,726.1	2,475.9	2,455.7	13.7	6.7	-124.54	-2,087.3	121.2	2,302.7	2,283.5	19.21	119.892	
2,900.0	2,798.2	2,541.6	2,519.9	14.1	7.0	-123.00	-2,090.7	134.4	2,325.6	2,305.8	19.82	117.352	
3,000.0	2,893.6	2,628.6	2,605.1	14.7	7.3	-120.66	-2,095.1	151.9	2,354.4	2,333.8	20.61	114.238	
3,100.0	2,989.4	2,716.4	2,690.9	15.3	7.7	-117.96	-2,099.6	169.6	2,381.6	2,360.2	21.39	111.358	
3,112.0	3,000.9	2,727.0	2,701.2	15.4	7.8	-117.61	-2,100.2	171.7	2,384.7	2,363.2	21.48	111.027	
3,200.0	3,085.5	2,804.7	2,777.3	15.9	8.1	-117.56	-2,104.2	187.4	2,407.7	2,385.6	22.11	108.887	
3,300.0	3,181.9	2,893.4	2,864.0	16.4	8.5	-117.42	-2,108.7	205.3	2,433.7	2,410.9	22.83	106.624	
3,400.0	3,278.4	2,982.5	2,951.2	16.9	8.9	-117.20	-2,113.3	223.2	2,459.5	2,435.9	23.53	104.520	
3,500.0	3,374.7	3,071.1	3,037.9	17.5	9.3	-117.80	-2,117.8	241.1	2,486.0	2,461.7	24.33	102.196	
3,600.0	3,470.3	3,158.6	3,123.4	18.1	9.7	-118.38	-2,122.3	258.7	2,514.3	2,489.2	25.11	100.136	
3,687.0	3,552.8	3,233.7	3,196.9	18.6	10.0	-118.86	-2,126.2	273.8	2,540.5	2,514.7	25.78	98.540	
3,700.0	3,565.1	3,244.8	3,207.8	18.7	10.1	-118.73	-2,126.7	276.1	2,544.5	2,518.6	25.89	98.293	
3,800.0	3,659.5	3,330.5	3,291.6	19.4	10.4	-117.70	-2,131.1	293.3	2,575.2	2,548.6	26.69	96.476	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,416.0	3,375.2	20.0	10.8	-116.69	-2,135.5	310.6	2,605.9	2,578.4	27.49	94.803	
3,974.0	3,823.6	3,479.2	3,437.1	20.5	11.1	-115.96	-2,138.8	323.3	2,628.6	2,600.5	28.07	93.650	
4,000.0	3,848.1	3,501.5	3,458.8	20.7	11.2	-116.50	-2,139.9	327.8	2,636.5	2,608.3	28.23	93.394	
4,100.0	3,942.9	3,587.8	3,543.3	21.3	11.6	-118.61	-2,144.3	345.2	2,667.1	2,638.3	28.85	92.445	
4,200.0	4,038.5	3,675.3	3,628.9	21.9	12.0	-120.82	-2,148.8	362.8	2,697.6	2,668.1	29.47	91.548	
4,263.0	4,099.0	3,731.0	3,683.3	22.3	12.2	-122.27	-2,151.7	374.1	2,716.7	2,686.8	29.85	91.002	
4,300.0	4,134.7	3,763.9	3,715.5	22.5	12.4	-123.68	-2,153.3	380.7	2,727.9	2,697.9	30.05	90.773	
4,400.0	4,231.2	3,852.9	3,802.6	23.0	12.8	-127.61	-2,157.9	398.6	2,759.0	2,728.4	30.58	90.212	
4,500.0	4,328.0	3,942.4	3,890.1	23.5	13.2	-131.73	-2,162.5	416.6	2,790.9	2,759.8	31.10	89.728	
4,549.0	4,375.5	3,986.4	3,933.1	23.8	13.4	-133.82	-2,164.7	425.5	2,806.9	2,775.5	31.36	89.516	
4,600.0	4,425.0	4,032.2	3,977.9	24.0	13.6	-134.30	-2,167.1	434.7	2,823.7	2,792.0	31.64	89.236	
4,700.0	4,521.9	4,121.9	4,065.7	24.5	14.0	-135.23	-2,171.7	452.8	2,857.0	2,824.8	32.20	88.725	
4,800.0	4,618.8	4,522.5	4,462.0	25.0	15.1	-137.73	-2,185.6	507.4	2,886.1	2,853.2	32.97	87.542	
4,837.0	4,654.7	4,688.3	4,627.6	25.2	15.4	-138.49	-2,187.3	514.2	2,894.2	2,861.0	33.21	87.146	
4,900.0	4,715.7	4,779.4	4,718.7	25.5	15.5	-139.21	-2,187.4	514.4	2,906.3	2,872.8	33.51	86.735	
5,000.0	4,812.4	4,876.1	4,815.4	26.0	15.7	-140.14	-2,187.4	514.4	2,926.0	2,892.1	33.96	86.172	
5,100.0	4,908.9	4,972.5	4,911.9	26.6	15.8	-141.04	-2,187.4	514.4	2,946.7	2,912.3	34.40	85.655	
5,125.0	4,932.9	4,996.6	4,935.9	26.7	15.8	-141.26	-2,187.4	514.4	2,951.9	2,917.4	34.51	85.533	
5,200.0	5,005.4	8,382.6	6,789.0	27.0	47.8	-111.56	-2,187.4	-1,322.9	2,935.4	2,862.0	73.36	40.011	
5,300.0	5,102.4	8,406.1	6,789.0	27.5	48.4	-106.42	-2,187.4	-1,346.4	2,880.8	2,806.1	74.73	38.550	
5,400.0	5,199.9	8,427.8	6,788.9	28.0	49.0	-100.46	-2,187.4	-1,368.1	2,826.5	2,750.5	75.99	37.194	
5,412.0	5,211.7	8,430.3	6,788.9	28.1	49.0	-99.68	-2,187.4	-1,370.6	2,820.0	2,743.9	76.14	37.038	
5,500.0	5,297.9	8,447.4	6,788.9	28.4	49.5	-95.94	-2,187.4	-1,387.7	2,772.9	2,695.8	77.14	35.948	
5,581.0	5,377.7	8,461.5	6,788.8	28.7	49.8	-91.94	-2,187.4	-1,401.7	2,730.5	2,652.5	77.95	35.028	
5,600.0	5,396.4	8,464.5	6,788.8	28.8	49.9	-92.83	-2,187.4	-1,404.8	2,720.7	2,642.6	78.14	34.819	
5,700.0	5,495.3	8,478.9	6,788.8	29.1	50.3	-99.25	-2,187.4	-1,419.2	2,671.8	2,592.8	79.00	33.818	
5,800.0	5,594.6	8,490.4	6,788.8	29.4	50.6	-109.77	-2,187.4	-1,430.7	2,627.2	2,547.5	79.67	32.977	
5,900.0	5,694.1	8,499.0	6,788.7	29.6	50.8	-126.20	-2,187.4	-1,439.3	2,587.3	2,507.2	80.14	32.284	
5,917.0	5,711.1	8,500.1	6,788.7	29.7	50.9	-129.64	-2,187.4	-1,440.4	2,581.0	2,500.8	80.20	32.181	
6,000.0	5,793.7	8,505.7	6,788.7	29.8	51.0	-129.51	-2,187.4	-1,445.9	2,551.8	2,471.3	80.52	31.693	
6,067.0	5,860.5	8,510.1	6,788.7	30.0	51.1	-129.40	-2,187.4	-1,450.4	2,530.0	2,449.2	80.77	31.323	
6,100.0	5,893.4	8,512.2	6,788.7	30.0	51.2	-129.19	-2,187.4	-1,452.4	2,519.7	2,438.8	80.93	31.136	
6,200.0	5,993.2	8,516.5	6,788.7	30.2	51.3	-128.59	-2,187.4	-1,456.8	2,489.5	2,408.3	81.28	30.627	
6,300.0	6,093.2	8,518.2	6,788.7	30.3	51.3	-128.08	-2,187.4	-1,458.4	2,461.0	2,379.5	81.49	30.201	
6,318.8	6,111.9	8,518.2	6,788.7	30.3	51.3	-179.96	-2,187.4	-1,458.4	2,455.8	2,424.9	30.90	79.478	
6,400.0	6,193.2	8,517.9	6,788.7	30.4	51.3	-179.96	-2,187.4	-1,458.2	2,434.8	2,403.7	31.03	78.473	
6,444.4	6,237.6	8,517.8	6,788.7	30.4	51.3	-179.96	-2,187.4	-1,458.1	2,424.3	2,393.2	31.10	77.959	
6,450.0	6,243.2	8,517.8	6,788.7	30.4	51.3	90.19	-2,187.4	-1,458.1	2,423.1	2,341.5	81.62	29.689	
6,475.0	6,268.1	8,516.8	6,788.7	30.4	51.3	90.84	-2,187.4	-1,457.1	2,417.6	2,336.0	81.61	29.623	
6,500.0	6,293.0	8,514.4	6,788.7	30.4	51.2	91.42	-2,187.4	-1,454.7	2,412.4	2,330.9	81.55	29.583	
6,525.0	6,317.8	8,510.8	6,788.7	30.4	51.1	91.94	-2,187.4	-1,451.1	2,407.5	2,326.0	81.42	29.567	
6,550.0	6,342.3	8,505.9	6,788.7	30.4	51.0	92.39	-2,187.4	-1,446.2	2,402.8	2,321.6	81.25	29.575	
6,575.0	6,366.5	8,499.7	6,788.7	30.3	50.8	92.77	-2,187.4	-1,440.0	2,398.5	2,317.5	81.02	29.605	
6,600.0	6,390.4	8,492.3	6,788.7	30.2	50.7	93.09	-2,187.4	-1,432.6	2,394.4	2,313.7	80.74	29.656	
6,625.0	6,413.9	8,483.6	6,788.8	30.2	50.4	93.35	-2,187.4	-1,423.9	2,390.7	2,310.2	80.42	29.727	
6,650.0	6,436.9	8,473.7	6,788.8	30.1	50.2	93.55	-2,187.4	-1,414.0	2,387.2	2,307.1	80.06	29.818	
6,675.0	6,459.3	8,462.6	6,788.8	30.0	49.9	93.69	-2,187.4	-1,402.9	2,384.0	2,304.4	79.66	29.929	
6,700.0	6,481.1	8,450.4	6,788.9	29.9	49.6	93.78	-2,187.4	-1,390.7	2,381.1	2,301.9	79.22	30.057	
6,725.0	6,502.3	8,437.0	6,788.9	29.7	49.2	93.82	-2,187.4	-1,377.3	2,378.5	2,299.8	78.75	30.203	
6,750.0	6,522.7	8,422.6	6,788.9	29.6	48.8	93.82	-2,187.4	-1,362.9	2,376.2	2,297.9	78.25	30.367	
6,775.0	6,542.4	8,407.1	6,789.0	29.5	48.4	93.78	-2,187.4	-1,347.4	2,374.1	2,296.4	77.72	30.546	
6,800.0	6,561.2	8,390.6	6,789.0	29.4	48.0	93.70	-2,187.4	-1,330.9	2,372.2	2,295.1	77.17	30.740	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	8,373.1	6,789.1	29.3	47.5	93.60	-2,187.4	-1,313.4	2,370.6	2,294.0	76.60	30.948	
6,850.0	6,596.1	8,354.7	6,789.1	29.1	47.1	93.47	-2,187.4	-1,295.0	2,369.2	2,293.2	76.01	31.169	
6,875.0	6,612.1	8,335.5	6,789.2	29.0	46.6	93.32	-2,187.4	-1,275.8	2,368.0	2,292.6	75.40	31.404	
6,900.0	6,627.1	8,315.5	6,789.2	28.9	46.0	93.15	-2,187.4	-1,255.7	2,366.9	2,292.1	74.78	31.650	
6,925.0	6,641.0	8,294.7	6,789.3	28.8	45.5	92.98	-2,187.4	-1,234.9	2,366.0	2,291.9	74.15	31.907	
6,950.0	6,653.8	8,273.2	6,789.3	28.7	44.9	92.80	-2,187.4	-1,213.4	2,365.3	2,291.8	73.52	32.171	
6,975.0	6,665.5	8,251.0	6,789.4	28.7	44.4	92.63	-2,187.4	-1,191.3	2,364.7	2,291.8	72.88	32.444	
7,000.0	6,676.0	8,228.3	6,789.4	28.6	43.8	92.46	-2,187.4	-1,168.6	2,364.1	2,291.9	72.24	32.725	
7,025.0	6,685.3	8,205.1	6,789.5	28.6	43.2	92.30	-2,187.4	-1,145.4	2,363.7	2,292.1	71.60	33.012	
7,050.0	6,693.4	8,181.4	6,789.6	28.5	42.6	92.16	-2,187.4	-1,121.7	2,363.4	2,292.4	70.97	33.301	
7,075.0	6,700.2	8,157.3	6,789.6	28.5	42.0	92.03	-2,187.4	-1,097.6	2,363.1	2,292.8	70.35	33.593	
7,100.0	6,705.8	8,132.9	6,789.7	28.5	41.4	91.93	-2,187.4	-1,073.2	2,363.0	2,293.2	69.73	33.888	
7,125.0	6,710.0	8,108.3	6,789.8	28.5	40.7	91.84	-2,187.4	-1,048.6	2,362.8	2,293.7	69.12	34.185	
7,150.0	6,713.0	8,083.5	6,789.8	28.6	40.1	91.78	-2,187.4	-1,023.8	2,362.7	2,294.2	68.52	34.480	
7,175.0	6,714.7	8,058.5	6,789.9	28.6	39.5	91.75	-2,187.4	-998.8	2,362.7	2,294.7	67.94	34.774	
7,193.1	6,715.1	8,040.4	6,789.9	28.6	39.0	91.74	-2,187.4	-980.7	2,362.7	2,295.1	67.53	34.985	
7,198.8	6,715.0	8,034.7	6,790.0	28.6	38.9	91.74	-2,187.4	-975.0	2,362.7	2,295.3	67.40	35.053	
7,200.0	6,715.0	8,033.5	6,790.0	28.6	38.9	91.74	-2,187.4	-973.8	2,362.7	2,295.3	67.38	35.066	
7,300.0	6,714.1	7,933.5	6,790.2	29.0	36.4	91.77	-2,187.4	-873.8	2,362.7	2,297.4	65.31	36.177	
7,400.0	6,713.2	7,833.5	6,790.5	29.7	34.0	91.80	-2,187.4	-773.8	2,362.7	2,299.2	63.56	37.174	
7,500.0	6,712.3	7,733.6	6,790.8	30.6	31.6	91.83	-2,187.4	-673.8	2,362.8	2,300.7	62.12	38.037	
7,600.0	6,711.3	7,633.6	6,791.0	31.7	29.3	91.86	-2,187.4	-573.9	2,362.8	2,301.8	60.98	38.747	
7,700.0	6,710.4	7,533.6	6,791.3	33.0	27.2	91.89	-2,187.4	-473.9	2,362.9	2,302.7	60.15	39.285	
7,800.0	6,709.5	7,433.6	6,791.5	34.5	25.1	91.92	-2,187.4	-373.9	2,362.9	2,303.3	59.62	39.634	
7,900.0	6,708.5	7,333.6	6,791.8	36.2	23.3	91.95	-2,187.4	-273.9	2,362.9	2,303.5	59.40	39.778	
8,000.0	6,707.6	7,229.8	6,791.3	38.0	21.5	91.96	-2,187.4	-170.1	2,362.9	2,303.5	59.44	39.751	
8,100.0	6,706.7	7,118.7	6,777.8	39.9	19.9	91.66	-2,187.4	-59.9	2,362.6	2,302.8	59.76	39.535	
8,200.0	6,705.8	7,013.8	6,749.6	41.9	18.7	90.99	-2,187.4	41.0	2,362.0	2,301.4	60.58	38.987	
8,300.0	6,704.8	6,918.6	6,711.5	44.0	18.0	90.09	-2,187.4	128.2	2,361.6	2,299.7	61.91	38.145	
8,308.9	6,704.8	6,910.6	6,707.8	44.2	18.0	90.00	-2,187.4	135.2	2,361.6	2,299.5	62.05	38.059	
8,400.0	6,703.9	6,834.6	6,668.5	46.2	17.6	89.06	-2,187.4	200.3	2,362.0	2,298.4	63.63	37.119	
8,500.0	6,703.0	6,761.9	6,624.7	48.5	17.4	88.01	-2,187.4	258.2	2,363.9	2,298.3	65.63	36.021	
8,600.0	6,702.1	6,700.0	6,582.9	50.8	17.3	87.01	-2,187.4	303.9	2,367.9	2,300.1	67.79	34.932	
8,700.0	6,701.1	6,650.0	6,546.4	53.1	17.3	86.14	-2,187.4	338.1	2,374.3	2,304.2	70.06	33.891	
8,800.0	6,700.2	6,600.0	6,507.6	55.5	17.4	85.21	-2,187.4	369.6	2,383.5	2,311.1	72.38	32.930	
8,900.0	6,699.3	6,561.7	6,476.5	57.9	17.4	84.46	-2,187.4	391.8	2,395.8	2,321.0	74.75	32.049	
9,000.0	6,698.3	6,528.0	6,448.1	60.4	17.4	83.79	-2,187.4	410.1	2,411.3	2,334.2	77.16	31.252	
9,100.0	6,697.4	6,500.0	6,423.9	62.9	17.5	83.21	-2,187.4	424.1	2,430.2	2,350.6	79.58	30.536	
9,200.0	6,696.5	6,473.0	6,400.1	65.4	17.5	82.64	-2,187.4	436.8	2,452.4	2,370.4	82.02	29.898	
9,300.0	6,695.5	6,450.0	6,379.4	68.0	17.5	82.15	-2,187.4	446.9	2,478.0	2,393.5	84.49	29.330	
9,400.0	6,694.6	6,430.6	6,361.7	70.5	17.6	81.73	-2,187.4	454.9	2,507.0	2,420.0	86.96	28.828	
9,500.0	6,693.7	6,400.0	6,333.4	73.1	17.6	81.07	-2,187.4	466.5	2,539.3	2,449.9	89.41	28.401	
9,600.0	6,692.8	6,400.0	6,333.4	75.7	17.6	81.07	-2,187.4	466.5	2,574.8	2,482.8	91.98	27.994	
9,700.0	6,691.8	6,382.8	6,317.3	78.3	17.6	80.69	-2,187.4	472.5	2,613.4	2,519.0	94.48	27.661	
9,800.0	6,690.9	6,370.0	6,305.2	80.9	17.6	80.40	-2,187.4	476.7	2,655.1	2,558.1	97.01	27.369	
9,900.0	6,690.0	6,350.0	6,286.2	83.6	17.6	79.95	-2,187.4	482.8	2,699.7	2,600.2	99.51	27.131	
10,000.0	6,689.0	6,350.0	6,286.2	86.2	17.6	79.95	-2,187.4	482.8	2,747.1	2,645.0	102.12	26.901	
10,100.0	6,688.1	6,350.0	6,286.2	88.9	17.6	79.95	-2,187.4	482.8	2,797.2	2,692.5	104.74	26.707	
10,200.0	6,687.2	6,329.2	6,266.2	91.6	17.6	79.49	-2,187.4	488.6	2,849.7	2,742.5	107.23	26.575	
10,300.0	6,686.2	6,321.0	6,258.3	94.2	17.7	79.30	-2,187.4	490.8	2,904.7	2,794.9	109.81	26.452	
10,400.0	6,685.3	6,300.0	6,237.9	96.9	17.7	78.83	-2,187.4	495.8	2,962.1	2,849.8	112.30	26.378	
10,500.0	6,684.4	6,300.0	6,237.9	99.6	17.7	78.82	-2,187.4	495.8	3,021.5	2,906.6	114.94	26.288	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,300.0	6,237.9	102.3	17.7	78.82	-2,187.4	495.8	3,083.0	2,965.4	117.59	26.218	
10,700.0	6,682.5	6,300.0	6,237.9	105.0	17.7	78.82	-2,187.4	495.8	3,146.4	3,026.2	120.24	26.167	
10,800.0	6,681.6	6,300.0	6,237.9	107.7	17.7	78.82	-2,187.4	495.8	3,211.7	3,088.8	122.90	26.132	
10,900.0	6,680.6	6,300.0	6,237.9	110.4	17.7	78.82	-2,187.4	495.8	3,278.8	3,153.2	125.57	26.112 SF	
11,000.0	6,679.7	6,278.2	6,216.5	113.1	17.7	78.33	-2,187.4	500.4	3,347.2	3,219.1	128.03	26.143	
11,100.0	6,678.8	6,273.5	6,212.0	115.9	17.7	78.22	-2,187.4	501.3	3,417.3	3,286.6	130.66	26.154	
11,200.0	6,677.8	6,250.0	6,188.8	118.6	17.7	77.69	-2,187.4	505.4	3,489.0	3,355.9	133.09	26.216	
11,300.0	6,676.9	6,250.0	6,188.8	121.3	17.7	77.69	-2,187.4	505.4	3,561.8	3,426.1	135.76	26.236	
11,400.0	6,676.0	6,250.0	6,188.8	124.1	17.7	77.69	-2,187.4	505.4	3,635.9	3,497.5	138.43	26.265	
11,500.0	6,675.0	6,250.0	6,188.8	126.8	17.7	77.68	-2,187.4	505.4	3,711.2	3,570.1	141.11	26.300	
11,600.0	6,674.1	6,250.0	6,188.8	129.5	17.7	77.68	-2,187.4	505.4	3,787.6	3,643.8	143.79	26.341	
11,700.0	6,673.1	6,250.0	6,188.8	132.3	17.7	77.68	-2,187.4	505.4	3,865.2	3,718.7	146.48	26.387	
11,800.0	6,672.2	6,250.0	6,188.8	135.0	17.7	77.68	-2,187.4	505.4	3,943.7	3,794.5	149.16	26.439	
11,900.0	6,671.3	6,250.0	6,188.8	137.8	17.7	77.68	-2,187.4	505.4	4,023.2	3,871.3	151.85	26.494	
12,000.0	6,670.3	6,250.0	6,188.8	140.5	17.7	77.68	-2,187.4	505.4	4,103.5	3,949.0	154.54	26.553	
12,036.2	6,670.0	6,250.0	6,188.8	141.5	17.7	77.68	-2,187.4	505.4	4,132.9	3,977.4	155.52	26.575	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.72	-1,945.0	-77.4	1,946.6				
100.0	100.0	103.0	103.0	0.1	0.1	171.68	-1,945.0	-77.4	1,946.7	1,946.5	0.20	9,616.354	
200.0	200.0	203.0	203.0	0.2	0.3	171.68	-1,945.0	-77.4	1,947.0	1,946.4	0.54	3,608.204	
261.0	261.0	264.0	264.0	0.3	0.5	171.68	-1,945.0	-77.4	1,947.3	1,946.5	0.75	2,612.796	
300.0	300.0	303.0	303.0	0.4	0.6	-110.11	-1,945.0	-77.4	1,947.5	1,946.5	0.92	2,110.321	
400.0	399.9	402.9	402.9	0.6	0.8	-95.66	-1,945.0	-77.4	1,948.0	1,946.6	1.38	1,413.683	
500.0	499.7	502.7	502.7	0.8	1.0	-93.47	-1,945.0	-77.4	1,948.5	1,946.7	1.83	1,063.239	
538.0	537.5	540.5	540.5	0.9	1.1	-93.12	-1,945.0	-77.4	1,948.7	1,946.7	2.01	971.834	
600.0	599.1	602.1	602.1	1.1	1.2	-94.08	-1,945.0	-77.4	1,949.2	1,946.8	2.36	826.571	
700.0	697.9	700.9	700.9	1.5	1.4	-95.21	-1,945.0	-77.4	1,950.4	1,947.5	2.93	666.515	
800.0	796.0	799.0	799.0	1.8	1.7	-96.16	-1,945.0	-77.4	1,952.4	1,948.9	3.49	559.027	
818.0	813.5	816.5	816.5	1.9	1.7	-96.32	-1,945.0	-77.4	1,952.9	1,949.3	3.59	543.339	
900.0	893.1	896.1	896.1	2.3	1.9	-96.01	-1,945.0	-77.4	1,955.0	1,950.8	4.23	461.904	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.98	-1,945.0	-77.4	1,958.1	1,953.0	5.01	391.035	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-96.23	-1,945.0	-77.4	1,961.6	1,955.9	5.78	339.531	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-96.24	-1,945.0	-77.4	1,961.8	1,956.0	5.81	337.763	
1,200.0	1,177.9	1,180.9	1,180.9	4.1	2.5	-97.82	-1,945.0	-77.4	1,966.0	1,959.4	6.62	296.902	
1,300.0	1,272.0	1,301.3	1,301.3	4.8	2.8	-99.73	-1,944.7	-77.1	1,971.3	1,963.7	7.52	262.101	
1,391.0	1,357.8	1,474.1	1,473.8	5.3	3.2	-102.21	-1,938.2	-72.0	1,974.0	1,965.5	8.46	233.249	
1,400.0	1,366.3	1,490.9	1,490.6	5.4	3.2	-102.22	-1,937.1	-71.2	1,974.1	1,965.5	8.55	230.880	
1,458.0	1,421.2	1,598.5	1,597.6	5.7	3.5	-102.17	-1,928.4	-64.4	1,973.7	1,964.6	9.12	216.493	
1,500.0	1,461.0	1,675.1	1,673.5	6.0	3.7	-103.24	-1,920.3	-58.0	1,972.4	1,962.9	9.53	207.004	
1,600.0	1,556.1	1,852.2	1,847.8	6.6	4.2	-105.89	-1,895.4	-38.5	1,967.3	1,956.8	10.53	186.904	
1,676.0	1,628.3	1,945.3	1,938.6	7.0	4.5	-107.47	-1,879.2	-25.7	1,962.0	1,950.8	11.20	175.119	
1,700.0	1,651.1	1,966.7	1,959.4	7.2	4.5	-107.23	-1,875.4	-22.7	1,960.4	1,949.0	11.40	171.933	
1,800.0	1,746.4	2,055.7	2,046.1	7.7	4.9	-106.17	-1,859.5	-10.3	1,953.4	1,941.2	12.23	159.682	
1,900.0	1,841.8	2,144.6	2,132.7	8.3	5.2	-105.03	-1,843.7	2.2	1,946.1	1,933.1	13.07	148.896	
1,963.0	1,902.0	2,200.7	2,187.3	8.7	5.4	-104.27	-1,833.7	10.0	1,941.4	1,927.8	13.60	142.749	
2,000.0	1,937.4	2,233.6	2,219.4	8.9	5.6	-104.69	-1,827.8	14.6	1,938.6	1,924.7	13.91	139.393	
2,100.0	2,033.1	2,322.8	2,306.2	9.5	5.9	-105.82	-1,811.9	27.1	1,931.7	1,917.0	14.74	131.043	
2,200.0	2,129.0	2,412.3	2,393.4	10.0	6.3	-106.94	-1,796.0	39.6	1,925.6	1,910.0	15.58	123.597	
2,250.0	2,177.1	2,457.1	2,437.0	10.3	6.5	-107.50	-1,788.0	45.9	1,922.9	1,906.9	16.00	120.171	
2,300.0	2,225.1	2,502.0	2,480.7	10.6	6.7	-109.18	-1,780.0	52.2	1,920.5	1,904.1	16.42	116.971	
2,400.0	2,321.2	2,591.7	2,568.2	11.2	7.1	-112.49	-1,764.0	64.8	1,917.4	1,900.1	17.25	111.137	
2,494.4	2,411.7	2,676.5	2,650.7	11.7	7.4	-115.56	-1,748.9	76.6	1,916.4	1,898.4	18.04	106.259	
2,500.0	2,417.0	2,681.5	2,655.6	11.7	7.4	-115.75	-1,748.0	77.3	1,916.4	1,898.3	18.08	105.985	
2,537.0	2,452.5	2,714.8	2,688.0	11.9	7.6	-116.93	-1,742.0	82.0	1,916.6	1,898.2	18.39	104.236	
2,600.0	2,512.8	2,771.4	2,743.1	12.3	7.8	-120.40	-1,731.9	89.9	1,917.9	1,899.0	18.90	101.469	
2,700.0	2,608.2	2,861.2	2,830.6	12.9	8.2	-125.66	-1,715.9	102.5	1,922.7	1,903.0	19.70	97.605	
2,800.0	2,703.3	2,951.1	2,918.1	13.5	8.6	-130.61	-1,699.9	115.1	1,931.0	1,910.5	20.47	94.321	
2,824.0	2,726.1	2,972.6	2,939.1	13.7	8.7	-131.75	-1,696.1	118.1	1,933.5	1,912.9	20.65	93.612	
2,900.0	2,798.2	3,040.9	3,005.7	14.1	9.0	-130.32	-1,683.9	127.7	1,941.3	1,920.0	21.31	91.107	
3,000.0	2,893.6	3,131.0	3,093.4	14.7	9.5	-128.14	-1,667.8	140.3	1,950.4	1,928.2	22.16	88.023	
3,100.0	2,989.4	3,221.3	3,181.3	15.3	9.9	-125.61	-1,651.7	152.9	1,958.0	1,935.0	22.99	85.158	
3,112.0	3,000.9	3,232.1	3,191.9	15.4	9.9	-125.28	-1,649.8	154.4	1,958.8	1,935.7	23.09	84.828	
3,200.0	3,085.5	3,311.7	3,269.4	15.9	10.3	-125.39	-1,635.6	165.6	1,964.8	1,941.0	23.78	82.635	
3,300.0	3,181.9	3,402.3	3,357.6	16.4	10.7	-125.45	-1,619.5	178.2	1,971.6	1,947.0	24.55	80.307	
3,400.0	3,278.4	3,493.1	3,446.1	16.9	11.1	-125.42	-1,603.3	191.0	1,978.4	1,953.0	25.32	78.138	
3,500.0	3,374.7	3,583.5	3,534.1	17.5	11.5	-126.55	-1,587.2	203.6	1,986.3	1,960.2	26.10	76.111	
3,600.0	3,470.3	3,672.9	3,621.2	18.1	12.0	-127.66	-1,571.2	216.1	1,996.8	1,969.9	26.86	74.354	
3,687.0	3,552.8	3,749.9	3,696.1	18.6	12.3	-128.61	-1,557.5	226.9	2,008.0	1,980.5	27.50	73.029	
3,700.0	3,565.1	3,761.3	3,707.3	18.7	12.4	-128.52	-1,555.5	228.5	2,009.8	1,982.2	27.61	72.806	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,849.0	3,792.7	19.4	12.8	-127.84	-1,539.8	240.8	2,024.0	1,995.6	28.44	71.174	
3,900.0	3,753.9	3,936.5	3,877.9	20.0	13.2	-127.20	-1,524.2	253.0	2,038.7	2,009.4	29.26	69.684	
3,974.0	3,823.6	4,000.9	3,940.7	20.5	13.5	-126.74	-1,512.7	262.1	2,049.7	2,019.9	29.85	68.666	
4,000.0	3,848.1	4,023.6	3,962.8	20.7	13.6	-127.29	-1,508.7	265.2	2,053.7	2,023.6	30.04	68.361	
4,100.0	3,942.9	4,111.5	4,048.4	21.3	14.0	-129.47	-1,493.0	277.5	2,068.8	2,038.0	30.77	67.224	
4,200.0	4,038.5	4,200.5	4,135.1	21.9	14.4	-131.73	-1,477.1	290.0	2,083.7	2,052.2	31.51	66.133	
4,263.0	4,099.0	4,257.2	4,190.3	22.3	14.7	-133.22	-1,467.0	297.9	2,092.9	2,061.0	31.97	65.465	
4,300.0	4,134.7	4,290.6	4,222.8	22.5	14.8	-134.69	-1,461.1	302.6	2,098.4	2,066.2	32.20	65.168	
4,400.0	4,231.2	4,381.4	4,311.3	23.0	15.3	-138.77	-1,444.9	315.3	2,113.8	2,081.0	32.82	64.410	
4,500.0	4,328.0	4,472.8	4,400.3	23.5	15.7	-143.05	-1,428.6	328.1	2,130.2	2,096.7	33.43	63.713	
4,549.0	4,375.5	4,517.8	4,444.1	23.8	15.9	-145.21	-1,420.6	334.4	2,138.5	2,104.7	33.73	63.391	
4,600.0	4,425.0	4,564.7	4,489.8	24.0	16.1	-145.84	-1,412.2	341.0	2,147.3	2,113.3	34.05	63.073	
4,700.0	4,521.9	4,656.7	4,579.4	24.5	16.6	-147.07	-1,395.8	353.9	2,165.2	2,130.6	34.65	62.492	
4,800.0	4,618.8	4,748.7	4,669.0	25.0	17.0	-148.27	-1,379.4	366.7	2,183.9	2,148.7	35.24	61.965	
4,837.0	4,654.7	4,782.7	4,702.1	25.2	17.2	-148.72	-1,373.3	371.5	2,191.0	2,155.5	35.46	61.782	
4,900.0	4,715.7	4,840.6	4,758.5	25.5	17.4	-149.67	-1,363.0	379.6	2,203.4	2,167.6	35.83	61.503	
5,000.0	4,812.4	4,932.3	4,847.8	26.0	17.9	-151.15	-1,346.7	392.5	2,224.2	2,187.8	36.39	61.118	
5,100.0	4,908.9	8,307.4	6,711.1	26.6	46.6	-121.49	-1,202.2	-1,294.2	2,244.8	2,176.3	68.47	32.786	
5,125.0	4,932.9	8,313.9	6,711.1	26.7	46.7	-121.50	-1,202.2	-1,300.7	2,226.5	2,157.7	68.80	32.363	
5,200.0	5,005.4	8,332.9	6,711.1	27.0	47.2	-117.69	-1,202.2	-1,319.7	2,172.0	2,101.9	70.08	30.994	
5,300.0	5,102.4	8,356.5	6,711.0	27.5	47.8	-112.01	-1,202.2	-1,343.3	2,099.4	2,027.7	71.70	29.281	
5,400.0	5,199.9	8,378.4	6,711.0	28.0	48.4	-105.49	-1,202.2	-1,365.2	2,027.1	1,953.9	73.22	27.686	
5,412.0	5,211.7	8,380.9	6,711.0	28.1	48.5	-104.64	-1,202.2	-1,367.7	2,018.4	1,945.0	73.39	27.502	
5,500.0	5,297.9	8,398.2	6,711.0	28.4	48.9	-100.22	-1,202.2	-1,385.0	1,955.4	1,880.7	74.72	26.170	
5,581.0	5,377.7	8,412.4	6,711.0	28.7	49.3	-95.60	-1,202.2	-1,399.2	1,898.4	1,822.5	75.81	25.040	
5,600.0	5,396.4	8,415.4	6,711.0	28.8	49.4	-96.31	-1,202.2	-1,402.2	1,885.1	1,809.1	76.10	24.773	
5,700.0	5,495.3	8,430.0	6,711.0	29.1	49.8	-101.83	-1,202.2	-1,416.8	1,817.9	1,740.5	77.41	23.485	
5,800.0	5,594.6	8,441.7	6,711.0	29.4	50.1	-111.57	-1,202.2	-1,428.5	1,754.9	1,676.5	78.42	22.378	
5,900.0	5,694.1	8,450.4	6,711.0	29.6	50.3	-127.36	-1,202.2	-1,437.2	1,696.8	1,617.6	79.17	21.432	
5,917.0	5,711.1	8,451.6	6,711.0	29.7	50.3	-130.69	-1,202.2	-1,438.4	1,687.5	1,608.2	79.27	21.287	
6,000.0	5,793.7	8,457.3	6,711.0	29.8	50.5	-130.46	-1,202.2	-1,444.1	1,643.7	1,564.1	79.62	20.645	
6,067.0	5,860.5	8,461.9	6,711.0	30.0	50.6	-130.28	-1,202.2	-1,448.7	1,610.6	1,530.7	79.90	20.159	
6,100.0	5,893.4	8,464.0	6,711.0	30.0	50.6	-129.92	-1,202.2	-1,450.8	1,595.0	1,514.9	80.08	19.918	
6,200.0	5,993.2	8,468.5	6,710.9	30.2	50.8	-128.95	-1,202.2	-1,455.3	1,549.6	1,469.1	80.49	19.251	
6,300.0	6,093.2	8,470.3	6,710.9	30.3	50.8	-128.15	-1,202.2	-1,457.1	1,507.5	1,426.7	80.73	18.672	
6,318.8	6,111.9	8,470.4	6,710.9	30.3	50.8	-179.98	-1,202.2	-1,457.2	1,499.9	1,463.8	36.17	41.473	
6,400.0	6,193.2	8,470.3	6,710.9	30.4	50.8	-179.98	-1,202.2	-1,457.1	1,469.6	1,433.3	36.30	40.489	
6,444.4	6,237.6	8,470.3	6,710.9	30.4	50.8	-179.98	-1,202.2	-1,457.1	1,454.6	1,418.2	36.37	39.998	
6,450.0	6,243.2	8,470.2	6,710.9	30.4	50.8	90.24	-1,202.2	-1,457.0	1,452.8	1,371.9	80.90	17.959	
6,475.0	6,268.1	8,469.3	6,710.9	30.4	50.8	91.19	-1,202.2	-1,456.1	1,445.0	1,364.0	80.98	17.843	
6,500.0	6,293.0	8,467.0	6,710.9	30.4	50.7	92.02	-1,202.2	-1,453.8	1,437.6	1,356.6	80.99	17.750	
6,525.0	6,317.8	8,463.4	6,711.0	30.4	50.6	92.74	-1,202.2	-1,450.2	1,430.7	1,349.7	80.93	17.678	
6,550.0	6,342.3	8,458.5	6,711.0	30.4	50.5	93.35	-1,202.2	-1,445.3	1,424.2	1,343.4	80.80	17.625	
6,575.0	6,366.5	8,452.4	6,711.0	30.3	50.3	93.84	-1,202.2	-1,439.2	1,418.2	1,337.5	80.61	17.592	
6,600.0	6,390.4	8,445.0	6,711.0	30.2	50.1	94.23	-1,202.2	-1,431.8	1,412.6	1,332.2	80.37	17.577	SF
6,625.0	6,413.9	8,436.4	6,711.0	30.2	49.9	94.52	-1,202.2	-1,423.2	1,407.5	1,327.4	80.07	17.579	
6,650.0	6,436.9	8,426.5	6,711.0	30.1	49.7	94.71	-1,202.2	-1,413.3	1,402.9	1,323.2	79.72	17.598	
6,675.0	6,459.3	8,415.5	6,711.0	30.0	49.4	94.80	-1,202.2	-1,402.3	1,398.7	1,319.4	79.33	17.633	
6,700.0	6,481.1	8,403.3	6,711.0	29.9	49.1	94.81	-1,202.2	-1,390.1	1,395.0	1,316.1	78.89	17.683	
6,725.0	6,502.3	8,389.9	6,711.0	29.7	48.7	94.74	-1,202.2	-1,376.7	1,391.7	1,313.3	78.42	17.748	
6,750.0	6,522.7	8,375.5	6,711.0	29.6	48.3	94.60	-1,202.2	-1,362.3	1,388.9	1,310.9	77.91	17.826	
6,775.0	6,542.4	8,360.1	6,711.0	29.5	47.9	94.40	-1,202.2	-1,346.9	1,386.4	1,309.0	77.37	17.918	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	8,343.6	6,711.1	29.4	47.5	94.14	-1,202.2	-1,330.4	1,384.3	1,307.5	76.80	18.023	
6,825.0	6,579.1	8,326.2	6,711.1	29.3	47.0	93.84	-1,202.2	-1,313.0	1,382.5	1,306.3	76.21	18.140	
6,850.0	6,596.1	8,307.8	6,711.1	29.1	46.6	93.50	-1,202.2	-1,294.6	1,381.0	1,305.4	75.59	18.269	
6,875.0	6,612.1	8,288.6	6,711.1	29.0	46.1	93.13	-1,202.2	-1,275.4	1,379.8	1,304.8	74.96	18.407	
6,900.0	6,627.1	8,268.6	6,711.1	28.9	45.6	92.75	-1,202.2	-1,255.4	1,378.8	1,304.5	74.31	18.554	
6,925.0	6,641.0	8,247.8	6,711.1	28.8	45.0	92.36	-1,202.2	-1,234.6	1,378.1	1,304.4	73.66	18.710	ES
6,950.0	6,653.8	8,226.3	6,711.2	28.7	44.5	91.97	-1,202.2	-1,213.1	1,377.5	1,304.5	72.99	18.873	
6,975.0	6,665.5	8,204.2	6,711.2	28.7	43.9	91.59	-1,202.2	-1,191.0	1,377.1	1,304.8	72.32	19.042	
7,000.0	6,676.0	8,181.5	6,711.2	28.6	43.3	91.23	-1,202.2	-1,168.3	1,376.8	1,305.2	71.65	19.215	
7,025.0	6,685.3	8,158.3	6,711.2	28.6	42.7	90.89	-1,202.2	-1,145.1	1,376.6	1,305.6	70.99	19.391	
7,050.0	6,693.4	8,134.6	6,711.2	28.5	42.1	90.59	-1,202.2	-1,121.4	1,376.5	1,306.2	70.34	19.570	
7,075.0	6,700.2	8,110.6	6,711.3	28.5	41.5	90.32	-1,202.2	-1,097.4	1,376.5	1,306.8	69.69	19.750	
7,100.0	6,705.8	8,086.2	6,711.3	28.5	40.9	90.10	-1,202.2	-1,073.0	1,376.4	1,307.4	69.06	19.930	
7,113.8	6,708.3	8,072.7	6,711.3	28.5	40.6	90.00	-1,202.2	-1,059.5	1,376.4	1,307.7	68.73	20.028	CC
7,125.0	6,710.0	8,061.6	6,711.3	28.5	40.3	89.93	-1,202.2	-1,048.4	1,376.4	1,308.0	68.45	20.108	
7,150.0	6,713.0	8,036.8	6,711.3	28.6	39.7	89.81	-1,202.2	-1,023.6	1,376.5	1,308.6	67.85	20.285	
7,175.0	6,714.7	8,011.8	6,711.3	28.6	39.0	89.74	-1,202.2	-998.6	1,376.5	1,309.2	67.27	20.461	
7,198.8	6,715.0	7,988.0	6,711.4	28.6	38.4	89.72	-1,202.2	-974.8	1,376.5	1,309.7	66.74	20.625	
7,200.0	6,715.0	7,986.8	6,711.4	28.6	38.4	89.72	-1,202.2	-973.6	1,376.5	1,309.7	66.71	20.633	
7,300.0	6,714.1	7,886.8	6,711.4	29.0	35.9	89.76	-1,202.2	-873.6	1,376.5	1,311.8	64.66	21.287	
7,400.0	6,713.2	7,786.8	6,711.5	29.7	33.5	89.81	-1,202.2	-773.6	1,376.5	1,313.5	62.93	21.872	
7,500.0	6,712.3	7,686.8	6,711.6	30.6	31.2	89.85	-1,202.2	-673.6	1,376.5	1,314.9	61.52	22.376	
7,600.0	6,711.3	7,586.8	6,711.7	31.7	28.9	89.89	-1,202.2	-573.6	1,376.4	1,316.0	60.41	22.785	
7,700.0	6,710.4	7,486.8	6,711.8	33.0	26.7	89.93	-1,202.2	-473.6	1,376.4	1,316.8	59.61	23.089	
7,800.0	6,709.5	7,386.8	6,711.9	34.5	24.7	89.97	-1,202.2	-373.7	1,376.4	1,317.3	59.13	23.277	
7,820.0	6,709.3	7,366.9	6,711.9	34.9	24.3	89.98	-1,202.2	-353.7	1,376.4	1,317.4	59.10	23.291	
7,900.0	6,708.5	7,286.9	6,711.9	36.2	22.8	90.02	-1,202.2	-273.7	1,376.4	1,317.5	58.98	23.339	
8,000.0	6,707.6	7,186.8	6,711.1	38.0	21.3	90.02	-1,202.2	-173.6	1,376.4	1,317.3	59.16	23.266	
8,012.9	6,707.5	7,174.0	6,710.3	38.2	21.1	89.99	-1,202.2	-160.8	1,376.4	1,317.2	59.22	23.245	
8,100.0	6,706.7	7,088.1	6,699.2	39.9	20.6	89.56	-1,202.2	-75.7	1,376.5	1,316.8	59.69	23.060	
8,200.0	6,705.8	6,994.0	6,675.5	41.9	20.6	88.61	-1,202.2	15.3	1,376.9	1,316.3	60.62	22.715	
8,300.0	6,704.8	6,907.2	6,643.3	44.0	20.7	87.30	-1,202.2	95.8	1,378.3	1,316.4	61.93	22.256	
8,400.0	6,703.9	6,829.1	6,606.1	46.2	20.9	85.79	-1,202.2	164.4	1,381.5	1,318.0	63.56	21.737	
8,500.0	6,703.0	6,760.1	6,567.2	48.5	21.0	84.20	-1,202.2	221.5	1,387.4	1,322.0	65.39	21.218	
8,600.0	6,702.1	6,700.0	6,529.0	50.8	21.1	82.65	-1,202.2	267.8	1,396.7	1,329.3	67.36	20.735	
8,700.0	6,701.1	6,650.0	6,494.4	53.1	21.3	81.25	-1,202.2	303.8	1,410.0	1,340.6	69.42	20.310	
8,800.0	6,700.2	6,600.0	6,457.3	55.5	21.4	79.76	-1,202.2	337.4	1,427.8	1,356.3	71.50	19.969	
8,900.0	6,699.3	6,561.3	6,427.1	57.9	21.5	78.56	-1,202.2	361.5	1,450.3	1,376.7	73.64	19.695	
9,000.0	6,698.3	6,526.5	6,398.8	60.4	21.5	77.44	-1,202.2	381.7	1,477.8	1,402.0	75.79	19.498	
9,100.0	6,697.4	6,500.0	6,376.6	62.9	21.6	76.57	-1,202.2	396.3	1,510.1	1,432.1	78.00	19.361	
9,200.0	6,696.5	6,469.0	6,350.0	65.4	21.6	75.53	-1,202.2	412.1	1,547.2	1,467.1	80.15	19.304	
9,300.0	6,695.5	6,450.0	6,333.3	68.0	21.7	74.89	-1,202.2	421.3	1,589.0	1,506.6	82.41	19.282	
9,400.0	6,694.6	6,424.0	6,310.2	70.5	21.7	74.00	-1,202.2	433.2	1,635.2	1,550.6	84.57	19.334	
9,500.0	6,693.7	6,400.0	6,288.5	73.1	21.8	73.17	-1,202.2	443.4	1,685.5	1,598.7	86.74	19.431	
9,600.0	6,692.8	6,400.0	6,288.5	75.7	21.8	73.17	-1,202.2	443.4	1,739.7	1,650.5	89.24	19.496	
9,700.0	6,691.8	6,372.6	6,263.2	78.3	21.8	72.21	-1,202.2	454.1	1,797.4	1,706.0	91.33	19.680	
9,800.0	6,690.9	6,350.0	6,242.1	80.9	21.8	71.42	-1,202.2	462.2	1,858.4	1,765.0	93.46	19.884	
9,900.0	6,690.0	6,350.0	6,242.1	83.6	21.8	71.42	-1,202.2	462.2	1,922.4	1,826.5	95.97	20.031	
10,000.0	6,689.0	6,350.0	6,242.1	86.2	21.8	71.42	-1,202.2	462.2	1,989.4	1,890.9	98.49	20.199	
10,100.0	6,688.1	6,323.8	6,217.4	88.9	21.8	70.51	-1,202.2	470.7	2,058.5	1,958.0	100.52	20.479	
10,200.0	6,687.2	6,300.0	6,194.6	91.6	21.9	69.67	-1,202.2	477.7	2,130.3	2,027.7	102.56	20.772	
10,300.0	6,686.2	6,300.0	6,194.6	94.2	21.9	69.67	-1,202.2	477.7	2,203.8	2,098.8	105.08	20.974	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,400.0	6,685.3	6,300.0	6,194.6	96.9	21.9	69.67	-1,202.2	477.7	2,279.4	2,171.8	107.60	21.183	
10,500.0	6,684.4	6,300.0	6,194.6	99.6	21.9	69.67	-1,202.2	477.7	2,356.8	2,246.6	110.14	21.399	
10,600.0	6,683.4	6,300.0	6,194.6	102.3	21.9	69.67	-1,202.2	477.7	2,435.8	2,323.1	112.68	21.618	
10,700.0	6,682.5	6,275.3	6,170.8	105.0	21.9	68.81	-1,202.2	484.2	2,515.9	2,401.2	114.62	21.950	
10,800.0	6,681.6	6,269.1	6,164.8	107.7	21.9	68.59	-1,202.2	485.6	2,597.5	2,480.5	117.00	22.201	
10,900.0	6,680.6	6,250.0	6,146.2	110.4	21.9	67.92	-1,202.2	489.9	2,680.4	2,561.4	119.03	22.519	
11,000.0	6,679.7	6,250.0	6,146.2	113.1	21.9	67.92	-1,202.2	489.9	2,764.2	2,642.6	121.56	22.739	
11,100.0	6,678.8	6,250.0	6,146.2	115.9	21.9	67.92	-1,202.2	489.9	2,849.0	2,724.9	124.10	22.958	
11,200.0	6,677.8	6,250.0	6,146.2	118.6	21.9	67.92	-1,202.2	489.9	2,934.8	2,808.2	126.63	23.176	
11,300.0	6,676.9	6,250.0	6,146.2	121.3	21.9	67.92	-1,202.2	489.9	3,021.5	2,892.3	129.18	23.390	
11,400.0	6,676.0	6,250.0	6,146.2	124.1	21.9	67.92	-1,202.2	489.9	3,109.0	2,977.3	131.72	23.602	
11,500.0	6,675.0	6,250.0	6,146.2	126.8	21.9	67.92	-1,202.2	489.9	3,197.2	3,062.9	134.27	23.811	
11,600.0	6,674.1	6,250.0	6,146.2	129.5	21.9	67.92	-1,202.2	489.9	3,286.1	3,149.2	136.82	24.017	
11,700.0	6,673.1	6,227.5	6,124.1	132.3	21.9	67.14	-1,202.2	494.3	3,375.2	3,236.5	138.65	24.343	
11,800.0	6,672.2	6,224.1	6,120.7	135.0	21.9	67.02	-1,202.2	494.9	3,465.1	3,324.0	141.08	24.562	
11,900.0	6,671.3	6,220.8	6,117.4	137.8	21.9	66.90	-1,202.2	495.5	3,555.6	3,412.1	143.51	24.776	
12,000.0	6,670.3	6,200.0	6,096.9	140.5	21.9	66.18	-1,202.2	498.7	3,646.8	3,501.5	145.32	25.095	
12,036.2	6,670.0	6,200.0	6,096.9	141.5	21.9	66.18	-1,202.2	498.7	3,679.8	3,533.6	146.24	25.163	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.70	-1,960.0	-78.8	1,961.6				
100.0	100.0	103.0	103.0	0.1	0.1	171.70	-1,960.0	-78.8	1,961.7	1,961.5	0.20	9,690.354	
200.0	200.0	203.0	203.0	0.2	0.3	171.70	-1,960.0	-78.8	1,962.0	1,961.4	0.54	3,635.966	
261.0	261.0	264.0	264.0	0.3	0.5	171.71	-1,960.0	-78.8	1,962.2	1,961.5	0.75	2,632.896	
300.0	300.0	303.0	303.0	0.4	0.6	-110.09	-1,960.0	-78.8	1,962.4	1,961.5	0.92	2,126.554	
400.0	399.9	402.9	402.9	0.6	0.8	-95.64	-1,960.0	-78.8	1,963.0	1,961.6	1.38	1,424.553	
500.0	499.7	502.7	502.7	0.8	1.0	-93.45	-1,960.0	-78.8	1,963.5	1,961.7	1.83	1,071.410	
538.0	537.5	540.5	540.5	0.9	1.1	-93.10	-1,960.0	-78.8	1,963.7	1,961.7	2.01	979.301	
600.0	599.1	602.1	602.1	1.1	1.2	-94.05	-1,960.0	-78.8	1,964.2	1,961.8	2.36	832.919	
700.0	697.9	700.9	700.9	1.5	1.4	-95.18	-1,960.0	-78.8	1,965.4	1,962.5	2.93	671.626	
800.0	796.0	799.0	799.0	1.8	1.7	-96.12	-1,960.0	-78.8	1,967.4	1,963.9	3.49	563.305	
818.0	813.5	816.5	816.5	1.9	1.7	-96.29	-1,960.0	-78.8	1,967.8	1,964.2	3.59	547.495	
900.0	893.1	896.1	896.1	2.3	1.9	-95.97	-1,960.0	-78.8	1,970.0	1,965.7	4.23	465.428	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.94	-1,960.0	-78.8	1,973.0	1,968.0	5.01	394.005	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-96.18	-1,960.0	-78.8	1,976.5	1,970.7	5.78	342.097	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-96.19	-1,960.0	-78.8	1,976.7	1,970.9	5.81	340.315	
1,200.0	1,177.9	1,180.9	1,180.9	4.1	2.5	-97.76	-1,960.0	-78.8	1,980.9	1,974.3	6.62	299.131	
1,300.0	1,272.0	1,275.0	1,275.0	4.8	2.7	-99.41	-1,960.0	-78.8	1,986.2	1,978.8	7.47	266.011	
1,391.0	1,357.8	1,370.5	1,370.5	5.3	3.0	-100.99	-1,959.9	-78.9	1,991.9	1,983.7	8.25	241.378	
1,400.0	1,366.3	1,386.8	1,386.8	5.4	3.0	-100.97	-1,959.8	-79.0	1,992.4	1,984.1	8.34	238.956	
1,458.0	1,421.2	1,493.1	1,493.0	5.7	3.2	-100.67	-1,957.8	-81.6	1,994.8	1,985.9	8.89	224.343	
1,500.0	1,461.0	1,571.4	1,571.2	6.0	3.4	-101.47	-1,954.6	-85.5	1,995.6	1,986.3	9.30	214.623	
1,600.0	1,556.1	1,761.3	1,759.9	6.6	3.8	-103.20	-1,941.6	-101.8	1,994.5	1,984.2	10.29	193.799	
1,676.0	1,628.3	1,907.9	1,904.4	7.0	4.2	-104.35	-1,926.2	-121.1	1,990.9	1,979.8	11.08	179.613	
1,700.0	1,651.1	1,954.5	1,950.0	7.2	4.4	-104.04	-1,920.3	-128.5	1,989.2	1,977.8	11.35	175.259	
1,800.0	1,746.4	2,131.4	2,121.7	7.7	5.0	-102.47	-1,893.9	-161.5	1,978.4	1,966.0	12.45	158.900	
1,900.0	1,841.8	2,229.8	2,216.7	8.3	5.4	-100.47	-1,877.7	-181.8	1,964.8	1,951.5	13.34	147.244	
1,963.0	1,902.0	2,291.7	2,276.4	8.7	5.7	-99.16	-1,867.6	-194.5	1,955.6	1,941.7	13.91	140.598	
2,000.0	1,937.4	2,328.0	2,311.5	8.9	5.9	-99.25	-1,861.6	-202.0	1,950.0	1,935.8	14.24	136.947	
2,100.0	2,033.1	2,426.3	2,406.3	9.5	6.3	-99.47	-1,845.4	-222.2	1,935.0	1,919.8	15.14	127.842	
2,200.0	2,129.0	2,524.7	2,501.1	10.0	6.8	-99.68	-1,829.3	-242.4	1,919.8	1,903.8	16.04	119.693	
2,250.0	2,177.1	2,573.8	2,548.6	10.3	7.0	-99.78	-1,821.2	-252.5	1,912.2	1,895.7	16.49	115.934	
2,300.0	2,225.1	2,623.0	2,596.1	10.6	7.3	-101.03	-1,813.1	-262.6	1,904.7	1,887.8	16.95	112.368	
2,400.0	2,321.2	2,721.6	2,691.1	11.2	7.8	-103.47	-1,796.9	-282.9	1,890.7	1,872.8	17.87	105.816	
2,500.0	2,417.0	2,820.2	2,786.3	11.7	8.2	-105.86	-1,780.7	-303.2	1,877.8	1,859.0	18.79	99.957	
2,537.0	2,452.5	2,856.8	2,821.5	11.9	8.4	-106.73	-1,774.7	-310.7	1,873.4	1,854.2	19.13	97.946	
2,600.0	2,512.8	2,919.0	2,881.6	12.3	8.8	-109.66	-1,764.4	-323.5	1,866.4	1,846.7	19.72	94.641	
2,700.0	2,608.2	3,018.1	2,977.1	12.9	9.3	-114.08	-1,748.2	-343.9	1,857.4	1,836.8	20.66	89.913	
2,800.0	2,703.3	3,117.3	3,072.8	13.5	9.8	-118.20	-1,731.9	-364.3	1,851.0	1,829.4	21.58	85.756	
2,824.0	2,726.1	3,141.1	3,095.8	13.7	9.9	-119.14	-1,727.9	-369.2	1,849.8	1,828.0	21.81	84.835	
2,900.0	2,798.2	3,216.5	3,168.6	14.1	10.3	-117.07	-1,715.5	-384.7	1,845.8	1,823.2	22.52	81.963	
3,000.0	2,893.6	3,315.7	3,264.3	14.7	10.8	-114.05	-1,699.2	-405.1	1,838.4	1,815.0	23.45	78.404	
3,100.0	2,989.4	3,414.8	3,359.8	15.3	11.3	-110.68	-1,683.0	-425.5	1,828.9	1,804.5	24.36	75.068	
3,112.0	3,000.9	3,426.6	3,371.3	15.4	11.4	-110.25	-1,681.0	-427.9	1,827.6	1,803.1	24.47	74.682	
3,200.0	3,085.5	3,513.7	3,455.3	15.9	11.9	-109.59	-1,666.7	-445.8	1,817.7	1,792.4	25.24	72.014	
3,300.0	3,181.9	3,612.6	3,550.7	16.4	12.4	-108.76	-1,650.4	-466.2	1,805.8	1,779.7	26.11	69.152	
3,400.0	3,278.4	3,711.5	3,646.1	16.9	12.9	-107.85	-1,634.2	-486.5	1,793.2	1,766.2	26.98	66.453	
3,500.0	3,374.7	3,810.2	3,741.4	17.5	13.5	-108.44	-1,618.0	-506.8	1,780.7	1,752.8	27.89	63.854	
3,600.0	3,470.3	3,908.9	3,836.5	18.1	14.0	-109.08	-1,601.7	-527.1	1,769.1	1,740.3	28.77	61.482	
3,687.0	3,552.8	3,994.5	3,919.1	18.6	14.5	-109.68	-1,587.7	-544.7	1,759.8	1,730.2	29.53	59.590	
3,700.0	3,565.1	4,007.3	3,931.4	18.7	14.5	-109.51	-1,585.6	-547.4	1,758.4	1,728.8	29.65	59.301	
3,800.0	3,659.5	4,105.5	4,026.2	19.4	15.1	-108.29	-1,569.4	-567.6	1,747.7	1,717.1	30.58	57.158	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	4,203.5	4,120.7	20.0	15.6	-107.12	-1,553.3	-587.7	1,736.1	1,704.7	31.48	55.148	
3,974.0	3,823.6	4,275.8	4,190.5	20.5	16.0	-106.30	-1,541.4	-602.6	1,727.1	1,695.0	32.14	53.739	
4,000.0	3,848.1	4,301.3	4,215.1	20.7	16.1	-106.60	-1,537.3	-607.8	1,723.9	1,691.5	32.37	53.253	
4,100.0	3,942.9	4,399.3	4,309.6	21.3	16.7	-107.78	-1,521.1	-628.0	1,711.4	1,678.1	33.27	51.438	
4,200.0	4,038.5	4,497.6	4,404.5	21.9	17.2	-109.04	-1,505.0	-648.2	1,698.7	1,664.6	34.18	49.697	
4,263.0	4,099.0	4,559.7	4,464.4	22.3	17.5	-109.88	-1,494.8	-661.0	1,690.7	1,655.9	34.76	48.634	
4,300.0	4,134.7	4,596.2	4,499.6	22.5	17.7	-111.00	-1,488.8	-668.5	1,686.0	1,650.9	35.07	48.070	
4,400.0	4,231.2	4,695.1	4,595.0	23.0	18.3	-114.17	-1,472.5	-688.8	1,674.0	1,638.1	35.91	46.611	
4,500.0	4,328.0	4,794.1	4,690.6	23.5	18.8	-117.53	-1,456.2	-709.2	1,663.0	1,626.2	36.76	45.241	
4,549.0	4,375.5	4,842.8	4,737.5	23.8	19.1	-119.24	-1,448.2	-719.2	1,657.9	1,620.7	37.17	44.600	
4,600.0	4,425.0	4,893.4	4,786.3	24.0	19.4	-119.53	-1,439.9	-729.6	1,652.8	1,615.2	37.58	43.985	
4,700.0	4,521.9	4,992.7	4,882.1	24.5	19.9	-120.10	-1,423.6	-750.1	1,642.9	1,604.5	38.36	42.826	
4,800.0	4,618.8	5,092.0	4,977.9	25.0	20.5	-120.67	-1,407.3	-770.5	1,633.2	1,594.0	39.14	41.723	
4,837.0	4,654.7	5,128.7	5,013.3	25.2	20.7	-120.88	-1,401.2	-778.0	1,629.6	1,590.2	39.43	41.328	
4,900.0	4,715.7	5,191.3	5,073.7	25.5	21.0	-121.48	-1,391.0	-790.9	1,623.8	1,583.9	39.93	40.667	
5,000.0	4,812.4	5,290.7	5,169.6	26.0	21.6	-122.41	-1,374.6	-811.3	1,615.1	1,574.4	40.71	39.674	
5,100.0	4,908.9	5,368.9	5,245.1	26.6	22.0	-123.27	-1,362.0	-827.2	1,607.5	1,566.1	41.39	38.839	
5,125.0	4,932.9	5,385.8	5,261.5	26.7	22.0	-123.48	-1,359.4	-830.4	1,606.0	1,564.5	41.55	38.657	
5,200.0	5,005.4	5,436.5	5,310.8	27.0	22.2	-121.04	-1,352.0	-839.7	1,601.6	1,559.6	41.97	38.162	
5,300.0	5,102.4	5,500.0	5,372.8	27.5	22.5	-117.18	-1,343.5	-850.3	1,595.2	1,552.7	42.49	37.543	
5,400.0	5,199.9	5,571.7	5,443.2	28.0	22.7	-112.52	-1,334.9	-861.0	1,588.2	1,545.2	42.98	36.948	
5,412.0	5,211.7	5,579.8	5,451.2	28.1	22.7	-111.90	-1,334.0	-862.1	1,587.3	1,544.3	43.04	36.879	
5,500.0	5,297.9	5,639.3	5,509.9	28.4	22.9	-109.45	-1,327.9	-869.8	1,581.0	1,537.5	43.43	36.402	
5,581.0	5,377.7	5,700.0	5,569.9	28.7	23.1	-106.60	-1,322.4	-876.7	1,575.2	1,531.5	43.76	35.994	
5,600.0	5,396.4	5,700.0	5,569.9	28.8	23.1	-107.74	-1,322.4	-876.7	1,574.0	1,530.1	43.84	35.901	
5,700.0	5,495.3	5,774.8	5,644.2	29.1	23.3	-115.60	-1,316.7	-883.8	1,568.9	1,524.6	44.30	35.420	
5,800.0	5,594.6	5,842.8	5,711.8	29.4	23.4	-127.34	-1,312.6	-889.0	1,566.7	1,522.1	44.67	35.074	
5,826.7	5,621.2	5,861.0	5,730.0	29.4	23.5	-131.38	-1,311.6	-890.2	1,566.6	1,521.9	44.75	35.007	
5,900.0	5,694.1	5,900.0	5,768.9	29.6	23.5	-144.80	-1,309.9	-892.4	1,567.5	1,522.5	44.96	34.863	
5,917.0	5,711.1	5,922.4	5,791.3	29.7	23.6	-148.41	-1,309.0	-893.4	1,567.8	1,522.8	45.02	34.825	
6,000.0	5,793.7	5,978.9	5,847.6	29.8	23.7	-148.45	-1,307.4	-895.5	1,570.6	1,525.4	45.24	34.721	
6,067.0	5,860.5	6,024.3	5,893.1	30.0	23.7	-148.50	-1,306.5	-896.6	1,573.9	1,528.5	45.40	34.668	
6,100.0	5,893.4	6,046.7	5,915.4	30.0	23.7	-148.55	-1,306.3	-896.9	1,575.7	1,530.3	45.46	34.659	
6,200.0	5,993.2	6,117.1	5,985.8	30.2	23.8	-148.67	-1,306.1	-897.1	1,580.4	1,534.8	45.63	34.634	
6,300.0	6,093.2	6,178.9	6,047.5	30.3	23.9	-148.83	-1,306.1	-894.5	1,584.1	1,538.4	45.69	34.669	
6,318.8	6,111.9	6,200.0	6,068.5	30.3	23.9	159.13	-1,306.1	-892.3	1,584.9	1,543.1	41.75	37.963	
6,400.0	6,193.2	6,234.1	6,102.3	30.4	23.9	158.97	-1,306.1	-887.6	1,588.7	1,546.7	41.93	37.892	
6,444.4	6,237.6	6,250.0	6,118.0	30.4	23.9	158.88	-1,306.1	-884.8	1,591.6	1,549.6	42.02	37.873	
6,450.0	6,243.2	6,261.3	6,129.0	30.4	23.9	68.76	-1,306.1	-882.7	1,592.0	1,546.3	45.69	34.845	
6,475.0	6,268.1	6,274.8	6,142.2	30.4	23.8	68.51	-1,306.1	-879.8	1,593.6	1,548.0	45.56	34.978	
6,500.0	6,293.0	6,288.3	6,155.4	30.4	23.8	68.30	-1,306.1	-876.7	1,594.9	1,549.4	45.43	35.105	
6,525.0	6,317.8	6,300.0	6,166.7	30.4	23.8	68.15	-1,306.1	-873.9	1,595.8	1,550.5	45.31	35.224	
6,550.0	6,342.3	6,315.5	6,181.7	30.4	23.8	68.03	-1,306.1	-869.8	1,596.5	1,551.3	45.17	35.342	
6,575.0	6,366.5	6,329.1	6,194.8	30.3	23.8	67.97	-1,306.1	-866.0	1,596.9	1,551.8	45.05	35.447	
6,600.0	6,390.4	6,350.0	6,214.6	30.2	23.8	67.97	-1,306.1	-859.6	1,597.0	1,552.0	44.93	35.542	
6,625.0	6,413.9	6,350.0	6,214.6	30.2	23.8	68.00	-1,306.1	-859.6	1,596.7	1,551.9	44.83	35.615	
6,650.0	6,436.9	6,370.0	6,233.5	30.1	23.7	68.10	-1,306.1	-852.9	1,596.1	1,551.4	44.74	35.679	
6,675.0	6,459.3	6,383.5	6,246.2	30.0	23.7	68.24	-1,306.1	-848.1	1,595.2	1,550.6	44.66	35.722	
6,700.0	6,481.1	6,400.0	6,261.4	29.9	23.7	68.44	-1,306.1	-842.0	1,594.1	1,549.5	44.60	35.742	
6,725.0	6,502.3	6,400.0	6,261.4	29.7	23.7	68.60	-1,306.1	-842.0	1,592.6	1,548.1	44.55	35.753	
6,750.0	6,522.7	6,424.1	6,283.5	29.6	23.6	68.95	-1,306.1	-832.3	1,590.8	1,546.3	44.54	35.718	
6,775.0	6,542.4	6,437.6	6,295.7	29.5	23.6	69.29	-1,306.1	-826.6	1,588.7	1,544.2	44.54	35.667	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,450.0	6,306.9	29.4	23.6	69.66	-1,306.1	-821.1	1,586.4	1,541.8	44.57	35.590	
6,825.0	6,579.1	6,464.3	6,319.6	29.3	23.6	70.10	-1,306.1	-814.6	1,583.8	1,539.2	44.63	35.484	
6,850.0	6,596.1	6,477.6	6,331.3	29.1	23.5	70.57	-1,306.1	-808.3	1,580.9	1,536.2	44.72	35.351	
6,875.0	6,612.1	6,500.0	6,350.7	29.0	23.5	71.20	-1,306.1	-797.2	1,577.9	1,533.0	44.86	35.174	
6,900.0	6,627.1	6,500.0	6,350.7	28.9	23.5	71.58	-1,306.1	-797.2	1,574.5	1,529.6	44.96	35.017	
6,925.0	6,641.0	6,517.0	6,365.3	28.8	23.4	72.24	-1,306.1	-788.3	1,571.0	1,525.9	45.14	34.799	
6,950.0	6,653.8	6,529.9	6,376.2	28.7	23.4	72.87	-1,306.1	-781.4	1,567.3	1,521.9	45.34	34.570	
6,975.0	6,665.5	6,550.0	6,392.8	28.7	23.4	73.67	-1,306.1	-770.2	1,563.4	1,517.8	45.58	34.304	
7,000.0	6,676.0	6,550.0	6,392.8	28.6	23.4	74.14	-1,306.1	-770.2	1,559.4	1,513.6	45.76	34.075	
7,025.0	6,685.3	6,568.1	6,407.6	28.6	23.3	74.98	-1,306.1	-759.8	1,555.2	1,509.1	46.04	33.782	
7,050.0	6,693.4	6,580.5	6,417.5	28.5	23.3	75.74	-1,306.1	-752.4	1,550.9	1,504.6	46.30	33.497	
7,075.0	6,700.2	6,600.0	6,433.0	28.5	23.3	76.69	-1,306.1	-740.4	1,546.5	1,499.9	46.60	33.190	
7,100.0	6,705.8	6,600.0	6,433.0	28.5	23.3	77.22	-1,306.1	-740.4	1,542.1	1,495.2	46.83	32.929	
7,125.0	6,710.0	6,616.8	6,445.9	28.5	23.2	78.16	-1,306.1	-729.8	1,537.6	1,490.4	47.13	32.623	
7,150.0	6,713.0	6,628.5	6,454.8	28.6	23.2	78.99	-1,306.1	-722.2	1,533.1	1,485.6	47.41	32.335	
7,175.0	6,714.7	6,640.0	6,463.4	28.6	23.2	79.83	-1,306.1	-714.6	1,528.6	1,480.9	47.69	32.055	
7,198.8	6,715.0	6,650.0	6,470.9	28.6	23.1	80.61	-1,306.1	-707.8	1,524.3	1,476.4	47.94	31.798	
7,200.0	6,715.0	6,650.0	6,470.9	28.6	23.1	80.61	-1,306.1	-707.8	1,524.1	1,476.2	47.94	31.791	
7,300.0	6,714.1	6,700.0	6,506.5	29.0	23.0	81.97	-1,306.1	-672.7	1,508.6	1,460.2	48.48	31.119	
7,400.0	6,713.2	6,750.0	6,539.5	29.7	22.9	83.24	-1,306.1	-635.2	1,497.2	1,447.9	49.29	30.376	
7,500.0	6,712.3	6,816.6	6,579.3	30.6	22.8	84.79	-1,306.1	-581.8	1,489.3	1,438.9	50.44	29.527	
7,600.0	6,711.3	6,888.0	6,616.2	31.7	22.8	86.23	-1,306.1	-520.8	1,484.5	1,432.6	51.90	28.600	
7,700.0	6,710.4	6,968.1	6,650.3	33.0	22.9	87.57	-1,306.1	-448.2	1,481.8	1,428.1	53.75	27.571	
7,800.0	6,709.5	7,056.4	6,678.1	34.5	23.1	88.67	-1,306.1	-364.5	1,480.7	1,424.7	56.00	26.441	
7,900.0	6,708.5	7,151.1	6,696.2	36.2	23.6	89.41	-1,306.1	-271.7	1,480.4	1,421.7	58.69	25.225	
8,000.0	6,707.6	7,249.3	6,702.0	38.0	24.4	89.67	-1,306.1	-173.7	1,480.3	1,418.6	61.76	23.969	
8,100.0	6,706.7	7,349.3	6,701.4	39.9	25.6	89.68	-1,306.1	-73.7	1,480.3	1,415.1	65.20	22.703	
8,200.0	6,705.8	7,449.3	6,700.8	41.9	27.2	89.69	-1,306.1	26.3	1,480.3	1,411.4	68.93	21.476	
8,300.0	6,704.8	7,549.3	6,700.1	44.0	29.0	89.70	-1,306.1	126.3	1,480.3	1,407.4	72.92	20.302	
8,400.0	6,703.9	7,649.3	6,699.5	46.2	31.0	89.71	-1,306.1	226.3	1,480.3	1,403.2	77.12	19.195	
8,500.0	6,703.0	7,749.3	6,698.9	48.5	33.1	89.73	-1,306.1	326.3	1,480.3	1,398.8	81.50	18.163	
8,600.0	6,702.1	7,849.3	6,698.3	50.8	35.3	89.74	-1,306.1	426.3	1,480.3	1,394.3	86.04	17.205	
8,700.0	6,701.1	7,949.3	6,697.7	53.1	37.6	89.75	-1,306.1	526.3	1,480.3	1,389.6	90.70	16.321	
8,800.0	6,700.2	8,049.3	6,697.1	55.5	40.0	89.76	-1,306.1	626.3	1,480.3	1,384.8	95.47	15.506	
8,900.0	6,699.3	8,149.3	6,696.5	57.9	42.4	89.78	-1,306.1	726.3	1,480.3	1,380.0	100.33	14.755	
9,000.0	6,698.3	8,249.3	6,695.8	60.4	44.9	89.79	-1,306.1	826.3	1,480.3	1,375.0	105.27	14.063	
9,100.0	6,697.4	8,349.3	6,695.2	62.9	47.4	89.80	-1,306.1	926.3	1,480.3	1,370.0	110.27	13.424	
9,200.0	6,696.5	8,449.3	6,694.6	65.4	50.0	89.81	-1,306.1	1,026.3	1,480.3	1,365.0	115.33	12.835	
9,300.0	6,695.5	8,549.3	6,694.0	68.0	52.5	89.82	-1,306.1	1,126.3	1,480.3	1,359.9	120.44	12.290	
9,400.0	6,694.6	8,649.3	6,693.4	70.5	55.1	89.84	-1,306.1	1,226.3	1,480.3	1,354.7	125.60	11.786	
9,500.0	6,693.7	8,749.3	6,692.8	73.1	57.7	89.85	-1,306.1	1,326.3	1,480.3	1,349.5	130.79	11.318	
9,600.0	6,692.8	8,849.3	6,692.1	75.7	60.4	89.86	-1,306.1	1,426.2	1,480.3	1,344.3	136.02	10.883	
9,700.0	6,691.8	8,949.3	6,691.5	78.3	63.0	89.87	-1,306.1	1,526.2	1,480.3	1,339.0	141.28	10.478	
9,800.0	6,690.9	9,049.3	6,690.9	80.9	65.7	89.88	-1,306.1	1,626.2	1,480.3	1,333.7	146.57	10.100	
9,900.0	6,690.0	9,149.3	6,690.3	83.6	68.4	89.90	-1,306.1	1,726.2	1,480.3	1,328.4	151.88	9.747	
10,000.0	6,689.0	9,249.3	6,689.7	86.2	71.0	89.91	-1,306.1	1,826.2	1,480.3	1,323.1	157.21	9.416	
10,100.0	6,688.1	9,349.3	6,689.1	88.9	73.7	89.92	-1,306.1	1,926.2	1,480.3	1,317.7	162.56	9.106	
10,200.0	6,687.2	9,449.3	6,688.4	91.6	76.4	89.93	-1,306.1	2,026.2	1,480.3	1,312.4	167.93	8.815	
10,278.9	6,686.4	9,528.2	6,688.0	93.7	78.6	89.94	-1,306.1	2,105.1	1,480.3	1,308.1	172.18	8.597	CC
10,300.0	6,686.2	9,549.3	6,687.8	94.2	79.1	89.95	-1,306.1	2,126.2	1,480.3	1,307.0	173.32	8.541	
10,400.0	6,685.3	9,649.3	6,687.2	96.9	81.9	89.96	-1,306.1	2,226.2	1,480.3	1,301.6	178.71	8.283	
10,500.0	6,684.4	9,749.3	6,686.6	99.6	84.6	89.97	-1,306.1	2,326.2	1,480.3	1,296.2	184.13	8.040	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	9,849.3	6,686.0	102.3	87.3	89.98	-1,306.1	2,426.2	1,480.3	1,290.7	189.55	7.809	
10,700.0	6,682.5	9,949.3	6,685.4	105.0	90.0	89.99	-1,306.1	2,526.2	1,480.3	1,285.3	194.99	7.592	
10,800.0	6,681.6	10,049.3	6,684.7	107.7	92.8	90.01	-1,306.1	2,626.2	1,480.3	1,279.9	200.43	7.385	
10,900.0	6,680.6	10,149.3	6,684.1	110.4	95.5	90.02	-1,306.1	2,726.2	1,480.3	1,274.4	205.89	7.190	
11,000.0	6,679.7	10,249.3	6,683.5	113.1	98.3	90.03	-1,306.1	2,826.2	1,480.3	1,268.9	211.35	7.004	
11,100.0	6,678.8	10,349.3	6,682.9	115.9	101.0	90.04	-1,306.1	2,926.2	1,480.3	1,263.5	216.82	6.827	
11,200.0	6,677.8	10,449.3	6,682.2	118.6	103.8	90.06	-1,306.1	3,026.2	1,480.3	1,258.0	222.30	6.659	
11,300.0	6,676.9	10,549.3	6,681.6	121.3	106.5	90.07	-1,306.1	3,126.2	1,480.3	1,252.5	227.79	6.499	
11,400.0	6,676.0	10,649.3	6,681.0	124.1	109.3	90.08	-1,306.1	3,226.2	1,480.3	1,247.0	233.28	6.346	
11,500.0	6,675.0	10,749.3	6,680.4	126.8	112.0	90.09	-1,306.1	3,326.2	1,480.3	1,241.5	238.78	6.199	
11,600.0	6,674.1	10,849.3	6,679.8	129.5	114.8	90.10	-1,306.1	3,426.2	1,480.3	1,236.0	244.28	6.060	
11,700.0	6,673.1	10,949.3	6,679.1	132.3	117.6	90.12	-1,306.1	3,526.2	1,480.3	1,230.5	249.79	5.926	
11,800.0	6,672.2	11,049.3	6,678.5	135.0	120.3	90.13	-1,306.1	3,626.2	1,480.3	1,225.0	255.31	5.798	
11,900.0	6,671.3	11,149.3	6,677.9	137.8	123.1	90.14	-1,306.1	3,726.2	1,480.3	1,219.5	260.83	5.675	
12,000.0	6,670.3	11,249.3	6,677.3	140.5	125.9	90.15	-1,306.1	3,826.2	1,480.3	1,214.0	266.35	5.558	
12,036.2	6,670.0	11,285.5	6,677.0	141.5	126.9	90.16	-1,306.1	3,862.4	1,480.3	1,212.0	268.35	5.516	ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.65	-1,989.9	-81.6	1,991.5				
100.0	100.0	103.0	103.0	0.1	0.1	171.75	-1,989.9	-81.6	1,991.6	1,991.4	0.20	9,838.360	
200.0	200.0	203.0	203.0	0.2	0.3	171.75	-1,989.9	-81.6	1,991.9	1,991.4	0.54	3,691.492	
261.0	261.0	264.0	264.0	0.3	0.5	171.75	-1,989.9	-81.6	1,992.2	1,991.5	0.75	2,673.098	
300.0	300.0	303.0	303.0	0.4	0.6	-110.04	-1,989.9	-81.6	1,992.4	1,991.5	0.92	2,159.022	
400.0	399.9	402.9	402.9	0.6	0.8	-95.59	-1,989.9	-81.6	1,992.9	1,991.5	1.38	1,446.294	
500.0	499.7	502.7	502.7	0.8	1.0	-93.40	-1,989.9	-81.6	1,993.4	1,991.6	1.83	1,087.753	
538.0	537.5	540.5	540.5	0.9	1.1	-93.04	-1,989.9	-81.6	1,993.6	1,991.6	2.01	994.235	
600.0	599.1	602.1	602.1	1.1	1.2	-93.99	-1,989.9	-81.6	1,994.1	1,991.7	2.36	845.614	
700.0	697.9	700.9	700.9	1.5	1.4	-95.12	-1,989.9	-81.6	1,995.3	1,992.4	2.93	681.848	
800.0	796.0	799.0	799.0	1.8	1.7	-96.06	-1,989.9	-81.6	1,997.3	1,993.8	3.49	571.861	
818.0	813.5	816.5	816.5	1.9	1.7	-96.22	-1,989.9	-81.6	1,997.7	1,994.1	3.59	555.807	
900.0	893.1	896.1	896.1	2.3	1.9	-95.89	-1,989.9	-81.6	1,999.8	1,995.6	4.23	472.475	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.85	-1,989.9	-81.6	2,002.8	1,997.8	5.01	399.948	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-96.08	-1,989.9	-81.6	2,006.3	2,000.5	5.78	347.230	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-96.09	-1,989.9	-81.6	2,006.4	2,000.6	5.81	345.421	
1,200.0	1,177.9	1,180.9	1,180.9	4.1	2.5	-97.65	-1,989.9	-81.6	2,010.6	2,004.0	6.62	303.589	
1,300.0	1,272.0	1,275.0	1,275.0	4.8	2.7	-99.28	-1,989.9	-81.6	2,015.9	2,008.4	7.47	269.946	
1,391.0	1,357.8	1,360.8	1,360.8	5.3	2.9	-100.76	-1,989.9	-81.6	2,021.5	2,013.3	8.23	245.514	
1,400.0	1,366.3	1,369.3	1,369.3	5.4	3.0	-100.67	-1,989.9	-81.6	2,022.1	2,013.8	8.30	243.506	
1,458.0	1,421.2	1,424.2	1,424.2	5.7	3.1	-99.99	-1,989.9	-81.6	2,025.6	2,016.9	8.76	231.319	
1,500.0	1,461.0	1,464.0	1,464.0	6.0	3.2	-100.54	-1,989.9	-81.6	2,028.1	2,019.0	9.08	223.262	
1,600.0	1,556.1	1,565.0	1,565.0	6.6	3.4	-101.90	-1,989.8	-81.6	2,034.4	2,024.6	9.87	206.092	
1,676.0	1,628.3	1,686.1	1,686.0	7.0	3.6	-103.23	-1,988.4	-84.5	2,038.6	2,028.1	10.55	193.271	
1,700.0	1,651.1	1,724.9	1,724.8	7.2	3.7	-102.99	-1,987.4	-86.3	2,039.6	2,028.9	10.77	189.452	
1,800.0	1,746.4	1,889.3	1,888.5	7.7	4.1	-101.81	-1,980.6	-99.4	2,041.1	2,029.4	11.69	174.590	
1,900.0	1,841.8	2,057.0	2,054.4	8.3	4.5	-100.32	-1,969.1	-121.3	2,038.2	2,025.6	12.66	160.943	
1,963.0	1,902.0	2,163.7	2,159.0	8.7	4.8	-99.23	-1,959.5	-139.6	2,034.0	2,020.7	13.31	152.807	
2,000.0	1,937.4	2,226.5	2,220.3	8.9	5.1	-99.41	-1,953.0	-152.1	2,030.8	2,017.1	13.70	148.252	
2,100.0	2,033.1	2,328.6	2,319.4	9.5	5.4	-99.62	-1,941.9	-173.4	2,021.1	2,006.6	14.58	138.666	
2,200.0	2,129.0	2,427.7	2,415.7	10.0	5.8	-99.81	-1,931.0	-194.2	2,011.4	1,996.0	15.46	130.129	
2,250.0	2,177.1	2,477.2	2,463.9	10.3	6.0	-99.89	-1,925.6	-204.6	2,006.5	1,990.6	15.90	126.175	
2,300.0	2,225.1	2,526.8	2,512.0	10.6	6.2	-101.11	-1,920.2	-215.0	2,001.8	1,985.4	16.35	122.420	
2,400.0	2,321.2	2,626.1	2,608.5	11.2	6.6	-103.51	-1,909.3	-235.8	1,993.1	1,975.9	17.26	115.506	
2,500.0	2,417.0	2,725.4	2,705.0	11.7	7.0	-105.84	-1,898.4	-256.6	1,985.7	1,967.5	18.17	109.307	
2,537.0	2,452.5	2,762.2	2,740.7	11.9	7.2	-106.69	-1,894.4	-264.3	1,983.2	1,964.7	18.50	107.175	
2,600.0	2,512.8	2,824.8	2,801.6	12.3	7.5	-109.58	-1,887.5	-277.4	1,979.7	1,960.6	19.09	103.683	
2,700.0	2,608.2	2,924.3	2,898.2	12.9	7.9	-113.94	-1,876.7	-298.3	1,976.1	1,956.1	20.02	98.685	
2,791.2	2,695.0	3,015.1	2,986.5	13.5	8.3	-117.65	-1,866.7	-317.3	1,975.1	1,954.2	20.87	94.653	
2,800.0	2,703.3	3,023.8	2,995.0	13.5	8.4	-117.99	-1,865.8	-319.1	1,975.1	1,954.1	20.95	94.288	
2,824.0	2,726.1	3,047.7	3,018.2	13.7	8.5	-118.92	-1,863.1	-324.1	1,975.2	1,954.0	21.17	93.313	
2,900.0	2,798.2	3,123.4	3,091.7	14.1	8.8	-116.82	-1,854.9	-340.0	1,975.2	1,953.3	21.90	90.211	
3,000.0	2,893.6	3,222.9	3,188.4	14.7	9.3	-113.76	-1,844.0	-360.8	1,973.2	1,950.4	22.85	86.370	
3,100.0	2,989.4	3,322.5	3,285.2	15.3	9.8	-110.34	-1,833.1	-381.7	1,969.0	1,945.2	23.79	82.775	
3,112.0	3,000.9	3,334.4	3,296.8	15.4	9.8	-109.90	-1,831.8	-384.2	1,968.3	1,944.4	23.90	82.359	
3,200.0	3,085.5	3,422.0	3,381.8	15.9	10.2	-109.20	-1,822.2	-402.5	1,963.1	1,938.4	24.69	79.519	
3,300.0	3,181.9	3,521.5	3,478.5	16.4	10.7	-108.33	-1,811.3	-423.4	1,956.5	1,930.9	25.58	76.476	
3,400.0	3,278.4	3,621.0	3,575.2	16.9	11.2	-107.37	-1,800.4	-444.2	1,949.2	1,922.7	26.48	73.611	
3,500.0	3,374.7	3,720.4	3,671.8	17.5	11.7	-107.82	-1,789.5	-465.0	1,941.9	1,914.5	27.42	70.828	
3,600.0	3,470.3	3,819.7	3,768.3	18.1	12.1	-108.31	-1,778.6	-485.8	1,935.6	1,907.2	28.35	68.283	
3,687.0	3,552.8	3,905.9	3,852.0	18.6	12.6	-108.76	-1,769.2	-503.9	1,930.8	1,901.6	29.14	66.249	
3,700.0	3,565.1	3,918.7	3,864.5	18.7	12.6	-108.59	-1,767.8	-506.6	1,930.1	1,900.8	29.27	65.935	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	4,017.6	3,960.6	19.4	13.1	-107.25	-1,757.0	-527.3	1,924.4	1,894.2	30.25	63.614	
3,900.0	3,753.9	4,116.3	4,056.5	20.0	13.6	-105.96	-1,746.2	-548.0	1,918.0	1,886.8	31.22	61.435	
3,974.0	3,823.6	4,189.3	4,127.4	20.5	14.0	-105.05	-1,738.2	-563.3	1,912.7	1,880.7	31.93	59.908	
4,000.0	3,848.1	4,214.9	4,152.3	20.7	14.1	-105.34	-1,735.4	-568.6	1,910.7	1,878.5	32.17	59.395	
4,100.0	3,942.9	4,313.7	4,248.3	21.3	14.6	-106.49	-1,724.6	-589.3	1,903.2	1,870.1	33.11	57.479	
4,200.0	4,038.5	4,412.8	4,344.6	21.9	15.1	-107.71	-1,713.7	-610.1	1,895.5	1,861.5	34.06	55.649	
4,263.0	4,099.0	4,475.3	4,405.3	22.3	15.4	-108.53	-1,706.9	-623.2	1,890.7	1,856.0	34.67	54.536	
4,300.0	4,134.7	4,512.1	4,441.1	22.5	15.6	-109.64	-1,702.8	-630.9	1,887.8	1,852.8	34.99	53.951	
4,400.0	4,231.2	4,611.6	4,537.7	23.0	16.0	-112.76	-1,691.9	-651.7	1,880.9	1,845.0	35.87	52.440	
4,500.0	4,328.0	4,711.2	4,634.6	23.5	16.5	-116.06	-1,681.0	-672.6	1,874.9	1,838.1	36.74	51.025	
4,549.0	4,375.5	4,760.1	4,682.1	23.8	16.8	-117.75	-1,675.7	-682.9	1,872.3	1,835.1	37.18	50.364	
4,600.0	4,425.0	4,811.0	4,731.5	24.0	17.0	-117.99	-1,670.1	-693.5	1,869.8	1,832.2	37.60	49.723	
4,700.0	4,521.9	4,910.8	4,828.5	24.5	17.5	-118.47	-1,659.2	-714.4	1,864.9	1,826.5	38.44	48.511	
4,800.0	4,618.8	5,010.6	4,925.4	25.0	18.0	-118.95	-1,648.3	-735.3	1,860.3	1,821.0	39.28	47.359	
4,837.0	4,654.7	5,047.5	4,961.3	25.2	18.2	-119.12	-1,644.2	-743.1	1,858.6	1,819.0	39.59	46.947	
4,900.0	4,715.7	5,110.4	5,022.4	25.5	18.5	-119.66	-1,637.3	-756.2	1,855.9	1,815.8	40.12	46.256	
5,000.0	4,812.4	5,210.2	5,119.3	26.0	19.0	-120.48	-1,626.4	-777.1	1,852.2	1,811.3	40.97	45.214	
5,100.0	4,908.9	5,309.9	5,216.3	26.6	19.5	-121.28	-1,615.5	-798.0	1,849.2	1,807.4	41.80	44.237	
5,125.0	4,932.9	5,334.9	5,240.5	26.7	19.7	-121.47	-1,612.8	-803.3	1,848.5	1,806.5	42.01	44.003	
5,200.0	5,005.4	5,409.7	5,313.2	27.0	20.0	-119.00	-1,604.6	-818.9	1,845.9	1,803.3	42.63	43.302	
5,300.0	5,102.4	5,493.0	5,394.2	27.5	20.4	-115.06	-1,595.6	-836.2	1,840.4	1,797.1	43.36	42.444	
5,400.0	5,199.9	5,561.7	5,461.4	28.0	20.7	-110.25	-1,588.8	-849.1	1,833.9	1,789.9	43.95	41.724	
5,412.0	5,211.7	5,570.0	5,469.5	28.1	20.7	-109.61	-1,588.0	-850.6	1,833.0	1,789.0	44.02	41.640	
5,500.0	5,297.9	5,630.4	5,528.9	28.4	20.9	-107.06	-1,582.8	-860.6	1,826.8	1,782.3	44.49	41.062	
5,581.0	5,377.7	5,700.0	5,597.5	28.7	21.1	-104.12	-1,577.5	-870.8	1,821.0	1,776.1	44.91	40.549	
5,600.0	5,396.4	5,700.0	5,597.5	28.8	21.1	-105.25	-1,577.5	-870.8	1,819.6	1,774.6	44.99	40.448	
5,700.0	5,495.3	5,768.0	5,664.8	29.1	21.3	-112.98	-1,573.0	-879.3	1,814.3	1,768.8	45.48	39.889	
5,800.0	5,594.6	5,837.0	5,733.3	29.4	21.5	-124.63	-1,569.3	-886.5	1,811.5	1,765.6	45.90	39.464	
5,851.5	5,645.9	5,872.6	5,768.7	29.5	21.5	-132.79	-1,567.6	-889.6	1,811.2	1,765.1	46.08	39.302	
5,900.0	5,694.1	5,900.0	5,796.0	29.6	21.6	-142.03	-1,566.5	-891.8	1,811.5	1,765.3	46.24	39.178	
5,917.0	5,711.1	5,917.8	5,813.7	29.7	21.6	-145.61	-1,565.8	-893.1	1,811.8	1,765.5	46.30	39.132	
6,000.0	5,793.7	5,975.1	5,870.9	29.8	21.7	-145.61	-1,564.1	-896.5	1,813.8	1,767.3	46.54	38.971	
6,067.0	5,860.5	6,021.2	5,917.0	30.0	21.8	-145.64	-1,563.0	-898.5	1,816.3	1,769.6	46.73	38.871	
6,100.0	5,893.4	6,044.0	5,939.7	30.0	21.9	-145.67	-1,562.6	-899.3	1,817.7	1,770.9	46.81	38.832	
6,200.0	5,993.2	6,112.8	6,008.6	30.2	21.9	-145.74	-1,561.9	-900.6	1,821.0	1,774.0	47.02	38.730	
6,300.0	6,093.2	6,187.2	6,082.9	30.3	22.0	-145.80	-1,561.9	-900.5	1,823.0	1,775.8	47.17	38.645	
6,318.8	6,111.9	6,200.0	6,095.7	30.3	22.0	162.22	-1,561.9	-900.1	1,823.2	1,785.4	37.81	48.224	
6,400.0	6,193.2	6,250.0	6,145.6	30.4	22.1	162.11	-1,561.9	-896.3	1,825.0	1,787.0	38.01	48.017	
6,444.4	6,237.6	6,267.9	6,163.3	30.4	22.1	162.04	-1,561.9	-894.0	1,826.6	1,788.5	38.10	47.938	
6,450.0	6,243.2	6,271.0	6,166.4	30.4	22.1	72.01	-1,561.9	-893.6	1,826.8	1,779.5	47.28	38.640	
6,475.0	6,268.1	6,284.8	6,180.1	30.4	22.1	71.86	-1,561.9	-891.6	1,827.7	1,780.5	47.21	38.710	
6,500.0	6,293.0	6,300.0	6,195.0	30.4	22.1	71.75	-1,561.9	-889.0	1,828.3	1,781.2	47.15	38.779	
6,525.0	6,317.8	6,312.5	6,207.3	30.4	22.0	71.69	-1,561.9	-886.6	1,828.7	1,781.6	47.07	38.849	
6,550.0	6,342.3	6,326.4	6,220.9	30.4	22.0	71.68	-1,561.9	-883.7	1,828.8	1,781.8	46.99	38.915	
6,575.0	6,366.5	6,350.0	6,243.8	30.3	22.0	71.71	-1,561.9	-878.2	1,828.7	1,781.8	46.92	38.977	
6,600.0	6,390.4	6,350.0	6,243.8	30.2	22.0	71.76	-1,561.9	-878.2	1,828.2	1,781.4	46.84	39.027	
6,625.0	6,413.9	6,368.0	6,261.2	30.2	22.0	71.88	-1,561.9	-873.6	1,827.5	1,780.8	46.77	39.075	
6,650.0	6,436.9	6,381.8	6,274.5	30.1	22.0	72.04	-1,561.9	-869.7	1,826.6	1,779.9	46.70	39.111	
6,675.0	6,459.3	6,400.0	6,291.8	30.0	22.0	72.25	-1,561.9	-864.1	1,825.5	1,778.8	46.65	39.133	
6,700.0	6,481.1	6,400.0	6,291.8	29.9	22.0	72.41	-1,561.9	-864.1	1,824.1	1,777.5	46.59	39.153	
6,725.0	6,502.3	6,423.1	6,313.6	29.7	21.9	72.75	-1,561.9	-856.5	1,822.4	1,775.8	46.55	39.146	
6,750.0	6,522.7	6,436.8	6,326.4	29.6	21.9	73.07	-1,561.9	-851.7	1,820.5	1,774.0	46.53	39.129	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,450.0	6,338.7	29.5	21.9	73.42	-1,561.9	-846.7	1,818.4	1,771.9	46.51	39.094	
6,800.0	6,561.2	6,464.0	6,351.5	29.4	21.8	73.82	-1,561.9	-841.3	1,816.1	1,769.6	46.51	39.045	
6,825.0	6,579.1	6,477.5	6,363.9	29.3	21.8	74.25	-1,561.9	-835.8	1,813.6	1,767.1	46.53	38.977	
6,850.0	6,596.1	6,500.0	6,384.2	29.1	21.8	74.83	-1,561.9	-826.1	1,810.9	1,764.4	46.58	38.880	
6,875.0	6,612.1	6,500.0	6,384.2	29.0	21.8	75.17	-1,561.9	-826.1	1,808.0	1,761.4	46.60	38.796	
6,900.0	6,627.1	6,517.5	6,399.8	28.9	21.7	75.75	-1,561.9	-818.1	1,805.0	1,758.3	46.68	38.671	
6,925.0	6,641.0	6,530.6	6,411.3	28.8	21.7	76.32	-1,561.9	-811.9	1,801.9	1,755.1	46.76	38.537	
6,950.0	6,653.8	6,550.0	6,428.2	28.7	21.7	77.01	-1,561.9	-802.3	1,798.6	1,751.7	46.86	38.379	
6,975.0	6,665.5	6,550.0	6,428.2	28.7	21.7	77.41	-1,561.9	-802.3	1,795.2	1,748.2	46.95	38.239	
7,000.0	6,676.0	6,569.3	6,444.7	28.6	21.6	78.16	-1,561.9	-792.3	1,791.7	1,744.6	47.08	38.054	
7,025.0	6,685.3	6,581.9	6,455.3	28.6	21.6	78.81	-1,561.9	-785.6	1,788.1	1,740.9	47.22	37.871	
7,050.0	6,693.4	6,600.0	6,470.4	28.5	21.6	79.60	-1,561.9	-775.5	1,784.5	1,737.2	47.37	37.673	
7,075.0	6,700.2	6,600.0	6,470.4	28.5	21.6	80.03	-1,561.9	-775.5	1,780.9	1,733.4	47.50	37.496	
7,100.0	6,705.8	6,618.7	6,485.7	28.5	21.5	80.86	-1,561.9	-764.8	1,777.3	1,729.6	47.67	37.286	
7,125.0	6,710.0	6,630.6	6,495.3	28.5	21.5	81.56	-1,561.9	-757.7	1,773.6	1,725.8	47.83	37.085	
7,150.0	6,713.0	6,650.0	6,510.6	28.6	21.5	82.44	-1,561.9	-745.9	1,770.1	1,722.1	48.00	36.878	
7,175.0	6,714.7	6,650.0	6,510.6	28.6	21.5	82.87	-1,561.9	-745.9	1,766.5	1,718.4	48.15	36.691	
7,198.8	6,715.0	6,664.3	6,521.7	28.6	21.4	83.62	-1,561.9	-736.9	1,763.2	1,714.9	48.31	36.499	
7,200.0	6,715.0	6,664.8	6,522.1	28.6	21.4	83.63	-1,561.9	-736.6	1,763.1	1,714.8	48.31	36.493	
7,300.0	6,714.1	6,712.4	6,557.8	29.0	21.3	84.81	-1,561.9	-705.1	1,751.5	1,702.7	48.76	35.921	
7,400.0	6,713.2	6,768.0	6,596.7	29.7	21.2	86.09	-1,561.9	-665.4	1,743.5	1,694.0	49.49	35.231	
7,500.0	6,712.3	6,832.8	6,638.0	30.6	21.2	87.47	-1,561.9	-615.4	1,738.8	1,688.2	50.51	34.422	
7,600.0	6,711.3	6,908.1	6,680.0	31.7	21.2	88.87	-1,561.9	-553.0	1,736.5	1,684.7	51.86	33.483	
7,683.4	6,710.6	6,979.3	6,713.5	32.8	21.4	90.00	-1,561.9	-490.2	1,736.1	1,682.8	53.30	32.569	CC
7,700.0	6,710.4	6,994.4	6,719.8	33.0	21.4	90.21	-1,561.9	-476.5	1,736.1	1,682.5	53.61	32.386	
7,800.0	6,709.5	7,091.3	6,753.3	34.5	21.9	91.34	-1,561.9	-385.6	1,736.6	1,680.8	55.82	31.109	
7,900.0	6,708.5	7,196.9	6,775.3	36.2	22.7	92.10	-1,561.9	-282.5	1,737.3	1,678.7	58.55	29.669	
8,000.0	6,707.6	7,307.0	6,782.0	38.0	24.0	92.35	-1,561.9	-172.7	1,737.5	1,675.8	61.76	28.132	
8,100.0	6,706.7	7,407.0	6,780.6	39.9	25.4	92.34	-1,561.9	-72.7	1,737.5	1,672.3	65.20	26.650	
8,200.0	6,705.8	7,507.0	6,779.3	41.9	27.0	92.33	-1,561.9	27.3	1,737.5	1,668.6	68.93	25.205	
8,300.0	6,704.8	7,607.0	6,777.9	44.0	28.9	92.31	-1,561.9	127.3	1,737.5	1,664.5	72.93	23.824	
8,400.0	6,703.9	7,707.0	6,776.5	46.2	30.9	92.30	-1,561.9	227.3	1,737.5	1,660.3	77.14	22.523	
8,500.0	6,703.0	7,807.0	6,775.2	48.5	33.1	92.28	-1,561.9	327.3	1,737.4	1,655.9	81.53	21.311	
8,600.0	6,702.1	7,907.0	6,773.8	50.8	35.3	92.27	-1,561.9	427.2	1,737.4	1,651.4	86.07	20.187	
8,700.0	6,701.1	8,007.0	6,772.5	53.1	37.6	92.25	-1,561.9	527.2	1,737.4	1,646.7	90.73	19.149	
8,800.0	6,700.2	8,107.0	6,771.1	55.5	40.0	92.24	-1,561.9	627.2	1,737.4	1,641.9	95.50	18.192	
8,900.0	6,699.3	8,207.0	6,769.7	57.9	42.4	92.23	-1,561.9	727.2	1,737.4	1,637.0	100.36	17.311	
9,000.0	6,698.3	8,307.0	6,768.4	60.4	44.9	92.21	-1,561.9	827.2	1,737.4	1,632.1	105.30	16.499	
9,100.0	6,697.4	8,407.0	6,767.0	62.9	47.4	92.20	-1,561.9	927.2	1,737.3	1,627.0	110.30	15.750	
9,200.0	6,696.5	8,507.0	6,765.7	65.4	50.0	92.18	-1,561.9	1,027.2	1,737.3	1,622.0	115.37	15.059	
9,300.0	6,695.5	8,607.0	6,764.3	68.0	52.5	92.17	-1,561.9	1,127.2	1,737.3	1,616.8	120.48	14.420	
9,400.0	6,694.6	8,707.0	6,762.9	70.5	55.1	92.16	-1,561.9	1,227.2	1,737.3	1,611.7	125.63	13.828	
9,500.0	6,693.7	8,807.0	6,761.6	73.1	57.8	92.14	-1,561.9	1,327.2	1,737.3	1,606.5	130.83	13.279	
9,600.0	6,692.8	8,907.0	6,760.2	75.7	60.4	92.13	-1,561.9	1,427.1	1,737.3	1,601.2	136.05	12.769	
9,700.0	6,691.8	9,007.0	6,758.9	78.3	63.0	92.11	-1,561.9	1,527.1	1,737.2	1,595.9	141.31	12.294	
9,800.0	6,690.9	9,107.0	6,757.5	80.9	65.7	92.10	-1,561.9	1,627.1	1,737.2	1,590.6	146.59	11.851	
9,900.0	6,690.0	9,207.0	6,756.1	83.6	68.4	92.08	-1,561.9	1,727.1	1,737.2	1,585.3	151.90	11.436	
10,000.0	6,689.0	9,307.0	6,754.8	86.2	71.1	92.07	-1,561.9	1,827.1	1,737.2	1,580.0	157.23	11.049	
10,100.0	6,688.1	9,407.0	6,753.4	88.9	73.7	92.06	-1,561.9	1,927.1	1,737.2	1,574.6	162.58	10.685	
10,200.0	6,687.2	9,507.0	6,752.1	91.6	76.5	92.04	-1,561.9	2,027.1	1,737.2	1,569.2	167.95	10.343	
10,300.0	6,686.2	9,607.0	6,750.7	94.2	79.2	92.03	-1,561.9	2,127.1	1,737.2	1,563.8	173.33	10.022	
10,400.0	6,685.3	9,707.0	6,749.4	96.9	81.9	92.01	-1,561.9	2,227.1	1,737.1	1,558.4	178.73	9.719	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	9,807.0	6,748.0	99.6	84.6	92.00	-1,561.9	2,327.1	1,737.1	1,553.0	184.14	9.434	
10,600.0	6,683.4	9,906.9	6,746.6	102.3	87.3	91.99	-1,561.9	2,427.0	1,737.1	1,547.5	189.56	9.164	
10,700.0	6,682.5	10,006.9	6,745.3	105.0	90.1	91.97	-1,561.9	2,527.0	1,737.1	1,542.1	195.00	8.908	
10,800.0	6,681.6	10,106.9	6,743.9	107.7	92.8	91.96	-1,561.9	2,627.0	1,737.1	1,536.6	200.44	8.666	
10,900.0	6,680.6	10,206.9	6,742.6	110.4	95.5	91.94	-1,561.9	2,727.0	1,737.1	1,531.2	205.89	8.437	
11,000.0	6,679.7	10,306.9	6,741.2	113.1	98.3	91.93	-1,561.9	2,827.0	1,737.1	1,525.7	211.35	8.219	
11,100.0	6,678.8	10,406.9	6,739.8	115.9	101.0	91.92	-1,561.9	2,927.0	1,737.0	1,520.2	216.82	8.011	
11,200.0	6,677.8	10,506.9	6,738.5	118.6	103.8	91.90	-1,561.9	3,027.0	1,737.0	1,514.7	222.30	7.814	
11,300.0	6,676.9	10,606.9	6,737.1	121.3	106.5	91.89	-1,561.9	3,127.0	1,737.0	1,509.2	227.79	7.626	
11,400.0	6,676.0	10,706.9	6,735.8	124.1	109.3	91.87	-1,561.9	3,227.0	1,737.0	1,503.7	233.28	7.446	
11,500.0	6,675.0	10,806.9	6,734.4	126.8	112.1	91.86	-1,561.9	3,327.0	1,737.0	1,498.2	238.77	7.275	
11,600.0	6,674.1	10,906.9	6,733.0	129.5	114.8	91.85	-1,561.9	3,426.9	1,737.0	1,492.7	244.28	7.111	
11,700.0	6,673.1	11,006.9	6,731.7	132.3	117.6	91.83	-1,561.9	3,526.9	1,737.0	1,487.2	249.78	6.954	
11,800.0	6,672.2	11,106.9	6,730.3	135.0	120.4	91.82	-1,561.9	3,626.9	1,736.9	1,481.6	255.30	6.804	
11,900.0	6,671.3	11,206.9	6,729.0	137.8	123.1	91.80	-1,561.9	3,726.9	1,736.9	1,476.1	260.81	6.660	
12,000.0	6,670.3	11,307.8	6,727.6	140.5	125.9	91.79	-1,561.9	3,827.8	1,736.9	1,470.6	266.36	6.521	
12,036.2	6,670.0	11,344.0	6,727.1	141.5	126.9	91.79	-1,561.8	3,864.0	1,736.9	1,468.5	268.36	6.472	ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.67	-1,974.9	-80.2	1,976.5				
100.0	100.0	103.0	103.0	0.1	0.1	171.73	-1,974.9	-80.2	1,976.6	1,976.4	0.20	9,764.356	
200.0	200.0	203.0	203.0	0.2	0.3	171.73	-1,974.9	-80.2	1,976.9	1,976.4	0.54	3,663.729	
261.0	261.0	264.0	264.0	0.3	0.5	171.73	-1,974.9	-80.2	1,977.2	1,976.5	0.75	2,652.997	
300.0	300.0	303.0	303.0	0.4	0.6	-110.06	-1,974.9	-80.2	1,977.4	1,976.5	0.92	2,142.788	
400.0	399.9	402.9	402.9	0.6	0.8	-95.61	-1,974.9	-80.2	1,977.9	1,976.6	1.38	1,435.423	
500.0	499.7	502.7	502.7	0.8	1.0	-93.42	-1,974.9	-80.2	1,978.5	1,976.6	1.83	1,079.581	
538.0	537.5	540.5	540.5	0.9	1.1	-93.07	-1,974.9	-80.2	1,978.7	1,976.7	2.01	986.768	
600.0	599.1	602.1	602.1	1.1	1.2	-94.02	-1,974.9	-80.2	1,979.1	1,976.8	2.36	839.266	
700.0	697.9	700.9	700.9	1.5	1.4	-95.15	-1,974.9	-80.2	1,980.4	1,977.4	2.93	676.737	
800.0	796.0	799.0	799.0	1.8	1.7	-96.09	-1,974.9	-80.2	1,982.3	1,978.8	3.49	567.583	
818.0	813.5	816.5	816.5	1.9	1.7	-96.25	-1,974.9	-80.2	1,982.8	1,979.2	3.59	551.651	
900.0	893.1	896.1	896.1	2.3	1.9	-95.93	-1,974.9	-80.2	1,984.9	1,980.7	4.23	468.951	
1,000.0	989.2	992.2	992.2	2.9	2.1	-95.89	-1,974.9	-80.2	1,987.9	1,982.9	5.01	396.976	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-96.13	-1,974.9	-80.2	1,991.4	1,985.6	5.78	344.663	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-96.14	-1,974.9	-80.2	1,991.6	1,985.8	5.81	342.868	
1,200.0	1,177.9	1,180.9	1,180.9	4.1	2.5	-97.71	-1,974.9	-80.2	1,995.7	1,989.1	6.62	301.360	
1,300.0	1,272.0	1,275.0	1,275.0	4.8	2.7	-99.34	-1,974.9	-80.2	2,001.1	1,993.6	7.47	267.978	
1,391.0	1,357.8	1,360.8	1,360.8	5.3	2.9	-100.83	-1,974.9	-80.2	2,006.7	1,998.5	8.23	243.738	
1,400.0	1,366.3	1,369.3	1,369.3	5.4	3.0	-100.74	-1,974.9	-80.2	2,007.3	1,999.0	8.30	241.747	
1,458.0	1,421.2	1,424.2	1,424.2	5.7	3.1	-100.06	-1,974.9	-80.2	2,010.9	2,002.1	8.76	229.656	
1,500.0	1,461.0	1,474.0	1,474.0	6.0	3.2	-100.70	-1,974.9	-80.1	2,013.3	2,004.2	9.10	221.174	
1,600.0	1,556.1	1,633.6	1,633.4	6.6	3.5	-102.70	-1,971.0	-75.8	2,017.7	2,007.7	10.00	201.754	
1,676.0	1,628.3	1,751.7	1,751.1	7.0	3.8	-104.30	-1,964.4	-68.3	2,019.7	2,009.0	10.68	189.155	
1,700.0	1,651.1	1,788.4	1,787.6	7.2	3.9	-104.18	-1,961.7	-65.3	2,020.0	2,009.1	10.89	185.445	
1,800.0	1,746.4	1,937.8	1,935.4	7.7	4.3	-103.68	-1,947.4	-49.2	2,019.4	2,007.6	11.80	171.105	
1,900.0	1,841.8	2,069.6	2,064.8	8.3	4.6	-103.02	-1,930.7	-30.3	2,015.8	2,003.2	12.70	158.740	
1,963.0	1,902.0	2,125.6	2,119.5	8.7	4.8	-102.25	-1,923.0	-21.6	2,013.0	1,999.8	13.21	152.408	
2,000.0	1,937.4	2,158.5	2,151.7	8.9	4.9	-102.66	-1,918.4	-16.5	2,011.3	1,997.8	13.50	148.961	
2,100.0	2,033.1	2,247.6	2,238.9	9.5	5.2	-103.76	-1,906.2	-2.6	2,007.5	1,993.2	14.30	140.356	
2,200.0	2,129.0	2,337.0	2,326.4	10.0	5.5	-104.85	-1,893.8	11.3	2,004.4	1,989.3	15.11	132.631	
2,250.0	2,177.1	2,381.9	2,370.2	10.3	5.7	-105.40	-1,887.6	18.2	2,003.2	1,987.6	15.52	129.075	
2,300.0	2,225.1	2,426.7	2,414.1	10.6	5.9	-107.06	-1,881.5	25.2	2,002.3	1,986.4	15.93	125.729	
2,356.2	2,279.1	2,477.1	2,463.4	10.9	6.1	-108.90	-1,874.5	33.1	2,002.0	1,985.6	16.38	122.209	
2,400.0	2,321.2	2,516.4	2,501.9	11.2	6.2	-110.33	-1,869.1	39.2	2,002.2	1,985.4	16.74	119.627	
2,500.0	2,417.0	2,606.1	2,589.6	11.7	6.6	-113.53	-1,856.7	53.1	2,004.2	1,986.6	17.55	114.227	
2,537.0	2,452.5	2,639.3	2,622.0	11.9	6.7	-114.70	-1,852.2	58.3	2,005.5	1,987.6	17.84	112.386	
2,600.0	2,512.8	2,695.8	2,677.3	12.3	6.9	-118.14	-1,844.4	67.1	2,008.6	1,990.2	18.35	109.461	
2,700.0	2,608.2	2,785.3	2,764.9	12.9	7.3	-123.35	-1,832.0	81.0	2,016.3	1,997.2	19.14	105.364	
2,800.0	2,703.3	2,874.8	2,852.4	13.5	7.6	-128.25	-1,819.7	94.9	2,027.5	2,007.6	19.90	101.878	
2,824.0	2,726.1	2,896.2	2,873.4	13.7	7.7	-129.38	-1,816.7	98.3	2,030.7	2,010.6	20.08	101.125	
2,900.0	2,798.2	2,964.2	2,939.9	14.1	8.0	-127.91	-1,807.4	108.8	2,040.6	2,019.9	20.72	98.501	
3,000.0	2,893.6	3,054.0	3,027.7	14.7	8.4	-125.69	-1,795.0	122.8	2,052.5	2,030.9	21.54	95.270	
3,100.0	2,989.4	3,144.0	3,115.7	15.3	8.7	-123.11	-1,782.6	136.8	2,062.9	2,040.5	22.36	92.268	
3,112.0	3,000.9	3,154.8	3,126.3	15.4	8.8	-122.77	-1,781.1	138.5	2,064.0	2,041.5	22.45	91.922	
3,200.0	3,085.5	3,234.2	3,204.0	15.9	9.1	-122.84	-1,770.1	150.8	2,072.4	2,049.2	23.12	89.629	
3,300.0	3,181.9	3,324.7	3,292.5	16.4	9.5	-122.84	-1,757.7	164.9	2,081.8	2,057.9	23.88	87.195	
3,400.0	3,278.4	3,415.4	3,381.2	16.9	9.9	-122.76	-1,745.2	179.0	2,091.2	2,066.6	24.62	84.925	
3,500.0	3,374.7	3,505.7	3,469.6	17.5	10.3	-123.79	-1,732.7	193.0	2,101.8	2,076.4	25.40	82.743	
3,600.0	3,470.3	3,595.0	3,556.9	18.1	10.6	-124.80	-1,720.4	206.9	2,114.6	2,088.4	26.16	80.836	
3,687.0	3,552.8	3,671.8	3,632.0	18.6	11.0	-125.66	-1,709.8	218.9	2,127.7	2,100.9	26.80	79.383	
3,700.0	3,565.1	3,683.2	3,643.1	18.7	11.0	-125.56	-1,708.3	220.6	2,129.8	2,102.9	26.91	79.143	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,770.7	3,728.8	19.4	11.4	-124.81	-1,696.2	234.3	2,146.1	2,118.4	27.73	77.380	
3,900.0	3,753.9	3,858.0	3,814.1	20.0	11.8	-124.08	-1,684.2	247.8	2,162.7	2,134.1	28.54	75.765	
3,974.0	3,823.6	3,922.4	3,877.1	20.5	12.1	-123.57	-1,675.3	257.8	2,175.1	2,146.0	29.13	74.658	
4,000.0	3,848.1	3,945.0	3,899.2	20.7	12.2	-124.11	-1,672.2	261.4	2,179.5	2,150.2	29.32	74.337	
4,100.0	3,942.9	4,032.8	3,985.1	21.3	12.5	-126.24	-1,660.1	275.0	2,196.5	2,166.4	30.03	73.143	
4,200.0	4,038.5	4,121.8	4,072.1	21.9	12.9	-128.47	-1,647.8	288.9	2,213.3	2,182.5	30.74	72.000	
4,263.0	4,099.0	4,178.4	4,127.5	22.3	13.2	-129.93	-1,640.0	297.7	2,223.7	2,192.5	31.19	71.301	
4,300.0	4,134.7	4,211.8	4,160.2	22.5	13.3	-131.38	-1,635.4	302.9	2,229.9	2,198.5	31.41	70.990	
4,400.0	4,231.2	4,302.5	4,248.9	23.0	13.7	-135.42	-1,622.9	317.0	2,247.3	2,215.3	32.01	70.199	
4,500.0	4,328.0	4,393.8	4,338.2	23.5	14.1	-139.64	-1,610.3	331.2	2,265.6	2,233.0	32.61	69.475	
4,549.0	4,375.5	4,438.7	4,382.2	23.8	14.3	-141.78	-1,604.1	338.2	2,274.9	2,242.0	32.90	69.142	
4,600.0	4,425.0	4,485.5	4,428.0	24.0	14.5	-142.38	-1,597.7	345.4	2,284.8	2,251.6	33.21	68.806	
4,700.0	4,521.9	4,577.3	4,517.8	24.5	14.9	-143.54	-1,585.0	359.7	2,304.7	2,270.9	33.80	68.191	
4,800.0	4,618.8	4,669.1	4,607.6	25.0	15.3	-144.69	-1,572.3	374.0	2,325.3	2,290.9	34.38	67.631	
4,837.0	4,654.7	4,703.1	4,640.8	25.2	15.5	-145.11	-1,567.7	379.3	2,333.1	2,298.5	34.60	67.437	
4,900.0	4,715.7	4,760.8	4,697.3	25.5	15.7	-146.02	-1,559.7	388.3	2,346.7	2,311.8	34.96	67.133	
5,000.0	4,812.4	4,852.4	4,786.8	26.0	16.1	-147.43	-1,547.1	402.5	2,369.3	2,333.8	35.52	66.710	
5,100.0	4,908.9	4,943.6	4,876.1	26.6	16.5	-148.78	-1,534.5	416.7	2,393.2	2,357.2	36.07	66.357	
5,125.0	4,932.9	4,966.4	4,898.3	26.7	16.6	-149.12	-1,531.4	420.2	2,399.4	2,363.2	36.20	66.279	
5,200.0	5,005.4	8,395.1	6,789.1	27.0	47.3	-115.85	-1,452.5	-1,322.9	2,393.1	2,321.9	71.19	33.617	
5,300.0	5,102.4	8,418.6	6,789.0	27.5	47.9	-110.33	-1,452.5	-1,346.4	2,324.5	2,251.8	72.72	31.967	
5,400.0	5,199.9	8,440.2	6,788.9	28.0	48.5	-103.99	-1,452.5	-1,368.1	2,256.3	2,182.1	74.14	30.431	
5,412.0	5,211.7	8,442.7	6,788.9	28.1	48.6	-103.17	-1,452.5	-1,370.6	2,248.1	2,173.8	74.31	30.254	
5,500.0	5,297.9	8,459.8	6,788.9	28.4	49.0	-98.95	-1,452.5	-1,387.7	2,188.7	2,113.1	75.52	28.981	
5,581.0	5,377.7	8,473.9	6,788.8	28.7	49.4	-94.53	-1,452.5	-1,401.7	2,134.8	2,058.3	76.51	27.903	
5,600.0	5,396.4	8,476.9	6,788.8	28.8	49.5	-95.29	-1,452.5	-1,404.8	2,122.4	2,045.6	76.76	27.650	
5,700.0	5,495.3	8,491.3	6,788.8	29.1	49.8	-101.08	-1,452.5	-1,419.2	2,059.1	1,981.2	77.91	26.428	
5,800.0	5,594.6	8,502.8	6,788.8	29.4	50.1	-111.05	-1,452.5	-1,430.7	2,000.2	1,921.3	78.81	25.380	
5,900.0	5,694.1	8,511.4	6,788.7	29.6	50.4	-127.02	-1,452.5	-1,439.3	1,945.9	1,866.5	79.46	24.489	
5,917.0	5,711.1	8,512.6	6,788.7	29.7	50.4	-130.39	-1,452.5	-1,440.4	1,937.2	1,857.7	79.55	24.352	
6,000.0	5,793.7	8,518.1	6,788.7	29.8	50.5	-130.20	-1,452.5	-1,445.9	1,896.4	1,816.5	79.88	23.740	
6,067.0	5,860.5	8,522.5	6,788.7	30.0	50.7	-130.05	-1,452.5	-1,450.4	1,865.5	1,785.4	80.15	23.276	
6,100.0	5,893.4	8,524.6	6,788.7	30.0	50.7	-129.73	-1,452.5	-1,452.4	1,850.9	1,770.6	80.32	23.045	
6,200.0	5,993.2	8,529.0	6,788.7	30.2	50.8	-128.84	-1,452.5	-1,456.8	1,808.1	1,727.4	80.71	22.403	
6,300.0	6,093.2	8,530.6	6,788.7	30.3	50.9	-128.10	-1,452.5	-1,458.4	1,768.0	1,687.0	80.93	21.847	
6,318.8	6,111.9	8,530.6	6,788.7	30.3	50.9	-179.94	-1,452.5	-1,458.4	1,760.7	1,727.0	33.71	52.238	
6,400.0	6,193.2	8,530.4	6,788.7	30.4	50.9	-179.94	-1,452.5	-1,458.2	1,731.3	1,697.4	33.84	51.167	
6,444.4	6,237.6	8,530.2	6,788.7	30.4	50.9	-179.95	-1,452.5	-1,458.1	1,716.6	1,682.7	33.91	50.626	
6,450.0	6,243.2	8,530.2	6,788.7	30.4	50.9	90.27	-1,452.5	-1,458.1	1,714.8	1,633.7	81.07	21.151	
6,475.0	6,268.1	8,529.2	6,788.7	30.4	50.8	91.21	-1,452.5	-1,457.0	1,707.1	1,625.9	81.13	21.040	
6,500.0	6,293.0	8,526.9	6,788.7	30.4	50.8	92.06	-1,452.5	-1,454.7	1,699.7	1,618.6	81.12	20.953	
6,525.0	6,317.8	8,523.3	6,788.7	30.4	50.7	92.81	-1,452.5	-1,451.1	1,692.7	1,611.6	81.03	20.889	
6,550.0	6,342.3	8,518.3	6,788.7	30.4	50.5	93.46	-1,452.5	-1,446.2	1,686.1	1,605.2	80.89	20.845	
6,575.0	6,366.5	8,512.2	6,788.7	30.3	50.4	94.02	-1,452.5	-1,440.0	1,679.9	1,599.2	80.68	20.821	
6,600.0	6,390.4	8,504.7	6,788.8	30.2	50.2	94.48	-1,452.5	-1,432.6	1,674.1	1,593.6	80.42	20.817	SF
6,625.0	6,413.9	8,496.0	6,788.8	30.2	50.0	94.86	-1,452.5	-1,423.9	1,668.7	1,588.6	80.11	20.830	
6,650.0	6,436.9	8,486.1	6,788.8	30.1	49.7	95.15	-1,452.5	-1,414.0	1,663.7	1,584.0	79.75	20.861	
6,675.0	6,459.3	8,475.1	6,788.8	30.0	49.4	95.35	-1,452.5	-1,402.9	1,659.2	1,579.8	79.35	20.908	
6,700.0	6,481.1	8,462.8	6,788.9	29.9	49.1	95.48	-1,452.5	-1,390.7	1,655.0	1,576.1	78.92	20.972	
6,725.0	6,502.3	8,449.5	6,788.9	29.7	48.7	95.54	-1,452.5	-1,377.3	1,651.3	1,572.8	78.44	21.050	
6,750.0	6,522.7	8,435.0	6,788.9	29.6	48.4	95.54	-1,452.5	-1,362.9	1,647.9	1,569.9	77.94	21.143	
6,775.0	6,542.4	8,419.5	6,789.0	29.5	48.0	95.48	-1,452.5	-1,347.4	1,644.9	1,567.5	77.41	21.250	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	8,403.0	6,789.0	29.4	47.5	95.37	-1,452.5	-1,330.9	1,642.2	1,565.3	76.84	21.370	
6,825.0	6,579.1	8,385.5	6,789.1	29.3	47.1	95.21	-1,452.5	-1,313.4	1,639.8	1,563.6	76.26	21.502	
6,850.0	6,596.1	8,367.2	6,789.1	29.1	46.6	95.02	-1,452.5	-1,295.0	1,637.8	1,562.1	75.66	21.646	
6,875.0	6,612.1	8,347.9	6,789.2	29.0	46.1	94.81	-1,452.5	-1,275.8	1,636.0	1,561.0	75.05	21.800	
6,900.0	6,627.1	8,327.9	6,789.2	28.9	45.6	94.57	-1,452.5	-1,255.7	1,634.5	1,560.1	74.41	21.965	
6,925.0	6,641.0	8,307.1	6,789.3	28.8	45.0	94.32	-1,452.5	-1,234.9	1,633.2	1,559.4	73.77	22.139	
6,950.0	6,653.8	8,285.6	6,789.3	28.7	44.5	94.07	-1,452.5	-1,213.4	1,632.1	1,559.0	73.12	22.320	
6,975.0	6,665.5	8,263.4	6,789.4	28.7	43.9	93.82	-1,452.5	-1,191.3	1,631.2	1,558.7	72.47	22.507	
7,000.0	6,676.0	8,240.7	6,789.5	28.6	43.3	93.57	-1,452.5	-1,168.6	1,630.5	1,558.6	71.82	22.701	ES
7,025.0	6,685.3	8,217.5	6,789.5	28.6	42.7	93.34	-1,452.5	-1,145.4	1,629.9	1,558.7	71.17	22.900	
7,050.0	6,693.4	8,193.8	6,789.6	28.5	42.1	93.13	-1,452.5	-1,121.7	1,629.4	1,558.9	70.53	23.103	
7,075.0	6,700.2	8,169.8	6,789.6	28.5	41.5	92.95	-1,452.5	-1,097.6	1,629.0	1,559.1	69.89	23.307	
7,100.0	6,705.8	8,145.4	6,789.7	28.5	40.9	92.80	-1,452.5	-1,073.2	1,628.7	1,559.5	69.27	23.513	
7,125.0	6,710.0	8,120.7	6,789.8	28.5	40.3	92.67	-1,452.5	-1,048.6	1,628.5	1,559.9	68.65	23.721	
7,150.0	6,713.0	8,095.9	6,789.8	28.6	39.7	92.59	-1,452.5	-1,023.8	1,628.4	1,560.3	68.05	23.930	
7,175.0	6,714.7	8,070.9	6,789.9	28.6	39.0	92.54	-1,452.5	-998.8	1,628.3	1,560.9	67.47	24.135	
7,193.1	6,715.1	8,052.8	6,790.0	28.6	38.6	92.53	-1,452.5	-980.7	1,628.3	1,561.3	67.05	24.284	
7,198.8	6,715.0	8,047.1	6,790.0	28.6	38.4	92.53	-1,452.5	-975.0	1,628.3	1,561.4	66.92	24.332	
7,200.0	6,715.0	8,046.0	6,790.0	28.6	38.4	92.53	-1,452.5	-973.8	1,628.3	1,561.4	66.90	24.341	
7,300.0	6,714.1	7,946.0	6,790.2	29.0	35.9	92.57	-1,452.5	-873.8	1,628.4	1,563.5	64.84	25.113	
7,400.0	6,713.2	7,846.0	6,790.5	29.7	33.5	92.62	-1,452.5	-773.8	1,628.4	1,565.3	63.11	25.804	
7,500.0	6,712.3	7,746.0	6,790.8	30.6	31.2	92.66	-1,452.5	-673.8	1,628.5	1,566.8	61.68	26.400	
7,600.0	6,711.3	7,646.0	6,791.0	31.7	28.9	92.70	-1,452.5	-573.8	1,628.5	1,568.0	60.57	26.887	
7,700.0	6,710.4	7,546.0	6,791.3	33.0	26.8	92.74	-1,452.5	-473.9	1,628.6	1,568.8	59.77	27.248	
7,800.0	6,709.5	7,446.0	6,791.6	34.5	24.7	92.78	-1,452.5	-373.9	1,628.6	1,569.4	59.29	27.470	
7,900.0	6,708.5	7,346.0	6,791.8	36.2	22.9	92.83	-1,452.5	-273.9	1,628.7	1,569.6	59.12	27.548	
8,000.0	6,707.6	7,241.6	6,791.0	38.0	21.2	92.83	-1,452.5	-169.4	1,628.7	1,569.5	59.20	27.512	
8,100.0	6,706.7	7,130.7	6,776.7	39.9	19.9	92.36	-1,452.5	-59.6	1,628.2	1,568.6	59.59	27.322	
8,200.0	6,705.8	7,026.2	6,747.8	41.9	19.2	91.38	-1,452.5	40.7	1,627.3	1,566.8	60.49	26.899	
8,300.0	6,704.8	6,931.6	6,709.3	44.0	19.0	90.05	-1,452.5	127.1	1,626.7	1,564.8	61.88	26.288	
8,303.6	6,704.8	6,928.4	6,707.8	44.1	19.0	90.00	-1,452.5	129.9	1,626.7	1,564.8	61.94	26.264	CC
8,400.0	6,703.9	6,848.2	6,666.2	46.2	19.0	88.56	-1,452.5	198.4	1,627.5	1,563.8	63.62	25.580	
8,500.0	6,703.0	6,776.1	6,622.5	48.5	19.1	87.04	-1,452.5	255.7	1,630.4	1,564.8	65.61	24.848	
8,600.0	6,702.1	6,714.3	6,580.6	50.8	19.2	85.58	-1,452.5	301.0	1,636.3	1,568.5	67.73	24.158	
8,700.0	6,701.1	6,661.5	6,541.8	53.1	19.3	84.24	-1,452.5	336.9	1,645.7	1,575.8	69.93	23.534	
8,800.0	6,700.2	6,616.3	6,506.6	55.5	19.4	83.02	-1,452.5	365.2	1,659.2	1,587.1	72.17	22.991	
8,900.0	6,699.3	6,577.5	6,475.0	57.9	19.4	81.94	-1,452.5	387.6	1,677.1	1,602.6	74.44	22.529	
9,000.0	6,698.3	6,550.0	6,451.8	60.4	19.5	81.14	-1,452.5	402.5	1,699.4	1,622.7	76.76	22.140	
9,100.0	6,697.4	6,514.9	6,421.5	62.9	19.6	80.11	-1,452.5	420.2	1,726.3	1,647.3	79.04	21.840	
9,200.0	6,696.5	6,500.0	6,408.4	65.4	19.6	79.66	-1,452.5	427.3	1,757.8	1,676.3	81.44	21.584	
9,300.0	6,695.5	6,467.1	6,378.9	68.0	19.6	78.67	-1,452.5	441.9	1,793.5	1,709.8	83.71	21.424	
9,400.0	6,694.6	6,450.0	6,363.3	70.5	19.7	78.14	-1,452.5	448.9	1,833.6	1,747.5	86.10	21.297	
9,500.0	6,693.7	6,429.7	6,344.6	73.1	19.7	77.52	-1,452.5	456.8	1,877.8	1,789.4	88.45	21.230	
9,600.0	6,692.8	6,400.0	6,316.9	75.7	19.7	76.59	-1,452.5	467.4	1,925.9	1,835.2	90.70	21.234	
9,700.0	6,691.8	6,400.0	6,316.9	78.3	19.7	76.59	-1,452.5	467.4	1,977.4	1,884.2	93.25	21.206	
9,800.0	6,690.9	6,400.0	6,316.9	80.9	19.7	76.59	-1,452.5	467.4	2,032.6	1,936.8	95.81	21.215	
9,900.0	6,690.0	6,375.5	6,293.6	83.6	19.8	75.82	-1,452.5	475.3	2,090.6	1,992.5	98.09	21.314	
10,000.0	6,689.0	6,350.0	6,269.2	86.2	19.8	75.02	-1,452.5	482.6	2,151.9	2,051.5	100.34	21.446	
10,100.0	6,688.1	6,350.0	6,269.2	88.9	19.8	75.02	-1,452.5	482.6	2,215.5	2,112.6	102.91	21.528	
10,200.0	6,687.2	6,350.0	6,269.2	91.6	19.8	75.02	-1,452.5	482.6	2,281.7	2,176.3	105.49	21.629	
10,300.0	6,686.2	6,350.0	6,269.2	94.2	19.8	75.02	-1,452.5	482.6	2,350.4	2,242.3	108.08	21.746	
10,400.0	6,685.3	6,330.8	6,250.6	96.9	19.8	74.41	-1,452.5	487.5	2,420.9	2,310.6	110.39	21.931	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,323.8	6,243.9	99.6	19.8	74.19	-1,452.5	489.2	2,493.5	2,380.7	112.87	22.092	
10,600.0	6,683.4	6,300.0	6,220.6	102.3	19.8	73.44	-1,452.5	494.4	2,568.1	2,453.0	115.07	22.318	
10,700.0	6,682.5	6,300.0	6,220.6	105.0	19.8	73.44	-1,452.5	494.4	2,644.0	2,526.3	117.67	22.470	
10,800.0	6,681.6	6,300.0	6,220.6	107.7	19.8	73.44	-1,452.5	494.4	2,721.4	2,601.2	120.27	22.628	
10,900.0	6,680.6	6,300.0	6,220.6	110.4	19.8	73.44	-1,452.5	494.4	2,800.3	2,677.4	122.88	22.789	
11,000.0	6,679.7	6,300.0	6,220.6	113.1	19.8	73.44	-1,452.5	494.4	2,880.5	2,755.0	125.49	22.954	
11,100.0	6,678.8	6,300.0	6,220.6	115.9	19.8	73.44	-1,452.5	494.4	2,961.9	2,833.8	128.11	23.120	
11,200.0	6,677.8	6,300.0	6,220.6	118.6	19.8	73.44	-1,452.5	494.4	3,044.4	2,913.6	130.73	23.288	
11,300.0	6,676.9	6,300.0	6,220.6	121.3	19.8	73.44	-1,452.5	494.4	3,127.9	2,994.5	133.35	23.456	
11,400.0	6,676.0	6,278.7	6,199.7	124.1	19.8	72.76	-1,452.5	498.4	3,212.0	3,076.5	135.52	23.701	
11,500.0	6,675.0	6,275.1	6,196.1	126.8	19.8	72.65	-1,452.5	499.0	3,297.2	3,159.1	138.06	23.882	
11,600.0	6,674.1	6,271.6	6,192.7	129.5	19.8	72.54	-1,452.5	499.6	3,383.2	3,242.6	140.61	24.061	
11,700.0	6,673.1	6,250.0	6,171.4	132.3	19.8	71.86	-1,452.5	502.8	3,470.2	3,327.4	142.72	24.314	
11,800.0	6,672.2	6,250.0	6,171.4	135.0	19.8	71.86	-1,452.5	502.8	3,557.5	3,412.1	145.34	24.477	
11,900.0	6,671.3	6,250.0	6,171.4	137.8	19.8	71.86	-1,452.5	502.8	3,645.5	3,497.5	147.96	24.638	
12,000.0	6,670.3	6,250.0	6,171.4	140.5	19.8	71.86	-1,452.5	502.8	3,734.0	3,583.5	150.58	24.797	
12,036.2	6,670.0	6,250.0	6,171.4	141.5	19.8	71.86	-1,452.5	502.8	3,766.3	3,614.8	151.53	24.854	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.74	-1,930.1	-76.0	1,931.6				
100.0	100.0	103.0	103.0	0.1	0.1	171.66	-1,930.1	-76.0	1,931.7	1,931.5	0.20	9,542.355	
200.0	200.0	203.0	203.0	0.2	0.3	171.66	-1,930.1	-76.0	1,932.0	1,931.5	0.54	3,580.442	
261.0	261.0	264.0	264.0	0.3	0.5	171.66	-1,930.1	-76.0	1,932.3	1,931.5	0.75	2,592.696	
300.0	300.0	303.0	303.0	0.4	0.6	-110.13	-1,930.1	-76.0	1,932.5	1,931.6	0.92	2,094.088	
400.0	399.9	402.9	402.9	0.6	0.8	-95.69	-1,930.1	-76.0	1,933.0	1,931.6	1.38	1,402.813	
500.0	499.7	502.7	502.7	0.8	1.0	-93.50	-1,930.1	-76.0	1,933.5	1,931.7	1.83	1,055.069	
538.0	537.5	540.5	540.5	0.9	1.1	-93.15	-1,930.1	-76.0	1,933.7	1,931.7	2.01	964.368	
600.0	599.1	602.1	602.1	1.1	1.2	-94.10	-1,930.1	-76.0	1,934.2	1,931.9	2.36	820.224	
700.0	697.9	700.9	700.9	1.5	1.4	-95.24	-1,930.1	-76.0	1,935.5	1,932.6	2.93	661.404	
800.0	796.0	799.0	799.0	1.8	1.7	-96.19	-1,930.1	-76.0	1,937.5	1,934.0	3.49	554.750	
818.0	813.5	816.5	816.5	1.9	1.7	-96.36	-1,930.1	-76.0	1,937.9	1,934.3	3.59	539.184	
900.0	893.1	896.1	896.1	2.3	1.9	-96.05	-1,930.1	-76.0	1,940.1	1,935.9	4.23	458.381	
1,000.0	989.2	992.2	992.2	2.9	2.1	-96.03	-1,930.1	-76.0	1,943.1	1,938.1	5.01	388.065	
1,100.0	1,083.9	1,086.9	1,086.9	3.5	2.3	-96.28	-1,930.1	-76.0	1,946.7	1,941.0	5.78	336.965	
1,104.0	1,087.6	1,090.6	1,090.6	3.5	2.3	-96.29	-1,930.1	-76.0	1,946.9	1,941.1	5.81	335.212	
1,200.0	1,177.9	1,213.3	1,213.3	4.1	2.6	-98.19	-1,929.6	-76.5	1,950.9	1,944.2	6.69	291.647	
1,300.0	1,272.0	1,410.4	1,410.0	4.8	3.0	-100.64	-1,921.6	-84.3	1,952.3	1,944.5	7.75	251.910	
1,391.0	1,357.8	1,594.3	1,592.5	5.3	3.5	-102.67	-1,905.4	-100.0	1,949.8	1,941.0	8.75	222.875	
1,400.0	1,366.3	1,612.7	1,610.7	5.4	3.5	-102.61	-1,903.3	-102.0	1,949.3	1,940.4	8.85	220.374	
1,458.0	1,421.2	1,731.8	1,727.8	5.7	3.9	-102.02	-1,887.8	-117.0	1,944.9	1,935.4	9.48	205.062	
1,500.0	1,461.0	1,818.5	1,812.4	6.0	4.2	-102.67	-1,874.3	-130.1	1,940.5	1,930.5	9.96	194.794	
1,600.0	1,556.1	1,983.0	1,971.4	6.6	4.8	-103.85	-1,843.9	-159.5	1,926.6	1,915.5	11.03	174.644	
1,676.0	1,628.3	2,057.5	2,043.0	7.0	5.2	-104.51	-1,829.2	-173.7	1,915.4	1,903.7	11.70	163.650	
1,700.0	1,651.1	2,081.0	2,065.6	7.2	5.3	-104.08	-1,824.6	-178.2	1,911.9	1,900.0	11.92	160.401	
1,800.0	1,746.4	2,178.9	2,159.8	7.7	5.8	-102.22	-1,805.3	-196.9	1,896.4	1,883.6	12.82	147.927	
1,900.0	1,841.8	2,276.6	2,253.8	8.3	6.2	-100.27	-1,786.1	-215.5	1,879.7	1,866.0	13.72	137.000	
1,963.0	1,902.0	2,338.1	2,312.9	8.7	6.5	-99.00	-1,774.0	-227.2	1,868.6	1,854.3	14.29	130.785	
2,000.0	1,937.4	2,374.2	2,347.6	8.9	6.7	-99.11	-1,766.9	-234.1	1,861.9	1,847.2	14.62	127.378	
2,100.0	2,033.1	2,471.7	2,441.4	9.5	7.2	-99.40	-1,747.7	-252.7	1,843.7	1,828.2	15.51	118.872	
2,200.0	2,129.0	2,569.3	2,535.3	10.0	7.7	-99.67	-1,728.5	-271.3	1,825.6	1,809.1	16.41	111.272	
2,250.0	2,177.1	2,618.1	2,582.2	10.3	8.0	-99.80	-1,718.9	-280.6	1,816.4	1,799.6	16.85	107.771	
2,300.0	2,225.1	2,667.0	2,629.2	10.6	8.3	-101.08	-1,709.3	-289.9	1,807.5	1,790.2	17.31	104.440	
2,400.0	2,321.2	2,764.8	2,723.3	11.2	8.8	-103.61	-1,690.0	-308.6	1,790.4	1,772.2	18.21	98.327	
2,500.0	2,417.0	2,862.9	2,817.6	11.7	9.3	-106.08	-1,670.7	-327.3	1,774.6	1,755.5	19.11	92.863	
2,537.0	2,452.5	2,899.2	2,852.5	11.9	9.5	-106.98	-1,663.6	-334.2	1,769.1	1,749.6	19.44	90.991	
2,600.0	2,512.8	2,961.1	2,912.0	12.3	9.8	-109.97	-1,651.4	-346.0	1,760.3	1,740.3	20.03	87.897	
2,700.0	2,608.2	3,059.5	3,006.7	12.9	10.4	-114.48	-1,632.0	-364.8	1,748.4	1,727.5	20.94	83.479	
2,800.0	2,703.3	3,158.3	3,101.7	13.5	10.9	-118.68	-1,612.6	-383.6	1,739.1	1,717.2	21.85	79.598	
2,824.0	2,726.1	3,182.0	3,124.5	13.7	11.1	-119.65	-1,607.9	-388.1	1,737.2	1,715.2	22.06	78.740	
2,900.0	2,798.2	3,257.1	3,196.7	14.1	11.5	-117.64	-1,593.2	-402.4	1,731.0	1,708.2	22.75	76.102	
3,000.0	2,893.6	3,355.8	3,291.6	14.7	12.0	-114.71	-1,573.7	-421.2	1,720.8	1,697.2	23.63	72.825	
3,100.0	2,989.4	3,454.3	3,386.4	15.3	12.6	-111.42	-1,554.3	-440.0	1,708.5	1,684.0	24.50	69.746	
3,112.0	3,000.9	3,466.1	3,397.7	15.4	12.6	-111.00	-1,552.0	-442.3	1,706.8	1,682.2	24.60	69.389	
3,200.0	3,085.5	3,552.6	3,481.0	15.9	13.1	-110.41	-1,535.0	-458.8	1,694.5	1,669.2	25.33	66.900	
3,300.0	3,181.9	3,651.0	3,575.5	16.4	13.7	-109.68	-1,515.6	-477.5	1,679.9	1,653.7	26.16	64.226	
3,400.0	3,278.4	3,749.2	3,670.0	16.9	14.2	-108.86	-1,496.3	-496.2	1,664.5	1,637.6	26.98	61.700	
3,500.0	3,374.7	3,847.4	3,764.4	17.5	14.8	-109.59	-1,477.0	-514.9	1,649.4	1,621.5	27.83	59.275	
3,600.0	3,470.3	3,945.3	3,858.6	18.1	15.3	-110.38	-1,457.7	-533.6	1,635.2	1,606.5	28.65	57.067	
3,687.0	3,552.8	4,030.4	3,940.4	18.6	15.8	-111.11	-1,441.0	-549.8	1,623.7	1,594.3	29.36	55.312	
3,700.0	3,565.1	4,043.1	3,952.6	18.7	15.9	-110.96	-1,438.5	-552.3	1,622.0	1,592.6	29.47	55.045	
3,800.0	3,659.5	4,140.6	4,046.4	19.4	16.4	-109.87	-1,419.3	-570.8	1,608.9	1,578.6	30.32	53.065	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	4,237.8	4,139.9	20.0	17.0	-108.85	-1,400.1	-589.4	1,595.1	1,563.9	31.15	51.207	
3,974.0	3,823.6	4,309.6	4,209.0	20.5	17.4	-108.14	-1,386.0	-603.1	1,584.4	1,552.6	31.75	49.905	
4,000.0	3,848.1	4,334.8	4,233.2	20.7	17.5	-108.47	-1,381.0	-607.9	1,580.6	1,548.6	31.96	49.451	
4,100.0	3,942.9	4,432.1	4,326.7	21.3	18.1	-109.76	-1,361.9	-626.4	1,565.9	1,533.1	32.79	47.749	
4,200.0	4,038.5	4,529.7	4,420.6	21.9	18.6	-111.13	-1,342.7	-645.0	1,551.0	1,517.4	33.64	46.112	
4,263.0	4,099.0	4,591.4	4,479.9	22.3	19.0	-112.04	-1,330.6	-656.8	1,541.5	1,507.4	34.17	45.110	
4,300.0	4,134.7	4,627.7	4,514.8	22.5	19.2	-113.21	-1,323.4	-663.7	1,536.0	1,501.6	34.46	44.577	
4,400.0	4,231.2	4,725.9	4,609.3	23.0	19.7	-116.49	-1,304.1	-682.4	1,521.7	1,486.5	35.23	43.195	
4,500.0	4,328.0	4,824.4	4,704.1	23.5	20.3	-119.95	-1,284.7	-701.2	1,508.4	1,472.4	36.00	41.895	
4,549.0	4,375.5	4,872.8	4,750.6	23.8	20.6	-121.72	-1,275.2	-710.4	1,502.2	1,465.8	36.39	41.286	
4,600.0	4,425.0	4,923.2	4,799.0	24.0	20.9	-122.08	-1,265.3	-720.0	1,495.9	1,459.2	36.75	40.707	
4,700.0	4,521.9	5,022.0	4,894.1	24.5	21.4	-122.78	-1,245.8	-738.9	1,483.7	1,446.3	37.45	39.616	
4,800.0	4,618.8	5,120.8	4,989.1	25.0	22.0	-123.49	-1,226.4	-757.7	1,471.8	1,433.6	38.15	38.580	
4,837.0	4,654.7	5,157.4	5,024.3	25.2	22.2	-123.75	-1,219.2	-764.7	1,467.4	1,429.0	38.41	38.209	
4,900.0	4,715.7	5,219.7	5,084.2	25.5	22.6	-124.44	-1,206.9	-776.5	1,460.2	1,421.3	38.85	37.589	
5,000.0	4,812.4	5,318.5	5,179.3	26.0	23.1	-125.53	-1,187.4	-795.4	1,449.3	1,409.8	39.53	36.660	
5,100.0	4,908.9	5,417.4	5,274.4	26.6	23.7	-126.59	-1,168.0	-814.3	1,439.2	1,399.0	40.21	35.794	
5,125.0	4,932.9	5,442.2	5,298.2	26.7	23.8	-126.86	-1,163.1	-819.0	1,436.8	1,396.5	40.38	35.587	
5,200.0	5,005.4	5,500.0	5,353.8	27.0	24.1	-124.49	-1,151.8	-829.9	1,429.2	1,388.4	40.80	35.028	
5,300.0	5,102.4	5,569.1	5,420.7	27.5	24.4	-120.70	-1,139.3	-842.0	1,418.6	1,377.4	41.29	34.360	
5,400.0	5,199.9	5,636.9	5,486.7	28.0	24.7	-116.08	-1,128.2	-852.8	1,407.6	1,365.9	41.74	33.725	
5,412.0	5,211.7	5,645.0	5,494.6	28.1	24.7	-115.46	-1,127.0	-854.0	1,406.3	1,364.5	41.79	33.651	
5,500.0	5,297.9	5,700.0	5,548.4	28.4	24.9	-113.01	-1,118.9	-861.8	1,396.5	1,354.3	42.16	33.126	
5,581.0	5,377.7	5,759.9	5,607.3	28.7	25.1	-110.18	-1,110.9	-869.6	1,387.6	1,345.2	42.47	32.674	
5,600.0	5,396.4	5,772.9	5,620.1	28.8	25.1	-111.35	-1,109.3	-871.1	1,385.6	1,343.1	42.56	32.555	
5,700.0	5,495.3	5,841.3	5,687.7	29.1	25.3	-119.15	-1,101.5	-878.7	1,376.8	1,333.8	43.02	32.002	
5,800.0	5,594.6	5,900.0	5,745.8	29.4	25.5	-130.82	-1,095.7	-884.3	1,370.9	1,327.5	43.41	31.582	
5,900.0	5,694.1	5,979.1	5,824.4	29.6	25.7	-148.23	-1,089.3	-890.5	1,367.8	1,324.0	43.76	31.255	
5,917.0	5,711.1	6,000.0	5,845.2	29.7	25.7	-151.81	-1,087.8	-891.9	1,367.6	1,323.8	43.83	31.201	
5,969.3	5,763.1	6,027.0	5,872.1	29.8	25.8	-151.82	-1,086.1	-893.5	1,367.2	1,323.3	43.96	31.102	
6,000.0	5,793.7	6,048.2	5,893.2	29.8	25.8	-151.83	-1,084.9	-894.7	1,367.3	1,323.3	44.04	31.045	
6,067.0	5,860.5	6,100.0	5,944.9	30.0	25.9	-151.87	-1,082.5	-897.1	1,368.3	1,324.1	44.23	30.936	
6,100.0	5,893.4	6,117.3	5,962.1	30.0	25.9	-151.89	-1,081.8	-897.7	1,369.0	1,324.7	44.29	30.910	
6,200.0	5,993.2	6,200.0	6,044.8	30.2	26.1	-151.96	-1,079.6	-899.8	1,370.6	1,326.1	44.48	30.816	
6,300.0	6,093.2	6,264.0	6,108.8	30.3	26.1	-151.97	-1,079.1	-900.3	1,371.2	1,326.7	44.58	30.757	
6,308.2	6,101.3	6,264.0	6,108.8	30.3	26.1	-151.97	-1,079.1	-900.3	1,371.2	1,326.6	44.58	30.757	
6,318.8	6,111.9	6,270.1	6,114.9	30.3	26.1	156.06	-1,079.1	-900.3	1,371.2	1,325.5	45.71	30.000	
6,400.0	6,193.2	6,326.3	6,171.1	30.4	26.2	156.04	-1,079.1	-899.6	1,371.8	1,325.9	45.87	29.904	
6,444.4	6,237.6	6,350.0	6,194.8	30.4	26.2	155.98	-1,079.1	-898.1	1,372.9	1,326.9	45.97	29.867	
6,450.0	6,243.2	6,350.0	6,194.8	30.4	26.2	65.96	-1,079.1	-898.1	1,373.1	1,328.3	44.77	30.671	
6,475.0	6,268.1	6,368.3	6,212.9	30.4	26.2	65.86	-1,079.1	-896.5	1,373.6	1,329.0	44.68	30.743	
6,500.0	6,293.0	6,382.3	6,226.9	30.4	26.2	65.82	-1,079.1	-894.9	1,373.9	1,329.3	44.60	30.806	
6,525.0	6,317.8	6,400.0	6,244.4	30.4	26.2	65.84	-1,079.1	-892.5	1,373.8	1,329.3	44.52	30.855	
6,550.0	6,342.3	6,400.0	6,244.4	30.4	26.2	65.88	-1,079.1	-892.5	1,373.4	1,329.0	44.43	30.910	
6,575.0	6,366.5	6,424.2	6,268.3	30.3	26.2	66.03	-1,079.1	-888.5	1,372.6	1,328.2	44.38	30.929	
6,600.0	6,390.4	6,438.2	6,282.0	30.2	26.2	66.21	-1,079.1	-885.9	1,371.5	1,327.2	44.33	30.941	
6,625.0	6,413.9	6,450.0	6,293.6	30.2	26.2	66.42	-1,079.1	-883.4	1,370.1	1,325.8	44.28	30.938	
6,650.0	6,436.9	6,466.1	6,309.2	30.1	26.2	66.72	-1,079.1	-879.8	1,368.3	1,324.0	44.26	30.912	
6,675.0	6,459.3	6,479.9	6,322.7	30.0	26.2	67.06	-1,079.1	-876.3	1,366.3	1,322.0	44.26	30.866	
6,700.0	6,481.1	6,500.0	6,342.0	29.9	26.1	67.51	-1,079.1	-870.9	1,363.9	1,319.6	44.31	30.782	
6,725.0	6,502.3	6,500.0	6,342.0	29.7	26.1	67.80	-1,079.1	-870.9	1,361.3	1,317.0	44.31	30.722	
6,750.0	6,522.7	6,521.3	6,362.3	29.6	26.1	68.38	-1,079.1	-864.6	1,358.3	1,313.9	44.41	30.584	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,534.9	6,375.2	29.5	26.1	68.92	-1,079.1	-860.2	1,355.2	1,310.6	44.52	30.440	
6,800.0	6,561.2	6,550.0	6,389.4	29.4	26.1	69.53	-1,079.1	-855.1	1,351.7	1,307.1	44.66	30.266	
6,825.0	6,579.1	6,562.0	6,400.6	29.3	26.1	70.14	-1,079.1	-850.8	1,348.1	1,303.2	44.82	30.078	
6,850.0	6,596.1	6,575.5	6,413.1	29.1	26.0	70.81	-1,079.1	-845.7	1,344.2	1,299.2	45.01	29.864	
6,875.0	6,612.1	6,588.8	6,425.3	29.0	26.0	71.53	-1,079.1	-840.5	1,340.1	1,294.9	45.23	29.629	
6,900.0	6,627.1	6,600.0	6,435.6	28.9	26.0	72.25	-1,079.1	-836.0	1,335.8	1,290.4	45.46	29.383	
6,925.0	6,641.0	6,615.1	6,449.2	28.8	26.0	73.08	-1,079.1	-829.6	1,331.4	1,285.7	45.74	29.109	
6,950.0	6,653.8	6,628.0	6,460.9	28.7	25.9	73.91	-1,079.1	-823.8	1,326.9	1,280.9	46.02	28.832	
6,975.0	6,665.5	6,650.0	6,480.3	28.7	25.9	74.99	-1,079.1	-813.7	1,322.3	1,276.0	46.38	28.514	
7,000.0	6,676.0	6,650.0	6,480.3	28.6	25.9	75.55	-1,079.1	-813.7	1,317.6	1,271.0	46.61	28.270	
7,025.0	6,685.3	6,666.0	6,494.3	28.6	25.9	76.55	-1,079.1	-805.9	1,312.8	1,265.9	46.94	27.967	
7,050.0	6,693.4	6,678.3	6,505.0	28.5	25.8	77.47	-1,079.1	-799.7	1,308.0	1,260.8	47.26	27.680	
7,075.0	6,700.2	6,690.5	6,515.3	28.5	25.8	78.40	-1,079.1	-793.4	1,303.3	1,255.7	47.57	27.399	
7,100.0	6,705.8	6,700.0	6,523.4	28.5	25.8	79.26	-1,079.1	-788.3	1,298.5	1,250.7	47.86	27.133	
7,125.0	6,710.0	6,714.0	6,535.2	28.5	25.7	80.28	-1,079.1	-780.7	1,293.9	1,245.7	48.16	26.864	
7,150.0	6,713.0	6,725.4	6,544.6	28.6	25.7	81.21	-1,079.1	-774.3	1,289.3	1,240.9	48.44	26.615	
7,175.0	6,714.7	6,736.5	6,553.7	28.6	25.7	82.13	-1,079.1	-767.9	1,284.9	1,236.2	48.70	26.381	
7,198.8	6,715.0	6,750.0	6,564.6	28.6	25.7	83.11	-1,079.1	-760.0	1,280.8	1,231.9	48.95	26.168	
7,200.0	6,715.0	6,750.0	6,564.6	28.6	25.7	83.11	-1,079.1	-760.0	1,280.6	1,231.7	48.95	26.162	
7,300.0	6,714.1	6,793.8	6,599.1	29.0	25.6	84.68	-1,079.1	-732.9	1,266.7	1,217.3	49.45	25.618	
7,400.0	6,713.2	6,850.0	6,640.6	29.7	25.4	86.58	-1,079.1	-695.1	1,258.0	1,207.8	50.21	25.057	
7,500.0	6,712.3	6,914.8	6,684.7	30.6	25.3	88.62	-1,079.1	-647.7	1,253.9	1,202.7	51.22	24.479	
7,563.7	6,711.7	6,963.0	6,714.7	31.3	25.2	90.00	-1,079.1	-610.0	1,253.3	1,201.3	52.04	24.084	CC
7,600.0	6,711.3	6,992.9	6,731.9	31.7	25.1	90.80	-1,079.1	-585.6	1,253.5	1,201.0	52.52	23.868	
7,700.0	6,710.4	7,084.7	6,778.4	33.0	24.9	92.96	-1,079.1	-506.4	1,255.4	1,201.3	54.16	23.179	
7,800.0	6,709.5	7,190.5	6,818.9	34.5	24.9	94.84	-1,079.1	-408.8	1,258.3	1,202.0	56.27	22.364	
7,900.0	6,708.5	7,308.0	6,846.4	36.2	25.0	96.13	-1,079.1	-294.7	1,260.7	1,201.8	58.96	21.384	
8,000.0	6,707.6	7,430.7	6,855.0	38.0	25.5	96.57	-1,079.1	-172.5	1,261.6	1,199.4	62.23	20.274	
8,100.0	6,706.7	7,530.7	6,854.1	39.9	26.4	96.57	-1,079.1	-72.5	1,261.6	1,196.0	65.63	19.224	
8,200.0	6,705.8	7,630.7	6,853.3	41.9	27.7	96.58	-1,079.1	27.5	1,261.6	1,192.3	69.32	18.201	
8,300.0	6,704.8	7,730.7	6,852.5	44.0	29.4	96.58	-1,079.1	127.5	1,261.6	1,188.4	73.26	17.220	
8,400.0	6,703.9	7,830.7	6,851.7	46.2	31.3	96.59	-1,079.1	227.5	1,261.6	1,184.2	77.43	16.295	
8,500.0	6,703.0	7,930.7	6,850.9	48.5	33.4	96.59	-1,079.1	327.5	1,261.7	1,179.9	81.76	15.430	
8,600.0	6,702.1	8,030.7	6,850.0	50.8	35.6	96.60	-1,079.1	427.5	1,261.7	1,175.4	86.25	14.627	
8,700.0	6,701.1	8,130.7	6,849.2	53.1	37.9	96.60	-1,079.1	527.5	1,261.7	1,170.8	90.87	13.884	
8,800.0	6,700.2	8,230.7	6,848.4	55.5	40.3	96.61	-1,079.1	627.5	1,261.7	1,166.1	95.59	13.198	
8,900.0	6,699.3	8,330.7	6,847.6	57.9	42.7	96.61	-1,079.1	727.5	1,261.7	1,161.3	100.41	12.566	
9,000.0	6,698.3	8,430.7	6,846.8	60.4	45.2	96.62	-1,079.1	827.5	1,261.7	1,156.4	105.30	11.982	
9,100.0	6,697.4	8,530.7	6,845.9	62.9	47.7	96.62	-1,079.1	927.5	1,261.7	1,151.5	110.26	11.443	
9,200.0	6,696.5	8,630.7	6,845.1	65.4	50.2	96.63	-1,079.1	1,027.5	1,261.8	1,146.5	115.28	10.945	
9,300.0	6,695.5	8,730.7	6,844.3	68.0	52.8	96.63	-1,079.1	1,127.5	1,261.8	1,141.4	120.35	10.484	
9,400.0	6,694.6	8,830.7	6,843.5	70.5	55.4	96.64	-1,079.1	1,227.5	1,261.8	1,136.3	125.46	10.057	
9,500.0	6,693.7	8,930.7	6,842.7	73.1	58.0	96.64	-1,079.1	1,327.5	1,261.8	1,131.2	130.62	9.660	
9,600.0	6,692.8	9,030.7	6,841.9	75.7	60.7	96.65	-1,079.1	1,427.5	1,261.8	1,126.0	135.80	9.291	
9,700.0	6,691.8	9,130.7	6,841.0	78.3	63.3	96.65	-1,079.1	1,527.5	1,261.8	1,120.8	141.02	8.948	
9,800.0	6,690.9	9,230.7	6,840.2	80.9	66.0	96.66	-1,079.1	1,627.5	1,261.8	1,115.6	146.26	8.627	
9,900.0	6,690.0	9,330.7	6,839.4	83.6	68.6	96.66	-1,079.1	1,727.5	1,261.8	1,110.3	151.53	8.327	
10,000.0	6,689.0	9,430.7	6,838.6	86.2	71.3	96.67	-1,079.1	1,827.4	1,261.9	1,105.0	156.82	8.046	
10,100.0	6,688.1	9,530.7	6,837.8	88.9	74.0	96.68	-1,079.1	1,927.4	1,261.9	1,099.7	162.13	7.783	
10,200.0	6,687.2	9,630.7	6,837.0	91.6	76.7	96.68	-1,079.1	2,027.4	1,261.9	1,094.4	167.46	7.535	
10,300.0	6,686.2	9,730.7	6,836.1	94.2	79.4	96.69	-1,079.1	2,127.4	1,261.9	1,089.1	172.81	7.302	
10,400.0	6,685.3	9,830.7	6,835.3	96.9	82.1	96.69	-1,079.1	2,227.4	1,261.9	1,083.8	178.16	7.083	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	9,930.7	6,834.5	99.6	84.8	96.70	-1,079.1	2,327.4	1,261.9	1,078.4	183.54	6.876	
10,600.0	6,683.4	10,030.7	6,833.7	102.3	87.6	96.70	-1,079.1	2,427.4	1,261.9	1,073.0	188.92	6.680	
10,700.0	6,682.5	10,130.7	6,832.9	105.0	90.3	96.71	-1,079.1	2,527.4	1,262.0	1,067.6	194.32	6.494	
10,800.0	6,681.6	10,230.7	6,832.1	107.7	93.0	96.71	-1,079.1	2,627.4	1,262.0	1,062.3	199.72	6.319	
10,900.0	6,680.6	10,330.7	6,831.3	110.4	95.8	96.72	-1,079.1	2,727.4	1,262.0	1,056.9	205.14	6.152	
11,000.0	6,679.7	10,430.7	6,830.5	113.1	98.5	96.72	-1,079.1	2,827.4	1,262.0	1,051.4	210.56	5.994	
11,100.0	6,678.8	10,530.7	6,829.6	115.9	101.2	96.73	-1,079.1	2,927.4	1,262.0	1,046.0	215.99	5.843	
11,200.0	6,677.8	10,630.7	6,828.8	118.6	104.0	96.73	-1,079.1	3,027.4	1,262.0	1,040.6	221.43	5.699	
11,300.0	6,676.9	10,730.6	6,828.0	121.3	106.7	96.74	-1,079.1	3,127.4	1,262.0	1,035.2	226.88	5.563	
11,400.0	6,676.0	10,830.6	6,827.2	124.1	109.5	96.75	-1,079.1	3,227.4	1,262.1	1,029.7	232.33	5.432	
11,500.0	6,675.0	10,930.6	6,826.4	126.8	112.3	96.75	-1,079.1	3,327.4	1,262.1	1,024.3	237.79	5.308	
11,600.0	6,674.1	11,030.6	6,825.6	129.5	115.0	96.76	-1,079.1	3,427.4	1,262.1	1,018.8	243.25	5.188	
11,700.0	6,673.1	11,130.6	6,824.8	132.3	117.8	96.76	-1,079.1	3,527.4	1,262.1	1,013.4	248.72	5.074	
11,800.0	6,672.2	11,230.6	6,824.0	135.0	120.5	96.77	-1,079.1	3,627.4	1,262.1	1,007.9	254.20	4.965	
11,900.0	6,671.3	11,330.6	6,823.1	137.8	123.3	96.77	-1,079.1	3,727.4	1,262.1	1,002.5	259.67	4.860	
12,000.0	6,670.3	11,430.6	6,822.3	140.5	126.1	96.78	-1,079.1	3,827.4	1,262.2	997.0	265.16	4.760	
12,036.2	6,670.0	11,466.9	6,822.0	141.5	127.1	96.78	-1,079.1	3,863.6	1,262.2	995.0	267.14	4.725	ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-177.77	-1,915.2	-74.6	1,916.6				
100.0	100.0	103.0	103.0	0.1	0.1	171.63	-1,915.2	-74.6	1,916.7	1,916.5	0.20	9,468.317	
200.0	200.0	203.0	203.0	0.2	0.3	171.63	-1,915.2	-74.6	1,917.0	1,916.5	0.54	3,552.666	
261.0	261.0	264.0	264.0	0.3	0.5	171.63	-1,915.2	-74.6	1,917.3	1,916.5	0.75	2,572.585	
300.0	300.0	303.0	303.0	0.4	0.6	-110.16	-1,915.2	-74.6	1,917.5	1,916.6	0.92	2,077.847	
400.0	399.9	402.9	402.9	0.6	0.8	-95.71	-1,915.2	-74.6	1,918.0	1,916.6	1.38	1,391.938	
500.0	499.7	502.7	502.7	0.8	1.0	-93.52	-1,915.2	-74.6	1,918.5	1,916.7	1.83	1,046.894	
538.0	537.5	540.5	540.5	0.9	1.1	-93.18	-1,915.2	-74.6	1,918.8	1,916.8	2.01	956.897	
600.0	599.1	602.1	602.1	1.1	1.2	-94.13	-1,915.2	-74.6	1,919.2	1,916.9	2.36	813.874	
700.0	697.9	700.9	700.9	1.5	1.4	-95.27	-1,915.2	-74.6	1,920.5	1,917.6	2.93	656.291	
800.0	796.0	799.0	799.0	1.8	1.7	-96.23	-1,915.2	-74.6	1,922.5	1,919.0	3.49	550.471	
818.0	813.5	816.5	816.5	1.9	1.7	-96.39	-1,915.2	-74.6	1,923.0	1,919.4	3.59	535.027	
900.0	893.1	896.1	896.1	2.3	1.9	-96.09	-1,915.2	-74.6	1,925.2	1,920.9	4.23	454.856	
1,000.0	989.2	992.2	992.2	2.9	2.1	-96.07	-1,915.2	-74.6	1,928.2	1,923.2	5.01	385.093	
1,100.0	1,083.9	1,134.9	1,134.9	3.5	2.4	-96.83	-1,914.1	-74.0	1,931.4	1,925.5	5.88	328.447	
1,104.0	1,087.6	1,143.5	1,143.5	3.5	2.4	-96.90	-1,913.9	-73.9	1,931.5	1,925.5	5.92	326.184	
1,200.0	1,177.9	1,346.8	1,346.2	4.1	2.9	-99.83	-1,902.0	-66.7	1,930.7	1,923.7	6.98	276.656	
1,300.0	1,272.0	1,551.0	1,548.5	4.8	3.4	-103.02	-1,877.7	-52.1	1,925.7	1,917.6	8.08	238.193	
1,391.0	1,357.8	1,729.2	1,722.9	5.3	4.0	-106.02	-1,846.5	-33.3	1,917.7	1,908.6	9.12	210.329	
1,400.0	1,366.3	1,746.4	1,739.6	5.4	4.1	-106.06	-1,843.0	-31.2	1,916.8	1,907.6	9.22	207.935	
1,458.0	1,421.2	1,810.0	1,801.1	5.7	4.3	-105.59	-1,829.6	-23.1	1,910.0	1,900.3	9.74	196.150	
1,500.0	1,461.0	1,847.2	1,837.2	6.0	4.4	-106.29	-1,821.6	-18.3	1,905.1	1,895.0	10.09	188.879	
1,600.0	1,556.1	1,935.9	1,923.2	6.6	4.8	-107.97	-1,802.8	-6.9	1,894.3	1,883.4	10.92	173.484	
1,676.0	1,628.3	2,003.5	1,988.6	7.0	5.1	-109.25	-1,788.4	1.7	1,886.9	1,875.4	11.56	163.238	
1,700.0	1,651.1	2,024.8	2,009.3	7.2	5.2	-109.01	-1,783.8	4.5	1,884.7	1,872.9	11.77	160.171	
1,800.0	1,746.4	2,113.7	2,095.4	7.7	5.6	-107.99	-1,764.9	15.9	1,875.2	1,862.6	12.63	148.435	
1,900.0	1,841.8	2,202.6	2,181.5	8.3	6.0	-106.90	-1,746.0	27.3	1,865.5	1,852.0	13.50	138.134	
1,963.0	1,902.0	2,258.5	2,235.7	8.7	6.2	-106.17	-1,734.1	34.5	1,859.2	1,845.1	14.06	132.268	
2,000.0	1,937.4	2,291.4	2,267.5	8.9	6.4	-106.61	-1,727.1	38.7	1,855.5	1,841.1	14.37	129.087	
2,100.0	2,033.1	2,380.4	2,353.7	9.5	6.8	-107.78	-1,708.2	50.1	1,846.2	1,830.9	15.24	121.156	
2,200.0	2,129.0	2,469.7	2,440.2	10.0	7.2	-108.95	-1,689.2	61.5	1,837.7	1,821.6	16.11	114.101	
2,250.0	2,177.1	2,514.4	2,483.5	10.3	7.4	-109.54	-1,679.6	67.3	1,833.8	1,817.2	16.54	110.863	
2,300.0	2,225.1	2,559.2	2,526.9	10.6	7.7	-111.25	-1,670.1	73.0	1,830.2	1,813.3	16.97	107.844	
2,400.0	2,321.2	2,648.8	2,613.7	11.2	8.1	-114.62	-1,651.0	84.5	1,824.8	1,807.0	17.83	102.355	
2,500.0	2,417.0	2,738.5	2,700.6	11.7	8.5	-117.94	-1,632.0	96.0	1,821.6	1,802.9	18.68	97.518	
2,537.0	2,452.5	2,771.7	2,732.7	11.9	8.7	-119.15	-1,624.9	100.3	1,820.9	1,801.9	18.99	95.876	
2,573.4	2,487.3	2,804.3	2,764.4	12.2	8.9	-121.19	-1,617.9	104.5	1,820.7	1,801.4	19.30	94.359	
2,600.0	2,512.8	2,828.3	2,787.5	12.3	9.0	-122.66	-1,612.8	107.5	1,820.8	1,801.3	19.52	93.301	
2,700.0	2,608.2	2,918.2	2,874.6	12.9	9.4	-127.98	-1,593.7	119.0	1,823.5	1,803.2	20.33	89.709	
2,800.0	2,703.3	3,008.2	2,961.8	13.5	9.9	-132.99	-1,574.6	130.6	1,829.7	1,808.6	21.11	86.663	
2,824.0	2,726.1	3,029.7	2,982.7	13.7	10.0	-134.15	-1,570.0	133.4	1,831.7	1,810.4	21.30	86.006	
2,900.0	2,798.2	3,098.2	3,049.0	14.1	10.3	-132.76	-1,555.4	142.1	1,838.0	1,816.0	21.97	83.651	
3,000.0	2,893.6	3,188.4	3,136.3	14.7	10.8	-130.64	-1,536.2	153.7	1,845.0	1,822.2	22.85	80.752	
3,100.0	2,989.4	3,278.6	3,223.7	15.3	11.2	-128.18	-1,517.0	165.3	1,850.7	1,827.0	23.71	78.061	
3,112.0	3,000.9	3,289.4	3,234.2	15.4	11.3	-127.86	-1,514.7	166.7	1,851.3	1,827.5	23.81	77.751	
3,200.0	3,085.5	3,368.9	3,311.2	15.9	11.7	-128.03	-1,497.8	176.9	1,855.6	1,831.1	24.52	75.688	
3,300.0	3,181.9	3,459.4	3,398.9	16.4	12.1	-128.16	-1,478.5	188.5	1,860.6	1,835.3	25.31	73.502	
3,400.0	3,278.4	3,550.1	3,486.7	16.9	12.6	-128.21	-1,459.2	200.1	1,865.6	1,839.5	26.10	71.468	
3,500.0	3,374.7	3,640.4	3,574.2	17.5	13.0	-129.43	-1,440.0	211.7	1,872.0	1,845.1	26.89	69.618	
3,600.0	3,470.3	3,729.7	3,660.7	18.1	13.5	-130.64	-1,421.0	223.1	1,881.0	1,853.3	27.65	68.031	
3,687.0	3,552.8	3,806.6	3,735.2	18.6	13.9	-131.68	-1,404.6	233.0	1,891.0	1,862.7	28.29	66.849	
3,700.0	3,565.1	3,818.1	3,746.3	18.7	13.9	-131.60	-1,402.2	234.4	1,892.7	1,864.3	28.40	66.647	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,905.8	3,831.2	19.4	14.4	-131.00	-1,383.5	245.7	1,905.8	1,876.6	29.24	65.170	
3,900.0	3,753.9	3,993.1	3,915.8	20.0	14.8	-130.44	-1,364.9	256.9	1,919.4	1,889.4	30.07	63.829	
3,974.0	3,823.6	4,057.5	3,978.2	20.5	15.1	-130.04	-1,351.2	265.2	1,929.9	1,899.2	30.67	62.916	
4,000.0	3,848.1	4,080.2	4,000.1	20.7	15.2	-130.61	-1,346.4	268.1	1,933.6	1,902.7	30.87	62.636	
4,100.0	3,942.9	4,167.9	4,085.2	21.3	15.7	-132.85	-1,327.7	279.3	1,947.9	1,916.2	31.63	61.588	
4,200.0	4,038.5	4,256.8	4,171.3	21.9	16.1	-135.18	-1,308.8	290.7	1,961.9	1,929.5	32.38	60.581	
4,263.0	4,099.0	4,313.4	4,226.0	22.3	16.4	-136.70	-1,296.8	298.0	1,970.6	1,937.7	32.86	59.965	
4,300.0	4,134.7	4,346.7	4,258.4	22.5	16.6	-138.19	-1,289.7	302.2	1,975.7	1,942.6	33.10	59.692	
4,400.0	4,231.2	4,437.4	4,346.2	23.0	17.1	-142.35	-1,270.4	313.9	1,990.1	1,956.4	33.73	58.996	
4,500.0	4,328.0	4,528.7	4,434.6	23.5	17.5	-146.68	-1,251.0	325.6	2,005.4	1,971.1	34.37	58.354	
4,549.0	4,375.5	4,573.7	4,478.2	23.8	17.8	-148.87	-1,241.4	331.4	2,013.3	1,978.6	34.68	58.056	
4,600.0	4,425.0	4,620.6	4,523.6	24.0	18.0	-149.54	-1,231.4	337.4	2,021.6	1,986.6	34.99	57.768	
4,700.0	4,521.9	4,712.5	4,612.6	24.5	18.5	-150.84	-1,211.8	349.1	2,038.5	2,002.9	35.61	57.243	
4,800.0	4,618.8	4,804.4	4,701.7	25.0	18.9	-152.11	-1,192.3	360.9	2,056.2	2,020.0	36.22	56.769	
4,837.0	4,654.7	4,838.4	4,734.6	25.2	19.1	-152.58	-1,185.0	365.3	2,063.0	2,026.5	36.45	56.605	
4,900.0	4,715.7	4,896.3	4,790.7	25.5	19.4	-153.58	-1,172.7	372.7	2,074.9	2,038.0	36.81	56.362	
5,000.0	4,812.4	4,988.0	4,879.5	26.0	19.9	-155.13	-1,153.2	384.5	2,094.8	2,057.4	37.39	56.031	
5,100.0	4,908.9	5,079.5	4,968.1	26.6	20.3	-156.62	-1,133.7	396.2	2,116.2	2,078.2	37.95	55.763	
5,125.0	4,932.9	5,102.3	4,990.3	26.7	20.5	-156.99	-1,128.9	399.1	2,121.7	2,083.7	38.09	55.706	
5,200.0	5,005.4	5,171.0	5,056.8	27.0	20.8	-155.01	-1,114.3	407.9	2,137.9	2,099.3	38.65	55.317	
5,300.0	5,102.4	8,511.9	6,861.3	27.5	47.8	-116.81	-962.6	-1,332.1	2,078.8	2,009.6	69.23	30.028	
5,400.0	5,199.9	8,534.4	6,861.4	28.0	48.3	-110.06	-962.6	-1,354.6	1,998.4	1,927.4	70.94	28.169	
5,412.0	5,211.7	8,536.9	6,861.4	28.1	48.4	-109.18	-962.6	-1,357.2	1,988.7	1,917.6	71.14	27.954	
5,500.0	5,297.9	8,554.7	6,861.5	28.4	48.9	-104.34	-962.6	-1,375.0	1,918.1	1,845.3	72.77	26.358	
5,581.0	5,377.7	8,569.5	6,861.6	28.7	49.2	-99.31	-962.6	-1,389.7	1,853.5	1,779.4	74.13	25.004	
5,600.0	5,396.4	8,572.7	6,861.6	28.8	49.3	-99.86	-962.6	-1,392.9	1,838.5	1,764.0	74.50	24.677	
5,700.0	5,495.3	8,587.9	6,861.7	29.1	49.7	-104.61	-962.6	-1,408.1	1,761.0	1,684.8	76.24	23.100	
5,800.0	5,594.6	8,600.2	6,861.8	29.4	50.0	-113.67	-962.6	-1,420.4	1,686.8	1,609.3	77.59	21.741	
5,900.0	5,694.1	8,609.6	6,861.8	29.6	50.3	-128.85	-962.6	-1,429.8	1,616.5	1,537.9	78.60	20.567	
5,917.0	5,711.1	8,610.9	6,861.8	29.7	50.3	-132.09	-962.6	-1,431.1	1,605.0	1,526.2	78.74	20.383	
6,000.0	5,793.7	8,617.1	6,861.9	29.8	50.5	-131.79	-962.6	-1,437.3	1,550.2	1,471.1	79.12	19.592	
6,067.0	5,860.5	8,622.1	6,861.9	30.0	50.6	-131.55	-962.6	-1,442.4	1,507.9	1,428.4	79.43	18.983	
6,100.0	5,893.4	8,624.4	6,861.9	30.0	50.7	-131.05	-962.6	-1,444.7	1,487.6	1,407.9	79.66	18.675	
6,200.0	5,993.2	8,629.6	6,861.9	30.2	50.8	-129.66	-962.6	-1,449.9	1,427.7	1,347.5	80.20	17.803	
6,300.0	6,093.2	8,632.1	6,861.9	30.3	50.9	-128.45	-962.6	-1,452.3	1,370.6	1,290.1	80.53	17.020	
6,318.8	6,111.9	8,632.2	6,861.9	30.3	50.9	179.79	-962.6	-1,452.5	1,360.3	1,321.0	39.28	34.628	
6,400.0	6,193.2	8,632.7	6,862.0	30.4	50.9	179.81	-962.6	-1,452.9	1,317.4	1,278.0	39.40	33.434	
6,444.4	6,237.6	8,632.9	6,862.0	30.4	50.9	179.82	-962.6	-1,453.2	1,295.5	1,256.0	39.47	32.824	
6,450.0	6,243.2	8,632.9	6,862.0	30.4	50.9	90.19	-962.6	-1,453.2	1,292.8	1,212.1	80.77	16.007	
6,475.0	6,268.1	8,632.1	6,861.9	30.4	50.9	91.74	-962.6	-1,452.4	1,281.1	1,200.2	80.96	15.824	
6,500.0	6,293.0	8,630.0	6,861.9	30.4	50.8	93.15	-962.6	-1,450.3	1,269.8	1,188.8	81.05	15.668	
6,525.0	6,317.8	8,626.6	6,861.9	30.4	50.7	94.42	-962.6	-1,446.8	1,259.0	1,178.0	81.04	15.535	
6,550.0	6,342.3	8,621.9	6,861.9	30.4	50.6	95.55	-962.6	-1,442.1	1,248.6	1,167.7	80.95	15.426	
6,575.0	6,366.5	8,615.9	6,861.9	30.3	50.4	96.54	-962.6	-1,436.2	1,238.8	1,158.0	80.77	15.337	
6,600.0	6,390.4	8,608.7	6,861.8	30.2	50.3	97.39	-962.6	-1,428.9	1,229.5	1,149.0	80.53	15.267	
6,625.0	6,413.9	8,600.2	6,861.8	30.2	50.0	98.11	-962.6	-1,420.4	1,220.7	1,140.5	80.22	15.216	
6,650.0	6,436.9	8,590.5	6,861.7	30.1	49.8	98.70	-962.6	-1,410.7	1,212.5	1,132.6	79.87	15.182	
6,675.0	6,459.3	8,579.6	6,861.7	30.0	49.5	99.17	-962.6	-1,399.8	1,204.9	1,125.4	79.46	15.164	
6,700.0	6,481.1	8,567.5	6,861.6	29.9	49.2	99.52	-962.6	-1,387.8	1,197.8	1,118.8	79.01	15.160	SF
6,725.0	6,502.3	8,554.3	6,861.5	29.7	48.8	99.77	-962.6	-1,374.6	1,191.3	1,112.7	78.52	15.172	
6,750.0	6,522.7	8,540.0	6,861.4	29.6	48.5	99.93	-962.6	-1,360.3	1,185.3	1,107.3	78.00	15.197	
6,775.0	6,542.4	8,524.7	6,861.3	29.5	48.1	99.99	-962.6	-1,345.0	1,179.9	1,102.4	77.44	15.235	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	8,508.4	6,861.3	29.4	47.7	99.98	-962.6	-1,328.6	1,174.9	1,098.1	76.87	15.285	
6,825.0	6,579.1	8,491.0	6,861.2	29.3	47.2	99.91	-962.6	-1,311.3	1,170.5	1,094.2	76.27	15.347	
6,850.0	6,596.1	8,472.8	6,861.1	29.1	46.7	99.77	-962.6	-1,293.1	1,166.5	1,090.9	75.65	15.420	
6,875.0	6,612.1	8,453.7	6,860.9	29.0	46.3	99.59	-962.6	-1,273.9	1,163.0	1,088.0	75.02	15.503	
6,900.0	6,627.1	8,433.8	6,860.8	28.9	45.7	99.37	-962.6	-1,254.0	1,159.9	1,085.6	74.38	15.595	
6,925.0	6,641.0	8,413.1	6,860.7	28.8	45.2	99.12	-962.6	-1,233.3	1,157.2	1,083.5	73.72	15.697	
6,950.0	6,653.8	8,391.7	6,860.6	28.7	44.7	98.85	-962.6	-1,211.9	1,154.9	1,081.8	73.06	15.806	
6,975.0	6,665.5	8,369.7	6,860.5	28.7	44.1	98.58	-962.6	-1,189.9	1,152.9	1,080.5	72.40	15.922	
7,000.0	6,676.0	8,347.0	6,860.3	28.6	43.5	98.31	-962.6	-1,167.3	1,151.1	1,079.4	71.74	16.045	
7,025.0	6,685.3	8,323.9	6,860.2	28.6	42.9	98.05	-962.6	-1,144.1	1,149.7	1,078.6	71.08	16.174	
7,050.0	6,693.4	8,300.3	6,860.1	28.5	42.3	97.81	-962.6	-1,120.5	1,148.5	1,078.1	70.42	16.308	
7,075.0	6,700.2	8,276.3	6,860.0	28.5	41.7	97.60	-962.6	-1,096.5	1,147.5	1,077.7	69.78	16.445	
7,100.0	6,705.8	8,251.9	6,859.8	28.5	41.1	97.42	-962.6	-1,072.2	1,146.8	1,077.6	69.14	16.586	
7,125.0	6,710.0	8,227.3	6,859.7	28.5	40.5	97.27	-962.6	-1,047.6	1,146.2	1,077.7	68.51	16.730	
7,150.0	6,713.0	8,202.5	6,859.5	28.6	39.9	97.16	-962.6	-1,022.8	1,145.8	1,077.9	67.89	16.877	
7,175.0	6,714.7	8,177.6	6,859.4	28.6	39.3	97.10	-962.6	-997.8	1,145.6	1,078.3	67.29	17.025	
7,197.1	6,715.1	8,155.5	6,859.3	28.6	38.7	97.08	-962.6	-975.7	1,145.5	1,078.7	66.77	17.157	
7,198.8	6,715.0	8,153.7	6,859.3	28.6	38.7	97.08	-962.6	-974.0	1,145.5	1,078.8	66.72	17.168	
7,200.0	6,715.0	8,152.6	6,859.3	28.6	38.7	97.08	-962.6	-972.8	1,145.5	1,078.8	66.70	17.174	
7,300.0	6,714.1	8,052.6	6,858.7	29.0	36.2	97.10	-962.6	-872.8	1,145.5	1,080.9	64.69	17.707	
7,400.0	6,713.2	7,952.6	6,858.1	29.7	33.8	97.12	-962.6	-772.8	1,145.6	1,082.6	63.01	18.182	
7,500.0	6,712.3	7,852.6	6,857.6	30.6	31.5	97.14	-962.6	-672.8	1,145.6	1,084.0	61.64	18.586	
7,600.0	6,711.3	7,752.6	6,857.0	31.7	29.3	97.15	-962.6	-572.8	1,145.7	1,085.1	60.58	18.912	
7,700.0	6,710.4	7,652.6	6,856.5	33.0	27.1	97.17	-962.6	-472.8	1,145.7	1,085.9	59.84	19.146	
7,800.0	6,709.5	7,552.6	6,855.9	34.5	25.1	97.19	-962.6	-372.8	1,145.8	1,086.4	59.42	19.281	
7,900.0	6,708.5	7,452.6	6,855.3	36.2	23.1	97.21	-962.6	-272.8	1,145.8	1,086.5	59.33	19.312	
8,000.0	6,707.6	7,342.6	6,853.0	38.0	22.9	97.14	-962.6	-162.9	1,145.7	1,086.3	59.41	19.285	
8,100.0	6,706.7	7,220.6	6,833.5	39.9	23.1	96.23	-962.6	-42.6	1,143.9	1,084.1	59.82	19.124	
8,200.0	6,705.8	7,107.8	6,797.6	41.9	23.4	94.48	-962.6	64.2	1,140.9	1,080.0	60.84	18.751	
8,300.0	6,704.8	7,007.9	6,752.1	44.0	23.6	92.24	-962.6	153.0	1,137.9	1,075.6	62.38	18.243	
8,392.9	6,704.0	6,927.8	6,707.0	46.1	23.7	90.00	-962.6	219.2	1,136.8	1,072.7	64.09	17.736	CC
8,400.0	6,703.9	6,922.1	6,703.5	46.2	23.8	89.83	-962.6	223.7	1,136.8	1,072.5	64.23	17.699	ES
8,500.0	6,703.0	6,850.0	6,656.4	48.5	23.9	87.48	-962.6	278.2	1,138.9	1,072.6	66.23	17.196	
8,600.0	6,702.1	6,788.6	6,612.1	50.8	24.1	85.28	-962.6	320.7	1,145.4	1,077.1	68.30	16.771	
8,700.0	6,701.1	6,737.3	6,572.4	53.1	24.2	83.31	-962.6	353.2	1,157.4	1,087.0	70.39	16.443	
8,800.0	6,700.2	6,700.0	6,542.1	55.5	24.2	81.82	-962.6	375.0	1,175.3	1,102.8	72.53	16.204	
8,900.0	6,699.3	6,650.0	6,499.9	57.9	24.3	79.76	-962.6	401.7	1,199.4	1,124.9	74.54	16.090	
9,000.0	6,698.3	6,625.8	6,478.7	60.4	24.4	78.74	-962.6	413.5	1,229.7	1,153.0	76.73	16.025	
9,100.0	6,697.4	6,600.0	6,455.8	62.9	24.4	77.63	-962.6	425.4	1,266.1	1,187.2	78.90	16.048	
9,200.0	6,696.5	6,575.0	6,433.3	65.4	24.4	76.56	-962.6	436.0	1,308.3	1,227.2	81.04	16.143	
9,300.0	6,695.5	6,550.0	6,410.3	68.0	24.5	75.47	-962.6	445.9	1,355.8	1,272.7	83.16	16.304	
9,400.0	6,694.6	6,536.2	6,397.4	70.5	24.5	74.87	-962.6	451.0	1,408.3	1,322.9	85.42	16.486	
9,500.0	6,693.7	6,520.0	6,382.3	73.1	24.5	74.16	-962.6	456.7	1,465.4	1,377.7	87.64	16.719	
9,600.0	6,692.8	6,500.0	6,363.4	75.7	24.5	73.29	-962.6	463.2	1,526.5	1,436.7	89.78	17.003	
9,700.0	6,691.8	6,500.0	6,363.4	78.3	24.5	73.29	-962.6	463.2	1,591.3	1,499.0	92.29	17.243	
9,800.0	6,690.9	6,481.1	6,345.3	80.9	24.5	72.46	-962.6	468.9	1,659.3	1,564.9	94.41	17.574	
9,900.0	6,690.0	6,470.5	6,335.2	83.6	24.5	72.00	-962.6	471.9	1,730.2	1,633.5	96.70	17.892	
10,000.0	6,689.0	6,450.0	6,315.4	86.2	24.6	71.10	-962.6	477.2	1,803.9	1,705.1	98.75	18.267	
10,100.0	6,688.1	6,450.0	6,315.4	88.9	24.6	71.10	-962.6	477.2	1,879.6	1,778.4	101.27	18.560	
10,200.0	6,687.2	6,450.0	6,315.4	91.6	24.6	71.10	-962.6	477.2	1,957.6	1,853.8	103.81	18.858	
10,300.0	6,686.2	6,450.0	6,315.4	94.2	24.6	71.10	-962.6	477.2	2,037.4	1,931.1	106.35	19.159	
10,400.0	6,685.3	6,430.0	6,296.0	96.9	24.6	70.23	-962.6	481.9	2,118.7	2,010.4	108.35	19.555	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,423.7	6,289.8	99.6	24.6	69.96	-962.6	483.3	2,201.6	2,090.9	110.71	19.886	
10,600.0	6,683.4	6,400.0	6,266.5	102.3	24.6	68.93	-962.6	487.9	2,286.0	2,173.5	112.54	20.313	
10,700.0	6,682.5	6,400.0	6,266.5	105.0	24.6	68.93	-962.6	487.9	2,371.2	2,256.1	115.07	20.606	
10,800.0	6,681.6	6,400.0	6,266.5	107.7	24.6	68.93	-962.6	487.9	2,457.5	2,339.9	117.61	20.895	
10,900.0	6,680.6	6,400.0	6,266.5	110.4	24.6	68.93	-962.6	487.9	2,544.9	2,424.7	120.15	21.180	
11,000.0	6,679.7	6,400.0	6,266.5	113.1	24.6	68.93	-962.6	487.9	2,633.1	2,510.4	122.70	21.459	
11,100.0	6,678.8	6,400.0	6,266.5	115.9	24.6	68.93	-962.6	487.9	2,722.2	2,596.9	125.25	21.733	
11,200.0	6,677.8	6,400.0	6,266.5	118.6	24.6	68.93	-962.6	487.9	2,811.9	2,684.1	127.81	22.001	
11,300.0	6,676.9	6,400.0	6,266.5	121.3	24.6	68.93	-962.6	487.9	2,902.4	2,772.0	130.37	22.263	
11,400.0	6,676.0	6,400.0	6,266.5	124.1	24.6	68.93	-962.6	487.9	2,993.5	2,860.5	132.93	22.519	
11,500.0	6,675.0	6,379.7	6,246.6	126.8	24.6	68.06	-962.6	491.2	3,084.7	2,950.0	134.73	22.896	
11,600.0	6,674.1	6,376.6	6,243.5	129.5	24.6	67.92	-962.6	491.7	3,176.7	3,039.6	137.16	23.160	
11,700.0	6,673.1	6,373.7	6,240.6	132.3	24.6	67.80	-962.6	492.1	3,269.2	3,129.6	139.60	23.418	
11,800.0	6,672.2	6,370.9	6,237.8	135.0	24.6	67.68	-962.6	492.5	3,362.1	3,220.0	142.04	23.670	
11,900.0	6,671.3	6,350.0	6,217.1	137.8	24.6	66.79	-962.6	495.1	3,455.6	3,311.9	143.71	24.045	
12,000.0	6,670.3	6,350.0	6,217.1	140.5	24.6	66.79	-962.6	495.1	3,549.2	3,402.9	146.26	24.267	
12,036.2	6,670.0	6,350.0	6,217.1	141.5	24.6	66.79	-962.6	495.1	3,583.2	3,436.0	147.18	24.346	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-109.33	-1,942.2	-5,537.8	5,868.6				
100.0	100.0	88.0	88.0	0.1	0.1	-119.93	-1,942.2	-5,538.0	5,868.7	5,868.6	0.18	N/A	
200.0	200.0	201.7	201.7	0.2	0.2	-119.92	-1,941.8	-5,538.3	5,869.1	5,868.7	0.43	N/A	
261.0	261.0	276.1	276.1	0.3	0.3	-119.92	-1,941.5	-5,538.4	5,869.2	5,868.6	0.55	N/A	
300.0	300.0	318.9	318.9	0.4	0.3	-41.72	-1,941.4	-5,538.3	5,868.9	5,868.3	0.66	8,859.696	
400.0	399.9	418.2	418.2	0.6	0.4	-27.22	-1,940.8	-5,538.3	5,865.8	5,864.8	0.97	6,070.580	
500.0	499.7	533.0	533.0	0.8	0.4	-24.92	-1,940.3	-5,538.0	5,859.0	5,857.8	1.27	4,604.183	
538.0	537.5	583.2	583.2	0.9	0.5	-24.51	-1,940.1	-5,537.8	5,855.4	5,854.1	1.39	4,205.814	
600.0	599.1	636.7	636.7	1.1	0.5	-25.37	-1,939.8	-5,537.5	5,848.4	5,846.8	1.60	3,646.074	
700.0	697.9	718.7	718.7	1.5	0.5	-26.32	-1,939.4	-5,537.3	5,834.3	5,832.4	1.94	3,008.995	
800.0	796.0	837.4	837.4	1.8	0.6	-27.07	-1,939.2	-5,536.8	5,816.3	5,814.1	2.28	2,551.725	
818.0	813.5	856.1	856.0	1.9	0.6	-27.20	-1,939.1	-5,536.7	5,812.7	5,810.3	2.34	2,483.244	
900.0	893.1	930.3	930.3	2.3	0.6	-26.63	-1,938.7	-5,536.3	5,794.5	5,791.8	2.69	2,155.684	
1,000.0	989.2	1,007.1	1,007.1	2.9	0.6	-26.23	-1,938.3	-5,536.1	5,768.9	5,765.8	3.10	1,858.230	
1,100.0	1,083.9	1,089.0	1,089.0	3.5	0.7	-26.09	-1,937.9	-5,536.1	5,739.8	5,736.3	3.52	1,631.411	
1,104.0	1,087.6	1,092.3	1,092.2	3.5	0.7	-26.09	-1,937.9	-5,536.1	5,738.6	5,735.0	3.53	1,623.407	
1,200.0	1,177.9	1,192.1	1,192.1	4.1	0.7	-26.97	-1,937.7	-5,536.1	5,708.9	5,704.9	3.94	1,448.105	
1,300.0	1,272.0	1,300.2	1,300.2	4.8	0.8	-27.92	-1,937.5	-5,535.8	5,678.2	5,673.9	4.35	1,305.899	
1,391.0	1,357.8	1,393.5	1,393.5	5.3	0.8	-28.78	-1,937.1	-5,535.5	5,650.6	5,645.9	4.73	1,193.376	
1,400.0	1,366.3	1,400.0	1,400.0	5.4	0.8	-28.57	-1,937.0	-5,535.5	5,647.9	5,643.2	4.77	1,184.748	
1,458.0	1,421.2	1,454.3	1,454.3	5.7	0.8	-27.15	-1,936.6	-5,535.3	5,630.9	5,625.9	4.98	1,130.782	
1,500.0	1,461.0	1,492.0	1,492.0	6.0	0.8	-27.42	-1,936.3	-5,535.2	5,618.9	5,613.7	5.15	1,091.752	
1,600.0	1,556.1	1,574.0	1,573.9	6.6	0.9	-28.04	-1,935.7	-5,535.2	5,590.6	5,585.1	5.54	1,008.896	
1,676.0	1,628.3	1,640.9	1,640.9	7.0	0.9	-28.52	-1,935.2	-5,535.2	5,569.5	5,563.6	5.85	952.698	
1,700.0	1,651.1	1,663.2	1,663.2	7.2	0.9	-27.98	-1,935.1	-5,535.2	5,562.9	5,556.9	5.94	936.926	
1,800.0	1,746.4	1,774.4	1,774.3	7.7	0.9	-25.68	-1,934.7	-5,535.1	5,535.2	5,528.9	6.33	875.065	
1,900.0	1,841.8	1,863.2	1,863.2	8.3	1.0	-23.24	-1,934.3	-5,534.8	5,507.3	5,500.6	6.71	820.956	
1,963.0	1,902.0	1,900.0	1,900.0	8.7	1.0	-21.64	-1,934.2	-5,534.8	5,489.9	5,482.9	6.94	790.841	
2,000.0	1,937.4	1,937.6	1,937.6	8.9	1.0	-21.66	-1,934.1	-5,534.8	5,479.7	5,472.6	7.07	775.591	
2,100.0	2,033.1	2,008.8	2,008.8	9.5	1.0	-21.67	-1,934.1	-5,535.0	5,453.0	5,445.6	7.40	736.947	
2,200.0	2,129.0	2,092.4	2,092.4	10.0	1.0	-21.69	-1,934.4	-5,535.4	5,427.3	5,419.6	7.74	701.297	
2,250.0	2,177.1	2,150.8	2,150.7	10.3	1.0	-21.72	-1,934.8	-5,535.7	5,414.7	5,406.8	7.92	683.943	
2,300.0	2,225.1	2,208.8	2,208.8	10.6	1.0	-22.97	-1,935.2	-5,535.9	5,402.0	5,393.9	8.11	665.709	
2,400.0	2,321.2	2,294.3	2,294.2	11.2	1.0	-25.38	-1,935.5	-5,536.2	5,376.9	5,368.4	8.50	632.391	
2,500.0	2,417.0	2,374.1	2,374.1	11.7	1.0	-27.74	-1,935.7	-5,536.7	5,352.0	5,343.1	8.89	601.972	
2,537.0	2,452.5	2,405.2	2,405.2	11.9	1.0	-28.60	-1,936.0	-5,536.9	5,342.9	5,333.9	9.04	591.290	
2,600.0	2,512.8	2,479.7	2,479.6	12.3	1.0	-31.67	-1,936.5	-5,537.4	5,327.4	5,318.1	9.34	570.235	
2,700.0	2,608.2	2,575.3	2,575.2	12.9	1.1	-36.29	-1,936.9	-5,537.9	5,303.0	5,293.2	9.83	539.579	
2,800.0	2,703.3	2,652.9	2,652.9	13.5	1.1	-40.57	-1,937.0	-5,538.5	5,279.1	5,268.8	10.31	511.902	
2,824.0	2,726.1	2,670.3	2,670.3	13.7	1.1	-41.56	-1,937.1	-5,538.7	5,273.5	5,263.1	10.43	505.598	
2,900.0	2,798.2	2,741.0	2,740.9	14.1	1.1	-39.16	-1,937.4	-5,539.5	5,255.9	5,245.1	10.76	488.660	
3,000.0	2,893.6	2,854.3	2,854.3	14.7	1.1	-35.76	-1,937.6	-5,540.6	5,232.6	5,221.4	11.19	467.484	
3,100.0	2,989.4	2,941.6	2,941.5	15.3	1.1	-31.94	-1,937.5	-5,541.4	5,209.3	5,197.7	11.62	448.473	
3,112.0	3,000.9	2,950.1	2,950.1	15.4	1.1	-31.45	-1,937.5	-5,541.5	5,206.5	5,194.9	11.67	446.331	
3,200.0	3,085.5	3,023.8	3,023.8	15.9	1.1	-30.58	-1,937.7	-5,542.4	5,186.6	5,174.6	11.99	432.477	
3,300.0	3,181.9	3,152.4	3,152.4	16.4	1.2	-29.60	-1,937.7	-5,543.8	5,164.1	5,151.7	12.39	416.885	
3,400.0	3,278.4	3,255.6	3,255.5	16.9	1.2	-28.50	-1,937.8	-5,544.3	5,141.6	5,128.8	12.77	402.540	
3,500.0	3,374.7	3,373.0	3,372.9	17.5	1.2	-28.97	-1,937.8	-5,544.9	5,118.2	5,105.0	13.25	386.193	
3,600.0	3,470.3	3,459.4	3,459.3	18.1	1.2	-29.40	-1,937.7	-5,545.0	5,092.4	5,078.7	13.73	371.003	
3,687.0	3,552.8	3,540.2	3,540.1	18.6	1.2	-29.81	-1,937.7	-5,545.4	5,068.5	5,054.3	14.15	358.189	
3,700.0	3,565.1	3,556.8	3,556.7	18.7	1.2	-29.59	-1,937.7	-5,545.4	5,064.8	5,050.6	14.21	356.399	
3,800.0	3,659.5	3,663.1	3,663.0	19.4	1.3	-27.88	-1,937.6	-5,545.5	5,035.6	5,021.0	14.67	343.277	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,750.0	3,749.9	20.0	1.3	-26.15	-1,937.5	-5,545.6	5,005.8	4,990.7	15.11	331.196	
3,974.0	3,823.6	3,812.1	3,812.0	20.5	1.3	-24.89	-1,937.4	-5,545.8	4,983.4	4,968.0	15.44	322.760	
4,000.0	3,848.1	3,836.9	3,836.9	20.7	1.3	-25.10	-1,937.4	-5,545.9	4,975.6	4,960.1	15.54	320.176	
4,100.0	3,942.9	3,932.8	3,932.8	21.3	1.3	-26.01	-1,937.4	-5,546.2	4,946.9	4,931.0	15.92	310.689	
4,200.0	4,038.5	4,033.9	4,033.8	21.9	1.4	-27.06	-1,937.1	-5,546.7	4,920.5	4,904.2	16.30	301.837	
4,263.0	4,099.0	4,105.0	4,104.9	22.3	1.4	-27.83	-1,936.8	-5,546.9	4,905.0	4,888.5	16.54	296.520	
4,300.0	4,134.7	4,146.1	4,146.0	22.5	1.4	-28.97	-1,936.6	-5,546.9	4,896.2	4,879.5	16.69	293.334	
4,400.0	4,231.2	4,244.6	4,244.5	23.0	1.4	-32.17	-1,936.4	-5,546.7	4,873.3	4,856.2	17.09	285.180	
4,500.0	4,328.0	4,336.3	4,336.3	23.5	1.4	-35.59	-1,936.5	-5,546.6	4,852.1	4,834.6	17.48	277.582	
4,549.0	4,375.5	4,385.8	4,385.7	23.8	1.4	-37.35	-1,936.5	-5,546.5	4,842.3	4,824.6	17.67	274.000	
4,600.0	4,425.0	4,462.5	4,462.4	24.0	1.4	-37.68	-1,936.7	-5,546.1	4,832.1	4,814.2	17.91	269.799	
4,700.0	4,521.9	4,559.1	4,558.9	24.5	1.4	-38.23	-1,937.9	-5,544.7	4,811.8	4,793.4	18.35	262.182	
4,800.0	4,618.8	4,635.7	4,635.5	25.0	1.4	-38.75	-1,938.9	-5,543.8	4,791.8	4,773.0	18.78	255.109	
4,837.0	4,654.7	4,664.3	4,664.2	25.2	1.4	-38.94	-1,939.3	-5,543.5	4,784.6	4,765.6	18.94	252.582	
4,900.0	4,715.7	4,700.0	4,699.9	25.5	1.4	-39.50	-1,939.6	-5,543.3	4,772.3	4,753.0	19.23	248.119	
5,000.0	4,812.4	4,775.2	4,775.0	26.0	1.4	-40.39	-1,940.3	-5,543.5	4,752.9	4,733.2	19.71	241.195	
5,100.0	4,908.9	4,855.1	4,855.0	26.6	1.4	-41.25	-1,940.7	-5,544.3	4,733.8	4,713.6	20.19	234.509	
5,125.0	4,932.9	4,877.5	4,877.4	26.7	1.4	-41.46	-1,940.7	-5,544.5	4,729.0	4,708.7	20.31	232.854	
5,200.0	5,005.4	4,960.9	4,960.8	27.0	1.4	-38.82	-1,940.8	-5,545.6	4,714.7	4,694.2	20.57	229.215	
5,300.0	5,102.4	5,064.9	5,064.7	27.5	1.5	-34.66	-1,940.9	-5,546.6	4,696.1	4,675.2	20.91	224.606	
5,400.0	5,199.9	5,154.4	5,154.3	28.0	1.5	-29.64	-1,941.1	-5,547.5	4,678.3	4,657.1	21.23	220.321	
5,412.0	5,211.7	5,164.8	5,164.6	28.1	1.5	-28.97	-1,941.1	-5,547.6	4,676.2	4,655.0	21.27	219.825	
5,500.0	5,297.9	5,284.7	5,284.6	28.4	1.5	-26.33	-1,941.0	-5,548.8	4,661.7	4,640.2	21.50	216.801	
5,581.0	5,377.7	5,369.5	5,369.4	28.7	1.5	-23.27	-1,940.7	-5,549.2	4,648.9	4,627.2	21.68	214.455	
5,600.0	5,396.4	5,387.8	5,387.6	28.8	1.5	-24.45	-1,940.7	-5,549.3	4,646.1	4,624.4	21.72	213.942	
5,700.0	5,495.3	5,469.1	5,468.9	29.1	1.6	-32.30	-1,940.7	-5,549.7	4,633.6	4,611.7	21.90	211.550	
5,800.0	5,594.6	5,560.8	5,560.7	29.4	1.6	-44.05	-1,940.9	-5,550.4	4,624.9	4,602.8	22.08	209.484	
5,900.0	5,694.1	5,647.2	5,647.0	29.6	1.6	-61.53	-1,941.1	-5,551.1	4,619.7	4,597.5	22.24	207.753	
5,917.0	5,711.1	5,660.4	5,660.2	29.7	1.6	-65.12	-1,941.2	-5,551.3	4,619.2	4,597.0	22.26	207.494	
6,000.0	5,793.7	5,726.4	5,726.2	29.8	1.6	-65.18	-1,941.6	-5,552.1	4,617.3	4,594.8	22.48	205.401	
6,067.0	5,860.5	5,781.7	5,781.5	30.0	1.6	-65.23	-1,941.7	-5,553.0	4,616.0	4,593.3	22.65	203.756	
6,100.0	5,893.4	5,800.0	5,799.8	30.0	1.6	-65.24	-1,941.7	-5,553.4	4,615.5	4,592.7	22.72	203.182	
6,167.1	5,960.4	5,862.5	5,862.3	30.1	1.6	-65.27	-1,941.7	-5,554.9	4,615.0	4,592.2	22.83	202.115 CC	
6,200.0	5,993.2	5,888.8	5,888.6	30.2	1.6	-65.28	-1,941.7	-5,555.6	4,615.1	4,592.2	22.89	201.614	
6,300.0	6,093.2	6,005.0	6,004.7	30.3	1.7	-65.32	-1,941.5	-5,558.6	4,616.4	4,593.3	23.03	200.407	
6,318.8	6,111.9	6,034.3	6,034.0	30.3	1.7	-117.28	-1,941.3	-5,559.3	4,616.7	4,588.3	28.37	162.708 ES	
6,400.0	6,193.2	6,160.5	6,160.2	30.4	1.7	-117.26	-1,940.6	-5,561.5	4,617.7	4,589.2	28.49	162.099	
6,444.4	6,237.6	6,223.4	6,223.1	30.4	1.7	-117.25	-1,940.3	-5,562.1	4,618.0	4,589.4	28.55	161.761	
6,450.0	6,243.2	6,230.3	6,230.0	30.4	1.7	152.75	-1,940.2	-5,562.1	4,618.0	4,594.8	23.23	198.829	
6,475.0	6,268.1	6,261.2	6,260.9	30.4	1.7	152.71	-1,940.1	-5,562.3	4,619.0	4,595.8	23.18	199.229	
6,500.0	6,293.0	6,292.0	6,291.7	30.4	1.8	152.61	-1,940.0	-5,562.4	4,621.0	4,597.8	23.17	199.439	
6,525.0	6,317.8	6,320.6	6,320.3	30.4	1.8	152.46	-1,939.9	-5,562.5	4,624.2	4,601.0	23.18	199.505	
6,550.0	6,342.3	6,348.2	6,347.9	30.4	1.8	152.25	-1,939.9	-5,562.5	4,628.5	4,605.3	23.20	199.468	
6,575.0	6,366.5	6,375.5	6,375.2	30.3	1.8	151.97	-1,939.8	-5,562.5	4,633.9	4,610.7	23.24	199.365	
6,600.0	6,390.4	6,402.0	6,401.8	30.2	1.8	151.64	-1,939.7	-5,562.5	4,640.4	4,617.2	23.29	199.225	
6,625.0	6,413.9	6,424.9	6,424.6	30.2	1.8	151.23	-1,939.7	-5,562.5	4,648.1	4,624.7	23.35	199.060	
6,650.0	6,436.9	6,447.2	6,446.9	30.1	1.8	150.74	-1,939.6	-5,562.5	4,656.8	4,633.4	23.42	198.861	
6,675.0	6,459.3	6,469.0	6,468.7	30.0	1.8	150.18	-1,939.6	-5,562.5	4,666.6	4,643.1	23.50	198.612	
6,700.0	6,481.1	6,490.2	6,490.0	29.9	1.8	149.52	-1,939.6	-5,562.5	4,677.5	4,653.9	23.59	198.286	
6,725.0	6,502.3	6,511.8	6,511.5	29.7	1.8	148.77	-1,939.6	-5,562.4	4,689.3	4,665.6	23.70	197.846	
6,750.0	6,522.7	6,533.6	6,533.3	29.6	1.8	147.93	-1,939.6	-5,562.4	4,702.1	4,678.3	23.84	197.254	
6,775.0	6,542.4	6,554.5	6,554.2	29.5	1.8	146.96	-1,939.6	-5,562.4	4,715.9	4,691.9	24.00	196.466	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,574.6	6,574.3	29.4	1.8	145.86	-1,939.6	-5,562.3	4,730.6	4,706.4	24.21	195.438	
6,825.0	6,579.1	6,593.7	6,593.4	29.3	1.8	144.62	-1,939.6	-5,562.3	4,746.1	4,721.7	24.45	194.131	
6,850.0	6,596.1	6,610.8	6,610.5	29.1	1.8	143.21	-1,939.6	-5,562.2	4,762.5	4,737.8	24.74	192.505	
6,875.0	6,612.1	6,626.5	6,626.2	29.0	1.8	141.60	-1,939.6	-5,562.2	4,779.7	4,754.6	25.08	190.542	
6,900.0	6,627.1	6,641.1	6,640.9	28.9	1.8	139.77	-1,939.6	-5,562.1	4,797.6	4,772.1	25.49	188.246	
6,925.0	6,641.0	6,654.7	6,654.5	28.8	1.8	137.69	-1,939.6	-5,562.1	4,816.2	4,790.3	25.94	185.637	
6,950.0	6,653.8	6,667.3	6,667.0	28.7	1.8	135.33	-1,939.6	-5,562.1	4,835.5	4,809.1	26.46	182.762	
6,975.0	6,665.5	6,678.7	6,678.4	28.7	1.8	132.64	-1,939.6	-5,562.1	4,855.4	4,828.4	27.02	179.697	
7,000.0	6,676.0	6,688.9	6,688.6	28.6	1.8	129.59	-1,939.6	-5,562.1	4,875.8	4,848.2	27.62	176.552	
7,025.0	6,685.3	6,698.0	6,697.7	28.6	1.8	126.12	-1,939.6	-5,562.0	4,896.7	4,868.5	28.23	173.469	
7,050.0	6,693.4	6,706.8	6,706.5	28.5	1.8	122.21	-1,939.6	-5,562.0	4,918.0	4,889.2	28.82	170.631	
7,075.0	6,700.2	6,714.6	6,714.3	28.5	1.8	117.81	-1,939.6	-5,562.0	4,939.8	4,910.4	29.36	168.235	
7,100.0	6,705.8	6,720.9	6,720.6	28.5	1.8	112.89	-1,939.6	-5,562.0	4,961.8	4,932.0	29.80	166.497	
7,125.0	6,710.0	6,725.8	6,725.5	28.5	1.8	107.47	-1,939.6	-5,562.0	4,984.1	4,954.0	30.09	165.617	
7,150.0	6,713.0	6,729.2	6,728.9	28.6	1.8	101.59	-1,939.6	-5,562.0	5,006.5	4,976.3	30.22	165.681	
7,175.0	6,714.7	6,731.1	6,730.8	28.6	1.8	95.35	-1,939.6	-5,562.0	5,029.2	4,999.0	30.21	166.459	
7,198.8	6,715.0	6,731.6	6,731.3	28.6	1.8	89.18	-1,939.6	-5,562.0	5,050.8	5,020.6	30.20	167.242	
7,200.0	6,715.0	6,731.6	6,731.3	28.6	1.8	89.18	-1,939.6	-5,562.0	5,051.9	5,021.6	30.20	167.260	
7,300.0	6,714.1	6,730.8	6,730.5	29.0	1.8	89.16	-1,939.6	-5,562.0	5,142.8	5,112.2	30.61	168.039	
7,400.0	6,713.2	6,730.0	6,729.7	29.7	1.8	89.14	-1,939.6	-5,562.0	5,234.2	5,202.9	31.27	167.390	
7,500.0	6,712.3	6,729.2	6,728.9	30.6	1.8	89.12	-1,939.6	-5,562.0	5,325.8	5,293.6	32.18	165.507	
7,600.0	6,711.3	6,728.3	6,728.0	31.7	1.8	89.09	-1,939.6	-5,562.0	5,417.7	5,384.4	33.31	162.635	
7,700.0	6,710.4	6,727.5	6,727.2	33.0	1.8	89.07	-1,939.6	-5,562.0	5,509.9	5,475.3	34.65	159.031	
7,800.0	6,709.5	6,726.7	6,726.4	34.5	1.8	89.05	-1,939.6	-5,562.0	5,602.4	5,566.3	36.16	154.936	
7,900.0	6,708.5	6,725.8	6,725.5	36.2	1.8	89.02	-1,939.6	-5,562.0	5,695.2	5,657.3	37.83	150.556	
8,000.0	6,707.6	6,725.0	6,724.7	38.0	1.8	89.00	-1,939.6	-5,562.0	5,788.1	5,748.5	39.63	146.053	
8,100.0	6,706.7	6,724.1	6,723.8	39.9	1.8	88.98	-1,939.6	-5,562.0	5,881.3	5,839.8	41.55	141.549	
8,200.0	6,705.8	6,723.3	6,723.0	41.9	1.8	88.95	-1,939.6	-5,562.0	5,974.8	5,931.2	43.57	137.130	
8,300.0	6,704.8	6,722.4	6,722.1	44.0	1.8	88.93	-1,939.6	-5,562.0	6,068.4	6,022.7	45.68	132.855	
8,400.0	6,703.9	6,721.6	6,721.3	46.2	1.8	88.91	-1,939.6	-5,562.0	6,162.2	6,114.4	47.86	128.760	
8,500.0	6,703.0	6,720.7	6,720.4	48.5	1.8	88.88	-1,939.6	-5,562.0	6,256.2	6,206.1	50.10	124.863	
8,600.0	6,702.1	6,719.8	6,719.5	50.8	1.8	88.86	-1,939.6	-5,562.0	6,350.5	6,298.0	52.41	121.175	
8,700.0	6,701.1	6,718.9	6,718.7	53.1	1.8	88.83	-1,939.6	-5,562.0	6,444.8	6,390.1	54.76	117.695	
8,800.0	6,700.2	6,718.1	6,717.8	55.5	1.8	88.81	-1,939.6	-5,562.0	6,539.4	6,482.2	57.15	114.420	
8,900.0	6,699.3	6,717.2	6,716.9	57.9	1.8	88.79	-1,939.6	-5,562.0	6,634.1	6,574.5	59.58	111.341	
9,000.0	6,698.3	6,716.3	6,716.0	60.4	1.8	88.76	-1,939.6	-5,562.0	6,729.0	6,666.9	62.05	108.448	
9,100.0	6,697.4	6,715.4	6,715.1	62.9	1.8	88.74	-1,939.6	-5,562.0	6,824.0	6,759.4	64.54	105.731	
9,200.0	6,696.5	6,714.5	6,714.2	65.4	1.8	88.71	-1,939.6	-5,562.0	6,919.1	6,852.1	67.06	103.179	
9,300.0	6,695.5	6,713.6	6,713.3	68.0	1.8	88.69	-1,939.6	-5,562.0	7,014.4	6,944.8	69.60	100.781	
9,400.0	6,694.6	6,712.7	6,712.4	70.5	1.8	88.66	-1,939.6	-5,562.0	7,109.8	7,037.6	72.16	98.525	
9,500.0	6,693.7	6,711.7	6,711.4	73.1	1.8	88.64	-1,939.6	-5,562.0	7,205.3	7,130.6	74.74	96.403	
9,600.0	6,692.8	6,710.8	6,710.5	75.7	1.8	88.61	-1,939.6	-5,562.0	7,301.0	7,223.7	77.34	94.404	
9,700.0	6,691.8	6,709.9	6,709.6	78.3	1.8	88.58	-1,939.6	-5,562.0	7,396.8	7,316.8	79.95	92.519	
9,800.0	6,690.9	6,708.9	6,708.6	80.9	1.8	88.56	-1,939.6	-5,562.0	7,492.7	7,410.1	82.57	90.741	
9,900.0	6,690.0	6,708.0	6,707.7	83.6	1.8	88.53	-1,939.6	-5,562.0	7,588.6	7,503.4	85.21	89.060	
10,000.0	6,689.0	6,707.1	6,706.8	86.2	1.8	88.51	-1,939.6	-5,562.0	7,684.7	7,596.9	87.85	87.471	
10,100.0	6,688.1	6,706.1	6,705.8	88.9	1.8	88.48	-1,939.6	-5,562.0	7,780.9	7,690.4	90.51	85.966	
10,200.0	6,687.2	6,705.1	6,704.8	91.6	1.8	88.45	-1,939.6	-5,562.0	7,877.2	7,784.0	93.18	84.540	
10,300.0	6,686.2	6,704.2	6,703.9	94.2	1.8	88.43	-1,939.6	-5,562.0	7,973.6	7,877.7	95.85	83.188	
10,400.0	6,685.3	6,703.2	6,702.9	96.9	1.8	88.40	-1,939.6	-5,562.0	8,070.0	7,971.5	98.53	81.903	
10,500.0	6,684.4	6,702.2	6,701.9	99.6	1.8	88.37	-1,939.6	-5,562.0	8,166.6	8,065.4	101.22	80.682	
10,600.0	6,683.4	6,701.2	6,701.0	102.3	1.8	88.35	-1,939.6	-5,562.0	8,263.2	8,159.3	103.91	79.519	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,700.3	6,700.0	105.0	1.8	88.32	-1,939.6	-5,562.0	8,359.9	8,253.3	106.61	78.412	
10,800.0	6,681.6	6,700.0	6,699.7	107.7	1.8	88.31	-1,939.6	-5,562.0	8,456.7	8,347.4	109.32	77.356	
10,900.0	6,680.6	6,700.0	6,699.7	110.4	1.8	88.31	-1,939.6	-5,562.0	8,553.6	8,441.5	112.03	76.348	
11,000.0	6,679.7	6,700.0	6,699.7	113.1	1.8	88.31	-1,939.6	-5,562.0	8,650.5	8,535.8	114.75	75.385	
11,100.0	6,678.8	6,700.0	6,699.7	115.9	1.8	88.31	-1,939.6	-5,562.0	8,747.5	8,630.0	117.47	74.464	
11,200.0	6,677.8	6,700.0	6,699.7	118.6	1.8	88.31	-1,939.6	-5,562.0	8,844.6	8,724.4	120.20	73.583	
11,300.0	6,676.9	6,700.0	6,699.7	121.3	1.8	88.31	-1,939.6	-5,562.0	8,941.7	8,818.8	122.93	72.739	
11,400.0	6,676.0	6,695.1	6,694.8	124.1	1.8	88.17	-1,939.6	-5,562.0	9,038.9	8,913.2	125.65	71.936	
11,500.0	6,675.0	6,694.4	6,694.1	126.8	1.8	88.15	-1,939.6	-5,562.0	9,136.1	9,007.8	128.39	71.161	
11,600.0	6,674.1	6,693.6	6,693.4	129.5	1.8	88.13	-1,939.6	-5,562.0	9,233.5	9,102.3	131.13	70.417	
11,700.0	6,673.1	6,692.9	6,692.6	132.3	1.8	88.11	-1,939.6	-5,562.0	9,330.8	9,197.0	133.87	69.703	
11,800.0	6,672.2	6,692.2	6,691.9	135.0	1.8	88.09	-1,939.6	-5,562.0	9,428.3	9,291.6	136.61	69.016	
11,900.0	6,671.3	6,691.5	6,691.2	137.8	1.8	88.07	-1,939.6	-5,562.0	9,525.7	9,386.4	139.36	68.356	
12,000.0	6,670.3	6,690.8	6,690.5	140.5	1.8	88.05	-1,939.6	-5,562.1	9,623.3	9,481.2	142.10	67.720	
12,036.2	6,670.0	6,690.5	6,690.2	141.5	1.8	88.05	-1,939.6	-5,562.1	9,658.6	9,515.5	143.10	67.495	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	4.0	4.0	0.0	0.0	-94.73	-443.9	-5,367.6	5,385.9				
100.0	100.0	104.0	104.0	0.1	1.2	-105.33	-443.9	-5,367.6	5,385.9	5,384.6	1.33	4,035.187	
200.0	200.0	204.0	204.0	0.2	3.5	-105.33	-443.9	-5,367.6	5,386.0	5,382.3	3.74	1,440.216	
261.0	261.0	265.0	265.0	0.3	4.8	-105.33	-443.9	-5,367.6	5,386.1	5,381.0	5.08	1,060.975	
300.0	300.0	304.0	304.0	0.4	5.6	-27.13	-443.9	-5,367.6	5,385.9	5,379.9	5.97	901.694	
400.0	399.9	403.9	403.9	0.6	7.6	-12.61	-443.9	-5,367.6	5,382.6	5,374.4	8.23	653.872	
500.0	499.7	503.7	503.7	0.8	9.7	-10.26	-443.9	-5,367.6	5,375.7	5,365.2	10.45	514.592	
538.0	537.5	541.5	541.5	0.9	10.4	-9.82	-443.9	-5,367.6	5,372.0	5,360.7	11.27	476.505	
600.0	599.1	603.1	603.1	1.1	11.7	-10.63	-443.9	-5,367.6	5,364.8	5,352.2	12.63	424.702	
700.0	697.9	701.9	701.9	1.5	13.7	-11.47	-443.9	-5,367.6	5,349.9	5,335.1	14.77	362.225	
800.0	796.0	800.0	800.0	1.8	15.7	-12.07	-443.9	-5,367.6	5,330.8	5,314.0	16.83	316.735	
818.0	813.5	817.5	817.5	1.9	16.0	-12.16	-443.9	-5,367.6	5,326.9	5,309.8	17.19	309.845	
900.0	893.1	897.1	897.1	2.3	17.6	-11.44	-443.9	-5,367.6	5,307.6	5,288.8	18.85	281.598	
1,000.0	989.2	993.2	993.2	2.9	19.5	-10.85	-443.9	-5,367.6	5,280.2	5,259.5	20.77	254.188	
1,100.0	1,083.9	1,087.9	1,087.9	3.5	21.5	-10.45	-443.9	-5,367.6	5,248.8	5,226.2	22.58	232.442	
1,104.0	1,087.6	1,091.6	1,091.6	3.5	21.5	-10.44	-443.9	-5,367.6	5,247.4	5,224.8	22.65	231.667	
1,200.0	1,177.9	1,181.9	1,181.9	4.1	23.4	-11.26	-443.9	-5,367.6	5,215.2	5,190.5	24.72	210.975	
1,300.0	1,272.0	1,276.0	1,276.0	4.8	25.2	-12.14	-443.9	-5,367.6	5,182.1	5,155.2	26.83	193.125	
1,391.0	1,357.8	1,361.8	1,361.8	5.3	27.0	-12.95	-443.9	-5,367.6	5,152.2	5,123.4	28.78	178.998	
1,400.0	1,366.3	1,370.3	1,370.3	5.4	27.1	-12.74	-443.9	-5,367.6	5,149.3	5,120.3	28.99	177.599	
1,458.0	1,421.2	1,425.2	1,425.2	5.7	28.2	-11.34	-443.9	-5,367.6	5,131.0	5,100.6	30.36	169.005	
1,500.0	1,461.0	1,465.0	1,465.0	6.0	29.0	-11.58	-443.9	-5,367.6	5,118.0	5,086.8	31.26	163.712	
1,600.0	1,556.1	1,560.1	1,560.1	6.6	31.0	-12.17	-443.9	-5,367.6	5,087.5	5,054.0	33.42	152.232	
1,676.0	1,628.3	1,632.3	1,632.3	7.0	32.4	-12.63	-443.9	-5,367.6	5,064.4	5,029.3	35.06	144.431	
1,700.0	1,651.1	1,655.1	1,655.1	7.2	32.9	-12.06	-443.9	-5,367.6	5,057.2	5,021.6	35.58	142.132	
1,800.0	1,746.4	1,750.4	1,750.4	7.7	34.8	-9.65	-443.9	-5,367.6	5,027.2	4,989.4	37.74	133.218	
1,900.0	1,841.8	1,845.8	1,845.8	8.3	36.7	-7.15	-443.9	-5,367.6	4,997.5	4,957.6	39.90	125.253	
1,963.0	1,902.0	1,906.0	1,906.0	8.7	37.9	-5.52	-443.9	-5,367.6	4,979.0	4,937.7	41.27	120.657	
2,000.0	1,937.4	1,941.4	1,941.4	8.9	38.6	-5.52	-443.9	-5,367.6	4,968.2	4,926.1	42.08	118.065	
2,100.0	2,033.1	2,037.1	2,037.1	9.5	40.6	-5.50	-443.9	-5,367.6	4,939.5	4,895.2	44.29	111.530	
2,200.0	2,129.0	2,133.0	2,133.0	10.0	42.5	-5.48	-443.9	-5,367.6	4,911.4	4,864.9	46.51	105.607	
2,250.0	2,177.1	2,181.1	2,181.1	10.3	43.5	-5.48	-443.9	-5,367.6	4,897.6	4,850.0	47.62	102.850	
2,300.0	2,225.1	2,229.1	2,229.1	10.6	44.4	-6.68	-443.9	-5,367.6	4,883.8	4,835.2	48.69	100.314	
2,400.0	2,321.2	2,325.2	2,325.2	11.2	46.4	-9.04	-443.9	-5,367.6	4,856.2	4,805.3	50.82	95.559	
2,500.0	2,417.0	2,421.0	2,421.0	11.7	48.3	-11.36	-443.9	-5,367.6	4,828.2	4,775.3	52.95	91.185	
2,537.0	2,452.5	2,456.5	2,456.5	11.9	49.0	-12.21	-443.9	-5,367.6	4,817.8	4,764.1	53.74	89.655	
2,600.0	2,512.8	2,516.8	2,516.8	12.3	50.2	-15.24	-443.9	-5,367.6	4,800.0	4,744.9	55.10	87.120	
2,700.0	2,608.2	2,612.2	2,612.2	12.9	52.1	-19.85	-443.9	-5,367.6	4,771.5	4,714.2	57.26	83.331	
2,800.0	2,703.3	2,707.3	2,707.3	13.5	54.0	-24.19	-443.9	-5,367.6	4,742.6	4,683.1	59.43	79.802	
2,824.0	2,726.1	2,730.1	2,730.1	13.7	54.5	-25.19	-443.9	-5,367.6	4,735.6	4,675.6	59.95	78.991	
2,900.0	2,798.2	2,802.2	2,802.2	14.1	56.0	-22.71	-443.9	-5,367.6	4,713.6	4,652.0	61.67	76.438	
3,000.0	2,893.6	2,897.6	2,897.6	14.7	57.9	-19.15	-443.9	-5,367.6	4,685.4	4,621.5	63.94	73.283	
3,100.0	2,989.4	2,993.4	2,993.4	15.3	59.8	-15.23	-443.9	-5,367.6	4,657.9	4,591.7	66.22	70.341	
3,112.0	3,000.9	3,004.9	3,004.9	15.4	60.0	-14.74	-443.9	-5,367.6	4,654.7	4,588.2	66.49	70.001	
3,200.0	3,085.5	3,089.5	3,089.5	15.9	61.7	-13.83	-443.9	-5,367.6	4,631.1	4,562.6	68.49	67.621	
3,300.0	3,181.9	3,185.9	3,185.9	16.4	63.7	-12.74	-443.9	-5,367.6	4,604.9	4,534.2	70.76	65.082	
3,400.0	3,278.4	3,282.4	3,282.4	16.9	65.6	-11.57	-443.9	-5,367.6	4,579.4	4,506.4	73.03	62.702	
3,500.0	3,374.7	3,378.7	3,378.7	17.5	67.5	-11.85	-443.9	-5,367.6	4,553.0	4,478.2	74.79	60.875	
3,600.0	3,470.3	3,474.3	3,474.3	18.1	69.5	-12.12	-443.9	-5,367.6	4,524.2	4,447.7	76.47	59.163	
3,687.0	3,552.8	3,556.8	3,556.8	18.6	71.1	-12.36	-443.9	-5,367.6	4,497.2	4,419.3	77.86	57.759	
3,700.0	3,565.1	3,569.1	3,569.1	18.7	71.4	-12.12	-443.9	-5,367.6	4,493.0	4,414.9	78.12	57.513	
3,800.0	3,659.5	3,663.5	3,663.5	19.4	73.3	-10.23	-443.9	-5,367.6	4,460.7	4,380.6	80.12	55.678	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,757.9	3,757.9	20.0	75.2	-8.37	-443.9	-5,367.6	4,427.9	4,345.8	82.10	53.933	
3,974.0	3,823.6	3,827.6	3,827.6	20.5	76.6	-7.00	-443.9	-5,367.6	4,403.4	4,319.8	83.56	52.697	
4,000.0	3,848.1	3,852.1	3,852.1	20.7	77.1	-7.22	-443.9	-5,367.6	4,394.8	4,310.5	84.27	52.149	
4,100.0	3,942.9	3,946.9	3,946.9	21.3	79.0	-8.16	-443.9	-5,367.6	4,363.2	4,276.2	87.02	50.141	
4,200.0	4,038.5	4,042.5	4,042.5	21.9	80.9	-9.24	-443.9	-5,367.6	4,334.1	4,244.3	89.76	48.287	
4,263.0	4,099.0	4,103.0	4,103.0	22.3	82.1	-10.02	-443.9	-5,367.6	4,316.9	4,225.4	91.47	47.193	
4,300.0	4,134.7	4,138.7	4,138.7	22.5	82.8	-11.14	-443.9	-5,367.6	4,307.2	4,214.8	92.39	46.622	
4,400.0	4,231.2	4,235.2	4,235.2	23.0	84.8	-14.34	-443.9	-5,367.6	4,281.7	4,186.8	94.86	45.139	
4,500.0	4,328.0	4,332.0	4,332.0	23.5	86.7	-17.77	-443.9	-5,367.6	4,257.4	4,160.1	97.33	43.741	
4,549.0	4,375.5	4,379.5	4,379.5	23.8	87.7	-19.54	-443.9	-5,367.6	4,246.0	4,147.5	98.55	43.086	
4,600.0	4,425.0	4,429.0	4,429.0	24.0	88.7	-19.78	-443.9	-5,367.6	4,234.3	4,134.6	99.68	42.480	
4,700.0	4,521.9	4,525.9	4,525.9	24.5	90.6	-20.26	-443.9	-5,367.6	4,211.2	4,109.3	101.89	41.331	
4,800.0	4,618.8	4,622.8	4,622.8	25.0	92.6	-20.73	-443.9	-5,367.6	4,188.0	4,083.9	104.10	40.229	
4,837.0	4,654.7	4,658.7	4,658.7	25.2	93.3	-20.91	-443.9	-5,367.6	4,179.5	4,074.6	104.92	39.833	
4,900.0	4,715.7	4,719.7	4,719.7	25.5	94.5	-21.47	-443.9	-5,367.6	4,164.8	4,058.5	106.26	39.194	
5,000.0	4,812.4	4,816.4	4,816.4	26.0	96.5	-22.33	-443.9	-5,367.6	4,140.9	4,032.6	108.37	38.210	
5,100.0	4,908.9	4,912.9	4,912.9	26.6	98.4	-23.16	-443.9	-5,367.6	4,116.5	4,006.1	110.48	37.261	
5,125.0	4,932.9	4,936.9	4,936.9	26.7	98.9	-23.36	-443.9	-5,367.6	4,110.4	3,999.4	111.00	37.029	
5,200.0	5,005.4	5,009.4	5,009.4	27.0	100.3	-20.63	-443.9	-5,367.6	4,092.2	3,979.3	112.88	36.253	
5,300.0	5,102.4	5,106.4	5,106.4	27.5	102.3	-16.37	-443.9	-5,367.6	4,069.2	3,953.9	115.38	35.267	
5,400.0	5,199.9	5,203.9	5,203.9	28.0	104.3	-11.28	-443.9	-5,367.6	4,047.8	3,929.9	117.89	34.336	
5,412.0	5,211.7	5,215.7	5,215.7	28.1	104.5	-10.60	-443.9	-5,367.6	4,045.4	3,927.2	118.19	34.228	
5,500.0	5,297.9	5,301.9	5,301.9	28.4	106.2	-7.91	-443.9	-5,367.6	4,028.3	3,907.8	120.49	33.431	
5,581.0	5,377.7	5,381.7	5,381.7	28.7	107.8	-4.84	-443.9	-5,367.6	4,014.1	3,891.5	122.58	32.746	
5,600.0	5,396.4	5,400.4	5,400.4	28.8	108.2	-6.03	-443.9	-5,367.6	4,011.0	3,887.9	123.10	32.583	
5,700.0	5,495.3	5,499.3	5,499.3	29.1	110.2	-13.94	-443.9	-5,367.6	3,996.5	3,870.8	125.77	31.776	
5,800.0	5,594.6	5,598.6	5,598.6	29.4	112.2	-25.74	-443.9	-5,367.6	3,985.2	3,856.9	128.34	31.053	
5,900.0	5,694.1	5,698.1	5,698.1	29.6	114.2	-43.27	-443.9	-5,367.6	3,977.1	3,846.3	130.78	30.410	
5,917.0	5,711.1	5,715.1	5,715.1	29.7	114.5	-46.88	-443.9	-5,367.6	3,976.0	3,844.8	131.19	30.308	
6,000.0	5,793.7	5,797.7	5,797.7	29.8	116.2	-46.95	-443.9	-5,367.6	3,971.0	3,838.0	133.04	29.848	
6,067.0	5,860.5	5,864.5	5,864.5	30.0	117.5	-47.01	-443.9	-5,367.6	3,967.0	3,832.5	134.54	29.487	
6,100.0	5,893.4	5,897.4	5,897.4	30.0	118.2	-47.02	-443.9	-5,367.6	3,965.2	3,829.9	135.29	29.308	
6,200.0	5,993.2	5,997.2	5,997.2	30.2	120.2	-47.02	-443.9	-5,367.6	3,961.2	3,823.6	137.53	28.802	
6,300.0	6,093.2	6,097.2	6,097.2	30.3	122.2	-47.02	-443.9	-5,367.6	3,959.5	3,819.8	139.68	28.347	
6,318.8	6,111.9	6,115.9	6,115.9	30.3	122.6	-98.98	-443.9	-5,367.6	3,959.5	3,807.4	152.12	26.028	CC
6,400.0	6,193.2	6,197.2	6,197.2	30.4	124.2	-98.98	-443.9	-5,367.6	3,959.5	3,805.7	153.83	25.740	
6,444.4	6,237.6	6,241.6	6,241.6	30.4	125.1	-98.98	-443.9	-5,367.6	3,959.5	3,804.7	154.76	25.584	ES, SF
6,450.0	6,243.2	6,247.2	6,247.2	30.4	125.2	171.02	-443.9	-5,367.6	3,959.5	3,816.7	142.86	27.717	
6,475.0	6,268.1	6,272.1	6,272.1	30.4	125.7	171.00	-443.9	-5,367.6	3,960.4	3,817.5	142.96	27.704	
6,500.0	6,293.0	6,297.0	6,297.0	30.4	126.2	170.97	-443.9	-5,367.6	3,962.7	3,820.0	142.68	27.773	
6,525.0	6,317.8	6,321.8	6,321.8	30.4	126.7	170.91	-443.9	-5,367.6	3,966.2	3,824.2	142.03	27.926	
6,550.0	6,342.3	6,346.3	6,346.3	30.4	127.2	170.83	-443.9	-5,367.6	3,971.0	3,830.0	140.99	28.165	
6,575.0	6,366.5	6,370.5	6,370.5	30.3	127.7	170.72	-443.9	-5,367.6	3,977.0	3,837.4	139.58	28.493	
6,600.0	6,390.4	6,394.4	6,394.4	30.2	128.2	170.59	-443.9	-5,367.6	3,984.3	3,846.5	137.80	28.914	
6,625.0	6,413.9	6,417.9	6,417.9	30.2	128.7	170.43	-443.9	-5,367.6	3,992.8	3,857.2	135.65	29.435	
6,650.0	6,436.9	6,440.9	6,440.9	30.1	129.1	170.24	-443.9	-5,367.6	4,002.5	3,869.4	133.14	30.062	
6,675.0	6,459.3	6,463.3	6,463.3	30.0	129.6	170.02	-443.9	-5,367.6	4,013.4	3,883.1	130.29	30.803	
6,700.0	6,481.1	6,485.1	6,485.1	29.9	130.0	169.76	-443.9	-5,367.6	4,025.5	3,898.3	127.12	31.667	
6,725.0	6,502.3	6,506.3	6,506.3	29.7	130.4	169.46	-443.9	-5,367.6	4,038.6	3,915.0	123.63	32.666	
6,750.0	6,522.7	6,526.7	6,526.7	29.6	130.9	169.11	-443.9	-5,367.6	4,052.8	3,933.0	119.86	33.812	
6,775.0	6,542.4	6,546.4	6,546.4	29.5	131.2	168.71	-443.9	-5,367.6	4,068.1	3,952.3	115.85	35.117	
6,800.0	6,561.2	6,565.2	6,565.2	29.4	131.6	168.24	-443.9	-5,367.6	4,084.4	3,972.8	111.62	36.593	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,583.1	6,583.1	29.3	132.0	167.69	-443.9	-5,367.6	4,101.6	3,994.4	107.23	38.252	
6,850.0	6,596.1	6,600.1	6,600.1	29.1	132.3	167.06	-443.9	-5,367.6	4,119.7	4,017.0	102.74	40.099	
6,875.0	6,612.1	6,616.1	6,616.1	29.0	132.7	166.31	-443.9	-5,367.6	4,138.7	4,040.4	98.24	42.127	
6,900.0	6,627.1	6,631.1	6,631.1	28.9	133.0	165.43	-443.9	-5,367.6	4,158.5	4,064.6	93.85	44.310	
6,925.0	6,641.0	6,645.0	6,645.0	28.8	133.2	164.38	-443.9	-5,367.6	4,179.0	4,089.3	89.71	46.582	
6,950.0	6,653.8	6,657.8	6,657.8	28.7	133.5	163.11	-443.9	-5,367.6	4,200.2	4,114.2	86.05	48.812	
6,975.0	6,665.5	6,669.5	6,669.5	28.7	133.7	161.55	-443.9	-5,367.6	4,222.1	4,138.9	83.16	50.771	
7,000.0	6,676.0	6,680.0	6,680.0	28.6	133.9	159.61	-443.9	-5,367.6	4,244.6	4,163.1	81.47	52.100	
7,025.0	6,685.3	6,689.3	6,689.3	28.6	134.1	157.16	-443.9	-5,367.6	4,267.5	4,185.9	81.56	52.322	
7,050.0	6,693.4	6,697.4	6,697.4	28.5	134.3	153.96	-443.9	-5,367.6	4,290.9	4,206.7	84.21	50.957	
7,075.0	6,700.2	6,704.2	6,704.2	28.5	134.4	149.68	-443.9	-5,367.6	4,314.7	4,224.4	90.34	47.759	
7,100.0	6,705.8	6,709.8	6,709.8	28.5	134.5	143.78	-443.9	-5,367.6	4,338.8	4,237.8	101.00	42.959	
7,125.0	6,710.0	6,714.0	6,714.0	28.5	134.6	135.36	-443.9	-5,367.6	4,363.2	4,246.2	116.99	37.297	
7,150.0	6,713.0	6,717.0	6,717.0	28.6	134.7	123.15	-443.9	-5,367.6	4,387.8	4,250.2	137.62	31.883	
7,175.0	6,714.7	6,718.7	6,718.7	28.6	134.7	106.04	-443.9	-5,367.6	4,412.5	4,255.4	157.12	28.084	
7,198.8	6,715.0	6,719.0	6,719.0	28.6	134.7	86.24	-443.9	-5,367.6	4,436.1	4,273.2	162.89	27.234	
7,200.0	6,715.0	6,719.0	6,719.0	28.6	134.7	86.24	-443.9	-5,367.6	4,437.2	4,274.3	162.89	27.241	
7,300.0	6,714.1	6,718.1	6,718.1	29.0	134.7	86.15	-443.9	-5,367.6	4,536.3	4,373.0	163.25	27.787	
7,400.0	6,713.2	6,717.2	6,717.2	29.7	134.7	86.06	-443.9	-5,367.6	4,635.4	4,471.5	163.88	28.285	
7,500.0	6,712.3	6,716.3	6,716.3	30.6	134.7	85.98	-443.9	-5,367.6	4,734.5	4,569.7	164.75	28.737	
7,600.0	6,711.3	6,715.3	6,715.3	31.7	134.6	85.89	-443.9	-5,367.6	4,833.6	4,667.8	165.84	29.146	
7,700.0	6,710.4	6,714.4	6,714.4	33.0	134.6	85.81	-443.9	-5,367.6	4,932.8	4,765.7	167.14	29.514	
7,800.0	6,709.5	6,713.5	6,713.5	34.5	134.6	85.72	-443.9	-5,367.6	5,032.1	4,863.4	168.61	29.845	
7,900.0	6,708.5	6,712.5	6,712.5	36.2	134.6	85.63	-443.9	-5,367.6	5,131.3	4,961.1	170.23	30.143	
8,000.0	6,707.6	6,711.6	6,711.6	38.0	134.6	85.55	-443.9	-5,367.6	5,230.6	5,058.6	171.99	30.411	
8,100.0	6,706.7	6,710.7	6,710.7	39.9	134.6	85.46	-443.9	-5,367.6	5,329.9	5,156.0	173.87	30.655	
8,200.0	6,705.8	6,709.8	6,709.8	41.9	134.5	85.37	-443.9	-5,367.6	5,429.2	5,253.4	175.84	30.875	
8,300.0	6,704.8	6,708.8	6,708.8	44.0	134.5	85.29	-443.9	-5,367.6	5,528.6	5,350.7	177.90	31.076	
8,400.0	6,703.9	6,707.9	6,707.9	46.2	134.5	85.20	-443.9	-5,367.6	5,628.0	5,447.9	180.04	31.260	
8,500.0	6,703.0	6,707.0	6,707.0	48.5	134.5	85.11	-443.9	-5,367.6	5,727.4	5,545.1	182.24	31.428	
8,600.0	6,702.1	6,706.1	6,706.1	50.8	134.5	85.03	-443.9	-5,367.6	5,826.8	5,642.3	184.49	31.583	
8,700.0	6,701.1	6,705.1	6,705.1	53.1	134.4	84.94	-443.9	-5,367.6	5,926.2	5,739.4	186.79	31.727	
8,800.0	6,700.2	6,704.2	6,704.2	55.5	134.4	84.85	-443.9	-5,367.6	6,025.7	5,836.6	189.13	31.860	
8,900.0	6,699.3	6,703.3	6,703.3	57.9	134.4	84.77	-443.9	-5,367.6	6,125.2	5,933.7	191.51	31.984	
9,000.0	6,698.3	6,702.3	6,702.3	60.4	134.4	84.68	-443.9	-5,367.6	6,224.7	6,030.7	193.92	32.099	
9,100.0	6,697.4	6,701.4	6,701.4	62.9	134.4	84.59	-443.9	-5,367.6	6,324.2	6,127.8	196.36	32.208	
9,200.0	6,696.5	6,700.5	6,700.5	65.4	134.3	84.50	-443.9	-5,367.6	6,423.7	6,224.9	198.82	32.309	
9,300.0	6,695.5	6,699.5	6,699.5	68.0	134.3	84.42	-443.9	-5,367.6	6,523.2	6,321.9	201.30	32.405	
9,400.0	6,694.6	6,698.6	6,698.6	70.5	134.3	84.33	-443.9	-5,367.6	6,622.8	6,419.0	203.80	32.496	
9,500.0	6,693.7	6,697.7	6,697.7	73.1	134.3	84.24	-443.9	-5,367.6	6,722.4	6,516.0	206.32	32.581	
9,600.0	6,692.8	6,696.8	6,696.8	75.7	134.3	84.16	-443.9	-5,367.6	6,821.9	6,613.1	208.86	32.663	
9,700.0	6,691.8	6,695.8	6,695.8	78.3	134.3	84.07	-443.9	-5,367.6	6,921.5	6,710.1	211.41	32.740	
9,800.0	6,690.9	6,694.9	6,694.9	80.9	134.2	83.98	-443.9	-5,367.6	7,021.1	6,807.2	213.97	32.814	
9,900.0	6,690.0	6,694.0	6,694.0	83.6	134.2	83.90	-443.9	-5,367.6	7,120.7	6,904.2	216.54	32.885	
10,000.0	6,689.0	6,693.0	6,693.0	86.2	134.2	83.81	-443.9	-5,367.6	7,220.4	7,001.2	219.12	32.952	
10,100.0	6,688.1	6,692.1	6,692.1	88.9	134.2	83.72	-443.9	-5,367.6	7,320.0	7,098.3	221.71	33.017	
10,200.0	6,687.2	6,691.2	6,691.2	91.6	134.2	83.63	-443.9	-5,367.6	7,419.6	7,195.3	224.30	33.079	
10,300.0	6,686.2	6,690.2	6,690.2	94.2	134.1	83.55	-443.9	-5,367.6	7,519.3	7,292.4	226.91	33.138	
10,400.0	6,685.3	6,689.3	6,689.3	96.9	134.1	83.46	-443.9	-5,367.6	7,619.0	7,389.4	229.52	33.196	
10,500.0	6,684.4	6,688.4	6,688.4	99.6	134.1	83.37	-443.9	-5,367.6	7,718.6	7,486.5	232.13	33.251	
10,600.0	6,683.4	6,687.4	6,687.4	102.3	134.1	83.29	-443.9	-5,367.6	7,818.3	7,583.5	234.75	33.305	
10,700.0	6,682.5	6,686.5	6,686.5	105.0	134.1	83.20	-443.9	-5,367.6	7,918.0	7,680.6	237.38	33.356	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,800.0	6,681.6	6,685.6	6,685.6	107.7	134.0	83.11	-443.9	-5,367.6	8,017.7	7,777.7	240.01	33.406	
10,900.0	6,680.6	6,684.6	6,684.6	110.4	134.0	83.03	-443.9	-5,367.6	8,117.4	7,874.7	242.64	33.455	
11,000.0	6,679.7	6,683.7	6,683.7	113.1	134.0	82.94	-443.9	-5,367.6	8,217.1	7,971.8	245.27	33.502	
11,100.0	6,678.8	6,682.8	6,682.8	115.9	134.0	82.85	-443.9	-5,367.6	8,316.8	8,068.9	247.91	33.547	
11,200.0	6,677.8	6,681.8	6,681.8	118.6	134.0	82.76	-443.9	-5,367.6	8,416.5	8,166.0	250.55	33.592	
11,300.0	6,676.9	6,680.9	6,680.9	121.3	134.0	82.68	-443.9	-5,367.6	8,516.3	8,263.1	253.20	33.635	
11,400.0	6,676.0	6,680.0	6,680.0	124.1	133.9	82.59	-443.9	-5,367.6	8,616.0	8,360.2	255.84	33.677	
11,500.0	6,675.0	6,679.0	6,679.0	126.8	133.9	82.50	-443.9	-5,367.6	8,715.7	8,457.2	258.49	33.718	
11,600.0	6,674.1	6,678.1	6,678.1	129.5	133.9	82.41	-443.9	-5,367.6	8,815.5	8,554.3	261.14	33.758	
11,700.0	6,673.1	6,677.1	6,677.1	132.3	133.9	82.33	-443.9	-5,367.6	8,915.2	8,651.4	263.79	33.797	
11,800.0	6,672.2	6,676.2	6,676.2	135.0	133.9	82.24	-443.9	-5,367.6	9,015.0	8,748.6	266.44	33.835	
11,900.0	6,671.3	6,675.3	6,675.3	137.8	133.8	82.15	-443.9	-5,367.6	9,114.8	8,845.7	269.09	33.873	
12,000.0	6,670.3	6,674.3	6,674.3	140.5	133.8	82.07	-443.9	-5,367.6	9,214.5	8,942.8	271.74	33.909	
12,036.2	6,670.0	6,674.0	6,674.0	141.5	133.8	82.03	-443.9	-5,367.6	9,250.7	8,978.0	272.70	33.922	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-93.09	-225.5	-4,183.9	4,189.9				
100.0	100.0	101.0	101.0	0.1	1.2	-103.69	-225.5	-4,183.9	4,190.0	4,188.7	1.31	3,209.349	
200.0	200.0	201.0	201.0	0.2	3.5	-103.69	-225.5	-4,183.9	4,190.0	4,186.3	3.71	1,129.902	
261.0	261.0	262.0	262.0	0.3	4.8	-103.69	-225.5	-4,183.9	4,190.1	4,185.1	5.04	830.589	
300.0	300.0	301.0	301.0	0.4	5.6	-25.49	-225.5	-4,183.9	4,189.9	4,183.9	5.94	705.121	
400.0	399.9	400.9	400.9	0.6	7.6	-10.97	-225.5	-4,183.9	4,186.6	4,178.4	8.20	510.498	
500.0	499.7	500.7	500.7	0.8	9.6	-8.61	-225.5	-4,183.9	4,179.6	4,169.2	10.42	401.291	
538.0	537.5	538.5	538.5	0.9	10.4	-8.18	-225.5	-4,183.9	4,175.9	4,164.7	11.24	371.441	
600.0	599.1	600.1	600.1	1.1	11.7	-8.98	-225.5	-4,183.9	4,168.7	4,156.1	12.60	330.852	
700.0	697.9	698.9	698.9	1.5	13.6	-9.82	-225.5	-4,183.9	4,153.7	4,138.9	14.74	281.884	
800.0	796.0	797.0	797.0	1.8	15.6	-10.40	-225.5	-4,183.9	4,134.5	4,117.7	16.79	246.197	
818.0	813.5	814.5	814.5	1.9	16.0	-10.50	-225.5	-4,183.9	4,130.6	4,113.5	17.15	240.787	
900.0	893.1	894.1	894.1	2.3	17.6	-9.77	-225.5	-4,183.9	4,111.2	4,092.4	18.81	218.605	
1,000.0	989.2	990.2	990.2	2.9	19.5	-9.16	-225.5	-4,183.9	4,083.7	4,063.0	20.73	197.040	
1,100.0	1,083.9	1,084.9	1,084.9	3.5	21.4	-8.75	-225.5	-4,183.9	4,052.0	4,029.5	22.53	179.886	
1,104.0	1,087.6	1,088.6	1,088.6	3.5	21.5	-8.73	-225.5	-4,183.9	4,050.7	4,028.1	22.59	179.274	
1,200.0	1,177.9	1,178.9	1,178.9	4.1	23.3	-9.57	-225.5	-4,183.9	4,018.4	3,993.7	24.66	162.968	
1,300.0	1,272.0	1,273.0	1,273.0	4.8	25.2	-10.45	-225.5	-4,183.9	3,985.0	3,958.3	26.76	148.903	
1,391.0	1,357.8	1,358.8	1,358.8	5.3	26.9	-11.27	-225.5	-4,183.9	3,955.0	3,926.3	28.71	137.775	
1,400.0	1,366.3	1,367.3	1,367.3	5.4	27.1	-11.07	-225.5	-4,183.9	3,952.1	3,923.2	28.92	136.671	
1,458.0	1,421.2	1,422.2	1,422.2	5.7	28.2	-9.68	-225.5	-4,183.9	3,933.7	3,903.4	30.28	129.893	
1,500.0	1,461.0	1,462.0	1,462.0	6.0	29.0	-9.93	-225.5	-4,183.9	3,920.7	3,889.5	31.18	125.728	
1,600.0	1,556.1	1,557.1	1,557.1	6.6	30.9	-10.53	-225.5	-4,183.9	3,889.9	3,856.6	33.33	116.696	
1,676.0	1,628.3	1,629.3	1,629.3	7.0	32.4	-10.99	-225.5	-4,183.9	3,866.7	3,831.8	34.97	110.560	
1,700.0	1,651.1	1,652.1	1,652.1	7.2	32.8	-10.43	-225.5	-4,183.9	3,859.5	3,824.0	35.49	108.746	
1,800.0	1,746.4	1,747.4	1,747.4	7.7	34.8	-8.03	-225.5	-4,183.9	3,829.3	3,791.7	37.65	101.718	
1,900.0	1,841.8	1,842.8	1,842.8	8.3	36.7	-5.53	-225.5	-4,183.9	3,799.6	3,759.8	39.81	95.441	
1,963.0	1,902.0	1,903.0	1,903.0	8.7	37.9	-3.90	-225.5	-4,183.9	3,781.0	3,739.9	41.18	91.821	
2,000.0	1,937.4	1,938.4	1,938.4	8.9	38.6	-3.90	-225.5	-4,183.9	3,770.2	3,728.2	41.99	89.784	
2,100.0	2,033.1	2,034.1	2,034.1	9.5	40.5	-3.88	-225.5	-4,183.9	3,741.4	3,697.2	44.20	84.652	
2,200.0	2,129.0	2,130.0	2,130.0	10.0	42.5	-3.87	-225.5	-4,183.9	3,713.3	3,666.9	46.41	80.004	
2,250.0	2,177.1	2,178.1	2,178.1	10.3	43.4	-3.86	-225.5	-4,183.9	3,699.5	3,651.9	47.52	77.843	
2,300.0	2,225.1	2,226.1	2,226.1	10.6	44.4	-5.06	-225.5	-4,183.9	3,685.7	3,637.1	48.59	75.857	
2,400.0	2,321.2	2,322.2	2,322.2	11.2	46.3	-7.43	-225.5	-4,183.9	3,657.9	3,607.2	50.71	72.133	
2,500.0	2,417.0	2,418.0	2,418.0	11.7	48.3	-9.75	-225.5	-4,183.9	3,629.8	3,577.0	52.83	68.706	
2,537.0	2,452.5	2,453.5	2,453.5	11.9	49.0	-10.60	-225.5	-4,183.9	3,619.4	3,565.8	53.62	67.506	
2,600.0	2,512.8	2,513.8	2,513.8	12.3	50.2	-13.65	-225.5	-4,183.9	3,601.5	3,546.5	54.96	65.527	
2,700.0	2,608.2	2,609.2	2,609.2	12.9	52.1	-18.28	-225.5	-4,183.9	3,572.7	3,515.6	57.10	62.566	
2,800.0	2,703.3	2,704.3	2,704.3	13.5	54.0	-22.66	-225.5	-4,183.9	3,543.5	3,484.3	59.25	59.805	
2,824.0	2,726.1	2,727.1	2,727.1	13.7	54.5	-23.67	-225.5	-4,183.9	3,536.5	3,476.7	59.77	59.169	
2,900.0	2,798.2	2,799.2	2,799.2	14.1	55.9	-21.22	-225.5	-4,183.9	3,514.3	3,452.8	61.49	57.152	
3,000.0	2,893.6	2,894.6	2,894.6	14.7	57.8	-17.69	-225.5	-4,183.9	3,485.8	3,422.1	63.77	54.665	
3,100.0	2,989.4	2,990.4	2,990.4	15.3	59.8	-13.80	-225.5	-4,183.9	3,458.1	3,392.1	66.06	52.350	
3,112.0	3,000.9	3,001.9	3,001.9	15.4	60.0	-13.31	-225.5	-4,183.9	3,454.9	3,388.5	66.33	52.084	
3,200.0	3,085.5	3,086.5	3,086.5	15.9	61.7	-12.41	-225.5	-4,183.9	3,431.2	3,362.8	68.33	50.218	
3,300.0	3,181.9	3,182.9	3,182.9	16.4	63.6	-11.34	-225.5	-4,183.9	3,404.9	3,334.3	70.60	48.230	
3,400.0	3,278.4	3,279.4	3,279.4	16.9	65.6	-10.19	-225.5	-4,183.9	3,379.2	3,306.3	72.88	46.369	
3,500.0	3,374.7	3,375.7	3,375.7	17.5	67.5	-10.47	-225.5	-4,183.9	3,352.7	3,278.0	74.62	44.928	
3,600.0	3,470.3	3,471.3	3,471.3	18.1	69.4	-10.75	-225.5	-4,183.9	3,323.7	3,247.4	76.29	43.567	
3,687.0	3,552.8	3,553.8	3,553.8	18.6	71.1	-11.00	-225.5	-4,183.9	3,296.6	3,219.0	77.67	42.443	
3,700.0	3,565.1	3,566.1	3,566.1	18.7	71.3	-10.75	-225.5	-4,183.9	3,292.4	3,214.5	77.93	42.247	
3,800.0	3,659.5	3,660.5	3,660.5	19.4	73.2	-8.88	-225.5	-4,183.9	3,260.0	3,180.1	79.93	40.785	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,754.9	3,754.9	20.0	75.1	-7.03	-225.5	-4,183.9	3,227.1	3,145.2	81.92	39.395	
3,974.0	3,823.6	3,824.6	3,824.6	20.5	76.5	-5.66	-225.5	-4,183.9	3,202.5	3,119.1	83.38	38.408	
4,000.0	3,848.1	3,849.1	3,849.1	20.7	77.0	-5.89	-225.5	-4,183.9	3,193.9	3,109.8	84.09	37.980	
4,100.0	3,942.9	3,943.9	3,943.9	21.3	78.9	-6.84	-225.5	-4,183.9	3,162.3	3,075.4	86.84	36.416	
4,200.0	4,038.5	4,039.5	4,039.5	21.9	80.9	-7.95	-225.5	-4,183.9	3,133.0	3,043.4	89.57	34.977	
4,263.0	4,099.0	4,100.0	4,100.0	22.3	82.1	-8.74	-225.5	-4,183.9	3,115.8	3,024.5	91.29	34.131	
4,300.0	4,134.7	4,135.7	4,135.7	22.5	82.8	-9.87	-225.5	-4,183.9	3,106.0	3,013.8	92.20	33.689	
4,400.0	4,231.2	4,232.2	4,232.2	23.0	84.7	-13.10	-225.5	-4,183.9	3,080.4	2,985.8	94.66	32.542	
4,500.0	4,328.0	4,329.0	4,329.0	23.5	86.7	-16.56	-225.5	-4,183.9	3,056.0	2,958.9	97.13	31.463	
4,549.0	4,375.5	4,376.5	4,376.5	23.8	87.6	-18.34	-225.5	-4,183.9	3,044.5	2,946.2	98.34	30.958	
4,600.0	4,425.0	4,426.0	4,426.0	24.0	88.6	-18.60	-225.5	-4,183.9	3,032.7	2,933.2	99.47	30.488	
4,700.0	4,521.9	4,522.9	4,522.9	24.5	90.6	-19.11	-225.5	-4,183.9	3,009.5	2,907.8	101.68	29.596	
4,800.0	4,618.8	4,619.8	4,619.8	25.0	92.5	-19.63	-225.5	-4,183.9	2,986.2	2,882.3	103.90	28.742	
4,837.0	4,654.7	4,655.7	4,655.7	25.2	93.3	-19.82	-225.5	-4,183.9	2,977.6	2,872.8	104.72	28.434	
4,900.0	4,715.7	4,716.7	4,716.7	25.5	94.5	-20.40	-225.5	-4,183.9	2,962.7	2,856.7	106.05	27.937	
5,000.0	4,812.4	4,813.4	4,813.4	26.0	96.4	-21.30	-225.5	-4,183.9	2,938.8	2,830.6	108.16	27.171	
5,100.0	4,908.9	4,909.9	4,909.9	26.6	98.4	-22.19	-225.5	-4,183.9	2,914.2	2,803.9	110.26	26.429	
5,125.0	4,932.9	4,933.9	4,933.9	26.7	98.9	-22.40	-225.5	-4,183.9	2,908.0	2,797.2	110.79	26.248	
5,200.0	5,005.4	5,006.4	5,006.4	27.0	100.3	-19.70	-225.5	-4,183.9	2,889.7	2,777.0	112.68	25.645	
5,300.0	5,102.4	5,103.4	5,103.4	27.5	102.3	-15.49	-225.5	-4,183.9	2,866.6	2,751.4	115.20	24.884	
5,400.0	5,199.9	5,200.9	5,200.9	28.0	104.2	-10.42	-225.5	-4,183.9	2,845.1	2,727.4	117.72	24.170	
5,412.0	5,211.7	5,212.7	5,212.7	28.1	104.5	-9.75	-225.5	-4,183.9	2,842.7	2,724.7	118.02	24.087	
5,500.0	5,297.9	5,298.9	5,298.9	28.4	106.2	-7.07	-225.5	-4,183.9	2,825.5	2,705.2	120.33	23.481	
5,581.0	5,377.7	5,378.7	5,378.7	28.7	107.8	-4.00	-225.5	-4,183.9	2,811.3	2,688.9	122.42	22.964	
5,600.0	5,396.4	5,397.4	5,397.4	28.8	108.2	-5.20	-225.5	-4,183.9	2,808.2	2,685.3	122.94	22.842	
5,700.0	5,495.3	5,496.3	5,496.3	29.1	110.2	-13.12	-225.5	-4,183.9	2,793.7	2,668.1	125.61	22.241	
5,800.0	5,594.6	5,595.6	5,595.6	29.4	112.2	-24.95	-225.5	-4,183.9	2,782.4	2,654.2	128.18	21.708	
5,900.0	5,694.1	5,695.1	5,695.1	29.6	114.2	-42.52	-225.5	-4,183.9	2,774.2	2,643.6	130.63	21.237	
5,917.0	5,711.1	5,712.1	5,712.1	29.7	114.5	-46.13	-225.5	-4,183.9	2,773.1	2,642.1	131.03	21.163	
6,000.0	5,793.7	5,794.7	5,794.7	29.8	116.2	-46.23	-225.5	-4,183.9	2,768.1	2,635.2	132.89	20.830	
6,067.0	5,860.5	5,861.5	5,861.5	30.0	117.5	-46.32	-225.5	-4,183.9	2,764.0	2,629.6	134.39	20.567	
6,100.0	5,893.4	5,894.4	5,894.4	30.0	118.2	-46.34	-225.5	-4,183.9	2,762.1	2,627.0	135.15	20.437	
6,200.0	5,993.2	5,994.2	5,994.2	30.2	120.2	-46.37	-225.5	-4,183.9	2,758.0	2,620.6	137.39	20.074	
6,300.0	6,093.2	6,094.2	6,094.2	30.3	122.2	-46.38	-225.5	-4,183.9	2,756.4	2,616.8	139.54	19.753	
6,318.8	6,111.9	6,112.9	6,112.9	30.3	122.6	-98.34	-225.5	-4,183.9	2,756.3	2,604.2	152.15	18.115	CC
6,400.0	6,193.2	6,194.2	6,194.2	30.4	124.2	-98.34	-225.5	-4,183.9	2,756.3	2,602.5	153.86	17.914	
6,444.4	6,237.6	6,238.6	6,238.6	30.4	125.1	-98.34	-225.5	-4,183.9	2,756.3	2,601.5	154.80	17.806	ES, SF
6,450.0	6,243.2	6,244.2	6,244.2	30.4	125.2	171.66	-225.5	-4,183.9	2,756.4	2,613.7	142.72	19.313	
6,475.0	6,268.1	6,269.1	6,269.1	30.4	125.7	171.65	-225.5	-4,183.9	2,757.3	2,614.5	142.82	19.306	
6,500.0	6,293.0	6,294.0	6,294.0	30.4	126.2	171.62	-225.5	-4,183.9	2,759.5	2,617.0	142.54	19.360	
6,525.0	6,317.8	6,318.8	6,318.8	30.4	126.7	171.56	-225.5	-4,183.9	2,763.1	2,621.2	141.87	19.475	
6,550.0	6,342.3	6,343.3	6,343.3	30.4	127.2	171.49	-225.5	-4,183.9	2,767.8	2,627.0	140.83	19.654	
6,575.0	6,366.5	6,367.5	6,367.5	30.3	127.7	171.40	-225.5	-4,183.9	2,773.9	2,634.5	139.41	19.898	
6,600.0	6,390.4	6,391.4	6,391.4	30.2	128.2	171.28	-225.5	-4,183.9	2,781.2	2,643.6	137.61	20.211	
6,625.0	6,413.9	6,414.9	6,414.9	30.2	128.6	171.15	-225.5	-4,183.9	2,789.7	2,654.3	135.44	20.597	
6,650.0	6,436.9	6,437.9	6,437.9	30.1	129.1	170.98	-225.5	-4,183.9	2,799.5	2,666.5	132.91	21.062	
6,675.0	6,459.3	6,460.3	6,460.3	30.0	129.5	170.78	-225.5	-4,183.9	2,810.4	2,680.3	130.04	21.612	
6,700.0	6,481.1	6,482.1	6,482.1	29.9	130.0	170.56	-225.5	-4,183.9	2,822.4	2,695.6	126.82	22.255	
6,725.0	6,502.3	6,503.3	6,503.3	29.7	130.4	170.29	-225.5	-4,183.9	2,835.6	2,712.3	123.30	22.998	
6,750.0	6,522.7	6,523.7	6,523.7	29.6	130.8	169.98	-225.5	-4,183.9	2,849.9	2,730.4	119.47	23.853	
6,775.0	6,542.4	6,543.4	6,543.4	29.5	131.2	169.63	-225.5	-4,183.9	2,865.2	2,749.8	115.39	24.831	
6,800.0	6,561.2	6,562.2	6,562.2	29.4	131.6	169.21	-225.5	-4,183.9	2,881.5	2,770.4	111.07	25.942	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,580.1	6,580.1	29.3	132.0	168.73	-225.5	-4,183.9	2,898.7	2,792.1	106.58	27.199	
6,850.0	6,596.1	6,597.1	6,597.1	29.1	132.3	168.17	-225.5	-4,183.9	2,916.9	2,814.9	101.95	28.610	
6,875.0	6,612.1	6,613.1	6,613.1	29.0	132.6	167.51	-225.5	-4,183.9	2,935.9	2,838.6	97.28	30.180	
6,900.0	6,627.1	6,628.1	6,628.1	28.9	132.9	166.72	-225.5	-4,183.9	2,955.7	2,863.0	92.66	31.898	
6,925.0	6,641.0	6,642.0	6,642.0	28.8	133.2	165.78	-225.5	-4,183.9	2,976.3	2,888.0	88.23	33.733	
6,950.0	6,653.8	6,654.8	6,654.8	28.7	133.5	164.64	-225.5	-4,183.9	2,997.5	2,913.4	84.18	35.608	
6,975.0	6,665.5	6,666.5	6,666.5	28.7	133.7	163.24	-225.5	-4,183.9	3,019.5	2,938.7	80.79	37.374	
7,000.0	6,676.0	6,677.0	6,677.0	28.6	133.9	161.50	-225.5	-4,183.9	3,041.9	2,963.5	78.46	38.773	
7,025.0	6,685.3	6,686.3	6,686.3	28.6	134.1	159.26	-225.5	-4,183.9	3,064.9	2,987.2	77.75	39.422	
7,050.0	6,693.4	6,694.4	6,694.4	28.5	134.3	156.34	-225.5	-4,183.9	3,088.4	3,009.0	79.46	38.869	
7,075.0	6,700.2	6,701.2	6,701.2	28.5	134.4	152.38	-225.5	-4,183.9	3,112.3	3,027.6	84.63	36.775	
7,100.0	6,705.8	6,706.8	6,706.8	28.5	134.5	146.82	-225.5	-4,183.9	3,136.4	3,041.9	94.53	33.179	
7,125.0	6,710.0	6,711.0	6,711.0	28.5	134.6	138.66	-225.5	-4,183.9	3,160.9	3,050.4	110.47	28.613	
7,150.0	6,713.0	6,714.0	6,714.0	28.6	134.7	126.30	-225.5	-4,183.9	3,185.5	3,052.8	132.66	24.012	
7,175.0	6,714.7	6,715.7	6,715.7	28.6	134.7	107.96	-225.5	-4,183.9	3,210.2	3,054.7	155.54	20.639	
7,198.8	6,715.0	6,716.0	6,716.0	28.6	134.7	85.75	-225.5	-4,183.9	3,233.9	3,071.1	162.76	19.869	
7,200.0	6,715.0	6,716.0	6,716.0	28.6	134.7	85.75	-225.5	-4,183.9	3,235.0	3,072.3	162.76	19.876	
7,300.0	6,714.1	6,715.1	6,715.1	29.0	134.7	85.62	-225.5	-4,183.9	3,334.3	3,171.2	163.11	20.442	
7,400.0	6,713.2	6,714.2	6,714.2	29.7	134.7	85.49	-225.5	-4,183.9	3,433.6	3,269.9	163.72	20.972	
7,500.0	6,712.3	6,713.3	6,713.3	30.6	134.6	85.35	-225.5	-4,183.9	3,532.9	3,368.3	164.58	21.466	
7,600.0	6,711.3	6,712.3	6,712.3	31.7	134.6	85.22	-225.5	-4,183.9	3,632.3	3,466.6	165.66	21.926	
7,700.0	6,710.4	6,711.4	6,711.4	33.0	134.6	85.09	-225.5	-4,183.9	3,731.7	3,564.7	166.94	22.354	
7,800.0	6,709.5	6,710.5	6,710.5	34.5	134.6	84.95	-225.5	-4,183.9	3,831.1	3,662.7	168.39	22.751	
7,900.0	6,708.5	6,709.5	6,709.5	36.2	134.6	84.82	-225.5	-4,183.9	3,930.6	3,760.6	170.00	23.121	
8,000.0	6,707.6	6,708.6	6,708.6	38.0	134.5	84.69	-225.5	-4,183.9	4,030.1	3,858.3	171.74	23.466	
8,100.0	6,706.7	6,707.7	6,707.7	39.9	134.5	84.55	-225.5	-4,183.9	4,129.6	3,956.0	173.60	23.788	
8,200.0	6,705.8	6,706.8	6,706.8	41.9	134.5	84.42	-225.5	-4,183.9	4,229.1	4,053.6	175.55	24.091	
8,300.0	6,704.8	6,705.8	6,705.8	44.0	134.5	84.29	-225.5	-4,183.9	4,328.7	4,151.1	177.59	24.375	
8,400.0	6,703.9	6,704.9	6,704.9	46.2	134.5	84.15	-225.5	-4,183.9	4,428.3	4,248.6	179.70	24.642	
8,500.0	6,703.0	6,704.0	6,704.0	48.5	134.4	84.02	-225.5	-4,183.9	4,527.9	4,346.0	181.88	24.895	
8,600.0	6,702.1	6,703.1	6,703.1	50.8	134.4	83.89	-225.5	-4,183.9	4,627.5	4,443.4	184.10	25.135	
8,700.0	6,701.1	6,702.1	6,702.1	53.1	134.4	83.75	-225.5	-4,183.9	4,727.1	4,540.7	186.38	25.363	
8,800.0	6,700.2	6,701.2	6,701.2	55.5	134.4	83.62	-225.5	-4,183.9	4,826.8	4,638.1	188.69	25.580	
8,900.0	6,699.3	6,700.3	6,700.3	57.9	134.4	83.49	-225.5	-4,183.9	4,926.4	4,735.4	191.04	25.787	
9,000.0	6,698.3	6,699.3	6,699.3	60.4	134.4	83.35	-225.5	-4,183.9	5,026.1	4,832.7	193.42	25.985	
9,100.0	6,697.4	6,698.4	6,698.4	62.9	134.3	83.22	-225.5	-4,183.9	5,125.8	4,929.9	195.83	26.175	
9,200.0	6,696.5	6,697.5	6,697.5	65.4	134.3	83.09	-225.5	-4,183.9	5,225.5	5,027.2	198.26	26.357	
9,300.0	6,695.5	6,696.5	6,696.5	68.0	134.3	82.95	-225.5	-4,183.9	5,325.2	5,124.5	200.71	26.532	
9,400.0	6,694.6	6,695.6	6,695.6	70.5	134.3	82.82	-225.5	-4,183.9	5,424.9	5,221.7	203.18	26.700	
9,500.0	6,693.7	6,694.7	6,694.7	73.1	134.3	82.69	-225.5	-4,183.9	5,524.6	5,319.0	205.66	26.863	
9,600.0	6,692.8	6,693.8	6,693.8	75.7	134.2	82.56	-225.5	-4,183.9	5,624.4	5,416.2	208.16	27.020	
9,700.0	6,691.8	6,692.8	6,692.8	78.3	134.2	82.42	-225.5	-4,183.9	5,724.1	5,513.4	210.67	27.171	
9,800.0	6,690.9	6,691.9	6,691.9	80.9	134.2	82.29	-225.5	-4,183.9	5,823.9	5,610.7	213.19	27.318	
9,900.0	6,690.0	6,691.0	6,691.0	83.6	134.2	82.16	-225.5	-4,183.9	5,923.6	5,707.9	215.72	27.460	
10,000.0	6,689.0	6,690.0	6,690.0	86.2	134.2	82.02	-225.5	-4,183.9	6,023.4	5,805.1	218.26	27.598	
10,100.0	6,688.1	6,689.1	6,689.1	88.9	134.1	81.89	-225.5	-4,183.9	6,123.2	5,902.4	220.80	27.732	
10,200.0	6,687.2	6,688.2	6,688.2	91.6	134.1	81.76	-225.5	-4,183.9	6,223.0	5,999.6	223.35	27.862	
10,300.0	6,686.2	6,687.2	6,687.2	94.2	134.1	81.62	-225.5	-4,183.9	6,322.8	6,096.8	225.91	27.988	
10,400.0	6,685.3	6,686.3	6,686.3	96.9	134.1	81.49	-225.5	-4,183.9	6,422.6	6,194.1	228.47	28.111	
10,500.0	6,684.4	6,685.4	6,685.4	99.6	134.1	81.36	-225.5	-4,183.9	6,522.4	6,291.3	231.03	28.231	
10,600.0	6,683.4	6,684.4	6,684.4	102.3	134.1	81.22	-225.5	-4,183.9	6,622.2	6,388.6	233.60	28.348	
10,700.0	6,682.5	6,683.5	6,683.5	105.0	134.0	81.09	-225.5	-4,183.9	6,722.0	6,485.8	236.17	28.462	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,800.0	6,681.6	6,682.6	6,682.6	107.7	134.0	80.96	-225.5	-4,183.9	6,821.8	6,583.1	238.75	28.573	
10,900.0	6,680.6	6,681.6	6,681.6	110.4	134.0	80.83	-225.5	-4,183.9	6,921.6	6,680.3	241.32	28.682	
11,000.0	6,679.7	6,680.7	6,680.7	113.1	134.0	80.69	-225.5	-4,183.9	7,021.5	6,777.6	243.90	28.788	
11,100.0	6,678.8	6,679.8	6,679.8	115.9	134.0	80.56	-225.5	-4,183.9	7,121.3	6,874.8	246.48	28.892	
11,200.0	6,677.8	6,678.8	6,678.8	118.6	133.9	80.43	-225.5	-4,183.9	7,221.1	6,972.1	249.06	28.994	
11,300.0	6,676.9	6,677.9	6,677.9	121.3	133.9	80.29	-225.5	-4,183.9	7,321.0	7,069.3	251.64	29.093	
11,400.0	6,676.0	6,677.0	6,677.0	124.1	133.9	80.16	-225.5	-4,183.9	7,420.8	7,166.6	254.22	29.191	
11,500.0	6,675.0	6,676.0	6,676.0	126.8	133.9	80.03	-225.5	-4,183.9	7,520.7	7,263.9	256.80	29.286	
11,600.0	6,674.1	6,675.1	6,675.1	129.5	133.9	79.90	-225.5	-4,183.9	7,620.5	7,361.2	259.38	29.380	
11,700.0	6,673.1	6,674.1	6,674.1	132.3	133.8	79.76	-225.5	-4,183.9	7,720.4	7,458.4	261.96	29.472	
11,800.0	6,672.2	6,673.2	6,673.2	135.0	133.8	79.63	-225.5	-4,183.9	7,820.3	7,555.7	264.53	29.562	
11,900.0	6,671.3	6,672.3	6,672.3	137.8	133.8	79.50	-225.5	-4,183.9	7,920.1	7,653.0	267.11	29.651	
12,000.0	6,670.3	6,671.3	6,671.3	140.5	133.8	79.37	-225.5	-4,183.9	8,020.0	7,750.3	269.69	29.738	
12,036.2	6,670.0	6,671.0	6,671.0	141.5	133.8	79.32	-225.5	-4,183.9	8,056.2	7,785.6	270.62	29.769	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-171.45	-1,690.4	-254.0	1,709.4				
100.0	100.0	102.7	102.7	0.1	0.1	177.95	-1,690.3	-254.1	1,709.4	1,709.2	0.20	8,700.298	
200.0	200.0	201.9	201.9	0.2	0.2	177.95	-1,690.1	-254.2	1,709.6	1,709.1	0.44	3,876.331	
261.0	261.0	263.2	263.2	0.3	0.3	177.96	-1,690.0	-254.4	1,709.8	1,709.2	0.56	3,057.955	
300.0	300.0	302.4	302.4	0.4	0.3	-103.83	-1,689.9	-254.6	1,709.9	1,709.2	0.68	2,513.749	
400.0	399.9	403.3	403.3	0.6	0.4	-89.38	-1,689.7	-255.4	1,709.9	1,708.9	0.98	1,751.389	
500.0	499.7	503.7	503.7	0.8	0.5	-87.21	-1,689.3	-256.2	1,709.4	1,708.1	1.26	1,353.583	
538.0	537.5	542.3	542.3	0.9	0.5	-86.88	-1,689.2	-256.5	1,709.1	1,707.7	1.37	1,247.709	
600.0	599.1	605.0	604.9	1.1	0.5	-87.87	-1,688.9	-257.1	1,708.6	1,707.0	1.61	1,057.944	
700.0	697.9	702.5	702.4	1.5	0.6	-89.08	-1,688.5	-258.1	1,707.9	1,705.9	2.00	851.820	
800.0	796.0	800.0	800.0	1.8	0.6	-90.13	-1,688.1	-259.1	1,707.5	1,705.1	2.39	713.820	
818.0	813.5	817.5	817.5	1.9	0.6	-90.31	-1,688.0	-259.3	1,707.5	1,705.0	2.46	693.733	
900.0	893.1	896.8	896.8	2.3	0.7	-90.12	-1,687.8	-260.1	1,707.3	1,704.4	2.95	578.161	
1,000.0	989.2	995.4	995.3	2.9	0.7	-90.28	-1,687.4	-261.1	1,707.1	1,703.6	3.55	480.580	
1,100.0	1,083.9	1,093.3	1,093.2	3.5	0.7	-90.75	-1,686.8	-262.2	1,706.9	1,702.8	4.15	411.295	
1,104.0	1,087.6	1,097.1	1,097.1	3.5	0.7	-90.77	-1,686.8	-262.2	1,706.9	1,702.8	4.17	408.939	
1,115.4	1,098.3	1,108.3	1,108.3	3.6	0.8	-90.98	-1,686.7	-262.3	1,706.9	1,702.7	4.25	401.506 CC	
1,200.0	1,177.9	1,192.0	1,191.9	4.1	0.8	-92.50	-1,686.1	-263.3	1,707.2	1,702.4	4.83	353.713 ES	
1,300.0	1,272.0	1,285.6	1,285.6	4.8	0.8	-94.25	-1,685.3	-264.5	1,708.5	1,703.0	5.50	310.469	
1,391.0	1,357.8	1,371.8	1,371.7	5.3	0.9	-95.85	-1,684.6	-265.6	1,710.5	1,704.4	6.12	279.653	
1,400.0	1,366.3	1,380.3	1,380.3	5.4	0.9	-95.76	-1,684.5	-265.7	1,710.8	1,704.6	6.17	277.200	
1,458.0	1,421.2	1,435.4	1,435.3	5.7	0.9	-95.12	-1,684.0	-266.3	1,712.2	1,705.6	6.53	262.376	
1,500.0	1,461.0	1,475.3	1,475.3	6.0	0.9	-95.72	-1,683.7	-266.8	1,713.1	1,706.3	6.78	252.605	
1,600.0	1,556.1	1,573.7	1,573.6	6.6	0.9	-97.20	-1,682.8	-267.6	1,715.8	1,708.4	7.39	232.170	
1,676.0	1,628.3	1,646.3	1,646.2	7.0	1.0	-98.30	-1,682.1	-268.0	1,718.3	1,710.5	7.85	218.850	
1,700.0	1,651.1	1,668.7	1,668.6	7.2	1.0	-98.01	-1,681.8	-268.0	1,719.2	1,711.2	8.00	214.959	
1,800.0	1,746.4	1,764.0	1,763.9	7.7	1.0	-96.73	-1,680.9	-268.4	1,722.2	1,713.6	8.61	200.142	
1,900.0	1,841.8	1,860.3	1,860.2	8.3	1.0	-95.36	-1,679.9	-268.7	1,724.4	1,715.2	9.21	187.251	
1,963.0	1,902.0	1,921.3	1,921.1	8.7	1.1	-94.46	-1,679.3	-268.8	1,725.4	1,715.8	9.59	179.955	
2,000.0	1,937.4	1,957.2	1,957.1	8.9	1.1	-94.79	-1,678.9	-268.9	1,725.9	1,716.1	9.80	176.046	
2,100.0	2,033.1	2,048.9	2,048.8	9.5	1.1	-95.64	-1,677.9	-269.1	1,727.5	1,717.1	10.38	166.366	
2,200.0	2,129.0	2,136.4	2,136.3	10.0	1.1	-96.43	-1,677.3	-269.0	1,729.9	1,718.9	10.96	157.900	
2,250.0	2,177.1	2,180.3	2,180.1	10.3	1.1	-96.83	-1,677.1	-268.8	1,731.4	1,720.2	11.24	154.078	
2,300.0	2,225.1	2,224.7	2,224.5	10.6	1.1	-98.33	-1,677.0	-268.5	1,733.3	1,721.7	11.52	150.457	
2,400.0	2,321.2	2,315.5	2,315.4	11.2	1.2	-101.32	-1,677.1	-267.3	1,738.4	1,726.4	12.08	143.896	
2,500.0	2,417.0	2,414.4	2,414.2	11.7	1.2	-104.33	-1,677.1	-265.8	1,745.3	1,732.6	12.64	138.118	
2,537.0	2,452.5	2,451.4	2,451.3	11.9	1.2	-105.43	-1,677.0	-265.3	1,748.1	1,735.3	12.84	136.147	
2,600.0	2,512.8	2,514.0	2,513.8	12.3	1.2	-108.74	-1,676.9	-264.6	1,753.7	1,740.5	13.20	132.827	
2,700.0	2,608.2	2,609.8	2,609.7	12.9	1.2	-113.71	-1,676.6	-263.7	1,764.9	1,751.1	13.77	128.147	
2,800.0	2,703.3	2,705.0	2,704.8	13.5	1.2	-118.37	-1,676.3	-262.7	1,779.0	1,764.7	14.33	124.136	
2,824.0	2,726.1	2,727.9	2,727.7	13.7	1.2	-119.44	-1,676.3	-262.4	1,782.8	1,768.4	14.46	123.264	
2,900.0	2,798.2	2,800.0	2,799.8	14.1	1.2	-117.83	-1,676.0	-261.7	1,794.6	1,779.7	14.87	120.683	
3,000.0	2,893.6	2,893.9	2,893.7	14.7	1.2	-115.40	-1,675.7	-260.8	1,808.5	1,793.1	15.40	117.473	
3,100.0	2,989.4	2,984.2	2,984.0	15.3	1.2	-112.56	-1,675.6	-259.9	1,820.8	1,804.9	15.91	114.468	
3,112.0	3,000.9	2,995.1	2,994.9	15.4	1.2	-112.19	-1,675.6	-259.8	1,822.1	1,806.2	15.97	114.120	
3,200.0	3,085.5	3,076.2	3,076.0	15.9	1.2	-112.01	-1,675.8	-259.1	1,832.0	1,815.6	16.38	111.872	
3,300.0	3,181.9	3,168.7	3,168.5	16.4	1.2	-111.71	-1,676.2	-258.6	1,842.9	1,826.1	16.83	109.481	
3,400.0	3,278.4	3,259.4	3,259.2	16.9	1.3	-111.31	-1,676.9	-258.2	1,853.7	1,836.4	17.29	107.229	
3,500.0	3,374.7	3,343.4	3,343.2	17.5	1.3	-111.92	-1,677.9	-257.7	1,865.3	1,847.5	17.82	104.676	
3,600.0	3,470.3	3,426.2	3,426.0	18.1	1.3	-112.53	-1,679.5	-257.0	1,879.0	1,860.7	18.35	102.398	
3,687.0	3,552.8	3,507.0	3,506.7	18.6	1.3	-113.16	-1,681.3	-256.1	1,892.3	1,873.5	18.80	100.646	
3,700.0	3,565.1	3,519.2	3,519.0	18.7	1.3	-113.03	-1,681.5	-256.0	1,894.4	1,875.6	18.87	100.368	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,613.9	3,613.6	19.4	1.3	-112.09	-1,683.6	-254.9	1,910.2	1,890.8	19.43	98.321	
3,900.0	3,753.9	3,711.6	3,711.3	20.0	1.3	-111.21	-1,685.6	-253.9	1,925.5	1,905.5	19.97	96.422	
3,974.0	3,823.6	3,788.1	3,787.8	20.5	1.3	-110.62	-1,687.0	-253.3	1,936.3	1,916.0	20.36	95.108	
4,000.0	3,848.1	3,812.5	3,812.2	20.7	1.3	-111.10	-1,687.5	-253.1	1,940.0	1,919.6	20.48	94.729	
4,100.0	3,942.9	3,900.0	3,899.7	21.3	1.3	-112.92	-1,689.2	-252.5	1,954.6	1,933.7	20.95	93.300	
4,200.0	4,038.5	3,997.3	3,996.9	21.9	1.3	-114.88	-1,691.3	-252.1	1,969.3	1,947.9	21.41	91.966	
4,263.0	4,099.0	4,061.8	4,061.4	22.3	1.3	-116.18	-1,692.8	-252.2	1,978.3	1,956.6	21.70	91.155	
4,300.0	4,134.7	4,099.8	4,099.4	22.5	1.3	-117.51	-1,693.6	-252.3	1,983.6	1,961.8	21.85	90.791	
4,400.0	4,231.2	4,209.0	4,208.6	23.0	1.3	-121.27	-1,695.7	-253.0	1,998.2	1,976.0	22.24	89.868	
4,500.0	4,328.0	4,316.8	4,316.3	23.5	1.4	-125.19	-1,697.2	-254.0	2,013.2	1,990.5	22.62	88.988	
4,549.0	4,375.5	4,368.4	4,368.0	23.8	1.4	-127.16	-1,697.8	-254.6	2,020.6	1,997.8	22.81	88.571	
4,600.0	4,425.0	4,431.7	4,431.3	24.0	1.4	-127.66	-1,698.2	-255.3	2,028.4	2,005.4	23.00	88.211	
4,700.0	4,521.9	4,566.1	4,565.7	24.5	1.4	-128.70	-1,697.2	-257.4	2,042.4	2,019.1	23.34	87.511	
4,800.0	4,618.8	4,667.6	4,667.1	25.0	1.4	-129.55	-1,695.5	-259.3	2,055.9	2,032.2	23.71	86.722	
4,837.0	4,654.7	4,702.4	4,701.9	25.2	1.4	-129.86	-1,694.9	-259.9	2,060.9	2,037.1	23.84	86.438	
4,900.0	4,715.7	4,765.3	4,764.8	25.5	1.4	-130.59	-1,693.9	-261.0	2,069.8	2,045.7	24.09	85.920	
5,000.0	4,812.4	4,859.2	4,858.7	26.0	1.5	-131.69	-1,692.3	-262.7	2,084.6	2,060.1	24.48	85.146	
5,100.0	4,908.9	4,956.4	4,955.9	26.6	1.5	-132.77	-1,690.8	-264.3	2,100.4	2,075.6	24.87	84.460	
5,125.0	4,932.9	4,982.1	4,981.5	26.7	1.5	-133.04	-1,690.4	-264.8	2,104.5	2,079.6	24.96	84.301	
5,200.0	5,005.4	5,044.1	5,043.5	27.0	1.5	-130.82	-1,689.4	-265.9	2,116.2	2,091.0	25.20	83.969	
5,300.0	5,102.4	5,125.1	5,124.5	27.5	1.5	-127.22	-1,688.9	-267.1	2,130.4	2,104.8	25.51	83.500	
5,400.0	5,199.9	5,217.1	5,216.5	28.0	1.5	-122.81	-1,688.6	-268.3	2,142.3	2,116.5	25.81	83.018	
5,412.0	5,211.7	5,228.0	5,227.4	28.1	1.5	-122.21	-1,688.6	-268.4	2,143.6	2,117.8	25.84	82.958	
5,500.0	5,297.9	5,308.1	5,307.5	28.4	1.6	-120.05	-1,688.5	-269.2	2,152.2	2,126.1	26.06	82.592	
5,581.0	5,377.7	5,381.0	5,380.3	28.7	1.6	-117.42	-1,688.5	-269.6	2,158.9	2,132.7	26.24	82.277	
5,600.0	5,396.4	5,400.0	5,399.4	28.8	1.6	-118.69	-1,688.6	-269.7	2,160.4	2,134.1	26.29	82.186	
5,700.0	5,495.3	5,500.7	5,500.1	29.1	1.6	-126.91	-1,688.7	-270.1	2,168.2	2,141.7	26.51	81.789	
5,800.0	5,594.6	5,599.2	5,598.6	29.4	1.6	-138.95	-1,688.6	-270.4	2,176.0	2,149.3	26.70	81.507	
5,900.0	5,694.1	5,693.8	5,693.2	29.6	1.6	-156.62	-1,688.7	-270.6	2,184.2	2,157.3	26.84	81.371	
5,917.0	5,711.1	5,710.8	5,710.1	29.7	1.6	-160.24	-1,688.7	-270.6	2,185.6	2,158.7	26.86	81.364	
6,000.0	5,793.7	5,795.9	5,795.3	29.8	1.6	-160.31	-1,688.7	-270.6	2,192.4	2,165.4	26.98	81.259	
6,067.0	5,860.5	5,864.0	5,863.4	30.0	1.6	-160.36	-1,688.5	-270.5	2,197.9	2,170.8	27.09	81.142	
6,100.0	5,893.4	5,897.6	5,896.9	30.0	1.6	-160.41	-1,688.5	-270.5	2,200.4	2,173.3	27.12	81.137	
6,200.0	5,993.2	6,001.2	6,000.6	30.2	1.7	-160.50	-1,688.1	-270.5	2,205.7	2,178.5	27.21	81.065	
6,300.0	6,093.2	6,104.3	6,103.6	30.3	1.7	-160.54	-1,687.7	-270.6	2,207.6	2,180.3	27.29	80.891	
6,318.8	6,111.9	6,123.2	6,122.6	30.3	1.7	147.50	-1,687.6	-270.6	2,207.5	2,183.1	24.41	90.439	
6,400.0	6,193.2	6,205.1	6,204.5	30.4	1.7	147.50	-1,687.3	-270.8	2,207.1	2,182.6	24.51	90.041	
6,444.4	6,237.6	6,248.0	6,247.3	30.4	1.7	147.50	-1,687.1	-270.9	2,206.9	2,182.3	24.57	89.822	
6,450.0	6,243.2	6,253.3	6,252.7	30.4	1.7	57.51	-1,687.1	-271.0	2,206.9	2,179.4	27.46	80.362	
6,475.0	6,268.1	6,277.4	6,276.8	30.4	1.7	57.59	-1,687.0	-271.0	2,206.3	2,178.8	27.47	80.317	
6,500.0	6,293.0	6,301.5	6,300.9	30.4	1.7	57.77	-1,687.0	-271.1	2,205.0	2,177.5	27.50	80.185	
6,525.0	6,317.8	6,326.5	6,325.9	30.4	1.7	58.05	-1,686.9	-271.2	2,203.0	2,175.4	27.55	79.963	
6,550.0	6,342.3	6,351.3	6,350.6	30.4	1.7	58.43	-1,686.8	-271.3	2,200.3	2,172.7	27.62	79.656	
6,575.0	6,366.5	6,375.7	6,375.1	30.3	1.7	58.92	-1,686.8	-271.3	2,196.9	2,169.2	27.71	79.272	
6,600.0	6,390.4	6,399.9	6,399.2	30.2	1.7	59.50	-1,686.7	-271.4	2,192.9	2,165.1	27.82	78.817	
6,625.0	6,413.9	6,422.9	6,422.3	30.2	1.7	60.17	-1,686.6	-271.4	2,188.3	2,160.3	27.95	78.305	
6,650.0	6,436.9	6,445.5	6,444.9	30.1	1.8	60.94	-1,686.6	-271.5	2,183.0	2,155.0	28.08	77.740	
6,675.0	6,459.3	6,467.5	6,466.9	30.0	1.8	61.80	-1,686.5	-271.6	2,177.2	2,149.0	28.23	77.131	
6,700.0	6,481.1	6,489.0	6,488.3	29.9	1.8	62.75	-1,686.5	-271.7	2,170.8	2,142.5	28.38	76.488	
6,725.0	6,502.3	6,510.5	6,509.9	29.7	1.8	63.81	-1,686.4	-271.8	2,163.9	2,135.4	28.54	75.814	
6,750.0	6,522.7	6,532.2	6,531.6	29.6	1.8	64.96	-1,686.4	-271.9	2,156.6	2,127.8	28.71	75.117	
6,775.0	6,542.4	6,553.1	6,552.5	29.5	1.8	66.19	-1,686.3	-271.9	2,148.7	2,119.8	28.88	74.414	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,573.1	6,572.5	29.4	1.8	67.50	-1,686.3	-272.0	2,140.4	2,111.4	29.04	73.713	
6,825.0	6,579.1	6,592.2	6,591.6	29.3	1.8	68.88	-1,686.2	-272.0	2,131.8	2,102.6	29.19	73.025	
6,850.0	6,596.1	6,610.4	6,609.8	29.1	1.8	70.33	-1,686.1	-272.1	2,122.8	2,093.4	29.34	72.355	
6,875.0	6,612.1	6,627.7	6,627.0	29.0	1.8	71.83	-1,686.0	-272.1	2,113.5	2,084.0	29.47	71.712	
6,900.0	6,627.1	6,643.8	6,643.1	28.9	1.8	73.37	-1,685.9	-272.2	2,104.0	2,074.4	29.59	71.103	
6,925.0	6,641.0	6,658.7	6,658.1	28.8	1.8	74.95	-1,685.8	-272.2	2,094.2	2,064.5	29.69	70.530	
6,950.0	6,653.8	6,672.4	6,671.8	28.7	1.8	76.54	-1,685.7	-272.3	2,084.3	2,054.6	29.78	69.996	
6,975.0	6,665.5	6,684.9	6,684.3	28.7	1.8	78.14	-1,685.6	-272.3	2,074.3	2,044.5	29.85	69.498	
7,000.0	6,676.0	6,696.1	6,695.5	28.6	1.8	79.73	-1,685.5	-272.4	2,064.3	2,034.4	29.90	69.032	
7,025.0	6,685.3	6,705.9	6,705.3	28.6	1.8	81.30	-1,685.4	-272.4	2,054.3	2,024.3	29.95	68.594	
7,050.0	6,693.4	6,714.3	6,713.6	28.5	1.8	82.84	-1,685.3	-272.5	2,044.2	2,014.3	29.99	68.175	
7,075.0	6,700.2	6,721.3	6,720.7	28.5	1.8	84.34	-1,685.3	-272.5	2,034.3	2,004.3	30.02	67.765	
7,100.0	6,705.8	6,727.0	6,726.4	28.5	1.8	85.78	-1,685.2	-272.6	2,024.5	1,994.4	30.06	67.357	
7,125.0	6,710.0	6,731.3	6,730.7	28.5	1.8	87.17	-1,685.2	-272.6	2,014.8	1,984.7	30.10	66.945	
7,150.0	6,713.0	6,734.2	6,733.6	28.6	1.8	88.48	-1,685.2	-272.6	2,005.4	1,975.2	30.15	66.522	
7,175.0	6,714.7	6,735.8	6,735.2	28.6	1.8	89.72	-1,685.1	-272.6	1,996.1	1,965.9	30.20	66.087	
7,198.8	6,715.0	6,736.0	6,735.4	28.6	1.8	90.83	-1,685.1	-272.6	1,987.6	1,957.3	30.27	65.662	
7,200.0	6,715.0	6,736.0	6,735.3	28.6	1.8	90.83	-1,685.1	-272.6	1,987.2	1,956.9	30.27	65.642	
7,300.0	6,714.1	6,734.3	6,733.6	29.0	1.8	90.77	-1,685.2	-272.6	1,954.2	1,923.5	30.68	63.705	
7,400.0	6,713.2	6,732.6	6,731.9	29.7	1.8	90.72	-1,685.2	-272.6	1,925.8	1,894.4	31.34	61.448	
7,500.0	6,712.3	6,730.9	6,730.3	30.6	1.8	90.67	-1,685.2	-272.6	1,902.2	1,870.0	32.25	58.985	
7,600.0	6,711.3	6,729.3	6,728.6	31.7	1.8	90.62	-1,685.2	-272.6	1,883.7	1,850.3	33.38	56.426	
7,700.0	6,710.4	6,727.6	6,727.0	33.0	1.8	90.57	-1,685.2	-272.6	1,870.3	1,835.6	34.72	53.871	
7,800.0	6,709.5	6,726.0	6,725.4	34.5	1.8	90.52	-1,685.2	-272.6	1,862.2	1,826.0	36.23	51.399	
7,900.0	6,708.5	6,724.5	6,723.8	36.2	1.8	90.47	-1,685.2	-272.6	1,859.5	1,821.6	37.90	49.065	
7,901.0	6,708.5	6,724.4	6,723.8	36.2	1.8	90.47	-1,685.2	-272.6	1,859.5	1,821.6	37.92	49.043	
8,000.0	6,707.6	6,722.9	6,722.3	38.0	1.8	90.42	-1,685.2	-272.5	1,862.1	1,822.4	39.70	46.903	
8,100.0	6,706.7	6,721.4	6,720.7	39.9	1.8	90.38	-1,685.3	-272.5	1,870.1	1,828.5	41.62	44.932	
8,200.0	6,705.8	6,719.8	6,719.2	41.9	1.8	90.33	-1,685.3	-272.5	1,883.4	1,839.7	43.64	43.156	
8,300.0	6,704.8	6,718.3	6,717.7	44.0	1.8	90.28	-1,685.3	-272.5	1,901.8	1,856.1	45.75	41.571	
8,400.0	6,703.9	6,716.9	6,716.2	46.2	1.8	90.24	-1,685.3	-272.5	1,925.3	1,877.4	47.93	40.168	
8,500.0	6,703.0	6,715.4	6,714.8	48.5	1.8	90.19	-1,685.3	-272.5	1,953.6	1,903.4	50.18	38.934	
8,600.0	6,702.1	6,714.0	6,713.3	50.8	1.8	90.15	-1,685.3	-272.5	1,986.5	1,934.0	52.48	37.853	
8,700.0	6,701.1	6,712.5	6,711.9	53.1	1.8	90.10	-1,685.3	-272.5	2,023.9	1,969.0	54.83	36.911	
8,800.0	6,700.2	6,711.1	6,710.5	55.5	1.8	90.06	-1,685.3	-272.5	2,065.4	2,008.2	57.23	36.092	
8,900.0	6,699.3	6,709.7	6,709.1	57.9	1.8	90.02	-1,685.4	-272.5	2,110.8	2,051.2	59.66	35.382	
9,000.0	6,698.3	6,708.4	6,707.7	60.4	1.8	89.98	-1,685.4	-272.5	2,159.9	2,097.8	62.12	34.769	
9,100.0	6,697.4	6,707.0	6,706.4	62.9	1.8	89.93	-1,685.4	-272.5	2,212.5	2,147.9	64.62	34.241	
9,200.0	6,696.5	6,705.7	6,705.1	65.4	1.8	89.89	-1,685.4	-272.4	2,268.2	2,201.1	67.13	33.786	
9,300.0	6,695.5	6,700.0	6,699.4	68.0	1.8	89.72	-1,685.4	-272.4	2,326.9	2,257.3	69.67	33.397	
9,400.0	6,694.6	6,700.0	6,699.4	70.5	1.8	89.72	-1,685.4	-272.4	2,388.4	2,316.1	72.24	33.063	
9,500.0	6,693.7	6,700.0	6,699.4	73.1	1.8	89.72	-1,685.4	-272.4	2,452.4	2,377.6	74.82	32.778	
9,600.0	6,692.8	6,700.0	6,699.4	75.7	1.8	89.72	-1,685.4	-272.4	2,518.7	2,441.3	77.42	32.535	
9,700.0	6,691.8	6,699.2	6,698.5	78.3	1.8	89.69	-1,685.4	-272.4	2,587.2	2,507.2	80.03	32.329	
9,800.0	6,690.9	6,697.7	6,697.1	80.9	1.8	89.65	-1,685.5	-272.4	2,657.7	2,575.0	82.65	32.155	
9,900.0	6,690.0	6,696.3	6,695.7	83.6	1.8	89.60	-1,685.5	-272.4	2,730.0	2,644.7	85.29	32.009	
10,000.0	6,689.0	6,694.9	6,694.3	86.2	1.8	89.56	-1,685.5	-272.4	2,804.1	2,716.1	87.94	31.887	
10,100.0	6,688.1	6,693.5	6,692.9	88.9	1.8	89.52	-1,685.5	-272.4	2,879.7	2,789.1	90.59	31.787	
10,200.0	6,687.2	6,692.1	6,691.5	91.6	1.8	89.47	-1,685.5	-272.4	2,956.7	2,863.5	93.26	31.704	
10,300.0	6,686.2	6,690.8	6,690.1	94.2	1.8	89.43	-1,685.5	-272.4	3,035.1	2,939.2	95.93	31.637	
10,400.0	6,685.3	6,689.4	6,688.8	96.9	1.8	89.39	-1,685.5	-272.4	3,114.7	3,016.1	98.62	31.584	
10,500.0	6,684.4	6,688.0	6,687.4	99.6	1.8	89.35	-1,685.5	-272.4	3,195.5	3,094.2	101.31	31.543	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,686.7	6,686.0	102.3	1.8	89.30	-1,685.5	-272.4	3,277.4	3,173.3	104.00	31.513	
10,700.0	6,682.5	6,685.3	6,684.7	105.0	1.8	89.26	-1,685.6	-272.4	3,360.2	3,253.5	106.70	31.491	
10,800.0	6,681.6	6,684.0	6,683.3	107.7	1.8	89.22	-1,685.6	-272.3	3,443.9	3,334.5	109.41	31.477	
10,900.0	6,680.6	6,682.6	6,682.0	110.4	1.8	89.18	-1,685.6	-272.3	3,528.5	3,416.3	112.12	31.470	
11,000.0	6,679.7	6,681.3	6,680.7	113.1	1.8	89.14	-1,685.6	-272.3	3,613.8	3,499.0	114.84	31.469	SF
11,100.0	6,678.8	6,680.0	6,679.3	115.9	1.8	89.10	-1,685.6	-272.3	3,699.9	3,582.4	117.56	31.473	
11,200.0	6,677.8	6,678.6	6,678.0	118.6	1.8	89.06	-1,685.6	-272.3	3,786.7	3,666.4	120.28	31.481	
11,300.0	6,676.9	6,677.3	6,676.7	121.3	1.8	89.01	-1,685.6	-272.3	3,874.1	3,751.1	123.01	31.494	
11,400.0	6,676.0	6,676.0	6,675.4	124.1	1.8	88.97	-1,685.6	-272.3	3,962.1	3,836.4	125.74	31.509	
11,500.0	6,675.0	6,674.7	6,674.1	126.8	1.8	88.93	-1,685.6	-272.3	4,050.7	3,922.2	128.48	31.528	
11,600.0	6,674.1	6,673.4	6,672.8	129.5	1.8	88.89	-1,685.6	-272.3	4,139.8	4,008.6	131.22	31.549	
11,700.0	6,673.1	6,672.1	6,671.5	132.3	1.8	88.85	-1,685.7	-272.3	4,229.4	4,095.4	133.96	31.572	
11,800.0	6,672.2	6,670.8	6,670.2	135.0	1.8	88.81	-1,685.7	-272.3	4,319.4	4,182.7	136.70	31.597	
11,900.0	6,671.3	6,669.6	6,668.9	137.8	1.8	88.77	-1,685.7	-272.3	4,409.9	4,270.4	139.45	31.623	
12,000.0	6,670.3	6,668.3	6,667.7	140.5	1.8	88.73	-1,685.7	-272.3	4,500.7	4,358.5	142.20	31.651	
12,036.2	6,670.0	6,667.8	6,667.2	141.5	1.8	88.72	-1,685.7	-272.3	4,533.7	4,390.5	143.19	31.662	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	169.79	-2,207.7	397.8	2,243.3				
100.0	100.0	100.0	100.0	0.1	0.1	159.19	-2,207.5	397.8	2,243.1	2,242.9	0.20	N/A	
134.5	134.5	133.2	133.2	0.1	0.1	159.18	-2,207.3	397.8	2,243.1	2,242.8	0.25	8,864.183	CC, ES
200.0	200.0	189.8	189.8	0.2	0.1	159.18	-2,207.3	397.9	2,243.2	2,242.9	0.35	6,413.640	
261.0	261.0	255.9	255.9	0.3	0.2	159.18	-2,207.3	398.1	2,243.6	2,243.1	0.45	5,008.819	
300.0	300.0	300.0	300.0	0.4	0.2	-122.61	-2,207.2	398.1	2,243.7	2,243.2	0.56	4,020.184	
400.0	399.9	381.9	381.9	0.6	0.2	-108.12	-2,207.2	398.3	2,245.0	2,244.2	0.81	2,775.181	
500.0	499.7	472.3	472.3	0.8	0.3	-105.84	-2,207.9	398.7	2,247.8	2,246.7	1.11	2,024.866	
538.0	537.5	508.5	508.5	0.9	0.3	-105.45	-2,208.2	398.9	2,249.2	2,248.0	1.23	1,830.384	
600.0	599.1	573.5	573.5	1.1	0.4	-106.33	-2,208.7	399.4	2,251.8	2,250.3	1.49	1,514.629	
700.0	697.9	676.7	676.7	1.5	0.4	-107.34	-2,209.3	400.1	2,257.0	2,255.1	1.89	1,192.017	
800.0	796.0	776.2	776.2	1.8	0.5	-108.09	-2,209.8	400.5	2,263.6	2,261.3	2.29	986.896	
818.0	813.5	793.9	793.8	1.9	0.5	-108.22	-2,209.9	400.5	2,265.0	2,262.6	2.37	957.519	
900.0	893.1	870.6	870.6	2.3	0.5	-107.69	-2,210.3	400.8	2,271.7	2,268.9	2.85	795.751	
1,000.0	989.2	966.9	966.9	2.9	0.6	-107.38	-2,210.9	401.3	2,281.1	2,277.7	3.45	661.542	
1,100.0	1,083.9	1,065.2	1,065.1	3.5	0.6	-107.34	-2,211.4	401.7	2,291.8	2,287.7	4.04	567.647	
1,104.0	1,087.6	1,069.1	1,069.1	3.5	0.6	-107.34	-2,211.5	401.7	2,292.2	2,288.2	4.06	564.475	
1,200.0	1,177.9	1,160.6	1,160.5	4.1	0.7	-108.79	-2,211.8	401.9	2,303.4	2,298.7	4.69	491.106	
1,300.0	1,272.0	1,255.0	1,255.0	4.8	0.7	-110.30	-2,212.2	402.0	2,315.8	2,310.5	5.34	433.924	
1,391.0	1,357.8	1,339.5	1,339.5	5.3	0.7	-111.65	-2,212.6	402.0	2,327.7	2,321.8	5.92	393.106	
1,400.0	1,366.3	1,347.7	1,347.7	5.4	0.7	-111.55	-2,212.7	402.0	2,328.9	2,322.9	5.97	389.990	
1,458.0	1,421.2	1,400.4	1,400.4	5.7	0.8	-110.81	-2,213.0	401.9	2,336.3	2,330.0	6.30	371.088	
1,500.0	1,461.0	1,440.1	1,440.1	6.0	0.8	-111.30	-2,213.3	401.9	2,341.5	2,335.0	6.54	358.164	
1,600.0	1,556.1	1,538.7	1,538.7	6.6	0.8	-112.50	-2,213.8	402.0	2,354.3	2,347.2	7.11	331.272	
1,676.0	1,628.3	1,618.3	1,618.3	7.0	0.8	-113.45	-2,213.9	402.3	2,364.1	2,356.6	7.53	314.084	
1,700.0	1,651.1	1,642.7	1,642.7	7.2	0.8	-113.10	-2,213.9	402.4	2,367.2	2,359.5	7.65	309.286	
1,800.0	1,746.4	1,738.5	1,738.5	7.7	0.8	-111.53	-2,213.9	402.4	2,379.2	2,371.0	8.19	290.664	
1,900.0	1,841.8	1,827.4	1,827.3	8.3	0.8	-109.80	-2,214.2	402.0	2,390.4	2,381.7	8.73	273.948	
1,963.0	1,902.0	1,884.5	1,884.5	8.7	0.9	-108.68	-2,214.5	401.8	2,397.0	2,388.0	9.07	264.189	
2,000.0	1,937.4	1,920.7	1,920.7	8.9	0.9	-108.92	-2,214.7	401.7	2,400.9	2,391.6	9.28	258.851	
2,100.0	2,033.1	2,026.3	2,026.3	9.5	0.9	-109.60	-2,215.0	401.6	2,411.0	2,401.2	9.81	245.779	
2,200.0	2,129.0	2,131.3	2,131.3	10.0	0.9	-110.27	-2,214.8	401.3	2,420.7	2,410.4	10.32	234.543	
2,250.0	2,177.1	2,178.9	2,178.9	10.3	0.9	-110.56	-2,214.7	401.2	2,425.5	2,414.9	10.58	229.291	
2,300.0	2,225.1	2,226.1	2,226.1	10.6	0.9	-111.94	-2,214.5	401.2	2,430.5	2,419.7	10.84	224.244	
2,400.0	2,321.2	2,321.0	2,321.0	11.2	0.9	-114.66	-2,214.2	401.3	2,441.6	2,430.3	11.36	215.011	
2,500.0	2,417.0	2,418.4	2,418.3	11.7	0.9	-117.33	-2,213.7	401.5	2,454.1	2,442.3	11.87	206.685	
2,537.0	2,452.5	2,450.6	2,450.6	11.9	0.9	-118.27	-2,213.6	401.5	2,459.1	2,447.1	12.07	203.822	
2,600.0	2,512.8	2,506.3	2,506.3	12.3	0.9	-121.35	-2,213.5	401.6	2,468.5	2,456.1	12.40	199.073	
2,700.0	2,608.2	2,607.8	2,607.7	12.9	1.0	-126.06	-2,213.2	401.8	2,485.4	2,472.5	12.92	192.324	
2,800.0	2,703.3	2,696.3	2,696.3	13.5	1.0	-130.38	-2,213.1	401.9	2,505.1	2,491.6	13.44	186.401	
2,824.0	2,726.1	2,716.7	2,716.6	13.7	1.0	-131.36	-2,213.1	401.9	2,510.2	2,496.6	13.56	185.078	
2,900.0	2,798.2	2,780.6	2,780.5	14.1	1.0	-129.41	-2,213.2	402.0	2,526.3	2,512.4	13.93	181.336	
3,000.0	2,893.6	2,874.1	2,874.0	14.7	1.0	-126.61	-2,213.6	402.2	2,545.9	2,531.4	14.42	176.604	
3,100.0	2,989.4	2,972.8	2,972.8	15.3	1.0	-123.49	-2,214.1	402.3	2,563.3	2,548.4	14.88	172.225	
3,112.0	3,000.9	2,984.8	2,984.8	15.4	1.0	-123.09	-2,214.1	402.3	2,565.2	2,550.3	14.94	171.719	
3,200.0	3,085.5	3,067.1	3,067.1	15.9	1.1	-122.65	-2,214.7	402.0	2,579.1	2,563.8	15.33	168.201	
3,300.0	3,181.9	3,171.7	3,171.7	16.4	1.1	-122.14	-2,215.3	401.5	2,594.2	2,578.5	15.77	164.473	
3,400.0	3,278.4	3,300.0	3,299.9	16.9	1.1	-121.65	-2,215.1	400.7	2,607.9	2,591.7	16.18	161.144	
3,500.0	3,374.7	3,389.9	3,389.8	17.5	1.1	-122.05	-2,214.4	400.0	2,621.5	2,604.8	16.70	156.971	
3,600.0	3,470.3	3,491.1	3,491.0	18.1	1.1	-122.50	-2,213.8	399.1	2,636.8	2,619.5	17.21	153.189	
3,687.0	3,552.8	3,565.7	3,565.6	18.6	1.1	-122.81	-2,213.7	398.0	2,651.4	2,633.7	17.67	150.080	
3,700.0	3,565.1	3,576.5	3,576.4	18.7	1.1	-122.63	-2,213.7	397.8	2,653.7	2,635.9	17.74	149.602	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,663.2	3,663.1	19.4	1.2	-121.28	-2,214.0	396.3	2,671.2	2,653.0	18.29	146.062	
3,900.0	3,753.9	3,755.7	3,755.6	20.0	1.2	-120.00	-2,214.5	394.8	2,688.5	2,669.7	18.83	142.770	
3,974.0	3,823.6	3,826.2	3,826.1	20.5	1.2	-119.10	-2,215.0	393.6	2,701.0	2,681.8	19.23	140.494	
4,000.0	3,848.1	3,850.7	3,850.6	20.7	1.2	-119.50	-2,215.2	393.1	2,705.3	2,686.0	19.34	139.871	
4,100.0	3,942.9	3,947.4	3,947.3	21.3	1.2	-121.10	-2,215.9	391.2	2,721.7	2,701.9	19.79	137.526	
4,200.0	4,038.5	4,047.5	4,047.3	21.9	1.2	-122.79	-2,216.8	388.9	2,737.3	2,717.0	20.24	135.262	
4,263.0	4,099.0	4,111.5	4,111.3	22.3	1.2	-123.91	-2,217.4	387.1	2,746.7	2,726.2	20.52	133.859	
4,300.0	4,134.7	4,150.0	4,149.8	22.5	1.3	-125.15	-2,217.8	386.0	2,752.1	2,731.5	20.66	133.197	
4,400.0	4,231.2	4,252.2	4,251.9	23.0	1.3	-128.63	-2,218.5	383.2	2,767.2	2,746.2	21.05	131.466	
4,500.0	4,328.0	4,376.7	4,376.4	23.5	1.3	-132.38	-2,218.9	379.5	2,782.5	2,761.1	21.42	129.876	
4,549.0	4,375.5	4,441.3	4,441.0	23.8	1.3	-134.28	-2,218.6	377.2	2,789.8	2,768.2	21.61	129.118	
4,600.0	4,425.0	4,504.5	4,504.1	24.0	1.3	-134.65	-2,218.1	374.7	2,797.2	2,775.4	21.79	128.368	
4,700.0	4,521.9	4,611.8	4,611.3	24.5	1.4	-135.31	-2,216.8	370.3	2,811.4	2,789.3	22.16	126.889	
4,800.0	4,618.8	4,700.0	4,699.4	25.0	1.4	-135.94	-2,215.2	367.7	2,826.1	2,803.5	22.52	125.464	
4,837.0	4,654.7	4,725.7	4,725.1	25.2	1.4	-136.15	-2,214.5	367.3	2,831.7	2,809.0	22.66	124.946	
4,900.0	4,715.7	4,774.9	4,774.3	25.5	1.4	-136.74	-2,213.3	367.0	2,841.6	2,818.7	22.91	124.036	
5,000.0	4,812.4	4,855.7	4,855.1	26.0	1.4	-137.68	-2,211.0	367.4	2,858.7	2,835.4	23.30	122.703	
5,100.0	4,908.9	4,939.0	4,938.4	26.6	1.4	-138.59	-2,208.9	368.2	2,877.1	2,853.4	23.68	121.485	
5,125.0	4,932.9	4,960.1	4,959.5	26.7	1.4	-138.81	-2,208.4	368.4	2,881.9	2,858.1	23.78	121.197	
5,200.0	5,005.4	5,023.3	5,022.6	27.0	1.4	-136.51	-2,207.1	369.2	2,895.9	2,871.9	24.00	120.644	
5,300.0	5,102.4	5,109.1	5,108.4	27.5	1.4	-132.83	-2,205.7	370.3	2,912.5	2,888.2	24.29	119.901	
5,400.0	5,199.9	5,214.5	5,213.8	28.0	1.4	-128.38	-2,203.8	371.8	2,926.5	2,901.9	24.55	119.192	
5,412.0	5,211.7	5,226.5	5,225.7	28.1	1.4	-127.78	-2,203.5	372.0	2,927.9	2,903.4	24.58	119.103	
5,500.0	5,297.9	5,312.6	5,311.9	28.4	1.4	-125.58	-2,201.9	373.2	2,937.8	2,913.0	24.78	118.556	
5,581.0	5,377.7	5,383.5	5,382.7	28.7	1.4	-122.88	-2,200.7	374.1	2,945.5	2,920.5	24.95	118.054	
5,600.0	5,396.4	5,400.0	5,399.2	28.8	1.4	-124.13	-2,200.4	374.4	2,947.1	2,922.1	24.99	117.909	
5,700.0	5,495.3	5,471.4	5,470.6	29.1	1.4	-132.25	-2,199.7	375.5	2,956.3	2,931.1	25.21	117.254	
5,800.0	5,594.6	5,567.1	5,566.3	29.4	1.4	-144.27	-2,199.5	377.0	2,966.0	2,940.6	25.38	116.849	
5,900.0	5,694.1	5,689.7	5,688.9	29.6	1.5	-161.96	-2,199.2	378.2	2,975.0	2,949.5	25.52	116.598	
5,917.0	5,711.1	5,711.4	5,710.6	29.7	1.5	-165.59	-2,199.0	378.3	2,976.4	2,950.9	25.53	116.565	
6,000.0	5,793.7	5,814.5	5,813.7	29.8	1.5	-165.64	-2,198.1	378.5	2,983.0	2,957.3	25.66	116.237	
6,067.0	5,860.5	5,883.8	5,883.0	30.0	1.5	-165.68	-2,197.3	378.4	2,988.1	2,962.3	25.77	115.960	
6,100.0	5,893.4	5,916.4	5,915.6	30.0	1.5	-165.71	-2,197.0	378.3	2,990.4	2,964.6	25.80	115.918	
6,200.0	5,993.2	6,011.4	6,010.5	30.2	1.5	-165.77	-2,196.0	378.3	2,995.2	2,969.3	25.88	115.751	
6,300.0	6,093.2	6,108.5	6,107.7	30.3	1.5	-165.80	-2,194.8	378.6	2,996.7	2,970.8	25.94	115.506	
6,318.8	6,111.9	6,126.1	6,125.3	30.3	1.5	142.23	-2,194.6	378.7	2,996.7	2,971.1	25.61	117.026	
6,400.0	6,193.2	6,200.0	6,199.2	30.4	1.5	142.22	-2,193.7	379.0	2,996.2	2,970.5	25.71	116.541	
6,444.4	6,237.6	6,244.1	6,243.2	30.4	1.5	142.21	-2,193.3	379.3	2,996.0	2,970.2	25.77	116.273	
6,450.0	6,243.2	6,249.3	6,248.5	30.4	1.5	52.21	-2,193.2	379.3	2,995.9	2,969.8	26.10	114.787	
6,475.0	6,268.1	6,272.9	6,272.0	30.4	1.5	52.28	-2,193.0	379.5	2,995.3	2,969.1	26.10	114.754	
6,500.0	6,293.0	6,296.3	6,295.5	30.4	1.5	52.45	-2,192.8	379.6	2,993.8	2,967.7	26.13	114.566	
6,525.0	6,317.8	6,317.9	6,317.0	30.4	1.5	52.71	-2,192.6	379.8	2,991.5	2,965.4	26.19	114.236	
6,550.0	6,342.3	6,338.9	6,338.1	30.4	1.6	53.05	-2,192.4	379.9	2,988.6	2,962.3	26.27	113.772	
6,575.0	6,366.5	6,359.7	6,358.9	30.3	1.6	53.49	-2,192.3	380.1	2,984.8	2,958.4	26.37	113.185	
6,600.0	6,390.4	6,380.2	6,379.4	30.2	1.6	54.03	-2,192.2	380.2	2,980.3	2,953.8	26.49	112.488	
6,625.0	6,413.9	6,400.0	6,399.2	30.2	1.6	54.65	-2,192.2	380.3	2,975.2	2,948.5	26.64	111.696	
6,650.0	6,436.9	6,422.3	6,421.4	30.1	1.6	55.38	-2,192.2	380.5	2,969.3	2,942.5	26.80	110.796	
6,675.0	6,459.3	6,443.7	6,442.8	30.0	1.6	56.21	-2,192.1	380.6	2,962.7	2,935.7	26.98	109.821	
6,700.0	6,481.1	6,464.5	6,463.7	29.9	1.6	57.14	-2,192.1	380.8	2,955.4	2,928.3	27.17	108.778	
6,725.0	6,502.3	6,484.8	6,483.9	29.7	1.6	58.17	-2,192.1	380.9	2,947.6	2,920.2	27.37	107.680	
6,750.0	6,522.7	6,504.8	6,503.9	29.6	1.6	59.29	-2,192.0	381.1	2,939.1	2,911.5	27.59	106.533	
6,775.0	6,542.4	6,525.6	6,524.8	29.5	1.6	60.53	-2,192.0	381.3	2,930.0	2,902.2	27.82	105.337	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,545.6	6,544.8	29.4	1.6	61.87	-2,192.0	381.4	2,920.4	2,892.4	28.05	104.124	
6,825.0	6,579.1	6,564.6	6,563.8	29.3	1.6	63.30	-2,191.9	381.6	2,910.3	2,882.0	28.28	102.910	
6,850.0	6,596.1	6,582.7	6,581.9	29.1	1.6	64.82	-2,191.9	381.7	2,899.7	2,871.2	28.51	101.711	
6,875.0	6,612.1	6,599.7	6,598.9	29.0	1.6	66.42	-2,191.9	381.9	2,888.7	2,860.0	28.73	100.543	
6,900.0	6,627.1	6,614.6	6,613.8	28.9	1.6	68.08	-2,191.8	382.0	2,877.3	2,848.3	28.94	99.428	
6,925.0	6,641.0	6,628.5	6,627.6	28.8	1.6	69.81	-2,191.8	382.1	2,865.6	2,836.4	29.13	98.369	
6,950.0	6,653.8	6,641.3	6,640.4	28.7	1.6	71.60	-2,191.7	382.2	2,853.5	2,824.2	29.30	97.375	
6,975.0	6,665.5	6,652.9	6,652.1	28.7	1.6	73.44	-2,191.7	382.3	2,841.3	2,811.8	29.46	96.454	
7,000.0	6,676.0	6,663.5	6,662.6	28.6	1.6	75.31	-2,191.7	382.4	2,828.8	2,799.2	29.59	95.608	
7,025.0	6,685.3	6,672.8	6,672.0	28.6	1.6	77.22	-2,191.6	382.5	2,816.1	2,786.5	29.70	94.835	
7,050.0	6,693.4	6,681.0	6,680.2	28.5	1.6	79.14	-2,191.6	382.5	2,803.4	2,773.6	29.78	94.129	
7,075.0	6,700.2	6,688.0	6,687.1	28.5	1.6	81.06	-2,191.6	382.6	2,790.6	2,760.7	29.85	93.479	
7,100.0	6,705.8	6,693.7	6,692.8	28.5	1.6	82.97	-2,191.6	382.7	2,777.8	2,747.8	29.91	92.867	
7,125.0	6,710.0	6,698.1	6,697.3	28.5	1.6	84.85	-2,191.6	382.7	2,764.9	2,735.0	29.96	92.277	
7,150.0	6,713.0	6,700.0	6,699.1	28.6	1.6	86.67	-2,191.6	382.7	2,752.2	2,722.2	30.02	91.689	
7,175.0	6,714.7	6,700.0	6,699.1	28.6	1.6	88.43	-2,191.6	382.7	2,739.5	2,709.4	30.08	91.087	
7,198.8	6,715.0	6,703.6	6,702.7	28.6	1.6	90.18	-2,191.5	382.8	2,727.6	2,697.4	30.14	90.488	
7,200.0	6,715.0	6,703.6	6,702.7	28.6	1.6	90.18	-2,191.5	382.8	2,727.0	2,696.9	30.15	90.460	
7,300.0	6,714.1	6,703.6	6,702.8	29.0	1.6	90.18	-2,191.5	382.8	2,678.7	2,648.1	30.55	87.686	
7,400.0	6,713.2	6,703.7	6,702.8	29.7	1.6	90.18	-2,191.5	382.8	2,633.2	2,602.0	31.21	84.363	
7,500.0	6,712.3	6,700.0	6,699.1	30.6	1.6	90.09	-2,191.6	382.7	2,590.9	2,558.8	32.12	80.656	
7,600.0	6,711.3	6,700.0	6,699.1	31.7	1.6	90.09	-2,191.6	382.7	2,551.8	2,518.5	33.26	76.728	
7,700.0	6,710.4	6,700.0	6,699.1	33.0	1.6	90.09	-2,191.6	382.7	2,516.0	2,481.4	34.59	72.732	
7,800.0	6,709.5	6,700.0	6,699.1	34.5	1.6	90.09	-2,191.6	382.7	2,483.7	2,447.6	36.11	68.790	
7,900.0	6,708.5	6,700.0	6,699.1	36.2	1.6	90.09	-2,191.6	382.7	2,455.1	2,417.3	37.77	64.994	
8,000.0	6,707.6	6,700.0	6,699.1	38.0	1.6	90.09	-2,191.6	382.7	2,430.3	2,390.7	39.58	61.405	
8,100.0	6,706.7	6,700.0	6,699.1	39.9	1.6	90.09	-2,191.6	382.7	2,409.4	2,367.9	41.50	58.059	
8,200.0	6,705.8	6,700.0	6,699.1	41.9	1.6	90.09	-2,191.6	382.7	2,392.4	2,348.9	43.52	54.974	
8,300.0	6,704.8	6,700.0	6,699.1	44.0	1.6	90.09	-2,191.6	382.7	2,379.6	2,334.0	45.63	52.153	
8,400.0	6,703.9	6,700.0	6,699.1	46.2	1.6	90.09	-2,191.6	382.7	2,370.9	2,323.1	47.81	49.591	
8,500.0	6,703.0	6,700.0	6,699.1	48.5	1.6	90.09	-2,191.6	382.7	2,366.4	2,316.4	50.06	47.274	
8,556.4	6,702.5	6,700.0	6,699.1	49.8	1.6	90.09	-2,191.6	382.7	2,365.8	2,314.4	51.36	46.066	
8,600.0	6,702.1	6,700.0	6,699.1	50.8	1.6	90.09	-2,191.6	382.7	2,366.2	2,313.8	52.36	45.190	
8,700.0	6,701.1	6,700.0	6,699.1	53.1	1.6	90.09	-2,191.6	382.7	2,370.1	2,315.4	54.71	43.319	
8,800.0	6,700.2	6,700.0	6,699.1	55.5	1.6	90.09	-2,191.6	382.7	2,378.3	2,321.2	57.11	41.645	
8,900.0	6,699.3	6,700.0	6,699.1	57.9	1.6	90.09	-2,191.6	382.7	2,390.6	2,331.0	59.54	40.150	
9,000.0	6,698.3	6,700.0	6,699.1	60.4	1.6	90.09	-2,191.6	382.7	2,407.0	2,345.0	62.01	38.819	
9,100.0	6,697.4	6,700.0	6,699.1	62.9	1.6	90.09	-2,191.6	382.7	2,427.4	2,362.9	64.50	37.634	
9,200.0	6,696.5	6,700.0	6,699.1	65.4	1.6	90.09	-2,191.6	382.7	2,451.7	2,384.7	67.02	36.582	
9,300.0	6,695.5	6,700.0	6,699.1	68.0	1.6	90.09	-2,191.6	382.7	2,479.9	2,410.3	69.56	35.650	
9,400.0	6,694.6	6,700.0	6,699.1	70.5	1.6	90.09	-2,191.6	382.7	2,511.7	2,439.5	72.13	34.824	
9,500.0	6,693.7	6,700.0	6,699.1	73.1	1.6	90.09	-2,191.6	382.7	2,547.0	2,472.3	74.71	34.093	
9,600.0	6,692.8	6,700.0	6,699.1	75.7	1.6	90.09	-2,191.6	382.7	2,585.7	2,508.4	77.30	33.448	
9,700.0	6,691.8	6,700.0	6,699.1	78.3	1.6	90.09	-2,191.6	382.7	2,627.7	2,547.8	79.92	32.880	
9,800.0	6,690.9	6,700.0	6,699.1	80.9	1.6	90.09	-2,191.6	382.7	2,672.7	2,590.2	82.54	32.380	
9,900.0	6,690.0	6,700.0	6,699.1	83.6	1.6	90.09	-2,191.6	382.7	2,720.7	2,635.5	85.18	31.940	
10,000.0	6,689.0	6,700.0	6,699.1	86.2	1.6	90.09	-2,191.6	382.7	2,771.4	2,683.6	87.83	31.555	
10,100.0	6,688.1	6,700.0	6,699.1	88.9	1.6	90.09	-2,191.6	382.7	2,824.8	2,734.3	90.49	31.218	
10,200.0	6,687.2	6,700.0	6,699.1	91.6	1.6	90.09	-2,191.6	382.7	2,880.7	2,787.5	93.15	30.924	
10,300.0	6,686.2	6,700.0	6,699.1	94.2	1.6	90.09	-2,191.6	382.7	2,938.9	2,843.1	95.83	30.667	
10,400.0	6,685.3	6,700.0	6,699.1	96.9	1.6	90.09	-2,191.6	382.7	2,999.3	2,900.8	98.51	30.445	
10,500.0	6,684.4	6,700.0	6,699.1	99.6	1.6	90.09	-2,191.6	382.7	3,061.8	2,960.6	101.21	30.253	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,700.0	6,699.1	102.3	1.6	90.09	-2,191.6	382.7	3,126.2	3,022.3	103.90	30.088	
10,700.0	6,682.5	6,700.0	6,699.1	105.0	1.6	90.09	-2,191.6	382.7	3,192.5	3,085.9	106.61	29.947	
10,800.0	6,681.6	6,700.0	6,699.1	107.7	1.6	90.09	-2,191.6	382.7	3,260.5	3,151.2	109.31	29.827	
10,900.0	6,680.6	6,700.0	6,699.1	110.4	1.6	90.09	-2,191.6	382.7	3,330.1	3,218.0	112.03	29.726	
11,000.0	6,679.7	6,700.0	6,699.1	113.1	1.6	90.09	-2,191.6	382.7	3,401.2	3,286.4	114.75	29.641	
11,100.0	6,678.8	6,700.0	6,699.1	115.9	1.6	90.09	-2,191.6	382.7	3,473.7	3,356.3	117.47	29.572	
11,200.0	6,677.8	6,700.0	6,699.1	118.6	1.6	90.09	-2,191.6	382.7	3,547.6	3,427.4	120.20	29.515	
11,300.0	6,676.9	6,700.0	6,699.1	121.3	1.6	90.09	-2,191.6	382.7	3,622.7	3,499.8	122.93	29.471	
11,400.0	6,676.0	6,700.0	6,699.1	124.1	1.6	90.09	-2,191.6	382.7	3,699.1	3,573.4	125.66	29.437	
11,500.0	6,675.0	6,700.0	6,699.1	126.8	1.6	90.09	-2,191.6	382.7	3,776.5	3,648.1	128.40	29.412	
11,600.0	6,674.1	6,700.0	6,699.1	129.5	1.6	90.09	-2,191.6	382.7	3,854.9	3,723.8	131.14	29.396	
11,700.0	6,673.1	6,700.0	6,699.1	132.3	1.6	90.09	-2,191.6	382.7	3,934.4	3,800.5	133.88	29.387	
11,800.0	6,672.2	6,700.0	6,699.1	135.0	1.6	90.09	-2,191.6	382.7	4,014.7	3,878.1	136.63	29.384	SF
11,900.0	6,671.3	6,700.0	6,699.1	137.8	1.6	90.09	-2,191.6	382.7	4,095.9	3,956.6	139.38	29.387	
12,000.0	6,670.3	6,700.0	6,699.1	140.5	1.6	90.09	-2,191.6	382.7	4,178.0	4,035.8	142.13	29.396	
12,036.2	6,670.0	6,700.0	6,699.1	141.5	1.6	90.09	-2,191.6	382.7	4,207.9	4,064.7	143.13	29.400	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wellbore # — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	145.94	-1,548.3	1,046.7	1,868.9				
100.0	100.0	93.3	93.3	0.1	0.1	135.34	-1,548.3	1,046.6	1,868.9	1,868.7	0.20	9,577.256	
200.0	200.0	191.0	191.0	0.2	0.2	135.36	-1,548.3	1,046.4	1,869.1	1,868.6	0.42	4,456.433	
261.0	261.0	253.1	253.1	0.3	0.3	135.37	-1,548.4	1,046.3	1,869.3	1,868.7	0.54	3,455.958	
300.0	300.0	293.2	293.2	0.4	0.3	-146.42	-1,548.5	1,046.1	1,869.5	1,868.9	0.66	2,820.721	
400.0	399.9	393.0	393.0	0.6	0.3	-131.91	-1,548.4	1,046.0	1,871.8	1,870.9	0.93	2,015.771	
500.0	499.7	488.9	488.9	0.8	0.4	-129.61	-1,548.3	1,046.1	1,876.4	1,875.2	1.21	1,556.494	
538.0	537.5	525.6	525.6	0.9	0.4	-129.20	-1,548.3	1,046.2	1,878.8	1,877.5	1.31	1,429.654	
600.0	599.1	585.7	585.7	1.1	0.4	-130.03	-1,548.3	1,046.4	1,883.6	1,882.1	1.55	1,213.994	
700.0	697.9	682.5	682.5	1.5	0.5	-130.92	-1,548.5	1,046.7	1,893.9	1,891.9	1.93	980.967	
800.0	796.0	780.3	780.3	1.8	0.5	-131.56	-1,548.7	1,047.0	1,907.2	1,904.9	2.31	827.205	
818.0	813.5	797.9	797.9	1.9	0.5	-131.66	-1,548.7	1,047.0	1,909.9	1,907.5	2.37	804.955	
900.0	893.1	878.2	878.2	2.3	0.5	-131.00	-1,548.9	1,047.2	1,923.4	1,920.6	2.81	685.360	
1,000.0	989.2	977.2	977.2	2.9	0.6	-130.51	-1,549.2	1,047.3	1,942.3	1,938.9	3.32	584.412	
1,100.0	1,083.9	1,075.8	1,075.8	3.5	0.6	-130.24	-1,549.3	1,047.2	1,963.7	1,959.9	3.81	514.725	
1,104.0	1,087.6	1,079.7	1,079.7	3.5	0.6	-130.24	-1,549.3	1,047.2	1,964.6	1,960.7	3.83	512.355	
1,200.0	1,177.9	1,168.2	1,168.2	4.1	0.6	-131.67	-1,549.2	1,047.3	1,986.7	1,982.4	4.34	457.478	
1,300.0	1,272.0	1,258.2	1,258.2	4.8	0.6	-133.13	-1,549.1	1,047.5	2,010.4	2,005.5	4.86	413.933	
1,391.0	1,357.8	1,345.0	1,345.0	5.3	0.7	-134.48	-1,549.3	1,047.7	2,032.4	2,027.1	5.32	381.988	
1,400.0	1,366.3	1,354.2	1,354.2	5.4	0.7	-134.38	-1,549.3	1,047.7	2,034.6	2,029.2	5.36	379.770	
1,458.0	1,421.2	1,414.6	1,414.6	5.7	0.7	-133.66	-1,549.3	1,047.8	2,047.9	2,042.4	5.59	366.120	
1,500.0	1,461.0	1,461.4	1,461.4	6.0	0.7	-134.18	-1,549.2	1,047.7	2,057.2	2,051.4	5.78	355.780	
1,600.0	1,556.1	1,565.7	1,565.7	6.6	0.7	-135.37	-1,548.3	1,047.5	2,079.0	2,072.8	6.23	333.909	
1,676.0	1,628.3	1,636.3	1,636.3	7.0	0.7	-136.21	-1,547.6	1,047.4	2,095.6	2,089.0	6.57	319.096	
1,700.0	1,651.1	1,657.1	1,657.1	7.2	0.7	-135.81	-1,547.3	1,047.4	2,100.9	2,094.2	6.68	314.708	
1,800.0	1,746.4	1,741.9	1,741.8	7.7	0.8	-134.04	-1,546.4	1,047.8	2,122.4	2,115.3	7.13	297.778	
1,900.0	1,841.8	1,825.5	1,825.5	8.3	0.8	-132.20	-1,545.8	1,048.6	2,143.5	2,135.9	7.58	282.833	
1,963.0	1,902.0	1,879.3	1,879.3	8.7	0.8	-131.00	-1,545.6	1,049.3	2,156.5	2,148.6	7.86	274.350	
2,000.0	1,937.4	1,911.0	1,911.0	8.9	0.8	-131.21	-1,545.5	1,049.7	2,164.0	2,156.0	8.03	269.618	
2,100.0	2,033.1	2,000.0	2,000.0	9.5	0.8	-131.78	-1,545.5	1,051.1	2,184.6	2,176.2	8.47	257.902	
2,200.0	2,129.0	2,091.2	2,091.2	10.0	0.9	-132.33	-1,545.7	1,052.5	2,205.2	2,196.3	8.91	247.539	
2,250.0	2,177.1	2,147.9	2,147.8	10.3	0.9	-132.66	-1,545.8	1,053.3	2,215.4	2,206.3	9.12	242.888	
2,300.0	2,225.1	2,209.3	2,209.2	10.6	0.9	-134.12	-1,545.8	1,053.9	2,225.4	2,216.1	9.33	238.409	
2,400.0	2,321.2	2,347.4	2,347.3	11.2	0.9	-137.04	-1,544.4	1,053.7	2,244.8	2,235.1	9.73	230.637	
2,500.0	2,417.0	2,451.8	2,451.7	11.7	1.0	-139.69	-1,542.6	1,052.8	2,264.6	2,254.5	10.15	223.129	
2,537.0	2,452.5	2,489.1	2,489.0	11.9	1.0	-140.65	-1,541.9	1,052.5	2,272.2	2,261.9	10.30	220.502	
2,600.0	2,512.8	2,547.9	2,547.8	12.3	1.0	-143.75	-1,540.7	1,052.0	2,285.6	2,275.1	10.56	216.374	
2,700.0	2,608.2	2,640.0	2,639.9	12.9	1.0	-148.42	-1,538.9	1,051.5	2,309.0	2,298.0	10.97	210.531	
2,800.0	2,703.3	2,736.0	2,735.9	13.5	1.0	-152.79	-1,536.8	1,051.1	2,334.6	2,323.2	11.36	205.489	
2,824.0	2,726.1	2,760.5	2,760.4	13.7	1.0	-153.80	-1,536.2	1,051.1	2,341.0	2,329.6	11.45	204.409	
2,900.0	2,798.2	2,835.6	2,835.4	14.1	1.1	-151.71	-1,533.8	1,051.3	2,361.0	2,349.3	11.74	201.157	
3,000.0	2,893.6	2,931.0	2,930.8	14.7	1.1	-148.68	-1,530.8	1,051.6	2,385.5	2,373.4	12.11	197.059	
3,100.0	2,989.4	3,022.0	3,021.7	15.3	1.1	-145.31	-1,528.3	1,051.6	2,408.0	2,395.5	12.47	193.163	
3,112.0	3,000.9	3,031.6	3,031.3	15.4	1.1	-144.88	-1,528.0	1,051.6	2,410.6	2,398.1	12.51	192.703	
3,200.0	3,085.5	3,100.0	3,099.7	15.9	1.1	-144.28	-1,526.7	1,051.6	2,429.5	2,416.6	12.83	189.409	
3,300.0	3,181.9	3,184.6	3,184.3	16.4	1.2	-143.57	-1,525.5	1,051.8	2,450.7	2,437.5	13.18	185.884	
3,400.0	3,278.4	3,270.9	3,270.6	16.9	1.2	-142.79	-1,524.5	1,052.3	2,471.6	2,458.1	13.54	182.593	
3,500.0	3,374.7	3,361.4	3,361.1	17.5	1.2	-143.09	-1,523.8	1,053.1	2,493.5	2,479.5	13.99	178.219	
3,600.0	3,470.3	3,457.2	3,456.9	18.1	1.2	-143.40	-1,523.1	1,053.9	2,517.6	2,503.2	14.44	174.344	
3,687.0	3,552.8	3,541.1	3,540.7	18.6	1.3	-143.66	-1,522.5	1,054.6	2,540.3	2,525.5	14.83	171.314	
3,700.0	3,565.1	3,553.4	3,553.0	18.7	1.3	-143.47	-1,522.4	1,054.7	2,543.8	2,528.9	14.89	170.867	
3,800.0	3,659.5	3,640.1	3,639.7	19.4	1.3	-141.95	-1,522.0	1,055.2	2,570.7	2,555.3	15.34	167.552	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wellbore # — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,722.1	3,721.7	20.0	1.3	-140.44	-1,522.5	1,055.6	2,597.8	2,582.0	15.80	164.442	
3,974.0	3,823.6	3,789.6	3,789.3	20.5	1.3	-139.37	-1,523.1	1,055.8	2,617.8	2,601.7	16.13	162.289	
4,000.0	3,848.1	3,811.9	3,811.6	20.7	1.3	-139.76	-1,523.4	1,055.9	2,624.8	2,608.6	16.22	161.873	
4,100.0	3,942.9	3,900.0	3,899.6	21.3	1.3	-141.29	-1,524.8	1,056.2	2,651.2	2,634.6	16.54	160.268	
4,200.0	4,038.5	3,977.9	3,977.5	21.9	1.3	-142.85	-1,526.9	1,056.4	2,676.5	2,659.7	16.88	158.578	
4,263.0	4,099.0	4,036.4	4,036.0	22.3	1.3	-143.92	-1,529.1	1,056.2	2,691.9	2,674.9	17.09	157.512	
4,300.0	4,134.7	4,073.0	4,072.5	22.5	1.3	-145.14	-1,530.7	1,055.9	2,700.8	2,683.6	17.20	157.001	
4,400.0	4,231.2	4,171.9	4,171.3	23.0	1.3	-148.54	-1,535.4	1,054.7	2,724.7	2,707.2	17.51	155.644	
4,500.0	4,328.0	4,268.7	4,267.9	23.5	1.3	-152.10	-1,540.5	1,053.1	2,748.6	2,730.8	17.82	154.269	
4,549.0	4,375.5	4,314.9	4,314.1	23.8	1.4	-153.91	-1,543.0	1,052.3	2,760.3	2,742.3	17.97	153.596	
4,600.0	4,425.0	4,361.5	4,360.6	24.0	1.4	-154.14	-1,545.4	1,051.7	2,772.5	2,754.3	18.14	152.838	
4,700.0	4,521.9	4,451.3	4,450.3	24.5	1.4	-154.61	-1,549.7	1,050.8	2,796.7	2,778.3	18.47	151.420	
4,800.0	4,618.8	4,546.7	4,545.6	25.0	1.4	-155.08	-1,554.3	1,050.1	2,821.4	2,802.6	18.80	150.080	
4,837.0	4,654.7	4,585.2	4,584.0	25.2	1.4	-155.26	-1,556.1	1,049.9	2,830.5	2,811.6	18.92	149.599	
4,900.0	4,715.7	4,647.5	4,646.3	25.5	1.4	-155.76	-1,559.0	1,049.4	2,846.2	2,827.1	19.14	148.693	
5,000.0	4,812.4	4,739.4	4,738.1	26.0	1.4	-156.53	-1,563.2	1,048.8	2,871.8	2,852.3	19.49	147.334	
5,100.0	4,908.9	4,827.0	4,825.6	26.6	1.4	-157.25	-1,566.9	1,048.7	2,898.5	2,878.7	19.84	146.085	
5,125.0	4,932.9	4,850.2	4,848.8	26.7	1.4	-157.43	-1,567.9	1,048.7	2,905.4	2,885.5	19.93	145.787	
5,200.0	5,005.4	4,921.6	4,920.1	27.0	1.4	-154.89	-1,570.7	1,049.0	2,925.3	2,905.1	20.14	145.215	
5,300.0	5,102.4	5,022.8	5,021.3	27.5	1.4	-150.94	-1,574.5	1,049.4	2,949.4	2,929.0	20.41	144.486	
5,400.0	5,199.9	5,130.7	5,129.1	28.0	1.5	-146.19	-1,578.0	1,049.9	2,970.6	2,949.9	20.66	143.802	
5,412.0	5,211.7	5,144.7	5,143.1	28.1	1.5	-145.56	-1,578.4	1,050.0	2,972.9	2,952.2	20.69	143.723	
5,500.0	5,297.9	5,247.6	5,245.9	28.4	1.5	-143.23	-1,581.0	1,050.3	2,988.6	2,967.8	20.85	143.331	
5,581.0	5,377.7	5,336.6	5,335.0	28.7	1.5	-140.45	-1,582.6	1,050.6	3,000.9	2,979.9	20.99	142.966	
5,600.0	5,396.4	5,355.7	5,354.1	28.8	1.5	-141.70	-1,582.9	1,050.6	3,003.5	2,982.5	21.02	142.876	
5,700.0	5,495.3	5,450.5	5,448.8	29.1	1.5	-149.84	-1,584.1	1,051.0	3,016.8	2,995.6	21.18	142.457	
5,800.0	5,594.6	5,569.8	5,568.1	29.4	1.5	-161.81	-1,585.7	1,051.6	3,028.8	3,007.5	21.31	142.139	
5,900.0	5,694.1	5,683.6	5,681.9	29.6	1.5	-179.39	-1,586.7	1,051.2	3,038.6	3,017.2	21.42	141.845	
5,917.0	5,711.1	5,700.0	5,698.3	29.7	1.5	177.00	-1,586.8	1,051.2	3,040.1	3,018.7	21.44	141.805	
6,000.0	5,793.7	5,774.9	5,773.3	29.8	1.6	177.02	-1,587.3	1,051.0	3,047.6	3,026.0	21.58	141.214	
6,067.0	5,860.5	5,855.7	5,854.0	30.0	1.6	177.03	-1,587.8	1,050.9	3,053.7	3,032.0	21.69	140.760	
6,100.0	5,893.4	5,900.0	5,898.3	30.0	1.6	177.04	-1,587.8	1,050.7	3,056.3	3,034.6	21.72	140.736	
6,200.0	5,993.2	5,990.8	5,989.2	30.2	1.6	177.06	-1,587.8	1,050.4	3,061.8	3,040.0	21.77	140.640	
6,300.0	6,093.2	6,075.2	6,073.5	30.3	1.6	177.07	-1,588.0	1,050.3	3,064.3	3,042.5	21.81	140.472	
6,318.8	6,111.9	6,090.9	6,089.2	30.3	1.6	125.11	-1,588.2	1,050.3	3,064.4	3,035.2	29.24	104.798	
6,400.0	6,193.2	6,165.6	6,163.9	30.4	1.6	125.12	-1,589.0	1,050.2	3,064.9	3,035.6	29.33	104.507	
6,444.4	6,237.6	6,207.4	6,205.7	30.4	1.6	125.13	-1,589.7	1,050.1	3,065.2	3,035.8	29.37	104.349	
6,450.0	6,243.2	6,212.9	6,211.2	30.4	1.6	35.13	-1,589.8	1,050.1	3,065.2	3,043.2	21.99	139.382	
6,475.0	6,268.1	6,237.6	6,235.9	30.4	1.6	35.19	-1,590.2	1,050.0	3,064.6	3,042.7	21.94	139.701	
6,500.0	6,293.0	6,262.2	6,260.5	30.4	1.6	35.34	-1,590.7	1,049.9	3,063.0	3,041.1	21.92	139.725	
6,525.0	6,317.8	6,286.6	6,284.9	30.4	1.6	35.58	-1,591.2	1,049.7	3,060.3	3,038.3	21.94	139.465	
6,550.0	6,342.3	6,311.4	6,309.6	30.4	1.6	35.91	-1,591.8	1,049.6	3,056.5	3,034.5	22.00	138.943	
6,575.0	6,366.5	6,336.5	6,334.7	30.3	1.6	36.33	-1,592.3	1,049.4	3,051.7	3,029.6	22.09	138.178	
6,600.0	6,390.4	6,361.2	6,359.5	30.2	1.6	36.86	-1,592.9	1,049.2	3,045.9	3,023.7	22.20	137.193	
6,625.0	6,413.9	6,385.4	6,383.7	30.2	1.6	37.48	-1,593.5	1,049.0	3,039.0	3,016.7	22.35	136.000	
6,650.0	6,436.9	6,410.1	6,408.4	30.1	1.6	38.22	-1,594.1	1,048.8	3,031.2	3,008.7	22.52	134.591	
6,675.0	6,459.3	6,435.6	6,433.9	30.0	1.6	39.08	-1,594.7	1,048.6	3,022.4	2,999.6	22.73	132.956	
6,700.0	6,481.1	6,460.4	6,458.7	29.9	1.6	40.06	-1,595.3	1,048.3	3,012.6	2,989.6	22.98	131.109	
6,725.0	6,502.3	6,484.4	6,482.6	29.7	1.6	41.17	-1,595.8	1,048.0	3,001.9	2,978.7	23.26	129.055	
6,750.0	6,522.7	6,506.5	6,504.8	29.6	1.7	42.41	-1,596.4	1,047.7	2,990.4	2,966.8	23.58	126.814	
6,775.0	6,542.4	6,525.9	6,524.1	29.5	1.7	43.77	-1,596.8	1,047.4	2,978.0	2,954.1	23.94	124.418	
6,800.0	6,561.2	6,544.5	6,542.7	29.4	1.7	45.27	-1,597.2	1,047.2	2,964.9	2,940.5	24.33	121.856	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wellbore # — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,562.1	6,560.3	29.3	1.7	46.93	-1,597.6	1,047.0	2,951.0	2,926.2	24.77	119.155	
6,850.0	6,596.1	6,578.8	6,577.0	29.1	1.7	48.76	-1,598.0	1,046.8	2,936.4	2,911.2	25.24	116.352	
6,875.0	6,612.1	6,594.6	6,592.8	29.0	1.7	50.75	-1,598.3	1,046.6	2,921.2	2,895.4	25.74	113.489	
6,900.0	6,627.1	6,610.1	6,608.3	28.9	1.7	52.93	-1,598.7	1,046.4	2,905.3	2,879.1	26.27	110.601	
6,925.0	6,641.0	6,625.0	6,623.2	28.8	1.7	55.31	-1,599.0	1,046.2	2,889.0	2,862.2	26.81	107.749	
6,950.0	6,653.8	6,638.6	6,636.8	28.7	1.7	57.87	-1,599.2	1,046.1	2,872.1	2,844.7	27.35	104.998	
6,975.0	6,665.5	6,651.1	6,649.3	28.7	1.7	60.62	-1,599.4	1,046.0	2,854.8	2,826.9	27.88	102.401	
7,000.0	6,676.0	6,662.3	6,660.4	28.6	1.7	63.54	-1,599.6	1,045.8	2,837.0	2,808.7	28.37	100.004	
7,025.0	6,685.3	6,672.2	6,670.3	28.6	1.7	66.62	-1,599.8	1,045.8	2,819.0	2,790.2	28.81	97.844	
7,050.0	6,693.4	6,680.7	6,678.9	28.5	1.7	69.85	-1,599.9	1,045.7	2,800.7	2,771.5	29.19	95.948	
7,075.0	6,700.2	6,687.9	6,686.1	28.5	1.7	73.21	-1,600.0	1,045.6	2,782.1	2,752.6	29.50	94.325	
7,100.0	6,705.8	6,693.8	6,691.9	28.5	1.7	76.65	-1,600.1	1,045.6	2,763.4	2,733.7	29.73	92.960	
7,125.0	6,710.0	6,698.2	6,696.4	28.5	1.7	80.15	-1,600.1	1,045.5	2,744.6	2,714.7	29.89	91.814	
7,150.0	6,713.0	6,700.0	6,698.2	28.6	1.7	83.63	-1,600.1	1,045.5	2,725.7	2,695.7	30.01	90.819	
7,175.0	6,714.7	6,700.0	6,698.2	28.6	1.7	87.08	-1,600.1	1,045.5	2,706.8	2,676.7	30.11	89.884	
7,198.8	6,715.0	6,700.0	6,698.2	28.6	1.7	90.35	-1,600.1	1,045.5	2,688.8	2,658.6	30.22	88.981	
7,200.0	6,715.0	6,700.0	6,698.2	28.6	1.7	90.35	-1,600.1	1,045.5	2,688.0	2,657.8	30.22	88.944	
7,300.0	6,714.1	6,700.0	6,698.2	29.0	1.7	90.35	-1,600.1	1,045.5	2,613.7	2,583.1	30.62	85.349	
7,400.0	6,713.2	6,699.2	6,697.3	29.7	1.7	90.32	-1,600.1	1,045.5	2,541.2	2,509.9	31.29	81.218	
7,500.0	6,712.3	6,697.2	6,695.4	30.6	1.7	90.26	-1,600.1	1,045.5	2,470.6	2,438.4	32.20	76.733	
7,600.0	6,711.3	6,695.2	6,693.4	31.7	1.7	90.20	-1,600.1	1,045.5	2,402.1	2,368.7	33.33	72.069	
7,700.0	6,710.4	6,693.3	6,691.4	33.0	1.7	90.13	-1,600.1	1,045.6	2,335.8	2,301.2	34.66	67.384	
7,800.0	6,709.5	6,691.3	6,689.4	34.5	1.7	90.07	-1,600.0	1,045.6	2,272.1	2,235.9	36.18	62.805	
7,900.0	6,708.5	6,689.2	6,687.4	36.2	1.7	90.00	-1,600.0	1,045.6	2,211.0	2,173.1	37.84	58.424	
8,000.0	6,707.6	6,687.2	6,685.4	38.0	1.7	89.94	-1,600.0	1,045.6	2,152.8	2,113.1	39.65	54.301	
8,100.0	6,706.7	6,685.2	6,683.3	39.9	1.7	89.87	-1,599.9	1,045.6	2,097.8	2,056.2	41.56	50.470	
8,200.0	6,705.8	6,683.1	6,681.3	41.9	1.7	89.80	-1,599.9	1,045.7	2,046.2	2,002.6	43.58	46.948	
8,300.0	6,704.8	6,681.0	6,679.2	44.0	1.7	89.74	-1,599.9	1,045.7	1,998.2	1,952.5	45.69	43.734	
8,400.0	6,703.9	6,678.9	6,677.1	46.2	1.7	89.67	-1,599.9	1,045.7	1,954.2	1,906.3	47.87	40.823	
8,500.0	6,703.0	6,676.8	6,674.9	48.5	1.7	89.60	-1,599.8	1,045.7	1,914.4	1,864.3	50.12	38.200	
8,600.0	6,702.1	6,674.6	6,672.8	50.8	1.7	89.53	-1,599.8	1,045.7	1,879.1	1,826.7	52.42	35.849	
8,700.0	6,701.1	6,672.5	6,670.6	53.1	1.7	89.46	-1,599.8	1,045.7	1,848.6	1,793.8	54.77	33.753	
8,800.0	6,700.2	6,670.3	6,668.4	55.5	1.7	89.39	-1,599.7	1,045.8	1,823.0	1,765.8	57.16	31.892	
8,900.0	6,699.3	6,668.1	6,666.2	57.9	1.7	89.32	-1,599.7	1,045.8	1,802.6	1,743.0	59.59	30.249	
9,000.0	6,698.3	6,665.9	6,664.0	60.4	1.7	89.25	-1,599.7	1,045.8	1,787.6	1,725.5	62.05	28.807	
9,100.0	6,697.4	6,663.6	6,661.8	62.9	1.7	89.18	-1,599.6	1,045.8	1,778.1	1,713.5	64.55	27.547	
9,200.0	6,696.5	6,661.4	6,659.5	65.4	1.7	89.10	-1,599.6	1,045.9	1,774.1	1,707.1	67.06	26.454	
9,219.8	6,696.3	6,660.9	6,659.1	65.9	1.7	89.09	-1,599.6	1,045.9	1,774.0	1,706.4	67.57	26.256	CC
9,300.0	6,695.5	6,659.1	6,657.2	68.0	1.7	89.03	-1,599.6	1,045.9	1,775.8	1,706.2	69.60	25.513	ES
9,400.0	6,694.6	6,656.8	6,654.9	70.5	1.7	88.96	-1,599.5	1,045.9	1,783.1	1,711.0	72.16	24.710	
9,500.0	6,693.7	6,654.5	6,652.6	73.1	1.7	88.88	-1,599.5	1,045.9	1,796.0	1,721.2	74.74	24.029	
9,600.0	6,692.8	6,652.1	6,650.3	75.7	1.7	88.80	-1,599.4	1,045.9	1,814.3	1,736.9	77.34	23.460	
9,700.0	6,691.8	6,649.7	6,647.9	78.3	1.7	88.73	-1,599.4	1,046.0	1,837.8	1,757.9	79.94	22.989	
9,800.0	6,690.9	6,647.4	6,645.5	80.9	1.7	88.65	-1,599.4	1,046.0	1,866.4	1,783.9	82.57	22.605	
9,900.0	6,690.0	6,645.0	6,643.1	83.6	1.7	88.57	-1,599.3	1,046.0	1,899.9	1,814.7	85.20	22.299	
10,000.0	6,689.0	6,642.5	6,640.7	86.2	1.7	88.50	-1,599.3	1,046.0	1,937.9	1,850.1	87.84	22.061	
10,100.0	6,688.1	6,640.1	6,638.3	88.9	1.7	88.42	-1,599.2	1,046.1	1,980.3	1,889.8	90.50	21.882	
10,200.0	6,687.2	6,637.6	6,635.8	91.6	1.7	88.34	-1,599.2	1,046.1	2,026.7	1,933.5	93.16	21.755	
10,300.0	6,686.2	6,635.1	6,633.3	94.2	1.7	88.26	-1,599.1	1,046.1	2,076.9	1,981.0	95.83	21.672	
10,400.0	6,685.3	6,632.6	6,630.8	96.9	1.7	88.17	-1,599.1	1,046.1	2,130.6	2,032.1	98.51	21.628	
10,500.0	6,684.4	6,630.0	6,628.2	99.6	1.7	88.09	-1,599.1	1,046.2	2,187.5	2,086.3	101.19	21.617	SF
10,600.0	6,683.4	6,627.5	6,625.7	102.3	1.7	88.01	-1,599.0	1,046.2	2,247.5	2,143.6	103.88	21.635	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Wellbore # — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,624.9	6,623.1	105.0	1.7	87.92	-1,599.0	1,046.2	2,310.2	2,203.6	106.58	21.676	
10,800.0	6,681.6	6,622.3	6,620.5	107.7	1.7	87.84	-1,598.9	1,046.3	2,375.5	2,266.2	109.28	21.738	
10,900.0	6,680.6	6,619.6	6,617.8	110.4	1.7	87.75	-1,598.9	1,046.3	2,443.1	2,331.1	111.98	21.816	
11,000.0	6,679.7	6,617.0	6,615.1	113.1	1.7	87.67	-1,598.8	1,046.3	2,512.9	2,398.2	114.69	21.909	
11,100.0	6,678.8	6,614.3	6,612.5	115.9	1.7	87.58	-1,598.7	1,046.4	2,584.7	2,467.3	117.41	22.014	
11,200.0	6,677.8	6,611.5	6,609.7	118.6	1.7	87.49	-1,598.7	1,046.4	2,658.3	2,538.1	120.12	22.129	
11,300.0	6,676.9	6,608.8	6,607.0	121.3	1.7	87.40	-1,598.6	1,046.4	2,733.5	2,610.7	122.84	22.252	
11,400.0	6,676.0	6,606.0	6,604.2	124.1	1.7	87.32	-1,598.6	1,046.4	2,810.3	2,684.8	125.57	22.381	
11,500.0	6,675.0	6,603.2	6,601.4	126.8	1.7	87.22	-1,598.5	1,046.5	2,888.6	2,760.3	128.29	22.515	
11,600.0	6,674.1	6,600.4	6,598.6	129.5	1.7	87.13	-1,598.5	1,046.5	2,968.1	2,837.1	131.02	22.653	
11,700.0	6,673.1	6,598.0	6,596.2	132.3	1.7	87.06	-1,598.4	1,046.5	3,048.8	2,915.1	133.75	22.794	
11,800.0	6,672.2	6,595.7	6,593.9	135.0	1.7	86.98	-1,598.4	1,046.6	3,130.7	2,994.2	136.49	22.937	
11,900.0	6,671.3	6,593.4	6,591.6	137.8	1.7	86.91	-1,598.3	1,046.6	3,213.5	3,074.3	139.22	23.082	
12,000.0	6,670.3	6,591.1	6,589.3	140.5	1.7	86.83	-1,598.3	1,046.6	3,297.4	3,155.4	141.96	23.227	
12,036.2	6,670.0	6,590.2	6,588.4	141.5	1.7	86.80	-1,598.2	1,046.6	3,328.0	3,185.0	142.96	23.280	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-101.76	-332.6	-1,597.8	1,632.1				
100.0	100.0	97.0	97.0	0.1	1.2	-112.36	-332.6	-1,597.8	1,632.1	1,630.8	1.30	1,256.700	
200.0	200.0	197.0	197.0	0.2	3.5	-112.37	-332.6	-1,597.8	1,632.2	1,628.6	3.66	445.886	
261.0	261.0	258.0	258.0	0.3	4.7	-112.38	-332.6	-1,597.8	1,632.3	1,627.3	5.00	326.301	
300.0	300.0	297.0	297.0	0.4	5.5	-34.18	-332.6	-1,597.8	1,632.1	1,626.2	5.90	276.628	
400.0	399.9	396.9	396.9	0.6	7.6	-19.71	-332.6	-1,597.8	1,629.1	1,620.9	8.16	199.607	
500.0	499.7	496.7	496.7	0.8	9.6	-17.43	-332.6	-1,597.8	1,622.3	1,611.9	10.38	156.306	
538.0	537.5	534.5	534.5	0.9	10.4	-17.04	-332.6	-1,597.8	1,618.8	1,607.6	11.21	144.428	
600.0	599.1	596.1	596.1	1.1	11.6	-17.93	-332.6	-1,597.8	1,611.8	1,599.2	12.57	128.196	
700.0	697.9	694.9	694.9	1.5	13.6	-18.96	-332.6	-1,597.8	1,597.3	1,582.6	14.73	108.474	
800.0	796.0	793.0	793.0	1.8	15.6	-19.80	-332.6	-1,597.8	1,578.9	1,562.1	16.81	93.935	
818.0	813.5	810.5	810.5	1.9	15.9	-19.94	-332.6	-1,597.8	1,575.2	1,558.0	17.18	91.713	
900.0	893.1	890.1	890.1	2.3	17.5	-19.48	-332.6	-1,597.8	1,556.6	1,537.7	18.86	82.513	
1,000.0	989.2	986.2	986.2	2.9	19.5	-19.26	-332.6	-1,597.8	1,530.2	1,509.3	20.84	73.417	
1,100.0	1,083.9	1,080.9	1,080.9	3.5	21.4	-19.32	-332.6	-1,597.8	1,499.8	1,477.1	22.72	66.012	
1,104.0	1,087.6	1,084.6	1,084.6	3.5	21.5	-19.33	-332.6	-1,597.8	1,498.5	1,475.7	22.79	65.744	
1,200.0	1,177.9	1,174.9	1,174.9	4.1	23.3	-20.49	-332.6	-1,597.8	1,467.6	1,442.7	24.92	58.891	
1,300.0	1,272.0	1,269.0	1,269.0	4.8	25.2	-21.75	-332.6	-1,597.8	1,435.8	1,408.7	27.11	52.967	
1,391.0	1,357.8	1,354.8	1,354.8	5.3	26.9	-22.94	-332.6	-1,597.8	1,407.4	1,378.3	29.13	48.312	
1,400.0	1,366.3	1,363.3	1,363.3	5.4	27.1	-22.76	-332.6	-1,597.8	1,404.6	1,375.3	29.34	47.868	
1,458.0	1,421.2	1,418.2	1,418.2	5.7	28.2	-21.56	-332.6	-1,597.8	1,387.2	1,356.4	30.72	45.157	
1,500.0	1,461.0	1,458.0	1,458.0	6.0	29.0	-21.98	-332.6	-1,597.8	1,374.8	1,343.2	31.65	43.435	
1,600.0	1,556.1	1,553.1	1,553.1	6.6	30.9	-22.98	-332.6	-1,597.8	1,345.8	1,311.9	33.89	39.711	
1,676.0	1,628.3	1,625.3	1,625.3	7.0	32.3	-23.77	-332.6	-1,597.8	1,324.0	1,288.4	35.60	37.191	
1,700.0	1,651.1	1,648.1	1,648.1	7.2	32.8	-23.32	-332.6	-1,597.8	1,317.2	1,281.1	36.13	36.458	
1,800.0	1,746.4	1,743.4	1,743.4	7.7	34.7	-21.35	-332.6	-1,597.8	1,288.8	1,250.5	38.33	33.621	
1,900.0	1,841.8	1,838.8	1,838.8	8.3	36.6	-19.27	-332.6	-1,597.8	1,260.6	1,220.0	40.54	31.093	
1,963.0	1,902.0	1,899.0	1,899.0	8.7	37.9	-17.89	-332.6	-1,597.8	1,242.9	1,200.9	41.93	29.638	
2,000.0	1,937.4	1,934.4	1,934.4	8.9	38.6	-18.02	-332.6	-1,597.8	1,232.5	1,189.7	42.77	28.815	
2,100.0	2,033.1	2,030.1	2,030.1	9.5	40.5	-18.37	-332.6	-1,597.8	1,205.0	1,159.9	45.05	26.750	
2,200.0	2,129.0	2,126.0	2,126.0	10.0	42.4	-18.73	-332.6	-1,597.8	1,178.1	1,130.8	47.33	24.890	
2,250.0	2,177.1	2,174.1	2,174.1	10.3	43.4	-18.91	-332.6	-1,597.8	1,165.0	1,116.5	48.48	24.029	
2,300.0	2,225.1	2,222.1	2,222.1	10.6	44.4	-20.32	-332.6	-1,597.8	1,151.9	1,102.3	49.62	23.216	
2,400.0	2,321.2	2,318.2	2,318.2	11.2	46.3	-23.15	-332.6	-1,597.8	1,125.8	1,073.9	51.90	21.693	
2,500.0	2,417.0	2,414.0	2,414.0	11.7	48.2	-26.01	-332.6	-1,597.8	1,099.8	1,045.6	54.20	20.294	
2,537.0	2,452.5	2,449.5	2,449.5	11.9	48.9	-27.07	-332.6	-1,597.8	1,090.3	1,035.2	55.05	19.804	
2,600.0	2,512.8	2,509.8	2,509.8	12.3	50.1	-30.49	-332.6	-1,597.8	1,074.1	1,017.5	56.59	18.980	
2,700.0	2,608.2	2,605.2	2,605.2	12.9	52.1	-35.81	-332.6	-1,597.8	1,048.8	989.7	59.07	17.755	
2,800.0	2,703.3	2,700.3	2,700.3	13.5	54.0	-40.99	-332.6	-1,597.8	1,024.1	962.5	61.60	16.624	
2,824.0	2,726.1	2,723.1	2,723.1	13.7	54.4	-42.21	-332.6	-1,597.8	1,018.2	956.0	62.22	16.366	
2,900.0	2,798.2	2,795.2	2,795.2	14.1	55.9	-40.53	-332.6	-1,597.8	1,000.0	935.9	64.05	15.611	
3,000.0	2,893.6	2,890.6	2,890.6	14.7	57.8	-37.97	-332.6	-1,597.8	976.3	909.8	66.47	14.687	
3,100.0	2,989.4	2,986.4	2,986.4	15.3	59.7	-34.99	-332.6	-1,597.8	952.9	884.0	68.89	13.831	
3,112.0	3,000.9	2,997.9	2,997.9	15.4	60.0	-34.60	-332.6	-1,597.8	950.1	880.9	69.18	13.733	
3,200.0	3,085.5	3,082.5	3,082.5	15.9	61.7	-34.44	-332.6	-1,597.8	929.9	858.5	71.33	13.035	
3,300.0	3,181.9	3,178.9	3,178.9	16.4	63.6	-34.19	-332.6	-1,597.8	907.4	833.6	73.79	12.298	
3,400.0	3,278.4	3,275.4	3,275.4	16.9	65.5	-33.87	-332.6	-1,597.8	885.6	809.3	76.26	11.613	
3,500.0	3,374.7	3,371.7	3,371.7	17.5	67.5	-35.18	-332.6	-1,597.8	863.1	784.7	78.47	11.000	
3,600.0	3,470.3	3,467.3	3,467.3	18.1	69.4	-36.64	-332.6	-1,597.8	839.0	758.3	80.69	10.397	
3,687.0	3,552.8	3,549.8	3,549.8	18.6	71.1	-38.06	-332.6	-1,597.8	816.6	734.0	82.64	9.882	
3,700.0	3,565.1	3,562.1	3,562.1	18.7	71.3	-37.99	-332.6	-1,597.8	813.2	730.3	82.96	9.803	
3,800.0	3,659.5	3,656.5	3,656.5	19.4	73.2	-37.53	-332.6	-1,597.8	786.7	701.3	85.38	9.213	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,750.9	3,750.9	20.0	75.1	-37.15	-332.6	-1,597.8	759.7	671.9	87.82	8.651	
3,974.0	3,823.6	3,820.6	3,820.6	20.5	76.5	-36.92	-332.6	-1,597.8	739.6	649.9	89.64	8.251	
4,000.0	3,848.1	3,845.1	3,845.1	20.7	77.0	-37.47	-332.6	-1,597.8	732.6	642.1	90.44	8.100	
4,100.0	3,942.9	3,939.9	3,939.9	21.3	78.9	-39.70	-332.6	-1,597.8	707.2	613.7	93.49	7.564	
4,200.0	4,038.5	4,035.5	4,035.5	21.9	80.8	-42.10	-332.6	-1,597.8	684.5	587.9	96.54	7.090	
4,263.0	4,099.0	4,096.0	4,096.0	22.3	82.0	-43.71	-332.6	-1,597.8	671.5	573.0	98.45	6.821	
4,300.0	4,134.7	4,131.7	4,131.7	22.5	82.8	-45.34	-332.6	-1,597.8	664.3	564.8	99.54	6.674	
4,400.0	4,231.2	4,228.2	4,228.2	23.0	84.7	-49.97	-332.6	-1,597.8	646.4	543.9	102.50	6.306	
4,500.0	4,328.0	4,325.0	4,325.0	23.5	86.6	-54.91	-332.6	-1,597.8	630.7	525.3	105.47	5.980	
4,549.0	4,375.5	4,372.5	4,372.5	23.8	87.6	-57.45	-332.6	-1,597.8	623.9	517.0	106.92	5.835	
4,600.0	4,425.0	4,422.0	4,422.0	24.0	88.6	-58.58	-332.6	-1,597.8	617.2	508.8	108.34	5.696	
4,700.0	4,521.9	4,518.9	4,518.9	24.5	90.5	-60.87	-332.6	-1,597.8	604.5	493.4	111.15	5.439	
4,800.0	4,618.8	4,615.8	4,615.8	25.0	92.5	-63.25	-332.6	-1,597.8	592.7	478.7	113.98	5.200	
4,837.0	4,654.7	4,651.7	4,651.7	25.2	93.2	-64.15	-332.6	-1,597.8	588.6	473.5	115.03	5.117	
4,900.0	4,715.7	4,712.7	4,712.7	25.5	94.4	-65.97	-332.6	-1,597.8	581.8	464.9	116.83	4.979	
5,000.0	4,812.4	4,809.4	4,809.4	26.0	96.4	-68.95	-332.6	-1,597.8	571.7	452.0	119.72	4.775	
5,100.0	4,908.9	4,905.9	4,905.9	26.6	98.3	-72.03	-332.6	-1,597.8	562.6	440.0	122.61	4.589	
5,125.0	4,932.9	4,929.9	4,929.9	26.7	98.8	-72.82	-332.6	-1,597.8	560.5	437.2	123.33	4.545	
5,200.0	5,005.4	5,002.4	5,002.4	27.0	100.3	-71.99	-332.6	-1,597.8	554.4	429.1	125.39	4.422	
5,300.0	5,102.4	5,099.4	5,099.4	27.5	102.2	-70.14	-332.6	-1,597.8	546.4	418.4	128.08	4.266	
5,400.0	5,199.9	5,196.9	5,196.9	28.0	104.2	-67.27	-332.6	-1,597.8	538.3	407.6	130.72	4.118	
5,412.0	5,211.7	5,208.7	5,208.7	28.1	104.4	-66.85	-332.6	-1,597.8	537.3	406.3	131.03	4.101	
5,500.0	5,297.9	5,294.9	5,294.9	28.4	106.2	-65.83	-332.6	-1,597.8	530.3	396.9	133.32	3.977	
5,581.0	5,377.7	5,374.7	5,374.7	28.7	107.8	-64.14	-332.6	-1,597.8	524.2	388.8	135.36	3.872	
5,600.0	5,396.4	5,393.4	5,393.4	28.8	108.1	-65.59	-332.6	-1,597.8	522.8	387.0	135.88	3.848	
5,700.0	5,495.3	5,492.3	5,492.3	29.1	110.1	-74.78	-332.6	-1,597.8	517.7	379.2	138.49	3.738	
5,800.0	5,594.6	5,591.6	5,591.6	29.4	112.1	-87.71	-332.6	-1,597.8	515.8	374.8	140.92	3.660	
5,814.4	5,609.0	5,606.0	5,606.0	29.4	112.4	-90.00	-332.6	-1,597.8	515.7	374.5	141.26	3.651	CC
5,900.0	5,694.1	5,691.1	5,691.1	29.6	114.1	-106.18	-332.6	-1,597.8	516.8	373.6	143.19	3.609	
5,917.0	5,711.1	5,708.1	5,708.1	29.7	114.5	-109.92	-332.6	-1,597.8	517.3	373.7	143.56	3.603	
6,000.0	5,793.7	5,790.7	5,790.7	29.8	116.1	-110.67	-332.6	-1,597.8	519.8	374.4	145.45	3.574	
6,067.0	5,860.5	5,857.5	5,857.5	30.0	117.5	-111.27	-332.6	-1,597.8	521.9	375.0	146.97	3.551	
6,100.0	5,893.4	5,890.4	5,890.4	30.0	118.1	-111.57	-332.6	-1,597.8	522.9	375.2	147.74	3.540	
6,200.0	5,993.2	5,990.2	5,990.2	30.2	120.1	-112.21	-332.6	-1,597.8	525.1	375.1	150.00	3.501	
6,300.0	6,093.2	6,090.2	6,090.2	30.3	122.1	-112.46	-332.6	-1,597.8	526.0	373.9	152.17	3.457	
6,318.8	6,111.9	6,108.9	6,108.9	30.3	122.5	-164.43	-332.6	-1,597.8	526.1	387.0	139.10	3.782	
6,400.0	6,193.2	6,190.2	6,190.2	30.4	124.2	-164.43	-332.6	-1,597.8	526.1	385.2	140.86	3.735	
6,444.4	6,237.6	6,234.6	6,234.6	30.4	125.0	-164.43	-332.6	-1,597.8	526.1	384.2	141.82	3.709	
6,450.0	6,243.2	6,240.2	6,240.2	30.4	125.2	105.57	-332.6	-1,597.8	526.1	370.7	155.32	3.387	
6,475.0	6,268.1	6,265.1	6,265.1	30.4	125.7	105.64	-332.6	-1,597.8	526.3	370.5	155.80	3.378	ES
6,500.0	6,293.0	6,290.0	6,290.0	30.4	126.2	105.81	-332.6	-1,597.8	526.9	370.7	156.23	3.373	
6,525.0	6,317.8	6,314.8	6,314.8	30.4	126.7	106.06	-332.6	-1,597.8	527.9	371.3	156.60	3.371	SF
6,550.0	6,342.3	6,339.3	6,339.3	30.4	127.2	106.39	-332.6	-1,597.8	529.3	372.4	156.91	3.373	
6,575.0	6,366.5	6,363.5	6,363.5	30.3	127.6	106.80	-332.6	-1,597.8	531.1	373.9	157.15	3.380	
6,600.0	6,390.4	6,387.4	6,387.4	30.2	128.1	107.27	-332.6	-1,597.8	533.3	376.0	157.31	3.390	
6,625.0	6,413.9	6,410.9	6,410.9	30.2	128.6	107.79	-332.6	-1,597.8	536.1	378.7	157.40	3.406	
6,650.0	6,436.9	6,433.9	6,433.9	30.1	129.1	108.33	-332.6	-1,597.8	539.4	382.0	157.39	3.427	
6,675.0	6,459.3	6,456.3	6,456.3	30.0	129.5	108.89	-332.6	-1,597.8	543.3	386.0	157.31	3.454	
6,700.0	6,481.1	6,478.1	6,478.1	29.9	129.9	109.44	-332.6	-1,597.8	547.8	390.6	157.13	3.486	
6,725.0	6,502.3	6,499.3	6,499.3	29.7	130.4	109.97	-332.6	-1,597.8	553.0	396.1	156.88	3.525	
6,750.0	6,522.7	6,519.7	6,519.7	29.6	130.8	110.46	-332.6	-1,597.8	558.9	402.3	156.56	3.570	
6,775.0	6,542.4	6,539.4	6,539.4	29.5	131.2	110.88	-332.6	-1,597.8	565.6	409.4	156.18	3.621	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,558.2	6,558.2	29.4	131.6	111.22	-332.6	-1,597.8	573.1	417.3	155.78	3.679	
6,825.0	6,579.1	6,576.1	6,576.1	29.3	131.9	111.46	-332.6	-1,597.8	581.4	426.0	155.37	3.742	
6,850.0	6,596.1	6,593.1	6,593.1	29.1	132.3	111.57	-332.6	-1,597.8	590.6	435.6	154.99	3.811	
6,875.0	6,612.1	6,609.1	6,609.1	29.0	132.6	111.54	-332.6	-1,597.8	600.7	446.0	154.68	3.883	
6,900.0	6,627.1	6,624.1	6,624.1	28.9	132.9	111.35	-332.6	-1,597.8	611.7	457.2	154.49	3.959	
6,925.0	6,641.0	6,638.0	6,638.0	28.8	133.2	110.98	-332.6	-1,597.8	623.5	469.1	154.44	4.037	
6,950.0	6,653.8	6,650.8	6,650.8	28.7	133.4	110.40	-332.6	-1,597.8	636.3	481.7	154.58	4.116	
6,975.0	6,665.5	6,662.5	6,662.5	28.7	133.7	109.60	-332.6	-1,597.8	649.9	494.9	154.94	4.194	
7,000.0	6,676.0	6,673.0	6,673.0	28.6	133.9	108.56	-332.6	-1,597.8	664.3	508.8	155.53	4.271	
7,025.0	6,685.3	6,682.3	6,682.3	28.6	134.1	107.25	-332.6	-1,597.8	679.6	523.2	156.36	4.346	
7,050.0	6,693.4	6,690.4	6,690.4	28.5	134.2	105.65	-332.6	-1,597.8	695.5	538.1	157.41	4.419	
7,075.0	6,700.2	6,697.2	6,697.2	28.5	134.4	103.74	-332.6	-1,597.8	712.2	553.6	158.61	4.490	
7,100.0	6,705.8	6,702.8	6,702.8	28.5	134.5	101.50	-332.6	-1,597.8	729.6	569.7	159.90	4.563	
7,125.0	6,710.0	6,707.0	6,707.0	28.5	134.6	98.93	-332.6	-1,597.8	747.5	586.3	161.16	4.638	
7,150.0	6,713.0	6,710.0	6,710.0	28.6	134.6	96.01	-332.6	-1,597.8	765.9	603.7	162.24	4.721	
7,175.0	6,714.7	6,711.7	6,711.7	28.6	134.6	92.75	-332.6	-1,597.8	784.8	621.8	162.97	4.816	
7,198.8	6,715.0	6,712.0	6,712.0	28.6	134.7	89.35	-332.6	-1,597.8	803.1	640.0	163.17	4.922	
7,200.0	6,715.0	6,712.0	6,712.0	28.6	134.7	89.35	-332.6	-1,597.8	804.0	640.9	163.18	4.927	
7,300.0	6,714.1	6,711.1	6,711.1	29.0	134.6	89.24	-332.6	-1,597.8	883.9	720.4	163.55	5.404	
7,400.0	6,713.2	6,710.2	6,710.2	29.7	134.6	89.14	-332.6	-1,597.8	967.5	803.3	164.20	5.893	
7,500.0	6,712.3	6,709.3	6,709.3	30.6	134.6	89.03	-332.6	-1,597.8	1,054.0	888.9	165.08	6.385	
7,600.0	6,711.3	6,708.3	6,708.3	31.7	134.6	88.93	-332.6	-1,597.8	1,142.7	976.5	166.19	6.876	
7,700.0	6,710.4	6,707.4	6,707.4	33.0	134.6	88.82	-332.6	-1,597.8	1,233.1	1,065.6	167.50	7.362	
7,800.0	6,709.5	6,706.5	6,706.5	34.5	134.5	88.72	-332.6	-1,597.8	1,324.9	1,156.0	168.99	7.841	
7,900.0	6,708.5	6,705.5	6,705.5	36.2	134.5	88.61	-332.6	-1,597.8	1,417.9	1,247.2	170.63	8.310	
8,000.0	6,707.6	6,704.6	6,704.6	38.0	134.5	88.51	-332.6	-1,597.8	1,511.7	1,339.3	172.40	8.768	
8,100.0	6,706.7	6,703.7	6,703.7	39.9	134.5	88.40	-332.6	-1,597.8	1,606.2	1,431.9	174.29	9.216	
8,200.0	6,705.8	6,702.8	6,702.8	41.9	134.5	88.30	-332.6	-1,597.8	1,701.4	1,525.1	176.29	9.651	
8,300.0	6,704.8	6,701.8	6,701.8	44.0	134.4	88.19	-332.6	-1,597.8	1,797.1	1,618.7	178.36	10.076	
8,400.0	6,703.9	6,700.9	6,700.9	46.2	134.4	88.09	-332.6	-1,597.8	1,893.3	1,712.7	180.51	10.488	
8,500.0	6,703.0	6,700.0	6,700.0	48.5	134.4	87.98	-332.6	-1,597.8	1,989.8	1,807.1	182.73	10.889	
8,600.0	6,702.1	6,699.1	6,699.1	50.8	134.4	87.88	-332.6	-1,597.8	2,086.6	1,901.6	185.00	11.279	
8,700.0	6,701.1	6,698.1	6,698.1	53.1	134.4	87.77	-332.6	-1,597.8	2,183.8	1,996.5	187.32	11.658	
8,800.0	6,700.2	6,697.2	6,697.2	55.5	134.4	87.67	-332.6	-1,597.8	2,281.2	2,091.5	189.68	12.026	
8,900.0	6,699.3	6,696.3	6,696.3	57.9	134.3	87.56	-332.6	-1,597.8	2,378.8	2,186.7	192.07	12.385	
9,000.0	6,698.3	6,695.3	6,695.3	60.4	134.3	87.45	-332.6	-1,597.8	2,476.6	2,282.0	194.50	12.733	
9,100.0	6,697.4	6,694.4	6,694.4	62.9	134.3	87.35	-332.6	-1,597.8	2,574.5	2,377.6	196.96	13.071	
9,200.0	6,696.5	6,693.5	6,693.5	65.4	134.3	87.24	-332.6	-1,597.8	2,672.6	2,473.2	199.44	13.401	
9,300.0	6,695.5	6,692.5	6,692.5	68.0	134.3	87.14	-332.6	-1,597.8	2,770.9	2,568.9	201.94	13.721	
9,400.0	6,694.6	6,691.6	6,691.6	70.5	134.2	87.03	-332.6	-1,597.8	2,869.2	2,664.8	204.46	14.033	
9,500.0	6,693.7	6,690.7	6,690.7	73.1	134.2	86.93	-332.6	-1,597.8	2,967.7	2,760.7	207.00	14.337	
9,600.0	6,692.8	6,689.8	6,689.8	75.7	134.2	86.82	-332.6	-1,597.8	3,066.3	2,856.7	209.56	14.632	
9,700.0	6,691.8	6,688.8	6,688.8	78.3	134.2	86.71	-332.6	-1,597.8	3,165.0	2,952.8	212.12	14.920	
9,800.0	6,690.9	6,687.9	6,687.9	80.9	134.2	86.61	-332.6	-1,597.8	3,263.7	3,049.0	214.70	15.201	
9,900.0	6,690.0	6,687.0	6,687.0	83.6	134.1	86.50	-332.6	-1,597.8	3,362.5	3,145.2	217.29	15.475	
10,000.0	6,689.0	6,686.0	6,686.0	86.2	134.1	86.40	-332.6	-1,597.8	3,461.4	3,241.5	219.89	15.741	
10,100.0	6,688.1	6,685.1	6,685.1	88.9	134.1	86.29	-332.6	-1,597.8	3,560.4	3,337.9	222.50	16.002	
10,200.0	6,687.2	6,684.2	6,684.2	91.6	134.1	86.18	-332.6	-1,597.8	3,659.4	3,434.2	225.12	16.255	
10,300.0	6,686.2	6,683.2	6,683.2	94.2	134.1	86.08	-332.6	-1,597.8	3,758.4	3,530.7	227.74	16.503	
10,400.0	6,685.3	6,682.3	6,682.3	96.9	134.1	85.97	-332.6	-1,597.8	3,857.5	3,627.2	230.37	16.745	
10,500.0	6,684.4	6,681.4	6,681.4	99.6	134.0	85.87	-332.6	-1,597.8	3,956.7	3,723.7	233.00	16.981	
10,600.0	6,683.4	6,680.4	6,680.4	102.3	134.0	85.76	-332.6	-1,597.8	4,055.9	3,820.2	235.64	17.212	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,679.5	6,679.5	105.0	134.0	85.65	-332.6	-1,597.8	4,155.1	3,916.8	238.29	17.437	
10,800.0	6,681.6	6,678.6	6,678.6	107.7	134.0	85.55	-332.6	-1,597.8	4,254.4	4,013.4	240.94	17.658	
10,900.0	6,680.6	6,677.6	6,677.6	110.4	134.0	85.44	-332.6	-1,597.8	4,353.7	4,110.1	243.59	17.873	
11,000.0	6,679.7	6,676.7	6,676.7	113.1	133.9	85.34	-332.6	-1,597.8	4,453.0	4,206.8	246.24	18.084	
11,100.0	6,678.8	6,675.8	6,675.8	115.9	133.9	85.23	-332.6	-1,597.8	4,552.4	4,303.5	248.90	18.290	
11,200.0	6,677.8	6,674.8	6,674.8	118.6	133.9	85.12	-332.6	-1,597.8	4,651.7	4,400.2	251.56	18.492	
11,300.0	6,676.9	6,673.9	6,673.9	121.3	133.9	85.02	-332.6	-1,597.8	4,751.2	4,496.9	254.22	18.689	
11,400.0	6,676.0	6,673.0	6,673.0	124.1	133.9	84.91	-332.6	-1,597.8	4,850.6	4,593.7	256.89	18.882	
11,500.0	6,675.0	6,672.0	6,672.0	126.8	133.8	84.80	-332.6	-1,597.8	4,950.1	4,690.5	259.55	19.072	
11,600.0	6,674.1	6,671.1	6,671.1	129.5	133.8	84.70	-332.6	-1,597.8	5,049.5	4,787.3	262.22	19.257	
11,700.0	6,673.1	6,670.1	6,670.1	132.3	133.8	84.59	-332.6	-1,597.8	5,149.0	4,884.1	264.89	19.439	
11,800.0	6,672.2	6,669.2	6,669.2	135.0	133.8	84.49	-332.6	-1,597.8	5,248.6	4,981.0	267.56	19.617	
11,900.0	6,671.3	6,668.3	6,668.3	137.8	133.8	84.38	-332.6	-1,597.8	5,348.1	5,077.9	270.23	19.791	
12,000.0	6,670.3	6,667.3	6,667.3	140.5	133.8	84.27	-332.6	-1,597.8	5,447.6	5,174.7	272.90	19.962	
12,036.2	6,670.0	6,667.0	6,667.0	141.5	133.7	84.23	-332.6	-1,597.8	5,483.7	5,209.9	273.86	20.023	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-94.42	-225.7	-2,919.4	2,928.1				
100.0	100.0	104.9	104.9	0.1	0.1	-105.03	-226.1	-2,919.2	2,928.0	2,927.8	0.20	N/A	
200.0	200.0	201.9	201.8	0.2	0.2	-105.05	-227.0	-2,918.9	2,927.9	2,927.4	0.44	6,616.971	
261.0	261.0	262.2	262.2	0.3	0.3	-105.07	-227.6	-2,918.8	2,927.8	2,927.3	0.56	5,228.454	
300.0	300.0	300.9	300.9	0.4	0.3	-26.87	-228.0	-2,918.7	2,927.5	2,926.9	0.68	4,301.902	
400.0	399.9	404.0	403.9	0.6	0.4	-12.39	-229.0	-2,918.4	2,924.1	2,923.1	0.99	2,953.916	
500.0	499.7	506.6	506.6	0.8	0.5	-10.06	-229.8	-2,918.1	2,916.9	2,915.6	1.29	2,257.373	
538.0	537.5	546.4	546.4	0.9	0.5	-9.64	-230.2	-2,917.9	2,913.1	2,911.7	1.40	2,075.125	
600.0	599.1	610.3	610.3	1.1	0.5	-10.47	-230.7	-2,917.6	2,905.6	2,904.0	1.61	1,800.197	
700.0	697.9	706.5	706.4	1.5	0.6	-11.36	-231.4	-2,917.1	2,890.2	2,888.3	1.94	1,486.353	
800.0	796.0	800.0	800.0	1.8	0.6	-12.00	-232.1	-2,916.7	2,870.8	2,868.6	2.26	1,268.088	
818.0	813.5	817.1	817.1	1.9	0.6	-12.11	-232.3	-2,916.7	2,866.9	2,864.6	2.32	1,235.532	
900.0	893.1	895.6	895.5	2.3	0.7	-11.44	-232.9	-2,916.4	2,847.4	2,844.8	2.63	1,083.384	
1,000.0	989.2	986.6	986.5	2.9	0.7	-10.90	-233.8	-2,916.3	2,819.9	2,816.9	3.00	941.334	
1,100.0	1,083.9	1,063.3	1,063.3	3.5	0.7	-10.56	-234.5	-2,916.4	2,788.7	2,785.4	3.35	833.475	
1,104.0	1,087.6	1,066.3	1,066.2	3.5	0.7	-10.55	-234.5	-2,916.4	2,787.4	2,784.0	3.36	829.700	
1,200.0	1,177.9	1,151.1	1,151.0	4.1	0.8	-11.44	-235.1	-2,917.1	2,756.0	2,752.3	3.69	746.779	
1,300.0	1,272.0	1,248.4	1,248.4	4.8	0.8	-12.41	-236.3	-2,917.8	2,723.6	2,719.6	4.00	681.183	
1,391.0	1,357.8	1,332.0	1,332.0	5.3	0.8	-13.30	-237.4	-2,918.3	2,694.5	2,690.2	4.30	626.148	
1,400.0	1,366.3	1,340.0	1,340.0	5.4	0.8	-13.11	-237.5	-2,918.4	2,691.6	2,687.3	4.33	621.792	
1,458.0	1,421.2	1,391.8	1,391.7	5.7	0.8	-11.76	-238.2	-2,918.8	2,673.8	2,669.3	4.50	594.533	
1,500.0	1,461.0	1,429.5	1,429.5	6.0	0.9	-12.04	-238.7	-2,919.2	2,661.3	2,656.7	4.63	574.492	
1,600.0	1,556.1	1,520.7	1,520.6	6.6	0.9	-12.71	-239.7	-2,920.1	2,631.9	2,627.0	4.96	530.677	
1,676.0	1,628.3	1,592.9	1,592.8	7.0	0.9	-13.24	-240.5	-2,920.9	2,609.8	2,604.6	5.21	500.555	
1,700.0	1,651.1	1,615.7	1,615.6	7.2	0.9	-12.70	-240.8	-2,921.2	2,602.9	2,597.6	5.29	492.029	
1,800.0	1,746.4	1,710.9	1,710.7	7.7	1.0	-10.39	-241.7	-2,922.3	2,574.2	2,568.6	5.61	458.908	
1,900.0	1,841.8	1,804.1	1,804.0	8.3	1.0	-7.95	-241.9	-2,923.5	2,545.8	2,539.9	5.93	429.633	
1,963.0	1,902.0	1,868.9	1,868.8	8.7	1.0	-6.36	-241.8	-2,924.4	2,528.1	2,522.0	6.13	412.510	
2,000.0	1,937.4	1,906.2	1,906.1	8.9	1.0	-6.36	-241.6	-2,924.8	2,517.8	2,511.5	6.24	403.287	
2,100.0	2,033.1	1,997.4	1,997.3	9.5	1.0	-6.38	-241.3	-2,926.0	2,490.3	2,483.7	6.55	380.204	
2,200.0	2,129.0	2,090.8	2,090.6	10.0	1.0	-6.39	-241.0	-2,927.3	2,463.5	2,456.7	6.86	359.314	
2,250.0	2,177.1	2,138.5	2,138.3	10.3	1.1	-6.39	-240.8	-2,928.0	2,450.5	2,443.4	7.01	349.545	
2,300.0	2,225.1	2,186.4	2,186.2	10.6	1.1	-7.60	-240.5	-2,928.8	2,437.4	2,430.3	7.18	339.499	
2,400.0	2,321.2	2,290.8	2,290.6	11.2	1.1	-10.00	-239.8	-2,930.2	2,411.1	2,403.6	7.52	320.418	
2,500.0	2,417.0	2,389.5	2,389.3	11.7	1.1	-12.36	-239.1	-2,931.4	2,384.3	2,376.4	7.87	302.873	
2,537.0	2,452.5	2,425.5	2,425.4	11.9	1.1	-13.23	-238.8	-2,931.8	2,374.3	2,366.3	8.00	296.749	
2,600.0	2,512.8	2,486.6	2,486.4	12.3	1.1	-16.31	-238.3	-2,932.5	2,357.2	2,348.9	8.25	285.594	
2,700.0	2,608.2	2,578.3	2,578.1	12.9	1.1	-20.99	-237.4	-2,933.6	2,329.8	2,321.1	8.66	269.042	
2,800.0	2,703.3	2,674.4	2,674.2	13.5	1.2	-25.44	-236.2	-2,934.9	2,302.3	2,293.2	9.08	253.569	
2,824.0	2,726.1	2,697.8	2,697.6	13.7	1.2	-26.47	-236.0	-2,935.2	2,295.6	2,286.4	9.18	249.999	
2,900.0	2,798.2	2,770.6	2,770.4	14.1	1.2	-24.11	-235.2	-2,936.1	2,274.7	2,265.2	9.45	240.584	
3,000.0	2,893.6	2,878.5	2,878.3	14.7	1.2	-20.72	-233.7	-2,937.2	2,247.6	2,237.8	9.82	228.963	
3,100.0	2,989.4	2,975.7	2,975.5	15.3	1.2	-16.91	-232.3	-2,937.9	2,220.8	2,210.6	10.17	218.412	
3,112.0	3,000.9	2,987.0	2,986.7	15.4	1.2	-16.43	-232.2	-2,938.0	2,217.6	2,207.4	10.21	217.210	
3,200.0	3,085.5	3,078.6	3,078.3	15.9	1.2	-15.60	-231.2	-2,938.5	2,194.6	2,184.1	10.50	209.050	
3,300.0	3,181.9	3,181.6	3,181.4	16.4	1.2	-14.60	-230.3	-2,938.6	2,168.6	2,157.8	10.82	200.371	
3,400.0	3,278.4	3,296.2	3,295.9	16.9	1.2	-13.54	-229.6	-2,938.2	2,142.8	2,131.6	11.15	192.213	
3,500.0	3,374.7	3,398.7	3,398.5	17.5	1.3	-13.94	-229.1	-2,937.1	2,115.5	2,103.9	11.55	183.197	
3,600.0	3,470.3	3,495.6	3,495.3	18.1	1.3	-14.38	-229.5	-2,935.7	2,085.6	2,073.7	11.95	174.509	
3,687.0	3,552.8	3,571.8	3,571.5	18.6	1.3	-14.77	-230.3	-2,934.7	2,057.9	2,045.6	12.31	167.229	
3,700.0	3,565.1	3,583.1	3,582.8	18.7	1.3	-14.54	-230.5	-2,934.5	2,053.6	2,041.3	12.35	166.241	
3,800.0	3,659.5	3,672.7	3,672.4	19.4	1.3	-12.83	-231.7	-2,933.5	2,020.7	2,008.0	12.72	158.868	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,764.6	3,764.2	20.0	1.3	-11.12	-232.7	-2,932.7	1,987.5	1,974.5	13.09	151.880	
3,974.0	3,823.6	3,832.2	3,831.8	20.5	1.3	-9.86	-233.4	-2,932.1	1,962.7	1,949.4	13.36	146.953	
4,000.0	3,848.1	3,855.6	3,855.3	20.7	1.3	-10.11	-233.6	-2,931.9	1,954.1	1,940.6	13.44	145.368	
4,100.0	3,942.9	3,946.7	3,946.4	21.3	1.3	-11.17	-234.5	-2,931.4	1,922.4	1,908.6	13.77	139.600	
4,200.0	4,038.5	4,035.3	4,035.0	21.9	1.4	-12.36	-235.4	-2,931.1	1,893.2	1,879.1	14.09	134.360	
4,263.0	4,099.0	4,088.4	4,088.0	22.3	1.4	-13.21	-236.0	-2,931.1	1,876.4	1,862.1	14.29	131.311	
4,300.0	4,134.7	4,120.8	4,120.5	22.5	1.4	-14.39	-236.5	-2,931.1	1,866.9	1,852.5	14.42	129.471	
4,400.0	4,231.2	4,209.8	4,209.4	23.0	1.4	-17.74	-237.9	-2,931.6	1,842.6	1,827.8	14.77	124.716	
4,500.0	4,328.0	4,292.7	4,292.3	23.5	1.4	-21.29	-238.5	-2,932.7	1,820.1	1,805.0	15.12	120.356	
4,549.0	4,375.5	4,349.6	4,349.2	23.8	1.4	-23.15	-238.5	-2,933.6	1,809.7	1,794.4	15.31	118.221	
4,600.0	4,425.0	4,411.4	4,411.1	24.0	1.4	-23.52	-238.2	-2,934.2	1,798.7	1,783.2	15.52	115.915	
4,700.0	4,521.9	4,525.7	4,525.3	24.5	1.4	-24.21	-237.1	-2,934.6	1,776.3	1,760.4	15.93	111.521	
4,800.0	4,618.8	4,635.6	4,635.2	25.0	1.4	-24.90	-235.6	-2,934.1	1,753.1	1,736.8	16.34	107.313	
4,837.0	4,654.7	4,674.9	4,674.5	25.2	1.4	-25.16	-235.0	-2,933.7	1,744.3	1,727.9	16.49	105.803	
4,900.0	4,715.7	4,741.2	4,740.7	25.5	1.5	-25.87	-234.2	-2,932.9	1,729.2	1,712.4	16.77	103.097	
5,000.0	4,812.4	4,844.0	4,843.5	26.0	1.5	-26.98	-233.2	-2,931.2	1,704.3	1,687.1	17.23	98.895	
5,100.0	4,908.9	4,940.4	4,940.0	26.6	1.5	-28.09	-232.5	-2,929.3	1,678.8	1,661.1	17.70	94.827	
5,125.0	4,932.9	4,963.2	4,962.8	26.7	1.5	-28.37	-232.5	-2,928.8	1,672.4	1,654.5	17.82	93.835	
5,200.0	5,005.4	5,034.0	5,033.6	27.0	1.5	-25.82	-232.5	-2,927.4	1,653.5	1,635.4	18.05	91.620	
5,300.0	5,102.4	5,127.1	5,126.6	27.5	1.5	-21.77	-232.6	-2,925.6	1,629.5	1,611.1	18.34	88.865	
5,400.0	5,199.9	5,211.4	5,210.9	28.0	1.5	-16.80	-232.5	-2,924.5	1,607.4	1,588.8	18.61	86.391	
5,412.0	5,211.7	5,222.7	5,222.2	28.1	1.5	-16.14	-232.5	-2,924.4	1,604.9	1,586.3	18.64	86.107	
5,500.0	5,297.9	5,305.4	5,304.8	28.4	1.5	-13.54	-232.5	-2,923.8	1,587.5	1,568.7	18.82	84.351	
5,581.0	5,377.7	5,384.9	5,384.4	28.7	1.5	-10.54	-232.7	-2,923.3	1,573.1	1,554.1	18.97	82.920	
5,600.0	5,396.4	5,403.5	5,403.0	28.8	1.5	-11.75	-232.7	-2,923.1	1,569.9	1,550.9	19.01	82.594	
5,700.0	5,495.3	5,500.8	5,500.2	29.1	1.5	-19.75	-232.8	-2,922.6	1,555.2	1,536.0	19.19	81.034	
5,800.0	5,594.6	5,603.2	5,602.7	29.4	1.6	-31.68	-232.9	-2,921.9	1,543.8	1,524.4	19.37	79.694	
5,900.0	5,694.1	5,700.0	5,699.5	29.6	1.6	-49.35	-233.0	-2,921.2	1,535.6	1,516.1	19.54	78.581	
5,917.0	5,711.1	5,716.8	5,716.2	29.7	1.6	-52.98	-233.1	-2,921.1	1,534.6	1,515.0	19.57	78.413	
6,000.0	5,793.7	5,798.6	5,798.0	29.8	1.6	-53.22	-233.6	-2,920.6	1,529.8	1,509.9	19.81	77.202	
6,067.0	5,860.5	5,864.6	5,864.1	30.0	1.6	-53.42	-234.3	-2,920.1	1,525.9	1,505.9	20.02	76.236	
6,100.0	5,893.4	5,897.2	5,896.6	30.0	1.6	-53.49	-234.7	-2,919.8	1,524.2	1,504.1	20.08	75.907	
6,200.0	5,993.2	5,993.5	5,993.0	30.2	1.6	-53.67	-236.2	-2,919.1	1,520.4	1,500.1	20.24	75.101	
6,300.0	6,093.2	6,091.1	6,090.5	30.3	1.6	-53.78	-237.9	-2,918.5	1,518.9	1,498.5	20.37	74.549	
6,318.7	6,111.9	6,109.4	6,108.8	30.3	1.7	-105.76	-238.3	-2,918.4	1,518.8	1,498.4	20.39	74.473 CC	
6,318.8	6,111.9	6,109.5	6,108.9	30.3	1.7	-105.76	-238.3	-2,918.4	1,518.8	1,488.5	30.36	50.025	
6,400.0	6,193.2	6,189.5	6,188.9	30.4	1.7	-105.82	-239.9	-2,918.0	1,518.8	1,488.4	30.44	49.888	
6,444.4	6,237.6	6,233.4	6,232.8	30.4	1.7	-105.85	-240.7	-2,917.8	1,518.9	1,488.4	30.49	49.814 ES	
6,450.0	6,243.2	6,238.9	6,238.3	30.4	1.7	164.14	-240.8	-2,917.8	1,518.9	1,498.3	20.58	73.799	
6,475.0	6,268.1	6,263.6	6,263.0	30.4	1.7	164.10	-241.2	-2,917.7	1,519.9	1,499.4	20.50	74.157	
6,500.0	6,293.0	6,288.2	6,287.6	30.4	1.7	164.04	-241.6	-2,917.6	1,522.1	1,501.6	20.43	74.492	
6,525.0	6,317.8	6,313.4	6,312.8	30.4	1.7	163.95	-241.9	-2,917.6	1,525.5	1,505.1	20.39	74.828	
6,550.0	6,342.3	6,339.2	6,338.6	30.4	1.7	163.83	-242.3	-2,917.5	1,530.2	1,509.9	20.35	75.190	
6,575.0	6,366.5	6,364.7	6,364.1	30.3	1.7	163.68	-242.6	-2,917.4	1,536.1	1,515.8	20.32	75.603	
6,600.0	6,390.4	6,389.9	6,389.3	30.2	1.7	163.50	-242.9	-2,917.3	1,543.2	1,522.9	20.28	76.085	
6,625.0	6,413.9	6,413.7	6,413.1	30.2	1.7	163.28	-243.3	-2,917.1	1,551.5	1,531.2	20.24	76.643	
6,650.0	6,436.9	6,436.5	6,435.9	30.1	1.7	163.01	-243.6	-2,917.0	1,560.9	1,540.7	20.20	77.279	
6,675.0	6,459.3	6,458.8	6,458.2	30.0	1.7	162.70	-244.0	-2,916.9	1,571.5	1,551.3	20.15	77.987	
6,700.0	6,481.1	6,480.5	6,479.9	29.9	1.7	162.33	-244.4	-2,916.8	1,583.2	1,563.1	20.10	78.754	
6,725.0	6,502.3	6,500.0	6,499.4	29.7	1.7	161.90	-244.7	-2,916.6	1,596.0	1,576.0	20.06	79.556	
6,750.0	6,522.7	6,521.0	6,520.3	29.6	1.7	161.42	-245.1	-2,916.5	1,609.9	1,589.9	20.03	80.375	
6,775.0	6,542.4	6,539.7	6,539.0	29.5	1.7	160.85	-245.4	-2,916.4	1,624.8	1,604.8	20.02	81.169	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,557.5	6,556.9	29.4	1.8	160.19	-245.7	-2,916.4	1,640.7	1,620.7	20.03	81.900	
6,825.0	6,579.1	6,574.6	6,573.9	29.3	1.8	159.42	-245.9	-2,916.3	1,657.6	1,637.5	20.09	82.515	
6,850.0	6,596.1	6,590.7	6,590.0	29.1	1.8	158.53	-246.1	-2,916.3	1,675.4	1,655.2	20.20	82.959	
6,875.0	6,612.1	6,606.3	6,605.6	29.0	1.8	157.50	-246.2	-2,916.3	1,694.0	1,673.6	20.37	83.175	
6,900.0	6,627.1	6,621.5	6,620.9	28.9	1.8	156.30	-246.4	-2,916.3	1,713.4	1,692.8	20.62	83.107	
6,925.0	6,641.0	6,635.7	6,635.1	28.8	1.8	154.87	-246.5	-2,916.3	1,733.6	1,712.6	20.96	82.690	
6,950.0	6,653.8	6,648.8	6,648.2	28.7	1.8	153.17	-246.6	-2,916.3	1,754.4	1,733.0	21.43	81.875	
6,975.0	6,665.5	6,660.7	6,660.1	28.7	1.8	151.12	-246.8	-2,916.3	1,775.9	1,753.9	22.03	80.630	
7,000.0	6,676.0	6,671.5	6,670.8	28.6	1.8	148.62	-246.9	-2,916.3	1,798.0	1,775.2	22.77	78.945	
7,025.0	6,685.3	6,681.0	6,680.3	28.6	1.8	145.53	-247.0	-2,916.2	1,820.5	1,796.9	23.69	76.837	
7,050.0	6,693.4	6,689.3	6,688.6	28.5	1.8	141.68	-247.1	-2,916.2	1,843.6	1,818.8	24.79	74.360	
7,075.0	6,700.2	6,696.3	6,695.6	28.5	1.8	136.80	-247.2	-2,916.2	1,867.0	1,840.9	26.07	71.628	
7,100.0	6,705.8	6,700.0	6,699.4	28.5	1.8	130.41	-247.2	-2,916.2	1,890.8	1,863.3	27.49	68.777	
7,125.0	6,710.0	6,705.6	6,705.0	28.5	1.8	122.51	-247.3	-2,916.2	1,914.8	1,885.9	28.86	66.356	
7,150.0	6,713.0	6,708.3	6,707.7	28.6	1.8	112.38	-247.3	-2,916.2	1,939.0	1,909.1	29.94	64.772	
7,175.0	6,714.7	6,709.8	6,709.2	28.6	1.8	100.16	-247.3	-2,916.2	1,963.4	1,933.0	30.35	64.692	
7,198.8	6,715.0	6,710.2	6,709.5	28.6	1.8	87.22	-247.3	-2,916.2	1,986.7	1,956.4	30.29	65.588	
7,200.0	6,715.0	6,710.2	6,709.5	28.6	1.8	87.22	-247.3	-2,916.2	1,987.8	1,957.5	30.29	65.619	
7,300.0	6,714.1	6,709.4	6,708.8	29.0	1.8	87.12	-247.3	-2,916.2	2,085.6	2,054.9	30.69	67.952	
7,400.0	6,713.2	6,708.7	6,708.1	29.7	1.8	87.02	-247.3	-2,916.2	2,183.6	2,152.3	31.35	69.644	
7,500.0	6,712.3	6,708.0	6,707.4	30.6	1.8	86.92	-247.3	-2,916.2	2,281.8	2,249.6	32.26	70.731	
7,600.0	6,711.3	6,707.3	6,706.7	31.7	1.8	86.83	-247.3	-2,916.2	2,380.2	2,346.8	33.39	71.281	
7,700.0	6,710.4	6,706.6	6,706.0	33.0	1.8	86.73	-247.3	-2,916.2	2,478.7	2,443.9	34.72	71.383	
7,800.0	6,709.5	6,705.9	6,705.3	34.5	1.8	86.64	-247.3	-2,916.2	2,577.2	2,541.0	36.23	71.132	
7,900.0	6,708.5	6,705.3	6,704.6	36.2	1.8	86.55	-247.3	-2,916.2	2,675.9	2,638.1	37.90	70.613	
8,000.0	6,707.6	6,704.6	6,704.0	38.0	1.8	86.46	-247.3	-2,916.2	2,774.7	2,735.0	39.69	69.903	
8,100.0	6,706.7	6,700.0	6,699.4	39.9	1.8	85.83	-247.2	-2,916.2	2,873.6	2,832.0	41.60	69.083	
8,200.0	6,705.8	6,700.0	6,699.4	41.9	1.8	85.83	-247.2	-2,916.2	2,972.6	2,929.0	43.61	68.159	
8,300.0	6,704.8	6,700.0	6,699.4	44.0	1.8	85.83	-247.2	-2,916.2	3,071.6	3,025.9	45.71	67.191	
8,400.0	6,703.9	6,700.0	6,699.4	46.2	1.8	85.83	-247.2	-2,916.2	3,170.7	3,122.8	47.89	66.205	
8,500.0	6,703.0	6,700.0	6,699.4	48.5	1.8	85.83	-247.2	-2,916.2	3,269.8	3,219.7	50.13	65.222	
8,600.0	6,702.1	6,700.0	6,699.4	50.8	1.8	85.83	-247.2	-2,916.2	3,369.0	3,316.6	52.43	64.256	
8,700.0	6,701.1	6,700.0	6,699.4	53.1	1.8	85.83	-247.2	-2,916.2	3,468.2	3,413.4	54.78	63.315	
8,800.0	6,700.2	6,699.6	6,698.9	55.5	1.8	85.77	-247.2	-2,916.2	3,567.5	3,510.3	57.16	62.409	
8,900.0	6,699.3	6,698.8	6,698.2	57.9	1.8	85.66	-247.2	-2,916.2	3,666.8	3,607.2	59.58	61.540	
9,000.0	6,698.3	6,698.0	6,697.4	60.4	1.8	85.56	-247.2	-2,916.2	3,766.2	3,704.1	62.04	60.708	
9,100.0	6,697.4	6,697.2	6,696.6	62.9	1.8	85.45	-247.2	-2,916.2	3,865.5	3,801.0	64.52	59.913	
9,200.0	6,696.5	6,696.4	6,695.8	65.4	1.8	85.34	-247.2	-2,916.2	3,965.0	3,897.9	67.02	59.157	
9,300.0	6,695.5	6,695.6	6,695.0	68.0	1.8	85.23	-247.2	-2,916.2	4,064.4	3,994.9	69.55	58.437	
9,400.0	6,694.6	6,694.9	6,694.2	70.5	1.8	85.12	-247.1	-2,916.2	4,163.9	4,091.8	72.10	57.752	
9,500.0	6,693.7	6,694.1	6,693.4	73.1	1.8	85.01	-247.1	-2,916.2	4,263.4	4,188.7	74.66	57.101	
9,600.0	6,692.8	6,693.2	6,692.6	75.7	1.8	84.90	-247.1	-2,916.2	4,362.9	4,285.6	77.24	56.482	
9,700.0	6,691.8	6,692.4	6,691.8	78.3	1.8	84.79	-247.1	-2,916.2	4,462.4	4,382.6	79.84	55.895	
9,800.0	6,690.9	6,691.6	6,691.0	80.9	1.8	84.68	-247.1	-2,916.2	4,562.0	4,479.5	82.44	55.336	
9,900.0	6,690.0	6,690.8	6,690.2	83.6	1.8	84.57	-247.1	-2,916.2	4,661.6	4,576.5	85.06	54.805	
10,000.0	6,689.0	6,690.0	6,689.4	86.2	1.8	84.46	-247.1	-2,916.2	4,761.2	4,673.5	87.68	54.299	
10,100.0	6,688.1	6,689.2	6,688.5	88.9	1.8	84.35	-247.1	-2,916.2	4,860.8	4,770.5	90.32	53.818	
10,200.0	6,687.2	6,688.4	6,687.7	91.6	1.8	84.23	-247.1	-2,916.2	4,960.4	4,867.4	92.96	53.360	
10,300.0	6,686.2	6,687.5	6,686.9	94.2	1.8	84.12	-247.1	-2,916.2	5,060.0	4,964.4	95.61	52.924	
10,400.0	6,685.3	6,686.7	6,686.1	96.9	1.8	84.01	-247.1	-2,916.2	5,159.7	5,061.4	98.27	52.508	
10,500.0	6,684.4	6,685.9	6,685.2	99.6	1.8	83.89	-247.0	-2,916.2	5,259.4	5,158.4	100.93	52.111	
10,600.0	6,683.4	6,685.0	6,684.4	102.3	1.8	83.78	-247.0	-2,916.2	5,359.0	5,255.5	103.59	51.732	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore

Offset Site Error: 0.0 usft

Survey Program: 100-GYD_CT

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,684.2	6,683.6	105.0	1.8	83.67	-247.0	-2,916.2	5,458.7	5,352.5	106.26	51.370	
10,800.0	6,681.6	6,683.4	6,682.7	107.7	1.8	83.55	-247.0	-2,916.2	5,558.4	5,449.5	108.94	51.024	
10,900.0	6,680.6	6,682.5	6,681.9	110.4	1.8	83.44	-247.0	-2,916.2	5,658.2	5,546.5	111.62	50.693	
11,000.0	6,679.7	6,681.7	6,681.0	113.1	1.8	83.32	-247.0	-2,916.2	5,757.9	5,643.6	114.30	50.376	
11,100.0	6,678.8	6,680.8	6,680.2	115.9	1.8	83.20	-247.0	-2,916.2	5,857.6	5,740.6	116.98	50.073	
11,200.0	6,677.8	6,680.0	6,679.3	118.6	1.8	83.09	-247.0	-2,916.2	5,957.4	5,837.7	119.67	49.782	
11,300.0	6,676.9	6,679.1	6,678.5	121.3	1.8	82.97	-247.0	-2,916.2	6,057.1	5,934.7	122.36	49.504	
11,400.0	6,676.0	6,678.2	6,677.6	124.1	1.8	82.85	-247.0	-2,916.2	6,156.9	6,031.8	125.05	49.236	
11,500.0	6,675.0	6,677.4	6,676.7	126.8	1.8	82.73	-246.9	-2,916.2	6,256.6	6,128.9	127.74	48.980	
11,600.0	6,674.1	6,676.5	6,675.9	129.5	1.8	82.61	-246.9	-2,916.2	6,356.4	6,226.0	130.43	48.734	
11,700.0	6,673.1	6,675.6	6,675.0	132.3	1.8	82.49	-246.9	-2,916.2	6,456.2	6,323.1	133.13	48.497	
11,800.0	6,672.2	6,674.7	6,674.1	135.0	1.8	82.38	-246.9	-2,916.2	6,556.0	6,420.1	135.82	48.269	
11,900.0	6,671.3	6,673.9	6,673.2	137.8	1.8	82.26	-246.9	-2,916.3	6,655.8	6,517.2	138.52	48.050	
12,000.0	6,670.3	6,673.0	6,672.3	140.5	1.8	82.13	-246.9	-2,916.3	6,755.6	6,614.4	141.21	47.840	
12,036.2	6,670.0	6,672.7	6,672.0	141.5	1.8	82.09	-246.9	-2,916.3	6,791.7	6,649.5	142.19	47.766	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	125.46	-1,841.8	2,586.2	3,175.0				
100.0	100.0	97.6	97.6	0.1	0.1	114.86	-1,841.9	2,586.1	3,175.0	3,174.8	0.19	N/A	
200.0	200.0	186.6	186.6	0.2	0.2	114.87	-1,842.2	2,586.0	3,175.2	3,174.8	0.40	7,882.572	
261.0	261.0	243.6	243.6	0.3	0.2	114.88	-1,842.3	2,586.1	3,175.5	3,175.0	0.50	6,308.907	
300.0	300.0	280.6	280.6	0.4	0.2	-166.91	-1,842.4	2,586.3	3,176.0	3,175.4	0.61	5,214.516	
400.0	399.9	370.4	370.4	0.6	0.3	-152.36	-1,842.3	2,587.0	3,179.7	3,178.8	0.92	3,474.955	
500.0	499.7	465.6	465.6	0.8	0.4	-149.96	-1,842.5	2,587.9	3,186.8	3,185.6	1.23	2,595.497	
538.0	537.5	503.2	503.2	0.9	0.4	-149.50	-1,842.6	2,588.2	3,190.3	3,189.0	1.35	2,371.701	
600.0	599.1	568.0	568.0	1.1	0.4	-150.25	-1,842.6	2,588.9	3,197.2	3,195.6	1.57	2,032.234	
700.0	697.9	659.1	659.1	1.5	0.5	-150.95	-1,842.5	2,589.9	3,211.4	3,209.4	1.93	1,661.584	
800.0	796.0	759.4	759.4	1.8	0.5	-151.36	-1,842.6	2,591.2	3,229.6	3,227.3	2.29	1,411.306	
818.0	813.5	780.0	780.0	1.9	0.5	-151.42	-1,842.6	2,591.5	3,233.3	3,230.9	2.35	1,374.534	
900.0	893.1	858.0	857.9	2.3	0.6	-150.52	-1,842.5	2,592.4	3,251.3	3,248.6	2.72	1,194.330	
1,000.0	989.2	946.0	946.0	2.9	0.6	-149.65	-1,842.5	2,593.5	3,276.7	3,273.5	3.17	1,034.896	
1,100.0	1,083.9	1,037.4	1,037.3	3.5	0.7	-148.94	-1,843.0	2,594.6	3,305.8	3,302.2	3.61	916.016	
1,104.0	1,087.6	1,041.3	1,041.3	3.5	0.7	-148.92	-1,843.0	2,594.6	3,307.0	3,303.4	3.63	911.886	
1,200.0	1,177.9	1,134.1	1,134.0	4.1	0.7	-149.99	-1,843.7	2,595.5	3,336.7	3,332.7	4.05	822.929	
1,300.0	1,272.0	1,230.4	1,230.3	4.8	0.7	-151.10	-1,844.3	2,596.4	3,367.7	3,363.2	4.46	754.547	
1,391.0	1,357.8	1,323.1	1,323.0	5.3	0.8	-152.12	-1,844.9	2,597.0	3,395.7	3,390.8	4.84	700.890	
1,400.0	1,366.3	1,331.0	1,330.9	5.4	0.8	-151.96	-1,844.9	2,597.1	3,398.4	3,393.6	4.88	697.022	
1,458.0	1,421.2	1,382.0	1,382.0	5.7	0.8	-150.90	-1,845.2	2,597.5	3,415.6	3,410.5	5.08	672.824	
1,500.0	1,461.0	1,418.8	1,418.7	6.0	0.8	-151.23	-1,845.3	2,597.9	3,427.7	3,422.4	5.24	654.326	
1,600.0	1,556.1	1,506.1	1,506.0	6.6	0.9	-151.99	-1,845.8	2,598.8	3,456.6	3,451.0	5.63	614.286	
1,676.0	1,628.3	1,580.3	1,580.2	7.0	0.9	-152.60	-1,846.2	2,599.7	3,478.6	3,472.7	5.92	587.290	
1,700.0	1,651.1	1,603.6	1,603.5	7.2	0.9	-152.10	-1,846.3	2,600.0	3,485.5	3,479.5	6.02	579.065	
1,800.0	1,746.4	1,698.4	1,698.3	7.7	0.9	-149.96	-1,847.0	2,600.9	3,513.7	3,507.2	6.42	547.560	
1,900.0	1,841.8	1,803.7	1,803.6	8.3	1.0	-147.79	-1,847.8	2,601.7	3,540.7	3,533.8	6.82	519.490	
1,963.0	1,902.0	1,860.7	1,860.6	8.7	1.0	-146.35	-1,848.2	2,602.1	3,557.1	3,550.0	7.06	503.507	
2,000.0	1,937.4	1,894.2	1,894.1	8.9	1.0	-146.45	-1,848.5	2,602.3	3,566.6	3,559.4	7.21	494.607	
2,100.0	2,033.1	2,025.6	2,025.5	9.5	1.0	-146.80	-1,849.8	2,602.3	3,591.5	3,583.9	7.59	472.933	
2,200.0	2,129.0	2,120.6	2,120.5	10.0	1.1	-147.04	-1,850.7	2,601.9	3,615.5	3,607.5	7.97	453.514	
2,250.0	2,177.1	2,175.8	2,175.7	10.3	1.1	-147.17	-1,851.3	2,601.5	3,627.3	3,619.1	8.16	444.425	
2,300.0	2,225.1	2,228.3	2,228.1	10.6	1.1	-148.42	-1,851.8	2,601.1	3,639.0	3,630.7	8.35	435.673	
2,400.0	2,321.2	2,327.8	2,327.7	11.2	1.1	-150.87	-1,852.7	2,600.2	3,663.1	3,654.4	8.73	419.561	
2,500.0	2,417.0	2,422.1	2,422.0	11.7	1.1	-153.23	-1,853.5	2,599.4	3,688.1	3,679.0	9.11	404.945	
2,537.0	2,452.5	2,453.8	2,453.7	11.9	1.1	-154.08	-1,853.7	2,599.2	3,697.6	3,688.3	9.25	399.866	
2,600.0	2,512.8	2,509.0	2,508.9	12.3	1.1	-157.08	-1,854.0	2,599.0	3,714.3	3,704.8	9.47	392.292	
2,700.0	2,608.2	2,609.8	2,609.6	12.9	1.2	-161.60	-1,854.6	2,598.5	3,742.3	3,732.5	9.81	381.340	
2,800.0	2,703.3	2,713.2	2,713.0	13.5	1.2	-165.81	-1,854.8	2,598.0	3,771.8	3,761.7	10.14	371.934	
2,824.0	2,726.1	2,732.7	2,732.5	13.7	1.2	-166.77	-1,854.8	2,597.9	3,779.1	3,768.9	10.22	369.811	
2,900.0	2,798.2	2,800.0	2,799.9	14.1	1.2	-164.36	-1,854.9	2,597.7	3,802.2	3,791.7	10.48	362.635	
3,000.0	2,893.6	2,907.1	2,907.0	14.7	1.2	-160.97	-1,855.1	2,597.3	3,830.7	3,819.9	10.83	353.724	
3,100.0	2,989.4	3,000.0	2,999.8	15.3	1.2	-157.25	-1,855.2	2,596.7	3,857.2	3,846.0	11.16	345.591	
3,112.0	3,000.9	3,014.9	3,014.7	15.4	1.2	-156.79	-1,855.2	2,596.6	3,860.2	3,849.0	11.20	344.636	
3,200.0	3,085.5	3,085.4	3,085.2	15.9	1.2	-156.00	-1,855.3	2,596.3	3,882.3	3,870.8	11.49	337.859	
3,300.0	3,181.9	3,199.8	3,199.7	16.4	1.2	-155.10	-1,855.6	2,595.8	3,906.7	3,894.8	11.82	330.631	
3,400.0	3,278.4	3,283.2	3,283.0	16.9	1.2	-154.09	-1,855.5	2,595.4	3,930.0	3,917.8	12.14	323.848	
3,500.0	3,374.7	3,362.5	3,362.3	17.5	1.2	-154.19	-1,855.3	2,595.5	3,954.3	3,941.8	12.55	315.010	
3,600.0	3,470.3	3,457.4	3,457.3	18.1	1.2	-154.31	-1,855.0	2,596.0	3,981.3	3,968.3	12.98	306.806	
3,687.0	3,552.8	3,539.7	3,539.6	18.6	1.3	-154.40	-1,854.7	2,596.3	4,006.5	3,993.2	13.35	300.167	
3,700.0	3,565.1	3,550.3	3,550.2	18.7	1.3	-154.16	-1,854.7	2,596.3	4,010.4	3,997.0	13.40	299.187	
3,800.0	3,659.5	3,643.0	3,642.9	19.4	1.3	-152.41	-1,854.2	2,596.9	4,040.4	4,026.6	13.84	291.957	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,745.0	3,744.8	20.0	1.3	-150.73	-1,853.6	2,597.4	4,070.1	4,055.8	14.27	285.219	
3,974.0	3,823.6	3,800.0	3,799.8	20.5	1.3	-149.46	-1,853.5	2,597.6	4,092.0	4,077.4	14.59	280.476	
4,000.0	3,848.1	3,829.2	3,829.1	20.7	1.3	-149.81	-1,853.6	2,597.6	4,099.6	4,084.9	14.67	279.468	
4,100.0	3,942.9	3,900.0	3,899.8	21.3	1.3	-151.10	-1,854.0	2,597.9	4,128.2	4,113.2	14.98	275.569	
4,200.0	4,038.5	3,990.0	3,989.8	21.9	1.3	-152.53	-1,854.8	2,598.4	4,155.4	4,140.1	15.30	271.635	
4,263.0	4,099.0	4,039.3	4,039.1	22.3	1.3	-153.49	-1,855.3	2,598.8	4,171.7	4,156.2	15.50	269.199	
4,300.0	4,134.7	4,067.4	4,067.2	22.5	1.4	-154.66	-1,855.6	2,599.1	4,181.2	4,165.6	15.60	267.986	
4,400.0	4,231.2	4,160.1	4,159.9	23.0	1.4	-157.99	-1,857.0	2,600.1	4,206.8	4,190.9	15.89	264.751	
4,500.0	4,328.0	4,274.5	4,274.2	23.5	1.4	-161.53	-1,858.9	2,600.9	4,231.8	4,215.7	16.18	261.554	
4,549.0	4,375.5	4,325.4	4,325.2	23.8	1.4	-163.33	-1,859.5	2,601.2	4,243.9	4,227.5	16.32	260.014	
4,600.0	4,425.0	4,372.2	4,372.0	24.0	1.4	-163.55	-1,860.1	2,601.4	4,256.3	4,239.9	16.48	258.272	
4,700.0	4,521.9	4,466.1	4,465.9	24.5	1.5	-163.99	-1,861.4	2,602.0	4,281.0	4,264.3	16.79	254.933	
4,800.0	4,618.8	4,548.2	4,547.9	25.0	1.5	-164.40	-1,862.6	2,602.6	4,306.0	4,288.9	17.11	251.741	
4,837.0	4,654.7	4,575.9	4,575.6	25.2	1.5	-164.55	-1,863.1	2,602.8	4,315.4	4,298.2	17.22	250.601	
4,900.0	4,715.7	4,635.7	4,635.5	25.5	1.5	-165.03	-1,864.3	2,603.4	4,331.7	4,314.3	17.43	248.505	
5,000.0	4,812.4	4,735.7	4,735.4	26.0	1.6	-165.77	-1,866.0	2,604.3	4,358.1	4,340.3	17.77	245.301	
5,100.0	4,908.9	4,815.5	4,815.2	26.6	1.6	-166.45	-1,867.6	2,605.2	4,385.4	4,367.3	18.10	242.334	
5,125.0	4,932.9	4,835.7	4,835.3	26.7	1.6	-166.61	-1,868.0	2,605.4	4,392.5	4,374.3	18.18	241.609	
5,200.0	5,005.4	4,900.0	4,899.7	27.0	1.6	-163.95	-1,869.4	2,606.3	4,413.0	4,394.6	18.40	239.818	
5,300.0	5,102.4	4,996.9	4,996.5	27.5	1.6	-159.85	-1,871.5	2,607.8	4,438.3	4,419.6	18.68	237.560	
5,400.0	5,199.9	5,109.2	5,108.8	28.0	1.7	-154.95	-1,873.7	2,609.3	4,460.8	4,441.8	18.95	235.452	
5,412.0	5,211.7	5,122.7	5,122.3	28.1	1.7	-154.31	-1,873.9	2,609.5	4,463.3	4,444.3	18.98	235.209	
5,500.0	5,297.9	5,224.8	5,224.4	28.4	1.7	-151.85	-1,875.3	2,610.8	4,480.3	4,461.2	19.16	233.852	
5,581.0	5,377.7	5,323.7	5,323.2	28.7	1.7	-148.99	-1,876.4	2,611.6	4,493.8	4,474.5	19.31	232.673	
5,600.0	5,396.4	5,343.7	5,343.2	28.8	1.7	-150.22	-1,876.6	2,611.8	4,496.7	4,477.4	19.35	232.442	
5,700.0	5,495.3	5,439.3	5,438.8	29.1	1.8	-158.30	-1,877.4	2,612.5	4,510.9	4,491.4	19.50	231.338	
5,800.0	5,594.6	5,526.3	5,525.9	29.4	1.8	-170.21	-1,878.4	2,613.2	4,523.7	4,504.0	19.63	230.418	
5,900.0	5,694.1	5,623.4	5,623.0	29.6	1.8	172.22	-1,879.4	2,614.3	4,534.9	4,515.2	19.75	229.621	
5,917.0	5,711.1	5,642.3	5,641.9	29.7	1.8	168.61	-1,879.6	2,614.6	4,536.6	4,516.9	19.77	229.486	
6,000.0	5,793.7	5,735.6	5,735.1	29.8	1.9	168.64	-1,880.3	2,615.6	4,544.9	4,524.9	19.93	228.014	
6,067.0	5,860.5	5,809.6	5,809.1	30.0	1.9	168.65	-1,880.8	2,616.2	4,551.3	4,531.3	20.06	226.844	
6,100.0	5,893.4	5,839.7	5,839.2	30.0	1.9	168.67	-1,881.1	2,616.4	4,554.3	4,534.2	20.09	226.652	
6,200.0	5,993.2	5,930.8	5,930.3	30.2	1.9	168.72	-1,882.0	2,617.1	4,561.3	4,541.1	20.17	226.093	
6,300.0	6,093.2	6,022.2	6,021.7	30.3	1.9	168.74	-1,882.8	2,618.2	4,565.0	4,544.8	20.24	225.545	
6,318.8	6,111.9	6,039.8	6,039.3	30.3	1.9	116.79	-1,883.0	2,618.4	4,565.3	4,534.7	30.62	149.084	
6,400.0	6,193.2	6,118.8	6,118.3	30.4	2.0	116.79	-1,883.7	2,619.4	4,566.6	4,535.9	30.71	148.708	
6,444.4	6,237.6	6,167.3	6,166.8	30.4	2.0	116.79	-1,884.2	2,619.9	4,567.2	4,536.5	30.76	148.494	
6,450.0	6,243.2	6,173.4	6,172.8	30.4	2.0	26.79	-1,884.2	2,620.0	4,567.3	4,546.8	20.44	223.415	
6,475.0	6,268.1	6,200.6	6,200.1	30.4	2.0	26.82	-1,884.5	2,620.2	4,566.8	4,546.4	20.35	224.406	
6,500.0	6,293.0	6,226.0	6,225.5	30.4	2.0	26.93	-1,884.8	2,620.5	4,565.1	4,544.8	20.28	225.062	
6,525.0	6,317.8	6,251.2	6,250.7	30.4	2.0	27.11	-1,885.1	2,620.7	4,562.3	4,542.1	20.24	225.379	
6,550.0	6,342.3	6,276.3	6,275.8	30.4	2.0	27.36	-1,885.4	2,621.0	4,558.3	4,538.1	20.23	225.377	
6,575.0	6,366.5	6,300.0	6,299.5	30.3	2.0	27.69	-1,885.7	2,621.2	4,553.2	4,532.9	20.23	225.086	
6,600.0	6,390.4	6,324.0	6,323.4	30.2	2.0	28.09	-1,886.0	2,621.4	4,546.9	4,526.7	20.25	224.505	
6,625.0	6,413.9	6,346.6	6,346.0	30.2	2.0	28.58	-1,886.2	2,621.6	4,539.6	4,519.3	20.30	223.647	
6,650.0	6,436.9	6,368.7	6,368.2	30.1	2.0	29.16	-1,886.5	2,621.8	4,531.1	4,510.8	20.37	222.485	
6,675.0	6,459.3	6,390.3	6,389.8	30.0	2.1	29.83	-1,886.7	2,622.1	4,521.6	4,501.2	20.46	220.983	
6,700.0	6,481.1	6,410.3	6,409.7	29.9	2.1	30.60	-1,887.0	2,622.3	4,511.1	4,490.5	20.59	219.120	
6,725.0	6,502.3	6,428.7	6,428.2	29.7	2.1	31.48	-1,887.2	2,622.4	4,499.6	4,478.8	20.75	216.849	
6,750.0	6,522.7	6,446.5	6,446.0	29.6	2.1	32.48	-1,887.4	2,622.7	4,487.1	4,466.2	20.96	214.106	
6,775.0	6,542.4	6,463.7	6,463.2	29.5	2.1	33.60	-1,887.6	2,622.9	4,473.7	4,452.5	21.22	210.850	
6,800.0	6,561.2	6,480.2	6,479.6	29.4	2.1	34.87	-1,887.8	2,623.1	4,459.5	4,437.9	21.54	207.057	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,500.0	6,499.5	29.3	2.1	36.33	-1,888.1	2,623.3	4,444.3	4,422.4	21.93	202.614	
6,850.0	6,596.1	6,512.3	6,511.8	29.1	2.1	37.92	-1,888.2	2,623.5	4,428.4	4,406.0	22.38	197.840	
6,875.0	6,612.1	6,528.2	6,527.7	29.0	2.1	39.74	-1,888.4	2,623.7	4,411.7	4,388.8	22.92	192.484	
6,900.0	6,627.1	6,543.1	6,542.6	28.9	2.1	41.79	-1,888.6	2,623.9	4,394.3	4,370.8	23.53	186.761	
6,925.0	6,641.0	6,557.0	6,556.4	28.8	2.1	44.07	-1,888.9	2,624.1	4,376.3	4,352.0	24.21	180.789	
6,950.0	6,653.8	6,569.8	6,569.2	28.7	2.1	46.63	-1,889.1	2,624.2	4,357.6	4,332.6	24.94	174.705	
6,975.0	6,665.5	6,581.4	6,580.9	28.7	2.1	49.48	-1,889.2	2,624.4	4,338.3	4,312.6	25.72	168.658	
7,000.0	6,676.0	6,591.9	6,591.4	28.6	2.1	52.64	-1,889.4	2,624.5	4,318.6	4,292.1	26.53	162.805	
7,025.0	6,685.3	6,600.0	6,599.4	28.6	2.1	56.12	-1,889.6	2,624.6	4,298.4	4,271.1	27.32	157.329	
7,050.0	6,693.4	6,600.0	6,599.4	28.5	2.1	59.81	-1,889.6	2,624.6	4,277.8	4,249.8	28.05	152.489	
7,075.0	6,700.2	6,600.0	6,599.4	28.5	2.1	63.83	-1,889.6	2,624.6	4,256.9	4,228.2	28.73	148.188	
7,100.0	6,705.8	6,600.0	6,599.4	28.5	2.1	68.19	-1,889.6	2,624.6	4,235.8	4,206.5	29.31	144.527	
7,125.0	6,710.0	6,618.3	6,617.7	28.5	2.1	73.32	-1,889.9	2,624.8	4,214.3	4,184.5	29.81	141.376	
7,150.0	6,713.0	6,620.5	6,619.9	28.6	2.1	78.32	-1,890.0	2,624.8	4,192.8	4,162.6	30.13	139.150	
7,175.0	6,714.7	6,621.9	6,621.3	28.6	2.1	83.49	-1,890.0	2,624.9	4,171.1	4,140.8	30.34	137.476	
7,198.8	6,715.0	6,622.3	6,621.8	28.6	2.1	88.47	-1,890.0	2,624.9	4,150.4	4,120.0	30.48	136.160	
7,200.0	6,715.0	6,622.3	6,621.8	28.6	2.1	88.47	-1,890.0	2,624.9	4,149.4	4,118.9	30.49	136.113	
7,300.0	6,714.1	6,622.6	6,622.0	29.0	2.1	88.48	-1,890.0	2,624.9	4,063.0	4,032.1	30.89	131.545	
7,400.0	6,713.2	6,622.9	6,622.3	29.7	2.1	88.49	-1,890.0	2,624.9	3,977.2	3,945.7	31.55	126.057	
7,500.0	6,712.3	6,623.1	6,622.5	30.6	2.1	88.50	-1,890.0	2,624.9	3,892.1	3,859.6	32.46	119.903	
7,600.0	6,711.3	6,623.4	6,622.8	31.7	2.1	88.50	-1,890.0	2,624.9	3,807.7	3,774.1	33.59	113.344	
7,700.0	6,710.4	6,623.7	6,623.1	33.0	2.1	88.51	-1,890.0	2,624.9	3,724.1	3,689.1	34.93	106.618	
7,800.0	6,709.5	6,623.9	6,623.4	34.5	2.1	88.52	-1,890.0	2,624.9	3,641.3	3,604.8	36.44	99.920	
7,900.0	6,708.5	6,624.2	6,623.6	36.2	2.1	88.53	-1,890.0	2,624.9	3,559.4	3,521.2	38.11	93.397	
8,000.0	6,707.6	6,624.5	6,623.9	38.0	2.1	88.54	-1,890.0	2,624.9	3,478.4	3,438.5	39.91	87.149	
8,100.0	6,706.7	6,624.8	6,624.2	39.9	2.1	88.54	-1,890.0	2,624.9	3,398.4	3,356.6	41.83	81.238	
8,200.0	6,705.8	6,625.1	6,624.5	41.9	2.1	88.55	-1,890.1	2,624.9	3,319.6	3,275.7	43.85	75.697	
8,300.0	6,704.8	6,625.3	6,624.8	44.0	2.1	88.56	-1,890.1	2,624.9	3,241.9	3,195.9	45.96	70.536	
8,400.0	6,703.9	6,625.6	6,625.1	46.2	2.1	88.57	-1,890.1	2,624.9	3,165.4	3,117.3	48.14	65.751	
8,500.0	6,703.0	6,625.9	6,625.4	48.5	2.1	88.58	-1,890.1	2,624.9	3,090.3	3,039.9	50.39	61.328	
8,600.0	6,702.1	6,626.2	6,625.7	50.8	2.1	88.59	-1,890.1	2,624.9	3,016.6	2,964.0	52.69	57.250	
8,700.0	6,701.1	6,626.5	6,626.0	53.1	2.1	88.59	-1,890.1	2,624.9	2,944.5	2,889.5	55.04	53.494	
8,800.0	6,700.2	6,626.8	6,626.3	55.5	2.1	88.60	-1,890.1	2,624.9	2,874.1	2,816.7	57.44	50.037	
8,900.0	6,699.3	6,627.1	6,626.6	57.9	2.1	88.61	-1,890.1	2,624.9	2,805.5	2,745.6	59.87	46.858	
9,000.0	6,698.3	6,627.5	6,626.9	60.4	2.1	88.62	-1,890.1	2,624.9	2,738.8	2,676.4	62.34	43.936	
9,100.0	6,697.4	6,627.8	6,627.2	62.9	2.1	88.63	-1,890.1	2,624.9	2,674.1	2,609.3	64.83	41.249	
9,200.0	6,696.5	6,628.1	6,627.5	65.4	2.1	88.64	-1,890.1	2,624.9	2,611.7	2,544.4	67.35	38.779	
9,300.0	6,695.5	6,628.4	6,627.8	68.0	2.1	88.65	-1,890.1	2,624.9	2,551.7	2,481.8	69.89	36.510	
9,400.0	6,694.6	6,628.8	6,628.2	70.5	2.1	88.66	-1,890.1	2,624.9	2,494.3	2,421.8	72.45	34.426	
9,500.0	6,693.7	6,629.1	6,628.5	73.1	2.1	88.67	-1,890.1	2,625.0	2,439.6	2,364.6	75.04	32.513	
9,600.0	6,692.8	6,629.4	6,628.8	75.7	2.1	88.67	-1,890.1	2,625.0	2,387.8	2,310.2	77.63	30.758	
9,700.0	6,691.8	6,629.8	6,629.2	78.3	2.1	88.68	-1,890.1	2,625.0	2,339.2	2,259.0	80.24	29.151	
9,800.0	6,690.9	6,630.1	6,629.5	80.9	2.1	88.69	-1,890.2	2,625.0	2,293.9	2,211.1	82.87	27.681	
9,900.0	6,690.0	6,630.5	6,629.9	83.6	2.1	88.70	-1,890.2	2,625.0	2,252.2	2,166.7	85.51	26.339	
10,000.0	6,689.0	6,630.8	6,630.2	86.2	2.1	88.71	-1,890.2	2,625.0	2,214.2	2,126.0	88.16	25.116	
10,100.0	6,688.1	6,631.2	6,630.6	88.9	2.1	88.72	-1,890.2	2,625.0	2,180.1	2,089.2	90.81	24.006	
10,200.0	6,687.2	6,631.5	6,631.0	91.6	2.1	88.73	-1,890.2	2,625.0	2,150.1	2,056.6	93.48	23.000	
10,300.0	6,686.2	6,631.9	6,631.3	94.2	2.1	88.74	-1,890.2	2,625.0	2,124.4	2,028.2	96.16	22.093	
10,400.0	6,685.3	6,632.3	6,631.7	96.9	2.1	88.75	-1,890.2	2,625.0	2,103.1	2,004.3	98.84	21.278	
10,500.0	6,684.4	6,632.7	6,632.1	99.6	2.1	88.77	-1,890.2	2,625.0	2,086.5	1,984.9	101.53	20.550	
10,600.0	6,683.4	6,633.0	6,632.5	102.3	2.1	88.78	-1,890.2	2,625.0	2,074.5	1,970.2	104.23	19.903	
10,700.0	6,682.5	6,633.4	6,632.8	105.0	2.1	88.79	-1,890.2	2,625.0	2,067.3	1,960.3	106.93	19.333	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,799.2	6,681.6	6,633.8	6,633.2	107.7	2.1	88.80	-1,890.2	2,625.0	2,064.9	1,955.3	109.62	18.837	CC
10,800.0	6,681.6	6,633.8	6,633.2	107.7	2.1	88.80	-1,890.2	2,625.0	2,064.9	1,955.2	109.64	18.833	
10,900.0	6,680.6	6,634.2	6,633.6	110.4	2.1	88.81	-1,890.2	2,625.0	2,067.3	1,955.0	112.35	18.400	ES
11,000.0	6,679.7	6,634.6	6,634.0	113.1	2.1	88.82	-1,890.3	2,625.0	2,074.6	1,959.6	115.07	18.029	
11,100.0	6,678.8	6,635.0	6,634.5	115.9	2.1	88.83	-1,890.3	2,625.0	2,086.7	1,968.9	117.79	17.715	
11,200.0	6,677.8	6,635.4	6,634.9	118.6	2.1	88.84	-1,890.3	2,625.0	2,103.4	1,982.9	120.52	17.453	
11,300.0	6,676.9	6,635.9	6,635.3	121.3	2.1	88.85	-1,890.3	2,625.0	2,124.7	2,001.5	123.25	17.239	
11,400.0	6,676.0	6,636.3	6,635.7	124.1	2.1	88.87	-1,890.3	2,625.1	2,150.5	2,024.5	125.99	17.069	
11,500.0	6,675.0	6,636.7	6,636.2	126.8	2.1	88.88	-1,890.3	2,625.1	2,180.6	2,051.8	128.72	16.940	
11,600.0	6,674.1	6,637.2	6,636.6	129.5	2.1	88.89	-1,890.3	2,625.1	2,214.7	2,083.3	131.46	16.847	
11,700.0	6,673.1	6,637.6	6,637.0	132.3	2.1	88.90	-1,890.3	2,625.1	2,252.8	2,118.6	134.21	16.786	
11,800.0	6,672.2	6,638.1	6,637.5	135.0	2.1	88.92	-1,890.3	2,625.1	2,294.6	2,157.7	136.96	16.755	
11,900.0	6,671.3	6,638.5	6,637.9	137.8	2.1	88.93	-1,890.3	2,625.1	2,340.0	2,200.3	139.70	16.749	SF
12,000.0	6,670.3	6,639.0	6,638.4	140.5	2.1	88.94	-1,890.3	2,625.1	2,388.7	2,246.2	142.46	16.768	
12,036.2	6,670.0	6,639.2	6,638.6	141.5	2.1	88.95	-1,890.3	2,625.1	2,407.1	2,263.6	143.45	16.779	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-136.34	-1,661.2	-1,585.4	2,296.3				
100.0	100.0	101.0	101.0	0.1	1.2	-146.94	-1,661.2	-1,585.4	2,296.4	2,295.1	1.31	1,758.856	
200.0	200.0	201.0	201.0	0.2	3.5	-146.94	-1,661.2	-1,585.4	2,296.7	2,292.9	3.71	619.309	
261.0	261.0	262.0	262.0	0.3	4.8	-146.95	-1,661.2	-1,585.4	2,296.9	2,291.8	5.04	455.296	
300.0	300.0	301.0	301.0	0.4	5.6	-68.75	-1,661.2	-1,585.4	2,296.9	2,290.9	5.94	386.411	
400.0	399.9	400.9	400.9	0.6	7.6	-54.31	-1,661.2	-1,585.4	2,295.1	2,286.9	8.21	279.484	
500.0	499.7	500.7	500.7	0.8	9.6	-52.14	-1,661.2	-1,585.4	2,290.8	2,280.3	10.45	219.189	
538.0	537.5	538.5	538.5	0.9	10.4	-51.79	-1,661.2	-1,585.4	2,288.5	2,277.2	11.29	202.631	
600.0	599.1	600.1	600.1	1.1	11.7	-52.78	-1,661.2	-1,585.4	2,284.0	2,271.3	12.72	179.627	
700.0	697.9	698.9	698.9	1.5	13.6	-54.00	-1,661.2	-1,585.4	2,274.9	2,259.9	14.99	151.801	
800.0	796.0	797.0	797.0	1.8	15.6	-55.07	-1,661.2	-1,585.4	2,263.4	2,246.2	17.23	131.393	
818.0	813.5	814.5	814.5	1.9	16.0	-55.26	-1,661.2	-1,585.4	2,261.1	2,243.5	17.63	128.282	
900.0	893.1	894.1	894.1	2.3	17.6	-55.07	-1,661.2	-1,585.4	2,249.6	2,230.1	19.56	115.024	
1,000.0	989.2	990.2	990.2	2.9	19.5	-55.22	-1,661.2	-1,585.4	2,233.3	2,211.4	21.89	102.044	
1,100.0	1,083.9	1,084.9	1,084.9	3.5	21.4	-55.70	-1,661.2	-1,585.4	2,214.4	2,190.3	24.18	91.586	
1,104.0	1,087.6	1,088.6	1,088.6	3.5	21.5	-55.72	-1,661.2	-1,585.4	2,213.6	2,189.4	24.27	91.209	
1,200.0	1,177.9	1,178.9	1,178.9	4.1	23.3	-57.08	-1,661.2	-1,585.4	2,194.8	2,168.1	26.65	82.361	
1,300.0	1,272.0	1,273.0	1,273.0	4.8	25.2	-58.52	-1,661.2	-1,585.4	2,176.0	2,146.9	29.13	74.706	
1,391.0	1,357.8	1,358.8	1,358.8	5.3	26.9	-59.85	-1,661.2	-1,585.4	2,159.7	2,128.3	31.40	68.778	
1,400.0	1,366.3	1,367.3	1,367.3	5.4	27.1	-59.71	-1,661.2	-1,585.4	2,158.1	2,126.5	31.62	68.251	
1,458.0	1,421.2	1,422.2	1,422.2	5.7	28.2	-58.68	-1,661.2	-1,585.4	2,148.1	2,115.1	33.04	65.015	
1,500.0	1,461.0	1,462.0	1,462.0	6.0	29.0	-59.17	-1,661.2	-1,585.4	2,141.1	2,107.0	34.08	62.833	
1,600.0	1,556.1	1,557.1	1,557.1	6.6	30.9	-60.34	-1,661.2	-1,585.4	2,124.8	2,088.2	36.55	58.137	
1,676.0	1,628.3	1,629.3	1,629.3	7.0	32.4	-61.24	-1,661.2	-1,585.4	2,112.8	2,074.4	38.43	54.974	
1,700.0	1,651.1	1,652.1	1,652.1	7.2	32.8	-60.86	-1,661.2	-1,585.4	2,109.1	2,070.1	39.01	54.062	
1,800.0	1,746.4	1,747.4	1,747.4	7.7	34.8	-59.21	-1,661.2	-1,585.4	2,093.3	2,051.9	41.43	50.529	
1,900.0	1,841.8	1,842.8	1,842.8	8.3	36.7	-57.47	-1,661.2	-1,585.4	2,077.1	2,033.2	43.84	47.374	
1,963.0	1,902.0	1,903.0	1,903.0	8.7	37.9	-56.31	-1,661.2	-1,585.4	2,066.6	2,021.2	45.37	45.553	
2,000.0	1,937.4	1,938.4	1,938.4	8.9	38.6	-56.53	-1,661.2	-1,585.4	2,060.4	2,014.1	46.28	44.523	
2,100.0	2,033.1	2,034.1	2,034.1	9.5	40.5	-57.09	-1,661.2	-1,585.4	2,044.1	1,995.4	48.74	41.936	
2,200.0	2,129.0	2,130.0	2,130.0	10.0	42.5	-57.66	-1,661.2	-1,585.4	2,028.5	1,977.3	51.22	39.603	
2,250.0	2,177.1	2,178.1	2,178.1	10.3	43.4	-57.94	-1,661.2	-1,585.4	2,020.9	1,968.4	52.46	38.521	
2,300.0	2,225.1	2,226.1	2,226.1	10.6	44.4	-59.39	-1,661.2	-1,585.4	2,013.5	1,959.8	53.73	37.474	
2,400.0	2,321.2	2,322.2	2,322.2	11.2	46.3	-62.27	-1,661.2	-1,585.4	1,999.4	1,943.2	56.27	35.533	
2,500.0	2,417.0	2,418.0	2,418.0	11.7	48.3	-65.12	-1,661.2	-1,585.4	1,986.5	1,927.7	58.81	33.776	
2,537.0	2,452.5	2,453.5	2,453.5	11.9	49.0	-66.16	-1,661.2	-1,585.4	1,981.9	1,922.2	59.76	33.167	
2,600.0	2,512.8	2,513.8	2,513.8	12.3	50.2	-69.43	-1,661.2	-1,585.4	1,974.8	1,913.3	61.44	32.143	
2,700.0	2,608.2	2,609.2	2,609.2	12.9	52.1	-74.40	-1,661.2	-1,585.4	1,965.1	1,901.0	64.09	30.662	
2,800.0	2,703.3	2,704.3	2,704.3	13.5	54.0	-79.09	-1,661.2	-1,585.4	1,957.7	1,891.0	66.72	29.342	
2,824.0	2,726.1	2,727.1	2,727.1	13.7	54.5	-80.17	-1,661.2	-1,585.4	1,956.3	1,888.9	67.35	29.048	
2,900.0	2,798.2	2,799.2	2,799.2	14.1	55.9	-78.46	-1,661.2	-1,585.4	1,951.6	1,882.4	69.26	28.178	
3,000.0	2,893.6	2,894.6	2,894.6	14.7	57.8	-75.90	-1,661.2	-1,585.4	1,944.7	1,872.9	71.78	27.093	
3,100.0	2,989.4	2,990.4	2,990.4	15.3	59.8	-72.95	-1,661.2	-1,585.4	1,936.7	1,862.4	74.28	26.071	
3,112.0	3,000.9	3,001.9	3,001.9	15.4	60.0	-72.57	-1,661.2	-1,585.4	1,935.6	1,861.1	74.58	25.953	
3,200.0	3,085.5	3,086.5	3,086.5	15.9	61.7	-72.30	-1,661.2	-1,585.4	1,928.1	1,851.3	76.78	25.113	
3,300.0	3,181.9	3,182.9	3,182.9	16.4	63.6	-71.93	-1,661.2	-1,585.4	1,919.5	1,840.3	79.27	24.216	
3,400.0	3,278.4	3,279.4	3,279.4	16.9	65.6	-71.47	-1,661.2	-1,585.4	1,911.1	1,829.3	81.76	23.373	
3,500.0	3,374.7	3,375.7	3,375.7	17.5	67.5	-72.45	-1,661.2	-1,585.4	1,902.5	1,818.2	84.29	22.570	
3,600.0	3,470.3	3,471.3	3,471.3	18.1	69.4	-73.49	-1,661.2	-1,585.4	1,893.5	1,806.7	86.82	21.810	
3,687.0	3,552.8	3,553.8	3,553.8	18.6	71.1	-74.44	-1,661.2	-1,585.4	1,885.5	1,796.5	89.01	21.183	
3,700.0	3,565.1	3,566.1	3,566.1	18.7	71.3	-74.33	-1,661.2	-1,585.4	1,884.3	1,794.9	89.34	21.091	
3,800.0	3,659.5	3,660.5	3,660.5	19.4	73.2	-73.47	-1,661.2	-1,585.4	1,874.7	1,782.8	91.88	20.403	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,754.9	3,754.9	20.0	75.1	-72.65	-1,661.2	-1,585.4	1,864.5	1,770.1	94.42	19.746	
3,974.0	3,823.6	3,824.6	3,824.6	20.5	76.5	-72.08	-1,661.2	-1,585.4	1,856.6	1,760.3	96.30	19.280	
4,000.0	3,848.1	3,849.1	3,849.1	20.7	77.0	-72.49	-1,661.2	-1,585.4	1,853.8	1,756.8	96.98	19.115	
4,100.0	3,942.9	3,943.9	3,943.9	21.3	78.9	-74.11	-1,661.2	-1,585.4	1,844.2	1,744.6	99.63	18.511	
4,200.0	4,038.5	4,039.5	4,039.5	21.9	80.9	-75.86	-1,661.2	-1,585.4	1,836.2	1,733.9	102.27	17.954	
4,263.0	4,099.0	4,100.0	4,100.0	22.3	82.1	-77.04	-1,661.2	-1,585.4	1,832.0	1,728.0	103.93	17.627	
4,300.0	4,134.7	4,135.7	4,135.7	22.5	82.8	-78.36	-1,661.2	-1,585.4	1,829.8	1,724.9	104.89	17.446	
4,400.0	4,231.2	4,232.2	4,232.2	23.0	84.7	-82.07	-1,661.2	-1,585.4	1,825.2	1,717.8	107.44	16.987	
4,500.0	4,328.0	4,329.0	4,329.0	23.5	86.7	-85.99	-1,661.2	-1,585.4	1,822.5	1,712.5	109.98	16.572	
4,549.0	4,375.5	4,376.5	4,376.5	23.8	87.6	-87.99	-1,661.2	-1,585.4	1,821.8	1,710.6	111.21	16.382	
4,600.0	4,425.0	4,426.0	4,426.0	24.0	88.6	-88.54	-1,661.2	-1,585.4	1,821.4	1,709.0	112.47	16.195	
4,700.0	4,521.9	4,522.9	4,522.9	24.5	90.6	-89.63	-1,661.2	-1,585.4	1,821.0	1,706.1	114.95	15.842	
4,734.3	4,555.2	4,556.2	4,556.2	24.7	91.3	-90.00	-1,661.2	-1,585.4	1,821.0	1,705.2	115.80	15.725	CC
4,800.0	4,618.8	4,619.8	4,619.8	25.0	92.5	-90.71	-1,661.2	-1,585.4	1,821.1	1,703.7	117.43	15.508	
4,837.0	4,654.7	4,655.7	4,655.7	25.2	93.3	-91.11	-1,661.2	-1,585.4	1,821.3	1,702.9	118.34	15.390	
4,900.0	4,715.7	4,716.7	4,716.7	25.5	94.5	-92.02	-1,661.2	-1,585.4	1,821.7	1,701.8	119.91	15.192	
5,000.0	4,812.4	4,813.4	4,813.4	26.0	96.4	-93.44	-1,661.2	-1,585.4	1,823.0	1,700.6	122.39	14.895	
5,100.0	4,908.9	4,909.9	4,909.9	26.6	98.4	-94.84	-1,661.2	-1,585.4	1,824.9	1,700.1	124.85	14.617	
5,125.0	4,932.9	4,933.9	4,933.9	26.7	98.9	-95.18	-1,661.2	-1,585.4	1,825.5	1,700.1	125.46	14.550	
5,200.0	5,005.4	5,006.4	5,006.4	27.0	100.3	-93.21	-1,661.2	-1,585.4	1,827.0	1,699.7	127.32	14.350	
5,300.0	5,102.4	5,103.4	5,103.4	27.5	102.3	-89.91	-1,661.2	-1,585.4	1,827.8	1,698.0	129.78	14.083	
5,400.0	5,199.9	5,200.9	5,200.9	28.0	104.2	-85.70	-1,661.2	-1,585.4	1,826.9	1,694.7	132.22	13.818	
5,412.0	5,211.7	5,212.7	5,212.7	28.1	104.5	-85.12	-1,661.2	-1,585.4	1,826.7	1,694.2	132.51	13.786	
5,500.0	5,297.9	5,298.9	5,298.9	28.4	106.2	-83.04	-1,661.2	-1,585.4	1,824.9	1,690.4	134.58	13.560	
5,581.0	5,377.7	5,378.7	5,378.7	28.7	107.8	-80.46	-1,661.2	-1,585.4	1,822.9	1,686.4	136.47	13.358	
5,600.0	5,396.4	5,397.4	5,397.4	28.8	108.2	-81.72	-1,661.2	-1,585.4	1,822.4	1,685.5	136.92	13.310	
5,700.0	5,495.3	5,496.3	5,496.3	29.1	110.2	-89.90	-1,661.2	-1,585.4	1,821.2	1,681.9	139.27	13.077	
5,701.0	5,496.3	5,497.3	5,497.3	29.1	110.2	-90.00	-1,661.2	-1,585.4	1,821.2	1,681.9	139.29	13.075	
5,800.0	5,594.6	5,595.6	5,595.6	29.4	112.2	-101.94	-1,661.2	-1,585.4	1,822.3	1,680.8	141.51	12.878	ES
5,900.0	5,694.1	5,695.1	5,695.1	29.6	114.2	-119.66	-1,661.2	-1,585.4	1,825.7	1,682.0	143.64	12.710	
5,917.0	5,711.1	5,712.1	5,712.1	29.7	114.5	-123.30	-1,661.2	-1,585.4	1,826.5	1,682.5	143.99	12.685	
6,000.0	5,793.7	5,794.7	5,794.7	29.8	116.2	-123.49	-1,661.2	-1,585.4	1,830.5	1,684.7	145.81	12.554	
6,067.0	5,860.5	5,861.5	5,861.5	30.0	117.5	-123.64	-1,661.2	-1,585.4	1,833.7	1,686.5	147.28	12.451	
6,100.0	5,893.4	5,894.4	5,894.4	30.0	118.2	-123.73	-1,661.2	-1,585.4	1,835.3	1,687.2	148.05	12.396	
6,200.0	5,993.2	5,994.2	5,994.2	30.2	120.2	-123.94	-1,661.2	-1,585.4	1,838.5	1,688.2	150.30	12.232	
6,300.0	6,093.2	6,094.2	6,094.2	30.3	122.2	-124.02	-1,661.2	-1,585.4	1,839.9	1,687.4	152.46	12.068	
6,318.8	6,111.9	6,112.9	6,112.9	30.3	122.6	-175.99	-1,661.2	-1,585.4	1,839.9	1,701.2	138.68	13.268	
6,400.0	6,193.2	6,194.2	6,194.2	30.4	124.2	-175.99	-1,661.2	-1,585.4	1,839.9	1,699.5	140.44	13.101	
6,444.4	6,237.6	6,238.6	6,238.6	30.4	125.1	-175.99	-1,661.2	-1,585.4	1,839.9	1,698.5	141.40	13.012	
6,450.0	6,243.2	6,244.2	6,244.2	30.4	125.2	94.01	-1,661.2	-1,585.4	1,839.9	1,684.3	155.61	11.824	
6,475.0	6,268.1	6,269.1	6,269.1	30.4	125.7	94.03	-1,661.2	-1,585.4	1,840.0	1,683.9	156.12	11.785	
6,500.0	6,293.0	6,294.0	6,294.0	30.4	126.2	94.09	-1,661.2	-1,585.4	1,840.1	1,683.5	156.61	11.750	
6,525.0	6,317.8	6,318.8	6,318.8	30.4	126.7	94.16	-1,661.2	-1,585.4	1,840.4	1,683.3	157.08	11.717	
6,550.0	6,342.3	6,343.3	6,343.3	30.4	127.2	94.27	-1,661.2	-1,585.4	1,840.8	1,683.2	157.52	11.686	
6,575.0	6,366.5	6,367.5	6,367.5	30.3	127.7	94.39	-1,661.2	-1,585.4	1,841.2	1,683.3	157.94	11.658	
6,600.0	6,390.4	6,391.4	6,391.4	30.2	128.2	94.54	-1,661.2	-1,585.4	1,841.8	1,683.5	158.33	11.633	
6,625.0	6,413.9	6,414.9	6,414.9	30.2	128.6	94.70	-1,661.2	-1,585.4	1,842.6	1,683.9	158.70	11.610	
6,650.0	6,436.9	6,437.9	6,437.9	30.1	129.1	94.88	-1,661.2	-1,585.4	1,843.5	1,684.4	159.05	11.591	
6,675.0	6,459.3	6,460.3	6,460.3	30.0	129.5	95.06	-1,661.2	-1,585.4	1,844.5	1,685.2	159.37	11.574	
6,700.0	6,481.1	6,482.1	6,482.1	29.9	130.0	95.24	-1,661.2	-1,585.4	1,845.8	1,686.1	159.66	11.561	
6,725.0	6,502.3	6,503.3	6,503.3	29.7	130.4	95.41	-1,661.2	-1,585.4	1,847.2	1,687.3	159.92	11.551	
6,750.0	6,522.7	6,523.7	6,523.7	29.6	130.8	95.57	-1,661.2	-1,585.4	1,848.9	1,688.8	160.17	11.544	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,543.4	6,543.4	29.5	131.2	95.72	-1,661.2	-1,585.4	1,850.9	1,690.5	160.39	11.540	
6,800.0	6,561.2	6,562.2	6,562.2	29.4	131.6	95.84	-1,661.2	-1,585.4	1,853.0	1,692.5	160.59	11.539	SF
6,825.0	6,579.1	6,580.1	6,580.1	29.3	132.0	95.92	-1,661.2	-1,585.4	1,855.5	1,694.8	160.77	11.541	
6,850.0	6,596.1	6,597.1	6,597.1	29.1	132.3	95.98	-1,661.2	-1,585.4	1,858.3	1,697.4	160.94	11.546	
6,875.0	6,612.1	6,613.1	6,613.1	29.0	132.6	95.98	-1,661.2	-1,585.4	1,861.4	1,700.3	161.11	11.554	
6,900.0	6,627.1	6,628.1	6,628.1	28.9	132.9	95.94	-1,661.2	-1,585.4	1,864.8	1,703.6	161.27	11.564	
6,925.0	6,641.0	6,642.0	6,642.0	28.8	133.2	95.84	-1,661.2	-1,585.4	1,868.6	1,707.2	161.42	11.576	
6,950.0	6,653.8	6,654.8	6,654.8	28.7	133.5	95.67	-1,661.2	-1,585.4	1,872.8	1,711.2	161.59	11.590	
6,975.0	6,665.5	6,666.5	6,666.5	28.7	133.7	95.45	-1,661.2	-1,585.4	1,877.3	1,715.5	161.76	11.606	
7,000.0	6,676.0	6,677.0	6,677.0	28.6	133.9	95.14	-1,661.2	-1,585.4	1,882.2	1,720.3	161.94	11.623	
7,025.0	6,685.3	6,686.3	6,686.3	28.6	134.1	94.76	-1,661.2	-1,585.4	1,887.5	1,725.4	162.12	11.642	
7,050.0	6,693.4	6,694.4	6,694.4	28.5	134.3	94.31	-1,661.2	-1,585.4	1,893.1	1,730.8	162.32	11.663	
7,075.0	6,700.2	6,701.2	6,701.2	28.5	134.4	93.77	-1,661.2	-1,585.4	1,899.2	1,736.7	162.51	11.686	
7,100.0	6,705.8	6,706.8	6,706.8	28.5	134.5	93.14	-1,661.2	-1,585.4	1,905.6	1,742.9	162.70	11.712	
7,125.0	6,710.0	6,711.0	6,711.0	28.5	134.6	92.43	-1,661.2	-1,585.4	1,912.4	1,749.5	162.88	11.741	
7,150.0	6,713.0	6,714.0	6,714.0	28.6	134.7	91.63	-1,661.2	-1,585.4	1,919.5	1,756.4	163.04	11.773	
7,175.0	6,714.7	6,715.7	6,715.7	28.6	134.7	90.75	-1,661.2	-1,585.4	1,926.9	1,763.8	163.16	11.810	
7,198.8	6,715.0	6,716.0	6,716.0	28.6	134.7	89.82	-1,661.2	-1,585.4	1,934.3	1,771.1	163.23	11.850	
7,200.0	6,715.0	6,716.0	6,716.0	28.6	134.7	89.82	-1,661.2	-1,585.4	1,934.7	1,771.4	163.23	11.853	
7,300.0	6,714.1	6,715.1	6,715.1	29.0	134.7	89.79	-1,661.2	-1,585.4	1,968.6	1,805.0	163.61	12.032	
7,400.0	6,713.2	6,714.2	6,714.2	29.7	134.7	89.77	-1,661.2	-1,585.4	2,006.9	1,842.6	164.26	12.218	
7,500.0	6,712.3	6,713.3	6,713.3	30.6	134.6	89.74	-1,661.2	-1,585.4	2,049.4	1,884.2	165.15	12.409	
7,600.0	6,711.3	6,712.3	6,712.3	31.7	134.6	89.71	-1,661.2	-1,585.4	2,095.8	1,929.5	166.26	12.605	
7,700.0	6,710.4	6,711.4	6,711.4	33.0	134.6	89.68	-1,661.2	-1,585.4	2,145.9	1,978.3	167.58	12.805	
7,800.0	6,709.5	6,710.5	6,710.5	34.5	134.6	89.65	-1,661.2	-1,585.4	2,199.3	2,030.3	169.07	13.008	
7,900.0	6,708.5	6,709.5	6,709.5	36.2	134.6	89.62	-1,661.2	-1,585.4	2,256.0	2,085.2	170.72	13.214	
8,000.0	6,707.6	6,708.6	6,708.6	38.0	134.5	89.59	-1,661.2	-1,585.4	2,315.5	2,143.0	172.51	13.423	
8,100.0	6,706.7	6,707.7	6,707.7	39.9	134.5	89.56	-1,661.2	-1,585.4	2,377.8	2,203.4	174.41	13.634	
8,200.0	6,705.8	6,706.8	6,706.8	41.9	134.5	89.53	-1,661.2	-1,585.4	2,442.6	2,266.2	176.41	13.846	
8,300.0	6,704.8	6,705.8	6,705.8	44.0	134.5	89.50	-1,661.2	-1,585.4	2,509.7	2,331.2	178.50	14.060	
8,400.0	6,703.9	6,704.9	6,704.9	46.2	134.5	89.48	-1,661.2	-1,585.4	2,579.0	2,398.3	180.66	14.275	
8,500.0	6,703.0	6,704.0	6,704.0	48.5	134.4	89.45	-1,661.2	-1,585.4	2,650.2	2,467.3	182.89	14.491	
8,600.0	6,702.1	6,703.1	6,703.1	50.8	134.4	89.42	-1,661.2	-1,585.4	2,723.2	2,538.0	185.17	14.706	
8,700.0	6,701.1	6,702.1	6,702.1	53.1	134.4	89.39	-1,661.2	-1,585.4	2,797.9	2,610.4	187.50	14.922	
8,800.0	6,700.2	6,701.2	6,701.2	55.5	134.4	89.36	-1,661.2	-1,585.4	2,874.1	2,684.2	189.88	15.137	
8,900.0	6,699.3	6,700.3	6,700.3	57.9	134.4	89.33	-1,661.2	-1,585.4	2,951.7	2,759.4	192.29	15.350	
9,000.0	6,698.3	6,699.3	6,699.3	60.4	134.4	89.30	-1,661.2	-1,585.4	3,030.7	2,835.9	194.73	15.563	
9,100.0	6,697.4	6,698.4	6,698.4	62.9	134.3	89.27	-1,661.2	-1,585.4	3,110.8	2,913.6	197.21	15.774	
9,200.0	6,696.5	6,697.5	6,697.5	65.4	134.3	89.24	-1,661.2	-1,585.4	3,192.1	2,992.4	199.71	15.984	
9,300.0	6,695.5	6,696.5	6,696.5	68.0	134.3	89.21	-1,661.2	-1,585.4	3,274.4	3,072.2	202.23	16.192	
9,400.0	6,694.6	6,695.6	6,695.6	70.5	134.3	89.18	-1,661.2	-1,585.4	3,357.7	3,152.9	204.77	16.397	
9,500.0	6,693.7	6,694.7	6,694.7	73.1	134.3	89.15	-1,661.2	-1,585.4	3,441.9	3,234.6	207.33	16.601	
9,600.0	6,692.8	6,693.8	6,693.8	75.7	134.2	89.12	-1,661.2	-1,585.4	3,526.9	3,317.0	209.91	16.802	
9,700.0	6,691.8	6,692.8	6,692.8	78.3	134.2	89.10	-1,661.2	-1,585.4	3,612.6	3,400.1	212.50	17.001	
9,800.0	6,690.9	6,691.9	6,691.9	80.9	134.2	89.07	-1,661.2	-1,585.4	3,699.1	3,484.0	215.11	17.197	
9,900.0	6,690.0	6,691.0	6,691.0	83.6	134.2	89.04	-1,661.2	-1,585.4	3,786.3	3,568.5	217.72	17.390	
10,000.0	6,689.0	6,690.0	6,690.0	86.2	134.2	89.01	-1,661.2	-1,585.4	3,874.0	3,653.7	220.35	17.581	
10,100.0	6,688.1	6,689.1	6,689.1	88.9	134.1	88.98	-1,661.2	-1,585.4	3,962.4	3,739.4	222.99	17.770	
10,200.0	6,687.2	6,688.2	6,688.2	91.6	134.1	88.95	-1,661.2	-1,585.4	4,051.3	3,825.6	225.63	17.955	
10,300.0	6,686.2	6,687.2	6,687.2	94.2	134.1	88.92	-1,661.2	-1,585.4	4,140.7	3,912.4	228.29	18.138	
10,400.0	6,685.3	6,686.3	6,686.3	96.9	134.1	88.89	-1,661.2	-1,585.4	4,230.5	3,999.6	230.95	18.318	
10,500.0	6,684.4	6,685.4	6,685.4	99.6	134.1	88.86	-1,661.2	-1,585.4	4,320.8	4,087.2	233.62	18.495	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,684.4	6,684.4	102.3	134.1	88.83	-1,661.2	-1,585.4	4,411.6	4,175.3	236.29	18.670	
10,700.0	6,682.5	6,683.5	6,683.5	105.0	134.0	88.80	-1,661.2	-1,585.4	4,502.7	4,263.7	238.97	18.842	
10,800.0	6,681.6	6,682.6	6,682.6	107.7	134.0	88.77	-1,661.2	-1,585.4	4,594.2	4,352.5	241.66	19.011	
10,900.0	6,680.6	6,681.6	6,681.6	110.4	134.0	88.74	-1,661.2	-1,585.4	4,686.0	4,441.7	244.35	19.177	
11,000.0	6,679.7	6,680.7	6,680.7	113.1	134.0	88.71	-1,661.2	-1,585.4	4,778.2	4,531.1	247.05	19.341	
11,100.0	6,678.8	6,679.8	6,679.8	115.9	134.0	88.68	-1,661.2	-1,585.4	4,870.7	4,620.9	249.75	19.502	
11,200.0	6,677.8	6,678.8	6,678.8	118.6	133.9	88.65	-1,661.2	-1,585.4	4,963.4	4,711.0	252.45	19.661	
11,300.0	6,676.9	6,677.9	6,677.9	121.3	133.9	88.62	-1,661.2	-1,585.4	5,056.5	4,801.3	255.16	19.817	
11,400.0	6,676.0	6,677.0	6,677.0	124.1	133.9	88.60	-1,661.2	-1,585.4	5,149.8	4,891.9	257.87	19.971	
11,500.0	6,675.0	6,676.0	6,676.0	126.8	133.9	88.57	-1,661.2	-1,585.4	5,243.3	4,982.7	260.58	20.121	
11,600.0	6,674.1	6,675.1	6,675.1	129.5	133.9	88.54	-1,661.2	-1,585.4	5,337.1	5,073.8	263.30	20.270	
11,700.0	6,673.1	6,674.1	6,674.1	132.3	133.8	88.51	-1,661.2	-1,585.4	5,431.1	5,165.1	266.02	20.416	
11,800.0	6,672.2	6,673.2	6,673.2	135.0	133.8	88.48	-1,661.2	-1,585.4	5,525.3	5,256.6	268.74	20.560	
11,900.0	6,671.3	6,672.3	6,672.3	137.8	133.8	88.45	-1,661.2	-1,585.4	5,619.7	5,348.3	271.47	20.701	
12,000.0	6,670.3	6,671.3	6,671.3	140.5	133.8	88.42	-1,661.2	-1,585.4	5,714.4	5,440.2	274.20	20.840	
12,036.2	6,670.0	6,671.0	6,671.0	141.5	133.8	88.41	-1,661.2	-1,585.4	5,748.7	5,473.5	275.19	20.890	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-121.44	-1,779.1	-2,909.8	3,410.6				
100.0	100.0	85.1	85.1	0.1	0.1	-132.05	-1,779.3	-2,909.9	3,410.8	3,410.6	0.18	N/A	
200.0	200.0	177.8	177.8	0.2	0.2	-132.05	-1,779.8	-2,910.0	3,411.4	3,411.0	0.42	8,215.333	
261.0	261.0	234.2	234.2	0.3	0.3	-132.06	-1,780.2	-2,910.1	3,412.0	3,411.4	0.54	6,291.501	
300.0	300.0	270.0	270.0	0.4	0.3	-53.86	-1,780.4	-2,910.3	3,412.1	3,411.5	0.66	5,169.183	
400.0	399.9	362.4	362.4	0.6	0.4	-39.38	-1,781.1	-2,910.8	3,410.5	3,409.6	0.96	3,549.279	
500.0	499.7	464.2	464.2	0.8	0.4	-37.13	-1,781.6	-2,911.7	3,405.9	3,404.6	1.26	2,696.401	
538.0	537.5	500.0	500.0	0.9	0.4	-36.74	-1,781.7	-2,911.9	3,403.2	3,401.9	1.38	2,474.660	
600.0	599.1	560.0	559.9	1.1	0.5	-37.65	-1,782.0	-2,912.4	3,398.0	3,396.4	1.60	2,127.012	
700.0	697.9	654.6	654.6	1.5	0.5	-38.70	-1,782.6	-2,913.3	3,387.1	3,385.1	1.95	1,733.237	
800.0	796.0	749.8	749.8	1.8	0.6	-39.57	-1,783.1	-2,914.2	3,373.0	3,370.7	2.31	1,461.422	
818.0	813.5	766.4	766.4	1.9	0.6	-39.72	-1,783.2	-2,914.4	3,370.1	3,367.8	2.37	1,421.287	
900.0	893.1	845.0	844.9	2.3	0.6	-39.31	-1,783.6	-2,915.4	3,355.8	3,353.0	2.76	1,214.909	
1,000.0	989.2	938.9	938.9	2.9	0.7	-39.16	-1,784.2	-2,916.4	3,335.2	3,331.9	3.24	1,027.850	
1,100.0	1,083.9	1,027.1	1,027.0	3.5	0.7	-39.28	-1,784.8	-2,917.6	3,311.3	3,307.6	3.73	888.000	
1,104.0	1,087.6	1,030.6	1,030.6	3.5	0.7	-39.29	-1,784.8	-2,917.6	3,310.3	3,306.5	3.75	883.136	
1,200.0	1,177.9	1,116.4	1,116.3	4.1	0.7	-40.32	-1,785.3	-2,919.0	3,286.1	3,281.9	4.24	775.157	
1,300.0	1,272.0	1,207.1	1,207.0	4.8	0.8	-41.42	-1,785.9	-2,920.5	3,261.7	3,256.9	4.73	689.134	
1,391.0	1,357.8	1,281.7	1,281.6	5.3	0.8	-42.40	-1,786.5	-2,922.0	3,240.2	3,235.0	5.19	623.825	
1,400.0	1,366.3	1,289.1	1,289.0	5.4	0.8	-42.22	-1,786.5	-2,922.1	3,238.1	3,232.9	5.23	618.558	
1,458.0	1,421.2	1,343.9	1,343.8	5.7	0.8	-40.95	-1,787.0	-2,923.3	3,225.1	3,219.6	5.50	585.934	
1,500.0	1,461.0	1,385.2	1,385.0	6.0	0.9	-41.31	-1,787.3	-2,924.2	3,215.9	3,210.2	5.71	563.333	
1,600.0	1,556.1	1,476.7	1,476.5	6.6	0.9	-42.13	-1,788.0	-2,926.2	3,194.4	3,188.2	6.20	515.363	
1,676.0	1,628.3	1,548.9	1,548.7	7.0	0.9	-42.77	-1,788.5	-2,928.0	3,178.4	3,171.8	6.58	483.349	
1,700.0	1,651.1	1,572.3	1,572.1	7.2	0.9	-42.29	-1,788.6	-2,928.5	3,173.4	3,166.7	6.69	474.240	
1,800.0	1,746.4	1,668.1	1,667.9	7.7	1.0	-40.23	-1,789.2	-2,930.8	3,152.3	3,145.1	7.17	439.405	
1,900.0	1,841.8	1,760.3	1,760.1	8.3	1.0	-38.06	-1,789.9	-2,933.1	3,131.0	3,123.3	7.66	409.009	
1,963.0	1,902.0	1,822.0	1,821.7	8.7	1.0	-36.65	-1,790.3	-2,934.6	3,117.5	3,109.5	7.96	391.622	
2,000.0	1,937.4	1,864.0	1,863.7	8.9	1.1	-36.75	-1,790.6	-2,935.7	3,109.5	3,101.4	8.13	382.398	
2,100.0	2,033.1	1,967.8	1,967.5	9.5	1.1	-36.99	-1,790.9	-2,938.1	3,088.1	3,079.5	8.59	359.449	
2,200.0	2,129.0	2,073.5	2,073.1	10.0	1.1	-37.22	-1,790.9	-2,940.5	3,067.1	3,058.1	9.05	338.801	
2,250.0	2,177.1	2,129.5	2,129.2	10.3	1.1	-37.34	-1,790.7	-2,941.7	3,056.7	3,047.4	9.29	329.176	
2,300.0	2,225.1	2,187.1	2,186.8	10.6	1.2	-38.66	-1,790.4	-2,942.8	3,046.2	3,036.7	9.54	319.431	
2,400.0	2,321.2	2,286.2	2,285.8	11.2	1.2	-41.25	-1,789.8	-2,944.5	3,025.5	3,015.5	10.03	301.651	
2,500.0	2,417.0	2,394.9	2,394.5	11.7	1.2	-43.82	-1,788.9	-2,946.4	3,005.0	2,994.5	10.53	285.342	
2,537.0	2,452.5	2,430.7	2,430.3	11.9	1.2	-44.74	-1,788.5	-2,946.9	2,997.5	2,986.8	10.72	279.744	
2,600.0	2,512.8	2,490.2	2,489.8	12.3	1.3	-47.86	-1,787.9	-2,947.8	2,984.9	2,973.9	11.08	269.417	
2,700.0	2,608.2	2,584.4	2,584.0	12.9	1.3	-52.59	-1,787.0	-2,949.3	2,966.0	2,954.3	11.66	254.336	
2,800.0	2,703.3	2,683.5	2,683.1	13.5	1.3	-57.06	-1,786.0	-2,950.8	2,948.2	2,935.9	12.25	240.569	
2,824.0	2,726.1	2,707.5	2,707.0	13.7	1.3	-58.09	-1,785.8	-2,951.1	2,944.0	2,931.6	12.40	237.450	
2,900.0	2,798.2	2,783.3	2,782.9	14.1	1.3	-55.99	-1,785.2	-2,952.0	2,930.9	2,918.1	12.83	228.464	
3,000.0	2,893.6	2,883.4	2,883.0	14.7	1.4	-52.90	-1,784.3	-2,953.1	2,913.2	2,899.8	13.39	217.527	
3,100.0	2,989.4	2,982.4	2,981.9	15.3	1.4	-49.42	-1,783.4	-2,954.0	2,894.9	2,881.0	13.95	207.507	
3,112.0	3,000.9	2,994.2	2,993.8	15.4	1.4	-48.98	-1,783.3	-2,954.1	2,892.7	2,878.7	14.02	206.359	
3,200.0	3,085.5	3,077.3	3,076.9	15.9	1.4	-48.33	-1,782.6	-2,954.8	2,876.4	2,861.9	14.44	199.145	
3,300.0	3,181.9	3,170.0	3,169.5	16.4	1.5	-47.52	-1,781.8	-2,955.8	2,858.2	2,843.3	14.93	191.477	
3,400.0	3,278.4	3,269.5	3,269.0	16.9	1.5	-46.65	-1,780.7	-2,957.1	2,840.4	2,825.0	15.42	184.259	
3,500.0	3,374.7	3,365.3	3,364.8	17.5	1.5	-47.32	-1,779.1	-2,958.6	2,821.8	2,805.8	15.99	176.499	
3,600.0	3,470.3	3,461.2	3,460.7	18.1	1.5	-48.03	-1,777.6	-2,960.2	2,801.7	2,785.1	16.57	169.065	
3,687.0	3,552.8	3,544.1	3,543.5	18.6	1.6	-48.68	-1,776.2	-2,961.6	2,783.0	2,765.9	17.09	162.850	
3,700.0	3,565.1	3,556.2	3,555.6	18.7	1.6	-48.50	-1,776.0	-2,961.8	2,780.1	2,762.9	17.17	161.942	
3,800.0	3,659.5	3,648.8	3,648.2	19.4	1.6	-47.11	-1,774.8	-2,963.2	2,757.5	2,739.7	17.77	155.186	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,742.9	3,742.3	20.0	1.6	-45.75	-1,773.7	-2,964.5	2,734.2	2,715.8	18.37	148.816	
3,974.0	3,823.6	3,815.0	3,814.4	20.5	1.6	-44.77	-1,772.9	-2,965.5	2,716.4	2,697.6	18.82	144.301	
4,000.0	3,848.1	3,840.9	3,840.3	20.7	1.6	-45.05	-1,772.6	-2,965.8	2,710.2	2,691.2	18.96	142.912	
4,100.0	3,942.9	3,936.6	3,936.0	21.3	1.7	-46.15	-1,771.5	-2,966.9	2,687.3	2,667.8	19.49	137.865	
4,200.0	4,038.5	4,028.3	4,027.6	21.9	1.7	-47.38	-1,770.5	-2,968.1	2,666.8	2,646.8	20.01	133.242	
4,263.0	4,099.0	4,089.3	4,088.6	22.3	1.7	-48.26	-1,769.9	-2,968.8	2,655.0	2,634.7	20.35	130.497	
4,300.0	4,134.7	4,121.4	4,120.7	22.5	1.7	-49.43	-1,769.6	-2,969.3	2,648.5	2,627.9	20.53	128.998	
4,400.0	4,231.2	4,200.0	4,199.3	23.0	1.8	-52.71	-1,768.8	-2,970.7	2,632.3	2,611.3	21.02	125.209	
4,500.0	4,328.0	4,283.7	4,283.0	23.5	1.8	-56.22	-1,767.9	-2,973.1	2,618.6	2,597.1	21.52	121.701	
4,549.0	4,375.5	4,322.5	4,321.7	23.8	1.8	-58.00	-1,767.4	-2,974.5	2,612.8	2,591.0	21.75	120.101	
4,600.0	4,425.0	4,362.6	4,361.8	24.0	1.8	-58.33	-1,766.9	-2,976.2	2,607.1	2,585.1	22.02	118.413	
4,700.0	4,521.9	4,437.4	4,436.5	24.5	1.8	-58.96	-1,766.0	-2,980.0	2,596.8	2,574.2	22.53	115.263	
4,800.0	4,618.8	4,500.0	4,499.0	25.0	1.9	-59.53	-1,765.6	-2,983.7	2,587.6	2,564.5	23.03	112.346	
4,837.0	4,654.7	4,538.7	4,537.6	25.2	1.9	-59.80	-1,765.4	-2,986.2	2,584.4	2,561.2	23.23	111.244	
4,900.0	4,715.7	4,588.0	4,586.8	25.5	1.9	-60.43	-1,765.3	-2,989.7	2,579.3	2,555.7	23.58	109.389	
5,000.0	4,812.4	4,699.5	4,698.0	26.0	1.9	-61.54	-1,764.8	-2,997.8	2,571.3	2,547.2	24.17	106.406	
5,100.0	4,908.9	4,828.2	4,826.5	26.6	2.0	-62.73	-1,764.0	-3,005.4	2,562.3	2,537.5	24.78	103.397	
5,125.0	4,932.9	4,855.0	4,853.3	26.7	2.0	-63.01	-1,763.9	-3,006.7	2,559.9	2,535.0	24.93	102.677	
5,200.0	5,005.4	4,936.1	4,934.3	27.0	2.0	-60.66	-1,763.8	-3,010.3	2,552.6	2,527.2	25.32	100.797	
5,300.0	5,102.4	5,049.0	5,047.1	27.5	2.1	-56.91	-1,763.6	-3,014.5	2,542.2	2,516.3	25.84	98.371	
5,400.0	5,199.9	5,163.9	5,161.9	28.0	2.1	-52.27	-1,763.6	-3,017.3	2,530.9	2,504.5	26.36	96.024	
5,412.0	5,211.7	5,177.4	5,175.5	28.1	2.1	-51.65	-1,763.6	-3,017.5	2,529.5	2,503.0	26.42	95.750	
5,500.0	5,297.9	5,274.7	5,272.7	28.4	2.1	-49.23	-1,763.9	-3,018.7	2,519.2	2,492.4	26.77	94.094	
5,581.0	5,377.7	5,354.4	5,352.5	28.7	2.1	-46.35	-1,764.3	-3,019.1	2,510.1	2,483.1	27.06	92.755	
5,600.0	5,396.4	5,372.3	5,370.3	28.8	2.1	-47.55	-1,764.5	-3,019.2	2,508.2	2,481.0	27.12	92.471	
5,700.0	5,495.3	5,461.4	5,459.4	29.1	2.2	-55.50	-1,765.4	-3,019.5	2,499.9	2,472.5	27.43	91.149	
5,800.0	5,594.6	5,554.8	5,552.8	29.4	2.2	-67.37	-1,766.9	-3,019.7	2,495.5	2,467.8	27.70	90.080	
5,886.5	5,680.7	5,646.9	5,644.9	29.6	2.2	-82.25	-1,768.7	-3,019.6	2,494.4	2,466.5	27.92	89.325	CC
5,900.0	5,694.1	5,662.4	5,660.4	29.6	2.2	-85.01	-1,769.0	-3,019.6	2,494.4	2,466.5	27.96	89.215	ES
5,917.0	5,711.1	5,682.0	5,680.0	29.7	2.2	-88.63	-1,769.2	-3,019.6	2,494.5	2,466.5	28.00	89.088	
6,000.0	5,793.7	5,774.1	5,772.1	29.8	2.2	-88.83	-1,770.4	-3,019.4	2,495.1	2,466.8	28.25	88.331	
6,067.0	5,860.5	5,842.2	5,840.2	30.0	2.2	-88.99	-1,771.1	-3,019.1	2,495.3	2,466.9	28.44	87.749	
6,100.0	5,893.4	5,874.2	5,872.2	30.0	2.2	-89.06	-1,771.5	-3,019.0	2,495.5	2,467.0	28.53	87.476	
6,200.0	5,993.2	5,986.1	5,984.1	30.2	2.2	-89.24	-1,772.6	-3,018.5	2,495.9	2,467.1	28.76	86.780	
6,300.0	6,093.2	6,087.5	6,085.4	30.3	2.2	-89.31	-1,773.1	-3,018.1	2,496.0	2,467.1	28.92	86.308	
6,318.8	6,111.9	6,106.3	6,104.2	30.3	2.2	-141.28	-1,773.1	-3,018.0	2,496.0	2,472.9	23.08	108.167	
6,400.0	6,193.2	6,189.2	6,187.2	30.4	2.2	-141.29	-1,773.6	-3,017.6	2,496.1	2,472.9	23.17	107.744	
6,444.4	6,237.6	6,235.0	6,232.9	30.4	2.2	-141.30	-1,773.8	-3,017.4	2,496.1	2,472.8	23.22	107.508	
6,444.5	6,237.7	6,235.1	6,233.1	30.4	2.2	-141.30	-1,773.8	-3,017.4	2,496.1	2,472.8	23.22	107.507	
6,450.0	6,243.2	6,240.7	6,238.7	30.4	2.2	128.70	-1,773.8	-3,017.3	2,496.1	2,467.0	29.08	85.828	
6,475.0	6,268.1	6,266.5	6,264.5	30.4	2.2	128.66	-1,773.8	-3,017.2	2,496.7	2,467.6	29.08	85.858	
6,500.0	6,293.0	6,292.3	6,290.2	30.4	2.2	128.57	-1,773.9	-3,017.2	2,498.1	2,469.0	29.08	85.905	
6,525.0	6,317.8	6,317.0	6,315.0	30.4	2.2	128.42	-1,773.9	-3,017.1	2,500.3	2,471.2	29.08	85.968	
6,550.0	6,342.3	6,341.2	6,339.2	30.4	2.2	128.22	-1,773.9	-3,017.1	2,503.3	2,474.2	29.09	86.045	
6,575.0	6,366.5	6,365.1	6,363.1	30.3	2.2	127.96	-1,773.9	-3,017.0	2,507.1	2,478.0	29.11	86.137	
6,600.0	6,390.4	6,388.7	6,386.6	30.2	2.2	127.64	-1,773.9	-3,017.0	2,511.7	2,482.6	29.12	86.246	
6,625.0	6,413.9	6,412.1	6,410.1	30.2	2.2	127.26	-1,774.0	-3,016.9	2,517.2	2,488.0	29.14	86.371	
6,650.0	6,436.9	6,435.5	6,433.4	30.1	2.2	126.81	-1,774.0	-3,016.8	2,523.4	2,494.2	29.17	86.512	
6,675.0	6,459.3	6,458.3	6,456.2	30.0	2.2	126.30	-1,774.0	-3,016.8	2,530.4	2,501.2	29.20	86.670	
6,700.0	6,481.1	6,480.4	6,478.4	29.9	2.2	125.71	-1,774.1	-3,016.7	2,538.2	2,509.0	29.23	86.840	
6,725.0	6,502.3	6,501.9	6,499.9	29.7	2.2	125.04	-1,774.1	-3,016.6	2,546.7	2,517.4	29.27	87.022	
6,750.0	6,522.7	6,522.2	6,520.1	29.6	2.2	124.29	-1,774.2	-3,016.5	2,556.0	2,526.7	29.31	87.209	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,541.7	6,539.6	29.5	2.2	123.44	-1,774.2	-3,016.5	2,566.0	2,536.6	29.36	87.402	
6,800.0	6,561.2	6,560.4	6,558.3	29.4	2.2	122.50	-1,774.2	-3,016.4	2,576.7	2,547.3	29.42	87.596	
6,825.0	6,579.1	6,578.2	6,576.1	29.3	2.2	121.45	-1,774.3	-3,016.3	2,588.1	2,558.7	29.48	87.791	
6,850.0	6,596.1	6,595.1	6,593.0	29.1	2.2	120.30	-1,774.3	-3,016.3	2,600.2	2,570.7	29.55	87.986	
6,875.0	6,612.1	6,611.4	6,609.3	29.0	2.1	119.03	-1,774.4	-3,016.2	2,613.0	2,583.3	29.63	88.183	
6,900.0	6,627.1	6,626.8	6,624.8	28.9	2.1	117.64	-1,774.4	-3,016.2	2,626.3	2,596.6	29.72	88.383	
6,925.0	6,641.0	6,641.2	6,639.1	28.8	2.1	116.12	-1,774.4	-3,016.1	2,640.3	2,610.5	29.80	88.590	
6,950.0	6,653.8	6,654.4	6,652.4	28.7	2.1	114.46	-1,774.4	-3,016.0	2,654.8	2,624.9	29.89	88.813	
6,975.0	6,665.5	6,666.5	6,664.4	28.7	2.1	112.65	-1,774.5	-3,016.0	2,669.8	2,639.9	29.98	89.060	
7,000.0	6,676.0	6,677.3	6,675.3	28.6	2.1	110.68	-1,774.5	-3,016.0	2,685.4	2,655.3	30.06	89.342	
7,025.0	6,685.3	6,687.0	6,684.9	28.6	2.1	108.56	-1,774.5	-3,015.9	2,701.4	2,671.3	30.13	89.672	
7,050.0	6,693.4	6,695.4	6,693.3	28.5	2.1	106.28	-1,774.5	-3,015.9	2,717.8	2,687.6	30.18	90.061	
7,075.0	6,700.2	6,700.0	6,698.0	28.5	2.1	103.77	-1,774.5	-3,015.9	2,734.6	2,704.4	30.21	90.517	
7,100.0	6,705.8	6,707.5	6,705.4	28.5	2.1	101.21	-1,774.5	-3,015.8	2,751.8	2,721.5	30.23	91.040	
7,125.0	6,710.0	6,711.5	6,709.5	28.5	2.1	98.45	-1,774.5	-3,015.8	2,769.2	2,739.0	30.22	91.620	
7,150.0	6,713.0	6,714.4	6,712.3	28.6	2.1	95.55	-1,774.5	-3,015.8	2,786.9	2,756.7	30.22	92.223	
7,175.0	6,714.7	6,716.0	6,714.0	28.6	2.1	92.54	-1,774.5	-3,015.8	2,804.8	2,774.5	30.22	92.803	
7,198.8	6,715.0	6,716.5	6,714.4	28.6	2.1	89.57	-1,774.5	-3,015.8	2,821.9	2,791.7	30.25	93.285	
7,200.0	6,715.0	6,716.5	6,714.4	28.6	2.1	89.57	-1,774.5	-3,015.8	2,822.8	2,792.5	30.25	93.304	
7,300.0	6,714.1	6,716.0	6,713.9	29.0	2.1	89.56	-1,774.5	-3,015.8	2,896.0	2,865.3	30.66	94.467	
7,400.0	6,713.2	6,715.5	6,713.5	29.7	2.1	89.55	-1,774.5	-3,015.8	2,970.7	2,939.4	31.32	94.849	
7,500.0	6,712.3	6,715.0	6,713.0	30.6	2.1	89.53	-1,774.5	-3,015.8	3,046.9	3,014.6	32.23	94.535	
7,600.0	6,711.3	6,714.6	6,712.5	31.7	2.1	89.52	-1,774.5	-3,015.8	3,124.4	3,091.0	33.36	93.646	
7,700.0	6,710.4	6,714.1	6,712.0	33.0	2.1	89.50	-1,774.5	-3,015.8	3,203.2	3,168.5	34.70	92.312	
7,800.0	6,709.5	6,713.6	6,711.6	34.5	2.1	89.49	-1,774.5	-3,015.8	3,283.1	3,246.9	36.21	90.663	
7,900.0	6,708.5	6,713.1	6,711.1	36.2	2.1	89.47	-1,774.5	-3,015.8	3,364.1	3,326.2	37.88	88.808	
8,000.0	6,707.6	6,712.7	6,710.6	38.0	2.1	89.46	-1,774.5	-3,015.8	3,446.1	3,406.4	39.68	86.839	
8,100.0	6,706.7	6,712.2	6,710.1	39.9	2.1	89.45	-1,774.5	-3,015.8	3,529.0	3,487.4	41.60	84.825	
8,200.0	6,705.8	6,711.7	6,709.7	41.9	2.1	89.43	-1,774.5	-3,015.8	3,612.8	3,569.2	43.62	82.817	
8,300.0	6,704.8	6,711.2	6,709.2	44.0	2.1	89.42	-1,774.5	-3,015.8	3,697.4	3,651.7	45.73	80.850	
8,400.0	6,703.9	6,710.7	6,708.7	46.2	2.1	89.40	-1,774.5	-3,015.8	3,782.7	3,734.8	47.91	78.949	
8,500.0	6,703.0	6,710.3	6,708.2	48.5	2.1	89.39	-1,774.5	-3,015.8	3,868.8	3,818.6	50.16	77.128	
8,600.0	6,702.1	6,709.8	6,707.8	50.8	2.1	89.37	-1,774.5	-3,015.8	3,955.5	3,903.0	52.46	75.395	
8,700.0	6,701.1	6,709.3	6,707.3	53.1	2.1	89.36	-1,774.5	-3,015.8	4,042.8	3,988.0	54.82	73.753	
8,800.0	6,700.2	6,708.8	6,706.8	55.5	2.1	89.35	-1,774.5	-3,015.8	4,130.7	4,073.5	57.21	72.202	
8,900.0	6,699.3	6,708.4	6,706.3	57.9	2.1	89.33	-1,774.5	-3,015.8	4,219.2	4,159.5	59.64	70.741	
9,000.0	6,698.3	6,707.9	6,705.8	60.4	2.1	89.32	-1,774.5	-3,015.8	4,308.1	4,246.0	62.11	69.366	
9,100.0	6,697.4	6,707.4	6,705.4	62.9	2.1	89.30	-1,774.5	-3,015.8	4,397.5	4,332.9	64.60	68.072	
9,200.0	6,696.5	6,706.9	6,704.9	65.4	2.1	89.29	-1,774.5	-3,015.8	4,487.4	4,420.3	67.12	66.856	
9,300.0	6,695.5	6,706.4	6,704.4	68.0	2.1	89.27	-1,774.5	-3,015.8	4,577.7	4,508.0	69.66	65.712	
9,400.0	6,694.6	6,706.0	6,703.9	70.5	2.1	89.26	-1,774.5	-3,015.8	4,668.3	4,596.1	72.22	64.636	
9,500.0	6,693.7	6,705.5	6,703.4	73.1	2.1	89.25	-1,774.5	-3,015.8	4,759.4	4,684.6	74.81	63.624	
9,600.0	6,692.8	6,705.0	6,703.0	75.7	2.1	89.23	-1,774.5	-3,015.8	4,850.8	4,773.4	77.40	62.670	
9,700.0	6,691.8	6,704.5	6,702.5	78.3	2.1	89.22	-1,774.5	-3,015.8	4,942.5	4,862.5	80.01	61.771	
9,800.0	6,690.9	6,704.0	6,702.0	80.9	2.1	89.20	-1,774.5	-3,015.8	5,034.6	4,951.9	82.64	60.922	
9,900.0	6,690.0	6,700.0	6,698.0	83.6	2.1	89.08	-1,774.5	-3,015.9	5,126.9	5,041.7	85.27	60.124	
10,000.0	6,689.0	6,700.0	6,698.0	86.2	2.1	89.08	-1,774.5	-3,015.9	5,219.6	5,131.6	87.92	59.366	
10,100.0	6,688.1	6,700.0	6,698.0	88.9	2.1	89.08	-1,774.5	-3,015.9	5,312.5	5,221.9	90.58	58.650	
10,200.0	6,687.2	6,700.0	6,698.0	91.6	2.1	89.08	-1,774.5	-3,015.9	5,405.6	5,312.4	93.25	57.971	
10,300.0	6,686.2	6,700.0	6,698.0	94.2	2.1	89.08	-1,774.5	-3,015.9	5,499.0	5,403.1	95.92	57.328	
10,400.0	6,685.3	6,700.0	6,698.0	96.9	2.1	89.08	-1,774.5	-3,015.9	5,592.6	5,494.0	98.61	56.717	
10,500.0	6,684.4	6,700.0	6,698.0	99.6	2.1	89.08	-1,774.5	-3,015.9	5,686.5	5,585.2	101.30	56.137	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,700.0	6,698.0	102.3	2.1	89.08	-1,774.5	-3,015.9	5,780.5	5,676.5	103.99	55.586	
10,700.0	6,682.5	6,699.7	6,697.6	105.0	2.1	89.07	-1,774.5	-3,015.9	5,874.8	5,768.1	106.69	55.061	
10,800.0	6,681.6	6,699.1	6,697.1	107.7	2.1	89.05	-1,774.5	-3,015.9	5,969.2	5,859.8	109.40	54.562	
10,900.0	6,680.6	6,698.6	6,696.5	110.4	2.1	89.04	-1,774.5	-3,015.9	6,063.8	5,951.7	112.11	54.086	
11,000.0	6,679.7	6,698.0	6,696.0	113.1	2.1	89.02	-1,774.5	-3,015.9	6,158.6	6,043.7	114.83	53.631	
11,100.0	6,678.8	6,697.5	6,695.4	115.9	2.1	89.00	-1,774.5	-3,015.9	6,253.5	6,136.0	117.55	53.197	
11,200.0	6,677.8	6,696.9	6,694.9	118.6	2.1	88.99	-1,774.5	-3,015.9	6,348.6	6,228.3	120.28	52.782	
11,300.0	6,676.9	6,696.4	6,694.3	121.3	2.1	88.97	-1,774.5	-3,015.9	6,443.8	6,320.8	123.01	52.385	
11,400.0	6,676.0	6,695.8	6,693.8	124.1	2.1	88.95	-1,774.5	-3,015.9	6,539.2	6,413.5	125.74	52.005	
11,500.0	6,675.0	6,695.3	6,693.2	126.8	2.1	88.94	-1,774.5	-3,015.9	6,634.8	6,506.3	128.48	51.641	
11,600.0	6,674.1	6,694.7	6,692.7	129.5	2.1	88.92	-1,774.5	-3,015.9	6,730.4	6,599.2	131.22	51.292	
11,700.0	6,673.1	6,694.1	6,692.1	132.3	2.1	88.90	-1,774.5	-3,015.9	6,826.2	6,692.2	133.96	50.957	
11,800.0	6,672.2	6,693.6	6,691.6	135.0	2.1	88.89	-1,774.5	-3,015.9	6,922.1	6,785.4	136.71	50.635	
11,900.0	6,671.3	6,693.0	6,691.0	137.8	2.1	88.87	-1,774.5	-3,015.9	7,018.1	6,878.6	139.45	50.326	
12,000.0	6,670.3	6,692.5	6,690.4	140.5	2.1	88.85	-1,774.5	-3,015.9	7,114.2	6,972.0	142.20	50.029	
12,036.2	6,670.0	6,692.3	6,690.2	141.5	2.1	88.85	-1,774.5	-3,015.9	7,149.1	7,005.9	143.20	49.924 SF	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-136.10	-3,005.4	-2,891.9	4,170.8				
100.0	100.0	96.6	96.6	0.1	0.1	-146.71	-3,005.6	-2,891.7	4,170.9	4,170.7	0.19	N/A	
200.0	200.0	193.5	193.5	0.2	0.2	-146.71	-3,005.9	-2,891.5	4,171.3	4,170.8	0.43	9,682.911	
261.0	261.0	260.3	260.3	0.3	0.3	-146.72	-3,006.2	-2,891.4	4,171.6	4,171.0	0.55	7,527.867	
300.0	300.0	304.4	304.4	0.4	0.3	-68.52	-3,006.3	-2,891.2	4,171.5	4,170.8	0.68	6,169.706	
400.0	399.9	431.9	431.9	0.6	0.4	-54.08	-3,006.5	-2,890.1	4,169.2	4,168.2	0.99	4,208.803	
500.0	499.7	539.8	539.8	0.8	0.5	-51.88	-3,006.3	-2,888.9	4,164.0	4,162.7	1.29	3,228.892	
538.0	537.5	578.3	578.3	0.9	0.5	-51.51	-3,006.2	-2,888.5	4,161.3	4,159.9	1.40	2,972.568	
600.0	599.1	637.9	637.9	1.1	0.5	-52.45	-3,006.0	-2,887.9	4,156.2	4,154.6	1.63	2,550.634	
700.0	697.9	729.5	729.5	1.5	0.6	-53.54	-3,005.7	-2,887.0	4,146.1	4,144.1	2.00	2,076.487	
800.0	796.0	817.3	817.3	1.8	0.6	-54.43	-3,005.6	-2,886.4	4,133.9	4,131.5	2.36	1,752.360	
818.0	813.5	833.0	833.0	1.9	0.6	-54.58	-3,005.6	-2,886.3	4,131.5	4,129.1	2.42	1,704.922	
900.0	893.1	904.6	904.6	2.3	0.6	-54.19	-3,005.6	-2,885.8	4,119.5	4,116.6	2.85	1,443.547	
1,000.0	989.2	1,001.2	1,001.2	2.9	0.7	-54.10	-3,005.9	-2,885.1	4,102.4	4,099.0	3.39	1,210.218	
1,100.0	1,083.9	1,103.4	1,103.3	3.5	0.7	-54.33	-3,006.3	-2,884.1	4,082.6	4,078.7	3.94	1,037.337	
1,104.0	1,087.6	1,107.6	1,107.5	3.5	0.7	-54.35	-3,006.3	-2,884.0	4,081.8	4,077.8	3.96	1,031.348	
1,200.0	1,177.9	1,206.6	1,206.5	4.1	0.8	-55.44	-3,006.4	-2,883.0	4,061.6	4,057.1	4.53	897.154	
1,300.0	1,272.0	1,290.1	1,290.0	4.8	0.8	-56.50	-3,006.3	-2,882.4	4,041.3	4,036.2	5.10	792.005	
1,391.0	1,357.8	1,359.9	1,359.9	5.3	0.8	-57.46	-3,006.3	-2,882.2	4,023.8	4,018.2	5.61	716.698	
1,400.0	1,366.3	1,366.7	1,366.7	5.4	0.8	-57.27	-3,006.3	-2,882.2	4,022.1	4,016.4	5.66	710.618	
1,458.0	1,421.2	1,411.6	1,411.6	5.7	0.8	-56.00	-3,006.3	-2,882.2	4,011.5	4,005.5	5.96	673.333	
1,500.0	1,461.0	1,445.8	1,445.8	6.0	0.8	-56.33	-3,006.4	-2,882.3	4,004.0	3,997.8	6.18	647.662	
1,600.0	1,556.1	1,530.2	1,530.1	6.6	0.8	-57.12	-3,006.8	-2,882.6	3,986.8	3,980.1	6.72	593.449	
1,676.0	1,628.3	1,600.0	1,599.9	7.0	0.9	-57.76	-3,007.2	-2,882.8	3,974.3	3,967.1	7.13	557.234	
1,700.0	1,651.1	1,624.1	1,624.1	7.2	0.9	-57.30	-3,007.4	-2,882.8	3,970.3	3,963.1	7.26	546.641	
1,800.0	1,746.4	1,729.9	1,729.8	7.7	0.9	-55.35	-3,008.2	-2,882.8	3,953.4	3,945.6	7.81	506.011	
1,900.0	1,841.8	1,835.1	1,835.0	8.3	0.9	-53.30	-3,008.8	-2,882.5	3,935.7	3,927.3	8.37	470.389	
1,963.0	1,902.0	1,903.8	1,903.7	8.7	1.0	-51.96	-3,009.1	-2,882.3	3,924.1	3,915.4	8.72	450.157	
2,000.0	1,937.4	1,939.9	1,939.8	8.9	1.0	-52.05	-3,009.1	-2,882.2	3,917.3	3,908.3	8.91	439.797	
2,100.0	2,033.1	2,034.4	2,034.3	9.5	1.0	-52.28	-3,009.2	-2,882.0	3,899.0	3,889.6	9.41	414.278	
2,200.0	2,129.0	2,122.9	2,122.9	10.0	1.0	-52.49	-3,009.2	-2,882.1	3,881.4	3,871.5	9.91	391.748	
2,250.0	2,177.1	2,166.2	2,166.1	10.3	1.0	-52.59	-3,009.3	-2,882.1	3,872.9	3,862.7	10.16	381.099	
2,300.0	2,225.1	2,212.8	2,212.7	10.6	1.0	-53.88	-3,009.4	-2,882.3	3,864.6	3,854.1	10.43	370.582	
2,400.0	2,321.2	2,326.9	2,326.8	11.2	1.0	-56.49	-3,009.1	-2,882.7	3,848.2	3,837.3	10.97	350.814	
2,500.0	2,417.0	2,423.5	2,423.4	11.7	1.0	-58.99	-3,008.3	-2,883.3	3,832.4	3,820.9	11.52	332.815	
2,537.0	2,452.5	2,452.2	2,452.1	11.9	1.0	-59.87	-3,008.1	-2,883.6	3,826.8	3,815.1	11.71	326.719	
2,600.0	2,512.8	2,501.2	2,501.2	12.3	1.0	-62.87	-3,007.8	-2,884.2	3,817.9	3,805.8	12.09	315.722	
2,700.0	2,608.2	2,600.9	2,600.8	12.9	1.0	-67.49	-3,007.4	-2,885.1	3,805.1	3,792.4	12.71	299.421	
2,800.0	2,703.3	2,710.9	2,710.8	13.5	1.0	-71.86	-3,006.8	-2,885.9	3,793.9	3,780.5	13.33	284.543	
2,824.0	2,726.1	2,730.6	2,730.5	13.7	1.0	-72.84	-3,006.6	-2,886.0	3,791.4	3,777.9	13.48	281.274	
2,900.0	2,798.2	2,793.3	2,793.2	14.1	1.1	-70.71	-3,006.2	-2,886.6	3,783.6	3,769.7	13.95	271.277	
3,000.0	2,893.6	2,880.4	2,880.3	14.7	1.1	-67.63	-3,005.8	-2,887.6	3,772.8	3,758.2	14.56	259.070	
3,100.0	2,989.4	2,987.8	2,987.7	15.3	1.1	-64.25	-3,005.5	-2,888.5	3,760.9	3,745.8	15.19	247.637	
3,112.0	3,000.9	3,001.3	3,001.2	15.4	1.1	-63.83	-3,005.4	-2,888.6	3,759.4	3,744.2	15.26	246.320	
3,200.0	3,085.5	3,092.4	3,092.3	15.9	1.1	-63.21	-3,005.0	-2,889.1	3,748.2	3,732.4	15.74	238.150	
3,300.0	3,181.9	3,185.2	3,185.1	16.4	1.1	-62.41	-3,004.3	-2,889.8	3,735.4	3,719.1	16.27	229.542	
3,400.0	3,278.4	3,281.5	3,281.4	16.9	1.1	-61.53	-3,003.6	-2,890.7	3,722.7	3,705.9	16.81	221.469	
3,500.0	3,374.7	3,383.8	3,383.6	17.5	1.1	-62.18	-3,002.8	-2,891.7	3,709.5	3,692.1	17.42	212.912	
3,600.0	3,470.3	3,468.4	3,468.3	18.1	1.2	-62.79	-3,001.9	-2,892.8	3,695.3	3,677.3	18.03	204.929	
3,687.0	3,552.8	3,543.4	3,543.3	18.6	1.2	-63.35	-3,001.3	-2,894.1	3,682.5	3,663.9	18.57	198.328	
3,700.0	3,565.1	3,555.2	3,555.0	18.7	1.2	-63.16	-3,001.2	-2,894.3	3,680.5	3,661.8	18.65	197.314	
3,800.0	3,659.5	3,642.7	3,642.6	19.4	1.2	-61.74	-3,000.3	-2,896.2	3,665.0	3,645.6	19.31	189.804	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,732.1	3,731.9	20.0	1.2	-60.36	-2,999.6	-2,898.3	3,648.8	3,628.8	19.97	182.729	
3,974.0	3,823.6	3,805.1	3,804.8	20.5	1.2	-59.39	-2,998.9	-2,900.1	3,636.2	3,615.8	20.46	177.712	
4,000.0	3,848.1	3,829.0	3,828.8	20.7	1.2	-59.64	-2,998.7	-2,900.7	3,631.8	3,611.2	20.61	176.195	
4,100.0	3,942.9	3,927.6	3,927.3	21.3	1.2	-60.72	-2,998.1	-2,902.9	3,615.9	3,594.7	21.20	170.587	
4,200.0	4,038.5	4,040.0	4,039.7	21.9	1.3	-61.99	-2,996.9	-2,905.1	3,601.4	3,579.6	21.79	165.286	
4,263.0	4,099.0	4,103.8	4,103.5	22.3	1.3	-62.84	-2,996.0	-2,906.5	3,593.0	3,570.9	22.16	162.170	
4,300.0	4,134.7	4,141.5	4,141.2	22.5	1.3	-64.00	-2,995.4	-2,907.5	3,588.4	3,566.0	22.35	160.538	
4,400.0	4,231.2	4,261.7	4,261.3	23.0	1.3	-67.33	-2,993.1	-2,910.5	3,576.9	3,554.1	22.89	156.251	
4,500.0	4,328.0	4,390.9	4,390.4	23.5	1.3	-70.90	-2,989.3	-2,913.7	3,566.3	3,542.9	23.43	152.182	
4,549.0	4,375.5	4,428.0	4,427.5	23.8	1.4	-72.65	-2,988.0	-2,914.7	3,561.6	3,537.9	23.68	150.391	
4,600.0	4,425.0	4,462.4	4,461.9	24.0	1.4	-72.93	-2,986.9	-2,915.7	3,557.2	3,533.2	23.95	148.541	
4,700.0	4,521.9	4,531.1	4,530.4	24.5	1.4	-73.49	-2,985.0	-2,918.2	3,549.3	3,524.8	24.47	145.062	
4,800.0	4,618.8	4,601.5	4,600.8	25.0	1.4	-74.05	-2,983.7	-2,920.8	3,542.3	3,517.3	24.99	141.759	
4,837.0	4,654.7	4,643.0	4,642.3	25.2	1.4	-74.31	-2,983.1	-2,922.3	3,539.9	3,514.7	25.19	140.526	
4,900.0	4,715.7	4,713.3	4,712.5	25.5	1.4	-75.00	-2,982.0	-2,924.5	3,535.8	3,510.2	25.55	138.368	
5,000.0	4,812.4	4,819.6	4,818.8	26.0	1.5	-76.05	-2,980.3	-2,927.5	3,529.1	3,503.0	26.13	135.058	
5,100.0	4,908.9	4,912.2	4,911.4	26.6	1.5	-77.03	-2,978.9	-2,929.9	3,522.7	3,495.9	26.70	131.930	
5,125.0	4,932.9	4,935.8	4,934.9	26.7	1.5	-77.28	-2,978.6	-2,930.5	3,521.1	3,494.2	26.84	131.169	
5,200.0	5,005.4	5,007.1	5,006.2	27.0	1.5	-74.89	-2,977.8	-2,932.1	3,516.2	3,489.0	27.24	129.080	
5,300.0	5,102.4	5,110.3	5,109.4	27.5	1.5	-71.09	-2,976.8	-2,933.7	3,508.9	3,481.1	27.77	126.360	
5,400.0	5,199.9	5,206.7	5,205.8	28.0	1.5	-66.40	-2,976.1	-2,934.7	3,500.6	3,472.3	28.29	123.755	
5,412.0	5,211.7	5,220.5	5,219.6	28.1	1.6	-65.78	-2,976.0	-2,934.8	3,499.5	3,471.2	28.35	123.444	
5,500.0	5,297.9	5,322.5	5,321.6	28.4	1.6	-63.35	-2,975.1	-2,935.6	3,491.6	3,462.9	28.72	121.578	
5,581.0	5,377.7	5,438.1	5,437.1	28.7	1.6	-60.51	-2,973.3	-2,936.7	3,484.0	3,455.0	29.04	119.989	
5,600.0	5,396.4	5,484.5	5,483.5	28.8	1.6	-61.75	-2,972.1	-2,936.9	3,482.1	3,453.0	29.11	119.613	
5,700.0	5,495.3	5,569.8	5,568.8	29.1	1.6	-69.59	-2,969.7	-2,936.9	3,473.5	3,444.1	29.41	118.104	
5,800.0	5,594.6	5,660.2	5,659.2	29.4	1.6	-81.36	-2,968.1	-2,936.2	3,468.4	3,438.7	29.67	116.886	
5,900.0	5,694.1	5,746.1	5,745.0	29.6	1.7	-98.85	-2,966.6	-2,935.8	3,466.5	3,436.6	29.90	115.935	
5,902.3	5,696.5	5,747.8	5,746.8	29.6	1.7	-99.34	-2,966.6	-2,935.8	3,466.5	3,436.6	29.91	115.917	CC, ES
5,917.0	5,711.1	5,759.0	5,757.9	29.7	1.7	-102.45	-2,966.5	-2,935.8	3,466.6	3,436.6	29.94	115.802	
6,000.0	5,793.7	5,820.8	5,819.8	29.8	1.7	-102.54	-2,965.8	-2,935.6	3,467.3	3,437.1	30.14	115.050	
6,067.0	5,860.5	5,869.0	5,868.0	30.0	1.7	-102.60	-2,965.5	-2,935.7	3,468.2	3,437.9	30.30	114.480	
6,100.0	5,893.4	5,900.0	5,899.0	30.0	1.7	-102.65	-2,965.4	-2,935.9	3,468.8	3,438.4	30.38	114.193	
6,200.0	5,993.2	5,997.1	5,996.1	30.2	1.7	-102.76	-2,965.3	-2,936.1	3,470.1	3,439.5	30.58	113.494	
6,300.0	6,093.2	6,111.5	6,110.5	30.3	1.7	-102.81	-2,965.0	-2,935.9	3,470.3	3,439.6	30.73	112.930	
6,318.8	6,111.9	6,130.1	6,129.1	30.3	1.7	-154.77	-2,964.9	-2,935.9	3,470.2	3,450.5	19.76	175.662	
6,400.0	6,193.2	6,209.3	6,208.3	30.4	1.7	-154.76	-2,964.5	-2,936.0	3,469.9	3,450.0	19.88	174.507	
6,444.4	6,237.6	6,247.1	6,246.1	30.4	1.7	-154.76	-2,964.3	-2,936.1	3,469.7	3,449.7	19.96	173.858	
6,447.0	6,240.2	6,249.4	6,248.3	30.4	1.7	115.24	-2,964.3	-2,936.1	3,469.7	3,438.8	30.88	112.349	
6,450.0	6,243.2	6,251.9	6,250.8	30.4	1.7	115.24	-2,964.3	-2,936.1	3,469.7	3,438.8	30.88	112.346	
6,475.0	6,268.1	6,273.1	6,272.1	30.4	1.7	115.21	-2,964.2	-2,936.2	3,470.1	3,439.2	30.89	112.339	
6,500.0	6,293.0	6,300.0	6,299.0	30.4	1.7	115.15	-2,964.1	-2,936.3	3,471.0	3,440.1	30.89	112.370	
6,525.0	6,317.8	6,317.4	6,316.4	30.4	1.7	115.03	-2,964.1	-2,936.4	3,472.5	3,441.7	30.88	112.436	
6,550.0	6,342.3	6,341.1	6,340.1	30.4	1.7	114.87	-2,964.1	-2,936.5	3,474.6	3,443.8	30.87	112.539	
6,575.0	6,366.5	6,364.6	6,363.5	30.3	1.7	114.67	-2,964.0	-2,936.5	3,477.3	3,446.4	30.86	112.673	
6,600.0	6,390.4	6,387.6	6,386.6	30.2	1.8	114.42	-2,964.1	-2,936.6	3,480.5	3,449.6	30.84	112.838	
6,625.0	6,413.9	6,412.7	6,411.7	30.2	1.8	114.13	-2,964.1	-2,936.6	3,484.2	3,453.4	30.82	113.042	
6,650.0	6,436.9	6,440.0	6,438.9	30.1	1.8	113.82	-2,964.1	-2,936.6	3,488.5	3,457.7	30.79	113.285	
6,675.0	6,459.3	6,466.6	6,465.6	30.0	1.8	113.46	-2,964.1	-2,936.5	3,493.3	3,462.6	30.76	113.558	
6,700.0	6,481.1	6,492.6	6,491.6	29.9	1.8	113.05	-2,964.0	-2,936.4	3,498.6	3,467.9	30.73	113.862	
6,725.0	6,502.3	6,515.7	6,514.7	29.7	1.8	112.58	-2,964.0	-2,936.4	3,504.5	3,473.8	30.69	114.182	
6,750.0	6,522.7	6,537.2	6,536.2	29.6	1.8	112.04	-2,963.9	-2,936.3	3,510.8	3,480.2	30.66	114.525	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,558.0	6,556.9	29.5	1.8	111.45	-2,963.9	-2,936.2	3,517.7	3,487.1	30.62	114.893	
6,800.0	6,561.2	6,577.8	6,576.8	29.4	1.8	110.79	-2,963.8	-2,936.1	3,525.1	3,494.5	30.58	115.284	
6,825.0	6,579.1	6,596.7	6,595.7	29.3	1.8	110.06	-2,963.8	-2,936.0	3,533.0	3,502.4	30.54	115.694	
6,850.0	6,596.1	6,615.2	6,614.2	29.1	1.8	109.28	-2,963.7	-2,936.0	3,541.4	3,510.9	30.50	116.123	
6,875.0	6,612.1	6,632.8	6,631.8	29.0	1.8	108.42	-2,963.7	-2,935.9	3,550.2	3,519.8	30.46	116.566	
6,900.0	6,627.1	6,649.3	6,648.2	28.9	1.8	107.50	-2,963.6	-2,935.8	3,559.5	3,529.1	30.42	117.022	
6,925.0	6,641.0	6,664.6	6,663.5	28.8	1.8	106.49	-2,963.5	-2,935.7	3,569.3	3,538.9	30.38	117.489	
6,950.0	6,653.8	6,678.7	6,677.7	28.7	1.8	105.41	-2,963.5	-2,935.6	3,579.5	3,549.1	30.34	117.966	
6,975.0	6,665.5	6,691.6	6,690.5	28.7	1.8	104.24	-2,963.4	-2,935.6	3,590.1	3,559.8	30.31	118.450	
7,000.0	6,676.0	6,702.9	6,701.8	28.6	1.8	102.99	-2,963.3	-2,935.5	3,601.1	3,570.8	30.28	118.941	
7,025.0	6,685.3	6,712.1	6,711.1	28.6	1.8	101.64	-2,963.3	-2,935.5	3,612.5	3,582.2	30.25	119.436	
7,050.0	6,693.4	6,720.2	6,719.2	28.5	1.8	100.21	-2,963.3	-2,935.4	3,624.2	3,594.0	30.22	119.930	
7,075.0	6,700.2	6,727.0	6,726.0	28.5	1.8	98.70	-2,963.2	-2,935.4	3,636.3	3,606.1	30.20	120.417	
7,100.0	6,705.8	6,732.6	6,731.6	28.5	1.8	97.11	-2,963.2	-2,935.4	3,648.6	3,618.4	30.18	120.886	
7,125.0	6,710.0	6,736.9	6,735.9	28.5	1.8	95.44	-2,963.2	-2,935.3	3,661.2	3,631.0	30.18	121.324	
7,150.0	6,713.0	6,740.0	6,738.9	28.6	1.8	93.71	-2,963.2	-2,935.3	3,674.0	3,643.8	30.19	121.712	
7,175.0	6,714.7	6,741.7	6,740.7	28.6	1.8	91.91	-2,963.1	-2,935.3	3,687.1	3,656.8	30.21	122.035	
7,198.8	6,715.0	6,742.2	6,741.2	28.6	1.8	90.15	-2,963.1	-2,935.3	3,699.6	3,669.4	30.26	122.268	
7,200.0	6,715.0	6,742.2	6,741.2	28.6	1.8	90.15	-2,963.1	-2,935.3	3,700.2	3,670.0	30.26	122.275	
7,300.0	6,714.1	6,741.8	6,740.7	29.0	1.8	90.14	-2,963.1	-2,935.3	3,754.2	3,723.6	30.66	122.432	
7,400.0	6,713.2	6,741.3	6,740.3	29.7	1.8	90.13	-2,963.1	-2,935.3	3,810.1	3,778.7	31.33	121.616	
7,500.0	6,712.3	6,740.9	6,739.9	30.6	1.8	90.12	-2,963.1	-2,935.3	3,867.7	3,835.4	32.24	119.969	
7,600.0	6,711.3	6,740.5	6,739.5	31.7	1.8	90.11	-2,963.2	-2,935.3	3,927.0	3,893.6	33.37	117.669	
7,700.0	6,710.4	6,740.1	6,739.0	33.0	1.8	90.11	-2,963.2	-2,935.3	3,987.9	3,953.2	34.71	114.898	
7,800.0	6,709.5	6,739.6	6,738.6	34.5	1.8	90.10	-2,963.2	-2,935.3	4,050.4	4,014.2	36.22	111.823	
7,900.0	6,708.5	6,739.2	6,738.2	36.2	1.8	90.09	-2,963.2	-2,935.3	4,114.4	4,076.5	37.89	108.587	
8,000.0	6,707.6	6,738.8	6,737.8	38.0	1.8	90.08	-2,963.2	-2,935.3	4,179.8	4,140.1	39.69	105.301	
8,100.0	6,706.7	6,738.4	6,737.3	39.9	1.8	90.08	-2,963.2	-2,935.3	4,246.5	4,204.9	41.61	102.046	
8,200.0	6,705.8	6,738.0	6,736.9	41.9	1.8	90.07	-2,963.2	-2,935.3	4,314.6	4,270.9	43.63	98.879	
8,300.0	6,704.8	6,737.5	6,736.5	44.0	1.8	90.06	-2,963.2	-2,935.3	4,383.8	4,338.1	45.74	95.837	
8,400.0	6,703.9	6,737.1	6,736.1	46.2	1.8	90.05	-2,963.2	-2,935.3	4,454.2	4,406.3	47.92	92.942	
8,500.0	6,703.0	6,736.7	6,735.7	48.5	1.8	90.04	-2,963.2	-2,935.3	4,525.8	4,475.6	50.17	90.205	
8,600.0	6,702.1	6,736.3	6,735.2	50.8	1.8	90.04	-2,963.2	-2,935.3	4,598.4	4,545.9	52.48	87.629	
8,700.0	6,701.1	6,735.9	6,734.8	53.1	1.8	90.03	-2,963.2	-2,935.3	4,672.0	4,617.1	54.83	85.212	
8,800.0	6,700.2	6,735.4	6,734.4	55.5	1.8	90.02	-2,963.2	-2,935.3	4,746.5	4,689.3	57.22	82.949	
8,900.0	6,699.3	6,735.0	6,734.0	57.9	1.8	90.01	-2,963.2	-2,935.3	4,822.0	4,762.4	59.65	80.832	
9,000.0	6,698.3	6,734.6	6,733.6	60.4	1.8	90.01	-2,963.2	-2,935.3	4,898.4	4,836.3	62.12	78.854	
9,100.0	6,697.4	6,734.2	6,733.2	62.9	1.8	90.00	-2,963.2	-2,935.3	4,975.6	4,911.0	64.61	77.005	
9,200.0	6,696.5	6,733.8	6,732.8	65.4	1.8	89.99	-2,963.2	-2,935.3	5,053.6	4,986.5	67.13	75.277	
9,300.0	6,695.5	6,733.4	6,732.3	68.0	1.8	89.98	-2,963.2	-2,935.4	5,132.4	5,062.7	69.68	73.660	
9,400.0	6,694.6	6,733.0	6,731.9	70.5	1.8	89.97	-2,963.2	-2,935.4	5,211.9	5,139.7	72.24	72.148	
9,500.0	6,693.7	6,732.6	6,731.5	73.1	1.8	89.97	-2,963.2	-2,935.4	5,292.1	5,217.3	74.82	70.731	
9,600.0	6,692.8	6,732.2	6,731.1	75.7	1.8	89.96	-2,963.2	-2,935.4	5,372.9	5,295.5	77.42	69.402	
9,700.0	6,691.8	6,731.7	6,730.7	78.3	1.8	89.95	-2,963.2	-2,935.4	5,454.4	5,374.4	80.03	68.155	
9,800.0	6,690.9	6,731.3	6,730.3	80.9	1.8	89.94	-2,963.2	-2,935.4	5,536.5	5,453.9	82.66	66.983	
9,900.0	6,690.0	6,730.9	6,729.9	83.6	1.8	89.94	-2,963.2	-2,935.4	5,619.2	5,533.9	85.29	65.881	
10,000.0	6,689.0	6,730.5	6,729.5	86.2	1.8	89.93	-2,963.2	-2,935.4	5,702.5	5,614.5	87.94	64.844	
10,100.0	6,688.1	6,730.1	6,729.1	88.9	1.8	89.92	-2,963.2	-2,935.4	5,786.2	5,695.6	90.60	63.866	
10,200.0	6,687.2	6,729.7	6,728.7	91.6	1.8	89.91	-2,963.2	-2,935.4	5,870.5	5,777.2	93.27	62.943	
10,300.0	6,686.2	6,729.3	6,728.3	94.2	1.8	89.91	-2,963.2	-2,935.4	5,955.3	5,859.3	95.94	62.071	
10,400.0	6,685.3	6,728.9	6,727.9	96.9	1.8	89.90	-2,963.2	-2,935.4	6,040.5	5,941.9	98.63	61.246	
10,500.0	6,684.4	6,728.5	6,727.5	99.6	1.8	89.89	-2,963.2	-2,935.4	6,126.2	6,024.8	101.32	60.465	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,728.1	6,727.1	102.3	1.8	89.88	-2,963.2	-2,935.4	6,212.3	6,108.2	104.01	59.725	
10,700.0	6,682.5	6,727.7	6,726.7	105.0	1.8	89.88	-2,963.2	-2,935.4	6,298.8	6,192.1	106.72	59.023	
10,800.0	6,681.6	6,727.3	6,726.3	107.7	1.8	89.87	-2,963.2	-2,935.4	6,385.7	6,276.3	109.42	58.357	
10,900.0	6,680.6	6,726.9	6,725.9	110.4	1.8	89.86	-2,963.2	-2,935.4	6,473.0	6,360.8	112.14	57.723	
11,000.0	6,679.7	6,726.5	6,725.5	113.1	1.8	89.85	-2,963.2	-2,935.4	6,560.6	6,445.8	114.86	57.120	
11,100.0	6,678.8	6,726.1	6,725.1	115.9	1.8	89.84	-2,963.2	-2,935.4	6,648.6	6,531.0	117.58	56.546	
11,200.0	6,677.8	6,725.7	6,724.7	118.6	1.8	89.84	-2,963.2	-2,935.4	6,736.9	6,616.6	120.31	55.998	
11,300.0	6,676.9	6,725.3	6,724.3	121.3	1.8	89.83	-2,963.2	-2,935.4	6,825.6	6,702.6	123.04	55.476	
11,400.0	6,676.0	6,724.9	6,723.9	124.1	1.8	89.82	-2,963.2	-2,935.4	6,914.6	6,788.8	125.77	54.978	
11,500.0	6,675.0	6,724.5	6,723.5	126.8	1.8	89.81	-2,963.2	-2,935.4	7,003.8	6,875.3	128.51	54.501	
11,600.0	6,674.1	6,724.1	6,723.1	129.5	1.8	89.81	-2,963.2	-2,935.4	7,093.4	6,962.1	131.25	54.045	
11,700.0	6,673.1	6,723.7	6,722.7	132.3	1.8	89.80	-2,963.2	-2,935.4	7,183.2	7,049.2	133.99	53.609	
11,800.0	6,672.2	6,723.3	6,722.3	135.0	1.8	89.79	-2,963.2	-2,935.4	7,273.3	7,136.5	136.74	53.191	
11,900.0	6,671.3	6,722.9	6,721.9	137.8	1.8	89.78	-2,963.2	-2,935.4	7,363.6	7,224.1	139.49	52.791	
12,000.0	6,670.3	6,722.5	6,721.5	140.5	1.8	89.78	-2,963.2	-2,935.4	7,454.2	7,312.0	142.24	52.407	
12,036.2	6,670.0	6,722.4	6,721.4	141.5	1.8	89.77	-2,963.2	-2,935.4	7,487.1	7,343.8	143.24	52.271	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-152.21	-2,976.4	-1,568.8	3,364.5				
100.0	100.0	111.1	111.1	0.1	0.1	-162.81	-2,976.1	-1,568.7	3,364.3	3,364.1	0.21	N/A	
169.4	169.4	176.3	176.3	0.2	0.2	-162.81	-2,975.9	-1,568.5	3,364.2	3,363.9	0.38	8,858.597	
200.0	200.0	205.3	205.3	0.2	0.2	-162.81	-2,975.8	-1,568.5	3,364.3	3,363.8	0.45	7,457.388	
261.0	261.0	265.6	265.6	0.3	0.3	-162.81	-2,975.7	-1,568.4	3,364.4	3,363.8	0.57	5,888.368	
300.0	300.0	304.5	304.5	0.4	0.3	-84.61	-2,975.6	-1,568.4	3,364.3	3,363.6	0.69	4,853.754	
400.0	399.9	412.5	412.5	0.6	0.4	-70.15	-2,974.9	-1,568.7	3,363.0	3,362.0	0.99	3,404.666	
500.0	499.7	519.9	519.9	0.8	0.5	-67.93	-2,973.9	-1,569.3	3,359.8	3,358.5	1.28	2,615.629	
538.0	537.5	561.2	561.2	0.9	0.5	-67.56	-2,973.4	-1,569.6	3,358.1	3,356.7	1.40	2,406.078	
600.0	599.1	625.9	625.9	1.1	0.5	-68.50	-2,972.6	-1,569.8	3,354.8	3,353.2	1.64	2,046.975	
700.0	697.9	721.2	721.1	1.5	0.6	-69.60	-2,971.5	-1,570.0	3,348.4	3,346.4	2.02	1,654.181	
800.0	796.0	807.1	807.1	1.8	0.6	-70.47	-2,970.8	-1,570.3	3,341.0	3,338.6	2.40	1,391.543	
818.0	813.5	823.4	823.4	1.9	0.6	-70.62	-2,970.7	-1,570.4	3,339.6	3,337.1	2.47	1,352.920	
900.0	893.1	900.0	900.0	2.3	0.6	-70.26	-2,970.2	-1,570.8	3,332.5	3,329.6	2.94	1,133.530	
1,000.0	989.2	988.9	988.8	2.9	0.7	-70.14	-2,969.7	-1,571.5	3,322.6	3,319.0	3.52	944.778	
1,100.0	1,083.9	1,078.6	1,078.6	3.5	0.7	-70.31	-2,969.3	-1,572.2	3,311.2	3,307.1	4.10	808.450	
1,104.0	1,087.6	1,082.2	1,082.2	3.5	0.7	-70.32	-2,969.3	-1,572.3	3,310.7	3,306.5	4.12	803.781	
1,200.0	1,177.9	1,168.9	1,168.8	4.1	0.8	-71.47	-2,969.0	-1,573.0	3,299.5	3,294.7	4.74	696.247	
1,300.0	1,272.0	1,266.6	1,266.6	4.8	0.8	-72.71	-2,968.7	-1,574.0	3,288.6	3,283.2	5.39	610.463	
1,391.0	1,357.8	1,357.4	1,357.4	5.3	0.8	-73.87	-2,968.3	-1,574.8	3,279.3	3,273.4	5.98	548.028	
1,400.0	1,366.3	1,366.3	1,366.3	5.4	0.8	-73.72	-2,968.2	-1,574.9	3,278.4	3,272.4	6.04	542.935	
1,458.0	1,421.2	1,422.2	1,422.2	5.7	0.8	-72.66	-2,967.9	-1,575.4	3,272.7	3,266.3	6.39	512.217	
1,500.0	1,461.0	1,461.2	1,461.2	6.0	0.9	-73.06	-2,967.8	-1,575.6	3,268.5	3,261.9	6.64	492.144	
1,600.0	1,556.1	1,552.8	1,552.7	6.6	0.9	-74.00	-2,967.5	-1,576.1	3,259.2	3,251.9	7.24	450.063	
1,676.0	1,628.3	1,622.9	1,622.8	7.0	0.9	-74.73	-2,967.3	-1,576.5	3,252.6	3,244.9	7.70	422.498	
1,700.0	1,651.1	1,645.7	1,645.7	7.2	0.9	-74.31	-2,967.3	-1,576.6	3,250.5	3,242.7	7.84	414.446	
1,800.0	1,746.4	1,741.4	1,741.3	7.7	1.0	-72.51	-2,967.1	-1,577.1	3,241.5	3,233.0	8.45	383.766	
1,900.0	1,841.8	1,845.5	1,845.4	8.3	1.0	-70.66	-2,966.9	-1,577.6	3,231.6	3,222.5	9.05	356.926	
1,963.0	1,902.0	1,924.0	1,923.9	8.7	1.0	-69.51	-2,966.4	-1,577.8	3,224.7	3,215.2	9.44	341.425	
2,000.0	1,937.4	1,979.0	1,979.0	8.9	1.0	-69.75	-2,965.8	-1,577.7	3,220.3	3,210.6	9.67	333.047	
2,100.0	2,033.1	2,097.2	2,097.1	9.5	1.1	-70.24	-2,963.8	-1,576.9	3,208.2	3,197.9	10.27	312.521	
2,200.0	2,129.0	2,200.0	2,199.9	10.0	1.1	-70.67	-2,961.8	-1,575.6	3,196.0	3,185.2	10.85	294.467	
2,250.0	2,177.1	2,246.8	2,246.6	10.3	1.1	-70.86	-2,960.9	-1,574.8	3,190.1	3,178.9	11.14	286.241	
2,300.0	2,225.1	2,290.7	2,290.5	10.6	1.1	-72.19	-2,960.2	-1,573.9	3,184.4	3,172.9	11.44	278.362	
2,400.0	2,321.2	2,378.1	2,377.9	11.2	1.1	-74.81	-2,958.9	-1,572.1	3,174.0	3,162.0	12.03	263.868	
2,500.0	2,417.0	2,461.5	2,461.3	11.7	1.2	-77.36	-2,957.9	-1,570.5	3,165.1	3,152.5	12.62	250.869	
2,537.0	2,452.5	2,491.9	2,491.7	11.9	1.2	-78.28	-2,957.6	-1,569.9	3,162.3	3,149.4	12.83	246.393	
2,600.0	2,512.8	2,545.9	2,545.7	12.3	1.2	-81.33	-2,957.2	-1,569.2	3,158.1	3,144.8	13.24	238.557	
2,700.0	2,608.2	2,640.8	2,640.6	12.9	1.2	-85.97	-2,956.4	-1,568.1	3,153.5	3,139.6	13.88	227.142	
2,800.0	2,703.3	2,742.0	2,741.7	13.5	1.2	-90.34	-2,955.4	-1,567.1	3,151.1	3,136.6	14.53	216.866	
2,824.0	2,726.1	2,764.0	2,763.7	13.7	1.2	-91.34	-2,955.1	-1,566.8	3,150.9	3,136.2	14.68	214.583	
2,900.0	2,798.2	2,833.6	2,833.3	14.1	1.3	-89.43	-2,954.4	-1,566.1	3,150.0	3,134.8	15.18	207.461	
3,000.0	2,893.6	2,924.9	2,924.7	14.7	1.3	-86.60	-2,953.6	-1,565.1	3,147.7	3,131.9	15.84	198.755	
3,100.0	2,989.4	3,017.4	3,017.1	15.3	1.3	-83.41	-2,952.9	-1,564.2	3,144.0	3,127.6	16.49	190.710	
3,112.0	3,000.9	3,029.5	3,029.2	15.4	1.3	-83.01	-2,952.8	-1,564.1	3,143.5	3,126.9	16.56	189.779	
3,200.0	3,085.5	3,119.9	3,119.6	15.9	1.3	-82.56	-2,951.9	-1,563.5	3,139.3	3,122.3	17.07	183.881	
3,300.0	3,181.9	3,235.4	3,235.1	16.4	1.4	-82.02	-2,950.1	-1,563.7	3,134.1	3,116.4	17.66	177.510	
3,400.0	3,278.4	3,362.7	3,362.4	16.9	1.4	-81.43	-2,946.8	-1,564.6	3,127.8	3,109.5	18.25	171.429	
3,500.0	3,374.7	3,465.5	3,465.1	17.5	1.4	-82.12	-2,943.4	-1,565.6	3,120.7	3,101.8	18.88	165.324	
3,600.0	3,470.3	3,557.7	3,557.2	18.1	1.5	-82.79	-2,940.3	-1,566.5	3,113.5	3,094.0	19.50	159.649	
3,687.0	3,552.8	3,634.2	3,633.7	18.6	1.5	-83.37	-2,937.9	-1,567.2	3,107.4	3,087.4	20.05	155.018	
3,700.0	3,565.1	3,645.2	3,644.7	18.7	1.5	-83.21	-2,937.6	-1,567.3	3,106.5	3,086.4	20.14	154.277	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,732.0	3,731.4	19.4	1.5	-81.94	-2,935.2	-1,568.2	3,099.3	3,078.5	20.83	148.783	
3,900.0	3,753.9	3,821.6	3,821.0	20.0	1.6	-80.73	-2,932.8	-1,569.2	3,091.5	3,070.0	21.53	143.618	
3,974.0	3,823.6	3,885.6	3,885.0	20.5	1.6	-79.85	-2,931.2	-1,570.1	3,085.4	3,063.3	22.04	140.004	
4,000.0	3,848.1	3,907.7	3,907.1	20.7	1.6	-80.15	-2,930.6	-1,570.4	3,083.2	3,061.0	22.20	138.865	
4,100.0	3,942.9	3,990.0	3,989.4	21.3	1.6	-81.36	-2,928.9	-1,571.5	3,075.9	3,053.0	22.84	134.695	
4,200.0	4,038.5	4,070.3	4,069.6	21.9	1.6	-82.69	-2,927.6	-1,572.6	3,070.1	3,046.7	23.47	130.836	
4,263.0	4,099.0	4,125.4	4,124.8	22.3	1.7	-83.64	-2,926.9	-1,573.4	3,067.3	3,043.4	23.86	128.538	
4,300.0	4,134.7	4,161.8	4,161.1	22.5	1.7	-84.84	-2,926.4	-1,573.9	3,065.9	3,041.8	24.07	127.395	
4,400.0	4,231.2	4,266.7	4,266.0	23.0	1.7	-88.25	-2,925.0	-1,575.8	3,063.1	3,038.5	24.61	124.441	
4,500.0	4,328.0	4,362.2	4,361.5	23.5	1.7	-91.83	-2,923.4	-1,577.8	3,061.8	3,036.6	25.16	121.709	
4,524.4	4,351.7	4,384.2	4,383.4	23.6	1.7	-92.73	-2,923.1	-1,578.3	3,061.7	3,036.4	25.29	121.076	
4,549.0	4,375.5	4,406.9	4,406.1	23.8	1.7	-93.65	-2,922.7	-1,578.8	3,061.8	3,036.3	25.42	120.450	
4,600.0	4,425.0	4,457.7	4,456.9	24.0	1.8	-94.03	-2,922.0	-1,580.1	3,062.0	3,036.3	25.69	119.203	
4,700.0	4,521.9	4,583.5	4,582.6	24.5	1.8	-94.87	-2,919.6	-1,583.5	3,062.5	3,036.2	26.22	116.796	
4,800.0	4,618.8	4,700.0	4,699.1	25.0	1.8	-95.66	-2,916.2	-1,587.3	3,062.2	3,035.4	26.75	114.465	
4,837.0	4,654.7	4,732.5	4,731.5	25.2	1.8	-95.91	-2,915.2	-1,588.4	3,062.1	3,035.1	26.95	113.640	
4,846.1	4,663.5	4,739.8	4,738.8	25.2	1.8	-96.01	-2,914.9	-1,588.7	3,062.1	3,035.1	26.99	113.434	
4,900.0	4,715.7	4,783.3	4,782.3	25.5	1.9	-96.55	-2,913.7	-1,590.1	3,062.2	3,035.0	27.29	112.226	
5,000.0	4,812.4	4,876.6	4,875.5	26.0	1.9	-97.58	-2,911.3	-1,592.7	3,063.2	3,035.4	27.83	110.068	
5,100.0	4,908.9	4,974.7	4,973.6	26.6	1.9	-98.61	-2,908.9	-1,595.3	3,064.8	3,036.4	28.37	108.014	
5,125.0	4,932.9	4,999.4	4,998.3	26.7	1.9	-98.87	-2,908.3	-1,595.9	3,065.2	3,036.7	28.51	107.516	
5,200.0	5,005.4	5,055.8	5,054.6	27.0	1.9	-96.54	-2,907.0	-1,597.5	3,066.4	3,037.5	28.89	106.125	
5,300.0	5,102.4	5,139.1	5,137.9	27.5	2.0	-92.84	-2,905.6	-1,599.7	3,067.0	3,037.6	29.40	104.314	
5,400.0	5,199.9	5,233.3	5,232.0	28.0	2.0	-88.29	-2,904.2	-1,602.3	3,066.0	3,036.1	29.90	102.535	
5,412.0	5,211.7	5,244.4	5,243.1	28.1	2.0	-87.67	-2,904.1	-1,602.7	3,065.8	3,035.8	29.96	102.324	
5,500.0	5,297.9	5,326.8	5,325.5	28.4	2.0	-85.31	-2,903.0	-1,605.2	3,063.7	3,033.4	30.33	101.013	
5,581.0	5,377.7	5,400.0	5,398.6	28.7	2.0	-82.48	-2,902.1	-1,607.9	3,061.4	3,030.7	30.64	99.922	
5,600.0	5,396.4	5,421.0	5,419.6	28.8	2.0	-83.69	-2,901.8	-1,608.8	3,060.8	3,030.1	30.71	99.675	
5,700.0	5,495.3	5,508.4	5,506.9	29.1	2.1	-91.58	-2,901.0	-1,612.4	3,059.4	3,028.4	31.04	98.550	
5,705.6	5,500.9	5,513.3	5,511.8	29.1	2.1	-92.12	-2,900.9	-1,612.6	3,059.4	3,028.3	31.06	98.499	CC, ES
5,800.0	5,594.6	5,600.0	5,598.4	29.4	2.1	-103.40	-2,900.5	-1,615.7	3,060.5	3,029.2	31.33	97.698	
5,900.0	5,694.1	5,700.6	5,699.0	29.6	2.1	-120.96	-2,900.1	-1,618.2	3,063.9	3,032.3	31.56	97.087	
5,917.0	5,711.1	5,718.1	5,716.5	29.7	2.1	-124.56	-2,900.0	-1,618.5	3,064.7	3,033.1	31.59	97.005	
6,000.0	5,793.7	5,800.0	5,798.4	29.8	2.1	-124.65	-2,899.7	-1,619.7	3,068.5	3,036.8	31.77	96.583	
6,067.0	5,860.5	5,860.9	5,859.2	30.0	2.1	-124.72	-2,899.5	-1,620.2	3,071.7	3,039.8	31.91	96.261	
6,100.0	5,893.4	5,889.5	5,887.9	30.0	2.1	-124.78	-2,899.5	-1,620.4	3,073.3	3,041.3	31.98	96.099	
6,200.0	5,993.2	6,000.9	5,999.2	30.2	2.2	-124.93	-2,899.4	-1,620.8	3,076.5	3,044.4	32.16	95.655	
6,300.0	6,093.2	6,100.0	6,098.4	30.3	2.2	-124.98	-2,898.9	-1,620.8	3,077.5	3,045.2	32.31	95.246	
6,318.8	6,111.9	6,121.1	6,119.5	30.3	2.2	-176.94	-2,898.9	-1,620.8	3,077.5	3,059.5	17.94	171.512	
6,392.1	6,185.2	6,182.9	6,181.2	30.4	2.2	-176.94	-2,898.7	-1,620.8	3,077.3	3,059.3	18.06	170.398	
6,400.0	6,193.2	6,189.5	6,187.9	30.4	2.2	-176.94	-2,898.7	-1,620.8	3,077.3	3,059.2	18.07	170.279	
6,444.4	6,237.6	6,232.6	6,231.0	30.4	2.2	-176.94	-2,898.8	-1,620.8	3,077.4	3,059.2	18.15	169.561	
6,450.0	6,243.2	6,238.3	6,236.7	30.4	2.2	93.06	-2,898.8	-1,620.8	3,077.4	3,044.9	32.44	94.859	
6,475.0	6,268.1	6,263.7	6,262.1	30.4	2.2	93.07	-2,898.8	-1,620.8	3,077.4	3,045.0	32.45	94.841	
6,500.0	6,293.0	6,289.1	6,287.5	30.4	2.2	93.09	-2,898.8	-1,620.8	3,077.6	3,045.1	32.44	94.878	
6,525.0	6,317.8	6,317.5	6,315.9	30.4	2.2	93.15	-2,898.8	-1,620.9	3,077.8	3,045.4	32.41	94.961	
6,550.0	6,342.3	6,348.1	6,346.5	30.4	2.2	93.23	-2,898.8	-1,620.9	3,078.0	3,045.6	32.37	95.087	
6,575.0	6,366.5	6,378.4	6,376.8	30.3	2.2	93.33	-2,898.7	-1,620.8	3,078.3	3,046.0	32.32	95.257	
6,600.0	6,390.4	6,406.4	6,404.8	30.2	2.2	93.45	-2,898.5	-1,620.8	3,078.6	3,046.3	32.25	95.465	
6,625.0	6,413.9	6,429.4	6,427.8	30.2	2.2	93.55	-2,898.4	-1,620.7	3,079.0	3,046.8	32.17	95.703	
6,650.0	6,436.9	6,451.9	6,450.3	30.1	2.2	93.65	-2,898.2	-1,620.7	3,079.5	3,047.4	32.09	95.978	
6,675.0	6,459.3	6,473.9	6,472.3	30.0	2.2	93.75	-2,898.1	-1,620.6	3,080.1	3,048.2	31.99	96.285	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,700.0	6,481.1	6,495.2	6,493.6	29.9	2.2	93.85	-2,898.0	-1,620.6	3,080.9	3,049.0	31.89	96.623	
6,725.0	6,502.3	6,515.4	6,513.8	29.7	2.2	93.94	-2,897.9	-1,620.5	3,081.8	3,050.0	31.78	96.987	
6,750.0	6,522.7	6,534.8	6,533.2	29.6	2.2	94.02	-2,897.8	-1,620.5	3,082.9	3,051.2	31.66	97.372	
6,775.0	6,542.4	6,553.5	6,551.8	29.5	2.2	94.08	-2,897.7	-1,620.4	3,084.1	3,052.6	31.54	97.773	
6,800.0	6,561.2	6,571.3	6,569.7	29.4	2.2	94.13	-2,897.7	-1,620.4	3,085.6	3,054.1	31.43	98.185	
6,825.0	6,579.1	6,588.3	6,586.7	29.3	2.2	94.16	-2,897.6	-1,620.3	3,087.2	3,055.9	31.31	98.603	
6,850.0	6,596.1	6,605.0	6,603.3	29.1	2.3	94.16	-2,897.6	-1,620.3	3,089.0	3,057.8	31.20	99.021	
6,875.0	6,612.1	6,621.8	6,620.1	29.0	2.3	94.16	-2,897.5	-1,620.2	3,091.0	3,059.9	31.09	99.431	
6,900.0	6,627.1	6,637.5	6,635.9	28.9	2.3	94.12	-2,897.4	-1,620.2	3,093.3	3,062.3	30.98	99.831	
6,925.0	6,641.0	6,652.1	6,650.5	28.8	2.3	94.05	-2,897.4	-1,620.2	3,095.7	3,064.8	30.89	100.214	
6,950.0	6,653.8	6,665.6	6,664.0	28.7	2.3	93.94	-2,897.3	-1,620.1	3,098.4	3,067.6	30.81	100.575	
6,975.0	6,665.5	6,677.9	6,676.2	28.7	2.3	93.79	-2,897.3	-1,620.1	3,101.3	3,070.6	30.73	100.910	
7,000.0	6,676.0	6,688.9	6,687.3	28.6	2.3	93.59	-2,897.2	-1,620.1	3,104.5	3,073.8	30.67	101.213	
7,025.0	6,685.3	6,698.7	6,697.1	28.6	2.3	93.35	-2,897.2	-1,620.0	3,107.9	3,077.3	30.63	101.481	
7,050.0	6,693.4	6,706.8	6,705.2	28.5	2.3	93.05	-2,897.1	-1,620.0	3,111.6	3,081.0	30.59	101.712	
7,075.0	6,700.2	6,713.6	6,712.0	28.5	2.3	92.70	-2,897.1	-1,620.0	3,115.5	3,084.9	30.57	101.901	
7,100.0	6,705.8	6,719.1	6,717.5	28.5	2.3	92.29	-2,897.1	-1,620.0	3,119.6	3,089.1	30.57	102.048	
7,125.0	6,710.0	6,723.4	6,721.8	28.5	2.3	91.84	-2,897.1	-1,620.0	3,124.0	3,093.5	30.58	102.150	
7,150.0	6,713.0	6,726.4	6,724.7	28.6	2.3	91.33	-2,897.0	-1,620.0	3,128.7	3,098.0	30.61	102.210	
7,175.0	6,714.7	6,728.0	6,726.4	28.6	2.3	90.76	-2,897.0	-1,620.0	3,133.5	3,102.8	30.65	102.226	
7,198.8	6,715.0	6,728.4	6,726.8	28.6	2.3	90.18	-2,897.0	-1,620.0	3,138.3	3,107.6	30.71	102.203	
7,200.0	6,715.0	6,728.4	6,726.8	28.6	2.3	90.18	-2,897.0	-1,620.0	3,138.5	3,107.8	30.71	102.201	
7,300.0	6,714.1	6,727.6	6,726.0	29.0	2.3	90.17	-2,897.0	-1,620.0	3,160.7	3,129.5	31.11	101.590	
7,400.0	6,713.2	6,726.8	6,725.2	29.7	2.3	90.15	-2,897.0	-1,620.0	3,185.8	3,154.0	31.78	100.255	
7,500.0	6,712.3	6,726.1	6,724.4	30.6	2.3	90.14	-2,897.0	-1,620.0	3,213.8	3,181.1	32.69	98.321	
7,600.0	6,711.3	6,725.3	6,723.7	31.7	2.3	90.12	-2,897.0	-1,620.0	3,244.6	3,210.8	33.82	95.936	
7,700.0	6,710.4	6,724.5	6,722.9	33.0	2.3	90.11	-2,897.1	-1,620.0	3,278.3	3,243.1	35.16	93.249	
7,800.0	6,709.5	6,723.8	6,722.2	34.5	2.3	90.10	-2,897.1	-1,620.0	3,314.5	3,277.9	36.67	90.391	
7,900.0	6,708.5	6,723.0	6,721.4	36.2	2.3	90.08	-2,897.1	-1,620.0	3,353.4	3,315.1	38.34	87.471	
8,000.0	6,707.6	6,722.3	6,720.7	38.0	2.3	90.07	-2,897.1	-1,620.0	3,394.8	3,354.7	40.14	84.573	
8,100.0	6,706.7	6,721.6	6,719.9	39.9	2.3	90.05	-2,897.1	-1,620.0	3,438.6	3,396.6	42.06	81.753	
8,200.0	6,705.8	6,720.8	6,719.2	41.9	2.3	90.04	-2,897.1	-1,620.0	3,484.7	3,440.7	44.08	79.052	
8,300.0	6,704.8	6,720.1	6,718.5	44.0	2.3	90.03	-2,897.1	-1,620.0	3,533.1	3,486.9	46.19	76.492	
8,400.0	6,703.9	6,719.4	6,717.8	46.2	2.3	90.01	-2,897.1	-1,620.0	3,583.6	3,535.2	48.37	74.085	
8,500.0	6,703.0	6,718.7	6,717.1	48.5	2.3	90.00	-2,897.1	-1,620.0	3,636.1	3,585.5	50.62	71.834	
8,600.0	6,702.1	6,718.0	6,716.4	50.8	2.3	89.99	-2,897.1	-1,620.0	3,690.6	3,637.7	52.92	69.737	
8,700.0	6,701.1	6,717.3	6,715.7	53.1	2.3	89.97	-2,897.1	-1,620.0	3,747.0	3,691.7	55.27	67.789	
8,800.0	6,700.2	6,716.6	6,715.0	55.5	2.3	89.96	-2,897.1	-1,620.0	3,805.1	3,747.5	57.67	65.983	
8,900.0	6,699.3	6,715.9	6,714.3	57.9	2.3	89.95	-2,897.1	-1,620.0	3,865.0	3,804.9	60.10	64.309	
9,000.0	6,698.3	6,715.3	6,713.6	60.4	2.3	89.94	-2,897.1	-1,620.0	3,926.5	3,864.0	62.57	62.759	
9,100.0	6,697.4	6,714.6	6,713.0	62.9	2.3	89.92	-2,897.1	-1,620.0	3,989.6	3,924.5	65.06	61.322	
9,200.0	6,696.5	6,713.9	6,712.3	65.4	2.3	89.91	-2,897.1	-1,620.0	4,054.1	3,986.6	67.58	59.991	
9,300.0	6,695.5	6,713.3	6,711.6	68.0	2.3	89.90	-2,897.1	-1,620.0	4,120.1	4,050.0	70.12	58.757	
9,400.0	6,694.6	6,712.6	6,711.0	70.5	2.3	89.89	-2,897.1	-1,620.0	4,187.4	4,114.8	72.68	57.611	
9,500.0	6,693.7	6,712.0	6,710.3	73.1	2.3	89.87	-2,897.1	-1,620.0	4,256.0	4,180.8	75.27	56.547	
9,600.0	6,692.8	6,711.3	6,709.7	75.7	2.3	89.86	-2,897.1	-1,620.0	4,325.9	4,248.0	77.86	55.558	
9,700.0	6,691.8	6,710.7	6,709.1	78.3	2.3	89.85	-2,897.1	-1,620.0	4,396.9	4,316.4	80.47	54.637	
9,800.0	6,690.9	6,710.0	6,708.4	80.9	2.3	89.84	-2,897.1	-1,620.0	4,469.0	4,385.9	83.10	53.778	
9,900.0	6,690.0	6,709.4	6,707.8	83.6	2.3	89.83	-2,897.1	-1,620.0	4,542.1	4,456.4	85.74	52.977	
10,000.0	6,689.0	6,708.8	6,707.2	86.2	2.3	89.81	-2,897.1	-1,620.0	4,616.3	4,527.9	88.39	52.229	
10,100.0	6,688.1	6,708.2	6,706.6	88.9	2.3	89.80	-2,897.1	-1,620.0	4,691.4	4,600.4	91.04	51.529	
10,200.0	6,687.2	6,707.6	6,705.9	91.6	2.3	89.79	-2,897.1	-1,620.0	4,767.5	4,673.8	93.71	50.874	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,300.0	6,686.2	6,700.0	6,698.4	94.2	2.3	89.65	-2,897.2	-1,620.0	4,844.4	4,748.0	96.38	50.262	
10,400.0	6,685.3	6,700.0	6,698.4	96.9	2.3	89.65	-2,897.2	-1,620.0	4,922.1	4,823.1	99.07	49.685	
10,500.0	6,684.4	6,700.0	6,698.4	99.6	2.3	89.65	-2,897.2	-1,620.0	5,000.7	4,898.9	101.76	49.143	
10,600.0	6,683.4	6,700.0	6,698.4	102.3	2.3	89.65	-2,897.2	-1,620.0	5,079.9	4,975.5	104.45	48.633	
10,700.0	6,682.5	6,700.0	6,698.4	105.0	2.3	89.65	-2,897.2	-1,620.0	5,160.0	5,052.8	107.16	48.153	
10,800.0	6,681.6	6,700.0	6,698.4	107.7	2.3	89.65	-2,897.2	-1,620.0	5,240.6	5,130.8	109.87	47.701	
10,900.0	6,680.6	6,700.0	6,698.4	110.4	2.3	89.65	-2,897.2	-1,620.0	5,322.0	5,209.4	112.58	47.273	
11,000.0	6,679.7	6,700.0	6,698.4	113.1	2.3	89.65	-2,897.2	-1,620.0	5,404.0	5,288.7	115.30	46.870	
11,100.0	6,678.8	6,700.0	6,698.4	115.9	2.3	89.65	-2,897.2	-1,620.0	5,486.5	5,368.5	118.02	46.488	
11,200.0	6,677.8	6,700.0	6,698.4	118.6	2.3	89.65	-2,897.2	-1,620.0	5,569.7	5,448.9	120.75	46.127	
11,300.0	6,676.9	6,700.0	6,698.4	121.3	2.3	89.65	-2,897.2	-1,620.0	5,653.4	5,529.9	123.48	45.785	
11,400.0	6,676.0	6,700.0	6,698.4	124.1	2.3	89.65	-2,897.2	-1,620.0	5,737.6	5,611.4	126.21	45.460	
11,500.0	6,675.0	6,700.0	6,698.4	126.8	2.3	89.65	-2,897.2	-1,620.0	5,822.3	5,693.3	128.95	45.152	
11,600.0	6,674.1	6,699.4	6,697.8	129.5	2.3	89.64	-2,897.2	-1,620.0	5,907.5	5,775.8	131.69	44.859	
11,700.0	6,673.1	6,698.7	6,697.1	132.3	2.3	89.62	-2,897.2	-1,620.0	5,993.1	5,858.7	134.43	44.581	
11,800.0	6,672.2	6,698.0	6,696.4	135.0	2.3	89.61	-2,897.2	-1,620.0	6,079.2	5,942.0	137.18	44.316	
11,900.0	6,671.3	6,697.3	6,695.7	137.8	2.3	89.60	-2,897.2	-1,620.0	6,165.7	6,025.8	139.93	44.064	
12,000.0	6,670.3	6,696.6	6,695.0	140.5	2.3	89.58	-2,897.2	-1,620.0	6,252.6	6,109.9	142.68	43.823	
12,036.2	6,670.0	6,696.4	6,694.8	141.5	2.3	89.58	-2,897.2	-1,620.0	6,284.2	6,140.5	143.68	43.739	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	97.76	-324.1	2,378.0	2,400.0				
100.0	100.0	93.0	93.0	0.1	1.2	87.16	-324.1	2,378.0	2,400.0	2,398.7	1.30	1,847.933	
200.0	200.0	193.0	193.0	0.2	3.4	87.17	-324.1	2,378.0	2,399.9	2,396.3	3.61	664.420	
261.0	261.0	254.0	254.0	0.3	4.7	87.18	-324.1	2,378.0	2,399.9	2,395.0	4.96	483.784	
261.7	261.7	254.7	254.7	0.3	4.7	90.00	-324.1	2,378.0	2,399.9	2,395.0	4.98	482.262	
300.0	300.0	293.0	293.0	0.4	5.5	165.39	-324.1	2,378.0	2,400.2	2,394.4	5.86	409.769	
400.0	399.9	392.9	392.9	0.6	7.5	179.94	-324.1	2,378.0	2,403.6	2,395.4	8.12	296.083	
500.0	499.7	492.7	492.7	0.8	9.6	-177.66	-324.1	2,378.0	2,410.7	2,400.3	10.33	233.319	
538.0	537.5	530.5	530.5	0.9	10.3	-177.21	-324.1	2,378.0	2,414.4	2,403.2	11.16	216.353	
600.0	599.1	592.1	592.1	1.1	11.6	-177.97	-324.1	2,378.0	2,421.7	2,409.1	12.52	193.501	
700.0	697.9	690.9	690.9	1.5	13.6	-178.71	-324.1	2,378.0	2,436.9	2,422.2	14.65	166.388	
800.0	796.0	789.0	789.0	1.8	15.5	-179.16	-324.1	2,378.0	2,456.3	2,439.6	16.70	147.124	
818.0	813.5	806.5	806.5	1.9	15.9	-179.23	-324.1	2,378.0	2,460.3	2,443.2	17.06	144.255	
900.0	893.1	886.1	886.1	2.3	17.5	-178.36	-324.1	2,378.0	2,480.0	2,461.3	18.70	132.619	
1,000.0	989.2	982.2	982.2	2.9	19.4	-177.57	-324.1	2,378.0	2,507.8	2,487.2	20.61	121.694	
1,100.0	1,083.9	1,076.9	1,076.9	3.5	21.3	-176.95	-324.1	2,378.0	2,539.8	2,517.4	22.40	113.409	
1,104.0	1,087.6	1,080.6	1,080.6	3.5	21.4	-176.93	-324.1	2,378.0	2,541.2	2,518.7	22.46	113.122	
1,200.0	1,177.9	1,170.9	1,170.9	4.1	23.2	-177.74	-324.1	2,378.0	2,573.8	2,549.3	24.50	105.043	
1,300.0	1,272.0	1,265.0	1,265.0	4.8	25.1	-178.58	-324.1	2,378.0	2,607.6	2,581.0	26.58	98.107	
1,391.0	1,357.8	1,350.8	1,350.8	5.3	26.9	-179.34	-324.1	2,378.0	2,638.1	2,609.6	28.49	92.581	
1,400.0	1,366.3	1,359.3	1,359.3	5.4	27.0	-179.14	-324.1	2,378.0	2,641.1	2,612.4	28.71	92.000	
1,458.0	1,421.2	1,414.2	1,414.2	5.7	28.1	-177.78	-324.1	2,378.0	2,659.8	2,629.7	30.09	88.405	
1,500.0	1,461.0	1,454.0	1,454.0	6.0	28.9	-178.01	-324.1	2,378.0	2,672.9	2,642.0	30.98	86.292	
1,600.0	1,556.1	1,549.1	1,549.1	6.6	30.9	-178.56	-324.1	2,378.0	2,704.1	2,671.0	33.10	81.699	
1,676.0	1,628.3	1,621.3	1,621.3	7.0	32.3	-178.98	-324.1	2,378.0	2,727.7	2,692.9	34.72	78.567	
1,700.0	1,651.1	1,644.1	1,644.1	7.2	32.8	-178.41	-324.1	2,378.0	2,735.1	2,699.8	35.24	77.613	
1,800.0	1,746.4	1,739.4	1,739.4	7.7	34.7	-175.98	-324.1	2,378.0	2,765.5	2,728.1	37.42	73.899	
1,900.0	1,841.8	1,834.8	1,834.8	8.3	36.6	-173.50	-324.1	2,378.0	2,795.3	2,755.7	39.62	70.558	
1,963.0	1,902.0	1,895.0	1,895.0	8.7	37.8	-171.91	-324.1	2,378.0	2,813.8	2,772.8	41.01	68.621	
2,000.0	1,937.4	1,930.4	1,930.4	8.9	38.5	-171.93	-324.1	2,378.0	2,824.6	2,782.7	41.82	67.541	
2,100.0	2,033.1	2,026.1	2,026.1	9.5	40.4	-172.00	-324.1	2,378.0	2,853.1	2,809.1	44.03	64.802	
2,200.0	2,129.0	2,122.0	2,122.0	10.0	42.4	-172.05	-324.1	2,378.0	2,881.1	2,834.8	46.25	62.300	
2,250.0	2,177.1	2,170.1	2,170.1	10.3	43.3	-172.08	-324.1	2,378.0	2,894.8	2,847.5	47.36	61.127	
2,300.0	2,225.1	2,218.1	2,218.1	10.6	44.3	-173.29	-324.1	2,378.0	2,908.6	2,860.2	48.40	60.095	
2,400.0	2,321.2	2,314.2	2,314.2	11.2	46.2	-175.65	-324.1	2,378.0	2,936.4	2,885.9	50.48	58.173	
2,500.0	2,417.0	2,410.0	2,410.0	11.7	48.2	-177.93	-324.1	2,378.0	2,964.7	2,912.1	52.55	56.421	
2,537.0	2,452.5	2,445.5	2,445.5	11.9	48.9	-178.75	-324.1	2,378.0	2,975.3	2,922.0	53.31	55.811	
2,600.0	2,512.8	2,505.8	2,505.8	12.3	50.1	178.28	-324.1	2,378.0	2,993.6	2,939.0	54.57	54.862	
2,700.0	2,608.2	2,601.2	2,601.2	12.9	52.0	173.82	-324.1	2,378.0	3,023.3	2,966.8	56.55	53.466	
2,800.0	2,703.3	2,696.3	2,696.3	13.5	53.9	169.71	-324.1	2,378.0	3,054.0	2,995.5	58.51	52.196	
2,824.0	2,726.1	2,719.1	2,719.1	13.7	54.4	168.77	-324.1	2,378.0	3,061.5	3,002.5	58.98	51.908	
2,900.0	2,798.2	2,791.2	2,791.2	14.1	55.8	171.44	-324.1	2,378.0	3,085.0	3,024.3	60.74	50.788	
3,000.0	2,893.6	2,886.6	2,886.6	14.7	57.8	175.17	-324.1	2,378.0	3,114.9	3,051.8	63.08	49.380	
3,100.0	2,989.4	2,982.4	2,982.4	15.3	59.7	179.19	-324.1	2,378.0	3,143.5	3,078.1	65.43	48.042	
3,112.0	3,000.9	2,993.9	2,993.9	15.4	59.9	179.69	-324.1	2,378.0	3,146.9	3,081.1	65.72	47.885	
3,200.0	3,085.5	3,078.5	3,078.5	15.9	61.6	-179.35	-324.1	2,378.0	3,171.1	3,103.4	67.72	46.829	
3,300.0	3,181.9	3,174.9	3,174.9	16.4	63.6	-178.22	-324.1	2,378.0	3,198.0	3,128.0	70.00	45.686	
3,400.0	3,278.4	3,271.4	3,271.4	16.9	65.5	-177.03	-324.1	2,378.0	3,224.0	3,151.7	72.29	44.600	
3,500.0	3,374.7	3,367.7	3,367.7	17.5	67.4	-177.16	-324.1	2,378.0	3,250.9	3,176.9	73.99	43.937	
3,600.0	3,470.3	3,463.3	3,463.3	18.1	69.4	-177.27	-324.1	2,378.0	3,280.3	3,204.7	75.61	43.387	
3,687.0	3,552.8	3,545.8	3,545.8	18.6	71.0	-177.35	-324.1	2,378.0	3,307.8	3,230.9	76.93	42.995	
3,700.0	3,565.1	3,558.1	3,558.1	18.7	71.3	-177.09	-324.1	2,378.0	3,312.1	3,234.9	77.20	42.901	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,652.5	3,652.5	19.4	73.2	-175.15	-324.1	2,378.0	3,344.9	3,265.6	79.27	42.198	
3,900.0	3,753.9	3,746.9	3,746.9	20.0	75.1	-173.25	-324.1	2,378.0	3,377.9	3,296.6	81.33	41.534	
3,974.0	3,823.6	3,816.6	3,816.6	20.5	76.5	-171.87	-324.1	2,378.0	3,402.4	3,319.6	82.85	41.067	
4,000.0	3,848.1	3,841.1	3,841.1	20.7	77.0	-172.14	-324.1	2,378.0	3,411.0	3,327.5	83.55	40.827	
4,100.0	3,942.9	3,935.9	3,935.9	21.3	78.9	-173.21	-324.1	2,378.0	3,442.6	3,356.4	86.23	39.922	
4,200.0	4,038.5	4,031.5	4,031.5	21.9	80.8	-174.40	-324.1	2,378.0	3,471.9	3,383.0	88.91	39.048	
4,263.0	4,099.0	4,092.0	4,092.0	22.3	82.0	-175.22	-324.1	2,378.0	3,489.3	3,398.7	90.60	38.513	
4,300.0	4,134.7	4,127.7	4,127.7	22.5	82.7	-176.36	-324.1	2,378.0	3,499.1	3,407.7	91.46	38.256	
4,400.0	4,231.2	4,224.2	4,224.2	23.0	84.7	-179.54	-324.1	2,378.0	3,525.2	3,431.4	93.81	37.579	
4,500.0	4,328.0	4,321.0	4,321.0	23.5	86.6	177.08	-324.1	2,378.0	3,550.3	3,454.2	96.16	36.921	
4,549.0	4,375.5	4,368.5	4,368.5	23.8	87.6	175.36	-324.1	2,378.0	3,562.3	3,465.0	97.32	36.606	
4,600.0	4,425.0	4,418.0	4,418.0	24.0	88.6	175.19	-324.1	2,378.0	3,574.7	3,476.3	98.41	36.326	
4,700.0	4,521.9	4,514.9	4,514.9	24.5	90.5	174.86	-324.1	2,378.0	3,599.1	3,498.6	100.55	35.795	
4,800.0	4,618.8	4,611.8	4,611.8	25.0	92.5	174.54	-324.1	2,378.0	3,623.6	3,520.9	102.69	35.289	
4,837.0	4,654.7	4,647.7	4,647.7	25.2	93.2	174.42	-324.1	2,378.0	3,632.7	3,529.2	103.48	35.107	
4,900.0	4,715.7	4,708.7	4,708.7	25.5	94.4	173.98	-324.1	2,378.0	3,648.4	3,543.6	104.73	34.835	
5,000.0	4,812.4	4,805.4	4,805.4	26.0	96.3	173.32	-324.1	2,378.0	3,673.8	3,567.1	106.71	34.427	
5,100.0	4,908.9	4,901.9	4,901.9	26.6	98.3	172.70	-324.1	2,378.0	3,699.9	3,591.2	108.67	34.046	
5,125.0	4,932.9	4,925.9	4,925.9	26.7	98.8	172.55	-324.1	2,378.0	3,706.6	3,597.4	109.16	33.955	
5,200.0	5,005.4	4,998.4	4,998.4	27.0	100.2	175.38	-324.1	2,378.0	3,726.0	3,614.8	111.18	33.514	
5,300.0	5,102.4	5,095.4	5,095.4	27.5	102.2	179.70	-324.1	2,378.0	3,750.1	3,636.2	113.85	32.938	
5,400.0	5,199.9	5,192.9	5,192.9	28.0	104.1	-175.20	-324.1	2,378.0	3,772.1	3,655.6	116.51	32.376	
5,412.0	5,211.7	5,204.7	5,204.7	28.1	104.4	-174.53	-324.1	2,378.0	3,774.6	3,657.8	116.83	32.309	
5,500.0	5,297.9	5,290.9	5,290.9	28.4	106.1	-171.90	-324.1	2,378.0	3,791.8	3,672.6	119.20	31.811	
5,581.0	5,377.7	5,370.7	5,370.7	28.7	107.7	-168.89	-324.1	2,378.0	3,805.9	3,684.6	121.34	31.367	
5,600.0	5,396.4	5,389.4	5,389.4	28.8	108.1	-170.11	-324.1	2,378.0	3,809.0	3,687.1	121.83	31.264	
5,700.0	5,495.3	5,488.3	5,488.3	29.1	110.1	-178.07	-324.1	2,378.0	3,823.5	3,699.1	124.39	30.737	
5,800.0	5,594.6	5,587.6	5,587.6	29.4	112.1	170.13	-324.1	2,378.0	3,835.4	3,708.6	126.88	30.229	
5,900.0	5,694.1	5,687.1	5,687.1	29.6	114.1	152.67	-324.1	2,378.0	3,844.7	3,715.5	129.29	29.738	
5,917.0	5,711.1	5,704.1	5,704.1	29.7	114.4	149.08	-324.1	2,378.0	3,846.1	3,716.4	129.69	29.656	
6,000.0	5,793.7	5,786.7	5,786.7	29.8	116.1	149.14	-324.1	2,378.0	3,852.3	3,720.8	131.50	29.294	
6,067.0	5,860.5	5,853.5	5,853.5	30.0	117.4	149.18	-324.1	2,378.0	3,857.4	3,724.4	132.97	29.009	
6,100.0	5,893.4	5,886.4	5,886.4	30.0	118.1	149.23	-324.1	2,378.0	3,859.7	3,725.9	133.75	28.858	
6,200.0	5,993.2	5,986.2	5,986.2	30.2	120.1	149.32	-324.1	2,378.0	3,864.8	3,728.7	136.02	28.412	
6,300.0	6,093.2	6,086.2	6,086.2	30.3	122.1	149.36	-324.1	2,378.0	3,866.8	3,728.7	138.17	27.985	
6,318.8	6,111.9	6,104.9	6,104.9	30.3	122.5	97.40	-324.1	2,378.0	3,866.9	3,714.1	152.79	25.308	
6,400.0	6,193.2	6,186.2	6,186.2	30.4	124.1	97.40	-324.1	2,378.0	3,866.9	3,712.4	154.50	25.028	
6,444.4	6,237.6	6,230.6	6,230.6	30.4	125.0	97.40	-324.1	2,378.0	3,866.9	3,711.4	155.43	24.878	
6,450.0	6,243.2	6,236.2	6,236.2	30.4	125.1	7.40	-324.1	2,378.0	3,866.8	3,725.5	141.36	27.355	
6,475.0	6,268.1	6,261.1	6,261.1	30.4	125.6	7.42	-324.1	2,378.0	3,865.9	3,724.5	141.44	27.333	
6,500.0	6,293.0	6,286.0	6,286.0	30.4	126.1	7.46	-324.1	2,378.0	3,863.7	3,722.5	141.13	27.377	
6,525.0	6,317.8	6,310.8	6,310.8	30.4	126.6	7.52	-324.1	2,378.0	3,860.2	3,719.7	140.44	27.486	
6,550.0	6,342.3	6,335.3	6,335.3	30.4	127.1	7.61	-324.1	2,378.0	3,855.4	3,716.0	139.36	27.664	
6,575.0	6,366.5	6,359.5	6,359.5	30.3	127.6	7.72	-324.1	2,378.0	3,849.3	3,711.4	137.90	27.913	
6,600.0	6,390.4	6,383.4	6,383.4	30.2	128.1	7.86	-324.1	2,378.0	3,842.0	3,705.9	136.06	28.237	
6,625.0	6,413.9	6,406.9	6,406.9	30.2	128.6	8.03	-324.1	2,378.0	3,833.4	3,699.6	133.85	28.640	
6,650.0	6,436.9	6,429.9	6,429.9	30.1	129.0	8.23	-324.1	2,378.0	3,823.7	3,692.4	131.27	29.129	
6,675.0	6,459.3	6,452.3	6,452.3	30.0	129.5	8.47	-324.1	2,378.0	3,812.7	3,684.4	128.33	29.709	
6,700.0	6,481.1	6,474.1	6,474.1	29.9	129.9	8.74	-324.1	2,378.0	3,800.7	3,675.6	125.06	30.390	
6,725.0	6,502.3	6,495.3	6,495.3	29.7	130.3	9.06	-324.1	2,378.0	3,787.5	3,666.0	121.47	31.180	
6,750.0	6,522.7	6,515.7	6,515.7	29.6	130.7	9.43	-324.1	2,378.0	3,773.2	3,655.6	117.59	32.089	
6,775.0	6,542.4	6,535.4	6,535.4	29.5	131.1	9.86	-324.1	2,378.0	3,757.9	3,644.4	113.44	33.128	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,554.2	6,554.2	29.4	131.5	10.36	-324.1	2,378.0	3,741.6	3,632.5	109.07	34.306	
6,825.0	6,579.1	6,572.1	6,572.1	29.3	131.9	10.94	-324.1	2,378.0	3,724.3	3,619.8	104.52	35.631	
6,850.0	6,596.1	6,589.1	6,589.1	29.1	132.2	11.61	-324.1	2,378.0	3,706.1	3,606.3	99.88	37.106	
6,875.0	6,612.1	6,605.1	6,605.1	29.0	132.5	12.40	-324.1	2,378.0	3,687.1	3,591.9	95.23	38.720	
6,900.0	6,627.1	6,620.1	6,620.1	28.9	132.8	13.34	-324.1	2,378.0	3,667.3	3,576.6	90.68	40.441	
6,925.0	6,641.0	6,634.0	6,634.0	28.8	133.1	14.46	-324.1	2,378.0	3,646.7	3,560.3	86.42	42.199	
6,950.0	6,653.8	6,646.8	6,646.8	28.7	133.4	15.82	-324.1	2,378.0	3,625.5	3,542.8	82.66	43.859	
6,975.0	6,665.5	6,658.5	6,658.5	28.7	133.6	17.47	-324.1	2,378.0	3,603.6	3,523.8	79.74	45.189	
7,000.0	6,676.0	6,669.0	6,669.0	28.6	133.8	19.53	-324.1	2,378.0	3,581.1	3,503.0	78.12	45.840	
7,025.0	6,685.3	6,678.3	6,678.3	28.6	134.0	22.15	-324.1	2,378.0	3,558.1	3,479.7	78.43	45.367	
7,050.0	6,693.4	6,686.4	6,686.4	28.5	134.2	25.55	-324.1	2,378.0	3,534.7	3,453.2	81.49	43.375	
7,075.0	6,700.2	6,693.2	6,693.2	28.5	134.3	30.08	-324.1	2,378.0	3,510.9	3,422.6	88.29	39.764	
7,100.0	6,705.8	6,698.8	6,698.8	28.5	134.4	36.31	-324.1	2,378.0	3,486.8	3,386.9	99.84	34.922	
7,125.0	6,710.0	6,703.0	6,703.0	28.5	134.5	45.11	-324.1	2,378.0	3,462.4	3,345.6	116.79	29.647	
7,150.0	6,713.0	6,706.0	6,706.0	28.6	134.6	57.61	-324.1	2,378.0	3,437.8	3,299.9	137.99	24.914	
7,175.0	6,714.7	6,707.7	6,707.7	28.6	134.6	74.59	-324.1	2,378.0	3,413.2	3,256.0	157.20	21.712	
7,198.8	6,715.0	6,708.0	6,708.0	28.6	134.6	93.56	-324.1	2,378.0	3,389.6	3,226.7	162.87	20.812	
7,200.0	6,715.0	6,708.0	6,708.0	28.6	134.6	93.56	-324.1	2,378.0	3,388.4	3,225.6	162.87	20.805	
7,300.0	6,714.1	6,707.1	6,707.1	29.0	134.6	93.46	-324.1	2,378.0	3,289.6	3,126.3	163.27	20.148	
7,400.0	6,713.2	6,706.2	6,706.2	29.7	134.6	93.35	-324.1	2,378.0	3,190.8	3,026.8	163.94	19.463	
7,500.0	6,712.3	6,705.3	6,705.3	30.6	134.6	93.24	-324.1	2,378.0	3,092.0	2,927.2	164.84	18.757	
7,600.0	6,711.3	6,704.3	6,704.3	31.7	134.5	93.14	-324.1	2,378.0	2,993.4	2,827.4	165.98	18.035	
7,700.0	6,710.4	6,703.4	6,703.4	33.0	134.5	93.03	-324.1	2,378.0	2,894.8	2,727.5	167.31	17.302	
7,800.0	6,709.5	6,702.5	6,702.5	34.5	134.5	92.93	-324.1	2,378.0	2,796.4	2,627.6	168.82	16.565	
7,900.0	6,708.5	6,701.5	6,701.5	36.2	134.5	92.82	-324.1	2,378.0	2,698.0	2,527.6	170.48	15.826	
8,000.0	6,707.6	6,700.6	6,700.6	38.0	134.5	92.72	-324.1	2,378.0	2,599.8	2,427.6	172.28	15.091	
8,100.0	6,706.7	6,699.7	6,699.7	39.9	134.4	92.61	-324.1	2,378.0	2,501.8	2,327.6	174.19	14.362	
8,200.0	6,705.8	6,698.8	6,698.8	41.9	134.4	92.51	-324.1	2,378.0	2,403.9	2,227.7	176.20	13.643	
8,300.0	6,704.8	6,697.8	6,697.8	44.0	134.4	92.40	-324.1	2,378.0	2,306.1	2,127.8	178.30	12.934	
8,400.0	6,703.9	6,696.9	6,696.9	46.2	134.4	92.29	-324.1	2,378.0	2,208.6	2,028.1	180.48	12.238	
8,500.0	6,703.0	6,696.0	6,696.0	48.5	134.4	92.19	-324.1	2,378.0	2,111.3	1,928.6	182.72	11.555	
8,600.0	6,702.1	6,695.1	6,695.1	50.8	134.4	92.08	-324.1	2,378.0	2,014.3	1,829.3	185.01	10.887	
8,700.0	6,701.1	6,694.1	6,694.1	53.1	134.3	91.98	-324.1	2,378.0	1,917.5	1,730.2	187.35	10.235	
8,800.0	6,700.2	6,693.2	6,693.2	55.5	134.3	91.87	-324.1	2,378.0	1,821.2	1,631.4	189.74	9.598	
8,900.0	6,699.3	6,692.3	6,692.3	57.9	134.3	91.76	-324.1	2,378.0	1,725.2	1,533.0	192.16	8.978	
9,000.0	6,698.3	6,691.3	6,691.3	60.4	134.3	91.66	-324.1	2,378.0	1,629.7	1,435.1	194.62	8.374	
9,100.0	6,697.4	6,690.4	6,690.4	62.9	134.3	91.55	-324.1	2,378.0	1,534.8	1,337.7	197.10	7.787	
9,200.0	6,696.5	6,689.5	6,689.5	65.4	134.2	91.45	-324.1	2,378.0	1,440.6	1,241.0	199.61	7.217	
9,300.0	6,695.5	6,688.5	6,688.5	68.0	134.2	91.34	-324.1	2,378.0	1,347.2	1,145.1	202.14	6.665	
9,400.0	6,694.6	6,687.6	6,687.6	70.5	134.2	91.23	-324.1	2,378.0	1,254.9	1,050.2	204.69	6.131	
9,500.0	6,693.7	6,686.7	6,686.7	73.1	134.2	91.13	-324.1	2,378.0	1,163.8	956.5	207.26	5.615	
9,600.0	6,692.8	6,685.8	6,685.8	75.7	134.2	91.02	-324.1	2,378.0	1,074.3	864.4	209.84	5.119	
9,700.0	6,691.8	6,684.8	6,684.8	78.3	134.1	90.91	-324.1	2,378.0	986.8	774.3	212.44	4.645	
9,800.0	6,690.9	6,683.9	6,683.9	80.9	134.1	90.81	-324.1	2,378.0	901.9	686.8	215.05	4.194	
9,900.0	6,690.0	6,683.0	6,683.0	83.6	134.1	90.70	-324.1	2,378.0	820.4	602.7	217.67	3.769	
10,000.0	6,689.0	6,682.0	6,682.0	86.2	134.1	90.59	-324.1	2,378.0	743.4	523.1	220.31	3.375	
10,100.0	6,688.1	6,681.1	6,681.1	88.9	134.1	90.48	-324.1	2,378.0	672.6	449.6	222.95	3.017	
10,200.0	6,687.2	6,680.2	6,680.2	91.6	134.1	90.38	-324.1	2,378.0	609.9	384.3	225.60	2.704	
10,300.0	6,686.2	6,679.2	6,679.2	94.2	134.0	90.27	-324.1	2,378.0	558.3	330.0	228.26	2.446	
10,400.0	6,685.3	6,678.3	6,678.3	96.9	134.0	90.16	-324.1	2,378.0	520.9	290.0	230.92	2.256	
10,500.0	6,684.4	6,677.4	6,677.4	99.6	134.0	90.06	-324.1	2,378.0	501.0	267.4	233.59	2.145	
10,551.7	6,683.9	6,676.9	6,676.9	101.0	134.0	90.00	-324.1	2,378.0	498.3	263.3	234.98	2.121	CC, ES

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,676.4	6,676.4	102.3	134.0	89.95	-324.1	2,378.0	500.6	264.4	236.27	2.119	SF
10,700.0	6,682.5	6,675.5	6,675.5	105.0	134.0	89.84	-324.1	2,378.0	519.9	280.9	238.95	2.176	
10,800.0	6,681.6	6,674.6	6,674.6	107.7	133.9	89.73	-324.1	2,378.0	556.7	315.1	241.64	2.304	
10,900.0	6,680.6	6,673.6	6,673.6	110.4	133.9	89.63	-324.1	2,378.0	607.9	363.6	244.33	2.488	
11,000.0	6,679.7	6,672.7	6,672.7	113.1	133.9	89.52	-324.1	2,378.0	670.2	423.2	247.03	2.713	
11,100.0	6,678.8	6,671.8	6,671.8	115.9	133.9	89.41	-324.1	2,378.0	740.9	491.1	249.72	2.967	
11,200.0	6,677.8	6,670.8	6,670.8	118.6	133.9	89.30	-324.1	2,378.0	817.6	565.2	252.43	3.239	
11,300.0	6,676.9	6,669.9	6,669.9	121.3	133.8	89.20	-324.1	2,378.0	899.0	643.8	255.13	3.524	
11,400.0	6,676.0	6,669.0	6,669.0	124.1	133.8	89.09	-324.1	2,378.0	983.8	725.9	257.84	3.815	
11,500.0	6,675.0	6,668.0	6,668.0	126.8	133.8	88.98	-324.1	2,378.0	1,071.2	810.6	260.55	4.111	
11,600.0	6,674.1	6,667.1	6,667.1	129.5	133.8	88.87	-324.1	2,378.0	1,160.6	897.4	263.26	4.409	
11,700.0	6,673.1	6,666.1	6,666.1	132.3	133.8	88.76	-324.1	2,378.0	1,251.7	985.7	265.97	4.706	
11,800.0	6,672.2	6,665.2	6,665.2	135.0	133.7	88.66	-324.1	2,378.0	1,344.0	1,075.3	268.69	5.002	
11,900.0	6,671.3	6,664.3	6,664.3	137.8	133.7	88.55	-324.1	2,378.0	1,437.3	1,165.9	271.40	5.296	
12,000.0	6,670.3	6,663.3	6,663.3	140.5	133.7	88.44	-324.1	2,378.0	1,531.5	1,257.4	274.12	5.587	
12,036.2	6,670.0	6,663.0	6,663.0	141.5	133.7	88.40	-324.1	2,378.0	1,565.8	1,290.7	275.10	5.692	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	94.83	-313.0	3,706.5	3,719.7				
100.0	100.0	93.0	93.0	0.1	1.2	84.23	-313.0	3,706.5	3,719.7	3,718.4	1.30	2,864.102	
200.0	200.0	193.0	193.0	0.2	3.4	84.23	-313.0	3,706.5	3,719.7	3,716.0	3.61	1,029.780	
261.0	261.0	254.0	254.0	0.3	4.7	84.24	-313.0	3,706.5	3,719.6	3,714.7	4.96	749.811	
262.4	262.4	255.4	255.4	0.3	4.7	90.00	-313.0	3,706.5	3,719.6	3,714.6	4.99	745.037	
300.0	300.0	293.0	293.0	0.4	5.5	162.45	-313.0	3,706.5	3,719.9	3,714.0	5.86	635.066	
400.0	399.9	392.9	392.9	0.6	7.5	176.99	-313.0	3,706.5	3,723.2	3,715.1	8.12	458.641	
500.0	499.7	492.7	492.7	0.8	9.6	179.39	-313.0	3,706.5	3,730.3	3,720.0	10.33	361.041	
538.0	537.5	530.5	530.5	0.9	10.3	179.85	-313.0	3,706.5	3,734.0	3,722.9	11.16	334.610	
600.0	599.1	592.1	592.1	1.1	11.6	179.09	-313.0	3,706.5	3,741.3	3,728.8	12.51	298.954	
700.0	697.9	690.9	690.9	1.5	13.6	178.34	-313.0	3,706.5	3,756.6	3,741.9	14.65	256.503	
800.0	796.0	789.0	789.0	1.8	15.5	177.88	-313.0	3,706.5	3,776.0	3,759.3	16.70	226.171	
818.0	813.5	806.5	806.5	1.9	15.9	177.81	-313.0	3,706.5	3,780.0	3,762.9	17.05	221.636	
900.0	893.1	886.1	886.1	2.3	17.5	178.67	-313.0	3,706.5	3,799.7	3,781.0	18.70	203.213	
1,000.0	989.2	982.2	982.2	2.9	19.4	179.46	-313.0	3,706.5	3,827.5	3,806.9	20.60	185.775	
1,100.0	1,083.9	1,076.9	1,076.9	3.5	21.3	-179.93	-313.0	3,706.5	3,859.5	3,837.1	22.39	172.401	
1,104.0	1,087.6	1,080.6	1,080.6	3.5	21.4	-179.91	-313.0	3,706.5	3,860.9	3,838.4	22.46	171.935	
1,200.0	1,177.9	1,170.9	1,170.9	4.1	23.2	179.32	-313.0	3,706.5	3,893.6	3,869.1	24.50	158.947	
1,300.0	1,272.0	1,265.0	1,265.0	4.8	25.1	178.52	-313.0	3,706.5	3,927.4	3,900.8	26.57	147.787	
1,391.0	1,357.8	1,350.8	1,350.8	5.3	26.9	177.78	-313.0	3,706.5	3,957.8	3,929.3	28.49	138.909	
1,400.0	1,366.3	1,359.3	1,359.3	5.4	27.0	177.99	-313.0	3,706.5	3,960.8	3,932.1	28.70	137.989	
1,458.0	1,421.2	1,414.2	1,414.2	5.7	28.1	179.39	-313.0	3,706.5	3,979.5	3,949.5	30.08	132.302	
1,500.0	1,461.0	1,454.0	1,454.0	6.0	28.9	179.17	-313.0	3,706.5	3,992.7	3,961.7	30.97	128.926	
1,600.0	1,556.1	1,549.1	1,549.1	6.6	30.9	178.65	-313.0	3,706.5	4,023.9	3,990.8	33.09	121.589	
1,676.0	1,628.3	1,621.3	1,621.3	7.0	32.3	178.25	-313.0	3,706.5	4,047.4	4,012.7	34.71	116.591	
1,700.0	1,651.1	1,644.1	1,644.1	7.2	32.8	178.83	-313.0	3,706.5	4,054.8	4,019.6	35.23	115.081	
1,800.0	1,746.4	1,739.4	1,739.4	7.7	34.7	-178.71	-313.0	3,706.5	4,085.3	4,047.9	37.41	109.211	
1,900.0	1,841.8	1,834.8	1,834.8	8.3	36.6	-176.18	-313.0	3,706.5	4,115.2	4,075.6	39.59	103.941	
1,963.0	1,902.0	1,895.0	1,895.0	8.7	37.8	-174.56	-313.0	3,706.5	4,133.8	4,092.8	40.97	100.890	
2,000.0	1,937.4	1,930.4	1,930.4	8.9	38.5	-174.57	-313.0	3,706.5	4,144.6	4,102.8	41.79	99.183	
2,100.0	2,033.1	2,026.1	2,026.1	9.5	40.4	-174.58	-313.0	3,706.5	4,173.3	4,129.3	43.99	94.863	
2,200.0	2,129.0	2,122.0	2,122.0	10.0	42.4	-174.59	-313.0	3,706.5	4,201.4	4,155.2	46.21	90.924	
2,250.0	2,177.1	2,170.1	2,170.1	10.3	43.3	-174.59	-313.0	3,706.5	4,215.2	4,167.9	47.32	89.082	
2,300.0	2,225.1	2,218.1	2,218.1	10.6	44.3	-175.79	-313.0	3,706.5	4,229.0	4,180.6	48.36	87.443	
2,400.0	2,321.2	2,314.2	2,314.2	11.2	46.2	-178.12	-313.0	3,706.5	4,256.9	4,206.4	50.45	84.384	
2,500.0	2,417.0	2,410.0	2,410.0	11.7	48.2	179.63	-313.0	3,706.5	4,285.2	4,232.7	52.52	81.589	
2,537.0	2,452.5	2,445.5	2,445.5	11.9	48.9	178.81	-313.0	3,706.5	4,295.8	4,242.5	53.29	80.614	
2,600.0	2,512.8	2,505.8	2,505.8	12.3	50.1	175.84	-313.0	3,706.5	4,314.1	4,259.5	54.56	79.071	
2,700.0	2,608.2	2,601.2	2,601.2	12.9	52.0	171.39	-313.0	3,706.5	4,343.8	4,287.2	56.57	76.790	
2,800.0	2,703.3	2,696.3	2,696.3	13.5	53.9	167.26	-313.0	3,706.5	4,374.2	4,315.7	58.56	74.696	
2,824.0	2,726.1	2,719.1	2,719.1	13.7	54.4	166.32	-313.0	3,706.5	4,381.7	4,322.6	59.04	74.219	
2,900.0	2,798.2	2,791.2	2,791.2	14.1	55.8	168.98	-313.0	3,706.5	4,405.0	4,344.2	60.78	72.468	
3,000.0	2,893.6	2,886.6	2,886.6	14.7	57.8	172.72	-313.0	3,706.5	4,434.7	4,371.6	63.10	70.277	
3,100.0	2,989.4	2,982.4	2,982.4	15.3	59.7	176.75	-313.0	3,706.5	4,463.3	4,397.8	65.44	68.205	
3,112.0	3,000.9	2,993.9	2,993.9	15.4	59.9	177.26	-313.0	3,706.5	4,466.6	4,400.9	65.72	67.964	
3,200.0	3,085.5	3,078.5	3,078.5	15.9	61.6	178.23	-313.0	3,706.5	4,490.8	4,423.1	67.72	66.319	
3,300.0	3,181.9	3,174.9	3,174.9	16.4	63.6	179.39	-313.0	3,706.5	4,517.7	4,447.7	69.99	64.546	
3,400.0	3,278.4	3,271.4	3,271.4	16.9	65.5	-179.40	-313.0	3,706.5	4,543.8	4,471.5	72.28	62.868	
3,500.0	3,374.7	3,367.7	3,367.7	17.5	67.4	-179.52	-313.0	3,706.5	4,570.7	4,496.7	73.98	61.785	
3,600.0	3,470.3	3,463.3	3,463.3	18.1	69.4	-179.63	-313.0	3,706.5	4,600.1	4,524.5	75.59	60.856	
3,687.0	3,552.8	3,545.8	3,545.8	18.6	71.0	-179.71	-313.0	3,706.5	4,627.7	4,550.7	76.92	60.164	
3,700.0	3,565.1	3,558.1	3,558.1	18.7	71.3	-179.45	-313.0	3,706.5	4,631.9	4,554.7	77.18	60.012	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,652.5	3,652.5	19.4	73.2	-177.47	-313.0	3,706.5	4,664.8	4,585.6	79.23	58.878	
3,900.0	3,753.9	3,746.9	3,746.9	20.0	75.1	-175.54	-313.0	3,706.5	4,697.9	4,616.6	81.27	57.806	
3,974.0	3,823.6	3,816.6	3,816.6	20.5	76.5	-174.15	-313.0	3,706.5	4,722.5	4,639.8	82.78	57.050	
4,000.0	3,848.1	3,841.1	3,841.1	20.7	77.0	-174.39	-313.0	3,706.5	4,731.1	4,647.7	83.48	56.673	
4,100.0	3,942.9	3,935.9	3,935.9	21.3	78.9	-175.41	-313.0	3,706.5	4,762.8	4,676.6	86.18	55.267	
4,200.0	4,038.5	4,031.5	4,031.5	21.9	80.8	-176.56	-313.0	3,706.5	4,792.3	4,703.4	88.87	53.924	
4,263.0	4,099.0	4,092.0	4,092.0	22.3	82.0	-177.36	-313.0	3,706.5	4,809.6	4,719.1	90.56	53.109	
4,300.0	4,134.7	4,127.7	4,127.7	22.5	82.7	-178.49	-313.0	3,706.5	4,819.5	4,728.1	91.43	52.711	
4,400.0	4,231.2	4,224.2	4,224.2	23.0	84.7	178.35	-313.0	3,706.5	4,845.6	4,751.8	93.79	51.662	
4,500.0	4,328.0	4,321.0	4,321.0	23.5	86.6	174.99	-313.0	3,706.5	4,870.7	4,774.5	96.16	50.651	
4,549.0	4,375.5	4,368.5	4,368.5	23.8	87.6	173.27	-313.0	3,706.5	4,882.7	4,785.4	97.32	50.169	
4,600.0	4,425.0	4,418.0	4,418.0	24.0	88.6	173.10	-313.0	3,706.5	4,895.0	4,796.6	98.42	49.737	
4,700.0	4,521.9	4,514.9	4,514.9	24.5	90.5	172.77	-313.0	3,706.5	4,919.3	4,818.8	100.56	48.918	
4,800.0	4,618.8	4,611.8	4,611.8	25.0	92.5	172.45	-313.0	3,706.5	4,943.7	4,841.0	102.70	48.136	
4,837.0	4,654.7	4,647.7	4,647.7	25.2	93.2	172.33	-313.0	3,706.5	4,952.8	4,849.3	103.50	47.855	
4,900.0	4,715.7	4,708.7	4,708.7	25.5	94.4	171.89	-313.0	3,706.5	4,968.4	4,863.6	104.76	47.427	
5,000.0	4,812.4	4,805.4	4,805.4	26.0	96.3	171.22	-313.0	3,706.5	4,993.7	4,886.9	106.75	46.781	
5,100.0	4,908.9	4,901.9	4,901.9	26.6	98.3	170.60	-313.0	3,706.5	5,019.7	4,911.0	108.72	46.172	
5,125.0	4,932.9	4,925.9	4,925.9	26.7	98.8	170.45	-313.0	3,706.5	5,026.3	4,917.1	109.21	46.025	
5,200.0	5,005.4	4,998.4	4,998.4	27.0	100.2	173.28	-313.0	3,706.5	5,045.6	4,934.4	111.20	45.374	
5,300.0	5,102.4	5,095.4	5,095.4	27.5	102.2	177.62	-313.0	3,706.5	5,069.7	4,955.8	113.85	44.528	
5,400.0	5,199.9	5,192.9	5,192.9	28.0	104.1	-177.26	-313.0	3,706.5	5,091.7	4,975.2	116.49	43.709	
5,412.0	5,211.7	5,204.7	5,204.7	28.1	104.4	-176.58	-313.0	3,706.5	5,094.2	4,977.4	116.81	43.613	
5,500.0	5,297.9	5,290.9	5,290.9	28.4	106.1	-173.93	-313.0	3,706.5	5,111.5	4,992.3	119.17	42.892	
5,581.0	5,377.7	5,370.7	5,370.7	28.7	107.7	-170.90	-313.0	3,706.5	5,125.7	5,004.3	121.31	42.254	
5,600.0	5,396.4	5,389.4	5,389.4	28.8	108.1	-172.11	-313.0	3,706.5	5,128.7	5,006.9	121.80	42.106	
5,700.0	5,495.3	5,488.3	5,488.3	29.1	110.1	179.94	-313.0	3,706.5	5,143.3	5,018.9	124.38	41.350	
5,800.0	5,594.6	5,587.6	5,587.6	29.4	112.1	168.15	-313.0	3,706.5	5,155.2	5,028.3	126.88	40.629	
5,900.0	5,694.1	5,687.1	5,687.1	29.6	114.1	150.69	-313.0	3,706.5	5,164.4	5,035.1	129.30	39.942	
5,917.0	5,711.1	5,704.1	5,704.1	29.7	114.4	147.11	-313.0	3,706.5	5,165.7	5,036.0	129.70	39.829	
6,000.0	5,793.7	5,786.7	5,786.7	29.8	116.1	147.15	-313.0	3,706.5	5,171.8	5,040.3	131.52	39.324	
6,067.0	5,860.5	5,853.5	5,853.5	30.0	117.4	147.18	-313.0	3,706.5	5,176.8	5,043.8	132.99	38.927	
6,100.0	5,893.4	5,886.4	5,886.4	30.0	118.1	147.23	-313.0	3,706.5	5,179.1	5,045.3	133.76	38.719	
6,200.0	5,993.2	5,986.2	5,986.2	30.2	120.1	147.31	-313.0	3,706.5	5,184.0	5,048.0	136.03	38.110	
6,300.0	6,093.2	6,086.2	6,086.2	30.3	122.1	147.35	-313.0	3,706.5	5,186.0	5,047.9	138.17	37.532	
6,318.8	6,111.9	6,104.9	6,104.9	30.3	122.5	95.39	-313.0	3,706.5	5,186.1	5,033.3	152.79	33.942	
6,400.0	6,193.2	6,186.2	6,186.2	30.4	124.1	95.39	-313.0	3,706.5	5,186.1	5,031.6	154.50	33.567	
6,444.4	6,237.6	6,230.6	6,230.6	30.4	125.0	95.39	-313.0	3,706.5	5,186.1	5,030.7	155.43	33.366	
6,450.0	6,243.2	6,236.2	6,236.2	30.4	125.1	5.39	-313.0	3,706.5	5,186.1	5,044.7	141.36	36.687	
6,475.0	6,268.1	6,261.1	6,261.1	30.4	125.6	5.40	-313.0	3,706.5	5,185.1	5,043.7	141.43	36.661	
6,500.0	6,293.0	6,286.0	6,286.0	30.4	126.1	5.43	-313.0	3,706.5	5,182.9	5,041.8	141.12	36.726	
6,525.0	6,317.8	6,310.8	6,310.8	30.4	126.6	5.48	-313.0	3,706.5	5,179.3	5,038.9	140.42	36.885	
6,550.0	6,342.3	6,335.3	6,335.3	30.4	127.1	5.54	-313.0	3,706.5	5,174.5	5,035.2	139.33	37.140	
6,575.0	6,366.5	6,359.5	6,359.5	30.3	127.6	5.62	-313.0	3,706.5	5,168.4	5,030.6	137.84	37.495	
6,600.0	6,390.4	6,383.4	6,383.4	30.2	128.1	5.72	-313.0	3,706.5	5,161.1	5,025.1	135.97	37.956	
6,625.0	6,413.9	6,406.9	6,406.9	30.2	128.6	5.84	-313.0	3,706.5	5,152.5	5,018.8	133.72	38.531	
6,650.0	6,436.9	6,429.9	6,429.9	30.1	129.0	5.98	-313.0	3,706.5	5,142.7	5,011.6	131.10	39.229	
6,675.0	6,459.3	6,452.3	6,452.3	30.0	129.5	6.15	-313.0	3,706.5	5,131.7	5,003.6	128.10	40.059	
6,700.0	6,481.1	6,474.1	6,474.1	29.9	129.9	6.34	-313.0	3,706.5	5,119.6	4,994.9	124.75	41.037	
6,725.0	6,502.3	6,495.3	6,495.3	29.7	130.3	6.57	-313.0	3,706.5	5,106.4	4,985.3	121.07	42.178	
6,750.0	6,522.7	6,515.7	6,515.7	29.6	130.7	6.83	-313.0	3,706.5	5,092.0	4,975.0	117.06	43.500	
6,775.0	6,542.4	6,535.4	6,535.4	29.5	131.1	7.14	-313.0	3,706.5	5,076.7	4,963.9	112.75	45.025	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,554.2	6,554.2	29.4	131.5	7.49	-313.0	3,706.5	5,060.3	4,952.1	108.18	46.778	
6,825.0	6,579.1	6,572.1	6,572.1	29.3	131.9	7.91	-313.0	3,706.5	5,042.9	4,939.6	103.37	48.786	
6,850.0	6,596.1	6,589.1	6,589.1	29.1	132.2	8.39	-313.0	3,706.5	5,024.7	4,926.3	98.38	51.075	
6,875.0	6,612.1	6,605.1	6,605.1	29.0	132.5	8.96	-313.0	3,706.5	5,005.6	4,912.3	93.27	53.669	
6,900.0	6,627.1	6,620.1	6,620.1	28.9	132.8	9.64	-313.0	3,706.5	4,985.7	4,897.6	88.12	56.578	
6,925.0	6,641.0	6,634.0	6,634.0	28.8	133.1	10.45	-313.0	3,706.5	4,965.0	4,882.0	83.05	59.784	
6,950.0	6,653.8	6,646.8	6,646.8	28.7	133.4	11.43	-313.0	3,706.5	4,943.7	4,865.4	78.22	63.204	
6,975.0	6,665.5	6,658.5	6,658.5	28.7	133.6	12.64	-313.0	3,706.5	4,921.7	4,847.8	73.86	66.632	
7,000.0	6,676.0	6,669.0	6,669.0	28.6	133.8	14.16	-313.0	3,706.5	4,899.1	4,828.7	70.34	69.647	
7,025.0	6,685.3	6,678.3	6,678.3	28.6	134.0	16.12	-313.0	3,706.5	4,876.0	4,807.8	68.20	71.493	
7,050.0	6,693.4	6,686.4	6,686.4	28.5	134.2	18.71	-313.0	3,706.5	4,852.5	4,784.2	68.29	71.059	
7,075.0	6,700.2	6,693.2	6,693.2	28.5	134.3	22.28	-313.0	3,706.5	4,828.5	4,756.7	71.83	67.220	
7,100.0	6,705.8	6,698.8	6,698.8	28.5	134.4	27.42	-313.0	3,706.5	4,804.3	4,723.7	80.53	59.656	
7,125.0	6,710.0	6,703.0	6,703.0	28.5	134.5	35.27	-313.0	3,706.5	4,779.8	4,683.2	96.56	49.501	
7,150.0	6,713.0	6,706.0	6,706.0	28.6	134.6	47.95	-313.0	3,706.5	4,755.1	4,633.3	121.82	39.035	
7,175.0	6,714.7	6,707.7	6,707.7	28.6	134.6	68.55	-313.0	3,706.5	4,730.3	4,578.4	151.84	31.154	
7,198.8	6,715.0	6,708.0	6,708.0	28.6	134.6	95.08	-313.0	3,706.5	4,706.6	4,544.0	162.56	28.953	
7,200.0	6,715.0	6,708.0	6,708.0	28.6	134.6	95.08	-313.0	3,706.5	4,705.4	4,542.9	162.56	28.945	
7,300.0	6,714.1	6,707.1	6,707.1	29.0	134.6	94.97	-313.0	3,706.5	4,606.0	4,443.0	162.97	28.262	
7,400.0	6,713.2	6,706.2	6,706.2	29.7	134.6	94.86	-313.0	3,706.5	4,506.5	4,342.9	163.65	27.538	
7,500.0	6,712.3	6,705.3	6,705.3	30.6	134.6	94.76	-313.0	3,706.5	4,407.2	4,242.6	164.56	26.781	
7,600.0	6,711.3	6,704.3	6,704.3	31.7	134.5	94.65	-313.0	3,706.5	4,307.8	4,142.1	165.70	25.997	
7,700.0	6,710.4	6,703.4	6,703.4	33.0	134.5	94.54	-313.0	3,706.5	4,208.4	4,041.4	167.04	25.194	
7,800.0	6,709.5	6,702.5	6,702.5	34.5	134.5	94.44	-313.0	3,706.5	4,109.1	3,940.6	168.55	24.379	
7,900.0	6,708.5	6,701.5	6,701.5	36.2	134.5	94.33	-313.0	3,706.5	4,009.9	3,839.6	170.22	23.557	
8,000.0	6,707.6	6,700.6	6,700.6	38.0	134.5	94.22	-313.0	3,706.5	3,910.6	3,738.6	172.03	22.733	
8,100.0	6,706.7	6,699.7	6,699.7	39.9	134.4	94.12	-313.0	3,706.5	3,811.4	3,637.5	173.95	21.912	
8,200.0	6,705.8	6,698.8	6,698.8	41.9	134.4	94.01	-313.0	3,706.5	3,712.3	3,536.3	175.96	21.097	
8,300.0	6,704.8	6,697.8	6,697.8	44.0	134.4	93.90	-313.0	3,706.5	3,613.2	3,435.1	178.07	20.291	
8,400.0	6,703.9	6,696.9	6,696.9	46.2	134.4	93.79	-313.0	3,706.5	3,514.1	3,333.9	180.25	19.496	
8,500.0	6,703.0	6,696.0	6,696.0	48.5	134.4	93.68	-313.0	3,706.5	3,415.1	3,232.6	182.50	18.713	
8,600.0	6,702.1	6,695.1	6,695.1	50.8	134.4	93.58	-313.0	3,706.5	3,316.2	3,131.4	184.80	17.945	
8,700.0	6,701.1	6,694.1	6,694.1	53.1	134.3	93.47	-313.0	3,706.5	3,217.3	3,030.1	187.15	17.191	
8,800.0	6,700.2	6,693.2	6,693.2	55.5	134.3	93.36	-313.0	3,706.5	3,118.5	2,928.9	189.54	16.453	
8,900.0	6,699.3	6,692.3	6,692.3	57.9	134.3	93.25	-313.0	3,706.5	3,019.8	2,827.8	191.97	15.731	
9,000.0	6,698.3	6,691.3	6,691.3	60.4	134.3	93.15	-313.0	3,706.5	2,921.1	2,726.7	194.43	15.024	
9,100.0	6,697.4	6,690.4	6,690.4	62.9	134.3	93.04	-313.0	3,706.5	2,822.6	2,625.7	196.92	14.334	
9,200.0	6,696.5	6,689.5	6,689.5	65.4	134.2	92.93	-313.0	3,706.5	2,724.1	2,524.7	199.43	13.659	
9,300.0	6,695.5	6,688.5	6,688.5	68.0	134.2	92.82	-313.0	3,706.5	2,625.8	2,423.8	201.97	13.001	
9,400.0	6,694.6	6,687.6	6,687.6	70.5	134.2	92.71	-313.0	3,706.5	2,527.6	2,323.1	204.53	12.358	
9,500.0	6,693.7	6,686.7	6,686.7	73.1	134.2	92.60	-313.0	3,706.5	2,429.6	2,222.5	207.11	11.731	
9,600.0	6,692.8	6,685.8	6,685.8	75.7	134.2	92.49	-313.0	3,706.5	2,331.7	2,122.0	209.70	11.119	
9,700.0	6,691.8	6,684.8	6,684.8	78.3	134.1	92.39	-313.0	3,706.5	2,234.0	2,021.7	212.31	10.523	
9,800.0	6,690.9	6,683.9	6,683.9	80.9	134.1	92.28	-313.0	3,706.5	2,136.5	1,921.6	214.93	9.941	
9,900.0	6,690.0	6,683.0	6,683.0	83.6	134.1	92.17	-313.0	3,706.5	2,039.3	1,821.7	217.56	9.374	
10,000.0	6,689.0	6,682.0	6,682.0	86.2	134.1	92.06	-313.0	3,706.5	1,942.3	1,722.1	220.20	8.821	
10,100.0	6,688.1	6,681.1	6,681.1	88.9	134.1	91.95	-313.0	3,706.5	1,845.7	1,622.9	222.85	8.282	
10,200.0	6,687.2	6,680.2	6,680.2	91.6	134.1	91.84	-313.0	3,706.5	1,749.5	1,524.0	225.51	7.758	
10,300.0	6,686.2	6,679.2	6,679.2	94.2	134.0	91.73	-313.0	3,706.5	1,653.7	1,425.5	228.18	7.247	
10,400.0	6,685.3	6,678.3	6,678.3	96.9	134.0	91.62	-313.0	3,706.5	1,558.4	1,327.5	230.85	6.751	
10,500.0	6,684.4	6,677.4	6,677.4	99.6	134.0	91.51	-313.0	3,706.5	1,463.7	1,230.2	233.53	6.268	
10,600.0	6,683.4	6,676.4	6,676.4	102.3	134.0	91.41	-313.0	3,706.5	1,369.8	1,133.6	236.22	5.799	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,675.5	6,675.5	105.0	134.0	91.30	-313.0	3,706.5	1,276.9	1,038.0	238.91	5.345	
10,800.0	6,681.6	6,674.6	6,674.6	107.7	133.9	91.19	-313.0	3,706.5	1,185.1	943.5	241.61	4.905	
10,900.0	6,680.6	6,673.6	6,673.6	110.4	133.9	91.08	-313.0	3,706.5	1,094.7	850.4	244.31	4.481	
11,000.0	6,679.7	6,672.7	6,672.7	113.1	133.9	90.97	-313.0	3,706.5	1,006.1	759.1	247.02	4.073	
11,100.0	6,678.8	6,671.8	6,671.8	115.9	133.9	90.86	-313.0	3,706.5	919.9	670.2	249.73	3.684	
11,200.0	6,677.8	6,670.8	6,670.8	118.6	133.9	90.75	-313.0	3,706.5	836.8	584.3	252.44	3.315	
11,300.0	6,676.9	6,669.9	6,669.9	121.3	133.8	90.64	-313.0	3,706.5	757.7	502.6	255.16	2.970	
11,400.0	6,676.0	6,669.0	6,669.0	124.1	133.8	90.53	-313.0	3,706.5	684.2	426.3	257.88	2.653	
11,500.0	6,675.0	6,668.0	6,668.0	126.8	133.8	90.42	-313.0	3,706.5	618.1	357.5	260.60	2.372	
11,600.0	6,674.1	6,667.1	6,667.1	129.5	133.8	90.31	-313.0	3,706.5	562.1	298.8	263.32	2.135	
11,700.0	6,673.1	6,666.1	6,666.1	132.3	133.8	90.20	-313.0	3,706.5	519.5	253.5	266.05	1.953	
11,800.0	6,672.2	6,665.2	6,665.2	135.0	133.7	90.09	-313.0	3,706.5	493.8	225.0	268.77	1.837	
11,880.3	6,671.5	6,664.5	6,664.5	137.2	133.7	90.00	-313.0	3,706.5	487.2	216.3	270.97	1.798	CC
11,900.0	6,671.3	6,664.3	6,664.3	137.8	133.7	89.98	-313.0	3,706.5	487.6	216.1	271.50	1.796	ES, SF
12,000.0	6,670.3	6,663.3	6,663.3	140.5	133.7	89.87	-313.0	3,706.5	501.7	227.5	274.23	1.829	
12,036.2	6,670.0	6,663.0	6,663.0	141.5	133.7	89.83	-313.0	3,706.5	511.6	236.3	275.22	1.859	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	143.29	-3,157.4	2,354.0	3,938.3				
100.0	100.0	91.0	91.0	0.1	0.1	132.69	-3,157.4	2,354.0	3,938.4	3,938.2	0.19	N/A	
200.0	200.0	184.7	184.7	0.2	0.2	132.70	-3,157.6	2,354.0	3,938.8	3,938.4	0.42	9,374.033	
261.0	261.0	241.5	241.5	0.3	0.3	132.70	-3,157.8	2,354.1	3,939.2	3,938.7	0.53	7,406.061	
300.0	300.0	277.8	277.8	0.4	0.3	-149.08	-3,157.8	2,354.3	3,939.7	3,939.0	0.64	6,123.171	
400.0	399.9	370.5	370.5	0.6	0.3	-134.54	-3,157.9	2,355.1	3,942.7	3,941.7	0.95	4,167.394	
500.0	499.7	464.7	464.7	0.8	0.4	-132.14	-3,157.9	2,356.0	3,948.2	3,947.0	1.25	3,167.611	
538.0	537.5	500.8	500.8	0.9	0.4	-131.68	-3,158.0	2,356.4	3,951.0	3,949.7	1.36	2,907.698	
600.0	599.1	563.0	563.0	1.1	0.5	-132.42	-3,158.1	2,357.1	3,956.4	3,954.8	1.60	2,478.415	
700.0	697.9	663.1	663.1	1.5	0.5	-133.13	-3,158.2	2,358.3	3,967.6	3,965.6	1.98	2,008.547	
800.0	796.0	760.8	760.8	1.8	0.6	-133.53	-3,158.2	2,359.4	3,981.9	3,979.5	2.35	1,696.046	
818.0	813.5	778.1	778.1	1.9	0.6	-133.58	-3,158.3	2,359.6	3,984.8	3,982.3	2.41	1,650.572	
900.0	893.1	858.5	858.5	2.3	0.6	-132.70	-3,158.3	2,360.6	3,999.1	3,996.2	2.84	1,406.773	
1,000.0	989.2	949.0	949.0	2.9	0.6	-131.84	-3,158.5	2,361.5	4,019.0	4,015.6	3.36	1,196.257	
1,100.0	1,083.9	1,036.3	1,036.3	3.5	0.7	-131.14	-3,158.9	2,362.4	4,041.8	4,037.9	3.88	1,042.882	
1,104.0	1,087.6	1,040.0	1,040.0	3.5	0.7	-131.12	-3,158.9	2,362.4	4,042.8	4,038.9	3.90	1,037.583	
1,200.0	1,177.9	1,132.0	1,132.0	4.1	0.7	-132.22	-3,159.4	2,363.3	4,066.3	4,061.8	4.42	919.199	
1,300.0	1,272.0	1,233.2	1,233.1	4.8	0.8	-133.39	-3,159.9	2,364.2	4,090.9	4,085.9	4.95	826.231	
1,391.0	1,357.8	1,319.4	1,319.4	5.3	0.8	-134.43	-3,160.2	2,364.9	4,113.4	4,107.9	5.43	757.150	
1,400.0	1,366.3	1,327.5	1,327.4	5.4	0.8	-134.30	-3,160.3	2,364.9	4,115.6	4,110.1	5.47	752.039	
1,458.0	1,421.2	1,379.6	1,379.5	5.7	0.8	-133.34	-3,160.6	2,365.3	4,129.4	4,123.7	5.73	720.609	
1,500.0	1,461.0	1,417.2	1,417.1	6.0	0.9	-133.69	-3,160.8	2,365.5	4,139.1	4,133.2	5.93	697.747	
1,600.0	1,556.1	1,506.7	1,506.7	6.6	0.9	-134.50	-3,161.3	2,366.3	4,162.4	4,156.0	6.41	649.240	
1,676.0	1,628.3	1,583.8	1,583.7	7.0	0.9	-135.15	-3,161.7	2,367.0	4,180.2	4,173.4	6.77	617.028	
1,700.0	1,651.1	1,607.2	1,607.1	7.2	0.9	-134.69	-3,161.9	2,367.2	4,185.8	4,178.9	6.89	607.435	
1,800.0	1,746.4	1,696.4	1,696.4	7.7	1.0	-132.67	-3,162.4	2,367.9	4,208.3	4,201.0	7.37	570.813	
1,900.0	1,841.8	1,784.9	1,784.8	8.3	1.0	-130.57	-3,163.2	2,368.6	4,229.9	4,222.1	7.85	538.576	
1,963.0	1,902.0	1,847.7	1,847.6	8.7	1.0	-129.23	-3,163.8	2,369.1	4,242.9	4,234.8	8.16	520.208	
2,000.0	1,937.4	1,886.3	1,886.2	8.9	1.0	-129.36	-3,164.2	2,369.3	4,250.4	4,242.1	8.33	509.995	
2,100.0	2,033.1	2,004.6	2,004.6	9.5	1.1	-129.74	-3,165.4	2,369.4	4,270.1	4,261.3	8.81	484.882	
2,200.0	2,129.0	2,112.8	2,112.7	10.0	1.1	-130.06	-3,166.4	2,368.9	4,289.0	4,279.8	9.27	462.653	
2,250.0	2,177.1	2,165.9	2,165.8	10.3	1.1	-130.22	-3,166.9	2,368.5	4,298.3	4,288.8	9.50	452.432	
2,300.0	2,225.1	2,219.2	2,219.0	10.6	1.1	-131.48	-3,167.3	2,368.2	4,307.6	4,297.8	9.73	442.574	
2,400.0	2,321.2	2,321.6	2,321.5	11.2	1.1	-133.93	-3,167.9	2,367.4	4,326.8	4,316.6	10.19	424.459	
2,500.0	2,417.0	2,412.8	2,412.7	11.7	1.1	-136.29	-3,168.4	2,366.8	4,347.3	4,336.6	10.65	408.103	
2,537.0	2,452.5	2,452.4	2,452.3	11.9	1.1	-137.16	-3,168.6	2,366.5	4,355.1	4,344.3	10.82	402.476	
2,600.0	2,512.8	2,516.4	2,516.3	12.3	1.2	-140.13	-3,168.8	2,366.1	4,369.0	4,357.9	11.10	393.602	
2,700.0	2,608.2	2,606.2	2,606.1	12.9	1.2	-144.58	-3,169.2	2,365.5	4,392.9	4,381.4	11.54	380.817	
2,800.0	2,703.3	2,707.0	2,706.8	13.5	1.2	-148.75	-3,169.5	2,365.0	4,419.1	4,407.1	11.96	369.504	
2,824.0	2,726.1	2,729.6	2,729.4	13.7	1.2	-149.70	-3,169.5	2,364.9	4,425.7	4,413.6	12.06	366.990	
2,900.0	2,798.2	2,801.2	2,801.1	14.1	1.2	-147.46	-3,169.7	2,364.6	4,446.1	4,433.7	12.38	359.223	
3,000.0	2,893.6	2,896.2	2,896.1	14.7	1.2	-144.25	-3,169.9	2,364.1	4,471.2	4,458.4	12.79	349.623	
3,100.0	2,989.4	2,995.5	2,995.4	15.3	1.2	-140.73	-3,170.0	2,363.6	4,494.1	4,480.9	13.19	340.783	
3,112.0	3,000.9	3,007.4	3,007.2	15.4	1.2	-140.28	-3,170.1	2,363.6	4,496.7	4,483.5	13.23	339.768	
3,200.0	3,085.5	3,093.3	3,093.2	15.9	1.2	-139.60	-3,170.1	2,363.2	4,515.4	4,501.8	13.58	332.621	
3,300.0	3,181.9	3,185.4	3,185.3	16.4	1.3	-138.76	-3,170.2	2,362.7	4,535.8	4,521.8	13.96	324.868	
3,400.0	3,278.4	3,287.7	3,287.6	16.9	1.3	-137.86	-3,170.3	2,362.3	4,555.3	4,541.0	14.34	317.630	
3,500.0	3,374.7	3,372.4	3,372.2	17.5	1.3	-137.98	-3,170.2	2,362.2	4,575.4	4,560.6	14.82	308.679	
3,600.0	3,470.3	3,459.9	3,459.7	18.1	1.3	-138.08	-3,169.9	2,362.6	4,597.8	4,582.5	15.31	300.249	
3,687.0	3,552.8	3,543.8	3,543.6	18.6	1.3	-138.18	-3,169.6	2,363.0	4,618.9	4,603.1	15.74	293.381	
3,700.0	3,565.1	3,557.1	3,557.0	18.7	1.3	-137.97	-3,169.5	2,363.1	4,622.1	4,606.3	15.81	292.361	
3,800.0	3,659.5	3,649.7	3,649.6	19.4	1.3	-136.33	-3,169.2	2,363.5	4,646.9	4,630.6	16.32	284.765	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,739.0	3,738.8	20.0	1.3	-134.72	-3,169.0	2,364.0	4,671.4	4,654.6	16.83	277.638	
3,974.0	3,823.6	3,800.0	3,799.9	20.5	1.3	-133.54	-3,168.8	2,364.2	4,689.3	4,672.1	17.20	272.628	
4,000.0	3,848.1	3,826.1	3,825.9	20.7	1.3	-133.90	-3,168.8	2,364.4	4,695.6	4,678.3	17.30	271.423	
4,100.0	3,942.9	3,900.0	3,899.9	21.3	1.3	-135.24	-3,169.1	2,364.7	4,719.1	4,701.4	17.69	266.757	
4,200.0	4,038.5	3,972.8	3,972.7	21.9	1.4	-136.70	-3,169.8	2,365.1	4,741.8	4,723.7	18.09	262.140	
4,263.0	4,099.0	4,025.7	4,025.5	22.3	1.4	-137.71	-3,170.5	2,365.5	4,755.7	4,737.3	18.34	259.320	
4,300.0	4,134.7	4,062.0	4,061.8	22.5	1.4	-138.90	-3,171.0	2,365.7	4,763.7	4,745.2	18.47	257.945	
4,400.0	4,231.2	4,153.4	4,153.2	23.0	1.4	-142.25	-3,172.3	2,366.3	4,785.5	4,766.7	18.82	254.338	
4,500.0	4,328.0	4,248.5	4,248.3	23.5	1.5	-145.81	-3,173.7	2,367.1	4,807.7	4,788.5	19.16	250.892	
4,549.0	4,375.5	4,299.6	4,299.4	23.8	1.5	-147.63	-3,174.4	2,367.4	4,818.6	4,799.2	19.33	249.245	
4,600.0	4,425.0	4,345.3	4,345.1	24.0	1.5	-147.88	-3,175.1	2,367.7	4,829.9	4,810.4	19.51	247.512	
4,700.0	4,521.9	4,437.3	4,437.1	24.5	1.5	-148.36	-3,176.7	2,368.3	4,852.5	4,832.6	19.87	244.220	
4,800.0	4,618.8	4,531.9	4,531.7	25.0	1.5	-148.84	-3,178.2	2,369.0	4,875.3	4,855.0	20.22	241.060	
4,837.0	4,654.7	4,565.7	4,565.5	25.2	1.5	-149.01	-3,178.8	2,369.3	4,883.8	4,863.4	20.36	239.924	
4,900.0	4,715.7	4,622.1	4,621.9	25.5	1.6	-149.51	-3,179.9	2,369.7	4,898.5	4,877.9	20.59	237.864	
5,000.0	4,812.4	4,709.0	4,708.7	26.0	1.6	-150.27	-3,181.6	2,370.3	4,922.6	4,901.7	20.97	234.732	
5,100.0	4,908.9	4,800.0	4,799.7	26.6	1.6	-150.99	-3,183.4	2,371.3	4,947.8	4,926.5	21.35	231.758	
5,125.0	4,932.9	4,816.8	4,816.5	26.7	1.6	-151.16	-3,183.7	2,371.5	4,954.3	4,932.8	21.44	231.044	
5,200.0	5,005.4	4,879.9	4,879.6	27.0	1.6	-148.64	-3,185.0	2,372.3	4,973.1	4,951.4	21.68	229.370	
5,300.0	5,102.4	4,973.7	4,973.4	27.5	1.7	-144.70	-3,187.0	2,373.6	4,995.9	4,973.9	21.99	227.231	
5,400.0	5,199.9	5,100.8	5,100.5	28.0	1.7	-139.99	-3,189.4	2,375.3	5,015.7	4,993.4	22.27	225.202	
5,412.0	5,211.7	5,115.1	5,114.7	28.1	1.7	-139.36	-3,189.6	2,375.5	5,017.9	4,995.6	22.31	224.965	
5,500.0	5,297.9	5,218.6	5,218.2	28.4	1.7	-137.01	-3,191.1	2,376.5	5,032.4	5,009.8	22.51	223.550	
5,581.0	5,377.7	5,307.7	5,307.3	28.7	1.8	-134.20	-3,192.1	2,377.2	5,043.8	5,021.1	22.69	222.319	
5,600.0	5,396.4	5,327.5	5,327.1	28.8	1.8	-135.44	-3,192.3	2,377.4	5,046.2	5,023.5	22.73	222.026	
5,700.0	5,495.3	5,429.7	5,429.3	29.1	1.8	-143.54	-3,193.3	2,378.1	5,058.6	5,035.6	22.92	220.659	
5,800.0	5,594.6	5,527.7	5,527.3	29.4	1.8	-155.48	-3,194.4	2,378.8	5,070.0	5,046.9	23.09	219.587	
5,900.0	5,694.1	5,624.2	5,623.7	29.6	1.9	-173.10	-3,195.5	2,379.4	5,080.6	5,057.4	23.22	218.785	
5,917.0	5,711.1	5,639.6	5,639.2	29.7	1.9	-176.71	-3,195.7	2,379.5	5,082.4	5,059.1	23.24	218.676	
6,000.0	5,793.7	5,718.6	5,718.1	29.8	1.9	-176.71	-3,196.6	2,380.2	5,090.8	5,067.4	23.39	217.650	
6,067.0	5,860.5	5,792.9	5,792.5	30.0	1.9	-176.71	-3,197.3	2,380.8	5,097.5	5,074.0	23.51	216.799	
6,100.0	5,893.4	5,827.1	5,826.7	30.0	1.9	-176.72	-3,197.7	2,381.1	5,100.6	5,077.1	23.55	216.619	
6,200.0	5,993.2	5,926.0	5,925.5	30.2	2.0	-176.73	-3,198.6	2,381.8	5,107.7	5,084.1	23.64	216.106	
6,300.0	6,093.2	6,020.0	6,019.5	30.3	2.0	-176.73	-3,199.6	2,382.6	5,111.4	5,087.7	23.71	215.613	
6,318.8	6,111.9	6,040.2	6,039.7	30.3	2.0	131.31	-3,199.8	2,382.8	5,111.7	5,083.6	28.16	181.543	
6,400.0	6,193.2	6,123.4	6,122.9	30.4	2.0	131.31	-3,200.6	2,383.5	5,112.7	5,084.5	28.25	180.987	
6,444.4	6,237.6	6,163.7	6,163.2	30.4	2.0	131.31	-3,200.9	2,383.9	5,113.3	5,085.0	28.30	180.687	
6,450.0	6,243.2	6,168.7	6,168.3	30.4	2.0	41.31	-3,201.0	2,383.9	5,113.4	5,089.5	23.89	214.000	
6,475.0	6,268.1	6,191.4	6,190.9	30.4	2.0	41.34	-3,201.2	2,384.1	5,113.0	5,089.2	23.85	214.405	
6,500.0	6,293.0	6,219.2	6,218.7	30.4	2.0	41.47	-3,201.5	2,384.4	5,111.7	5,087.8	23.83	214.499	
6,525.0	6,317.8	6,250.1	6,249.6	30.4	2.1	41.69	-3,201.8	2,384.7	5,109.3	5,085.5	23.85	214.266	
6,550.0	6,342.3	6,280.6	6,280.1	30.4	2.1	42.00	-3,202.1	2,384.9	5,106.0	5,082.1	23.89	213.720	
6,575.0	6,366.5	6,307.6	6,307.1	30.3	2.1	42.41	-3,202.3	2,385.1	5,101.7	5,077.7	23.96	212.898	
6,600.0	6,390.4	6,328.6	6,328.1	30.2	2.1	42.90	-3,202.5	2,385.2	5,096.4	5,072.3	24.06	211.848	
6,625.0	6,413.9	6,349.2	6,348.7	30.2	2.1	43.48	-3,202.8	2,385.3	5,090.2	5,066.0	24.18	210.537	
6,650.0	6,436.9	6,369.4	6,368.9	30.1	2.1	44.16	-3,203.0	2,385.5	5,083.1	5,058.8	24.32	208.973	
6,675.0	6,459.3	6,389.2	6,388.7	30.0	2.1	44.94	-3,203.2	2,385.6	5,075.2	5,050.7	24.50	207.160	
6,700.0	6,481.1	6,408.7	6,408.2	29.9	2.1	45.82	-3,203.4	2,385.8	5,066.4	5,041.7	24.70	205.101	
6,725.0	6,502.3	6,427.9	6,427.4	29.7	2.1	46.82	-3,203.6	2,385.9	5,056.8	5,031.8	24.93	202.800	
6,750.0	6,522.7	6,446.5	6,446.0	29.6	2.1	47.93	-3,203.8	2,386.1	5,046.3	5,021.1	25.20	200.273	
6,775.0	6,542.4	6,464.4	6,463.9	29.5	2.1	49.16	-3,204.0	2,386.2	5,035.2	5,009.7	25.49	197.536	
6,800.0	6,561.2	6,481.6	6,481.1	29.4	2.1	50.51	-3,204.2	2,386.4	5,023.3	4,997.4	25.81	194.613	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,500.0	6,499.5	29.3	2.1	52.01	-3,204.5	2,386.6	5,010.7	4,984.5	26.17	191.499	
6,850.0	6,596.1	6,512.7	6,512.2	29.1	2.1	53.61	-3,204.6	2,386.7	4,997.4	4,970.9	26.53	188.360	
6,875.0	6,612.1	6,526.4	6,525.9	29.0	2.1	55.35	-3,204.8	2,386.8	4,983.5	4,956.6	26.92	185.118	
6,900.0	6,627.1	6,539.2	6,538.7	28.9	2.1	57.24	-3,205.0	2,387.0	4,969.1	4,941.8	27.32	181.858	
6,925.0	6,641.0	6,551.2	6,550.7	28.8	2.1	59.27	-3,205.1	2,387.1	4,954.1	4,926.4	27.73	178.635	
6,950.0	6,653.8	6,562.2	6,561.7	28.7	2.2	61.44	-3,205.3	2,387.2	4,938.7	4,910.5	28.14	175.504	
6,975.0	6,665.5	6,572.3	6,571.8	28.7	2.2	63.75	-3,205.5	2,387.3	4,922.8	4,894.3	28.53	172.521	
7,000.0	6,676.0	6,581.4	6,580.9	28.6	2.2	66.20	-3,205.6	2,387.4	4,906.5	4,877.6	28.91	169.732	
7,025.0	6,685.3	6,589.5	6,588.9	28.6	2.2	68.77	-3,205.7	2,387.5	4,889.9	4,860.7	29.25	167.178	
7,050.0	6,693.4	6,600.0	6,599.5	28.5	2.2	71.51	-3,205.9	2,387.6	4,873.0	4,843.4	29.56	164.853	
7,075.0	6,700.2	6,600.0	6,599.5	28.5	2.2	74.22	-3,205.9	2,387.6	4,855.8	4,826.0	29.81	162.895	
7,100.0	6,705.8	6,600.0	6,599.5	28.5	2.2	77.02	-3,205.9	2,387.6	4,838.5	4,808.5	30.02	161.178	
7,125.0	6,710.0	6,600.0	6,599.5	28.5	2.2	79.90	-3,205.9	2,387.6	4,821.0	4,790.8	30.19	159.680	
7,150.0	6,713.0	6,600.0	6,599.5	28.6	2.2	82.83	-3,205.9	2,387.6	4,803.4	4,773.1	30.33	158.358	
7,175.0	6,714.7	6,600.0	6,599.5	28.6	2.2	85.81	-3,205.9	2,387.6	4,785.8	4,755.3	30.45	157.156	
7,198.8	6,715.0	6,600.0	6,599.5	28.6	2.2	88.65	-3,205.9	2,387.6	4,768.9	4,738.4	30.56	156.073	
7,200.0	6,715.0	6,600.0	6,599.5	28.6	2.2	88.65	-3,205.9	2,387.6	4,768.1	4,737.6	30.56	156.031	
7,300.0	6,714.1	6,600.0	6,599.5	29.0	2.2	88.65	-3,205.9	2,387.6	4,698.1	4,667.2	30.96	151.747	
7,400.0	6,713.2	6,600.0	6,599.5	29.7	2.2	88.65	-3,205.9	2,387.6	4,629.3	4,597.6	31.62	146.383	
7,500.0	6,712.3	6,600.0	6,599.5	30.6	2.2	88.65	-3,205.9	2,387.6	4,561.6	4,529.0	32.53	140.209	
7,600.0	6,711.3	6,600.0	6,599.5	31.7	2.2	88.65	-3,205.9	2,387.6	4,495.0	4,461.4	33.67	133.512	
7,700.0	6,710.4	6,600.0	6,599.5	33.0	2.2	88.65	-3,205.9	2,387.6	4,429.8	4,394.8	35.00	126.556	
7,800.0	6,709.5	6,600.0	6,599.5	34.5	2.2	88.65	-3,205.9	2,387.6	4,365.8	4,329.3	36.51	119.563	
7,900.0	6,708.5	6,600.0	6,599.5	36.2	2.2	88.65	-3,205.9	2,387.6	4,303.3	4,265.1	38.18	112.701	
8,000.0	6,707.6	6,600.0	6,599.5	38.0	2.2	88.65	-3,205.9	2,387.6	4,242.1	4,202.1	39.99	106.090	
8,100.0	6,706.7	6,600.0	6,599.5	39.9	2.2	88.65	-3,205.9	2,387.6	4,182.5	4,140.6	41.91	99.807	
8,200.0	6,705.8	6,600.0	6,599.5	41.9	2.2	88.65	-3,205.9	2,387.6	4,124.4	4,080.5	43.93	93.895	
8,300.0	6,704.8	6,600.0	6,599.5	44.0	2.2	88.65	-3,205.9	2,387.6	4,068.0	4,021.9	46.03	88.371	
8,400.0	6,703.9	6,600.0	6,599.5	46.2	2.2	88.65	-3,205.9	2,387.6	4,013.2	3,965.0	48.22	83.236	
8,500.0	6,703.0	6,600.0	6,599.5	48.5	2.2	88.66	-3,205.9	2,387.6	3,960.3	3,909.8	50.46	78.480	
8,600.0	6,702.1	6,600.0	6,599.5	50.8	2.2	88.66	-3,205.9	2,387.6	3,909.1	3,856.4	52.76	74.086	
8,700.0	6,701.1	6,600.0	6,599.5	53.1	2.2	88.66	-3,205.9	2,387.6	3,859.9	3,804.8	55.12	70.032	
8,800.0	6,700.2	6,600.0	6,599.5	55.5	2.2	88.66	-3,205.9	2,387.6	3,812.7	3,755.1	57.51	66.295	
8,900.0	6,699.3	6,600.0	6,599.5	57.9	2.2	88.66	-3,205.9	2,387.6	3,767.5	3,707.5	59.94	62.852	
9,000.0	6,698.3	6,600.0	6,599.5	60.4	2.2	88.66	-3,205.9	2,387.6	3,724.5	3,662.0	62.41	59.680	
9,100.0	6,697.4	6,600.0	6,599.5	62.9	2.2	88.66	-3,205.9	2,387.6	3,683.6	3,618.7	64.90	56.758	
9,200.0	6,696.5	6,600.0	6,599.5	65.4	2.2	88.66	-3,205.9	2,387.6	3,645.1	3,577.7	67.42	54.066	
9,300.0	6,695.5	6,600.0	6,599.5	68.0	2.2	88.66	-3,205.9	2,387.6	3,608.9	3,539.0	69.96	51.584	
9,400.0	6,694.6	6,600.0	6,599.5	70.5	2.2	88.66	-3,205.9	2,387.6	3,575.2	3,502.7	72.52	49.296	
9,500.0	6,693.7	6,600.0	6,599.5	73.1	2.2	88.66	-3,205.9	2,387.6	3,543.9	3,468.8	75.10	47.187	
9,600.0	6,692.8	6,600.0	6,599.5	75.7	2.2	88.66	-3,205.9	2,387.6	3,515.3	3,437.6	77.70	45.241	
9,700.0	6,691.8	6,600.0	6,599.5	78.3	2.2	88.66	-3,205.9	2,387.6	3,489.2	3,408.9	80.31	43.445	
9,800.0	6,690.9	6,615.2	6,614.6	80.9	2.2	88.91	-3,206.2	2,387.7	3,465.8	3,382.9	82.95	41.782	
9,900.0	6,690.0	6,615.3	6,614.8	83.6	2.2	88.92	-3,206.2	2,387.7	3,445.2	3,359.6	85.59	40.253	
10,000.0	6,689.0	6,615.5	6,615.0	86.2	2.2	88.92	-3,206.2	2,387.7	3,427.4	3,339.2	88.24	38.843	
10,100.0	6,688.1	6,615.6	6,615.1	88.9	2.2	88.92	-3,206.2	2,387.7	3,412.4	3,321.5	90.89	37.543	
10,200.0	6,687.2	6,615.8	6,615.3	91.6	2.2	88.92	-3,206.2	2,387.7	3,400.3	3,306.8	93.56	36.343	
10,300.0	6,686.2	6,616.0	6,615.4	94.2	2.2	88.93	-3,206.2	2,387.7	3,391.1	3,294.9	96.24	35.237	
10,400.0	6,685.3	6,616.1	6,615.6	96.9	2.2	88.93	-3,206.2	2,387.7	3,384.9	3,286.0	98.92	34.218	
10,500.0	6,684.4	6,616.3	6,615.8	99.6	2.2	88.93	-3,206.2	2,387.7	3,381.6	3,280.0	101.61	33.280	
10,562.1	6,683.8	6,616.4	6,615.9	101.3	2.2	88.93	-3,206.2	2,387.7	3,381.0	3,277.7	103.29	32.734	CC
10,600.0	6,683.4	6,616.5	6,615.9	102.3	2.2	88.93	-3,206.2	2,387.7	3,381.2	3,276.9	104.31	32.416	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,616.6	6,616.1	105.0	2.2	88.94	-3,206.2	2,387.7	3,383.8	3,276.8	107.01	31.621	ES
10,800.0	6,681.6	6,616.8	6,616.3	107.7	2.2	88.94	-3,206.2	2,387.7	3,389.4	3,279.6	109.72	30.891	
10,900.0	6,680.6	6,617.0	6,616.5	110.4	2.2	88.94	-3,206.2	2,387.8	3,397.8	3,285.4	112.43	30.221	
11,000.0	6,679.7	6,617.2	6,616.6	113.1	2.2	88.95	-3,206.2	2,387.8	3,409.2	3,294.1	115.15	29.607	
11,100.0	6,678.8	6,617.3	6,616.8	115.9	2.2	88.95	-3,206.2	2,387.8	3,423.5	3,305.6	117.87	29.044	
11,200.0	6,677.8	6,617.5	6,617.0	118.6	2.2	88.95	-3,206.2	2,387.8	3,440.6	3,320.0	120.60	28.530	
11,300.0	6,676.9	6,617.7	6,617.2	121.3	2.2	88.96	-3,206.2	2,387.8	3,460.6	3,337.2	123.33	28.060	
11,400.0	6,676.0	6,617.9	6,617.4	124.1	2.2	88.96	-3,206.2	2,387.8	3,483.3	3,357.2	126.06	27.631	
11,500.0	6,675.0	6,618.1	6,617.5	126.8	2.2	88.96	-3,206.2	2,387.8	3,508.7	3,379.9	128.80	27.241	
11,600.0	6,674.1	6,618.3	6,617.7	129.5	2.2	88.97	-3,206.2	2,387.8	3,536.7	3,405.2	131.54	26.887	
11,700.0	6,673.1	6,618.4	6,617.9	132.3	2.2	88.97	-3,206.2	2,387.8	3,567.3	3,433.1	134.28	26.566	
11,800.0	6,672.2	6,618.6	6,618.1	135.0	2.2	88.97	-3,206.2	2,387.8	3,600.5	3,463.5	137.03	26.275	
11,900.0	6,671.3	6,618.8	6,618.3	137.8	2.2	88.97	-3,206.3	2,387.8	3,636.1	3,496.3	139.78	26.013	
12,000.0	6,670.3	6,619.0	6,618.5	140.5	2.2	88.98	-3,206.3	2,387.8	3,674.1	3,531.5	142.53	25.777	
12,036.2	6,670.0	6,619.1	6,618.6	141.5	2.2	88.98	-3,206.3	2,387.8	3,688.4	3,544.9	143.53	25.698	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	2.2	2.2	0.0	0.0	-119.07	-3,096.0	-5,568.7	6,371.5				
100.0	100.0	111.0	111.0	0.1	0.1	-129.67	-3,096.0	-5,568.6	6,371.5	6,371.3	0.20	N/A	
104.8	104.8	115.3	115.3	0.1	0.1	-129.67	-3,096.0	-5,568.6	6,371.5	6,371.3	0.21	N/A	
200.0	200.0	200.0	200.0	0.2	0.2	-129.67	-3,095.9	-5,568.6	6,371.6	6,371.2	0.42	N/A	
261.0	261.0	259.9	259.9	0.3	0.2	-129.68	-3,095.9	-5,568.6	6,371.8	6,371.3	0.49	N/A	
300.0	300.0	296.5	296.5	0.4	0.2	-51.47	-3,096.0	-5,568.6	6,371.7	6,371.1	0.58	N/A	
400.0	399.9	389.3	389.3	0.6	0.3	-36.98	-3,096.3	-5,568.6	6,369.3	6,368.4	0.89	7,140.346	
500.0	499.7	494.8	494.8	0.8	0.4	-34.71	-3,096.9	-5,568.4	6,363.6	6,362.4	1.21	5,269.205	
538.0	537.5	534.9	534.9	0.9	0.4	-34.31	-3,097.2	-5,568.3	6,360.6	6,359.3	1.32	4,807.793	
600.0	599.1	599.9	599.9	1.1	0.4	-35.20	-3,097.6	-5,568.1	6,354.6	6,353.1	1.55	4,098.943	
700.0	697.9	702.9	702.9	1.5	0.5	-36.21	-3,098.4	-5,567.7	6,342.2	6,340.3	1.91	3,320.153	
800.0	796.0	828.0	828.0	1.8	0.5	-37.04	-3,099.5	-5,566.7	6,326.2	6,324.0	2.27	2,781.550	
818.0	813.5	849.7	849.6	1.9	0.6	-37.18	-3,099.7	-5,566.4	6,323.0	6,320.6	2.34	2,703.055	
900.0	893.1	949.1	949.1	2.3	0.6	-36.73	-3,100.5	-5,565.2	6,306.5	6,303.7	2.73	2,309.134	
1,000.0	989.2	1,051.6	1,051.6	2.9	0.6	-36.49	-3,101.1	-5,563.7	6,282.8	6,279.6	3.21	1,960.047	
1,100.0	1,083.9	1,149.7	1,149.7	3.5	0.7	-36.50	-3,101.7	-5,562.3	6,255.7	6,252.0	3.68	1,700.334	
1,104.0	1,087.6	1,154.1	1,154.1	3.5	0.7	-36.51	-3,101.8	-5,562.2	6,254.5	6,250.8	3.70	1,691.244	
1,200.0	1,177.9	1,256.9	1,256.8	4.1	0.7	-37.43	-3,102.2	-5,560.6	6,226.8	6,222.6	4.17	1,492.418	
1,300.0	1,272.0	1,354.1	1,354.0	4.8	0.8	-38.38	-3,102.2	-5,559.1	6,198.3	6,193.6	4.64	1,335.868	
1,391.0	1,357.8	1,441.6	1,441.5	5.3	0.8	-39.26	-3,102.2	-5,557.9	6,172.8	6,167.7	5.08	1,215.168	
1,400.0	1,366.3	1,450.7	1,450.6	5.4	0.8	-39.05	-3,102.1	-5,557.7	6,170.3	6,165.2	5.12	1,205.533	
1,458.0	1,421.2	1,508.5	1,508.4	5.7	0.8	-37.66	-3,102.1	-5,556.8	6,154.6	6,149.2	5.37	1,146.454	
1,500.0	1,461.0	1,546.7	1,546.6	6.0	0.8	-37.93	-3,102.0	-5,556.3	6,143.4	6,137.8	5.56	1,105.104	
1,600.0	1,556.1	1,626.5	1,626.4	6.6	0.9	-38.58	-3,101.9	-5,555.1	6,117.2	6,111.1	6.01	1,017.694	
1,676.0	1,628.3	1,675.2	1,675.1	7.0	0.9	-39.05	-3,102.0	-5,554.6	6,097.8	6,091.4	6.35	960.131	
1,700.0	1,651.1	1,700.0	1,699.9	7.2	0.9	-38.52	-3,102.0	-5,554.4	6,091.7	6,085.3	6.46	943.391	
1,800.0	1,746.4	1,766.9	1,766.8	7.7	0.9	-36.21	-3,102.1	-5,553.9	6,066.6	6,059.7	6.89	881.065	
1,900.0	1,841.8	1,843.8	1,843.7	8.3	1.0	-33.82	-3,102.3	-5,553.7	6,041.6	6,034.3	7.31	826.250	
1,963.0	1,902.0	1,900.0	1,899.9	8.7	1.0	-32.29	-3,102.5	-5,553.7	6,025.8	6,018.3	7.58	794.913	
2,000.0	1,937.4	1,919.7	1,919.6	8.9	1.0	-32.28	-3,102.6	-5,553.7	6,016.7	6,008.9	7.72	779.008	
2,100.0	2,033.1	2,000.0	1,999.9	9.5	1.0	-32.32	-3,102.9	-5,554.0	5,992.5	5,984.3	8.12	738.222	
2,200.0	2,129.0	2,066.7	2,066.5	10.0	1.0	-32.34	-3,103.2	-5,554.5	5,969.2	5,960.7	8.51	701.436	
2,250.0	2,177.1	2,100.0	2,099.9	10.3	1.0	-32.34	-3,103.3	-5,554.8	5,957.9	5,949.2	8.71	684.333	
2,300.0	2,225.1	2,136.0	2,135.9	10.6	1.0	-33.56	-3,103.5	-5,555.3	5,946.9	5,938.0	8.92	666.596	
2,400.0	2,321.2	2,200.0	2,199.9	11.2	1.0	-35.93	-3,103.8	-5,556.5	5,925.4	5,916.1	9.35	633.691	
2,500.0	2,417.0	2,288.5	2,288.3	11.7	1.0	-38.28	-3,104.1	-5,558.5	5,904.5	5,894.8	9.79	603.001	
2,537.0	2,452.5	2,322.7	2,322.5	11.9	1.0	-39.14	-3,104.1	-5,559.4	5,897.0	5,887.0	9.96	592.188	
2,600.0	2,512.8	2,384.6	2,384.4	12.3	1.0	-42.15	-3,104.0	-5,561.1	5,884.2	5,873.9	10.29	571.719	
2,700.0	2,608.2	2,488.8	2,488.5	12.9	1.1	-46.70	-3,103.6	-5,564.0	5,864.6	5,853.8	10.83	541.367	
2,800.0	2,703.3	2,595.8	2,595.5	13.5	1.1	-50.96	-3,102.7	-5,567.1	5,845.6	5,834.3	11.38	513.592	
2,824.0	2,726.1	2,618.5	2,618.2	13.7	1.1	-51.93	-3,102.5	-5,567.7	5,841.2	5,829.7	11.51	507.363	
2,900.0	2,798.2	2,688.6	2,688.2	14.1	1.1	-49.58	-3,101.8	-5,569.8	5,827.1	5,815.3	11.89	489.937	
3,000.0	2,893.6	2,810.1	2,809.7	14.7	1.1	-46.25	-3,100.1	-5,573.4	5,808.2	5,795.8	12.41	468.157	
3,100.0	2,989.4	2,911.2	2,910.8	15.3	1.1	-42.51	-3,098.2	-5,576.3	5,788.7	5,775.8	12.91	448.512	
3,112.0	3,000.9	2,922.7	2,922.3	15.4	1.1	-42.03	-3,097.9	-5,576.7	5,786.4	5,773.4	12.97	446.280	
3,200.0	3,085.5	3,007.2	3,006.6	15.9	1.1	-41.18	-3,096.2	-5,579.2	5,769.2	5,755.8	13.34	432.312	
3,300.0	3,181.9	3,102.8	3,102.3	16.4	1.1	-40.16	-3,094.8	-5,581.8	5,749.9	5,736.1	13.78	417.403	
3,400.0	3,278.4	3,203.5	3,202.9	16.9	1.1	-39.08	-3,094.2	-5,583.9	5,730.9	5,716.7	14.21	403.312	
3,500.0	3,374.7	3,302.3	3,301.7	17.5	1.2	-39.55	-3,093.9	-5,585.6	5,711.1	5,696.3	14.74	387.487	
3,600.0	3,470.3	3,410.3	3,409.7	18.1	1.2	-40.06	-3,093.6	-5,587.4	5,689.3	5,674.0	15.28	372.256	
3,687.0	3,552.8	3,527.2	3,526.6	18.6	1.2	-40.58	-3,093.1	-5,588.8	5,668.4	5,652.7	15.78	359.176	
3,700.0	3,565.1	3,540.0	3,539.4	18.7	1.2	-40.36	-3,093.1	-5,588.9	5,665.2	5,649.3	15.85	357.409	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,635.3	3,634.7	19.4	1.2	-38.69	-3,092.6	-5,589.8	5,639.7	5,623.3	16.38	344.350	
3,900.0	3,753.9	3,726.0	3,725.4	20.0	1.2	-37.04	-3,092.2	-5,590.6	5,613.5	5,596.6	16.90	332.157	
3,974.0	3,823.6	3,793.7	3,793.0	20.5	1.3	-35.83	-3,091.8	-5,591.3	5,593.6	5,576.3	17.29	323.585	
4,000.0	3,848.1	3,817.6	3,817.0	20.7	1.3	-36.04	-3,091.7	-5,591.6	5,586.6	5,569.2	17.40	321.043	
4,100.0	3,942.9	3,912.0	3,911.4	21.3	1.3	-36.91	-3,091.2	-5,592.6	5,561.1	5,543.3	17.84	311.671	
4,200.0	4,038.5	4,016.9	4,016.2	21.9	1.3	-37.95	-3,090.4	-5,593.8	5,537.8	5,519.5	18.29	302.837	
4,263.0	4,099.0	4,075.0	4,074.3	22.3	1.3	-38.68	-3,089.9	-5,594.5	5,524.2	5,505.7	18.56	297.662	
4,300.0	4,134.7	4,111.8	4,111.1	22.5	1.3	-39.80	-3,089.6	-5,595.0	5,516.7	5,497.9	18.72	294.635	
4,400.0	4,231.2	4,241.7	4,241.0	23.0	1.4	-43.01	-3,087.7	-5,596.7	5,497.0	5,477.9	19.18	286.561	
4,500.0	4,328.0	4,425.6	4,424.7	23.5	1.4	-46.49	-3,080.0	-5,600.1	5,478.0	5,458.3	19.67	278.564	
4,549.0	4,375.5	4,527.5	4,526.4	23.8	1.4	-48.27	-3,073.6	-5,602.0	5,468.6	5,448.7	19.90	274.751	
4,600.0	4,425.0	4,617.8	4,616.4	24.0	1.4	-48.57	-3,067.2	-5,603.0	5,458.6	5,438.4	20.16	270.703	
4,700.0	4,521.9	4,700.0	4,698.4	24.5	1.4	-49.04	-3,061.1	-5,603.9	5,438.7	5,418.1	20.63	263.680	
4,800.0	4,618.8	4,778.1	4,776.4	25.0	1.5	-49.50	-3,055.7	-5,604.6	5,419.2	5,398.1	21.08	257.039	
4,837.0	4,654.7	4,800.0	4,798.2	25.2	1.5	-49.66	-3,054.4	-5,604.9	5,412.1	5,390.9	21.25	254.694	
4,900.0	4,715.7	4,859.0	4,857.1	25.5	1.5	-50.24	-3,051.0	-5,605.4	5,400.2	5,378.6	21.57	250.335	
5,000.0	4,812.4	4,942.7	4,940.6	26.0	1.5	-51.11	-3,046.5	-5,606.1	5,381.2	5,359.1	22.08	243.678	
5,100.0	4,908.9	5,000.0	4,997.9	26.6	1.5	-51.91	-3,043.7	-5,606.6	5,362.3	5,339.7	22.58	237.433	
5,125.0	4,932.9	5,026.8	5,024.6	26.7	1.5	-52.13	-3,042.5	-5,606.8	5,357.6	5,334.9	22.72	235.845	
5,200.0	5,005.4	5,065.0	5,062.9	27.0	1.5	-49.39	-3,041.1	-5,607.2	5,344.0	5,321.0	22.98	232.513	
5,300.0	5,102.4	5,120.6	5,118.4	27.5	1.5	-45.15	-3,039.6	-5,608.0	5,326.7	5,303.4	23.34	228.210	
5,400.0	5,199.9	5,200.0	5,197.8	28.0	1.6	-40.12	-3,038.2	-5,609.1	5,310.4	5,286.7	23.71	223.985	
5,412.0	5,211.7	5,200.0	5,197.8	28.1	1.6	-39.44	-3,038.2	-5,609.1	5,308.5	5,284.8	23.75	223.528	
5,500.0	5,297.9	5,261.9	5,259.7	28.4	1.6	-36.74	-3,037.5	-5,610.1	5,295.3	5,271.3	23.99	220.767	
5,581.0	5,377.7	5,323.4	5,321.1	28.7	1.6	-33.67	-3,037.0	-5,611.2	5,284.3	5,260.2	24.18	218.519	
5,600.0	5,396.4	5,336.8	5,334.6	28.8	1.6	-34.84	-3,037.0	-5,611.4	5,282.0	5,257.8	24.22	218.045	
5,700.0	5,495.3	5,400.0	5,397.7	29.1	1.6	-42.63	-3,036.9	-5,612.6	5,271.9	5,247.5	24.43	215.808	
5,800.0	5,594.6	5,480.6	5,478.4	29.4	1.6	-54.35	-3,037.6	-5,614.1	5,265.9	5,241.2	24.62	213.881	
5,900.0	5,694.1	5,565.7	5,563.4	29.6	1.6	-71.81	-3,039.0	-5,615.6	5,263.7	5,238.9	24.80	212.252	
5,907.7	5,701.8	5,572.7	5,570.4	29.6	1.6	-73.42	-3,039.2	-5,615.7	5,263.7	5,238.9	24.81	212.138	
5,917.0	5,711.1	5,581.0	5,578.7	29.7	1.6	-75.40	-3,039.3	-5,615.8	5,263.7	5,238.9	24.83	212.002	
6,000.0	5,793.7	5,703.2	5,700.8	29.8	1.6	-75.53	-3,041.6	-5,617.6	5,263.8	5,238.7	25.07	209.965	
6,067.0	5,860.5	5,801.3	5,799.0	30.0	1.7	-75.62	-3,042.8	-5,618.5	5,263.3	5,238.1	25.26	208.334	
6,100.0	5,893.4	5,844.7	5,842.4	30.0	1.7	-75.65	-3,043.2	-5,618.8	5,263.0	5,237.7	25.34	207.660	
6,200.0	5,993.2	5,990.4	5,988.0	30.2	1.7	-75.74	-3,044.4	-5,619.0	5,262.2	5,236.7	25.55	205.938	
6,300.0	6,093.2	6,125.7	6,123.4	30.3	1.7	-75.77	-3,045.4	-5,617.7	5,261.3	5,235.6	25.70	204.734	
6,318.8	6,111.9	6,144.7	6,142.3	30.3	1.7	-127.73	-3,045.6	-5,617.5	5,261.2	5,235.1	26.10	201.567	
6,400.0	6,193.2	6,228.4	6,226.0	30.4	1.7	-127.75	-3,046.2	-5,616.4	5,260.8	5,234.6	26.19	200.865	
6,444.4	6,237.6	6,276.2	6,273.8	30.4	1.7	-127.75	-3,046.6	-5,615.8	5,260.5	5,234.3	26.24	200.476	ES
6,448.4	6,241.6	6,280.4	6,278.1	30.4	1.7	142.25	-3,046.6	-5,615.7	5,260.5	5,234.6	25.87	203.356	CC
6,450.0	6,243.2	6,282.2	6,279.8	30.4	1.7	142.25	-3,046.6	-5,615.7	5,260.5	5,234.6	25.87	203.376	
6,475.0	6,268.1	6,307.8	6,305.4	30.4	1.7	142.21	-3,046.8	-5,615.3	5,261.1	5,235.2	25.84	203.601	
6,500.0	6,293.0	6,331.0	6,328.6	30.4	1.7	142.10	-3,047.0	-5,615.0	5,262.7	5,236.8	25.84	203.669	
6,525.0	6,317.8	6,354.0	6,351.6	30.4	1.7	141.92	-3,047.2	-5,614.7	5,265.3	5,239.5	25.86	203.597	
6,550.0	6,342.3	6,376.9	6,374.5	30.4	1.7	141.67	-3,047.4	-5,614.4	5,269.0	5,243.1	25.90	203.412	
6,575.0	6,366.5	6,400.0	6,397.6	30.3	1.7	141.34	-3,047.5	-5,614.0	5,273.7	5,247.8	25.96	203.144	
6,600.0	6,390.4	6,425.9	6,423.5	30.2	1.7	140.95	-3,047.7	-5,613.7	5,279.4	5,253.4	26.03	202.815	
6,625.0	6,413.9	6,452.0	6,449.6	30.2	1.7	140.49	-3,047.9	-5,613.4	5,286.1	5,260.0	26.11	202.438	
6,650.0	6,436.9	6,477.6	6,475.1	30.1	1.7	139.94	-3,048.1	-5,613.0	5,293.8	5,267.6	26.20	202.018	
6,675.0	6,459.3	6,502.3	6,499.9	30.0	1.7	139.30	-3,048.3	-5,612.7	5,302.4	5,276.1	26.31	201.548	
6,700.0	6,481.1	6,524.5	6,522.1	29.9	1.7	138.57	-3,048.4	-5,612.4	5,311.9	5,285.5	26.42	201.018	
6,725.0	6,502.3	6,546.0	6,543.6	29.7	1.7	137.74	-3,048.5	-5,612.1	5,322.3	5,295.8	26.56	200.415	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,750.0	6,522.7	6,566.8	6,564.4	29.6	1.7	136.80	-3,048.6	-5,611.8	5,333.6	5,306.9	26.70	199.726	
6,775.0	6,542.4	6,586.8	6,584.4	29.5	1.7	135.75	-3,048.7	-5,611.5	5,345.8	5,318.9	26.87	198.935	
6,800.0	6,561.2	6,606.3	6,603.9	29.4	1.7	134.57	-3,048.8	-5,611.3	5,358.8	5,331.7	27.06	198.031	
6,825.0	6,579.1	6,625.8	6,623.4	29.3	1.7	133.27	-3,048.9	-5,611.0	5,372.6	5,345.3	27.27	197.006	
6,850.0	6,596.1	6,644.3	6,641.8	29.1	1.7	131.81	-3,049.0	-5,610.8	5,387.1	5,359.6	27.51	195.859	
6,875.0	6,612.1	6,661.7	6,659.3	29.0	1.7	130.20	-3,049.1	-5,610.6	5,402.4	5,374.6	27.76	194.597	
6,900.0	6,627.1	6,678.1	6,675.7	28.9	1.7	128.42	-3,049.1	-5,610.3	5,418.3	5,390.3	28.04	193.237	
6,925.0	6,641.0	6,693.4	6,690.9	28.8	1.7	126.45	-3,049.2	-5,610.1	5,434.9	5,406.6	28.33	191.811	
6,950.0	6,653.8	6,706.7	6,704.2	28.7	1.7	124.27	-3,049.3	-5,609.9	5,452.1	5,423.4	28.64	190.355	
6,975.0	6,665.5	6,718.2	6,715.8	28.7	1.7	121.86	-3,049.3	-5,609.7	5,469.8	5,440.9	28.95	188.926	
7,000.0	6,676.0	6,728.6	6,726.2	28.6	1.7	119.22	-3,049.4	-5,609.6	5,488.1	5,458.8	29.25	187.597	
7,025.0	6,685.3	6,737.9	6,735.4	28.6	1.7	116.34	-3,049.4	-5,609.5	5,506.8	5,477.3	29.54	186.445	
7,050.0	6,693.4	6,745.9	6,743.5	28.5	1.7	113.22	-3,049.5	-5,609.3	5,525.9	5,496.1	29.78	185.549	
7,075.0	6,700.2	6,752.8	6,750.4	28.5	1.7	109.85	-3,049.5	-5,609.2	5,545.4	5,515.4	29.98	184.988	
7,100.0	6,705.8	6,758.5	6,756.0	28.5	1.7	106.23	-3,049.5	-5,609.2	5,565.2	5,535.1	30.11	184.816	
7,125.0	6,710.0	6,762.9	6,760.5	28.5	1.7	102.40	-3,049.5	-5,609.1	5,585.3	5,555.1	30.18	185.045	
7,150.0	6,713.0	6,766.1	6,763.6	28.6	1.7	98.37	-3,049.6	-5,609.1	5,605.5	5,575.3	30.20	185.597	
7,175.0	6,714.7	6,768.0	6,765.6	28.6	1.7	94.19	-3,049.6	-5,609.0	5,625.9	5,595.7	30.20	186.272	
7,198.8	6,715.0	6,768.7	6,766.2	28.6	1.7	90.11	-3,049.6	-5,609.0	5,645.5	5,615.3	30.23	186.771	
7,200.0	6,715.0	6,768.7	6,766.2	28.6	1.7	90.11	-3,049.6	-5,609.0	5,646.4	5,616.2	30.23	186.784	
7,300.0	6,714.1	6,769.1	6,766.7	29.0	1.7	90.12	-3,049.6	-5,609.0	5,728.8	5,698.2	30.63	187.019	
7,400.0	6,713.2	6,769.5	6,767.1	29.7	1.7	90.13	-3,049.6	-5,609.0	5,811.7	5,780.4	31.30	185.695	
7,500.0	6,712.3	6,769.9	6,767.5	30.6	1.7	90.13	-3,049.6	-5,609.0	5,895.2	5,863.0	32.21	183.038	
7,600.0	6,711.3	6,770.3	6,767.9	31.7	1.7	90.14	-3,049.6	-5,609.0	5,979.2	5,945.8	33.34	179.328	
7,700.0	6,710.4	6,770.7	6,768.3	33.0	1.7	90.15	-3,049.6	-5,609.0	6,063.6	6,029.0	34.68	174.856	
7,800.0	6,709.5	6,771.1	6,768.7	34.5	1.7	90.16	-3,049.6	-5,609.0	6,148.6	6,112.4	36.19	169.891	
7,900.0	6,708.5	6,771.6	6,769.1	36.2	1.7	90.16	-3,049.6	-5,609.0	6,233.9	6,196.1	37.86	164.657	
8,000.0	6,707.6	6,772.0	6,769.5	38.0	1.7	90.17	-3,049.6	-5,609.0	6,319.7	6,280.1	39.66	159.332	
8,100.0	6,706.7	6,772.4	6,769.9	39.9	1.7	90.18	-3,049.6	-5,609.0	6,406.0	6,364.4	41.58	154.047	
8,200.0	6,705.8	6,772.8	6,770.3	41.9	1.7	90.18	-3,049.6	-5,609.0	6,492.6	6,449.0	43.61	148.894	
8,300.0	6,704.8	6,773.2	6,770.7	44.0	1.7	90.19	-3,049.6	-5,609.0	6,579.6	6,533.8	45.71	143.931	
8,400.0	6,703.9	6,773.6	6,771.1	46.2	1.7	90.20	-3,049.6	-5,609.0	6,666.9	6,619.0	47.90	139.196	
8,500.0	6,703.0	6,774.0	6,771.5	48.5	1.7	90.20	-3,049.6	-5,609.0	6,754.6	6,704.5	50.14	134.706	
8,600.0	6,702.1	6,774.4	6,771.9	50.8	1.7	90.21	-3,049.6	-5,609.0	6,842.7	6,790.2	52.45	130.468	
8,700.0	6,701.1	6,774.7	6,772.3	53.1	1.7	90.22	-3,049.6	-5,608.9	6,931.0	6,876.2	54.80	126.480	
8,800.0	6,700.2	6,775.1	6,772.7	55.5	1.7	90.22	-3,049.6	-5,608.9	7,019.7	6,962.5	57.19	122.734	
8,900.0	6,699.3	6,775.5	6,773.1	57.9	1.7	90.23	-3,049.6	-5,608.9	7,108.7	7,049.1	59.63	119.219	
9,000.0	6,698.3	6,775.9	6,773.5	60.4	1.7	90.24	-3,049.6	-5,608.9	7,197.9	7,135.9	62.09	115.923	
9,100.0	6,697.4	6,776.3	6,773.9	62.9	1.7	90.24	-3,049.6	-5,608.9	7,287.5	7,222.9	64.59	112.833	
9,200.0	6,696.5	6,776.7	6,774.3	65.4	1.7	90.25	-3,049.6	-5,608.9	7,377.3	7,310.2	67.11	109.934	
9,300.0	6,695.5	6,777.1	6,774.6	68.0	1.7	90.26	-3,049.6	-5,608.9	7,467.4	7,397.7	69.65	107.214	
9,400.0	6,694.6	6,777.5	6,775.0	70.5	1.7	90.26	-3,049.6	-5,608.9	7,557.7	7,485.5	72.21	104.659	
9,500.0	6,693.7	6,777.8	6,775.4	73.1	1.7	90.27	-3,049.6	-5,608.9	7,648.3	7,573.5	74.79	102.258	
9,600.0	6,692.8	6,778.2	6,775.8	75.7	1.7	90.28	-3,049.6	-5,608.9	7,739.1	7,661.7	77.39	99.999	
9,700.0	6,691.8	6,778.6	6,776.2	78.3	1.7	90.28	-3,049.6	-5,608.9	7,830.1	7,750.1	80.00	97.871	
9,800.0	6,690.9	6,779.0	6,776.5	80.9	1.7	90.29	-3,049.6	-5,608.9	7,921.3	7,838.7	82.63	95.866	
9,900.0	6,690.0	6,779.4	6,776.9	83.6	1.7	90.30	-3,049.6	-5,608.9	8,012.8	7,927.5	85.27	93.972	
10,000.0	6,689.0	6,779.7	6,777.3	86.2	1.7	90.30	-3,049.6	-5,608.9	8,104.4	8,016.5	87.92	92.184	
10,100.0	6,688.1	6,780.1	6,777.7	88.9	1.7	90.31	-3,049.6	-5,608.9	8,196.3	8,105.7	90.57	90.492	
10,200.0	6,687.2	6,780.5	6,778.0	91.6	1.7	90.31	-3,049.6	-5,608.9	8,288.3	8,195.1	93.24	88.890	
10,300.0	6,686.2	6,780.8	6,778.4	94.2	1.7	90.32	-3,049.6	-5,608.9	8,380.5	8,284.6	95.92	87.372	
10,400.0	6,685.3	6,781.2	6,778.8	96.9	1.7	90.33	-3,049.6	-5,608.9	8,472.9	8,374.3	98.60	85.931	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,781.6	6,779.1	99.6	1.7	90.33	-3,049.6	-5,608.9	8,565.5	8,464.2	101.29	84.562	
10,600.0	6,683.4	6,781.9	6,779.5	102.3	1.7	90.34	-3,049.6	-5,608.8	8,658.2	8,554.2	103.99	83.260	
10,700.0	6,682.5	6,782.3	6,779.9	105.0	1.7	90.34	-3,049.6	-5,608.8	8,751.1	8,644.4	106.69	82.022	
10,800.0	6,681.6	6,782.7	6,780.2	107.7	1.7	90.35	-3,049.6	-5,608.8	8,844.1	8,734.7	109.40	80.841	
10,900.0	6,680.6	6,783.0	6,780.6	110.4	1.7	90.36	-3,049.6	-5,608.8	8,937.3	8,825.2	112.11	79.716	
11,000.0	6,679.7	6,783.4	6,780.9	113.1	1.7	90.36	-3,049.6	-5,608.8	9,030.7	8,915.8	114.83	78.642	
11,100.0	6,678.8	6,783.7	6,781.3	115.9	1.7	90.37	-3,049.6	-5,608.8	9,124.1	9,006.6	117.56	77.615	
11,200.0	6,677.8	6,784.1	6,781.7	118.6	1.7	90.37	-3,049.6	-5,608.8	9,217.8	9,097.5	120.28	76.634	
11,300.0	6,676.9	6,784.5	6,782.0	121.3	1.7	90.38	-3,049.6	-5,608.8	9,311.5	9,188.5	123.01	75.695	
11,400.0	6,676.0	6,784.8	6,782.4	124.1	1.7	90.39	-3,049.6	-5,608.8	9,405.4	9,279.6	125.75	74.796	
11,500.0	6,675.0	6,785.2	6,782.7	126.8	1.7	90.39	-3,049.6	-5,608.8	9,499.4	9,370.9	128.49	73.934	
11,600.0	6,674.1	6,785.5	6,783.1	129.5	1.7	90.40	-3,049.6	-5,608.8	9,593.5	9,462.3	131.23	73.107	
11,700.0	6,673.1	6,785.9	6,783.4	132.3	1.7	90.40	-3,049.6	-5,608.8	9,687.8	9,553.8	133.97	72.313	
11,800.0	6,672.2	6,786.2	6,783.8	135.0	1.7	90.41	-3,049.6	-5,608.8	9,782.1	9,645.4	136.72	71.551	
11,900.0	6,671.3	6,786.6	6,784.1	137.8	1.7	90.42	-3,049.6	-5,608.8	9,876.6	9,737.1	139.47	70.818	
12,000.0	6,670.3	6,786.9	6,784.5	140.5	1.7	90.42	-3,049.6	-5,608.8	9,971.2	9,828.9	142.22	70.112	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-114.16	-1,890.4	-4,214.8	4,619.3				
100.0	100.0	101.0	101.0	0.1	1.2	-124.76	-1,890.4	-4,214.8	4,619.4	4,618.1	1.31	3,538.178	
200.0	200.0	201.0	201.0	0.2	3.5	-124.76	-1,890.4	-4,214.8	4,619.5	4,615.8	3.71	1,245.712	
261.0	261.0	262.0	262.0	0.3	4.8	-124.76	-1,890.4	-4,214.8	4,619.7	4,614.7	5.04	915.741	
300.0	300.0	301.0	301.0	0.4	5.6	-46.56	-1,890.4	-4,214.8	4,619.6	4,613.6	5.94	777.324	
400.0	399.9	400.9	400.9	0.6	7.6	-32.07	-1,890.4	-4,214.8	4,616.8	4,608.6	8.21	562.648	
500.0	499.7	500.7	500.7	0.8	9.6	-29.79	-1,890.4	-4,214.8	4,610.7	4,600.3	10.43	442.091	
538.0	537.5	538.5	538.5	0.9	10.4	-29.39	-1,890.4	-4,214.8	4,607.5	4,596.2	11.26	409.111	
600.0	599.1	600.1	600.1	1.1	11.7	-30.28	-1,890.4	-4,214.8	4,601.1	4,588.5	12.64	363.909	
700.0	697.9	698.9	698.9	1.5	13.6	-31.28	-1,890.4	-4,214.8	4,588.0	4,573.2	14.83	309.342	
800.0	796.0	797.0	797.0	1.8	15.6	-32.08	-1,890.4	-4,214.8	4,571.4	4,554.4	16.96	269.500	
818.0	813.5	814.5	814.5	1.9	16.0	-32.21	-1,890.4	-4,214.8	4,568.0	4,550.7	17.34	263.450	
900.0	893.1	894.1	894.1	2.3	17.6	-31.72	-1,890.4	-4,214.8	4,551.1	4,532.0	19.10	238.279	
1,000.0	989.2	990.2	990.2	2.9	19.5	-31.44	-1,890.4	-4,214.8	4,527.1	4,505.9	21.18	213.730	
1,100.0	1,083.9	1,084.9	1,084.9	3.5	21.4	-31.43	-1,890.4	-4,214.8	4,499.4	4,476.3	23.18	194.094	
1,104.0	1,087.6	1,088.6	1,088.6	3.5	21.5	-31.43	-1,890.4	-4,214.8	4,498.3	4,475.0	23.26	193.390	
1,200.0	1,177.9	1,178.9	1,178.9	4.1	23.3	-32.37	-1,890.4	-4,214.8	4,470.0	4,444.6	25.46	175.566	
1,300.0	1,272.0	1,273.0	1,273.0	4.8	25.2	-33.36	-1,890.4	-4,214.8	4,441.2	4,413.4	27.73	160.144	
1,391.0	1,357.8	1,358.8	1,358.8	5.3	26.9	-34.28	-1,890.4	-4,214.8	4,415.4	4,385.6	29.82	148.047	
1,400.0	1,366.3	1,367.3	1,367.3	5.4	27.1	-34.08	-1,890.4	-4,214.8	4,412.9	4,382.8	30.04	146.919	
1,458.0	1,421.2	1,422.2	1,422.2	5.7	28.2	-32.71	-1,890.4	-4,214.8	4,397.0	4,365.6	31.41	139.990	
1,500.0	1,461.0	1,462.0	1,462.0	6.0	29.0	-33.00	-1,890.4	-4,214.8	4,385.8	4,353.4	32.37	135.495	
1,600.0	1,556.1	1,557.1	1,557.1	6.6	30.9	-33.72	-1,890.4	-4,214.8	4,359.3	4,324.7	34.66	125.772	
1,676.0	1,628.3	1,629.3	1,629.3	7.0	32.4	-34.27	-1,890.4	-4,214.8	4,339.5	4,303.1	36.41	119.185	
1,700.0	1,651.1	1,652.1	1,652.1	7.2	32.8	-33.75	-1,890.4	-4,214.8	4,333.3	4,296.3	36.94	117.292	
1,800.0	1,746.4	1,747.4	1,747.4	7.7	34.8	-31.52	-1,890.4	-4,214.8	4,307.3	4,268.1	39.17	109.957	
1,900.0	1,841.8	1,842.8	1,842.8	8.3	36.7	-29.19	-1,890.4	-4,214.8	4,281.1	4,239.7	41.40	103.407	
1,963.0	1,902.0	1,903.0	1,903.0	8.7	37.9	-27.67	-1,890.4	-4,214.8	4,264.6	4,221.8	42.80	99.630	
2,000.0	1,937.4	1,938.4	1,938.4	8.9	38.6	-27.70	-1,890.4	-4,214.8	4,254.9	4,211.2	43.65	97.474	
2,100.0	2,033.1	2,034.1	2,034.1	9.5	40.5	-27.80	-1,890.4	-4,214.8	4,229.1	4,183.2	45.95	92.040	
2,200.0	2,129.0	2,130.0	2,130.0	10.0	42.5	-27.90	-1,890.4	-4,214.8	4,204.0	4,155.7	48.26	87.118	
2,250.0	2,177.1	2,178.1	2,178.1	10.3	43.4	-27.94	-1,890.4	-4,214.8	4,191.6	4,142.2	49.41	84.828	
2,300.0	2,225.1	2,226.1	2,226.1	10.6	44.4	-29.20	-1,890.4	-4,214.8	4,179.4	4,128.8	50.57	82.644	
2,400.0	2,321.2	2,322.2	2,322.2	11.2	46.3	-31.70	-1,890.4	-4,214.8	4,155.0	4,102.2	52.89	78.559	
2,500.0	2,417.0	2,418.0	2,418.0	11.7	48.3	-34.14	-1,890.4	-4,214.8	4,131.0	4,075.7	55.22	74.812	
2,537.0	2,452.5	2,453.5	2,453.5	11.9	49.0	-35.03	-1,890.4	-4,214.8	4,122.1	4,066.0	56.08	73.503	
2,600.0	2,512.8	2,513.8	2,513.8	12.3	50.2	-38.12	-1,890.4	-4,214.8	4,107.2	4,049.6	57.64	71.261	
2,700.0	2,608.2	2,609.2	2,609.2	12.9	52.1	-42.80	-1,890.4	-4,214.8	4,084.1	4,024.0	60.12	67.936	
2,800.0	2,703.3	2,704.3	2,704.3	13.5	54.0	-47.19	-1,890.4	-4,214.8	4,061.6	3,999.0	62.61	64.873	
2,824.0	2,726.1	2,727.1	2,727.1	13.7	54.5	-48.20	-1,890.4	-4,214.8	4,056.4	3,993.2	63.21	64.174	
2,900.0	2,798.2	2,799.2	2,799.2	14.1	55.9	-45.90	-1,890.4	-4,214.8	4,039.7	3,974.8	64.96	62.187	
3,000.0	2,893.6	2,894.6	2,894.6	14.7	57.8	-42.58	-1,890.4	-4,214.8	4,017.7	3,950.4	67.27	59.727	
3,100.0	2,989.4	2,990.4	2,990.4	15.3	59.8	-38.89	-1,890.4	-4,214.8	3,995.6	3,926.0	69.58	57.426	
3,112.0	3,000.9	3,001.9	3,001.9	15.4	60.0	-38.42	-1,890.4	-4,214.8	3,992.9	3,923.1	69.86	57.160	
3,200.0	3,085.5	3,086.5	3,086.5	15.9	61.7	-37.64	-1,890.4	-4,214.8	3,973.6	3,901.6	71.91	55.254	
3,300.0	3,181.9	3,182.9	3,182.9	16.4	63.6	-36.69	-1,890.4	-4,214.8	3,951.9	3,877.6	74.26	53.217	
3,400.0	3,278.4	3,279.4	3,279.4	16.9	65.6	-35.67	-1,890.4	-4,214.8	3,930.6	3,854.0	76.61	51.306	
3,500.0	3,374.7	3,375.7	3,375.7	17.5	67.5	-36.22	-1,890.4	-4,214.8	3,908.5	3,829.8	78.70	49.661	
3,600.0	3,470.3	3,471.3	3,471.3	18.1	69.4	-36.79	-1,890.4	-4,214.8	3,884.5	3,803.7	80.76	48.100	
3,687.0	3,552.8	3,553.8	3,553.8	18.6	71.1	-37.31	-1,890.4	-4,214.8	3,862.1	3,779.6	82.52	46.803	
3,700.0	3,565.1	3,566.1	3,566.1	18.7	71.3	-37.10	-1,890.4	-4,214.8	3,858.6	3,775.8	82.80	46.602	
3,800.0	3,659.5	3,660.5	3,660.5	19.4	73.2	-35.51	-1,890.4	-4,214.8	3,831.6	3,746.6	84.96	45.099	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,754.9	3,754.9	20.0	75.1	-33.93	-1,890.4	-4,214.8	3,803.8	3,716.7	87.10	43.671	
3,974.0	3,823.6	3,824.6	3,824.6	20.5	76.5	-32.78	-1,890.4	-4,214.8	3,782.8	3,694.1	88.68	42.658	
4,000.0	3,848.1	3,849.1	3,849.1	20.7	77.0	-33.01	-1,890.4	-4,214.8	3,775.4	3,686.1	89.40	42.232	
4,100.0	3,942.9	3,943.9	3,943.9	21.3	78.9	-33.98	-1,890.4	-4,214.8	3,748.5	3,656.3	92.16	40.672	
4,200.0	4,038.5	4,039.5	4,039.5	21.9	80.9	-35.09	-1,890.4	-4,214.8	3,723.8	3,628.9	94.92	39.230	
4,263.0	4,099.0	4,100.0	4,100.0	22.3	82.1	-35.89	-1,890.4	-4,214.8	3,709.5	3,612.8	96.66	38.378	
4,300.0	4,134.7	4,135.7	4,135.7	22.5	82.8	-37.04	-1,890.4	-4,214.8	3,701.4	3,603.8	97.64	37.911	
4,400.0	4,231.2	4,232.2	4,232.2	23.0	84.7	-40.30	-1,890.4	-4,214.8	3,680.8	3,580.5	100.28	36.706	
4,500.0	4,328.0	4,329.0	4,329.0	23.5	86.7	-43.78	-1,890.4	-4,214.8	3,661.8	3,558.9	102.91	35.583	
4,549.0	4,375.5	4,376.5	4,376.5	23.8	87.6	-45.57	-1,890.4	-4,214.8	3,653.2	3,549.0	104.20	35.060	
4,600.0	4,425.0	4,426.0	4,426.0	24.0	88.6	-45.89	-1,890.4	-4,214.8	3,644.3	3,538.9	105.42	34.569	
4,700.0	4,521.9	4,522.9	4,522.9	24.5	90.6	-46.53	-1,890.4	-4,214.8	3,627.1	3,519.3	107.83	33.638	
4,800.0	4,618.8	4,619.8	4,619.8	25.0	92.5	-47.16	-1,890.4	-4,214.8	3,610.0	3,499.8	110.24	32.748	
4,837.0	4,654.7	4,655.7	4,655.7	25.2	93.3	-47.39	-1,890.4	-4,214.8	3,603.7	3,492.6	111.13	32.428	
4,900.0	4,715.7	4,716.7	4,716.7	25.5	94.5	-48.05	-1,890.4	-4,214.8	3,593.0	3,480.3	112.64	31.896	
5,000.0	4,812.4	4,813.4	4,813.4	26.0	96.4	-49.08	-1,890.4	-4,214.8	3,575.7	3,460.7	115.05	31.079	
5,100.0	4,908.9	4,909.9	4,909.9	26.6	98.4	-50.09	-1,890.4	-4,214.8	3,558.3	3,440.9	117.46	30.293	
5,125.0	4,932.9	4,933.9	4,933.9	26.7	98.9	-50.34	-1,890.4	-4,214.8	3,553.9	3,435.9	118.07	30.101	
5,200.0	5,005.4	5,006.4	5,006.4	27.0	100.3	-47.77	-1,890.4	-4,214.8	3,540.9	3,421.1	119.83	29.548	
5,300.0	5,102.4	5,103.4	5,103.4	27.5	102.3	-43.73	-1,890.4	-4,214.8	3,523.8	3,401.6	122.20	28.838	
5,400.0	5,199.9	5,200.9	5,200.9	28.0	104.2	-38.82	-1,890.4	-4,214.8	3,507.1	3,382.6	124.56	28.156	
5,412.0	5,211.7	5,212.7	5,212.7	28.1	104.5	-38.16	-1,890.4	-4,214.8	3,505.2	3,380.3	124.84	28.076	
5,500.0	5,297.9	5,298.9	5,298.9	28.4	106.2	-35.55	-1,890.4	-4,214.8	3,491.2	3,364.2	127.03	27.484	
5,581.0	5,377.7	5,378.7	5,378.7	28.7	107.8	-32.54	-1,890.4	-4,214.8	3,479.3	3,350.3	129.01	26.970	
5,600.0	5,396.4	5,397.4	5,397.4	28.8	108.2	-33.73	-1,890.4	-4,214.8	3,476.7	3,347.2	129.53	26.840	
5,700.0	5,495.3	5,496.3	5,496.3	29.1	110.2	-41.62	-1,890.4	-4,214.8	3,465.0	3,332.8	132.22	26.206	
5,800.0	5,594.6	5,595.6	5,595.6	29.4	112.2	-53.40	-1,890.4	-4,214.8	3,456.8	3,322.1	134.77	25.651	
5,900.0	5,694.1	5,695.1	5,695.1	29.6	114.2	-70.92	-1,890.4	-4,214.8	3,452.1	3,315.0	137.15	25.170	
5,917.0	5,711.1	5,712.1	5,712.1	29.7	114.5	-74.53	-1,890.4	-4,214.8	3,451.7	3,314.1	137.54	25.096	
6,000.0	5,793.7	5,794.7	5,794.7	29.8	116.2	-74.64	-1,890.4	-4,214.8	3,449.7	3,310.3	139.42	24.744	
6,067.0	5,860.5	5,861.5	5,861.5	30.0	117.5	-74.74	-1,890.4	-4,214.8	3,448.2	3,307.2	140.94	24.466	
6,100.0	5,893.4	5,894.4	5,894.4	30.0	118.2	-74.76	-1,890.4	-4,214.8	3,447.5	3,305.8	141.68	24.333	
6,200.0	5,993.2	5,994.2	5,994.2	30.2	120.2	-74.83	-1,890.4	-4,214.8	3,445.9	3,302.0	143.88	23.950	
6,300.0	6,093.2	6,094.2	6,094.2	30.3	122.2	-74.86	-1,890.4	-4,214.8	3,445.3	3,299.3	146.03	23.593	
6,318.8	6,111.9	6,112.9	6,112.9	30.3	122.6	-126.82	-1,890.4	-4,214.8	3,445.3	3,298.0	147.22	23.402	
6,318.8	6,111.9	6,112.9	6,112.9	30.3	122.6	-126.82	-1,890.4	-4,214.8	3,445.3	3,298.0	147.22	23.402	CC
6,400.0	6,193.2	6,194.2	6,194.2	30.4	124.2	-126.82	-1,890.4	-4,214.8	3,445.3	3,296.3	148.94	23.132	
6,444.4	6,237.6	6,238.6	6,238.6	30.4	125.1	-126.82	-1,890.4	-4,214.8	3,445.3	3,295.4	149.88	22.986	ES, SF
6,450.0	6,243.2	6,244.2	6,244.2	30.4	125.2	143.18	-1,890.4	-4,214.8	3,445.3	3,296.1	149.18	23.094	
6,475.0	6,268.1	6,269.1	6,269.1	30.4	125.7	143.14	-1,890.4	-4,214.8	3,446.0	3,296.6	149.47	23.055	
6,500.0	6,293.0	6,294.0	6,294.0	30.4	126.2	143.03	-1,890.4	-4,214.8	3,447.9	3,298.3	149.52	23.060	
6,525.0	6,317.8	6,318.8	6,318.8	30.4	126.7	142.86	-1,890.4	-4,214.8	3,450.7	3,301.4	149.33	23.108	
6,550.0	6,342.3	6,343.3	6,343.3	30.4	127.2	142.62	-1,890.4	-4,214.8	3,454.6	3,305.7	148.92	23.197	
6,575.0	6,366.5	6,367.5	6,367.5	30.3	127.7	142.31	-1,890.4	-4,214.8	3,459.5	3,311.2	148.30	23.327	
6,600.0	6,390.4	6,391.4	6,391.4	30.2	128.2	141.94	-1,890.4	-4,214.8	3,465.4	3,317.9	147.49	23.496	
6,625.0	6,413.9	6,414.9	6,414.9	30.2	128.6	141.49	-1,890.4	-4,214.8	3,472.3	3,325.8	146.51	23.700	
6,650.0	6,436.9	6,437.9	6,437.9	30.1	129.1	140.96	-1,890.4	-4,214.8	3,480.2	3,334.9	145.39	23.937	
6,675.0	6,459.3	6,460.3	6,460.3	30.0	129.5	140.35	-1,890.4	-4,214.8	3,489.1	3,345.0	144.17	24.202	
6,700.0	6,481.1	6,482.1	6,482.1	29.9	130.0	139.65	-1,890.4	-4,214.8	3,499.0	3,356.1	142.88	24.489	
6,725.0	6,502.3	6,503.3	6,503.3	29.7	130.4	138.85	-1,890.4	-4,214.8	3,509.7	3,368.1	141.58	24.790	
6,750.0	6,522.7	6,523.7	6,523.7	29.6	130.8	137.94	-1,890.4	-4,214.8	3,521.4	3,381.0	140.32	25.096	
6,775.0	6,542.4	6,543.4	6,543.4	29.5	131.2	136.92	-1,890.4	-4,214.8	3,533.9	3,394.7	139.16	25.394	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,562.2	6,562.2	29.4	131.6	135.77	-1,890.4	-4,214.8	3,547.3	3,409.1	138.17	25.672	
6,825.0	6,579.1	6,580.1	6,580.1	29.3	132.0	134.49	-1,890.4	-4,214.8	3,561.4	3,424.0	137.43	25.914	
6,850.0	6,596.1	6,597.1	6,597.1	29.1	132.3	133.05	-1,890.4	-4,214.8	3,576.4	3,439.4	137.00	26.104	
6,875.0	6,612.1	6,613.1	6,613.1	29.0	132.6	131.45	-1,890.4	-4,214.8	3,592.1	3,455.1	136.97	26.226	
6,900.0	6,627.1	6,628.1	6,628.1	28.9	132.9	129.66	-1,890.4	-4,214.8	3,608.5	3,471.1	137.38	26.266	
6,925.0	6,641.0	6,642.0	6,642.0	28.8	133.2	127.67	-1,890.4	-4,214.8	3,625.5	3,487.2	138.30	26.215	
6,950.0	6,653.8	6,654.8	6,654.8	28.7	133.5	125.46	-1,890.4	-4,214.8	3,643.2	3,503.4	139.75	26.070	
6,975.0	6,665.5	6,666.5	6,666.5	28.7	133.7	123.01	-1,890.4	-4,214.8	3,661.4	3,519.7	141.73	25.835	
7,000.0	6,676.0	6,677.0	6,677.0	28.6	133.9	120.30	-1,890.4	-4,214.8	3,680.2	3,536.0	144.20	25.522	
7,025.0	6,685.3	6,686.3	6,686.3	28.6	134.1	117.32	-1,890.4	-4,214.8	3,699.4	3,552.3	147.08	25.153	
7,050.0	6,693.4	6,694.4	6,694.4	28.5	134.3	114.05	-1,890.4	-4,214.8	3,719.1	3,568.8	150.23	24.755	
7,075.0	6,700.2	6,701.2	6,701.2	28.5	134.4	110.49	-1,890.4	-4,214.8	3,739.1	3,585.6	153.49	24.360	
7,100.0	6,705.8	6,706.8	6,706.8	28.5	134.5	106.65	-1,890.4	-4,214.8	3,759.4	3,602.8	156.63	24.002	
7,125.0	6,710.0	6,711.0	6,711.0	28.5	134.6	102.53	-1,890.4	-4,214.8	3,780.0	3,620.6	159.40	23.714	
7,150.0	6,713.0	6,714.0	6,714.0	28.6	134.7	98.17	-1,890.4	-4,214.8	3,800.9	3,639.3	161.56	23.526	
7,175.0	6,714.7	6,715.7	6,715.7	28.6	134.7	93.63	-1,890.4	-4,214.8	3,821.8	3,658.9	162.88	23.464	
7,198.8	6,715.0	6,716.0	6,716.0	28.6	134.7	89.17	-1,890.4	-4,214.8	3,841.9	3,678.7	163.21	23.540	
7,200.0	6,715.0	6,716.0	6,716.0	28.6	134.7	89.17	-1,890.4	-4,214.8	3,842.9	3,679.7	163.21	23.546	
7,300.0	6,714.1	6,715.1	6,715.1	29.0	134.7	89.14	-1,890.4	-4,214.8	3,927.6	3,764.0	163.59	24.009	
7,400.0	6,713.2	6,714.2	6,714.2	29.7	134.7	89.12	-1,890.4	-4,214.8	4,013.0	3,848.8	164.23	24.435	
7,500.0	6,712.3	6,713.3	6,713.3	30.6	134.6	89.09	-1,890.4	-4,214.8	4,099.1	3,933.9	165.12	24.824	
7,600.0	6,711.3	6,712.3	6,712.3	31.7	134.6	89.06	-1,890.4	-4,214.8	4,185.8	4,019.5	166.24	25.179	
7,700.0	6,710.4	6,711.4	6,711.4	33.0	134.6	89.04	-1,890.4	-4,214.8	4,273.0	4,105.5	167.55	25.502	
7,800.0	6,709.5	6,710.5	6,710.5	34.5	134.6	89.01	-1,890.4	-4,214.8	4,360.8	4,191.8	169.05	25.797	
7,900.0	6,708.5	6,709.5	6,709.5	36.2	134.6	88.99	-1,890.4	-4,214.8	4,449.2	4,278.5	170.69	26.065	
8,000.0	6,707.6	6,708.6	6,708.6	38.0	134.5	88.96	-1,890.4	-4,214.8	4,538.0	4,365.5	172.48	26.311	
8,100.0	6,706.7	6,707.7	6,707.7	39.9	134.5	88.93	-1,890.4	-4,214.8	4,627.3	4,452.9	174.38	26.536	
8,200.0	6,705.8	6,706.8	6,706.8	41.9	134.5	88.91	-1,890.4	-4,214.8	4,717.0	4,540.6	176.38	26.744	
8,300.0	6,704.8	6,705.8	6,705.8	44.0	134.5	88.88	-1,890.4	-4,214.8	4,807.1	4,628.6	178.46	26.936	
8,400.0	6,703.9	6,704.9	6,704.9	46.2	134.5	88.86	-1,890.4	-4,214.8	4,897.6	4,716.9	180.63	27.114	
8,500.0	6,703.0	6,704.0	6,704.0	48.5	134.4	88.83	-1,890.4	-4,214.8	4,988.4	4,805.6	182.85	27.281	
8,600.0	6,702.1	6,703.1	6,703.1	50.8	134.4	88.80	-1,890.4	-4,214.8	5,079.6	4,894.5	185.13	27.437	
8,700.0	6,701.1	6,702.1	6,702.1	53.1	134.4	88.78	-1,890.4	-4,214.8	5,171.1	4,983.7	187.46	27.585	
8,800.0	6,700.2	6,701.2	6,701.2	55.5	134.4	88.75	-1,890.4	-4,214.8	5,263.0	5,073.1	189.84	27.723	
8,900.0	6,699.3	6,700.3	6,700.3	57.9	134.4	88.73	-1,890.4	-4,214.8	5,355.1	5,162.8	192.25	27.855	
9,000.0	6,698.3	6,699.3	6,699.3	60.4	134.4	88.70	-1,890.4	-4,214.8	5,447.5	5,252.8	194.69	27.980	
9,100.0	6,697.4	6,698.4	6,698.4	62.9	134.3	88.67	-1,890.4	-4,214.8	5,540.2	5,343.0	197.17	28.099	
9,200.0	6,696.5	6,697.5	6,697.5	65.4	134.3	88.65	-1,890.4	-4,214.8	5,633.1	5,433.4	199.66	28.213	
9,300.0	6,695.5	6,696.5	6,696.5	68.0	134.3	88.62	-1,890.4	-4,214.8	5,726.2	5,524.0	202.19	28.322	
9,400.0	6,694.6	6,695.6	6,695.6	70.5	134.3	88.60	-1,890.4	-4,214.8	5,819.6	5,614.9	204.73	28.426	
9,500.0	6,693.7	6,694.7	6,694.7	73.1	134.3	88.57	-1,890.4	-4,214.8	5,913.2	5,705.9	207.29	28.527	
9,600.0	6,692.8	6,693.8	6,693.8	75.7	134.2	88.54	-1,890.4	-4,214.8	6,007.0	5,797.1	209.86	28.624	
9,700.0	6,691.8	6,692.8	6,692.8	78.3	134.2	88.52	-1,890.4	-4,214.8	6,101.0	5,888.6	212.45	28.717	
9,800.0	6,690.9	6,691.9	6,691.9	80.9	134.2	88.49	-1,890.4	-4,214.8	6,195.2	5,980.1	215.05	28.808	
9,900.0	6,690.0	6,691.0	6,691.0	83.6	134.2	88.46	-1,890.4	-4,214.8	6,289.6	6,071.9	217.67	28.895	
10,000.0	6,689.0	6,690.0	6,690.0	86.2	134.2	88.44	-1,890.4	-4,214.8	6,384.1	6,163.8	220.30	28.980	
10,100.0	6,688.1	6,689.1	6,689.1	88.9	134.1	88.41	-1,890.4	-4,214.8	6,478.8	6,255.9	222.93	29.062	
10,200.0	6,687.2	6,688.2	6,688.2	91.6	134.1	88.39	-1,890.4	-4,214.8	6,573.7	6,348.1	225.58	29.142	
10,300.0	6,686.2	6,687.2	6,687.2	94.2	134.1	88.36	-1,890.4	-4,214.8	6,668.7	6,440.4	228.23	29.219	
10,400.0	6,685.3	6,686.3	6,686.3	96.9	134.1	88.33	-1,890.4	-4,214.8	6,763.8	6,532.9	230.89	29.295	
10,500.0	6,684.4	6,685.4	6,685.4	99.6	134.1	88.31	-1,890.4	-4,214.8	6,859.1	6,625.6	233.56	29.368	
10,600.0	6,683.4	6,684.4	6,684.4	102.3	134.1	88.28	-1,890.4	-4,214.8	6,954.5	6,718.3	236.23	29.440	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,683.5	6,683.5	105.0	134.0	88.25	-1,890.4	-4,214.8	7,050.1	6,811.2	238.91	29.509	
10,800.0	6,681.6	6,682.6	6,682.6	107.7	134.0	88.23	-1,890.4	-4,214.8	7,145.8	6,904.2	241.59	29.577	
10,900.0	6,680.6	6,681.6	6,681.6	110.4	134.0	88.20	-1,890.4	-4,214.8	7,241.6	6,997.3	244.28	29.644	
11,000.0	6,679.7	6,680.7	6,680.7	113.1	134.0	88.17	-1,890.4	-4,214.8	7,337.5	7,090.5	246.98	29.709	
11,100.0	6,678.8	6,679.8	6,679.8	115.9	134.0	88.15	-1,890.4	-4,214.8	7,433.5	7,183.8	249.68	29.772	
11,200.0	6,677.8	6,678.8	6,678.8	118.6	133.9	88.12	-1,890.4	-4,214.8	7,529.6	7,277.2	252.38	29.834	
11,300.0	6,676.9	6,677.9	6,677.9	121.3	133.9	88.10	-1,890.4	-4,214.8	7,625.8	7,370.7	255.09	29.895	
11,400.0	6,676.0	6,677.0	6,677.0	124.1	133.9	88.07	-1,890.4	-4,214.8	7,722.1	7,464.3	257.80	29.954	
11,500.0	6,675.0	6,676.0	6,676.0	126.8	133.9	88.04	-1,890.4	-4,214.8	7,818.5	7,558.0	260.51	30.012	
11,600.0	6,674.1	6,675.1	6,675.1	129.5	133.9	88.02	-1,890.4	-4,214.8	7,915.0	7,651.8	263.23	30.069	
11,700.0	6,673.1	6,674.1	6,674.1	132.3	133.8	87.99	-1,890.4	-4,214.8	8,011.6	7,745.6	265.94	30.125	
11,800.0	6,672.2	6,673.2	6,673.2	135.0	133.8	87.96	-1,890.4	-4,214.8	8,108.2	7,839.6	268.67	30.180	
11,900.0	6,671.3	6,672.3	6,672.3	137.8	133.8	87.94	-1,890.4	-4,214.8	8,205.0	7,933.6	271.39	30.233	
12,000.0	6,670.3	6,671.3	6,671.3	140.5	133.8	87.91	-1,890.4	-4,214.8	8,301.8	8,027.7	274.12	30.286	
12,036.2	6,670.0	6,671.0	6,671.0	141.5	133.8	87.90	-1,890.4	-4,214.8	8,336.9	8,061.8	275.10	30.304	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-175.37	-3,034.7	-245.7	3,044.6				
100.0	100.0	85.4	85.4	0.1	0.1	174.03	-3,034.9	-245.9	3,045.0	3,044.8	0.18	N/A	
200.0	200.0	186.3	186.2	0.2	0.2	174.05	-3,035.3	-246.7	3,045.8	3,045.4	0.42	7,198.120	
261.0	261.0	250.2	250.2	0.3	0.3	174.06	-3,035.5	-247.3	3,046.3	3,045.8	0.55	5,529.015	
300.0	300.0	291.1	291.1	0.4	0.3	-107.72	-3,035.6	-247.7	3,046.6	3,045.9	0.67	4,520.809	
400.0	399.9	383.7	383.7	0.6	0.4	-93.21	-3,035.9	-248.8	3,047.4	3,046.4	0.97	3,156.444	
500.0	499.7	494.7	494.7	0.8	0.4	-90.94	-3,036.3	-249.8	3,048.0	3,046.8	1.26	2,421.988	
538.0	537.5	532.5	532.5	0.9	0.5	-90.55	-3,036.3	-250.0	3,048.1	3,046.8	1.36	2,233.242	
600.0	599.1	592.6	592.6	1.1	0.5	-91.42	-3,036.4	-250.3	3,048.4	3,046.8	1.61	1,894.533	
700.0	697.9	690.5	690.5	1.5	0.6	-92.40	-3,036.6	-250.7	3,049.1	3,047.1	2.00	1,524.115	
800.0	796.0	794.6	794.6	1.8	0.6	-93.19	-3,036.8	-251.1	3,050.3	3,047.9	2.39	1,277.556	
818.0	813.5	812.1	812.0	1.9	0.6	-93.31	-3,036.8	-251.2	3,050.5	3,048.0	2.46	1,241.751	
900.0	893.1	888.8	888.8	2.3	0.6	-92.81	-3,036.8	-251.5	3,051.7	3,048.7	2.95	1,035.810	
1,000.0	989.2	982.6	982.6	2.9	0.7	-92.52	-3,037.0	-251.9	3,053.2	3,049.6	3.54	861.776	
1,100.0	1,083.9	1,085.2	1,085.1	3.5	0.7	-92.54	-3,037.1	-252.1	3,054.8	3,050.6	4.13	739.260	
1,104.0	1,087.6	1,089.3	1,089.3	3.5	0.7	-92.55	-3,037.1	-252.2	3,054.8	3,050.7	4.16	735.095	
1,200.0	1,177.9	1,178.7	1,178.7	4.1	0.8	-93.80	-3,037.0	-252.4	3,056.7	3,051.9	4.80	636.826	
1,300.0	1,272.0	1,270.9	1,270.9	4.8	0.8	-95.11	-3,037.0	-252.7	3,059.5	3,054.0	5.47	559.335	
1,391.0	1,357.8	1,360.8	1,360.7	5.3	0.8	-96.34	-3,037.0	-252.7	3,062.7	3,056.7	6.06	505.177	
1,400.0	1,366.3	1,369.9	1,369.9	5.4	0.8	-96.22	-3,037.0	-252.7	3,063.1	3,056.9	6.11	500.947	
1,458.0	1,421.2	1,426.7	1,426.7	5.7	0.8	-95.36	-3,036.9	-252.5	3,065.0	3,058.5	6.46	474.783	
1,500.0	1,461.0	1,466.1	1,466.0	6.0	0.8	-95.79	-3,036.8	-252.5	3,066.2	3,059.5	6.71	457.042	
1,600.0	1,556.1	1,558.2	1,558.2	6.6	0.8	-96.81	-3,036.7	-252.3	3,069.7	3,062.4	7.31	419.970	
1,676.0	1,628.3	1,626.7	1,626.7	7.0	0.8	-97.58	-3,036.7	-252.1	3,072.8	3,065.0	7.76	395.725	
1,700.0	1,651.1	1,648.0	1,647.9	7.2	0.8	-97.18	-3,036.7	-252.0	3,073.8	3,065.9	7.91	388.639	
1,800.0	1,746.4	1,740.7	1,740.6	7.7	0.9	-95.49	-3,036.9	-251.7	3,077.5	3,069.0	8.51	361.585	
1,900.0	1,841.8	1,836.9	1,836.9	8.3	0.9	-93.71	-3,037.0	-251.5	3,080.2	3,071.1	9.11	338.099	
1,963.0	1,902.0	1,895.1	1,895.1	8.7	0.9	-92.53	-3,037.1	-251.5	3,081.4	3,071.9	9.48	324.933	
2,000.0	1,937.4	1,929.2	1,929.2	8.9	0.9	-92.71	-3,037.2	-251.6	3,082.0	3,072.3	9.70	317.776	
2,100.0	2,033.1	2,023.7	2,023.7	9.5	0.9	-93.19	-3,037.5	-251.7	3,083.9	3,073.6	10.28	299.971	
2,200.0	2,129.0	2,125.3	2,125.3	10.0	1.0	-93.69	-3,037.7	-252.0	3,085.9	3,075.0	10.86	284.201	
2,250.0	2,177.1	2,174.6	2,174.6	10.3	1.0	-93.92	-3,037.8	-252.2	3,086.9	3,075.7	11.15	276.928	
2,300.0	2,225.1	2,223.1	2,223.1	10.6	1.0	-95.25	-3,037.9	-252.6	3,088.0	3,076.6	11.44	269.976	
2,400.0	2,321.2	2,317.8	2,317.7	11.2	1.0	-97.85	-3,038.0	-253.3	3,091.5	3,079.4	12.02	257.209	
2,500.0	2,417.0	2,409.9	2,409.8	11.7	1.1	-100.38	-3,038.3	-254.1	3,096.3	3,083.7	12.60	245.773	
2,537.0	2,452.5	2,445.7	2,445.7	11.9	1.1	-101.31	-3,038.4	-254.4	3,098.5	3,085.7	12.81	241.838	
2,600.0	2,512.8	2,506.3	2,506.3	12.3	1.1	-104.33	-3,038.6	-255.0	3,102.9	3,089.7	13.20	235.119	
2,700.0	2,608.2	2,597.5	2,597.5	12.9	1.1	-108.86	-3,038.9	-255.8	3,112.1	3,098.3	13.80	225.470	
2,800.0	2,703.3	2,695.2	2,695.1	13.5	1.1	-113.11	-3,039.3	-256.5	3,124.0	3,109.6	14.40	216.912	
2,824.0	2,726.1	2,717.5	2,717.5	13.7	1.2	-114.08	-3,039.4	-256.7	3,127.2	3,112.7	14.54	215.009	
2,900.0	2,798.2	2,787.6	2,787.6	14.1	1.2	-112.17	-3,039.7	-257.4	3,137.3	3,122.3	14.98	209.382	
3,000.0	2,893.6	2,876.3	2,876.2	14.7	1.2	-109.35	-3,040.2	-258.5	3,148.8	3,133.3	15.56	202.430	
3,100.0	2,989.4	2,966.7	2,966.6	15.3	1.2	-106.16	-3,041.0	-259.6	3,158.6	3,142.5	16.12	195.947	
3,112.0	3,000.9	2,977.7	2,977.6	15.4	1.2	-105.76	-3,041.1	-259.7	3,159.7	3,143.5	16.19	195.198	
3,200.0	3,085.5	3,056.9	3,056.8	15.9	1.3	-105.26	-3,041.9	-260.6	3,167.1	3,150.5	16.65	190.272	
3,300.0	3,181.9	3,146.4	3,146.3	16.4	1.3	-104.63	-3,043.0	-261.6	3,175.3	3,158.2	17.16	184.996	
3,400.0	3,278.4	3,238.3	3,238.2	16.9	1.3	-103.92	-3,044.3	-262.6	3,183.3	3,165.6	17.68	180.033	
3,500.0	3,374.7	3,330.2	3,330.1	17.5	1.4	-104.33	-3,045.7	-263.8	3,191.4	3,173.1	18.27	174.726	
3,600.0	3,470.3	3,414.3	3,414.1	18.1	1.4	-104.70	-3,047.3	-265.1	3,200.7	3,181.9	18.85	169.818	
3,687.0	3,552.8	3,484.1	3,484.0	18.6	1.4	-105.00	-3,048.9	-266.2	3,209.9	3,190.6	19.35	165.845	
3,700.0	3,565.1	3,500.0	3,499.8	18.7	1.4	-104.85	-3,049.3	-266.4	3,211.4	3,191.9	19.44	165.214	
3,800.0	3,659.5	3,578.8	3,578.5	19.4	1.4	-103.47	-3,051.5	-267.7	3,222.3	3,202.3	20.07	160.516	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,666.6	3,666.3	20.0	1.5	-102.18	-3,054.1	-269.0	3,232.9	3,212.2	20.71	156.130	
3,974.0	3,823.6	3,739.2	3,738.9	20.5	1.5	-101.29	-3,056.3	-269.9	3,240.3	3,219.1	21.17	153.073	
4,000.0	3,848.1	3,767.2	3,766.9	20.7	1.5	-101.68	-3,057.2	-270.3	3,242.8	3,221.5	21.32	152.129	
4,100.0	3,942.9	3,877.9	3,877.5	21.3	1.5	-103.24	-3,060.1	-271.8	3,252.4	3,230.5	21.88	148.631	
4,200.0	4,038.5	4,009.8	4,009.3	21.9	1.6	-104.98	-3,062.7	-274.0	3,261.5	3,239.0	22.44	145.340	
4,263.0	4,099.0	4,095.1	4,094.7	22.3	1.6	-106.14	-3,063.6	-275.9	3,266.7	3,243.9	22.79	143.346	
4,300.0	4,134.7	4,143.4	4,142.9	22.5	1.6	-107.40	-3,063.8	-277.0	3,269.6	3,246.6	22.96	142.387	
4,400.0	4,231.2	4,263.3	4,262.8	23.0	1.7	-110.88	-3,063.8	-280.0	3,277.7	3,254.3	23.43	139.873	
4,500.0	4,328.0	4,374.4	4,373.8	23.5	1.7	-114.53	-3,063.3	-283.1	3,286.5	3,262.6	23.90	137.491	
4,549.0	4,375.5	4,428.6	4,428.0	23.8	1.7	-116.39	-3,062.9	-284.6	3,291.0	3,266.9	24.13	136.375	
4,600.0	4,425.0	4,485.1	4,484.5	24.0	1.7	-116.76	-3,062.3	-286.1	3,295.8	3,271.5	24.36	135.319	
4,700.0	4,521.9	4,603.4	4,602.8	24.5	1.7	-117.50	-3,060.5	-289.0	3,305.1	3,280.3	24.79	133.330	
4,800.0	4,618.8	4,700.0	4,699.3	25.0	1.8	-118.18	-3,058.6	-290.9	3,314.4	3,289.2	25.22	131.395	
4,837.0	4,654.7	4,728.8	4,728.1	25.2	1.8	-118.40	-3,058.1	-291.5	3,317.9	3,292.6	25.39	130.689	
4,900.0	4,715.7	4,777.9	4,777.2	25.5	1.8	-118.99	-3,057.2	-292.2	3,324.4	3,298.7	25.68	129.451	
5,000.0	4,812.4	4,862.7	4,862.0	26.0	1.8	-119.92	-3,056.1	-293.1	3,335.6	3,309.5	26.14	127.595	
5,100.0	4,908.9	4,950.4	4,949.6	26.6	1.8	-120.83	-3,055.1	-293.9	3,347.9	3,321.3	26.60	125.855	
5,125.0	4,932.9	4,972.3	4,971.6	26.7	1.8	-121.05	-3,054.9	-294.1	3,351.1	3,324.4	26.72	125.437	
5,200.0	5,005.4	5,036.9	5,036.1	27.0	1.8	-118.78	-3,054.3	-294.6	3,360.3	3,333.3	27.01	124.419	
5,300.0	5,102.4	5,126.4	5,125.7	27.5	1.8	-115.13	-3,053.8	-295.1	3,370.8	3,343.4	27.39	123.063	
5,400.0	5,199.9	5,228.2	5,227.5	28.0	1.9	-110.66	-3,053.1	-295.7	3,378.8	3,351.1	27.76	121.707	
5,412.0	5,211.7	5,240.2	5,239.5	28.1	1.9	-110.05	-3,053.0	-295.7	3,379.6	3,351.8	27.81	121.543	
5,500.0	5,297.9	5,328.1	5,327.3	28.4	1.9	-107.80	-3,052.4	-296.2	3,384.6	3,356.5	28.09	120.485	
5,581.0	5,377.7	5,412.7	5,412.0	28.7	1.9	-105.09	-3,051.9	-296.9	3,388.0	3,359.7	28.33	119.580	
5,600.0	5,396.4	5,440.2	5,439.5	28.8	1.9	-106.34	-3,051.6	-297.1	3,388.6	3,360.2	28.39	119.348	
5,700.0	5,495.3	5,565.3	5,564.6	29.1	1.9	-114.43	-3,049.7	-298.4	3,391.9	3,363.2	28.69	118.233	
5,800.0	5,594.6	5,666.8	5,666.0	29.4	1.9	-126.34	-3,047.8	-299.3	3,395.7	3,366.8	28.94	117.344	
5,900.0	5,694.1	5,761.8	5,761.0	29.6	2.0	-143.92	-3,045.9	-299.9	3,400.5	3,371.4	29.14	116.698	
5,917.0	5,711.1	5,777.8	5,777.0	29.7	2.0	-147.53	-3,045.6	-300.0	3,401.4	3,372.3	29.17	116.612	
6,000.0	5,793.7	5,856.6	5,855.8	29.8	2.0	-147.60	-3,044.2	-300.3	3,406.0	3,376.7	29.32	116.181	
6,067.0	5,860.5	5,921.1	5,920.2	30.0	2.0	-147.66	-3,043.0	-300.4	3,409.8	3,380.4	29.44	115.842	
6,100.0	5,893.4	5,953.4	5,952.6	30.0	2.0	-147.70	-3,042.4	-300.4	3,411.5	3,382.1	29.48	115.719	
6,200.0	5,993.2	6,059.2	6,058.3	30.2	2.0	-147.80	-3,040.5	-300.7	3,414.8	3,385.1	29.61	115.341	
6,300.0	6,093.2	6,167.4	6,166.5	30.3	2.0	-147.83	-3,038.2	-300.8	3,414.7	3,385.0	29.71	114.939	
6,318.8	6,111.9	6,187.2	6,186.3	30.3	2.0	160.21	-3,037.7	-300.8	3,414.4	3,392.7	21.67	157.563	
6,400.0	6,193.2	6,269.6	6,268.7	30.4	2.0	160.20	-3,035.8	-300.7	3,412.6	3,390.8	21.78	156.667	
6,444.4	6,237.6	6,316.8	6,315.9	30.4	2.0	160.19	-3,034.6	-300.6	3,411.6	3,389.8	21.84	156.173	
6,450.0	6,243.2	6,323.3	6,322.4	30.4	2.0	70.20	-3,034.4	-300.6	3,411.5	3,381.6	29.87	114.197	
6,475.0	6,268.1	6,352.6	6,351.7	30.4	2.0	70.32	-3,033.7	-300.5	3,410.5	3,380.6	29.90	114.063	
6,500.0	6,293.0	6,381.8	6,380.9	30.4	2.0	70.51	-3,032.9	-300.5	3,409.2	3,379.2	29.93	113.905	
6,525.0	6,317.8	6,408.7	6,407.7	30.4	2.0	70.78	-3,032.1	-300.4	3,407.3	3,377.3	29.96	113.722	
6,550.0	6,342.3	6,431.6	6,430.6	30.4	2.0	71.10	-3,031.5	-300.4	3,405.0	3,375.0	29.99	113.526	
6,575.0	6,366.5	6,454.2	6,453.2	30.3	2.0	71.49	-3,030.9	-300.5	3,402.4	3,372.3	30.03	113.316	
6,600.0	6,390.4	6,476.5	6,475.5	30.2	2.0	71.95	-3,030.3	-300.5	3,399.3	3,369.2	30.06	113.097	
6,625.0	6,413.9	6,500.0	6,499.0	30.2	2.0	72.48	-3,029.7	-300.7	3,395.9	3,365.8	30.09	112.864	
6,650.0	6,436.9	6,500.0	6,499.0	30.1	2.0	72.91	-3,029.7	-300.7	3,392.1	3,362.0	30.09	112.724	
6,675.0	6,459.3	6,525.1	6,524.1	30.0	2.0	73.56	-3,029.2	-300.8	3,388.0	3,357.9	30.12	112.484	
6,700.0	6,481.1	6,537.7	6,536.7	29.9	2.0	74.17	-3,029.0	-300.8	3,383.7	3,353.6	30.13	112.301	
6,725.0	6,502.3	6,549.9	6,548.9	29.7	2.0	74.81	-3,028.8	-300.9	3,379.1	3,349.0	30.14	112.126	
6,750.0	6,522.7	6,561.7	6,560.7	29.6	2.0	75.50	-3,028.6	-300.9	3,374.3	3,344.2	30.14	111.961	
6,775.0	6,542.4	6,573.0	6,572.0	29.5	2.0	76.21	-3,028.5	-300.9	3,369.3	3,339.1	30.13	111.807	
6,800.0	6,561.2	6,600.0	6,599.0	29.4	2.0	77.14	-3,028.4	-300.9	3,364.1	3,334.0	30.15	111.590	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,600.0	6,599.0	29.3	2.0	77.79	-3,028.4	-300.9	3,358.7	3,328.6	30.12	111.504	
6,850.0	6,596.1	6,600.0	6,599.0	29.1	2.0	78.46	-3,028.4	-300.9	3,353.2	3,323.1	30.09	111.422	
6,875.0	6,612.1	6,617.4	6,616.4	29.0	2.0	79.37	-3,028.3	-300.9	3,347.5	3,317.4	30.08	111.278	
6,900.0	6,627.1	6,628.7	6,627.6	28.9	2.0	80.23	-3,028.3	-300.9	3,341.7	3,311.6	30.06	111.158	
6,925.0	6,641.0	6,639.1	6,638.1	28.8	2.0	81.09	-3,028.3	-300.9	3,335.8	3,305.8	30.04	111.039	
6,950.0	6,653.8	6,648.8	6,647.8	28.7	2.0	81.96	-3,028.3	-300.9	3,329.9	3,299.9	30.02	110.915	
6,975.0	6,665.5	6,657.6	6,656.5	28.7	2.0	82.83	-3,028.3	-300.9	3,323.9	3,293.9	30.00	110.782	
7,000.0	6,676.0	6,665.5	6,664.5	28.6	2.0	83.69	-3,028.4	-300.9	3,318.0	3,288.0	29.99	110.634	
7,025.0	6,685.3	6,672.5	6,671.5	28.6	2.0	84.54	-3,028.4	-300.9	3,312.0	3,282.0	29.98	110.465	
7,050.0	6,693.4	6,678.6	6,677.6	28.5	2.0	85.37	-3,028.4	-300.8	3,306.1	3,276.1	29.98	110.271	
7,075.0	6,700.2	6,683.8	6,682.8	28.5	2.0	86.18	-3,028.4	-300.8	3,300.3	3,270.3	29.99	110.045	
7,100.0	6,705.8	6,700.0	6,699.0	28.5	2.0	87.17	-3,028.5	-300.8	3,294.5	3,264.5	30.01	109.777	
7,125.0	6,710.0	6,700.0	6,699.0	28.5	2.0	87.87	-3,028.5	-300.8	3,288.8	3,258.8	30.04	109.484	
7,150.0	6,713.0	6,700.0	6,699.0	28.6	2.0	88.55	-3,028.5	-300.8	3,283.3	3,253.2	30.08	109.152	
7,175.0	6,714.7	6,700.0	6,699.0	28.6	2.0	89.21	-3,028.5	-300.8	3,277.9	3,247.8	30.13	108.782	
7,198.8	6,715.0	6,700.0	6,699.0	28.6	2.0	89.82	-3,028.5	-300.8	3,272.9	3,242.7	30.19	108.396	
7,200.0	6,715.0	6,700.0	6,699.0	28.6	2.0	89.82	-3,028.5	-300.8	3,272.7	3,242.5	30.20	108.377	
7,300.0	6,714.1	6,700.0	6,699.0	29.0	2.0	89.82	-3,028.5	-300.8	3,253.6	3,223.0	30.60	106.329	
7,400.0	6,713.2	6,700.0	6,699.0	29.7	2.0	89.82	-3,028.5	-300.8	3,237.5	3,206.2	31.26	103.552	
7,500.0	6,712.3	6,700.0	6,699.0	30.6	2.0	89.82	-3,028.5	-300.8	3,224.4	3,192.2	32.17	100.216	
7,600.0	6,711.3	6,700.0	6,699.0	31.7	2.0	89.82	-3,028.5	-300.8	3,214.4	3,181.0	33.31	96.502	
7,700.0	6,710.4	6,700.0	6,699.0	33.0	2.0	89.82	-3,028.5	-300.8	3,207.4	3,172.8	34.64	92.582	
7,800.0	6,709.5	6,700.0	6,699.0	34.5	2.0	89.82	-3,028.5	-300.8	3,203.6	3,167.4	36.16	88.601	
7,873.0	6,708.8	6,700.0	6,699.0	35.7	2.0	89.82	-3,028.5	-300.8	3,202.7	3,165.4	37.37	85.693	
7,900.0	6,708.5	6,700.0	6,699.0	36.2	2.0	89.82	-3,028.5	-300.8	3,202.9	3,165.0	37.83	84.673	
8,000.0	6,707.6	6,700.0	6,699.0	38.0	2.0	89.82	-3,028.5	-300.8	3,205.3	3,165.6	39.63	80.880	
8,100.0	6,706.7	6,700.0	6,699.0	39.9	2.0	89.82	-3,028.5	-300.8	3,210.8	3,169.2	41.55	77.275	
8,200.0	6,705.8	6,700.0	6,699.0	41.9	2.0	89.82	-3,028.5	-300.8	3,219.4	3,175.8	43.57	73.889	
8,300.0	6,704.8	6,700.0	6,699.0	44.0	2.0	89.82	-3,028.5	-300.8	3,231.1	3,185.4	45.68	70.735	
8,400.0	6,703.9	6,700.0	6,699.0	46.2	2.0	89.82	-3,028.5	-300.8	3,245.8	3,198.0	47.86	67.818	
8,500.0	6,703.0	6,688.5	6,687.5	48.5	2.0	89.62	-3,028.5	-300.8	3,263.5	3,213.4	50.11	65.132	
8,600.0	6,702.1	6,688.0	6,687.0	50.8	2.0	89.61	-3,028.5	-300.8	3,284.2	3,231.8	52.41	62.664	
8,700.0	6,701.1	6,687.5	6,686.4	53.1	2.0	89.60	-3,028.4	-300.8	3,307.8	3,253.0	54.76	60.403	
8,800.0	6,700.2	6,686.9	6,685.9	55.5	2.0	89.59	-3,028.4	-300.8	3,334.2	3,277.0	57.16	58.334	
8,900.0	6,699.3	6,686.4	6,685.4	57.9	2.0	89.58	-3,028.4	-300.8	3,363.4	3,303.8	59.59	56.443	
9,000.0	6,698.3	6,685.9	6,684.8	60.4	2.0	89.57	-3,028.4	-300.8	3,395.2	3,333.2	62.05	54.714	
9,100.0	6,697.4	6,685.3	6,684.3	62.9	2.0	89.56	-3,028.4	-300.8	3,429.7	3,365.2	64.55	53.134	
9,200.0	6,696.5	6,684.8	6,683.8	65.4	2.0	89.55	-3,028.4	-300.8	3,466.7	3,399.7	67.07	51.690	
9,300.0	6,695.5	6,684.2	6,683.2	68.0	2.0	89.54	-3,028.4	-300.8	3,506.2	3,436.6	69.61	50.370	
9,400.0	6,694.6	6,683.7	6,682.7	70.5	2.0	89.53	-3,028.4	-300.8	3,548.1	3,475.9	72.17	49.161	
9,500.0	6,693.7	6,683.1	6,682.1	73.1	2.0	89.52	-3,028.4	-300.8	3,592.3	3,517.5	74.75	48.055	
9,600.0	6,692.8	6,682.6	6,681.6	75.7	2.0	89.51	-3,028.4	-300.8	3,638.7	3,561.3	77.35	47.041	
9,700.0	6,691.8	6,682.0	6,681.0	78.3	2.0	89.50	-3,028.4	-300.8	3,687.2	3,607.2	79.96	46.111	
9,800.0	6,690.9	6,681.5	6,680.5	80.9	2.0	89.49	-3,028.4	-300.8	3,737.7	3,655.1	82.59	45.257	
9,900.0	6,690.0	6,680.9	6,679.9	83.6	2.0	89.48	-3,028.4	-300.8	3,790.3	3,705.0	85.23	44.473	
10,000.0	6,689.0	6,680.4	6,679.4	86.2	2.0	89.47	-3,028.4	-300.8	3,844.7	3,756.8	87.87	43.752	
10,100.0	6,688.1	6,679.8	6,678.8	88.9	2.0	89.46	-3,028.4	-300.8	3,900.9	3,810.3	90.53	43.088	
10,200.0	6,687.2	6,679.3	6,678.2	91.6	2.0	89.45	-3,028.4	-300.8	3,958.8	3,865.6	93.20	42.477	
10,300.0	6,686.2	6,678.7	6,677.7	94.2	2.0	89.44	-3,028.4	-300.8	4,018.4	3,922.5	95.88	41.913	
10,400.0	6,685.3	6,678.1	6,677.1	96.9	2.0	89.43	-3,028.4	-300.8	4,079.6	3,981.0	98.56	41.392	
10,500.0	6,684.4	6,677.6	6,676.6	99.6	2.0	89.42	-3,028.4	-300.8	4,142.3	4,041.0	101.25	40.912	
10,600.0	6,683.4	6,677.0	6,676.0	102.3	2.0	89.41	-3,028.4	-300.8	4,206.4	4,102.4	103.95	40.467	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,676.4	6,675.4	105.0	2.0	89.40	-3,028.4	-300.8	4,271.9	4,165.2	106.65	40.056	
10,800.0	6,681.6	6,675.9	6,674.8	107.7	2.0	89.39	-3,028.4	-300.8	4,338.7	4,229.4	109.36	39.675	
10,900.0	6,680.6	6,675.3	6,674.3	110.4	2.0	89.38	-3,028.4	-300.8	4,406.8	4,294.7	112.07	39.322	
11,000.0	6,679.7	6,674.7	6,673.7	113.1	2.0	89.37	-3,028.4	-300.9	4,476.1	4,361.3	114.79	38.994	
11,100.0	6,678.8	6,674.1	6,673.1	115.9	2.0	89.36	-3,028.4	-300.9	4,546.5	4,429.0	117.51	38.690	
11,200.0	6,677.8	6,673.5	6,672.5	118.6	2.0	89.35	-3,028.4	-300.9	4,618.0	4,497.8	120.24	38.408	
11,300.0	6,676.9	6,672.9	6,671.9	121.3	2.0	89.34	-3,028.4	-300.9	4,690.6	4,567.6	122.97	38.145	
11,400.0	6,676.0	6,672.4	6,671.3	124.1	2.0	89.33	-3,028.4	-300.9	4,764.1	4,638.4	125.70	37.901	
11,500.0	6,675.0	6,671.8	6,670.8	126.8	2.0	89.32	-3,028.4	-300.9	4,838.6	4,710.2	128.44	37.673	
11,600.0	6,674.1	6,671.2	6,670.2	129.5	2.0	89.31	-3,028.4	-300.9	4,914.0	4,782.8	131.18	37.461	
11,700.0	6,673.1	6,670.6	6,669.6	132.3	2.0	89.29	-3,028.4	-300.9	4,990.3	4,856.3	133.92	37.263	
11,800.0	6,672.2	6,670.0	6,669.0	135.0	2.0	89.28	-3,028.4	-300.9	5,067.4	4,930.7	136.67	37.078	
11,900.0	6,671.3	6,669.4	6,668.4	137.8	2.0	89.27	-3,028.4	-300.9	5,145.2	5,005.8	139.41	36.906	
12,000.0	6,670.3	6,668.8	6,667.8	140.5	2.0	89.26	-3,028.4	-300.9	5,223.9	5,081.7	142.17	36.745	
12,036.2	6,670.0	6,668.6	6,667.5	141.5	2.0	89.26	-3,028.4	-300.9	5,252.5	5,109.4	143.16	36.689	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	160.15	-2,983.7	1,077.4	3,172.2				
100.0	100.0	86.6	86.6	0.1	0.1	149.54	-2,983.8	1,077.5	3,172.5	3,172.3	0.18	N/A	
200.0	200.0	197.8	197.8	0.2	0.1	149.55	-2,984.0	1,077.6	3,173.0	3,172.6	0.34	9,440.579	
261.0	261.0	269.3	269.3	0.3	0.2	149.55	-2,983.9	1,077.4	3,173.1	3,172.6	0.49	6,535.354	
300.0	300.0	313.3	313.3	0.4	0.3	-132.23	-2,983.8	1,077.2	3,173.2	3,172.6	0.62	5,107.669	
400.0	399.9	417.0	417.0	0.6	0.3	-117.72	-2,983.5	1,076.4	3,174.3	3,173.4	0.93	3,407.610	
500.0	499.7	521.3	521.3	0.8	0.4	-115.39	-2,983.0	1,075.4	3,176.8	3,175.5	1.23	2,587.007	
538.0	537.5	556.5	556.4	0.9	0.4	-114.96	-2,982.8	1,075.0	3,178.1	3,176.7	1.34	2,379.736	
600.0	599.1	615.9	615.8	1.1	0.5	-115.76	-2,982.7	1,074.5	3,180.8	3,179.2	1.58	2,015.547	
700.0	697.9	719.7	719.7	1.5	0.5	-116.60	-2,982.2	1,073.5	3,186.9	3,184.9	1.97	1,618.133	
800.0	796.0	813.1	813.1	1.8	0.6	-117.14	-2,981.8	1,072.8	3,195.1	3,192.8	2.35	1,357.888	
818.0	813.5	831.3	831.3	1.9	0.6	-117.22	-2,981.7	1,072.7	3,196.8	3,194.4	2.42	1,319.957	
900.0	893.1	912.7	912.7	2.3	0.6	-116.52	-2,981.2	1,072.3	3,205.4	3,202.5	2.89	1,108.361	
1,000.0	989.2	1,004.0	1,004.0	2.9	0.6	-115.92	-2,980.7	1,072.1	3,217.4	3,214.0	3.46	929.768	
1,100.0	1,083.9	1,099.6	1,099.6	3.5	0.7	-115.54	-2,980.1	1,072.1	3,231.3	3,227.3	4.03	802.293	
1,104.0	1,087.6	1,103.4	1,103.3	3.5	0.7	-115.53	-2,980.1	1,072.1	3,231.9	3,227.9	4.05	797.968	
1,200.0	1,177.9	1,192.4	1,192.4	4.1	0.7	-116.74	-2,979.6	1,072.0	3,246.5	3,241.9	4.65	698.279	
1,300.0	1,272.0	1,286.6	1,286.6	4.8	0.8	-118.01	-2,979.1	1,072.0	3,262.2	3,257.0	5.26	619.908	
1,391.0	1,357.8	1,372.2	1,372.2	5.3	0.8	-119.17	-2,978.5	1,072.0	3,277.0	3,271.2	5.82	563.220	
1,400.0	1,366.3	1,380.7	1,380.7	5.4	0.8	-119.05	-2,978.5	1,072.0	3,278.5	3,272.6	5.87	558.920	
1,458.0	1,421.2	1,434.8	1,434.7	5.7	0.8	-118.20	-2,978.2	1,072.0	3,287.5	3,281.3	6.17	532.716	
1,500.0	1,461.0	1,473.7	1,473.7	6.0	0.8	-118.60	-2,978.0	1,072.0	3,293.8	3,287.4	6.40	514.474	
1,600.0	1,556.1	1,560.4	1,560.3	6.6	0.9	-119.53	-2,977.6	1,072.0	3,309.2	3,302.2	6.95	476.473	
1,676.0	1,628.3	1,628.2	1,628.1	7.0	0.9	-120.24	-2,977.5	1,072.1	3,321.3	3,313.9	7.35	451.587	
1,700.0	1,651.1	1,651.5	1,651.4	7.2	0.9	-119.82	-2,977.5	1,072.2	3,325.1	3,317.6	7.48	444.272	
1,800.0	1,746.4	1,744.6	1,744.6	7.7	0.9	-118.02	-2,977.2	1,072.4	3,340.3	3,332.3	8.02	416.683	
1,900.0	1,841.8	1,836.1	1,836.0	8.3	0.9	-116.12	-2,977.2	1,072.5	3,354.5	3,345.9	8.54	392.843	
1,963.0	1,902.0	1,896.2	1,896.1	8.7	0.9	-114.89	-2,977.2	1,072.6	3,362.8	3,354.0	8.87	379.299	
2,000.0	1,937.4	1,928.2	1,928.1	8.9	0.9	-115.04	-2,977.2	1,072.7	3,367.6	3,358.6	9.05	371.954	
2,100.0	2,033.1	2,014.6	2,014.6	9.5	0.9	-115.44	-2,977.5	1,072.8	3,380.7	3,371.2	9.56	353.610	
2,200.0	2,129.0	2,105.8	2,105.8	10.0	0.9	-115.84	-2,977.9	1,073.0	3,393.9	3,383.8	10.07	337.059	
2,250.0	2,177.1	2,153.0	2,152.9	10.3	0.9	-116.05	-2,978.2	1,073.1	3,400.5	3,390.1	10.32	329.436	
2,300.0	2,225.1	2,200.0	2,200.0	10.6	1.0	-117.34	-2,978.5	1,073.2	3,407.2	3,396.6	10.58	322.046	
2,400.0	2,321.2	2,294.2	2,294.2	11.2	1.0	-119.88	-2,979.2	1,073.3	3,421.7	3,410.6	11.09	308.421	
2,500.0	2,417.0	2,391.0	2,391.0	11.7	1.0	-122.35	-2,979.9	1,073.3	3,437.5	3,425.9	11.61	296.196	
2,537.0	2,452.5	2,427.7	2,427.6	11.9	1.0	-123.25	-2,980.3	1,073.2	3,443.7	3,431.9	11.79	291.975	
2,600.0	2,512.8	2,490.5	2,490.4	12.3	1.0	-126.26	-2,980.8	1,073.0	3,454.8	3,442.6	12.12	285.019	
2,700.0	2,608.2	2,586.9	2,586.8	12.9	1.0	-130.77	-2,981.6	1,072.6	3,474.4	3,461.8	12.63	275.014	
2,800.0	2,703.3	2,679.2	2,679.1	13.5	1.0	-134.95	-2,982.4	1,072.2	3,496.6	3,483.5	13.14	266.141	
2,824.0	2,726.1	2,701.3	2,701.2	13.7	1.0	-135.91	-2,982.6	1,072.1	3,502.4	3,489.1	13.26	264.169	
2,900.0	2,798.2	2,776.8	2,776.7	14.1	1.1	-133.86	-2,983.3	1,071.8	3,520.0	3,506.4	13.62	258.487	
3,000.0	2,893.6	2,869.3	2,869.2	14.7	1.1	-130.85	-2,984.2	1,071.3	3,541.4	3,527.3	14.08	251.440	
3,100.0	2,989.4	2,966.4	2,966.3	15.3	1.1	-127.52	-2,985.2	1,070.8	3,560.6	3,546.0	14.54	244.871	
3,112.0	3,000.9	2,978.5	2,978.4	15.4	1.1	-127.10	-2,985.3	1,070.7	3,562.7	3,548.1	14.59	244.111	
3,200.0	3,085.5	3,060.8	3,060.7	15.9	1.1	-126.53	-2,986.1	1,070.3	3,578.1	3,563.2	14.98	238.830	
3,300.0	3,181.9	3,154.3	3,154.2	16.4	1.1	-125.81	-2,987.1	1,069.8	3,595.0	3,579.6	15.42	233.162	
3,400.0	3,278.4	3,247.6	3,247.5	16.9	1.2	-125.02	-2,988.1	1,069.4	3,611.2	3,595.4	15.85	227.791	
3,500.0	3,374.7	3,339.9	3,339.8	17.5	1.2	-125.25	-2,989.2	1,069.1	3,628.0	3,611.6	16.39	221.397	
3,600.0	3,470.3	3,428.0	3,427.9	18.1	1.2	-125.45	-2,990.4	1,068.8	3,646.4	3,629.5	16.92	215.493	
3,687.0	3,552.8	3,500.0	3,499.9	18.6	1.2	-125.60	-2,991.5	1,068.8	3,664.1	3,646.7	17.39	210.726	
3,700.0	3,565.1	3,507.0	3,506.9	18.7	1.2	-125.38	-2,991.6	1,068.8	3,666.9	3,649.4	17.46	209.988	
3,800.0	3,659.5	3,595.7	3,595.6	19.4	1.2	-123.88	-2,993.2	1,068.8	3,687.9	3,669.9	18.02	204.635	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,681.4	3,681.2	20.0	1.3	-122.40	-2,995.0	1,068.8	3,708.6	3,690.0	18.58	199.636	
3,974.0	3,823.6	3,750.5	3,750.3	20.5	1.3	-121.36	-2,996.6	1,068.9	3,723.6	3,704.7	18.98	196.172	
4,000.0	3,848.1	3,775.6	3,775.4	20.7	1.3	-121.74	-2,997.1	1,068.9	3,728.9	3,709.8	19.10	195.244	
4,100.0	3,942.9	3,866.0	3,865.8	21.3	1.3	-123.21	-2,999.2	1,068.9	3,748.5	3,729.0	19.55	191.739	
4,200.0	4,038.5	3,960.8	3,960.6	21.9	1.3	-124.80	-3,001.6	1,068.8	3,767.6	3,747.6	20.00	188.372	
4,263.0	4,099.0	4,022.1	4,021.9	22.3	1.3	-125.88	-3,003.2	1,068.7	3,779.1	3,758.9	20.28	186.307	
4,300.0	4,134.7	4,057.2	4,056.9	22.5	1.3	-127.08	-3,004.1	1,068.5	3,785.9	3,765.5	20.43	185.307	
4,400.0	4,231.2	4,156.9	4,156.6	23.0	1.4	-130.49	-3,007.1	1,067.7	3,804.5	3,783.7	20.82	182.700	
4,500.0	4,328.0	4,252.8	4,252.4	23.5	1.4	-134.07	-3,010.2	1,066.4	3,823.6	3,802.4	21.22	180.201	
4,549.0	4,375.5	4,300.0	4,299.6	23.8	1.4	-135.90	-3,011.8	1,065.7	3,833.2	3,811.8	21.41	179.022	
4,600.0	4,425.0	4,348.6	4,348.2	24.0	1.4	-136.18	-3,013.4	1,065.0	3,843.3	3,821.6	21.61	177.847	
4,700.0	4,521.9	4,446.4	4,445.9	24.5	1.5	-136.73	-3,016.5	1,063.8	3,863.1	3,841.1	22.00	175.624	
4,800.0	4,618.8	4,541.0	4,540.4	25.0	1.5	-137.26	-3,019.6	1,062.7	3,883.3	3,860.9	22.38	173.495	
4,837.0	4,654.7	4,576.4	4,575.8	25.2	1.5	-137.46	-3,020.8	1,062.3	3,890.8	3,868.3	22.53	172.731	
4,900.0	4,715.7	4,647.7	4,647.1	25.5	1.5	-138.02	-3,023.0	1,061.4	3,903.8	3,881.0	22.78	171.352	
5,000.0	4,812.4	4,762.8	4,762.2	26.0	1.5	-138.88	-3,026.1	1,060.0	3,924.6	3,901.4	23.19	169.264	
5,100.0	4,908.9	4,870.8	4,870.1	26.6	1.6	-139.70	-3,028.4	1,058.8	3,945.9	3,922.3	23.59	167.282	
5,125.0	4,932.9	4,897.7	4,897.0	26.7	1.6	-139.89	-3,028.9	1,058.5	3,951.3	3,927.6	23.69	166.802	
5,200.0	5,005.4	4,965.1	4,964.3	27.0	1.6	-137.49	-3,030.2	1,057.8	3,966.9	3,942.9	23.93	165.766	
5,300.0	5,102.4	5,065.8	5,065.0	27.5	1.6	-133.70	-3,032.0	1,056.9	3,985.3	3,961.1	24.24	164.417	
5,400.0	5,199.9	5,175.8	5,175.1	28.0	1.7	-129.10	-3,033.6	1,056.1	4,000.8	3,976.3	24.53	163.097	
5,412.0	5,211.7	5,189.2	5,188.4	28.1	1.7	-128.48	-3,033.8	1,056.0	4,002.5	3,977.9	24.56	162.940	
5,500.0	5,297.9	5,290.2	5,289.5	28.4	1.7	-126.20	-3,034.4	1,055.7	4,013.4	3,988.7	24.78	161.978	
5,581.0	5,377.7	5,373.4	5,372.7	28.7	1.7	-123.45	-3,034.6	1,055.5	4,021.8	3,996.8	24.96	161.137	
5,600.0	5,396.4	5,392.7	5,392.0	28.8	1.7	-124.69	-3,034.7	1,055.5	4,023.5	3,998.5	25.01	160.903	
5,700.0	5,495.3	5,484.8	5,484.0	29.1	1.7	-132.77	-3,034.9	1,055.4	4,032.8	4,007.6	25.23	159.856	
5,800.0	5,594.6	5,587.4	5,586.6	29.4	1.7	-144.72	-3,035.0	1,055.6	4,041.9	4,016.5	25.41	159.067	
5,900.0	5,694.1	5,685.0	5,684.3	29.6	1.7	-162.35	-3,034.9	1,056.0	4,050.7	4,025.2	25.56	158.510	
5,917.0	5,711.1	5,701.6	5,700.9	29.7	1.7	-165.96	-3,034.8	1,056.0	4,052.2	4,026.6	25.58	158.439	
6,000.0	5,793.7	5,787.8	5,787.1	29.8	1.7	-166.00	-3,034.7	1,056.4	4,059.4	4,033.7	25.71	157.882	
6,067.0	5,860.5	5,853.4	5,852.6	30.0	1.7	-166.02	-3,034.5	1,056.7	4,065.2	4,039.4	25.82	157.443	
6,100.0	5,893.4	5,885.2	5,884.5	30.0	1.7	-166.05	-3,034.4	1,056.9	4,067.8	4,042.0	25.85	157.372	
6,200.0	5,993.2	5,976.6	5,975.9	30.2	1.7	-166.10	-3,034.1	1,057.6	4,073.8	4,047.9	25.92	157.143	
6,300.0	6,093.2	6,073.1	6,072.3	30.3	1.8	-166.14	-3,033.9	1,058.5	4,076.5	4,050.6	25.99	156.870	
6,318.8	6,111.9	6,091.5	6,090.8	30.3	1.8	141.90	-3,033.9	1,058.7	4,076.7	4,050.8	25.87	157.587	
6,400.0	6,193.2	6,167.7	6,166.9	30.4	1.8	141.89	-3,033.7	1,059.6	4,077.1	4,051.1	25.96	157.043	
6,444.4	6,237.6	6,200.0	6,199.2	30.4	1.8	141.89	-3,033.6	1,060.0	4,077.4	4,051.4	26.01	156.749	
6,450.0	6,243.2	6,212.6	6,211.8	30.4	1.8	51.88	-3,033.6	1,060.1	4,077.4	4,051.2	26.14	155.969	
6,475.0	6,268.1	6,233.1	6,232.3	30.4	1.8	51.92	-3,033.6	1,060.4	4,077.0	4,050.9	26.13	156.056	
6,500.0	6,293.0	6,253.5	6,252.7	30.4	1.8	52.05	-3,033.6	1,060.7	4,075.8	4,049.7	26.13	155.963	
6,525.0	6,317.8	6,273.9	6,273.1	30.4	1.8	52.27	-3,033.6	1,061.0	4,073.9	4,047.7	26.17	155.690	
6,550.0	6,342.3	6,300.0	6,299.2	30.4	1.8	52.58	-3,033.7	1,061.4	4,071.1	4,044.9	26.23	155.219	
6,575.0	6,366.5	6,314.8	6,314.0	30.3	1.8	52.96	-3,033.7	1,061.6	4,067.7	4,041.4	26.30	154.638	
6,600.0	6,390.4	6,335.5	6,334.7	30.2	1.8	53.44	-3,033.7	1,062.0	4,063.4	4,037.0	26.41	153.880	
6,625.0	6,413.9	6,355.9	6,355.1	30.2	1.8	54.01	-3,033.8	1,062.4	4,058.5	4,031.9	26.53	152.989	
6,650.0	6,436.9	6,375.9	6,375.1	30.1	1.8	54.66	-3,033.9	1,062.8	4,052.8	4,026.1	26.67	151.976	
6,675.0	6,459.3	6,400.0	6,399.2	30.0	1.8	55.44	-3,034.0	1,063.2	4,046.4	4,019.5	26.83	150.815	
6,700.0	6,481.1	6,415.8	6,415.0	29.9	1.8	56.26	-3,034.0	1,063.5	4,039.3	4,012.3	27.00	149.621	
6,725.0	6,502.3	6,435.9	6,435.1	29.7	1.8	57.21	-3,034.1	1,063.9	4,031.6	4,004.4	27.19	148.296	
6,750.0	6,522.7	6,455.2	6,454.4	29.6	1.8	58.25	-3,034.2	1,064.3	4,023.2	3,995.8	27.39	146.896	
6,775.0	6,542.4	6,473.9	6,473.1	29.5	1.8	59.39	-3,034.4	1,064.6	4,014.2	3,986.6	27.60	145.438	
6,800.0	6,561.2	6,491.7	6,490.9	29.4	1.8	60.62	-3,034.5	1,064.9	4,004.7	3,976.8	27.82	143.937	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,511.4	6,510.5	29.3	1.8	61.96	-3,034.7	1,065.2	3,994.6	3,966.5	28.06	142.379	
6,850.0	6,596.1	6,532.2	6,531.4	29.1	1.8	63.43	-3,034.9	1,065.5	3,984.0	3,955.7	28.30	140.792	
6,875.0	6,612.1	6,551.7	6,550.9	29.0	1.8	64.98	-3,035.2	1,065.7	3,972.9	3,944.3	28.54	139.225	
6,900.0	6,627.1	6,569.8	6,569.0	28.9	1.8	66.62	-3,035.4	1,065.8	3,961.3	3,932.6	28.77	137.701	
6,925.0	6,641.0	6,586.5	6,585.7	28.8	1.8	68.34	-3,035.6	1,065.8	3,949.4	3,920.4	28.99	136.239	
6,950.0	6,653.8	6,600.0	6,599.2	28.7	1.8	70.11	-3,035.9	1,065.8	3,937.1	3,907.9	29.19	134.871	
6,975.0	6,665.5	6,612.7	6,611.9	28.7	1.8	71.95	-3,036.1	1,065.8	3,924.5	3,895.1	29.38	133.581	
7,000.0	6,676.0	6,622.9	6,622.1	28.6	1.8	73.82	-3,036.2	1,065.8	3,911.6	3,882.1	29.55	132.395	
7,025.0	6,685.3	6,632.0	6,631.2	28.6	1.8	75.74	-3,036.4	1,065.8	3,898.5	3,868.8	29.69	131.303	
7,050.0	6,693.4	6,639.9	6,639.1	28.5	1.8	77.69	-3,036.5	1,065.8	3,885.3	3,855.4	29.82	130.300	
7,075.0	6,700.2	6,646.6	6,645.8	28.5	1.8	79.67	-3,036.6	1,065.9	3,871.9	3,841.9	29.93	129.377	
7,100.0	6,705.8	6,652.1	6,651.2	28.5	1.8	81.66	-3,036.7	1,065.9	3,858.4	3,828.4	30.02	128.518	
7,125.0	6,710.0	6,656.3	6,655.5	28.5	1.8	83.65	-3,036.7	1,065.9	3,844.8	3,814.7	30.11	127.702	
7,150.0	6,713.0	6,659.3	6,658.5	28.6	1.8	85.63	-3,036.8	1,065.9	3,831.3	3,801.1	30.19	126.906	
7,175.0	6,714.7	6,661.0	6,660.2	28.6	1.8	87.59	-3,036.8	1,065.9	3,817.8	3,787.5	30.27	126.112	
7,198.8	6,715.0	6,661.5	6,660.6	28.6	1.8	89.42	-3,036.8	1,065.9	3,804.9	3,774.6	30.36	125.344	
7,200.0	6,715.0	6,661.5	6,660.6	28.6	1.8	89.42	-3,036.8	1,065.9	3,804.3	3,773.9	30.36	125.311	
7,300.0	6,714.1	6,660.9	6,660.0	29.0	1.8	89.41	-3,036.8	1,065.9	3,751.6	3,720.9	30.76	121.962	
7,400.0	6,713.2	6,660.3	6,659.4	29.7	1.8	89.40	-3,036.8	1,065.9	3,700.9	3,669.5	31.42	117.770	
7,500.0	6,712.3	6,659.6	6,658.8	30.6	1.8	89.39	-3,036.8	1,065.9	3,652.2	3,619.9	32.33	112.951	
7,600.0	6,711.3	6,659.0	6,658.2	31.7	1.8	89.38	-3,036.8	1,065.9	3,605.7	3,572.2	33.47	107.733	
7,700.0	6,710.4	6,658.4	6,657.5	33.0	1.8	89.36	-3,036.7	1,065.9	3,561.3	3,526.5	34.80	102.326	
7,800.0	6,709.5	6,657.7	6,656.9	34.5	1.8	89.35	-3,036.7	1,065.9	3,519.2	3,482.9	36.32	96.905	
7,900.0	6,708.5	6,657.0	6,656.2	36.2	1.8	89.34	-3,036.7	1,065.9	3,479.5	3,441.5	37.98	91.604	
8,000.0	6,707.6	6,656.4	6,655.5	38.0	1.8	89.33	-3,036.7	1,065.9	3,442.2	3,402.4	39.79	86.516	
8,100.0	6,706.7	6,655.7	6,654.9	39.9	1.8	89.32	-3,036.7	1,065.9	3,407.5	3,365.8	41.71	81.700	
8,200.0	6,705.8	6,655.0	6,654.2	41.9	1.8	89.30	-3,036.7	1,065.9	3,375.3	3,331.6	43.73	77.190	
8,300.0	6,704.8	6,654.3	6,653.5	44.0	1.8	89.29	-3,036.7	1,065.9	3,345.9	3,300.0	45.83	72.999	
8,400.0	6,703.9	6,653.6	6,652.8	46.2	1.8	89.28	-3,036.7	1,065.9	3,319.2	3,271.2	48.02	69.126	
8,500.0	6,703.0	6,652.9	6,652.0	48.5	1.8	89.27	-3,036.7	1,065.9	3,295.3	3,245.0	50.26	65.561	
8,600.0	6,702.1	6,652.2	6,651.3	50.8	1.8	89.25	-3,036.7	1,065.9	3,274.3	3,221.7	52.57	62.289	
8,700.0	6,701.1	6,651.4	6,650.6	53.1	1.8	89.24	-3,036.6	1,065.9	3,256.2	3,201.3	54.92	59.293	
8,800.0	6,700.2	6,650.7	6,649.8	55.5	1.8	89.23	-3,036.6	1,065.9	3,241.1	3,183.8	57.31	56.552	
8,900.0	6,699.3	6,649.9	6,649.0	57.9	1.8	89.21	-3,036.6	1,065.9	3,229.1	3,169.3	59.74	54.049	
9,000.0	6,698.3	6,649.1	6,648.3	60.4	1.8	89.20	-3,036.6	1,065.9	3,220.1	3,157.9	62.21	51.763	
9,100.0	6,697.4	6,648.3	6,647.5	62.9	1.8	89.19	-3,036.6	1,065.9	3,214.2	3,149.5	64.70	49.677	
9,200.0	6,696.5	6,647.5	6,646.7	65.4	1.8	89.17	-3,036.6	1,065.9	3,211.4	3,144.2	67.22	47.774	
9,240.0	6,696.1	6,647.2	6,646.4	66.4	1.8	89.17	-3,036.6	1,065.9	3,211.1	3,142.9	68.24	47.058	
9,300.0	6,695.5	6,646.7	6,645.9	68.0	1.8	89.16	-3,036.6	1,065.9	3,211.7	3,141.9	69.76	46.037	ES
9,400.0	6,694.6	6,645.9	6,645.0	70.5	1.8	89.14	-3,036.6	1,065.9	3,215.1	3,142.8	72.32	44.454	
9,500.0	6,693.7	6,645.0	6,644.2	73.1	1.8	89.13	-3,036.6	1,065.9	3,221.6	3,146.7	74.91	43.010	
9,600.0	6,692.8	6,644.2	6,643.3	75.7	1.8	89.11	-3,036.5	1,065.8	3,231.2	3,153.7	77.50	41.692	
9,700.0	6,691.8	6,643.3	6,642.5	78.3	1.8	89.10	-3,036.5	1,065.8	3,243.9	3,163.8	80.11	40.492	
9,800.0	6,690.9	6,642.4	6,641.6	80.9	1.8	89.08	-3,036.5	1,065.8	3,259.6	3,176.9	82.74	39.397	
9,900.0	6,690.0	6,641.5	6,640.7	83.6	1.8	89.06	-3,036.5	1,065.8	3,278.3	3,192.9	85.37	38.399	
10,000.0	6,689.0	6,640.6	6,639.8	86.2	1.8	89.05	-3,036.5	1,065.8	3,299.8	3,211.8	88.02	37.489	
10,100.0	6,688.1	6,639.7	6,638.9	88.9	1.8	89.03	-3,036.5	1,065.8	3,324.3	3,233.6	90.68	36.660	
10,200.0	6,687.2	6,638.7	6,637.9	91.6	1.8	89.01	-3,036.5	1,065.8	3,351.6	3,258.2	93.35	35.905	
10,300.0	6,686.2	6,637.8	6,636.9	94.2	1.8	89.00	-3,036.4	1,065.8	3,381.6	3,285.5	96.02	35.217	
10,400.0	6,685.3	6,636.8	6,636.0	96.9	1.8	88.98	-3,036.4	1,065.8	3,414.2	3,315.5	98.70	34.591	
10,500.0	6,684.4	6,635.8	6,635.0	99.6	1.8	88.96	-3,036.4	1,065.8	3,449.5	3,348.1	101.39	34.021	
10,600.0	6,683.4	6,634.8	6,634.0	102.3	1.8	88.94	-3,036.4	1,065.8	3,487.2	3,383.2	104.09	33.503	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,633.8	6,632.9	105.0	1.8	88.93	-3,036.4	1,065.8	3,527.4	3,420.6	106.79	33.032	
10,800.0	6,681.6	6,632.7	6,631.9	107.7	1.8	88.91	-3,036.4	1,065.8	3,570.0	3,460.5	109.50	32.604	
10,900.0	6,680.6	6,631.7	6,630.8	110.4	1.8	88.89	-3,036.4	1,065.8	3,614.8	3,502.6	112.21	32.215	
11,000.0	6,679.7	6,630.6	6,629.7	113.1	1.8	88.87	-3,036.3	1,065.8	3,661.8	3,546.9	114.92	31.863	
11,100.0	6,678.8	6,629.5	6,628.6	115.9	1.8	88.85	-3,036.3	1,065.8	3,710.9	3,593.2	117.65	31.543	
11,200.0	6,677.8	6,628.3	6,627.5	118.6	1.8	88.83	-3,036.3	1,065.8	3,762.0	3,641.6	120.37	31.253	
11,300.0	6,676.9	6,627.2	6,626.4	121.3	1.8	88.81	-3,036.3	1,065.8	3,815.1	3,692.0	123.10	30.992	
11,400.0	6,676.0	6,626.0	6,625.2	124.1	1.8	88.79	-3,036.3	1,065.8	3,870.0	3,744.1	125.83	30.755	
11,500.0	6,675.0	6,624.8	6,624.0	126.8	1.8	88.77	-3,036.3	1,065.8	3,926.7	3,798.1	128.57	30.542	
11,600.0	6,674.1	6,623.6	6,622.8	129.5	1.8	88.74	-3,036.2	1,065.8	3,985.0	3,853.7	131.31	30.349	
11,700.0	6,673.1	6,622.4	6,621.5	132.3	1.8	88.72	-3,036.2	1,065.8	4,045.1	3,911.0	134.05	30.176	
11,800.0	6,672.2	6,621.1	6,620.3	135.0	1.8	88.70	-3,036.2	1,065.8	4,106.6	3,969.8	136.79	30.021	
11,900.0	6,671.3	6,619.8	6,619.0	137.8	1.8	88.68	-3,036.2	1,065.8	4,169.7	4,030.2	139.54	29.882	
12,000.0	6,670.3	6,618.5	6,617.7	140.5	1.8	88.65	-3,036.2	1,065.8	4,234.2	4,091.9	142.29	29.758	
12,036.2	6,670.0	6,618.0	6,617.2	141.5	1.8	88.64	-3,036.1	1,065.8	4,257.9	4,114.6	143.28	29.716	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-162.52	-364.3	-114.7	382.0				
100.0	100.0	95.9	95.9	0.1	0.1	-173.10	-364.1	-114.9	381.9	381.7	0.19	1,971.665	
116.1	116.1	111.9	111.9	0.1	0.1	-173.09	-364.1	-114.9	381.9	381.7	0.22	1,714.759	
200.0	200.0	195.3	195.3	0.2	0.2	-173.08	-363.9	-114.9	382.1	381.7	0.37	1,046.433	
261.0	261.0	256.4	256.4	0.3	0.2	-173.10	-363.9	-114.9	382.3	381.8	0.50	770.835	
300.0	300.0	295.6	295.6	0.4	0.3	-94.94	-363.9	-114.8	382.4	381.7	0.63	609.482	
400.0	399.9	395.0	395.0	0.6	0.3	-80.93	-363.8	-114.7	381.9	381.0	0.93	410.311	
500.0	499.7	494.9	494.9	0.8	0.4	-79.63	-363.8	-114.6	380.6	379.4	1.22	313.087	
538.0	537.5	532.7	532.7	0.9	0.4	-79.74	-363.8	-114.6	379.9	378.6	1.32	287.686	
600.0	599.1	594.3	594.3	1.1	0.4	-81.60	-363.8	-114.6	378.7	377.2	1.56	242.691	
700.0	697.9	693.2	693.2	1.5	0.5	-84.63	-363.7	-114.6	376.8	374.9	1.96	192.544	
800.0	796.0	791.2	791.2	1.8	0.5	-88.01	-363.6	-114.6	375.5	373.1	2.35	160.031	
818.0	813.5	808.7	808.7	1.9	0.5	-88.66	-363.6	-114.6	375.4	372.9	2.41	155.485	
869.3	863.4	858.3	858.3	2.2	0.5	-89.90	-363.6	-114.5	375.2	372.5	2.71	138.368	CC
900.0	893.1	887.8	887.7	2.3	0.5	-90.76	-363.6	-114.5	375.3	372.4	2.89	129.884	ES
1,000.0	989.2	983.5	983.5	2.9	0.6	-94.06	-363.8	-114.4	376.6	373.1	3.48	108.287	
1,100.0	1,083.9	1,078.1	1,078.1	3.5	0.6	-98.00	-364.0	-114.3	380.4	376.3	4.06	93.662	
1,104.0	1,087.6	1,081.9	1,081.9	3.5	0.6	-98.16	-364.0	-114.3	380.6	376.5	4.08	93.184	
1,200.0	1,177.9	1,172.1	1,172.1	4.1	0.6	-103.38	-364.1	-114.3	387.3	382.6	4.71	82.295	
1,300.0	1,272.0	1,266.3	1,266.3	4.8	0.7	-108.63	-364.3	-114.1	397.4	392.0	5.32	74.677	
1,391.0	1,357.8	1,352.0	1,352.0	5.3	0.7	-113.20	-364.4	-113.9	409.0	403.1	5.85	69.883	
1,400.0	1,366.3	1,360.4	1,360.4	5.4	0.7	-113.41	-364.4	-113.9	410.3	404.4	5.90	69.579	
1,458.0	1,421.2	1,415.3	1,415.2	5.7	0.7	-114.55	-364.5	-113.7	418.3	412.2	6.17	67.794	
1,500.0	1,461.0	1,455.1	1,455.1	6.0	0.7	-116.33	-364.5	-113.5	424.3	418.0	6.37	66.585	
1,600.0	1,556.1	1,550.0	1,550.0	6.6	0.8	-120.39	-364.6	-113.1	440.0	433.1	6.83	64.403	
1,676.0	1,628.3	1,622.3	1,622.3	7.0	0.8	-123.30	-364.6	-112.8	453.0	445.9	7.16	63.273	
1,700.0	1,651.1	1,645.3	1,645.3	7.2	0.8	-123.54	-364.5	-112.6	457.3	450.0	7.26	62.986	
1,800.0	1,746.4	1,741.2	1,741.2	7.7	0.9	-124.40	-364.3	-112.0	475.0	467.4	7.66	62.017	
1,900.0	1,841.8	1,837.4	1,837.4	8.3	0.9	-125.02	-363.6	-111.1	492.6	484.6	8.03	61.348	
1,963.0	1,902.0	1,897.9	1,897.9	8.7	0.9	-125.32	-363.0	-110.4	503.5	495.3	8.25	61.053	
2,000.0	1,937.4	1,933.8	1,933.8	8.9	0.9	-126.37	-362.5	-109.9	510.0	501.6	8.37	60.918	
2,100.0	2,033.1	2,030.9	2,030.8	9.5	1.0	-129.10	-361.0	-108.6	527.7	519.0	8.69	60.706	
2,200.0	2,129.0	2,128.7	2,128.6	10.0	1.0	-131.65	-358.9	-107.3	545.8	536.8	9.00	60.673	
2,250.0	2,177.1	2,178.2	2,178.1	10.3	1.0	-132.87	-357.7	-106.7	554.8	545.7	9.14	60.708	
2,300.0	2,225.1	2,227.4	2,227.3	10.6	1.0	-135.15	-356.2	-106.1	564.0	554.7	9.28	60.748	
2,400.0	2,321.2	2,324.6	2,324.4	11.2	1.1	-139.52	-353.1	-105.0	583.6	574.0	9.57	60.985	
2,500.0	2,417.0	2,419.6	2,419.4	11.7	1.1	-143.61	-350.0	-103.9	604.8	595.0	9.85	61.393	
2,537.0	2,452.5	2,454.4	2,454.2	11.9	1.1	-145.06	-348.9	-103.4	613.1	603.2	9.96	61.583	
2,600.0	2,512.8	2,513.9	2,513.6	12.3	1.1	-148.98	-347.0	-102.7	628.1	617.9	10.12	62.046	
2,700.0	2,608.2	2,610.1	2,609.8	12.9	1.1	-154.82	-344.0	-101.5	653.7	643.3	10.38	62.975	
2,800.0	2,703.3	2,706.3	2,705.9	13.5	1.2	-160.13	-340.9	-100.4	681.5	670.9	10.64	64.076	
2,824.0	2,726.1	2,729.1	2,728.7	13.7	1.2	-161.33	-340.1	-100.2	688.5	677.8	10.70	64.357	
2,900.0	2,798.2	2,801.4	2,801.0	14.1	1.2	-159.70	-337.9	-99.6	710.2	699.3	10.90	65.139	
3,000.0	2,893.6	2,896.5	2,896.0	14.7	1.2	-157.28	-335.1	-98.9	737.4	726.2	11.16	66.045	
3,100.0	2,989.4	2,992.5	2,992.0	15.3	1.3	-154.52	-332.6	-98.4	762.8	751.4	11.41	66.846	
3,112.0	3,000.9	3,004.1	3,003.5	15.4	1.3	-154.17	-332.3	-98.4	765.7	754.3	11.44	66.935	
3,200.0	3,085.5	3,088.4	3,087.9	15.9	1.3	-154.17	-330.4	-98.1	786.9	775.2	11.65	67.537	
3,300.0	3,181.9	3,184.8	3,184.3	16.4	1.3	-154.04	-328.6	-98.0	810.3	798.4	11.89	68.131	
3,400.0	3,278.4	3,279.8	3,279.2	16.9	1.3	-153.74	-327.4	-98.2	833.1	820.9	12.14	68.622	
3,500.0	3,374.7	3,379.7	3,379.1	17.5	1.3	-154.53	-326.9	-98.9	856.7	844.2	12.48	68.659	
3,600.0	3,470.3	3,481.4	3,480.8	18.1	1.4	-155.28	-326.9	-100.6	882.1	869.3	12.81	68.851	
3,687.0	3,552.8	3,566.8	3,566.2	18.6	1.4	-155.86	-327.4	-102.7	905.8	892.7	13.11	69.106	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,700.0	3,565.1	3,579.5	3,578.8	18.7	1.4	-155.70	-327.4	-103.0	909.5	896.3	13.15	69.145	
3,800.0	3,659.5	3,674.5	3,673.8	19.4	1.4	-154.48	-328.2	-105.6	937.6	924.1	13.50	69.427	
3,900.0	3,753.9	3,769.8	3,769.1	20.0	1.4	-153.31	-329.1	-108.3	965.7	951.8	13.85	69.731	
3,974.0	3,823.6	3,839.3	3,838.6	20.5	1.4	-152.47	-329.7	-110.2	986.5	972.4	14.10	69.962	
4,000.0	3,848.1	3,863.5	3,862.7	20.7	1.4	-152.93	-330.0	-110.9	993.7	979.6	14.16	70.185	
4,100.0	3,942.9	3,954.5	3,953.8	21.3	1.4	-154.67	-331.0	-113.1	1,020.8	1,006.4	14.40	70.914	
4,200.0	4,038.5	4,047.4	4,046.6	21.9	1.4	-156.46	-331.8	-114.9	1,046.6	1,031.9	14.64	71.498	
4,263.0	4,099.0	4,108.1	4,107.3	22.3	1.4	-157.63	-332.3	-115.9	1,061.9	1,047.1	14.79	71.788	
4,300.0	4,134.7	4,144.3	4,143.5	22.5	1.4	-158.93	-332.5	-116.5	1,070.7	1,055.8	14.87	71.982	
4,400.0	4,231.2	4,242.7	4,241.8	23.0	1.4	-162.52	-332.7	-118.1	1,094.1	1,079.0	15.10	72.442	
4,500.0	4,328.0	4,341.3	4,340.5	23.5	1.4	-166.25	-332.5	-119.6	1,116.9	1,101.5	15.34	72.800	
4,549.0	4,375.5	4,389.4	4,388.6	23.8	1.4	-168.12	-332.3	-120.4	1,127.9	1,112.4	15.46	72.938	
4,600.0	4,425.0	4,437.5	4,436.7	24.0	1.4	-168.41	-332.2	-121.1	1,139.3	1,123.7	15.60	73.017	
4,700.0	4,521.9	4,532.2	4,531.3	24.5	1.4	-168.93	-333.0	-122.8	1,162.1	1,146.2	15.89	73.146	
4,800.0	4,618.8	4,629.8	4,628.8	25.0	1.4	-169.41	-334.3	-124.7	1,185.0	1,168.8	16.18	73.260	
4,837.0	4,654.7	4,666.0	4,665.1	25.2	1.4	-169.59	-334.7	-125.4	1,193.6	1,177.3	16.28	73.302	
4,900.0	4,715.7	4,727.1	4,726.2	25.5	1.4	-170.11	-335.4	-126.5	1,208.2	1,191.8	16.48	73.333	
5,000.0	4,812.4	4,823.1	4,822.2	26.0	1.5	-170.94	-335.8	-127.9	1,232.3	1,215.5	16.78	73.433	
5,100.0	4,908.9	4,919.9	4,919.0	26.6	1.5	-171.73	-335.7	-129.2	1,257.2	1,240.1	17.08	73.590	
5,125.0	4,932.9	4,944.5	4,943.5	26.7	1.5	-171.93	-335.7	-129.5	1,263.5	1,246.3	17.16	73.634	
5,200.0	5,005.4	5,018.6	5,017.6	27.0	1.5	-169.35	-335.4	-130.4	1,281.9	1,264.5	17.35	73.894	
5,300.0	5,102.4	5,119.5	5,118.6	27.5	1.5	-165.39	-334.9	-131.8	1,304.0	1,286.4	17.58	74.189	
5,400.0	5,199.9	5,222.5	5,221.5	28.0	1.5	-160.67	-334.1	-133.5	1,323.3	1,305.5	17.78	74.419	
5,412.0	5,211.7	5,234.4	5,233.5	28.1	1.5	-160.05	-334.0	-133.7	1,325.4	1,307.6	17.81	74.441	
5,500.0	5,297.9	5,323.9	5,322.9	28.4	1.5	-157.74	-333.2	-135.4	1,339.9	1,321.9	17.94	74.676	
5,581.0	5,377.7	5,412.0	5,410.9	28.7	1.6	-155.02	-332.3	-137.4	1,351.0	1,332.9	18.05	74.825	
5,600.0	5,396.4	5,433.5	5,432.5	28.8	1.6	-156.29	-332.1	-138.0	1,353.2	1,335.2	18.08	74.853	
5,700.0	5,495.3	5,539.5	5,538.4	29.1	1.6	-164.43	-331.0	-141.5	1,363.6	1,345.4	18.21	74.888	
5,800.0	5,594.6	5,633.9	5,632.7	29.4	1.6	-176.27	-330.6	-144.7	1,372.0	1,353.7	18.34	74.803	
5,900.0	5,694.1	5,726.3	5,725.1	29.6	1.6	166.30	-330.4	-147.5	1,378.9	1,360.4	18.47	74.641	
5,917.0	5,711.1	5,741.9	5,740.7	29.7	1.6	162.73	-330.4	-147.9	1,379.9	1,361.4	18.50	74.607	
6,000.0	5,793.7	5,818.5	5,817.3	29.8	1.6	162.84	-330.4	-149.8	1,385.0	1,366.3	18.67	74.185	
6,067.0	5,860.5	5,881.8	5,880.6	30.0	1.7	162.93	-330.4	-151.1	1,389.3	1,370.5	18.81	73.862	
6,100.0	5,893.4	5,914.1	5,912.8	30.0	1.7	162.98	-330.4	-151.7	1,391.3	1,372.5	18.84	73.833	
6,200.0	5,993.2	6,014.3	6,013.0	30.2	1.7	163.10	-330.5	-153.7	1,395.1	1,376.2	18.94	73.665	
6,300.0	6,093.2	6,103.9	6,102.6	30.3	1.7	163.18	-331.0	-155.3	1,396.0	1,377.0	19.02	73.415	
6,318.8	6,111.9	6,121.3	6,120.0	30.3	1.7	111.22	-331.1	-155.5	1,395.9	1,364.7	31.22	44.713	
6,400.0	6,193.2	6,200.0	6,198.7	30.4	1.7	111.25	-331.5	-156.3	1,395.3	1,364.0	31.30	44.583	
6,444.4	6,237.6	6,241.9	6,240.6	30.4	1.7	111.26	-331.7	-156.6	1,395.1	1,363.7	31.34	44.514	
6,450.0	6,243.2	6,247.6	6,246.3	30.4	1.7	21.27	-331.7	-156.6	1,395.0	1,375.8	19.22	72.567	
6,475.0	6,268.1	6,273.1	6,271.8	30.4	1.7	21.33	-331.8	-156.8	1,394.0	1,374.8	19.14	72.826	
6,500.0	6,293.0	6,298.5	6,297.2	30.4	1.7	21.47	-331.8	-157.0	1,391.7	1,372.6	19.09	72.912	
6,525.0	6,317.8	6,322.6	6,321.3	30.4	1.7	21.68	-331.9	-157.2	1,388.2	1,369.2	19.06	72.842	
6,550.0	6,342.3	6,346.5	6,345.2	30.4	1.7	21.97	-332.0	-157.4	1,383.6	1,364.5	19.05	72.637	
6,575.0	6,366.5	6,370.0	6,368.7	30.3	1.7	22.34	-332.0	-157.5	1,377.8	1,358.7	19.05	72.310	
6,600.0	6,390.4	6,393.2	6,391.9	30.2	1.7	22.79	-332.1	-157.7	1,370.8	1,351.7	19.07	71.869	
6,625.0	6,413.9	6,416.5	6,415.2	30.2	1.8	23.34	-332.1	-157.8	1,362.7	1,343.6	19.11	71.307	
6,650.0	6,436.9	6,439.5	6,438.2	30.1	1.8	23.99	-332.2	-158.0	1,353.4	1,334.3	19.17	70.615	
6,675.0	6,459.3	6,462.0	6,460.6	30.0	1.8	24.74	-332.2	-158.1	1,343.1	1,323.9	19.25	69.777	
6,700.0	6,481.1	6,483.8	6,482.5	29.9	1.8	25.62	-332.2	-158.2	1,331.7	1,312.4	19.36	68.770	
6,725.0	6,502.3	6,505.0	6,503.6	29.7	1.8	26.62	-332.2	-158.3	1,319.3	1,299.8	19.53	67.571	
6,750.0	6,522.7	6,525.4	6,524.1	29.6	1.8	27.77	-332.3	-158.4	1,306.0	1,286.2	19.74	66.154	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,545.1	6,543.8	29.5	1.8	29.09	-332.3	-158.5	1,291.6	1,271.6	20.02	64.503	
6,800.0	6,561.2	6,564.0	6,562.6	29.4	1.8	30.58	-332.3	-158.7	1,276.4	1,256.0	20.39	62.612	
6,825.0	6,579.1	6,581.9	6,580.6	29.3	1.8	32.28	-332.3	-158.8	1,260.4	1,239.5	20.84	60.485	
6,850.0	6,596.1	6,598.9	6,597.6	29.1	1.8	34.21	-332.3	-158.9	1,243.5	1,222.1	21.39	58.145	
6,875.0	6,612.1	6,600.0	6,598.7	29.0	1.8	35.93	-332.3	-158.9	1,226.0	1,204.1	21.88	56.023	
6,900.0	6,627.1	6,600.0	6,598.7	28.9	1.8	37.79	-332.3	-158.9	1,208.0	1,185.6	22.44	53.823	
6,925.0	6,641.0	6,600.0	6,598.7	28.8	1.8	39.85	-332.3	-158.9	1,189.6	1,166.5	23.07	51.553	
6,950.0	6,653.8	6,600.0	6,598.7	28.7	1.8	42.12	-332.3	-158.9	1,170.7	1,146.9	23.77	49.253	
6,975.0	6,665.5	6,600.0	6,598.7	28.7	1.8	44.62	-332.3	-158.9	1,151.4	1,126.8	24.52	46.963	
7,000.0	6,676.0	6,600.0	6,598.7	28.6	1.8	47.38	-332.3	-158.9	1,131.7	1,106.4	25.30	44.725	
7,025.0	6,685.3	6,600.0	6,598.7	28.6	1.8	50.39	-332.3	-158.9	1,111.7	1,085.6	26.11	42.577	
7,050.0	6,693.4	6,600.0	6,598.7	28.5	1.8	53.68	-332.3	-158.9	1,091.4	1,064.5	26.91	40.552	
7,075.0	6,700.2	6,600.0	6,598.7	28.5	1.8	57.25	-332.3	-158.9	1,070.8	1,043.1	27.69	38.679	
7,100.0	6,705.8	6,600.0	6,598.7	28.5	1.8	61.09	-332.3	-158.9	1,050.1	1,021.7	28.40	36.979	
7,125.0	6,710.0	6,600.0	6,598.7	28.5	1.8	65.20	-332.3	-158.9	1,029.1	1,000.1	29.02	35.468	
7,150.0	6,713.0	6,600.0	6,598.7	28.6	1.8	69.52	-332.3	-158.9	1,008.1	978.5	29.52	34.151	
7,175.0	6,714.7	6,600.0	6,598.7	28.6	1.8	74.02	-332.3	-158.9	986.9	957.0	29.89	33.018	
7,198.8	6,715.0	6,600.0	6,598.7	28.6	1.8	78.42	-332.3	-158.9	966.8	936.6	30.13	32.088	
7,200.0	6,715.0	6,600.0	6,598.7	28.6	1.8	78.42	-332.3	-158.9	965.8	935.7	30.13	32.053	
7,300.0	6,714.1	6,600.0	6,598.7	29.0	1.8	78.42	-332.3	-158.9	883.0	852.4	30.52	28.927	
7,400.0	6,713.2	6,600.0	6,598.7	29.7	1.8	78.42	-332.3	-158.9	804.0	772.9	31.18	25.791	
7,500.0	6,712.3	6,600.0	6,598.7	30.6	1.8	78.42	-332.3	-158.9	730.3	698.2	32.07	22.774	
7,600.0	6,711.3	6,600.0	6,598.7	31.7	1.8	78.42	-332.3	-158.9	663.5	630.3	33.18	19.996	
7,700.0	6,710.4	6,600.0	6,598.7	33.0	1.8	78.42	-332.3	-158.9	605.8	571.3	34.49	17.566	
7,800.0	6,709.5	6,600.0	6,598.7	34.5	1.8	78.42	-332.3	-158.9	560.3	524.3	35.97	15.574	
7,900.0	6,708.5	6,600.0	6,598.7	36.2	1.8	78.42	-332.3	-158.9	529.9	492.2	37.61	14.088	
8,000.0	6,707.6	6,600.0	6,598.7	38.0	1.8	78.42	-332.3	-158.9	517.3	477.9	39.38	13.136	
8,015.7	6,707.5	6,600.0	6,598.7	38.3	1.8	78.42	-332.3	-158.9	517.1	477.4	39.68	13.032	
8,100.0	6,706.7	6,600.0	6,598.7	39.9	1.8	78.42	-332.3	-158.9	523.9	482.6	41.26	12.696	
8,200.0	6,705.8	6,600.0	6,598.7	41.9	1.8	78.42	-332.3	-158.9	548.9	505.7	43.25	12.692	SF
8,300.0	6,704.8	6,600.0	6,598.7	44.0	1.8	78.42	-332.3	-158.9	590.0	544.7	45.31	13.021	
8,400.0	6,703.9	6,600.0	6,598.7	46.2	1.8	78.42	-332.3	-158.9	644.2	596.8	47.46	13.575	
8,500.0	6,703.0	6,600.0	6,598.7	48.5	1.8	78.42	-332.3	-158.9	708.4	658.8	49.66	14.265	
8,600.0	6,702.1	6,600.0	6,598.7	50.8	1.8	78.42	-332.3	-158.9	780.2	728.3	51.92	15.027	
8,700.0	6,701.1	6,600.0	6,598.7	53.1	1.8	78.42	-332.3	-158.9	857.6	803.4	54.23	15.815	
8,800.0	6,700.2	6,600.0	6,598.7	55.5	1.8	78.42	-332.3	-158.9	939.4	882.8	56.58	16.603	
8,900.0	6,699.3	6,600.0	6,598.7	57.9	1.8	78.42	-332.3	-158.9	1,024.3	965.4	58.96	17.372	
9,000.0	6,698.3	6,600.0	6,598.7	60.4	1.8	78.42	-332.3	-158.9	1,111.8	1,050.4	61.38	18.113	
9,100.0	6,697.4	6,600.0	6,598.7	62.9	1.8	78.42	-332.3	-158.9	1,201.2	1,137.4	63.83	18.820	
9,200.0	6,696.5	6,600.0	6,598.7	65.4	1.8	78.42	-332.3	-158.9	1,292.2	1,225.9	66.30	19.490	
9,300.0	6,695.5	6,600.0	6,598.7	68.0	1.8	78.42	-332.3	-158.9	1,384.4	1,315.6	68.79	20.124	
9,400.0	6,694.6	6,600.0	6,598.7	70.5	1.8	78.42	-332.3	-158.9	1,477.7	1,406.4	71.31	20.722	
9,500.0	6,693.7	6,600.0	6,598.7	73.1	1.8	78.42	-332.3	-158.9	1,571.7	1,497.9	73.84	21.286	
9,600.0	6,692.8	6,600.0	6,598.7	75.7	1.8	78.42	-332.3	-158.9	1,666.5	1,590.1	76.39	21.816	
9,700.0	6,691.8	6,600.0	6,598.7	78.3	1.8	78.42	-332.3	-158.9	1,761.8	1,682.9	78.95	22.316	
9,800.0	6,690.9	6,600.0	6,598.7	80.9	1.8	78.42	-332.3	-158.9	1,857.7	1,776.1	81.53	22.786	
9,900.0	6,690.0	6,600.0	6,598.7	83.6	1.8	78.42	-332.3	-158.9	1,953.9	1,869.8	84.11	23.230	
10,000.0	6,689.0	6,600.0	6,598.7	86.2	1.8	78.42	-332.3	-158.9	2,050.5	1,963.8	86.71	23.648	
10,100.0	6,688.1	6,600.0	6,598.7	88.9	1.8	78.41	-332.3	-158.9	2,147.4	2,058.1	89.32	24.043	
10,200.0	6,687.2	6,600.0	6,598.7	91.6	1.8	78.41	-332.3	-158.9	2,244.6	2,152.7	91.93	24.416	
10,300.0	6,686.2	6,600.0	6,598.7	94.2	1.8	78.41	-332.3	-158.9	2,342.0	2,247.5	94.56	24.768	
10,400.0	6,685.3	6,600.0	6,598.7	96.9	1.8	78.41	-332.3	-158.9	2,439.7	2,342.5	97.19	25.102	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,600.0	6,598.7	99.6	1.8	78.41	-332.3	-158.9	2,537.5	2,437.7	99.83	25.418	
10,600.0	6,683.4	6,600.0	6,598.7	102.3	1.8	78.41	-332.3	-158.9	2,635.5	2,533.0	102.47	25.719	
10,700.0	6,682.5	6,600.0	6,598.7	105.0	1.8	78.41	-332.3	-158.9	2,733.6	2,628.5	105.12	26.003	
10,800.0	6,681.6	6,600.0	6,598.7	107.7	1.8	78.41	-332.3	-158.9	2,831.9	2,724.1	107.78	26.274	
10,900.0	6,680.6	6,600.0	6,598.7	110.4	1.8	78.41	-332.3	-158.9	2,930.2	2,819.8	110.44	26.532	
11,000.0	6,679.7	6,600.0	6,598.7	113.1	1.8	78.41	-332.3	-158.9	3,028.7	2,915.6	113.11	26.777	
11,100.0	6,678.8	6,600.0	6,598.7	115.9	1.8	78.41	-332.3	-158.9	3,127.3	3,011.5	115.78	27.011	
11,200.0	6,677.8	6,600.0	6,598.7	118.6	1.8	78.41	-332.3	-158.9	3,226.0	3,107.5	118.45	27.234	
11,300.0	6,676.9	6,600.0	6,598.7	121.3	1.8	78.41	-332.3	-158.9	3,324.7	3,203.6	121.13	27.448	
11,400.0	6,676.0	6,600.0	6,598.7	124.1	1.8	78.41	-332.3	-158.9	3,423.5	3,299.7	123.81	27.651	
11,500.0	6,675.0	6,600.0	6,598.7	126.8	1.8	78.40	-332.3	-158.9	3,522.4	3,395.9	126.49	27.846	
11,600.0	6,674.1	6,600.0	6,598.7	129.5	1.8	78.40	-332.3	-158.9	3,621.4	3,492.2	129.18	28.033	
11,700.0	6,673.1	6,600.0	6,598.7	132.3	1.8	78.40	-332.3	-158.9	3,720.4	3,588.5	131.87	28.212	
11,800.0	6,672.2	6,600.0	6,598.7	135.0	1.8	78.40	-332.3	-158.9	3,819.4	3,684.9	134.57	28.383	
11,900.0	6,671.3	6,600.0	6,598.7	137.8	1.8	78.40	-332.3	-158.9	3,918.5	3,781.3	137.26	28.548	
12,000.0	6,670.3	6,600.0	6,598.7	140.5	1.8	78.40	-332.3	-158.9	4,017.7	3,877.7	139.96	28.706	
12,036.2	6,670.0	6,600.0	6,598.7	141.5	1.8	78.40	-332.3	-158.9	4,053.6	3,912.7	140.94	28.762	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	5.0	5.0	0.0	0.1	116.06	-1,810.3	3,701.2	4,120.2				
100.0	100.0	105.0	105.0	0.1	1.2	105.47	-1,810.3	3,701.2	4,120.2	4,118.9	1.34	3,064.255	
200.0	200.0	205.0	205.0	0.2	3.5	105.47	-1,810.3	3,701.2	4,120.3	4,116.5	3.75	1,098.665	
261.0	261.0	266.0	266.0	0.3	4.8	105.47	-1,810.3	3,701.2	4,120.4	4,115.3	5.09	809.944	
300.0	300.0	305.0	305.0	0.4	5.6	-176.31	-1,810.3	3,701.2	4,120.7	4,114.7	5.98	688.681	
400.0	399.9	404.9	404.9	0.6	7.7	-161.76	-1,810.3	3,701.2	4,123.9	4,115.7	8.24	500.339	
500.0	499.7	504.7	504.7	0.8	9.7	-159.35	-1,810.3	3,701.2	4,130.6	4,120.2	10.46	394.889	
538.0	537.5	542.5	542.5	0.9	10.4	-158.88	-1,810.3	3,701.2	4,134.1	4,122.8	11.29	366.160	
600.0	599.1	604.1	604.1	1.1	11.7	-159.62	-1,810.3	3,701.2	4,140.9	4,128.3	12.66	327.103	
700.0	697.9	702.9	702.9	1.5	13.7	-160.31	-1,810.3	3,701.2	4,155.2	4,140.4	14.82	280.460	
800.0	796.0	801.0	801.0	1.8	15.7	-160.70	-1,810.3	3,701.2	4,173.6	4,156.7	16.90	246.984	
818.0	813.5	818.5	818.5	1.9	16.0	-160.75	-1,810.3	3,701.2	4,177.4	4,160.1	17.26	241.966	
900.0	893.1	898.1	898.1	2.3	17.6	-159.82	-1,810.3	3,701.2	4,196.0	4,177.0	18.97	221.141	
1,000.0	989.2	994.2	994.2	2.9	19.6	-158.93	-1,810.3	3,701.2	4,222.2	4,201.2	20.98	201.289	
1,100.0	1,083.9	1,088.9	1,088.9	3.5	21.5	-158.20	-1,810.3	3,701.2	4,252.2	4,229.3	22.88	185.870	
1,104.0	1,087.6	1,092.6	1,092.6	3.5	21.5	-158.17	-1,810.3	3,701.2	4,253.4	4,230.5	22.95	185.327	
1,200.0	1,177.9	1,182.9	1,182.9	4.1	23.4	-159.11	-1,810.3	3,701.2	4,284.1	4,259.1	25.03	171.132	
1,300.0	1,272.0	1,277.0	1,277.0	4.8	25.3	-160.09	-1,810.3	3,701.2	4,316.0	4,288.9	27.16	158.884	
1,391.0	1,357.8	1,362.8	1,362.8	5.3	27.0	-160.99	-1,810.3	3,701.2	4,344.9	4,315.8	29.12	149.204	
1,400.0	1,366.3	1,371.3	1,371.3	5.4	27.2	-160.82	-1,810.3	3,701.2	4,347.8	4,318.5	29.34	148.197	
1,458.0	1,421.2	1,426.2	1,426.2	5.7	28.3	-159.64	-1,810.3	3,701.2	4,365.5	4,334.8	30.74	141.992	
1,500.0	1,461.0	1,466.0	1,466.0	6.0	29.1	-159.93	-1,810.3	3,701.2	4,377.9	4,346.3	31.65	138.325	
1,600.0	1,556.1	1,561.1	1,561.1	6.6	31.0	-160.60	-1,810.3	3,701.2	4,407.5	4,373.6	33.81	130.368	
1,676.0	1,628.3	1,633.3	1,633.3	7.0	32.4	-161.12	-1,810.3	3,701.2	4,429.8	4,394.4	35.45	124.956	
1,700.0	1,651.1	1,656.1	1,656.1	7.2	32.9	-160.58	-1,810.3	3,701.2	4,436.8	4,400.8	36.00	123.260	
1,800.0	1,746.4	1,751.4	1,751.4	7.7	34.8	-158.32	-1,810.3	3,701.2	4,465.5	4,427.3	38.27	116.677	
1,900.0	1,841.8	1,846.8	1,846.8	8.3	36.7	-155.99	-1,810.3	3,701.2	4,493.3	4,452.8	40.56	110.784	
1,963.0	1,902.0	1,907.0	1,907.0	8.7	37.9	-154.49	-1,810.3	3,701.2	4,510.4	4,468.4	42.00	107.378	
2,000.0	1,937.4	1,942.4	1,942.4	8.9	38.6	-154.55	-1,810.3	3,701.2	4,520.2	4,477.4	42.84	105.521	
2,100.0	2,033.1	2,038.1	2,038.1	9.5	40.6	-154.71	-1,810.3	3,701.2	4,546.5	4,501.4	45.09	100.825	
2,200.0	2,129.0	2,134.0	2,134.0	10.0	42.5	-154.87	-1,810.3	3,701.2	4,572.2	4,524.9	47.35	96.552	
2,250.0	2,177.1	2,182.1	2,182.1	10.3	43.5	-154.95	-1,810.3	3,701.2	4,584.8	4,536.4	48.49	94.555	
2,300.0	2,225.1	2,230.1	2,230.1	10.6	44.4	-156.17	-1,810.3	3,701.2	4,597.5	4,548.0	49.54	92.806	
2,400.0	2,321.2	2,326.2	2,326.2	11.2	46.4	-158.57	-1,810.3	3,701.2	4,623.5	4,571.8	51.63	89.550	
2,500.0	2,417.0	2,422.0	2,422.0	11.7	48.3	-160.89	-1,810.3	3,701.2	4,650.2	4,596.5	53.71	86.587	
2,537.0	2,452.5	2,457.5	2,457.5	11.9	49.0	-161.74	-1,810.3	3,701.2	4,660.3	4,605.8	54.47	85.558	
2,600.0	2,512.8	2,517.8	2,517.8	12.3	50.2	-164.73	-1,810.3	3,701.2	4,677.8	4,622.2	55.67	84.028	
2,700.0	2,608.2	2,613.2	2,613.2	12.9	52.1	-169.22	-1,810.3	3,701.2	4,707.0	4,649.4	57.54	81.798	
2,800.0	2,703.3	2,708.3	2,708.3	13.5	54.1	-173.41	-1,810.3	3,701.2	4,737.6	4,678.3	59.38	79.790	
2,824.0	2,726.1	2,731.1	2,731.1	13.7	54.5	-174.37	-1,810.3	3,701.2	4,745.2	4,685.4	59.81	79.338	
2,900.0	2,798.2	2,803.2	2,803.2	14.1	56.0	-171.88	-1,810.3	3,701.2	4,768.9	4,707.2	61.68	77.317	
3,000.0	2,893.6	2,898.6	2,898.6	14.7	57.9	-168.35	-1,810.3	3,701.2	4,798.5	4,734.4	64.15	74.805	
3,100.0	2,989.4	2,994.4	2,994.4	15.3	59.8	-164.52	-1,810.3	3,701.2	4,826.5	4,759.8	66.62	72.451	
3,112.0	3,000.9	3,005.9	3,005.9	15.4	60.0	-164.04	-1,810.3	3,701.2	4,829.7	4,762.8	66.91	72.178	
3,200.0	3,085.5	3,090.5	3,090.5	15.9	61.7	-163.19	-1,810.3	3,701.2	4,853.0	4,784.1	68.95	70.382	
3,300.0	3,181.9	3,186.9	3,186.9	16.4	63.7	-162.18	-1,810.3	3,701.2	4,878.8	4,807.5	71.28	68.449	
3,400.0	3,278.4	3,283.4	3,283.4	16.9	65.6	-161.11	-1,810.3	3,701.2	4,903.6	4,830.0	73.60	66.621	
3,500.0	3,374.7	3,379.7	3,379.7	17.5	67.6	-161.21	-1,810.3	3,701.2	4,929.2	4,853.8	75.41	65.368	
3,600.0	3,470.3	3,475.3	3,475.3	18.1	69.5	-161.29	-1,810.3	3,701.2	4,957.2	4,880.0	77.13	64.272	
3,687.0	3,552.8	3,557.8	3,557.8	18.6	71.1	-161.34	-1,810.3	3,701.2	4,983.4	4,904.8	78.56	63.436	
3,700.0	3,565.1	3,570.1	3,570.1	18.7	71.4	-161.10	-1,810.3	3,701.2	4,987.4	4,908.6	78.85	63.256	
3,800.0	3,659.5	3,664.5	3,664.5	19.4	73.3	-159.25	-1,810.3	3,701.2	5,018.6	4,937.5	81.06	61.909	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,758.9	3,758.9	20.0	75.2	-157.44	-1,810.3	3,701.2	5,049.6	4,966.3	83.28	60.634	
3,974.0	3,823.6	3,828.6	3,828.6	20.5	76.6	-156.14	-1,810.3	3,701.2	5,072.6	4,987.6	84.92	59.734	
4,000.0	3,848.1	3,853.1	3,853.1	20.7	77.1	-156.44	-1,810.3	3,701.2	5,080.5	4,995.0	85.58	59.363	
4,100.0	3,942.9	3,947.9	3,947.9	21.3	79.0	-157.68	-1,810.3	3,701.2	5,110.1	5,021.9	88.16	57.967	
4,200.0	4,038.5	4,043.5	4,043.5	21.9	80.9	-159.03	-1,810.3	3,701.2	5,137.6	5,046.9	90.74	56.620	
4,263.0	4,099.0	4,104.0	4,104.0	22.3	82.1	-159.95	-1,810.3	3,701.2	5,154.0	5,061.6	92.37	55.797	
4,300.0	4,134.7	4,139.7	4,139.7	22.5	82.8	-161.11	-1,810.3	3,701.2	5,163.4	5,070.2	93.19	55.405	
4,400.0	4,231.2	4,236.2	4,236.2	23.0	84.8	-164.39	-1,810.3	3,701.2	5,188.3	5,092.9	95.42	54.371	
4,500.0	4,328.0	4,333.0	4,333.0	23.5	86.7	-167.86	-1,810.3	3,701.2	5,212.8	5,115.1	97.67	53.372	
4,549.0	4,375.5	4,380.5	4,380.5	23.8	87.7	-169.63	-1,810.3	3,701.2	5,224.6	5,125.8	98.78	52.894	
4,600.0	4,425.0	4,430.0	4,430.0	24.0	88.7	-169.84	-1,810.3	3,701.2	5,236.9	5,137.0	99.86	52.441	
4,700.0	4,521.9	4,526.9	4,526.9	24.5	90.6	-170.24	-1,810.3	3,701.2	5,261.0	5,159.0	101.99	51.583	
4,800.0	4,618.8	4,623.8	4,623.8	25.0	92.6	-170.64	-1,810.3	3,701.2	5,285.3	5,181.2	104.12	50.762	
4,837.0	4,654.7	4,659.7	4,659.7	25.2	93.3	-170.78	-1,810.3	3,701.2	5,294.3	5,189.4	104.91	50.467	
4,900.0	4,715.7	4,720.7	4,720.7	25.5	94.5	-171.26	-1,810.3	3,701.2	5,309.8	5,203.7	106.15	50.024	
5,000.0	4,812.4	4,817.4	4,817.4	26.0	96.5	-171.97	-1,810.3	3,701.2	5,335.1	5,227.0	108.10	49.355	
5,100.0	4,908.9	4,913.9	4,913.9	26.6	98.4	-172.65	-1,810.3	3,701.2	5,361.2	5,251.2	110.03	48.725	
5,125.0	4,932.9	4,937.9	4,937.9	26.7	98.9	-172.81	-1,810.3	3,701.2	5,367.9	5,257.4	110.51	48.574	
5,200.0	5,005.4	5,010.4	5,010.4	27.0	100.3	-170.11	-1,810.3	3,701.2	5,387.2	5,274.6	112.64	47.828	
5,300.0	5,102.4	5,107.4	5,107.4	27.5	102.3	-165.95	-1,810.3	3,701.2	5,410.8	5,295.4	115.43	46.874	
5,400.0	5,199.9	5,204.9	5,204.9	28.0	104.3	-160.99	-1,810.3	3,701.2	5,432.0	5,313.8	118.18	45.962	
5,412.0	5,211.7	5,216.7	5,216.7	28.1	104.5	-160.33	-1,810.3	3,701.2	5,434.4	5,315.9	118.51	45.856	
5,500.0	5,297.9	5,302.9	5,302.9	28.4	106.2	-157.80	-1,810.3	3,701.2	5,450.6	5,329.7	120.88	45.091	
5,581.0	5,377.7	5,382.7	5,382.7	28.7	107.8	-154.87	-1,810.3	3,701.2	5,463.7	5,340.7	123.01	44.416	
5,600.0	5,396.4	5,401.4	5,401.4	28.8	108.2	-156.10	-1,810.3	3,701.2	5,466.6	5,343.1	123.48	44.272	
5,700.0	5,495.3	5,500.3	5,500.3	29.1	110.2	-164.13	-1,810.3	3,701.2	5,480.3	5,354.4	125.90	43.527	
5,800.0	5,594.6	5,599.6	5,599.6	29.4	112.2	-176.00	-1,810.3	3,701.2	5,492.1	5,363.8	128.29	42.810	
5,900.0	5,694.1	5,699.1	5,699.1	29.6	114.2	166.47	-1,810.3	3,701.2	5,501.8	5,371.2	130.63	42.118	
5,917.0	5,711.1	5,716.1	5,716.1	29.7	114.5	162.87	-1,810.3	3,701.2	5,503.3	5,372.3	131.02	42.004	
6,000.0	5,793.7	5,798.7	5,798.7	29.8	116.2	162.89	-1,810.3	3,701.2	5,510.2	5,377.4	132.82	41.488	
6,067.0	5,860.5	5,865.5	5,865.5	30.0	117.5	162.91	-1,810.3	3,701.2	5,515.9	5,381.6	134.27	41.082	
6,100.0	5,893.4	5,898.4	5,898.4	30.0	118.2	162.93	-1,810.3	3,701.2	5,518.4	5,383.4	135.06	40.858	
6,200.0	5,993.2	5,998.2	5,998.2	30.2	120.2	162.98	-1,810.3	3,701.2	5,524.1	5,386.7	137.38	40.211	
6,300.0	6,093.2	6,098.2	6,098.2	30.3	122.2	163.00	-1,810.3	3,701.2	5,526.4	5,386.8	139.54	39.605	
6,318.8	6,111.9	6,116.9	6,116.9	30.3	122.6	111.04	-1,810.3	3,701.2	5,526.4	5,374.2	152.22	36.305	
6,400.0	6,193.2	6,198.2	6,198.2	30.4	124.2	111.04	-1,810.3	3,701.2	5,526.4	5,372.5	153.93	35.902	
6,444.4	6,237.6	6,242.6	6,242.6	30.4	125.1	111.04	-1,810.3	3,701.2	5,526.4	5,371.6	154.86	35.686	
6,450.0	6,243.2	6,248.2	6,248.2	30.4	125.2	21.05	-1,810.3	3,701.2	5,526.4	5,383.7	142.72	38.723	
6,475.0	6,268.1	6,273.1	6,273.1	30.4	125.7	21.09	-1,810.3	3,701.2	5,525.5	5,382.7	142.86	38.678	
6,500.0	6,293.0	6,298.0	6,298.0	30.4	126.2	21.19	-1,810.3	3,701.2	5,523.4	5,380.7	142.67	38.713	
6,525.0	6,317.8	6,322.8	6,322.8	30.4	126.7	21.35	-1,810.3	3,701.2	5,520.1	5,377.9	142.17	38.828	
6,550.0	6,342.3	6,347.3	6,347.3	30.4	127.2	21.57	-1,810.3	3,701.2	5,515.6	5,374.2	141.34	39.023	
6,575.0	6,366.5	6,371.5	6,371.5	30.3	127.7	21.85	-1,810.3	3,701.2	5,509.9	5,369.7	140.21	39.297	
6,600.0	6,390.4	6,395.4	6,395.4	30.2	128.2	22.20	-1,810.3	3,701.2	5,503.0	5,364.2	138.79	39.651	
6,625.0	6,413.9	6,418.9	6,418.9	30.2	128.7	22.62	-1,810.3	3,701.2	5,495.0	5,357.9	137.09	40.083	
6,650.0	6,436.9	6,441.9	6,441.9	30.1	129.1	23.12	-1,810.3	3,701.2	5,485.8	5,350.6	135.15	40.591	
6,675.0	6,459.3	6,464.3	6,464.3	30.0	129.6	23.71	-1,810.3	3,701.2	5,475.5	5,342.5	132.99	41.171	
6,700.0	6,481.1	6,486.1	6,486.1	29.9	130.0	24.38	-1,810.3	3,701.2	5,464.2	5,333.5	130.67	41.816	
6,725.0	6,502.3	6,507.3	6,507.3	29.7	130.5	25.15	-1,810.3	3,701.2	5,451.8	5,323.5	128.23	42.515	
6,750.0	6,522.7	6,527.7	6,527.7	29.6	130.9	26.04	-1,810.3	3,701.2	5,438.3	5,312.6	125.74	43.251	
6,775.0	6,542.4	6,547.4	6,547.4	29.5	131.3	27.06	-1,810.3	3,701.2	5,424.0	5,300.7	123.27	44.000	
6,800.0	6,561.2	6,566.2	6,566.2	29.4	131.6	28.21	-1,810.3	3,701.2	5,408.7	5,287.7	120.93	44.726	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,584.1	6,584.1	29.3	132.0	29.53	-1,810.3	3,701.2	5,392.5	5,273.6	118.82	45.383	
6,850.0	6,596.1	6,601.1	6,601.1	29.1	132.3	31.03	-1,810.3	3,701.2	5,375.4	5,258.3	117.08	45.913	
6,875.0	6,612.1	6,617.1	6,617.1	29.0	132.7	32.74	-1,810.3	3,701.2	5,357.6	5,241.7	115.86	46.244	
6,900.0	6,627.1	6,632.1	6,632.1	28.9	133.0	34.70	-1,810.3	3,701.2	5,339.0	5,223.7	115.32	46.298	
6,925.0	6,641.0	6,646.0	6,646.0	28.8	133.2	36.94	-1,810.3	3,701.2	5,319.7	5,204.1	115.64	46.004	
6,950.0	6,653.8	6,658.8	6,658.8	28.7	133.5	39.50	-1,810.3	3,701.2	5,299.8	5,182.8	116.98	45.305	
6,975.0	6,665.5	6,670.5	6,670.5	28.7	133.7	42.44	-1,810.3	3,701.2	5,279.3	5,159.8	119.48	44.184	
7,000.0	6,676.0	6,681.0	6,681.0	28.6	133.9	45.82	-1,810.3	3,701.2	5,258.3	5,135.1	123.22	42.674	
7,025.0	6,685.3	6,690.3	6,690.3	28.6	134.1	49.69	-1,810.3	3,701.2	5,236.8	5,108.7	128.16	40.862	
7,050.0	6,693.4	6,698.4	6,698.4	28.5	134.3	54.10	-1,810.3	3,701.2	5,215.0	5,080.8	134.14	38.877	
7,075.0	6,700.2	6,705.2	6,705.2	28.5	134.4	59.10	-1,810.3	3,701.2	5,192.7	5,051.9	140.83	36.872	
7,100.0	6,705.8	6,710.8	6,710.8	28.5	134.5	64.70	-1,810.3	3,701.2	5,170.2	5,022.5	147.71	35.002	
7,125.0	6,710.0	6,715.0	6,715.0	28.5	134.6	70.87	-1,810.3	3,701.2	5,147.5	4,993.4	154.10	33.403	
7,150.0	6,713.0	6,718.0	6,718.0	28.6	134.7	77.53	-1,810.3	3,701.2	5,124.6	4,965.3	159.23	32.183	
7,175.0	6,714.7	6,719.7	6,719.7	28.6	134.7	84.50	-1,810.3	3,701.2	5,101.6	4,939.2	162.42	31.411	
7,198.8	6,715.0	6,720.0	6,720.0	28.6	134.7	91.25	-1,810.3	3,701.2	5,079.6	4,916.4	163.24	31.118	
7,200.0	6,715.0	6,720.0	6,720.0	28.6	134.7	91.25	-1,810.3	3,701.2	5,078.6	4,915.3	163.24	31.110	
7,300.0	6,714.1	6,719.1	6,719.1	29.0	134.7	91.22	-1,810.3	3,701.2	4,986.7	4,823.1	163.63	30.476	
7,400.0	6,713.2	6,718.2	6,718.2	29.7	134.7	91.20	-1,810.3	3,701.2	4,895.1	4,730.8	164.28	29.798	
7,500.0	6,712.3	6,717.3	6,717.3	30.6	134.7	91.17	-1,810.3	3,701.2	4,803.9	4,638.7	165.17	29.084	
7,600.0	6,711.3	6,716.3	6,716.3	31.7	134.7	91.14	-1,810.3	3,701.2	4,713.0	4,546.7	166.29	28.342	
7,700.0	6,710.4	6,715.4	6,715.4	33.0	134.6	91.12	-1,810.3	3,701.2	4,622.5	4,454.9	167.61	27.579	
7,800.0	6,709.5	6,714.5	6,714.5	34.5	134.6	91.09	-1,810.3	3,701.2	4,532.4	4,363.3	169.10	26.803	
7,900.0	6,708.5	6,713.5	6,713.5	36.2	134.6	91.06	-1,810.3	3,701.2	4,442.7	4,271.9	170.75	26.018	
8,000.0	6,707.6	6,712.6	6,712.6	38.0	134.6	91.04	-1,810.3	3,701.2	4,353.5	4,180.9	172.54	25.232	
8,100.0	6,706.7	6,711.7	6,711.7	39.9	134.6	91.01	-1,810.3	3,701.2	4,264.7	4,090.3	174.44	24.448	
8,200.0	6,705.8	6,710.8	6,710.8	41.9	134.5	90.98	-1,810.3	3,701.2	4,176.4	4,000.0	176.45	23.670	
8,300.0	6,704.8	6,709.8	6,709.8	44.0	134.5	90.96	-1,810.3	3,701.2	4,088.7	3,910.2	178.53	22.902	
8,400.0	6,703.9	6,708.9	6,708.9	46.2	134.5	90.93	-1,810.3	3,701.2	4,001.6	3,820.9	180.70	22.145	
8,500.0	6,703.0	6,708.0	6,708.0	48.5	134.5	90.90	-1,810.3	3,701.2	3,915.1	3,732.2	182.93	21.402	
8,600.0	6,702.1	6,707.1	6,707.1	50.8	134.5	90.88	-1,810.3	3,701.2	3,829.2	3,644.0	185.21	20.675	
8,700.0	6,701.1	6,706.1	6,706.1	53.1	134.5	90.85	-1,810.3	3,701.2	3,744.1	3,556.5	187.55	19.963	
8,800.0	6,700.2	6,705.2	6,705.2	55.5	134.4	90.82	-1,810.3	3,701.2	3,659.7	3,469.7	189.93	19.269	
8,900.0	6,699.3	6,704.3	6,704.3	57.9	134.4	90.80	-1,810.3	3,701.2	3,576.0	3,383.7	192.34	18.592	
9,000.0	6,698.3	6,703.3	6,703.3	60.4	134.4	90.77	-1,810.3	3,701.2	3,493.3	3,298.5	194.79	17.934	
9,100.0	6,697.4	6,702.4	6,702.4	62.9	134.4	90.74	-1,810.3	3,701.2	3,411.5	3,214.2	197.26	17.294	
9,200.0	6,696.5	6,701.5	6,701.5	65.4	134.4	90.72	-1,810.3	3,701.2	3,330.7	3,130.9	199.77	16.673	
9,300.0	6,695.5	6,700.5	6,700.5	68.0	134.3	90.69	-1,810.3	3,701.2	3,250.9	3,048.6	202.29	16.070	
9,400.0	6,694.6	6,699.6	6,699.6	70.5	134.3	90.66	-1,810.3	3,701.2	3,172.3	2,967.4	204.84	15.487	
9,500.0	6,693.7	6,698.7	6,698.7	73.1	134.3	90.64	-1,810.3	3,701.2	3,094.9	2,887.5	207.40	14.922	
9,600.0	6,692.8	6,697.8	6,697.8	75.7	134.3	90.61	-1,810.3	3,701.2	3,018.9	2,808.9	209.98	14.377	
9,700.0	6,691.8	6,696.8	6,696.8	78.3	134.3	90.58	-1,810.3	3,701.2	2,944.2	2,731.7	212.57	13.850	
9,800.0	6,690.9	6,695.9	6,695.9	80.9	134.2	90.56	-1,810.3	3,701.2	2,871.2	2,656.0	215.18	13.343	
9,900.0	6,690.0	6,695.0	6,695.0	83.6	134.2	90.53	-1,810.3	3,701.2	2,799.8	2,582.0	217.80	12.855	
10,000.0	6,689.0	6,694.0	6,694.0	86.2	134.2	90.50	-1,810.3	3,701.2	2,730.1	2,509.7	220.43	12.386	
10,100.0	6,688.1	6,693.1	6,693.1	88.9	134.2	90.48	-1,810.3	3,701.2	2,662.5	2,439.4	223.07	11.936	
10,200.0	6,687.2	6,692.2	6,692.2	91.6	134.2	90.45	-1,810.3	3,701.2	2,596.9	2,371.1	225.72	11.505	
10,300.0	6,686.2	6,691.2	6,691.2	94.2	134.2	90.42	-1,810.3	3,701.2	2,533.5	2,305.1	228.38	11.094	
10,400.0	6,685.3	6,690.3	6,690.3	96.9	134.1	90.40	-1,810.3	3,701.2	2,472.6	2,241.6	231.04	10.702	
10,500.0	6,684.4	6,689.4	6,689.4	99.6	134.1	90.37	-1,810.3	3,701.2	2,414.3	2,180.6	233.71	10.330	
10,600.0	6,683.4	6,688.4	6,688.4	102.3	134.1	90.34	-1,810.3	3,701.2	2,358.8	2,122.4	236.39	9.978	
10,700.0	6,682.5	6,687.5	6,687.5	105.0	134.1	90.32	-1,810.3	3,701.2	2,306.3	2,067.2	239.08	9.647	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,800.0	6,681.6	6,686.6	6,686.6	107.7	134.1	90.29	-1,810.3	3,701.2	2,257.0	2,015.2	241.77	9.335	
10,900.0	6,680.6	6,685.6	6,685.6	110.4	134.0	90.26	-1,810.3	3,701.2	2,211.1	1,966.6	244.46	9.045	
11,000.0	6,679.7	6,684.7	6,684.7	113.1	134.0	90.24	-1,810.3	3,701.2	2,168.9	1,921.7	247.16	8.775	
11,100.0	6,678.8	6,683.8	6,683.8	115.9	134.0	90.21	-1,810.3	3,701.2	2,130.5	1,880.6	249.87	8.526	
11,200.0	6,677.8	6,682.8	6,682.8	118.6	134.0	90.18	-1,810.3	3,701.2	2,096.2	1,843.6	252.57	8.299	
11,300.0	6,676.9	6,681.9	6,681.9	121.3	134.0	90.16	-1,810.3	3,701.2	2,066.1	1,810.9	255.29	8.093	
11,400.0	6,676.0	6,681.0	6,681.0	124.1	133.9	90.13	-1,810.3	3,701.2	2,040.6	1,782.6	258.00	7.909	
11,500.0	6,675.0	6,680.0	6,680.0	126.8	133.9	90.10	-1,810.3	3,701.2	2,019.7	1,758.9	260.72	7.746	
11,600.0	6,674.1	6,679.1	6,679.1	129.5	133.9	90.07	-1,810.3	3,701.2	2,003.5	1,740.1	263.44	7.605	
11,700.0	6,673.1	6,678.1	6,678.1	132.3	133.9	90.05	-1,810.3	3,701.2	1,992.2	1,726.1	266.17	7.485	
11,800.0	6,672.2	6,677.2	6,677.2	135.0	133.9	90.02	-1,810.3	3,701.2	1,986.0	1,717.1	268.89	7.386	
11,875.0	6,671.5	6,676.5	6,676.5	137.1	133.9	90.00	-1,810.3	3,701.2	1,984.5	1,713.6	270.94	7.325	CC
11,900.0	6,671.3	6,676.3	6,676.3	137.8	133.9	89.99	-1,810.3	3,701.2	1,984.7	1,713.1	271.62	7.307	ES
12,000.0	6,670.3	6,675.3	6,675.3	140.5	133.8	89.97	-1,810.3	3,701.2	1,988.5	1,714.1	274.36	7.248	
12,036.2	6,670.0	6,675.0	6,675.0	141.5	133.8	89.96	-1,810.3	3,701.2	1,991.1	1,715.7	275.35	7.231	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	6.8	6.8	0.0	0.0	124.69	-2,710.2	3,915.8	4,762.2				
100.0	100.0	158.8	158.8	0.1	0.2	114.10	-2,710.0	3,914.3	4,761.3	4,761.0	0.27	N/A	
200.0	200.0	253.4	253.4	0.2	0.3	114.11	-2,709.8	3,913.1	4,760.2	4,759.7	0.49	9,732.861	
261.0	261.0	310.0	309.9	0.3	0.3	114.12	-2,709.7	3,912.5	4,759.7	4,759.1	0.60	7,877.527	
284.8	284.8	334.3	334.3	0.3	0.3	-179.48	-2,709.7	3,912.3	4,759.7	4,759.0	0.67	7,061.558	
300.0	300.0	349.9	349.8	0.4	0.4	-167.67	-2,709.6	3,912.1	4,759.7	4,759.0	0.72	6,615.391	
400.0	399.9	453.2	453.2	0.6	0.4	-153.13	-2,709.2	3,911.1	4,761.7	4,760.7	1.02	4,663.896	
500.0	499.7	554.8	554.8	0.8	0.5	-150.72	-2,708.6	3,910.2	4,766.9	4,765.6	1.32	3,622.636	
538.0	537.5	592.5	592.5	0.9	0.5	-150.26	-2,708.3	3,909.9	4,769.7	4,768.3	1.43	3,345.488	
600.0	599.1	653.4	653.4	1.1	0.5	-150.99	-2,707.8	3,909.4	4,775.4	4,773.8	1.64	2,903.218	
700.0	697.9	755.7	755.7	1.5	0.6	-151.68	-2,707.0	3,908.6	4,787.8	4,785.8	2.00	2,397.171	
800.0	796.0	857.3	857.3	1.8	0.6	-152.05	-2,706.0	3,907.8	4,803.8	4,801.5	2.34	2,050.286	
818.0	813.5	875.0	874.9	1.9	0.6	-152.10	-2,705.9	3,907.7	4,807.1	4,804.7	2.40	1,999.387	
900.0	893.1	956.8	956.8	2.3	0.7	-151.17	-2,705.1	3,907.0	4,823.6	4,820.8	2.77	1,741.380	
1,000.0	989.2	1,058.6	1,058.6	2.9	0.7	-150.27	-2,704.2	3,906.0	4,846.8	4,843.6	3.21	1,509.390	
1,100.0	1,083.9	1,156.6	1,156.5	3.5	0.8	-149.53	-2,703.3	3,904.9	4,873.5	4,869.8	3.65	1,336.490	
1,104.0	1,087.6	1,160.4	1,160.3	3.5	0.8	-149.50	-2,703.3	3,904.9	4,874.6	4,871.0	3.66	1,330.479	
1,200.0	1,177.9	1,251.5	1,251.4	4.1	0.8	-150.46	-2,702.5	3,903.8	4,902.0	4,897.9	4.09	1,198.014	
1,300.0	1,272.0	1,341.4	1,341.3	4.8	0.8	-151.46	-2,701.8	3,902.8	4,930.6	4,926.1	4.50	1,095.070	
1,391.0	1,357.8	1,419.0	1,418.9	5.3	0.9	-152.36	-2,701.3	3,901.9	4,956.7	4,951.8	4.89	1,014.298	
1,400.0	1,366.3	1,427.0	1,426.9	5.4	0.9	-152.20	-2,701.2	3,901.9	4,959.3	4,954.4	4.92	1,008.201	
1,458.0	1,421.2	1,478.5	1,478.4	5.7	0.9	-151.09	-2,701.0	3,901.3	4,975.3	4,970.2	5.13	970.210	
1,500.0	1,461.0	1,515.6	1,515.5	6.0	0.9	-151.38	-2,700.9	3,901.0	4,986.6	4,981.3	5.29	942.191	
1,600.0	1,556.1	1,600.0	1,599.9	6.6	1.0	-152.06	-2,700.6	3,900.2	5,013.4	5,007.7	5.68	882.139	
1,676.0	1,628.3	1,668.2	1,668.1	7.0	1.0	-152.58	-2,700.4	3,899.6	5,033.9	5,027.9	5.98	841.504	
1,700.0	1,651.1	1,688.8	1,688.7	7.2	1.0	-152.06	-2,700.4	3,899.5	5,040.3	5,034.3	6.08	829.131	
1,800.0	1,746.4	1,781.8	1,781.7	7.7	1.0	-149.86	-2,700.2	3,898.8	5,066.7	5,060.2	6.49	781.283	
1,900.0	1,841.8	1,866.8	1,866.7	8.3	1.1	-147.57	-2,700.1	3,898.4	5,092.0	5,085.1	6.89	739.138	
1,963.0	1,902.0	1,918.3	1,918.1	8.7	1.1	-146.09	-2,700.0	3,898.2	5,107.6	5,100.5	7.14	715.396	
2,000.0	1,937.4	1,947.8	1,947.6	8.9	1.1	-146.16	-2,699.9	3,898.2	5,116.7	5,109.4	7.28	702.557	
2,100.0	2,033.1	2,031.8	2,031.7	9.5	1.1	-146.33	-2,699.8	3,898.3	5,140.9	5,133.3	7.67	670.431	
2,200.0	2,129.0	2,125.4	2,125.3	10.0	1.1	-146.52	-2,699.5	3,898.6	5,164.9	5,156.8	8.05	641.361	
2,250.0	2,177.1	2,174.0	2,173.8	10.3	1.1	-146.61	-2,699.3	3,898.8	5,176.6	5,168.4	8.24	627.931	
2,300.0	2,225.1	2,222.2	2,222.1	10.6	1.1	-147.84	-2,699.1	3,899.0	5,188.4	5,180.0	8.44	614.964	
2,400.0	2,321.2	2,318.1	2,317.9	11.2	1.1	-150.24	-2,698.7	3,899.4	5,212.8	5,203.9	8.82	590.930	
2,500.0	2,417.0	2,415.9	2,415.8	11.7	1.2	-152.57	-2,698.4	3,899.7	5,238.0	5,228.8	9.20	569.139	
2,537.0	2,452.5	2,455.9	2,455.8	11.9	1.2	-153.43	-2,698.2	3,899.8	5,247.5	5,238.2	9.34	561.553	
2,600.0	2,512.8	2,521.7	2,521.6	12.3	1.2	-156.41	-2,697.9	3,899.9	5,264.2	5,254.6	9.57	550.092	
2,700.0	2,608.2	2,619.6	2,619.5	12.9	1.2	-160.89	-2,697.4	3,900.1	5,292.0	5,282.1	9.92	533.343	
2,800.0	2,703.3	2,719.2	2,719.1	13.5	1.2	-165.07	-2,697.0	3,900.2	5,321.6	5,311.3	10.27	518.231	
2,824.0	2,726.1	2,745.0	2,744.9	13.7	1.2	-166.03	-2,696.9	3,900.1	5,328.9	5,318.6	10.35	514.795	
2,900.0	2,798.2	2,824.4	2,824.3	14.1	1.3	-163.62	-2,696.6	3,900.0	5,351.7	5,341.1	10.63	503.263	
3,000.0	2,893.6	2,924.4	2,924.3	14.7	1.3	-160.20	-2,696.2	3,899.6	5,380.0	5,369.0	11.00	488.930	
3,100.0	2,989.4	3,030.2	3,030.1	15.3	1.3	-156.47	-2,695.8	3,899.1	5,406.2	5,394.8	11.37	475.610	
3,112.0	3,000.9	3,043.1	3,042.9	15.4	1.3	-156.00	-2,695.7	3,899.1	5,409.2	5,397.8	11.41	474.079	
3,200.0	3,085.5	3,146.8	3,146.7	15.9	1.4	-155.23	-2,695.2	3,898.3	5,430.7	5,419.0	11.72	463.217	
3,300.0	3,181.9	3,266.5	3,266.3	16.4	1.4	-154.29	-2,695.0	3,896.6	5,453.8	5,441.8	12.08	451.566	
3,400.0	3,278.4	3,362.9	3,362.7	16.9	1.4	-153.24	-2,695.6	3,894.6	5,475.9	5,463.5	12.42	440.732	
3,500.0	3,374.7	3,456.2	3,456.0	17.5	1.5	-153.31	-2,696.4	3,892.5	5,498.7	5,485.9	12.86	427.548	
3,600.0	3,470.3	3,537.8	3,537.6	18.1	1.5	-153.35	-2,697.0	3,890.9	5,523.9	5,510.6	13.30	415.419	
3,687.0	3,552.8	3,600.0	3,599.8	18.6	1.5	-153.35	-2,697.2	3,890.1	5,548.0	5,534.3	13.68	405.650	
3,700.0	3,565.1	3,600.0	3,599.8	18.7	1.5	-153.10	-2,697.2	3,890.1	5,551.8	5,538.0	13.73	404.218	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,687.0	3,686.7	19.4	1.5	-151.28	-2,697.6	3,889.2	5,580.6	5,566.4	14.19	393.276	
3,900.0	3,753.9	3,778.4	3,778.2	20.0	1.5	-149.50	-2,698.6	3,888.3	5,609.5	5,594.8	14.64	383.134	
3,974.0	3,823.6	3,847.1	3,846.8	20.5	1.5	-148.21	-2,699.3	3,887.6	5,630.7	5,615.7	14.97	376.068	
4,000.0	3,848.1	3,871.1	3,870.8	20.7	1.5	-148.53	-2,699.6	3,887.3	5,638.1	5,623.0	15.06	374.427	
4,100.0	3,942.9	3,934.3	3,934.1	21.3	1.5	-149.75	-2,700.3	3,886.8	5,665.6	5,650.2	15.38	368.277	
4,200.0	4,038.5	4,000.0	3,999.7	21.9	1.5	-151.10	-2,701.3	3,886.7	5,692.2	5,676.4	15.71	362.387	
4,263.0	4,099.0	4,000.0	3,999.7	22.3	1.5	-151.98	-2,701.3	3,886.7	5,708.4	5,692.5	15.91	358.797	
4,300.0	4,134.7	4,000.0	3,999.7	22.5	1.5	-153.11	-2,701.3	3,886.7	5,718.0	5,701.9	16.01	357.061	
4,400.0	4,231.2	4,061.0	4,060.7	23.0	1.5	-156.39	-2,702.7	3,887.4	5,744.0	5,727.7	16.30	352.423	
4,500.0	4,328.0	4,100.0	4,099.7	23.5	1.5	-159.86	-2,704.0	3,888.4	5,770.9	5,754.3	16.58	348.036	
4,549.0	4,375.5	4,100.0	4,099.7	23.8	1.5	-161.63	-2,704.0	3,888.4	5,784.4	5,767.6	16.72	346.048	
4,600.0	4,425.0	4,145.3	4,144.9	24.0	1.6	-161.83	-2,705.8	3,889.7	5,798.5	5,781.6	16.88	343.606	
4,700.0	4,521.9	4,345.6	4,345.0	24.5	1.6	-162.29	-2,714.9	3,894.6	5,826.4	5,809.2	17.18	339.069	
4,800.0	4,618.8	4,400.0	4,399.3	25.0	1.6	-162.66	-2,717.1	3,895.3	5,853.1	5,835.6	17.48	334.848	
4,837.0	4,654.7	4,434.0	4,433.3	25.2	1.6	-162.81	-2,718.6	3,895.8	5,863.1	5,845.5	17.60	333.221	
4,900.0	4,715.7	4,461.4	4,460.7	25.5	1.6	-163.26	-2,719.9	3,896.4	5,880.7	5,862.9	17.80	330.411	
5,000.0	4,812.4	4,508.7	4,507.8	26.0	1.6	-163.93	-2,722.4	3,897.6	5,909.9	5,891.8	18.12	326.137	
5,100.0	4,908.9	4,587.7	4,586.7	26.6	1.6	-164.58	-2,727.0	3,899.9	5,940.5	5,922.0	18.45	321.947	
5,125.0	4,932.9	4,611.4	4,610.3	26.7	1.6	-164.74	-2,728.5	3,900.6	5,948.3	5,929.7	18.53	320.931	
5,200.0	5,005.4	4,702.8	4,701.5	27.0	1.6	-162.07	-2,733.8	3,903.2	5,970.9	5,952.1	18.76	318.301	
5,300.0	5,102.4	4,834.7	4,833.2	27.5	1.6	-157.95	-2,740.6	3,906.6	5,998.3	5,979.2	19.04	315.108	
5,400.0	5,199.9	4,967.1	4,965.4	28.0	1.6	-153.03	-2,747.0	3,909.7	6,022.7	6,003.4	19.29	312.195	
5,412.0	5,211.7	4,988.6	4,986.9	28.1	1.6	-152.38	-2,747.9	3,910.1	6,025.4	6,006.1	19.32	311.863	
5,500.0	5,297.9	5,168.2	5,166.4	28.4	1.6	-149.95	-2,754.1	3,912.8	6,043.2	6,023.7	19.49	310.092	
5,581.0	5,377.7	5,365.3	5,363.4	28.7	1.6	-147.14	-2,757.6	3,913.8	6,056.5	6,036.9	19.62	308.625	
5,600.0	5,396.4	5,400.0	5,398.1	28.8	1.6	-148.38	-2,757.9	3,913.7	6,059.1	6,039.5	19.65	308.297	
5,700.0	5,495.3	5,489.8	5,487.9	29.1	1.6	-156.41	-2,758.5	3,913.4	6,072.2	6,052.4	19.80	306.623	
5,800.0	5,594.6	5,564.5	5,562.7	29.4	1.6	-168.30	-2,759.0	3,913.4	6,083.9	6,064.0	19.92	305.345	
5,900.0	5,694.1	5,637.4	5,635.6	29.6	1.6	174.13	-2,759.7	3,913.7	6,094.4	6,074.4	20.02	304.383	
5,917.0	5,711.1	5,649.8	5,647.9	29.7	1.6	170.53	-2,759.8	3,913.7	6,096.1	6,076.0	20.04	304.253	
6,000.0	5,793.7	5,711.6	5,709.7	29.8	1.6	170.54	-2,760.6	3,914.2	6,104.3	6,084.1	20.17	302.597	
6,067.0	5,860.5	5,768.1	5,766.2	30.0	1.6	170.55	-2,761.3	3,914.8	6,111.1	6,090.8	20.28	301.265	
6,100.0	5,893.4	5,800.0	5,798.1	30.0	1.6	170.57	-2,761.8	3,915.1	6,114.3	6,094.0	20.31	301.096	
6,200.0	5,993.2	5,883.5	5,881.6	30.2	1.7	170.61	-2,763.0	3,916.2	6,121.9	6,101.5	20.36	300.679	
6,300.0	6,093.2	5,985.0	5,983.0	30.3	1.7	170.63	-2,764.6	3,917.5	6,126.2	6,105.8	20.40	300.269	
6,318.8	6,111.9	6,004.5	6,002.5	30.3	1.7	118.67	-2,764.9	3,917.7	6,126.6	6,096.2	30.35	201.866	
6,400.0	6,193.2	6,087.0	6,085.1	30.4	1.7	118.68	-2,766.3	3,918.7	6,128.0	6,097.6	30.44	201.333	
6,444.4	6,237.6	6,137.7	6,135.8	30.4	1.7	118.68	-2,767.2	3,919.2	6,128.8	6,098.3	30.49	201.033	
6,450.0	6,243.2	6,144.4	6,142.4	30.4	1.7	28.68	-2,767.3	3,919.3	6,128.9	6,108.3	20.57	297.947	
6,475.0	6,268.1	6,174.1	6,172.2	30.4	1.7	28.71	-2,767.8	3,919.6	6,128.5	6,108.0	20.48	299.261	
6,500.0	6,293.0	6,203.5	6,201.5	30.4	1.7	28.82	-2,768.2	3,919.8	6,126.9	6,106.5	20.42	300.030	
6,525.0	6,317.8	6,230.8	6,228.8	30.4	1.7	29.00	-2,768.7	3,920.1	6,124.2	6,103.8	20.40	300.276	
6,550.0	6,342.3	6,257.7	6,255.8	30.4	1.7	29.26	-2,769.1	3,920.3	6,120.3	6,099.9	20.40	300.046	
6,575.0	6,366.5	6,284.4	6,282.4	30.3	1.7	29.59	-2,769.6	3,920.5	6,115.3	6,094.8	20.43	299.392	
6,600.0	6,390.4	6,309.3	6,307.3	30.2	1.7	30.01	-2,770.1	3,920.6	6,109.1	6,088.7	20.48	298.365	
6,625.0	6,413.9	6,331.7	6,329.7	30.2	1.7	30.50	-2,770.5	3,920.7	6,101.9	6,081.4	20.55	296.991	
6,650.0	6,436.9	6,353.7	6,351.7	30.1	1.7	31.09	-2,770.9	3,920.9	6,093.6	6,073.0	20.64	295.237	
6,675.0	6,459.3	6,375.1	6,373.1	30.0	1.7	31.77	-2,771.3	3,921.0	6,084.3	6,063.6	20.76	293.070	
6,700.0	6,481.1	6,396.0	6,393.9	29.9	1.7	32.56	-2,771.8	3,921.1	6,074.0	6,053.1	20.91	290.440	
6,725.0	6,502.3	6,400.0	6,398.0	29.7	1.7	33.40	-2,771.9	3,921.1	6,062.7	6,041.6	21.08	287.654	
6,750.0	6,522.7	6,423.2	6,421.2	29.6	1.7	34.42	-2,772.3	3,921.3	6,050.4	6,029.1	21.31	283.898	
6,775.0	6,542.4	6,435.5	6,433.5	29.5	1.7	35.53	-2,772.5	3,921.4	6,037.3	6,015.7	21.58	279.782	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,447.3	6,445.3	29.4	1.7	36.78	-2,772.7	3,921.6	6,023.3	6,001.4	21.90	275.053	
6,825.0	6,579.1	6,458.7	6,456.6	29.3	1.7	38.18	-2,772.8	3,921.8	6,008.5	5,986.2	22.28	269.709	
6,850.0	6,596.1	6,469.5	6,467.4	29.1	1.7	39.75	-2,772.9	3,922.0	5,992.9	5,970.2	22.72	263.782	
6,875.0	6,612.1	6,479.7	6,477.7	29.0	1.7	41.50	-2,773.0	3,922.2	5,976.6	5,953.3	23.22	257.337	
6,900.0	6,627.1	6,500.0	6,498.0	28.9	1.7	43.53	-2,773.2	3,922.7	5,959.5	5,935.7	23.82	250.146	
6,925.0	6,641.0	6,500.0	6,498.0	28.8	1.7	45.65	-2,773.2	3,922.7	5,941.8	5,917.4	24.42	243.273	
6,950.0	6,653.8	6,509.1	6,507.0	28.7	1.7	48.08	-2,773.2	3,922.9	5,923.5	5,898.4	25.10	235.966	
6,975.0	6,665.5	6,519.3	6,517.2	28.7	1.7	50.80	-2,773.3	3,923.2	5,904.7	5,878.8	25.82	228.644	
7,000.0	6,676.0	6,528.5	6,526.5	28.6	1.7	53.81	-2,773.4	3,923.4	5,885.3	5,858.7	26.56	221.555	
7,025.0	6,685.3	6,536.8	6,534.7	28.6	1.7	57.12	-2,773.5	3,923.6	5,865.5	5,838.2	27.30	214.882	
7,050.0	6,693.4	6,544.0	6,541.9	28.5	1.7	60.76	-2,773.6	3,923.8	5,845.3	5,817.3	27.99	208.802	
7,075.0	6,700.2	6,550.1	6,548.1	28.5	1.7	64.70	-2,773.6	3,923.9	5,824.7	5,796.1	28.63	203.473	
7,100.0	6,705.8	6,555.2	6,553.2	28.5	1.7	68.95	-2,773.7	3,924.0	5,803.8	5,774.7	29.16	199.019	
7,125.0	6,710.0	6,559.3	6,557.2	28.5	1.7	73.47	-2,773.7	3,924.1	5,782.8	5,753.2	29.58	195.504	
7,150.0	6,713.0	6,562.2	6,560.2	28.6	1.7	78.22	-2,773.8	3,924.2	5,761.5	5,731.6	29.87	192.888	
7,175.0	6,714.7	6,564.1	6,562.1	28.6	1.7	83.12	-2,773.8	3,924.2	5,740.2	5,710.1	30.06	190.962	
7,198.8	6,715.0	6,564.9	6,562.8	28.6	1.7	87.87	-2,773.8	3,924.3	5,719.7	5,689.5	30.20	189.426	
7,200.0	6,715.0	6,564.9	6,562.8	28.6	1.7	87.87	-2,773.8	3,924.3	5,718.7	5,688.6	30.20	189.374	
7,300.0	6,714.1	6,566.1	6,564.0	29.0	1.7	87.89	-2,773.8	3,924.3	5,633.3	5,602.7	30.60	184.097	
7,400.0	6,713.2	6,567.3	6,565.2	29.7	1.7	87.91	-2,773.8	3,924.3	5,548.4	5,517.1	31.26	177.470	
7,500.0	6,712.3	6,568.4	6,566.4	30.6	1.7	87.93	-2,773.9	3,924.3	5,463.9	5,431.8	32.17	169.829	
7,600.0	6,711.3	6,569.6	6,567.5	31.7	1.7	87.96	-2,773.9	3,924.4	5,380.0	5,346.7	33.31	161.530	
7,700.0	6,710.4	6,570.8	6,568.7	33.0	1.7	87.98	-2,773.9	3,924.4	5,296.7	5,262.1	34.64	152.900	
7,800.0	6,709.5	6,571.9	6,569.9	34.5	1.7	88.00	-2,773.9	3,924.4	5,213.9	5,177.8	36.15	144.214	
7,900.0	6,708.5	6,573.1	6,571.0	36.2	1.7	88.03	-2,773.9	3,924.4	5,131.8	5,094.0	37.82	135.682	
8,000.0	6,707.6	6,574.2	6,572.1	38.0	1.7	88.05	-2,773.9	3,924.5	5,050.3	5,010.7	39.63	127.451	
8,100.0	6,706.7	6,575.3	6,573.3	39.9	1.7	88.07	-2,774.0	3,924.5	4,969.5	4,927.9	41.55	119.616	
8,200.0	6,705.8	6,576.5	6,574.4	41.9	1.7	88.09	-2,774.0	3,924.5	4,889.3	4,845.8	43.57	112.230	
8,300.0	6,704.8	6,577.6	6,575.5	44.0	1.7	88.11	-2,774.0	3,924.6	4,810.0	4,764.3	45.67	105.314	
8,400.0	6,703.9	6,578.7	6,576.6	46.2	1.7	88.14	-2,774.0	3,924.6	4,731.4	4,683.5	47.85	98.870	
8,500.0	6,703.0	6,579.8	6,577.7	48.5	1.7	88.16	-2,774.0	3,924.6	4,653.6	4,603.5	50.10	92.884	
8,600.0	6,702.1	6,580.9	6,578.8	50.8	1.7	88.18	-2,774.0	3,924.6	4,576.7	4,524.3	52.40	87.334	
8,700.0	6,701.1	6,582.0	6,579.9	53.1	1.7	88.20	-2,774.1	3,924.7	4,500.7	4,446.0	54.76	82.195	
8,800.0	6,700.2	6,583.1	6,581.0	55.5	1.7	88.22	-2,774.1	3,924.7	4,425.7	4,368.5	57.15	77.438	
8,900.0	6,699.3	6,584.2	6,582.1	57.9	1.7	88.24	-2,774.1	3,924.7	4,351.6	4,292.0	59.58	73.034	
9,000.0	6,698.3	6,585.3	6,583.2	60.4	1.7	88.26	-2,774.1	3,924.7	4,278.6	4,216.6	62.05	68.957	
9,100.0	6,697.4	6,586.4	6,584.3	62.9	1.7	88.29	-2,774.1	3,924.8	4,206.8	4,142.2	64.54	65.178	
9,200.0	6,696.5	6,587.4	6,585.4	65.4	1.7	88.31	-2,774.2	3,924.8	4,136.1	4,069.0	67.06	61.675	
9,300.0	6,695.5	6,588.5	6,586.4	68.0	1.7	88.33	-2,774.2	3,924.8	4,066.6	3,997.0	69.60	58.424	
9,400.0	6,694.6	6,600.0	6,597.9	70.5	1.7	88.55	-2,774.4	3,925.1	3,998.4	3,926.2	72.18	55.398	
9,500.0	6,693.7	6,600.0	6,597.9	73.1	1.7	88.55	-2,774.4	3,925.1	3,931.6	3,856.8	74.76	52.592	
9,600.0	6,692.8	6,600.0	6,597.9	75.7	1.7	88.55	-2,774.4	3,925.1	3,866.2	3,788.9	77.35	49.981	
9,700.0	6,691.8	6,600.0	6,597.9	78.3	1.7	88.55	-2,774.4	3,925.1	3,802.3	3,722.4	79.96	47.550	
9,800.0	6,690.9	6,600.0	6,597.9	80.9	1.7	88.55	-2,774.4	3,925.1	3,740.0	3,657.4	82.59	45.284	
9,900.0	6,690.0	6,600.0	6,597.9	83.6	1.7	88.55	-2,774.4	3,925.1	3,679.4	3,594.1	85.23	43.172	
10,000.0	6,689.0	6,600.0	6,597.9	86.2	1.7	88.55	-2,774.4	3,925.1	3,620.5	3,532.6	87.87	41.201	
10,100.0	6,688.1	6,600.0	6,597.9	88.9	1.7	88.55	-2,774.4	3,925.1	3,563.4	3,472.9	90.53	39.361	
10,200.0	6,687.2	6,600.0	6,597.9	91.6	1.7	88.55	-2,774.4	3,925.1	3,508.3	3,415.1	93.20	37.643	
10,300.0	6,686.2	6,600.0	6,597.9	94.2	1.7	88.55	-2,774.4	3,925.1	3,455.2	3,359.3	95.87	36.039	
10,400.0	6,685.3	6,600.0	6,597.9	96.9	1.7	88.55	-2,774.4	3,925.1	3,404.1	3,305.6	98.56	34.540	
10,500.0	6,684.4	6,600.0	6,597.9	99.6	1.7	88.55	-2,774.4	3,925.1	3,355.3	3,254.1	101.25	33.140	
10,600.0	6,683.4	6,600.0	6,597.9	102.3	1.7	88.55	-2,774.4	3,925.1	3,308.8	3,204.9	103.94	31.833	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,600.0	6,597.9	105.0	1.7	88.55	-2,774.4	3,925.1	3,264.7	3,158.1	106.64	30.613	
10,800.0	6,681.6	6,600.0	6,597.9	107.7	1.7	88.55	-2,774.4	3,925.1	3,223.1	3,113.8	109.35	29.475	
10,900.0	6,680.6	6,600.0	6,597.9	110.4	1.7	88.55	-2,774.4	3,925.1	3,184.1	3,072.1	112.06	28.413	
11,000.0	6,679.7	6,600.0	6,597.9	113.1	1.7	88.55	-2,774.4	3,925.1	3,147.8	3,033.0	114.78	27.424	
11,100.0	6,678.8	6,600.0	6,597.9	115.9	1.7	88.55	-2,774.4	3,925.1	3,114.3	2,996.8	117.50	26.504	
11,200.0	6,677.8	6,600.0	6,597.9	118.6	1.7	88.55	-2,774.4	3,925.1	3,083.6	2,963.4	120.23	25.648	
11,300.0	6,676.9	6,600.0	6,597.9	121.3	1.7	88.55	-2,774.4	3,925.1	3,056.0	2,933.0	122.96	24.853	
11,400.0	6,676.0	6,600.0	6,597.9	124.1	1.7	88.55	-2,774.4	3,925.1	3,031.3	2,905.6	125.69	24.117	
11,500.0	6,675.0	6,600.0	6,597.9	126.8	1.7	88.55	-2,774.4	3,925.1	3,009.8	2,881.4	128.43	23.436	
11,600.0	6,674.1	6,600.0	6,597.9	129.5	1.7	88.55	-2,774.4	3,925.1	2,991.5	2,860.3	131.17	22.806	
11,700.0	6,673.1	6,600.0	6,597.9	132.3	1.7	88.55	-2,774.4	3,925.1	2,976.5	2,842.5	133.91	22.227	
11,800.0	6,672.2	6,600.0	6,597.9	135.0	1.7	88.55	-2,774.4	3,925.1	2,964.7	2,828.0	136.66	21.694	
11,900.0	6,671.3	6,600.0	6,597.9	137.8	1.7	88.55	-2,774.4	3,925.1	2,956.3	2,816.8	139.41	21.206	
12,000.0	6,670.3	6,600.0	6,597.9	140.5	1.7	88.55	-2,774.4	3,925.1	2,951.2	2,809.0	142.16	20.760	
12,036.2	6,670.0	6,600.0	6,597.9	141.5	1.7	88.55	-2,774.4	3,925.1	2,950.2	2,807.0	143.15	20.609	CC, ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	108.27	-345.7	1,046.9	1,102.6				
100.0	100.0	96.0	96.0	0.1	1.2	97.68	-345.7	1,046.9	1,102.6	1,101.3	1.30	848.691	
200.0	200.0	196.0	196.0	0.2	3.4	97.69	-345.7	1,046.9	1,102.6	1,099.0	3.65	302.214	
261.0	261.0	257.0	257.0	0.3	4.7	97.71	-345.7	1,046.9	1,102.6	1,097.6	4.99	220.877	
300.0	300.0	296.0	296.0	0.4	5.5	175.93	-345.7	1,046.9	1,102.9	1,097.1	5.89	187.283	
400.0	399.9	395.9	395.9	0.6	7.6	-169.54	-345.7	1,046.9	1,106.3	1,098.1	8.15	135.756	
500.0	499.7	495.7	495.7	0.8	9.6	-167.19	-345.7	1,046.9	1,113.2	1,102.9	10.36	107.406	
538.0	537.5	533.5	533.5	0.9	10.4	-166.76	-345.7	1,046.9	1,116.8	1,105.6	11.19	99.779	
600.0	599.1	595.1	595.1	1.1	11.6	-167.56	-345.7	1,046.9	1,124.0	1,111.4	12.55	89.530	
700.0	697.9	693.9	693.9	1.5	13.6	-168.39	-345.7	1,046.9	1,138.9	1,124.2	14.69	77.504	
800.0	796.0	792.0	792.0	1.8	15.6	-168.94	-345.7	1,046.9	1,158.0	1,141.2	16.76	69.110	
818.0	813.5	809.5	809.5	1.9	15.9	-169.02	-345.7	1,046.9	1,161.8	1,144.7	17.12	67.877	
900.0	893.1	889.1	889.1	2.3	17.5	-168.25	-345.7	1,046.9	1,181.2	1,162.4	18.79	62.876	
1,000.0	989.2	985.2	985.2	2.9	19.5	-167.59	-345.7	1,046.9	1,208.5	1,187.7	20.73	58.304	
1,100.0	1,083.9	1,079.9	1,079.9	3.5	21.4	-167.13	-345.7	1,046.9	1,239.8	1,217.2	22.55	54.971	
1,104.0	1,087.6	1,083.6	1,083.6	3.5	21.5	-167.12	-345.7	1,046.9	1,241.1	1,218.5	22.62	54.859	
1,200.0	1,177.9	1,173.9	1,173.9	4.1	23.3	-168.21	-345.7	1,046.9	1,273.1	1,248.5	24.67	51.608	
1,300.0	1,272.0	1,268.0	1,268.0	4.8	25.2	-169.33	-345.7	1,046.9	1,306.3	1,279.6	26.76	48.825	
1,391.0	1,357.8	1,353.8	1,353.8	5.3	26.9	-170.32	-345.7	1,046.9	1,336.4	1,307.7	28.68	46.604	
1,400.0	1,366.3	1,362.3	1,362.3	5.4	27.1	-170.15	-345.7	1,046.9	1,339.4	1,310.5	28.89	46.361	
1,458.0	1,421.2	1,417.2	1,417.2	5.7	28.2	-168.98	-345.7	1,046.9	1,357.8	1,327.5	30.28	44.842	
1,500.0	1,461.0	1,457.0	1,457.0	6.0	29.0	-169.30	-345.7	1,046.9	1,370.7	1,339.6	31.17	43.976	
1,600.0	1,556.1	1,552.1	1,552.1	6.6	30.9	-170.07	-345.7	1,046.9	1,401.5	1,368.2	33.29	42.093	
1,676.0	1,628.3	1,624.3	1,624.3	7.0	32.3	-170.64	-345.7	1,046.9	1,424.7	1,389.8	34.91	40.806	
1,700.0	1,651.1	1,647.1	1,647.1	7.2	32.8	-170.12	-345.7	1,046.9	1,432.0	1,396.6	35.44	40.401	
1,800.0	1,746.4	1,742.4	1,742.4	7.7	34.7	-167.91	-345.7	1,046.9	1,462.0	1,424.3	37.66	38.820	
1,900.0	1,841.8	1,837.8	1,837.8	8.3	36.6	-165.66	-345.7	1,046.9	1,491.2	1,451.3	39.89	37.387	
1,963.0	1,902.0	1,898.0	1,898.0	8.7	37.8	-164.23	-345.7	1,046.9	1,509.3	1,468.0	41.29	36.551	
2,000.0	1,937.4	1,933.4	1,933.4	8.9	38.6	-164.34	-345.7	1,046.9	1,519.7	1,477.6	42.11	36.090	
2,100.0	2,033.1	2,029.1	2,029.1	9.5	40.5	-164.62	-345.7	1,046.9	1,547.6	1,503.3	44.32	34.916	
2,200.0	2,129.0	2,125.0	2,125.0	10.0	42.4	-164.88	-345.7	1,046.9	1,574.9	1,528.3	46.55	33.835	
2,250.0	2,177.1	2,173.1	2,173.1	10.3	43.4	-165.01	-345.7	1,046.9	1,588.3	1,540.6	47.66	33.325	
2,300.0	2,225.1	2,221.1	2,221.1	10.6	44.3	-166.30	-345.7	1,046.9	1,601.7	1,553.0	48.70	32.892	
2,400.0	2,321.2	2,317.2	2,317.2	11.2	46.3	-168.80	-345.7	1,046.9	1,629.1	1,578.3	50.76	32.093	
2,500.0	2,417.0	2,413.0	2,413.0	11.7	48.2	-171.21	-345.7	1,046.9	1,657.0	1,604.2	52.82	31.373	
2,537.0	2,452.5	2,448.5	2,448.5	11.9	48.9	-172.07	-345.7	1,046.9	1,667.5	1,613.9	53.57	31.125	
2,600.0	2,512.8	2,508.8	2,508.8	12.3	50.1	-175.10	-345.7	1,046.9	1,685.7	1,630.9	54.80	30.763	
2,700.0	2,608.2	2,604.2	2,604.2	12.9	52.0	-179.62	-345.7	1,046.9	1,715.5	1,658.8	56.72	30.247	
2,800.0	2,703.3	2,699.3	2,699.3	13.5	54.0	176.23	-345.7	1,046.9	1,746.5	1,687.8	58.61	29.796	
2,824.0	2,726.1	2,722.1	2,722.1	13.7	54.4	175.29	-345.7	1,046.9	1,754.1	1,695.0	59.06	29.697	
2,900.0	2,798.2	2,794.2	2,794.2	14.1	55.9	177.91	-345.7	1,046.9	1,777.8	1,717.0	60.87	29.207	
3,000.0	2,893.6	2,889.6	2,889.6	14.7	57.8	-178.44	-345.7	1,046.9	1,807.9	1,744.6	63.26	28.579	
3,100.0	2,989.4	2,985.4	2,985.4	15.3	59.7	-174.53	-345.7	1,046.9	1,836.5	1,770.9	65.66	27.971	
3,112.0	3,000.9	2,996.9	2,996.9	15.4	59.9	-174.04	-345.7	1,046.9	1,839.9	1,773.9	65.95	27.899	
3,200.0	3,085.5	3,081.5	3,081.5	15.9	61.6	-173.18	-345.7	1,046.9	1,864.0	1,796.0	67.96	27.428	
3,300.0	3,181.9	3,177.9	3,177.9	16.4	63.6	-172.15	-345.7	1,046.9	1,890.6	1,820.4	70.25	26.913	
3,400.0	3,278.4	3,274.4	3,274.4	16.9	65.5	-171.07	-345.7	1,046.9	1,916.4	1,843.9	72.55	26.416	
3,500.0	3,374.7	3,370.7	3,370.7	17.5	67.5	-171.26	-345.7	1,046.9	1,943.1	1,868.8	74.27	26.163	
3,600.0	3,470.3	3,466.3	3,466.3	18.1	69.4	-171.43	-345.7	1,046.9	1,972.2	1,896.3	75.90	25.984	
3,687.0	3,552.8	3,548.8	3,548.8	18.6	71.0	-171.57	-345.7	1,046.9	1,999.5	1,922.2	77.24	25.885	
3,700.0	3,565.1	3,561.1	3,561.1	18.7	71.3	-171.32	-345.7	1,046.9	2,003.7	1,926.1	77.52	25.848	
3,800.0	3,659.5	3,655.5	3,655.5	19.4	73.2	-169.49	-345.7	1,046.9	2,036.1	1,956.5	79.63	25.571	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,749.9	3,749.9	20.0	75.1	-167.72	-345.7	1,046.9	2,068.7	1,987.0	81.73	25.311	
3,974.0	3,823.6	3,819.6	3,819.6	20.5	76.5	-166.45	-345.7	1,046.9	2,092.9	2,009.6	83.28	25.130	
4,000.0	3,848.1	3,844.1	3,844.1	20.7	77.0	-166.75	-345.7	1,046.9	2,101.3	2,017.4	83.97	25.025	
4,100.0	3,942.9	3,938.9	3,938.9	21.3	78.9	-167.98	-345.7	1,046.9	2,132.4	2,045.8	86.61	24.622	
4,200.0	4,038.5	4,034.5	4,034.5	21.9	80.8	-169.31	-345.7	1,046.9	2,161.4	2,072.1	89.25	24.216	
4,263.0	4,099.0	4,095.0	4,095.0	22.3	82.0	-170.21	-345.7	1,046.9	2,178.5	2,087.6	90.92	23.961	
4,300.0	4,134.7	4,130.7	4,130.7	22.5	82.7	-171.37	-345.7	1,046.9	2,188.3	2,096.5	91.77	23.846	
4,400.0	4,231.2	4,227.2	4,227.2	23.0	84.7	-174.64	-345.7	1,046.9	2,214.2	2,120.1	94.07	23.539	
4,500.0	4,328.0	4,324.0	4,324.0	23.5	86.6	-178.08	-345.7	1,046.9	2,239.3	2,142.9	96.38	23.234	
4,549.0	4,375.5	4,371.5	4,371.5	23.8	87.6	-179.82	-345.7	1,046.9	2,251.3	2,153.8	97.52	23.086	
4,600.0	4,425.0	4,421.0	4,421.0	24.0	88.6	179.99	-345.7	1,046.9	2,263.8	2,165.2	98.61	22.958	
4,700.0	4,521.9	4,517.9	4,517.9	24.5	90.5	179.63	-345.7	1,046.9	2,288.3	2,187.5	100.74	22.715	
4,800.0	4,618.8	4,614.8	4,614.8	25.0	92.5	179.28	-345.7	1,046.9	2,312.9	2,210.0	102.87	22.483	
4,837.0	4,654.7	4,650.7	4,650.7	25.2	93.2	179.16	-345.7	1,046.9	2,322.0	2,218.3	103.66	22.401	
4,900.0	4,715.7	4,711.7	4,711.7	25.5	94.4	178.70	-345.7	1,046.9	2,337.7	2,232.8	104.90	22.284	
5,000.0	4,812.4	4,808.4	4,808.4	26.0	96.4	178.02	-345.7	1,046.9	2,363.2	2,256.4	106.87	22.114	
5,100.0	4,908.9	4,904.9	4,904.9	26.6	98.3	177.39	-345.7	1,046.9	2,389.5	2,280.7	108.81	21.960	
5,125.0	4,932.9	4,928.9	4,928.9	26.7	98.8	177.24	-345.7	1,046.9	2,396.2	2,286.9	109.30	21.924	
5,200.0	5,005.4	5,001.4	5,001.4	27.0	100.3	-179.97	-345.7	1,046.9	2,415.8	2,304.4	111.36	21.694	
5,300.0	5,102.4	5,098.4	5,098.4	27.5	102.2	-175.72	-345.7	1,046.9	2,439.9	2,325.8	114.08	21.387	
5,400.0	5,199.9	5,195.9	5,195.9	28.0	104.2	-170.69	-345.7	1,046.9	2,461.7	2,345.0	116.77	21.081	
5,412.0	5,211.7	5,207.7	5,207.7	28.1	104.4	-170.03	-345.7	1,046.9	2,464.2	2,347.1	117.09	21.045	
5,500.0	5,297.9	5,293.9	5,293.9	28.4	106.1	-167.47	-345.7	1,046.9	2,481.2	2,361.8	119.47	20.769	
5,581.0	5,377.7	5,373.7	5,373.7	28.7	107.7	-164.52	-345.7	1,046.9	2,495.1	2,373.5	121.61	20.518	
5,600.0	5,396.4	5,392.4	5,392.4	28.8	108.1	-165.75	-345.7	1,046.9	2,498.1	2,376.0	122.09	20.461	
5,700.0	5,495.3	5,491.3	5,491.3	29.1	110.1	-173.76	-345.7	1,046.9	2,512.5	2,387.9	124.61	20.162	
5,800.0	5,594.6	5,590.6	5,590.6	29.4	112.1	174.41	-345.7	1,046.9	2,524.5	2,397.4	127.07	19.866	
5,900.0	5,694.1	5,690.1	5,690.1	29.6	114.1	156.94	-345.7	1,046.9	2,534.0	2,404.5	129.46	19.573	
5,917.0	5,711.1	5,707.1	5,707.1	29.7	114.5	153.36	-345.7	1,046.9	2,535.3	2,405.5	129.86	19.523	
6,000.0	5,793.7	5,789.7	5,789.7	29.8	116.1	153.43	-345.7	1,046.9	2,541.8	2,410.2	131.68	19.304	
6,067.0	5,860.5	5,856.5	5,856.5	30.0	117.5	153.49	-345.7	1,046.9	2,547.1	2,414.0	133.14	19.131	
6,100.0	5,893.4	5,889.4	5,889.4	30.0	118.1	153.54	-345.7	1,046.9	2,549.5	2,415.6	133.92	19.037	
6,200.0	5,993.2	5,989.2	5,989.2	30.2	120.1	153.65	-345.7	1,046.9	2,554.8	2,418.6	136.22	18.756	
6,300.0	6,093.2	6,089.2	6,089.2	30.3	122.1	153.69	-345.7	1,046.9	2,557.0	2,418.6	138.37	18.479	
6,318.8	6,111.9	6,107.9	6,107.9	30.3	122.5	101.73	-345.7	1,046.9	2,557.0	2,404.3	152.74	16.741	
6,400.0	6,193.2	6,189.2	6,189.2	30.4	124.1	101.73	-345.7	1,046.9	2,557.0	2,402.6	154.44	16.556	
6,444.4	6,237.6	6,233.6	6,233.6	30.4	125.0	101.73	-345.7	1,046.9	2,557.0	2,401.6	155.38	16.457	
6,450.0	6,243.2	6,239.2	6,239.2	30.4	125.2	11.73	-345.7	1,046.9	2,557.0	2,415.4	141.55	18.064	
6,475.0	6,268.1	6,264.1	6,264.1	30.4	125.7	11.76	-345.7	1,046.9	2,556.1	2,414.4	141.64	18.046	
6,500.0	6,293.0	6,289.0	6,289.0	30.4	126.2	11.82	-345.7	1,046.9	2,553.9	2,412.5	141.36	18.066	
6,525.0	6,317.8	6,313.8	6,313.8	30.4	126.7	11.93	-345.7	1,046.9	2,550.4	2,409.7	140.71	18.125	
6,550.0	6,342.3	6,338.3	6,338.3	30.4	127.1	12.07	-345.7	1,046.9	2,545.6	2,405.9	139.69	18.223	
6,575.0	6,366.5	6,362.5	6,362.5	30.3	127.6	12.26	-345.7	1,046.9	2,539.6	2,401.3	138.31	18.362	
6,600.0	6,390.4	6,386.4	6,386.4	30.2	128.1	12.48	-345.7	1,046.9	2,532.4	2,395.9	136.57	18.543	
6,625.0	6,413.9	6,409.9	6,409.9	30.2	128.6	12.76	-345.7	1,046.9	2,524.0	2,389.5	134.48	18.769	
6,650.0	6,436.9	6,432.9	6,432.9	30.1	129.0	13.09	-345.7	1,046.9	2,514.4	2,382.3	132.06	19.040	
6,675.0	6,459.3	6,455.3	6,455.3	30.0	129.5	13.48	-345.7	1,046.9	2,503.6	2,374.3	129.32	19.360	
6,700.0	6,481.1	6,477.1	6,477.1	29.9	129.9	13.93	-345.7	1,046.9	2,491.7	2,365.4	126.30	19.729	
6,725.0	6,502.3	6,498.3	6,498.3	29.7	130.4	14.45	-345.7	1,046.9	2,478.7	2,355.6	123.02	20.149	
6,750.0	6,522.7	6,518.7	6,518.7	29.6	130.8	15.06	-345.7	1,046.9	2,464.6	2,345.0	119.53	20.619	
6,775.0	6,542.4	6,538.4	6,538.4	29.5	131.2	15.76	-345.7	1,046.9	2,449.5	2,333.6	115.88	21.139	
6,800.0	6,561.2	6,557.2	6,557.2	29.4	131.5	16.56	-345.7	1,046.9	2,433.4	2,321.3	112.14	21.700	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,575.1	6,575.1	29.3	131.9	17.50	-345.7	1,046.9	2,416.4	2,308.0	108.39	22.293	
6,850.0	6,596.1	6,592.1	6,592.1	29.1	132.2	18.58	-345.7	1,046.9	2,398.5	2,293.7	104.77	22.894	
6,875.0	6,612.1	6,608.1	6,608.1	29.0	132.6	19.85	-345.7	1,046.9	2,379.8	2,278.4	101.40	23.469	
6,900.0	6,627.1	6,623.1	6,623.1	28.9	132.9	21.33	-345.7	1,046.9	2,360.2	2,261.7	98.48	23.966	
6,925.0	6,641.0	6,637.0	6,637.0	28.8	133.2	23.08	-345.7	1,046.9	2,340.0	2,243.7	96.26	24.309	
6,950.0	6,653.8	6,649.8	6,649.8	28.7	133.4	25.15	-345.7	1,046.9	2,319.1	2,224.0	95.04	24.402	
6,975.0	6,665.5	6,661.5	6,661.5	28.7	133.6	27.64	-345.7	1,046.9	2,297.5	2,202.3	95.17	24.141	
7,000.0	6,676.0	6,672.0	6,672.0	28.6	133.9	30.65	-345.7	1,046.9	2,275.4	2,178.3	97.08	23.438	
7,025.0	6,685.3	6,681.3	6,681.3	28.6	134.0	34.32	-345.7	1,046.9	2,252.8	2,151.7	101.17	22.267	
7,050.0	6,693.4	6,689.4	6,689.4	28.5	134.2	38.83	-345.7	1,046.9	2,229.8	2,122.1	107.77	20.690	
7,075.0	6,700.2	6,696.2	6,696.2	28.5	134.3	44.41	-345.7	1,046.9	2,206.5	2,089.5	116.98	18.862	
7,100.0	6,705.8	6,701.8	6,701.8	28.5	134.5	51.30	-345.7	1,046.9	2,182.8	2,054.3	128.45	16.993	
7,125.0	6,710.0	6,706.0	6,706.0	28.5	134.5	59.72	-345.7	1,046.9	2,158.9	2,017.7	141.13	15.297	
7,150.0	6,713.0	6,709.0	6,709.0	28.6	134.6	69.69	-345.7	1,046.9	2,134.8	1,981.8	152.94	13.958	
7,175.0	6,714.7	6,710.7	6,710.7	28.6	134.6	80.91	-345.7	1,046.9	2,110.6	1,949.6	161.02	13.108	
7,198.8	6,715.0	6,711.0	6,711.0	28.6	134.6	92.06	-345.7	1,046.9	2,087.5	1,924.4	163.09	12.800	
7,200.0	6,715.0	6,711.0	6,711.0	28.6	134.6	92.06	-345.7	1,046.9	2,086.4	1,923.3	163.09	12.793	
7,300.0	6,714.1	6,710.1	6,710.1	29.0	134.6	91.96	-345.7	1,046.9	1,989.7	1,826.2	163.49	12.170	
7,400.0	6,713.2	6,709.2	6,709.2	29.7	134.6	91.86	-345.7	1,046.9	1,893.4	1,729.2	164.14	11.535	
7,500.0	6,712.3	6,708.3	6,708.3	30.6	134.6	91.75	-345.7	1,046.9	1,797.4	1,632.4	165.04	10.891	
7,600.0	6,711.3	6,707.3	6,707.3	31.7	134.6	91.65	-345.7	1,046.9	1,701.9	1,535.8	166.17	10.242	
7,700.0	6,710.4	6,706.4	6,706.4	33.0	134.5	91.55	-345.7	1,046.9	1,607.0	1,439.5	167.49	9.595	
7,800.0	6,709.5	6,705.5	6,705.5	34.5	134.5	91.45	-345.7	1,046.9	1,512.7	1,343.7	168.99	8.952	
7,900.0	6,708.5	6,704.5	6,704.5	36.2	134.5	91.35	-345.7	1,046.9	1,419.3	1,248.6	170.65	8.317	
8,000.0	6,707.6	6,703.6	6,703.6	38.0	134.5	91.25	-345.7	1,046.9	1,326.7	1,154.3	172.44	7.694	
8,100.0	6,706.7	6,702.7	6,702.7	39.9	134.5	91.15	-345.7	1,046.9	1,235.3	1,061.0	174.35	7.086	
8,200.0	6,705.8	6,701.8	6,701.8	41.9	134.5	91.04	-345.7	1,046.9	1,145.4	969.0	176.35	6.495	
8,300.0	6,704.8	6,700.8	6,700.8	44.0	134.4	90.94	-345.7	1,046.9	1,057.3	878.8	178.45	5.925	
8,400.0	6,703.9	6,699.9	6,699.9	46.2	134.4	90.84	-345.7	1,046.9	971.4	790.8	180.61	5.379	
8,500.0	6,703.0	6,699.0	6,699.0	48.5	134.4	90.74	-345.7	1,046.9	888.6	705.7	182.84	4.860	
8,600.0	6,702.1	6,698.1	6,698.1	50.8	134.4	90.64	-345.7	1,046.9	809.6	624.5	185.13	4.373	
8,700.0	6,701.1	6,697.1	6,697.1	53.1	134.4	90.53	-345.7	1,046.9	735.8	548.3	187.47	3.925	
8,800.0	6,700.2	6,696.2	6,696.2	55.5	134.3	90.43	-345.7	1,046.9	668.8	478.9	189.85	3.523	
8,900.0	6,699.3	6,695.3	6,695.3	57.9	134.3	90.33	-345.7	1,046.9	610.8	418.6	192.26	3.177	
9,000.0	6,698.3	6,694.3	6,694.3	60.4	134.3	90.23	-345.7	1,046.9	564.8	370.1	194.71	2.901	
9,100.0	6,697.4	6,693.4	6,693.4	62.9	134.3	90.12	-345.7	1,046.9	533.7	336.5	197.18	2.707	
9,200.0	6,696.5	6,692.5	6,692.5	65.4	134.3	90.02	-345.7	1,046.9	520.3	320.6	199.68	2.606	
9,220.7	6,696.3	6,692.3	6,692.3	65.9	134.3	90.00	-345.7	1,046.9	519.9	319.7	200.20	2.597	CC, ES, SF
9,300.0	6,695.5	6,691.5	6,691.5	68.0	134.2	89.92	-345.7	1,046.9	525.9	323.7	202.21	2.601	
9,400.0	6,694.6	6,690.6	6,690.6	70.5	134.2	89.82	-345.7	1,046.9	550.0	345.2	204.75	2.686	
9,500.0	6,693.7	6,689.7	6,689.7	73.1	134.2	89.71	-345.7	1,046.9	590.2	382.9	207.31	2.847	
9,600.0	6,692.8	6,688.8	6,688.8	75.7	134.2	89.61	-345.7	1,046.9	643.6	433.7	209.88	3.066	
9,700.0	6,691.8	6,687.8	6,687.8	78.3	134.2	89.51	-345.7	1,046.9	707.1	494.7	212.47	3.328	
9,800.0	6,690.9	6,686.9	6,686.9	80.9	134.2	89.41	-345.7	1,046.9	778.4	563.3	215.07	3.619	
9,900.0	6,690.0	6,686.0	6,686.0	83.6	134.1	89.30	-345.7	1,046.9	855.4	637.7	217.69	3.930	
10,000.0	6,689.0	6,685.0	6,685.0	86.2	134.1	89.20	-345.7	1,046.9	936.8	716.5	220.31	4.252	
10,100.0	6,688.1	6,684.1	6,684.1	88.9	134.1	89.10	-345.7	1,046.9	1,021.5	798.6	222.94	4.582	
10,200.0	6,687.2	6,683.2	6,683.2	91.6	134.1	88.99	-345.7	1,046.9	1,108.8	883.2	225.59	4.915	
10,300.0	6,686.2	6,682.2	6,682.2	94.2	134.1	88.89	-345.7	1,046.9	1,198.0	969.8	228.23	5.249	
10,400.0	6,685.3	6,681.3	6,681.3	96.9	134.0	88.79	-345.7	1,046.9	1,288.8	1,057.9	230.89	5.582	
10,500.0	6,684.4	6,680.4	6,680.4	99.6	134.0	88.68	-345.7	1,046.9	1,380.9	1,147.3	233.55	5.913	
10,600.0	6,683.4	6,679.4	6,679.4	102.3	134.0	88.58	-345.7	1,046.9	1,474.0	1,237.8	236.22	6.240	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,678.5	6,678.5	105.0	134.0	88.48	-345.7	1,046.9	1,568.0	1,329.1	238.89	6.564	
10,800.0	6,681.6	6,677.6	6,677.6	107.7	134.0	88.37	-345.7	1,046.9	1,662.7	1,421.1	241.56	6.883	
10,900.0	6,680.6	6,676.6	6,676.6	110.4	133.9	88.27	-345.7	1,046.9	1,757.9	1,513.7	244.24	7.197	
11,000.0	6,679.7	6,675.7	6,675.7	113.1	133.9	88.17	-345.7	1,046.9	1,853.7	1,606.7	246.93	7.507	
11,100.0	6,678.8	6,674.8	6,674.8	115.9	133.9	88.06	-345.7	1,046.9	1,949.9	1,700.2	249.61	7.811	
11,200.0	6,677.8	6,673.8	6,673.8	118.6	133.9	87.96	-345.7	1,046.9	2,046.4	1,794.1	252.31	8.111	
11,300.0	6,676.9	6,672.9	6,672.9	121.3	133.9	87.86	-345.7	1,046.9	2,143.3	1,888.3	255.00	8.405	
11,400.0	6,676.0	6,672.0	6,672.0	124.1	133.9	87.75	-345.7	1,046.9	2,240.4	1,982.7	257.69	8.694	
11,500.0	6,675.0	6,671.0	6,671.0	126.8	133.8	87.65	-345.7	1,046.9	2,337.8	2,077.4	260.39	8.978	
11,600.0	6,674.1	6,670.1	6,670.1	129.5	133.8	87.55	-345.7	1,046.9	2,435.4	2,172.3	263.09	9.257	
11,700.0	6,673.1	6,669.1	6,669.1	132.3	133.8	87.44	-345.7	1,046.9	2,533.2	2,267.4	265.79	9.531	
11,800.0	6,672.2	6,668.2	6,668.2	135.0	133.8	87.34	-345.7	1,046.9	2,631.1	2,362.6	268.49	9.800	
11,900.0	6,671.3	6,667.3	6,667.3	137.8	133.8	87.24	-345.7	1,046.9	2,729.2	2,458.0	271.20	10.064	
12,000.0	6,670.3	6,666.3	6,666.3	140.5	133.7	87.13	-345.7	1,046.9	2,827.4	2,553.5	273.90	10.323	
12,036.2	6,670.0	6,666.0	6,666.0	141.5	133.7	87.09	-345.7	1,046.9	2,863.1	2,588.2	274.88	10.416	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-79.86	980.6	-5,484.3	5,571.2				
100.0	100.0	92.0	92.0	0.1	1.2	-90.46	980.6	-5,484.3	5,571.2	5,570.0	1.26	4,417.011	
200.0	200.0	192.0	192.0	0.2	3.4	-90.47	980.6	-5,484.3	5,571.2	5,567.7	3.57	1,561.463	
261.0	261.0	253.0	253.0	0.3	4.6	-90.47	980.6	-5,484.3	5,571.2	5,566.3	4.92	1,132.527	
300.0	300.0	292.0	292.0	0.4	5.5	-12.26	980.6	-5,484.3	5,571.0	5,565.1	5.82	957.829	
400.0	399.9	391.9	391.9	0.6	7.5	2.28	980.6	-5,484.3	5,567.6	5,559.5	8.08	689.303	
500.0	499.7	491.7	491.7	0.8	9.5	4.70	980.6	-5,484.3	5,560.5	5,550.2	10.29	540.277	
538.0	537.5	529.5	529.5	0.9	10.3	5.16	980.6	-5,484.3	5,556.8	5,545.7	11.12	499.736	
600.0	599.1	591.1	591.1	1.1	11.5	4.42	980.6	-5,484.3	5,549.5	5,537.1	12.48	444.820	
700.0	697.9	689.9	689.9	1.5	13.5	3.72	980.6	-5,484.3	5,534.4	5,519.7	14.61	378.856	
800.0	796.0	788.0	788.0	1.8	15.5	3.31	980.6	-5,484.3	5,514.9	5,498.3	16.66	331.036	
818.0	813.5	805.5	805.5	1.9	15.9	3.25	980.6	-5,484.3	5,511.0	5,494.0	17.02	323.808	
900.0	893.1	885.1	885.1	2.3	17.5	4.16	980.6	-5,484.3	5,491.3	5,472.6	18.67	294.149	
1,000.0	989.2	981.2	981.2	2.9	19.4	5.04	980.6	-5,484.3	5,463.5	5,443.0	20.58	265.450	
1,100.0	1,083.9	1,075.9	1,075.9	3.5	21.3	5.75	980.6	-5,484.3	5,431.7	5,409.3	22.38	242.729	
1,104.0	1,087.6	1,079.6	1,079.6	3.5	21.4	5.78	980.6	-5,484.3	5,430.3	5,407.9	22.45	241.920	
1,200.0	1,177.9	1,169.9	1,169.9	4.1	23.2	5.04	980.6	-5,484.3	5,397.7	5,373.3	24.49	220.432	
1,300.0	1,272.0	1,264.0	1,264.0	4.8	25.1	4.25	980.6	-5,484.3	5,364.1	5,337.5	26.57	201.919	
1,391.0	1,357.8	1,349.8	1,349.8	5.3	26.8	3.52	980.6	-5,484.3	5,333.6	5,305.1	28.48	187.264	
1,400.0	1,366.3	1,358.3	1,358.3	5.4	27.0	3.72	980.6	-5,484.3	5,330.6	5,301.9	28.70	185.769	
1,458.0	1,421.2	1,413.2	1,413.2	5.7	28.1	5.09	980.6	-5,484.3	5,312.0	5,281.9	30.08	176.603	
1,500.0	1,461.0	1,453.0	1,453.0	6.0	28.9	4.88	980.6	-5,484.3	5,298.9	5,267.9	30.97	171.106	
1,600.0	1,556.1	1,548.1	1,548.1	6.6	30.8	4.37	980.6	-5,484.3	5,267.8	5,234.7	33.09	159.183	
1,676.0	1,628.3	1,620.3	1,620.3	7.0	32.3	3.98	980.6	-5,484.3	5,244.3	5,209.6	34.71	151.079	
1,700.0	1,651.1	1,643.1	1,643.1	7.2	32.7	4.56	980.6	-5,484.3	5,236.9	5,201.7	35.24	148.617	
1,800.0	1,746.4	1,738.4	1,738.4	7.7	34.6	7.05	980.6	-5,484.3	5,206.6	5,169.1	37.44	139.083	
1,900.0	1,841.8	1,833.8	1,833.8	8.3	36.6	9.62	980.6	-5,484.3	5,176.9	5,137.2	39.65	130.579	
1,963.0	1,902.0	1,894.0	1,894.0	8.7	37.8	11.29	980.6	-5,484.3	5,158.6	5,117.5	41.05	125.681	
2,000.0	1,937.4	1,929.4	1,929.4	8.9	38.5	11.32	980.6	-5,484.3	5,147.9	5,106.1	41.86	122.969	
2,100.0	2,033.1	2,025.1	2,025.1	9.5	40.4	11.40	980.6	-5,484.3	5,119.6	5,075.5	44.08	116.135	
2,200.0	2,129.0	2,121.0	2,121.0	10.0	42.3	11.47	980.6	-5,484.3	5,091.9	5,045.6	46.31	109.949	
2,250.0	2,177.1	2,169.1	2,169.1	10.3	43.3	11.51	980.6	-5,484.3	5,078.3	5,030.9	47.43	107.072	
2,300.0	2,225.1	2,217.1	2,217.1	10.6	44.3	10.37	980.6	-5,484.3	5,064.7	5,016.2	48.47	104.489	
2,400.0	2,321.2	2,313.2	2,313.2	11.2	46.2	8.12	980.6	-5,484.3	5,037.1	4,986.6	50.55	99.649	
2,500.0	2,417.0	2,409.0	2,409.0	11.7	48.1	5.92	980.6	-5,484.3	5,008.9	4,956.3	52.62	95.200	
2,537.0	2,452.5	2,444.5	2,444.5	11.9	48.8	5.12	980.6	-5,484.3	4,998.4	4,945.0	53.38	93.643	
2,600.0	2,512.8	2,504.8	2,504.8	12.3	50.1	2.17	980.6	-5,484.3	4,980.1	4,925.5	54.61	91.189	
2,700.0	2,608.2	2,600.2	2,600.2	12.9	52.0	-2.32	980.6	-5,484.3	4,950.3	4,893.7	56.56	87.528	
2,800.0	2,703.3	2,695.3	2,695.3	13.5	53.9	-6.53	980.6	-5,484.3	4,919.4	4,860.9	58.48	84.123	
2,824.0	2,726.1	2,718.1	2,718.1	13.7	54.3	-7.51	980.6	-5,484.3	4,911.9	4,852.9	58.94	83.341	
2,900.0	2,798.2	2,790.2	2,790.2	14.1	55.8	-4.96	980.6	-5,484.3	4,888.2	4,827.4	60.72	80.500	
3,000.0	2,893.6	2,885.6	2,885.6	14.7	57.7	-1.32	980.6	-5,484.3	4,858.2	4,795.1	63.09	77.008	
3,100.0	2,989.4	2,981.4	2,981.4	15.3	59.6	2.66	980.6	-5,484.3	4,829.5	4,764.0	65.47	73.771	
3,112.0	3,000.9	2,992.9	2,992.9	15.4	59.9	3.16	980.6	-5,484.3	4,826.1	4,760.4	65.75	73.399	
3,200.0	3,085.5	3,077.5	3,077.5	15.9	61.6	4.14	980.6	-5,484.3	4,801.9	4,734.2	67.76	70.865	
3,300.0	3,181.9	3,173.9	3,173.9	16.4	63.5	5.30	980.6	-5,484.3	4,775.2	4,705.1	70.05	68.165	
3,400.0	3,278.4	3,270.4	3,270.4	16.9	65.5	6.53	980.6	-5,484.3	4,749.2	4,676.8	72.35	65.639	
3,500.0	3,374.7	3,366.7	3,366.7	17.5	67.4	6.49	980.6	-5,484.3	4,722.4	4,648.3	74.07	63.756	
3,600.0	3,470.3	3,462.3	3,462.3	18.1	69.3	6.47	980.6	-5,484.3	4,693.2	4,617.5	75.70	61.996	
3,687.0	3,552.8	3,544.8	3,544.8	18.6	71.0	6.48	980.6	-5,484.3	4,665.8	4,588.8	77.05	60.559	
3,700.0	3,565.1	3,557.1	3,557.1	18.7	71.2	6.74	980.6	-5,484.3	4,661.6	4,584.2	77.32	60.290	
3,800.0	3,659.5	3,651.5	3,651.5	19.4	73.1	8.78	980.6	-5,484.3	4,629.0	4,549.5	79.42	58.281	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,745.9	3,745.9	20.0	75.0	10.81	980.6	-5,484.3	4,596.2	4,514.7	81.53	56.373	
3,974.0	3,823.6	3,815.6	3,815.6	20.5	76.4	12.30	980.6	-5,484.3	4,571.9	4,488.8	83.10	55.020	
4,000.0	3,848.1	3,840.1	3,840.1	20.7	76.9	12.07	980.6	-5,484.3	4,563.5	4,479.7	83.79	54.463	
4,100.0	3,942.9	3,934.9	3,934.9	21.3	78.8	11.12	980.6	-5,484.3	4,532.3	4,445.8	86.46	52.420	
4,200.0	4,038.5	4,030.5	4,030.5	21.9	80.7	10.02	980.6	-5,484.3	4,503.2	4,414.1	89.13	50.525	
4,263.0	4,099.0	4,091.0	4,091.0	22.3	82.0	9.24	980.6	-5,484.3	4,486.0	4,395.2	90.81	49.402	
4,300.0	4,134.7	4,126.7	4,126.7	22.5	82.7	8.13	980.6	-5,484.3	4,476.3	4,384.6	91.66	48.836	
4,400.0	4,231.2	4,223.2	4,223.2	23.0	84.6	4.99	980.6	-5,484.3	4,450.4	4,356.4	93.97	47.358	
4,500.0	4,328.0	4,320.0	4,320.0	23.5	86.6	1.62	980.6	-5,484.3	4,425.2	4,328.9	96.29	45.956	
4,549.0	4,375.5	4,367.5	4,367.5	23.8	87.5	-0.12	980.6	-5,484.3	4,413.2	4,315.8	97.43	45.295	
4,600.0	4,425.0	4,417.0	4,417.0	24.0	88.5	-0.31	980.6	-5,484.3	4,400.8	4,302.2	98.52	44.669	
4,700.0	4,521.9	4,513.9	4,513.9	24.5	90.5	-0.67	980.6	-5,484.3	4,376.3	4,275.6	100.65	43.479	
4,800.0	4,618.8	4,610.8	4,610.8	25.0	92.4	-1.03	980.6	-5,484.3	4,351.7	4,248.9	102.78	42.339	
4,837.0	4,654.7	4,646.7	4,646.7	25.2	93.1	-1.17	980.6	-5,484.3	4,342.6	4,239.0	103.57	41.929	
4,900.0	4,715.7	4,707.7	4,707.7	25.5	94.4	-1.63	980.6	-5,484.3	4,326.9	4,222.0	104.82	41.280	
5,000.0	4,812.4	4,804.4	4,804.4	26.0	96.3	-2.34	980.6	-5,484.3	4,301.3	4,194.5	106.78	40.282	
5,100.0	4,908.9	4,900.9	4,900.9	26.6	98.2	-3.02	980.6	-5,484.3	4,275.0	4,166.3	108.72	39.320	
5,125.0	4,932.9	4,924.9	4,924.9	26.7	98.7	-3.18	980.6	-5,484.3	4,268.3	4,159.1	109.21	39.085	
5,200.0	5,005.4	4,997.4	4,997.4	27.0	100.2	-0.41	980.6	-5,484.3	4,248.8	4,137.5	111.26	38.188	
5,300.0	5,102.4	5,094.4	5,094.4	27.5	102.1	3.88	980.6	-5,484.3	4,224.7	4,110.7	113.98	37.064	
5,400.0	5,199.9	5,191.9	5,191.9	28.0	104.1	9.00	980.6	-5,484.3	4,202.8	4,086.1	116.68	36.020	
5,412.0	5,211.7	5,203.7	5,203.7	28.1	104.3	9.68	980.6	-5,484.3	4,200.3	4,083.3	117.00	35.900	
5,500.0	5,297.9	5,289.9	5,289.9	28.4	106.1	12.36	980.6	-5,484.3	4,183.3	4,063.9	119.39	35.040	
5,581.0	5,377.7	5,369.7	5,369.7	28.7	107.7	15.44	980.6	-5,484.3	4,169.4	4,047.9	121.54	34.306	
5,600.0	5,396.4	5,388.4	5,388.4	28.8	108.1	14.24	980.6	-5,484.3	4,166.4	4,044.4	122.02	34.145	
5,700.0	5,495.3	5,487.3	5,487.3	29.1	110.0	6.32	980.6	-5,484.3	4,152.0	4,027.5	124.55	33.336	
5,800.0	5,594.6	5,586.6	5,586.6	29.4	112.0	-5.50	980.6	-5,484.3	4,140.1	4,013.1	127.01	32.597	
5,900.0	5,694.1	5,686.1	5,686.1	29.6	114.0	-23.05	980.6	-5,484.3	4,130.6	4,001.2	129.39	31.922	
5,917.0	5,711.1	5,703.1	5,703.1	29.7	114.4	-26.65	980.6	-5,484.3	4,129.2	3,999.4	129.79	31.814	
6,000.0	5,793.7	5,785.7	5,785.7	29.8	116.0	-26.70	980.6	-5,484.3	4,122.7	3,991.1	131.60	31.328	
6,067.0	5,860.5	5,852.5	5,852.5	30.0	117.4	-26.74	980.6	-5,484.3	4,117.4	3,984.4	133.06	30.945	
6,100.0	5,893.4	5,885.4	5,885.4	30.0	118.0	-26.73	980.6	-5,484.3	4,115.0	3,981.2	133.84	30.746	
6,200.0	5,993.2	5,985.2	5,985.2	30.2	120.1	-26.72	980.6	-5,484.3	4,109.7	3,973.6	136.12	30.192	
6,300.0	6,093.2	6,085.2	6,085.2	30.3	122.1	-26.72	980.6	-5,484.3	4,107.6	3,969.3	138.27	29.707	
6,318.8	6,111.9	6,103.9	6,103.9	30.3	122.4	-78.68	980.6	-5,484.3	4,107.5	3,954.9	152.68	26.903	
6,400.0	6,193.2	6,185.2	6,185.2	30.4	124.1	-78.68	980.6	-5,484.3	4,107.5	3,953.2	154.39	26.606	
6,444.4	6,237.6	6,229.6	6,229.6	30.4	125.0	-78.68	980.6	-5,484.3	4,107.5	3,952.2	155.32	26.446	CC, ES, SF
6,450.0	6,243.2	6,235.2	6,235.2	30.4	125.1	-168.68	980.6	-5,484.3	4,107.6	3,966.1	141.46	29.038	
6,475.0	6,268.1	6,260.1	6,260.1	30.4	125.6	-168.66	980.6	-5,484.3	4,108.5	3,967.0	141.55	29.026	
6,500.0	6,293.0	6,285.0	6,285.0	30.4	126.1	-168.61	980.6	-5,484.3	4,110.7	3,969.4	141.26	29.100	
6,525.0	6,317.8	6,309.8	6,309.8	30.4	126.6	-168.54	980.6	-5,484.3	4,114.2	3,973.6	140.61	29.260	
6,550.0	6,342.3	6,334.3	6,334.3	30.4	127.1	-168.44	980.6	-5,484.3	4,118.9	3,979.4	139.58	29.510	
6,575.0	6,366.5	6,358.5	6,358.5	30.3	127.6	-168.30	980.6	-5,484.3	4,124.9	3,986.8	138.18	29.853	
6,600.0	6,390.4	6,382.4	6,382.4	30.2	128.0	-168.14	980.6	-5,484.3	4,132.2	3,995.8	136.41	30.291	
6,625.0	6,413.9	6,405.9	6,405.9	30.2	128.5	-167.94	980.6	-5,484.3	4,140.6	4,006.3	134.29	30.832	
6,650.0	6,436.9	6,428.9	6,428.9	30.1	129.0	-167.70	980.6	-5,484.3	4,150.3	4,018.4	131.83	31.482	
6,675.0	6,459.3	6,451.3	6,451.3	30.0	129.4	-167.43	980.6	-5,484.3	4,161.1	4,032.1	129.04	32.247	
6,700.0	6,481.1	6,473.1	6,473.1	29.9	129.9	-167.10	980.6	-5,484.3	4,173.0	4,047.1	125.94	33.135	
6,725.0	6,502.3	6,494.3	6,494.3	29.7	130.3	-166.73	980.6	-5,484.3	4,186.1	4,063.6	122.55	34.157	
6,750.0	6,522.7	6,514.7	6,514.7	29.6	130.7	-166.29	980.6	-5,484.3	4,200.2	4,081.3	118.92	35.320	
6,775.0	6,542.4	6,534.4	6,534.4	29.5	131.1	-165.79	980.6	-5,484.3	4,215.4	4,100.3	115.07	36.632	
6,800.0	6,561.2	6,553.2	6,553.2	29.4	131.5	-165.21	980.6	-5,484.3	4,231.5	4,120.5	111.07	38.098	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,571.1	6,571.1	29.3	131.8	-164.54	980.6	-5,484.3	4,248.6	4,141.7	106.97	39.717	
6,850.0	6,596.1	6,588.1	6,588.1	29.1	132.2	-163.75	980.6	-5,484.3	4,266.6	4,163.8	102.87	41.475	
6,875.0	6,612.1	6,604.1	6,604.1	29.0	132.5	-162.83	980.6	-5,484.3	4,285.5	4,186.6	98.88	43.342	
6,900.0	6,627.1	6,619.1	6,619.1	28.9	132.8	-161.75	980.6	-5,484.3	4,305.2	4,210.0	95.13	45.253	
6,925.0	6,641.0	6,633.0	6,633.0	28.8	133.1	-160.46	980.6	-5,484.3	4,325.5	4,233.7	91.84	47.101	
6,950.0	6,653.8	6,645.8	6,645.8	28.7	133.3	-158.92	980.6	-5,484.3	4,346.6	4,257.4	89.24	48.708	
6,975.0	6,665.5	6,657.5	6,657.5	28.7	133.6	-157.05	980.6	-5,484.3	4,368.4	4,280.7	87.68	49.824	
7,000.0	6,676.0	6,668.0	6,668.0	28.6	133.8	-154.74	980.6	-5,484.3	4,390.7	4,303.1	87.58	50.133	
7,025.0	6,685.3	6,677.3	6,677.3	28.6	134.0	-151.86	980.6	-5,484.3	4,413.5	4,324.0	89.49	49.319	
7,050.0	6,693.4	6,685.4	6,685.4	28.5	134.1	-148.18	980.6	-5,484.3	4,436.7	4,342.7	94.01	47.193	
7,075.0	6,700.2	6,692.2	6,692.2	28.5	134.3	-143.40	980.6	-5,484.3	4,460.4	4,358.6	101.77	43.828	
7,100.0	6,705.8	6,697.8	6,697.8	28.5	134.4	-137.07	980.6	-5,484.3	4,484.4	4,371.1	113.22	39.606	
7,125.0	6,710.0	6,702.0	6,702.0	28.5	134.5	-128.56	980.6	-5,484.3	4,508.6	4,380.3	128.25	35.155	
7,150.0	6,713.0	6,705.0	6,705.0	28.6	134.5	-117.20	980.6	-5,484.3	4,533.0	4,387.9	145.12	31.236	
7,175.0	6,714.7	6,706.7	6,706.7	28.6	134.6	-102.75	980.6	-5,484.3	4,557.6	4,398.6	158.99	28.666	
7,198.8	6,715.0	6,707.0	6,707.0	28.6	134.6	-87.04	980.6	-5,484.3	4,581.0	4,418.1	162.92	28.119	
7,200.0	6,715.0	6,707.0	6,707.0	28.6	134.6	-87.04	980.6	-5,484.3	4,582.2	4,419.2	162.92	28.125	
7,300.0	6,714.1	6,706.1	6,706.1	29.0	134.6	-86.97	980.6	-5,484.3	4,680.6	4,517.3	163.30	28.663	
7,400.0	6,713.2	6,705.2	6,705.2	29.7	134.5	-86.91	980.6	-5,484.3	4,779.2	4,615.2	163.93	29.153	
7,500.0	6,712.3	6,704.3	6,704.3	30.6	134.5	-86.84	980.6	-5,484.3	4,877.8	4,712.9	164.82	29.595	
7,600.0	6,711.3	6,703.3	6,703.3	31.7	134.5	-86.77	980.6	-5,484.3	4,976.4	4,810.5	165.92	29.992	
7,700.0	6,710.4	6,702.4	6,702.4	33.0	134.5	-86.71	980.6	-5,484.3	5,075.1	4,907.9	167.23	30.348	
7,800.0	6,709.5	6,701.5	6,701.5	34.5	134.5	-86.64	980.6	-5,484.3	5,173.8	5,005.1	168.71	30.667	
7,900.0	6,708.5	6,700.5	6,700.5	36.2	134.4	-86.57	980.6	-5,484.3	5,272.6	5,102.3	170.35	30.952	
8,000.0	6,707.6	6,699.6	6,699.6	38.0	134.4	-86.51	980.6	-5,484.3	5,371.5	5,199.4	172.12	31.208	
8,100.0	6,706.7	6,698.7	6,698.7	39.9	134.4	-86.44	980.6	-5,484.3	5,470.4	5,296.4	174.01	31.437	
8,200.0	6,705.8	6,697.8	6,697.8	41.9	134.4	-86.37	980.6	-5,484.3	5,569.3	5,393.3	176.00	31.644	
8,300.0	6,704.8	6,696.8	6,696.8	44.0	134.4	-86.31	980.6	-5,484.3	5,668.3	5,490.2	178.07	31.832	
8,400.0	6,703.9	6,695.9	6,695.9	46.2	134.3	-86.24	980.6	-5,484.3	5,767.2	5,587.0	180.22	32.002	
8,500.0	6,703.0	6,695.0	6,695.0	48.5	134.3	-86.17	980.6	-5,484.3	5,866.3	5,683.8	182.43	32.157	
8,600.0	6,702.1	6,694.1	6,694.1	50.8	134.3	-86.11	980.6	-5,484.3	5,965.3	5,780.6	184.70	32.298	
8,700.0	6,701.1	6,693.1	6,693.1	53.1	134.3	-86.04	980.6	-5,484.3	6,064.4	5,877.4	187.01	32.428	
8,800.0	6,700.2	6,692.2	6,692.2	55.5	134.3	-85.97	980.6	-5,484.3	6,163.6	5,974.2	189.37	32.548	
8,900.0	6,699.3	6,691.3	6,691.3	57.9	134.3	-85.91	980.6	-5,484.3	6,262.7	6,070.9	191.76	32.659	
9,000.0	6,698.3	6,690.3	6,690.3	60.4	134.2	-85.84	980.6	-5,484.3	6,361.9	6,167.7	194.19	32.761	
9,100.0	6,697.4	6,689.4	6,689.4	62.9	134.2	-85.77	980.6	-5,484.3	6,461.1	6,264.4	196.64	32.857	
9,200.0	6,696.5	6,688.5	6,688.5	65.4	134.2	-85.71	980.6	-5,484.3	6,560.3	6,361.2	199.12	32.946	
9,300.0	6,695.5	6,687.5	6,687.5	68.0	134.2	-85.64	980.6	-5,484.3	6,659.6	6,457.9	201.62	33.030	
9,400.0	6,694.6	6,686.6	6,686.6	70.5	134.2	-85.57	980.6	-5,484.3	6,758.8	6,554.7	204.14	33.108	
9,500.0	6,693.7	6,685.7	6,685.7	73.1	134.1	-85.51	980.6	-5,484.3	6,858.1	6,651.4	206.68	33.182	
9,600.0	6,692.8	6,684.8	6,684.8	75.7	134.1	-85.44	980.6	-5,484.3	6,957.4	6,748.2	209.24	33.252	
9,700.0	6,691.8	6,683.8	6,683.8	78.3	134.1	-85.37	980.6	-5,484.3	7,056.8	6,845.0	211.80	33.317	
9,800.0	6,690.9	6,682.9	6,682.9	80.9	134.1	-85.30	980.6	-5,484.3	7,156.1	6,941.7	214.38	33.380	
9,900.0	6,690.0	6,682.0	6,682.0	83.6	134.1	-85.24	980.6	-5,484.3	7,255.5	7,038.5	216.98	33.439	
10,000.0	6,689.0	6,681.0	6,681.0	86.2	134.0	-85.17	980.6	-5,484.3	7,354.9	7,135.3	219.58	33.496	
10,100.0	6,688.1	6,680.1	6,680.1	88.9	134.0	-85.10	980.6	-5,484.3	7,454.3	7,232.1	222.19	33.549	
10,200.0	6,687.2	6,679.2	6,679.2	91.6	134.0	-85.04	980.6	-5,484.3	7,553.7	7,328.9	224.81	33.601	
10,300.0	6,686.2	6,678.2	6,678.2	94.2	134.0	-84.97	980.6	-5,484.3	7,653.1	7,425.7	227.43	33.650	
10,400.0	6,685.3	6,677.3	6,677.3	96.9	134.0	-84.90	980.6	-5,484.3	7,752.6	7,522.5	230.07	33.697	
10,500.0	6,684.4	6,676.4	6,676.4	99.6	134.0	-84.84	980.6	-5,484.3	7,852.0	7,619.3	232.71	33.742	
10,600.0	6,683.4	6,675.4	6,675.4	102.3	133.9	-84.77	980.6	-5,484.3	7,951.5	7,716.1	235.35	33.785	
10,700.0	6,682.5	6,674.5	6,674.5	105.0	133.9	-84.70	980.6	-5,484.3	8,051.0	7,813.0	238.00	33.827	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,800.0	6,681.6	6,673.6	6,673.6	107.7	133.9	-84.63	980.6	-5,484.3	8,150.5	7,909.8	240.66	33.867	
10,900.0	6,680.6	6,672.6	6,672.6	110.4	133.9	-84.57	980.6	-5,484.3	8,250.0	8,006.7	243.32	33.906	
11,000.0	6,679.7	6,671.7	6,671.7	113.1	133.9	-84.50	980.6	-5,484.3	8,349.5	8,103.5	245.98	33.944	
11,100.0	6,678.8	6,670.8	6,670.8	115.9	133.8	-84.43	980.6	-5,484.3	8,449.0	8,200.4	248.65	33.980	
11,200.0	6,677.8	6,669.8	6,669.8	118.6	133.8	-84.36	980.6	-5,484.3	8,548.6	8,297.3	251.32	34.015	
11,300.0	6,676.9	6,668.9	6,668.9	121.3	133.8	-84.30	980.6	-5,484.3	8,648.1	8,394.2	253.99	34.049	
11,400.0	6,676.0	6,668.0	6,668.0	124.1	133.8	-84.23	980.6	-5,484.3	8,747.7	8,491.0	256.66	34.082	
11,500.0	6,675.0	6,667.0	6,667.0	126.8	133.8	-84.16	980.6	-5,484.3	8,847.3	8,587.9	259.34	34.114	
11,600.0	6,674.1	6,666.1	6,666.1	129.5	133.7	-84.10	980.6	-5,484.3	8,946.9	8,684.8	262.02	34.145	
11,700.0	6,673.1	6,665.1	6,665.1	132.3	133.7	-84.03	980.6	-5,484.3	9,046.5	8,781.8	264.70	34.176	
11,800.0	6,672.2	6,664.2	6,664.2	135.0	133.7	-83.96	980.6	-5,484.3	9,146.1	8,878.7	267.39	34.205	
11,900.0	6,671.3	6,663.3	6,663.3	137.8	133.7	-83.89	980.6	-5,484.3	9,245.7	8,975.6	270.07	34.234	
12,000.0	6,670.3	6,662.3	6,662.3	140.5	133.7	-83.83	980.6	-5,484.3	9,345.3	9,072.5	272.76	34.262	
12,036.2	6,670.0	6,662.0	6,662.0	141.5	133.7	-83.80	980.6	-5,484.3	9,381.4	9,107.7	273.73	34.272	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-85.71	353.8	-4,718.5	4,731.7				
100.0	100.0	100.0	100.0	0.1	0.9	-96.31	353.8	-4,718.5	4,731.8	4,730.8	0.99	4,780.910	
200.0	200.0	200.0	200.0	0.2	3.3	-96.32	353.8	-4,718.5	4,731.8	4,728.3	3.47	1,365.589	
261.0	261.0	261.0	261.0	0.3	4.5	-96.32	353.8	-4,718.5	4,731.8	4,727.0	4.80	985.088	
300.0	300.0	300.0	300.0	0.4	5.3	-18.11	353.8	-4,718.5	4,731.6	4,725.9	5.70	829.761	
400.0	399.9	399.9	399.9	0.6	7.4	-3.58	353.8	-4,718.5	4,728.2	4,720.3	7.96	593.884	
500.0	499.7	499.7	499.7	0.8	9.4	-1.19	353.8	-4,718.5	4,721.1	4,710.9	10.18	463.969	
538.0	537.5	537.5	537.5	0.9	10.2	-0.73	353.8	-4,718.5	4,717.4	4,706.4	11.00	428.760	
600.0	599.1	599.1	599.1	1.1	11.4	-1.50	353.8	-4,718.5	4,710.1	4,697.8	12.36	381.129	
700.0	697.9	697.9	697.9	1.5	13.4	-2.26	353.8	-4,718.5	4,694.9	4,680.4	14.49	324.017	
800.0	796.0	796.0	796.0	1.8	15.4	-2.75	353.8	-4,718.5	4,675.5	4,658.9	16.54	282.658	
818.0	813.5	813.5	813.5	1.9	15.7	-2.82	353.8	-4,718.5	4,671.5	4,654.6	16.90	276.410	
900.0	893.1	893.1	893.1	2.3	17.3	-1.99	353.8	-4,718.5	4,651.8	4,633.3	18.55	250.838	
1,000.0	989.2	989.2	989.2	2.9	19.3	-1.22	353.8	-4,718.5	4,624.0	4,603.5	20.45	226.090	
1,100.0	1,083.9	1,083.9	1,083.9	3.5	21.2	-0.63	353.8	-4,718.5	4,592.0	4,569.7	22.24	206.496	
1,104.0	1,087.6	1,087.6	1,087.6	3.5	21.3	-0.61	353.8	-4,718.5	4,590.6	4,568.3	22.31	205.798	
1,200.0	1,177.9	1,177.9	1,177.9	4.1	23.1	-1.39	353.8	-4,718.5	4,557.9	4,533.6	24.35	187.203	
1,300.0	1,272.0	1,272.0	1,272.0	4.8	25.0	-2.22	353.8	-4,718.5	4,524.2	4,497.7	26.43	171.198	
1,391.0	1,357.8	1,357.8	1,357.8	5.3	26.7	-2.98	353.8	-4,718.5	4,493.7	4,465.3	28.35	158.535	
1,400.0	1,366.3	1,366.3	1,366.3	5.4	26.9	-2.78	353.8	-4,718.5	4,490.7	4,462.1	28.56	157.256	
1,458.0	1,421.2	1,421.2	1,421.2	5.7	28.0	-1.39	353.8	-4,718.5	4,472.0	4,442.1	29.93	149.417	
1,500.0	1,461.0	1,461.0	1,461.0	6.0	28.8	-1.62	353.8	-4,718.5	4,458.8	4,428.0	30.82	144.675	
1,600.0	1,556.1	1,556.1	1,556.1	6.6	30.7	-2.16	353.8	-4,718.5	4,427.7	4,394.7	32.95	134.392	
1,676.0	1,628.3	1,628.3	1,628.3	7.0	32.1	-2.58	353.8	-4,718.5	4,404.1	4,369.6	34.57	127.407	
1,700.0	1,651.1	1,651.1	1,651.1	7.2	32.6	-2.00	353.8	-4,718.5	4,396.7	4,361.7	35.09	125.312	
1,800.0	1,746.4	1,746.4	1,746.4	7.7	34.5	0.46	353.8	-4,718.5	4,366.3	4,329.0	37.26	117.195	
1,900.0	1,841.8	1,841.8	1,841.8	8.3	36.4	3.01	353.8	-4,718.5	4,336.3	4,296.9	39.44	109.955	
1,963.0	1,902.0	1,902.0	1,902.0	8.7	37.7	4.67	353.8	-4,718.5	4,317.7	4,276.9	40.82	105.783	
2,000.0	1,937.4	1,937.4	1,937.4	8.9	38.4	4.69	353.8	-4,718.5	4,306.9	4,265.3	41.63	103.457	
2,100.0	2,033.1	2,033.1	2,033.1	9.5	40.3	4.75	353.8	-4,718.5	4,278.2	4,234.4	43.84	97.597	
2,200.0	2,129.0	2,129.0	2,129.0	10.0	42.2	4.81	353.8	-4,718.5	4,250.1	4,204.0	46.05	92.293	
2,250.0	2,177.1	2,177.1	2,177.1	10.3	43.2	4.84	353.8	-4,718.5	4,236.3	4,189.1	47.16	89.827	
2,300.0	2,225.1	2,225.1	2,225.1	10.6	44.2	3.68	353.8	-4,718.5	4,222.5	4,174.3	48.21	87.593	
2,400.0	2,321.2	2,321.2	2,321.2	11.2	46.1	1.38	353.8	-4,718.5	4,194.6	4,144.3	50.29	83.406	
2,500.0	2,417.0	2,417.0	2,417.0	11.7	48.0	-0.87	353.8	-4,718.5	4,166.2	4,113.8	52.37	79.556	
2,537.0	2,452.5	2,452.5	2,452.5	11.9	48.7	-1.69	353.8	-4,718.5	4,155.6	4,102.5	53.14	78.208	
2,600.0	2,512.8	2,512.8	2,512.8	12.3	49.9	-4.68	353.8	-4,718.5	4,137.3	4,082.9	54.41	76.040	
2,700.0	2,608.2	2,608.2	2,608.2	12.9	51.9	-9.23	353.8	-4,718.5	4,107.7	4,051.3	56.43	72.799	
2,800.0	2,703.3	2,703.3	2,703.3	13.5	53.8	-13.52	353.8	-4,718.5	4,077.3	4,018.9	58.43	69.778	
2,824.0	2,726.1	2,726.1	2,726.1	13.7	54.2	-14.51	353.8	-4,718.5	4,069.9	4,011.0	58.91	69.082	
2,900.0	2,798.2	2,798.2	2,798.2	14.1	55.7	-12.00	353.8	-4,718.5	4,046.7	3,986.0	60.66	66.709	
3,000.0	2,893.6	2,893.6	2,893.6	14.7	57.6	-8.39	353.8	-4,718.5	4,017.0	3,954.1	62.98	63.788	
3,100.0	2,989.4	2,989.4	2,989.4	15.3	59.5	-4.43	353.8	-4,718.5	3,988.5	3,923.2	65.30	61.075	
3,112.0	3,000.9	3,000.9	3,000.9	15.4	59.8	-3.94	353.8	-4,718.5	3,985.2	3,919.6	65.59	60.763	
3,200.0	3,085.5	3,085.5	3,085.5	15.9	61.5	-2.99	353.8	-4,718.5	3,961.0	3,893.4	67.58	58.612	
3,300.0	3,181.9	3,181.9	3,181.9	16.4	63.4	-1.85	353.8	-4,718.5	3,934.1	3,864.3	69.85	56.321	
3,400.0	3,278.4	3,278.4	3,278.4	16.9	65.3	-0.65	353.8	-4,718.5	3,908.1	3,835.9	72.13	54.178	
3,500.0	3,374.7	3,374.7	3,374.7	17.5	67.3	-0.78	353.8	-4,718.5	3,881.1	3,807.3	73.84	52.564	
3,600.0	3,470.3	3,470.3	3,470.3	18.1	69.2	-0.90	353.8	-4,718.5	3,851.7	3,776.3	75.45	51.049	
3,687.0	3,552.8	3,552.8	3,552.8	18.6	70.9	-1.00	353.8	-4,718.5	3,824.2	3,747.4	76.78	49.807	
3,700.0	3,565.1	3,565.1	3,565.1	18.7	71.1	-0.74	353.8	-4,718.5	3,819.9	3,742.9	77.04	49.581	
3,800.0	3,659.5	3,659.5	3,659.5	19.4	73.0	1.25	353.8	-4,718.5	3,787.0	3,708.0	79.08	47.889	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,753.9	3,753.9	20.0	74.9	3.22	353.8	-4,718.5	3,753.9	3,672.8	81.11	46.280	
3,974.0	3,823.6	3,823.6	3,823.6	20.5	76.3	4.67	353.8	-4,718.5	3,729.2	3,646.6	82.61	45.140	
4,000.0	3,848.1	3,848.1	3,848.1	20.7	76.8	4.45	353.8	-4,718.5	3,720.6	3,637.3	83.32	44.656	
4,100.0	3,942.9	3,942.9	3,942.9	21.3	78.7	3.50	353.8	-4,718.5	3,688.9	3,602.8	86.02	42.885	
4,200.0	4,038.5	4,038.5	4,038.5	21.9	80.6	2.42	353.8	-4,718.5	3,659.4	3,570.7	88.71	41.249	
4,263.0	4,099.0	4,099.0	4,099.0	22.3	81.8	1.64	353.8	-4,718.5	3,642.0	3,551.6	90.41	40.284	
4,300.0	4,134.7	4,134.7	4,134.7	22.5	82.6	0.52	353.8	-4,718.5	3,632.1	3,540.8	91.28	39.790	
4,400.0	4,231.2	4,231.2	4,231.2	23.0	84.5	-2.65	353.8	-4,718.5	3,606.1	3,512.4	93.65	38.506	
4,500.0	4,328.0	4,328.0	4,328.0	23.5	86.4	-6.06	353.8	-4,718.5	3,581.0	3,484.9	96.03	37.292	
4,549.0	4,375.5	4,375.5	4,375.5	23.8	87.4	-7.81	353.8	-4,718.5	3,569.0	3,471.8	97.19	36.721	
4,600.0	4,425.0	4,425.0	4,425.0	24.0	88.4	-8.02	353.8	-4,718.5	3,556.7	3,458.4	98.29	36.186	
4,700.0	4,521.9	4,521.9	4,521.9	24.5	90.3	-8.44	353.8	-4,718.5	3,532.4	3,432.0	100.44	35.170	
4,800.0	4,618.8	4,618.8	4,618.8	25.0	92.3	-8.86	353.8	-4,718.5	3,508.1	3,405.5	102.59	34.196	
4,837.0	4,654.7	4,654.7	4,654.7	25.2	93.0	-9.02	353.8	-4,718.5	3,499.1	3,395.7	103.38	33.846	
4,900.0	4,715.7	4,715.7	4,715.7	25.5	94.2	-9.53	353.8	-4,718.5	3,483.6	3,378.9	104.65	33.287	
5,000.0	4,812.4	4,812.4	4,812.4	26.0	96.2	-10.31	353.8	-4,718.5	3,458.4	3,351.7	106.65	32.426	
5,100.0	4,908.9	4,908.9	4,908.9	26.6	98.1	-11.07	353.8	-4,718.5	3,432.5	3,323.8	108.64	31.595	
5,125.0	4,932.9	4,932.9	4,932.9	26.7	98.6	-11.26	353.8	-4,718.5	3,425.9	3,316.8	109.14	31.391	
5,200.0	5,005.4	5,005.4	5,005.4	27.0	100.1	-8.50	353.8	-4,718.5	3,406.6	3,295.5	111.11	30.659	
5,300.0	5,102.4	5,102.4	5,102.4	27.5	102.0	-4.22	353.8	-4,718.5	3,382.7	3,268.9	113.75	29.739	
5,400.0	5,199.9	5,199.9	5,199.9	28.0	104.0	0.89	353.8	-4,718.5	3,360.6	3,244.3	116.36	28.880	
5,412.0	5,211.7	5,211.7	5,211.7	28.1	104.2	1.57	353.8	-4,718.5	3,358.1	3,241.5	116.68	28.781	
5,500.0	5,297.9	5,297.9	5,297.9	28.4	106.0	4.27	353.8	-4,718.5	3,340.8	3,221.8	119.04	28.066	
5,581.0	5,377.7	5,377.7	5,377.7	28.7	107.6	7.35	353.8	-4,718.5	3,326.6	3,205.5	121.17	27.455	
5,600.0	5,396.4	5,396.4	5,396.4	28.8	107.9	6.15	353.8	-4,718.5	3,323.5	3,201.9	121.67	27.317	
5,700.0	5,495.3	5,495.3	5,495.3	29.1	109.9	-1.77	353.8	-4,718.5	3,308.9	3,184.6	124.26	26.629	
5,800.0	5,594.6	5,594.6	5,594.6	29.4	111.9	-13.59	353.8	-4,718.5	3,297.0	3,170.3	126.77	26.008	
5,900.0	5,694.1	5,694.1	5,694.1	29.6	113.9	-31.14	353.8	-4,718.5	3,288.0	3,158.8	129.19	25.451	
5,917.0	5,711.1	5,711.1	5,711.1	29.7	114.3	-34.75	353.8	-4,718.5	3,286.7	3,157.1	129.59	25.362	
6,000.0	5,793.7	5,793.7	5,793.7	29.8	115.9	-34.82	353.8	-4,718.5	3,280.7	3,149.3	131.42	24.964	
6,067.0	5,860.5	5,860.5	5,860.5	30.0	117.3	-34.88	353.8	-4,718.5	3,275.9	3,143.0	132.89	24.650	
6,100.0	5,893.4	5,893.4	5,893.4	30.0	117.9	-34.88	353.8	-4,718.5	3,273.6	3,140.0	133.66	24.491	
6,200.0	5,993.2	5,993.2	5,993.2	30.2	119.9	-34.89	353.8	-4,718.5	3,268.8	3,132.9	135.93	24.048	
6,300.0	6,093.2	6,093.2	6,093.2	30.3	121.9	-34.89	353.8	-4,718.5	3,266.8	3,128.8	138.08	23.660	
6,318.8	6,111.9	6,111.9	6,111.9	30.3	122.3	-86.85	353.8	-4,718.5	3,266.8	3,114.2	152.60	21.408	
6,400.0	6,193.2	6,193.2	6,193.2	30.4	124.0	-86.85	353.8	-4,718.5	3,266.8	3,112.5	154.30	21.171	
6,444.4	6,237.6	6,237.6	6,237.6	30.4	124.8	-86.85	353.8	-4,718.5	3,266.8	3,111.6	155.24	21.044	CC, ES, SF
6,450.0	6,243.2	6,243.2	6,243.2	30.4	125.0	-176.85	353.8	-4,718.5	3,266.8	3,125.6	141.26	23.126	
6,475.0	6,268.1	6,268.1	6,268.1	30.4	125.5	-176.84	353.8	-4,718.5	3,267.8	3,126.4	141.33	23.121	
6,500.0	6,293.0	6,293.0	6,293.0	30.4	126.0	-176.83	353.8	-4,718.5	3,270.0	3,129.0	141.02	23.189	
6,525.0	6,317.8	6,317.8	6,317.8	30.4	126.5	-176.81	353.8	-4,718.5	3,273.6	3,133.3	140.31	23.331	
6,550.0	6,342.3	6,342.3	6,342.3	30.4	127.0	-176.78	353.8	-4,718.5	3,278.4	3,139.2	139.21	23.550	
6,575.0	6,366.5	6,366.5	6,366.5	30.3	127.4	-176.74	353.8	-4,718.5	3,284.5	3,146.8	137.71	23.850	
6,600.0	6,390.4	6,390.4	6,390.4	30.2	127.9	-176.70	353.8	-4,718.5	3,291.9	3,156.0	135.83	24.236	
6,625.0	6,413.9	6,413.9	6,413.9	30.2	128.4	-176.64	353.8	-4,718.5	3,300.5	3,166.9	133.55	24.713	
6,650.0	6,436.9	6,436.9	6,436.9	30.1	128.9	-176.58	353.8	-4,718.5	3,310.3	3,179.4	130.90	25.289	
6,675.0	6,459.3	6,459.3	6,459.3	30.0	129.3	-176.50	353.8	-4,718.5	3,321.3	3,193.4	127.87	25.975	
6,700.0	6,481.1	6,481.1	6,481.1	29.9	129.7	-176.41	353.8	-4,718.5	3,333.5	3,209.0	124.47	26.782	
6,725.0	6,502.3	6,502.3	6,502.3	29.7	130.2	-176.30	353.8	-4,718.5	3,346.8	3,226.0	120.72	27.724	
6,750.0	6,522.7	6,522.7	6,522.7	29.6	130.6	-176.18	353.8	-4,718.5	3,361.1	3,244.5	116.62	28.821	
6,775.0	6,542.4	6,542.4	6,542.4	29.5	131.0	-176.04	353.8	-4,718.5	3,376.6	3,264.4	112.20	30.094	
6,800.0	6,561.2	6,561.2	6,561.2	29.4	131.4	-175.88	353.8	-4,718.5	3,393.0	3,285.5	107.48	31.570	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,579.1	6,579.1	29.3	131.7	-175.68	353.8	-4,718.5	3,410.4	3,307.9	102.47	33.282	
6,850.0	6,596.1	6,596.1	6,596.1	29.1	132.1	-175.46	353.8	-4,718.5	3,428.7	3,331.5	97.21	35.271	
6,875.0	6,612.1	6,612.1	6,612.1	29.0	132.4	-175.19	353.8	-4,718.5	3,447.9	3,356.1	91.73	37.586	
6,900.0	6,627.1	6,627.1	6,627.1	28.9	132.7	-174.87	353.8	-4,718.5	3,467.8	3,381.8	86.08	40.288	
6,925.0	6,641.0	6,641.0	6,641.0	28.8	133.0	-174.49	353.8	-4,718.5	3,488.6	3,408.3	80.30	43.443	
6,950.0	6,653.8	6,653.8	6,653.8	28.7	133.2	-174.03	353.8	-4,718.5	3,510.0	3,435.5	74.48	47.129	
6,975.0	6,665.5	6,665.5	6,665.5	28.7	133.5	-173.45	353.8	-4,718.5	3,532.1	3,463.4	68.70	51.412	
7,000.0	6,676.0	6,676.0	6,676.0	28.6	133.7	-172.72	353.8	-4,718.5	3,554.8	3,491.6	63.12	56.318	
7,025.0	6,685.3	6,685.3	6,685.3	28.6	133.9	-171.77	353.8	-4,718.5	3,577.9	3,520.0	57.97	61.725	
7,050.0	6,693.4	6,693.4	6,693.4	28.5	134.0	-170.48	353.8	-4,718.5	3,601.6	3,547.9	53.66	67.117	
7,075.0	6,700.2	6,700.2	6,700.2	28.5	134.2	-168.67	353.8	-4,718.5	3,625.6	3,574.6	51.01	71.078	
7,100.0	6,705.8	6,705.8	6,705.8	28.5	134.3	-165.92	353.8	-4,718.5	3,649.9	3,598.3	51.60	70.736	
7,125.0	6,710.0	6,710.0	6,710.0	28.5	134.3	-161.34	353.8	-4,718.5	3,674.5	3,616.0	58.53	62.781	
7,150.0	6,713.0	6,713.0	6,713.0	28.6	134.4	-152.38	353.8	-4,718.5	3,699.3	3,621.1	78.23	47.285	
7,175.0	6,714.7	6,714.7	6,714.7	28.6	134.4	-130.11	353.8	-4,718.5	3,724.2	3,599.1	125.17	29.754	
7,198.8	6,715.0	6,715.0	6,715.0	28.6	134.5	-79.09	353.8	-4,718.5	3,748.0	3,587.8	160.19	23.398	
7,200.0	6,715.0	6,715.0	6,715.0	28.6	134.5	-79.09	353.8	-4,718.5	3,749.2	3,589.0	160.19	23.405	
7,300.0	6,714.1	6,714.1	6,714.1	29.0	134.4	-78.80	353.8	-4,718.5	3,849.1	3,688.6	160.43	23.993	
7,400.0	6,713.2	6,713.2	6,713.2	29.7	134.4	-78.51	353.8	-4,718.5	3,949.0	3,788.0	160.92	24.541	
7,500.0	6,712.3	6,712.3	6,712.3	30.6	134.4	-78.23	353.8	-4,718.5	4,048.9	3,887.2	161.64	25.049	
7,600.0	6,711.3	6,711.3	6,711.3	31.7	134.4	-77.94	353.8	-4,718.5	4,148.8	3,986.2	162.58	25.518	
7,700.0	6,710.4	6,710.4	6,710.4	33.0	134.4	-77.65	353.8	-4,718.5	4,248.7	4,085.0	163.71	25.953	
7,800.0	6,709.5	6,709.5	6,709.5	34.5	134.3	-77.37	353.8	-4,718.5	4,348.6	4,183.6	165.00	26.355	
7,900.0	6,708.5	6,708.5	6,708.5	36.2	134.3	-77.08	353.8	-4,718.5	4,448.5	4,282.0	166.44	26.727	
8,000.0	6,707.6	6,707.6	6,707.6	38.0	134.3	-76.80	353.8	-4,718.5	4,548.4	4,380.4	168.01	27.073	
8,100.0	6,706.7	6,706.7	6,706.7	39.9	134.3	-76.52	353.8	-4,718.5	4,648.3	4,478.6	169.67	27.395	
8,200.0	6,705.8	6,705.8	6,705.8	41.9	134.3	-76.23	353.8	-4,718.5	4,748.2	4,576.8	171.43	27.697	
8,300.0	6,704.8	6,704.8	6,704.8	44.0	134.2	-75.95	353.8	-4,718.5	4,848.2	4,674.9	173.27	27.981	
8,400.0	6,703.9	6,703.9	6,703.9	46.2	134.2	-75.67	353.8	-4,718.5	4,948.1	4,772.9	175.17	28.248	
8,500.0	6,703.0	6,703.0	6,703.0	48.5	134.2	-75.39	353.8	-4,718.5	5,048.0	4,870.9	177.12	28.501	
8,600.0	6,702.1	6,702.1	6,702.1	50.8	134.2	-75.11	353.8	-4,718.5	5,148.0	4,968.8	179.12	28.741	
8,700.0	6,701.1	6,701.1	6,701.1	53.1	134.2	-74.83	353.8	-4,718.5	5,247.9	5,066.7	181.15	28.969	
8,800.0	6,700.2	6,700.2	6,700.2	55.5	134.2	-74.55	353.8	-4,718.5	5,347.8	5,164.6	183.22	29.187	
8,900.0	6,699.3	6,699.3	6,699.3	57.9	134.1	-74.27	353.8	-4,718.5	5,447.8	5,262.5	185.32	29.397	
9,000.0	6,698.3	6,698.3	6,698.3	60.4	134.1	-73.99	353.8	-4,718.5	5,547.7	5,360.3	187.44	29.598	
9,100.0	6,697.4	6,697.4	6,697.4	62.9	134.1	-73.71	353.8	-4,718.5	5,647.7	5,458.1	189.57	29.792	
9,200.0	6,696.5	6,696.5	6,696.5	65.4	134.1	-73.44	353.8	-4,718.5	5,747.6	5,555.9	191.72	29.979	
9,300.0	6,695.5	6,695.5	6,695.5	68.0	134.1	-73.16	353.8	-4,718.5	5,847.6	5,653.7	193.88	30.160	
9,400.0	6,694.6	6,694.6	6,694.6	70.5	134.0	-72.88	353.8	-4,718.5	5,947.5	5,751.4	196.05	30.336	
9,500.0	6,693.7	6,693.7	6,693.7	73.1	134.0	-72.61	353.8	-4,718.5	6,047.5	5,849.2	198.23	30.507	
9,600.0	6,692.8	6,692.8	6,692.8	75.7	134.0	-72.34	353.8	-4,718.5	6,147.4	5,947.0	200.41	30.673	
9,700.0	6,691.8	6,691.8	6,691.8	78.3	134.0	-72.06	353.8	-4,718.5	6,247.4	6,044.8	202.60	30.836	
9,800.0	6,690.9	6,690.9	6,690.9	80.9	134.0	-71.79	353.8	-4,718.5	6,347.3	6,142.5	204.79	30.994	
9,900.0	6,690.0	6,690.0	6,690.0	83.6	133.9	-71.52	353.8	-4,718.5	6,447.3	6,240.3	206.98	31.149	
10,000.0	6,689.0	6,689.0	6,689.0	86.2	133.9	-71.24	353.8	-4,718.5	6,547.2	6,338.1	209.17	31.301	
10,100.0	6,688.1	6,688.1	6,688.1	88.9	133.9	-70.97	353.8	-4,718.5	6,647.2	6,435.8	211.36	31.450	
10,200.0	6,687.2	6,687.2	6,687.2	91.6	133.9	-70.70	353.8	-4,718.5	6,747.1	6,533.6	213.54	31.596	
10,300.0	6,686.2	6,686.2	6,686.2	94.2	133.9	-70.43	353.8	-4,718.5	6,847.1	6,631.4	215.72	31.740	
10,400.0	6,685.3	6,685.3	6,685.3	96.9	133.9	-70.17	353.8	-4,718.5	6,947.1	6,729.2	217.90	31.882	
10,500.0	6,684.4	6,684.4	6,684.4	99.6	133.8	-69.90	353.8	-4,718.5	7,047.0	6,827.0	220.07	32.021	
10,600.0	6,683.4	6,683.4	6,683.4	102.3	133.8	-69.63	353.8	-4,718.5	7,147.0	6,924.8	222.24	32.159	
10,700.0	6,682.5	6,682.5	6,682.5	105.0	133.8	-69.37	353.8	-4,718.5	7,247.0	7,022.6	224.40	32.294	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,800.0	6,681.6	6,681.6	6,681.6	107.7	133.8	-69.10	353.8	-4,718.5	7,346.9	7,120.4	226.56	32.428	
10,900.0	6,680.6	6,680.6	6,680.6	110.4	133.8	-68.83	353.8	-4,718.5	7,446.9	7,218.2	228.71	32.561	
11,000.0	6,679.7	6,679.7	6,679.7	113.1	133.7	-68.57	353.8	-4,718.5	7,546.9	7,316.0	230.85	32.692	
11,100.0	6,678.8	6,678.8	6,678.8	115.9	133.7	-68.31	353.8	-4,718.5	7,646.8	7,413.8	232.98	32.822	
11,200.0	6,677.8	6,677.8	6,677.8	118.6	133.7	-68.05	353.8	-4,718.5	7,746.8	7,511.7	235.11	32.950	
11,300.0	6,676.9	6,676.9	6,676.9	121.3	133.7	-67.78	353.8	-4,718.5	7,846.8	7,609.5	237.22	33.077	
11,400.0	6,676.0	6,676.0	6,676.0	124.1	133.7	-67.52	353.8	-4,718.5	7,946.7	7,707.4	239.33	33.204	
11,500.0	6,675.0	6,675.0	6,675.0	126.8	133.6	-67.26	353.8	-4,718.5	8,046.7	7,805.3	241.43	33.329	
11,600.0	6,674.1	6,674.1	6,674.1	129.5	133.6	-67.01	353.8	-4,718.5	8,146.7	7,903.1	243.52	33.453	
11,700.0	6,673.1	6,673.1	6,673.1	132.3	133.6	-66.75	353.8	-4,718.5	8,246.6	8,001.0	245.60	33.577	
11,800.0	6,672.2	6,672.2	6,672.2	135.0	133.6	-66.49	353.8	-4,718.5	8,346.6	8,098.9	247.68	33.700	
11,900.0	6,671.3	6,671.3	6,671.3	137.8	133.6	-66.23	353.8	-4,718.5	8,446.6	8,196.8	249.74	33.822	
12,000.0	6,670.3	6,670.3	6,670.3	140.5	133.6	-65.98	353.8	-4,718.5	8,546.6	8,294.8	251.79	33.943	
12,036.2	6,670.0	6,670.0	6,670.0	141.5	133.5	-65.89	353.8	-4,718.5	8,582.8	8,330.2	252.53	33.987	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-76.55	1,013.2	-4,236.6	4,356.0				
100.0	100.0	81.4	81.4	0.1	0.1	-87.15	1,013.1	-4,236.7	4,356.1	4,356.0	0.16	N/A	
200.0	200.0	175.2	175.2	0.2	0.2	-87.16	1,013.0	-4,237.0	4,356.4	4,356.0	0.40	N/A	
261.0	261.0	233.7	233.7	0.3	0.3	-87.16	1,013.0	-4,237.2	4,356.6	4,356.1	0.53	8,173.904	
300.0	300.0	271.5	271.5	0.4	0.3	-8.96	1,012.9	-4,237.4	4,356.5	4,355.9	0.65	6,656.347	
400.0	399.9	376.0	376.0	0.6	0.4	5.59	1,012.8	-4,237.9	4,353.6	4,352.6	0.97	4,485.182	
500.0	499.7	483.6	483.6	0.8	0.4	8.01	1,012.4	-4,238.3	4,346.8	4,345.5	1.28	3,403.714	
538.0	537.5	523.5	523.5	0.9	0.5	8.49	1,012.2	-4,238.4	4,343.2	4,341.8	1.39	3,126.460	
600.0	599.1	587.5	587.5	1.1	0.5	7.76	1,011.9	-4,238.5	4,336.0	4,334.4	1.60	2,709.107	
700.0	697.9	693.2	693.2	1.5	0.5	7.08	1,011.3	-4,238.6	4,320.9	4,318.9	1.93	2,233.129	
800.0	796.0	799.0	799.0	1.8	0.6	6.71	1,010.8	-4,238.5	4,301.4	4,299.1	2.26	1,903.240	
818.0	813.5	816.6	816.6	1.9	0.6	6.67	1,010.7	-4,238.5	4,297.4	4,295.1	2.32	1,854.803	
900.0	893.1	896.3	896.2	2.3	0.6	7.62	1,010.2	-4,238.4	4,277.6	4,275.0	2.63	1,628.942	
1,000.0	989.2	993.7	993.7	2.9	0.7	8.57	1,009.8	-4,238.2	4,249.7	4,246.7	2.99	1,419.887	
1,100.0	1,083.9	1,078.7	1,078.7	3.5	0.7	9.36	1,009.5	-4,238.1	4,217.9	4,214.5	3.34	1,261.014	
1,104.0	1,087.6	1,082.1	1,082.1	3.5	0.7	9.39	1,009.5	-4,238.1	4,216.5	4,213.1	3.36	1,255.396	
1,200.0	1,177.9	1,161.4	1,161.4	4.1	0.7	8.67	1,009.3	-4,238.2	4,184.2	4,180.5	3.69	1,134.690	
1,300.0	1,272.0	1,246.6	1,246.5	4.8	0.8	7.91	1,009.0	-4,238.5	4,151.0	4,147.0	3.98	1,042.938	
1,391.0	1,357.8	1,325.8	1,325.8	5.3	0.8	7.20	1,008.7	-4,239.0	4,121.2	4,116.9	4.27	965.282	
1,400.0	1,366.3	1,333.6	1,333.6	5.4	0.8	7.39	1,008.7	-4,239.0	4,118.3	4,114.0	4.29	959.181	
1,458.0	1,421.2	1,383.9	1,383.9	5.7	0.8	8.75	1,008.4	-4,239.4	4,100.1	4,095.6	4.45	920.795	
1,500.0	1,461.0	1,423.1	1,423.1	6.0	0.8	8.55	1,008.2	-4,239.7	4,087.3	4,082.7	4.58	891.963	
1,600.0	1,556.1	1,521.3	1,521.3	6.6	0.9	8.07	1,007.5	-4,240.6	4,057.1	4,052.2	4.90	828.506	
1,676.0	1,628.3	1,595.6	1,595.6	7.0	0.9	7.70	1,006.9	-4,241.2	4,034.2	4,029.0	5.14	784.934	
1,700.0	1,651.1	1,619.6	1,619.6	7.2	0.9	8.28	1,006.7	-4,241.4	4,026.9	4,021.7	5.22	771.905	
1,800.0	1,746.4	1,720.8	1,720.8	7.7	1.0	10.78	1,005.7	-4,242.2	3,997.3	3,991.8	5.54	721.296	
1,900.0	1,841.8	1,822.7	1,822.7	8.3	1.0	13.37	1,004.8	-4,242.7	3,968.3	3,962.4	5.87	676.025	
1,963.0	1,902.0	1,884.0	1,883.9	8.7	1.0	15.06	1,004.4	-4,243.0	3,950.3	3,944.3	6.08	650.058	
2,000.0	1,937.4	1,920.2	1,920.1	8.9	1.0	15.10	1,004.1	-4,243.1	3,939.9	3,933.7	6.20	635.707	
2,100.0	2,033.1	2,019.3	2,019.2	9.5	1.1	15.21	1,003.6	-4,243.5	3,912.2	3,905.6	6.52	599.611	
2,200.0	2,129.0	2,118.1	2,118.1	10.0	1.1	15.32	1,002.9	-4,243.7	3,884.9	3,878.1	6.85	567.052	
2,250.0	2,177.1	2,162.7	2,162.6	10.3	1.1	15.37	1,002.7	-4,243.8	3,871.6	3,864.6	7.01	552.092	
2,300.0	2,225.1	2,208.8	2,208.7	10.6	1.1	14.25	1,002.4	-4,244.0	3,858.3	3,851.1	7.18	537.400	
2,400.0	2,321.2	2,315.4	2,315.4	11.2	1.2	12.05	1,001.8	-4,244.2	3,831.1	3,823.5	7.52	509.654	
2,500.0	2,417.0	2,417.0	2,416.9	11.7	1.2	9.89	1,001.1	-4,244.2	3,803.0	3,795.2	7.85	484.312	
2,537.0	2,452.5	2,453.0	2,452.9	11.9	1.2	9.11	1,000.9	-4,244.1	3,792.5	3,784.5	7.98	475.537	
2,600.0	2,512.8	2,514.5	2,514.4	12.3	1.2	6.18	1,000.5	-4,244.1	3,774.2	3,766.0	8.18	461.540	
2,700.0	2,608.2	2,612.0	2,611.9	12.9	1.3	1.73	999.9	-4,243.9	3,744.1	3,735.6	8.49	440.819	
2,800.0	2,703.3	2,704.7	2,704.6	13.5	1.3	-2.46	999.5	-4,243.7	3,712.8	3,704.0	8.80	421.759	
2,824.0	2,726.1	2,726.0	2,725.9	13.7	1.3	-3.42	999.4	-4,243.7	3,705.2	3,696.3	8.88	417.453	
2,900.0	2,798.2	2,793.5	2,793.4	14.1	1.3	-0.87	999.3	-4,243.6	3,681.2	3,672.1	9.11	404.187	
3,000.0	2,893.6	2,885.9	2,885.8	14.7	1.3	2.78	999.3	-4,243.5	3,651.1	3,641.7	9.41	387.804	
3,100.0	2,989.4	2,982.8	2,982.8	15.3	1.3	6.78	999.4	-4,243.5	3,622.5	3,612.8	9.72	372.511	
3,112.0	3,000.9	2,994.6	2,994.5	15.4	1.3	7.28	999.4	-4,243.4	3,619.2	3,609.4	9.76	370.754	
3,200.0	3,085.5	3,073.3	3,073.2	15.9	1.3	8.28	999.5	-4,243.4	3,595.1	3,585.1	10.03	358.578	
3,300.0	3,181.9	3,160.6	3,160.5	16.4	1.3	9.46	999.7	-4,243.6	3,568.8	3,558.4	10.33	345.580	
3,400.0	3,278.4	3,244.6	3,244.6	16.9	1.3	10.71	999.7	-4,244.0	3,543.5	3,532.9	10.63	333.434	
3,500.0	3,374.7	3,325.6	3,325.5	17.5	1.4	10.72	999.5	-4,244.8	3,517.9	3,506.9	11.00	319.791	
3,600.0	3,470.3	3,400.0	3,399.9	18.1	1.4	10.75	999.2	-4,245.9	3,490.3	3,479.0	11.37	306.934	
3,687.0	3,552.8	3,468.8	3,468.7	18.6	1.4	10.80	998.8	-4,247.4	3,464.8	3,453.1	11.69	296.275	
3,700.0	3,565.1	3,478.4	3,478.3	18.7	1.4	11.07	998.7	-4,247.6	3,460.9	3,449.1	11.74	294.718	
3,800.0	3,659.5	3,563.4	3,563.3	19.4	1.4	13.12	998.1	-4,250.0	3,431.0	3,418.9	12.12	283.004	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,654.6	3,654.4	20.0	1.4	15.16	997.1	-4,252.7	3,401.2	3,388.7	12.51	271.825	
3,974.0	3,823.6	3,723.9	3,723.7	20.5	1.5	16.66	996.4	-4,254.8	3,379.2	3,366.4	12.81	263.882	
4,000.0	3,848.1	3,749.2	3,748.9	20.7	1.5	16.44	996.2	-4,255.6	3,371.6	3,358.7	12.89	261.594	
4,100.0	3,942.9	3,854.7	3,854.5	21.3	1.5	15.53	995.3	-4,258.7	3,343.4	3,330.1	13.21	253.114	
4,200.0	4,038.5	3,986.6	3,986.3	21.9	1.5	14.50	994.4	-4,261.5	3,316.6	3,303.1	13.54	244.934	
4,263.0	4,099.0	4,056.3	4,056.0	22.3	1.6	13.75	994.1	-4,262.4	3,300.4	3,286.7	13.74	240.177	
4,300.0	4,134.7	4,095.2	4,094.8	22.5	1.6	12.66	994.0	-4,262.9	3,291.1	3,277.3	13.85	237.586	
4,400.0	4,231.2	4,212.6	4,212.3	23.0	1.6	9.58	993.6	-4,263.7	3,266.1	3,252.0	14.15	230.760	
4,500.0	4,328.0	4,314.1	4,313.8	23.5	1.6	6.24	993.7	-4,263.9	3,241.4	3,226.9	14.44	224.440	
4,549.0	4,375.5	4,363.1	4,362.7	23.8	1.6	4.52	993.8	-4,263.9	3,229.5	3,214.9	14.58	221.479	
4,600.0	4,425.0	4,413.9	4,413.6	24.0	1.6	4.36	994.0	-4,263.9	3,217.1	3,202.4	14.74	218.309	
4,700.0	4,521.9	4,513.3	4,513.0	24.5	1.6	4.04	994.5	-4,263.9	3,192.7	3,177.7	15.04	212.286	
4,800.0	4,618.8	4,620.3	4,619.9	25.0	1.6	3.73	995.1	-4,263.6	3,168.1	3,152.8	15.35	206.450	
4,837.0	4,654.7	4,672.5	4,672.1	25.2	1.6	3.63	995.6	-4,263.1	3,158.8	3,143.3	15.46	204.271	
4,900.0	4,715.7	4,751.4	4,751.0	25.5	1.6	3.22	996.5	-4,261.9	3,142.4	3,126.7	15.67	200.490	
5,000.0	4,812.4	4,853.4	4,853.1	26.0	1.6	2.58	997.5	-4,259.9	3,115.3	3,099.3	16.00	194.721	
5,100.0	4,908.9	4,950.5	4,950.1	26.6	1.6	1.98	998.5	-4,258.1	3,087.5	3,071.2	16.32	189.184	
5,125.0	4,932.9	4,976.5	4,976.1	26.7	1.6	1.83	998.6	-4,257.6	3,080.4	3,064.0	16.40	187.821	
5,200.0	5,005.4	5,052.7	5,052.2	27.0	1.6	4.63	998.9	-4,256.1	3,059.6	3,043.0	16.60	184.297	
5,300.0	5,102.4	5,149.1	5,148.6	27.5	1.6	8.97	999.1	-4,254.2	3,033.9	3,017.0	16.86	179.956	
5,400.0	5,199.9	5,243.3	5,242.9	28.0	1.6	14.14	999.4	-4,252.4	3,010.5	2,993.4	17.11	175.991	
5,412.0	5,211.7	5,254.9	5,254.4	28.1	1.6	14.82	999.4	-4,252.1	3,007.9	2,990.8	17.14	175.537	
5,500.0	5,297.9	5,337.1	5,336.6	28.4	1.6	17.54	999.7	-4,250.6	2,989.8	2,972.5	17.31	172.690	
5,581.0	5,377.7	5,409.7	5,409.2	28.7	1.6	20.64	999.7	-4,249.5	2,975.1	2,957.6	17.46	170.371	
5,600.0	5,396.4	5,426.0	5,425.5	28.8	1.6	19.44	999.7	-4,249.3	2,971.9	2,954.4	17.49	169.902	
5,700.0	5,495.3	5,513.6	5,513.1	29.1	1.6	11.51	999.0	-4,248.5	2,956.7	2,939.1	17.63	167.690	
5,800.0	5,594.6	5,609.9	5,609.4	29.4	1.7	-0.33	997.9	-4,247.9	2,944.0	2,926.3	17.75	165.855	
5,900.0	5,694.1	5,705.1	5,704.6	29.6	1.7	-17.91	997.1	-4,247.4	2,933.6	2,915.8	17.85	164.394	
5,917.0	5,711.1	5,721.8	5,721.3	29.7	1.7	-21.52	997.0	-4,247.4	2,932.1	2,914.2	17.86	164.180	
6,000.0	5,793.7	5,803.2	5,802.7	29.8	1.7	-21.58	996.6	-4,246.9	2,924.8	2,906.8	18.01	162.426	
6,067.0	5,860.5	5,867.5	5,867.0	30.0	1.7	-21.62	996.4	-4,246.6	2,918.9	2,900.8	18.13	161.033	
6,100.0	5,893.4	5,900.0	5,899.5	30.0	1.7	-21.62	996.4	-4,246.4	2,916.2	2,898.1	18.15	160.703	
6,200.0	5,993.2	5,986.2	5,985.7	30.2	1.7	-21.62	996.4	-4,246.2	2,910.5	2,892.3	18.20	159.939	
6,300.0	6,093.2	6,076.9	6,076.4	30.3	1.7	-21.61	996.6	-4,246.3	2,908.4	2,890.1	18.25	159.388	
6,309.6	6,102.8	6,085.7	6,085.2	30.3	1.7	-21.61	996.6	-4,246.3	2,908.4	2,890.1	18.25	159.346 CC	
6,318.8	6,111.9	6,094.0	6,093.5	30.3	1.7	-73.57	996.6	-4,246.3	2,908.4	2,876.7	31.69	91.769 ES	
6,400.0	6,193.2	6,169.1	6,168.6	30.4	1.7	-73.57	996.9	-4,246.6	2,908.7	2,877.0	31.77	91.558	
6,444.4	6,237.6	6,210.5	6,210.0	30.4	1.7	-73.57	997.1	-4,246.8	2,909.0	2,877.2	31.81	91.444	
6,450.0	6,243.2	6,215.8	6,215.3	30.4	1.7	-163.57	997.1	-4,246.8	2,909.1	2,890.6	18.44	157.753	
6,475.0	6,268.1	6,239.5	6,239.0	30.4	1.7	-163.53	997.2	-4,246.9	2,910.1	2,891.8	18.33	158.784	
6,500.0	6,293.0	6,263.2	6,262.7	30.4	1.7	-163.46	997.4	-4,247.1	2,912.5	2,894.2	18.24	159.682	
6,525.0	6,317.8	6,286.7	6,286.2	30.4	1.7	-163.35	997.6	-4,247.2	2,916.1	2,897.9	18.17	160.503	
6,550.0	6,342.3	6,311.8	6,311.3	30.4	1.7	-163.21	997.7	-4,247.3	2,920.9	2,902.8	18.11	161.310	
6,575.0	6,366.5	6,339.0	6,338.5	30.3	1.7	-163.03	997.9	-4,247.5	2,926.9	2,908.9	18.05	162.159	
6,600.0	6,390.4	6,365.9	6,365.3	30.2	1.7	-162.81	998.1	-4,247.6	2,934.2	2,916.2	17.99	163.090	
6,625.0	6,413.9	6,392.2	6,391.7	30.2	1.7	-162.54	998.2	-4,247.7	2,942.5	2,924.6	17.93	164.120	
6,650.0	6,436.9	6,418.2	6,417.7	30.1	1.7	-162.23	998.3	-4,247.8	2,952.1	2,934.2	17.86	165.254	
6,675.0	6,459.3	6,443.7	6,443.1	30.0	1.7	-161.87	998.3	-4,247.8	2,962.7	2,944.9	17.80	166.462	
6,700.0	6,481.1	6,468.4	6,467.9	29.9	1.7	-161.45	998.4	-4,247.9	2,974.5	2,956.7	17.74	167.695	
6,725.0	6,502.3	6,492.4	6,491.9	29.7	1.7	-160.97	998.3	-4,247.9	2,987.3	2,969.6	17.69	168.890	
6,750.0	6,522.7	6,513.9	6,513.4	29.6	1.7	-160.40	998.3	-4,247.9	3,001.1	2,983.5	17.66	169.951	
6,775.0	6,542.4	6,533.7	6,533.2	29.5	1.7	-159.75	998.2	-4,248.0	3,016.0	2,998.3	17.66	170.771	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,552.6	6,552.1	29.4	1.7	-158.99	998.2	-4,248.0	3,031.8	3,014.1	17.71	171.222	
6,825.0	6,579.1	6,570.7	6,570.2	29.3	1.8	-158.12	998.1	-4,248.0	3,048.6	3,030.8	17.81	171.161	
6,850.0	6,596.1	6,587.8	6,587.3	29.1	1.8	-157.10	998.0	-4,248.0	3,066.2	3,048.3	17.99	170.439	
6,875.0	6,612.1	6,600.0	6,599.5	29.0	1.8	-155.89	998.0	-4,248.0	3,084.7	3,066.5	18.27	168.866	
6,900.0	6,627.1	6,614.7	6,614.2	28.9	1.8	-154.51	997.9	-4,248.1	3,104.0	3,085.4	18.65	166.417	
6,925.0	6,641.0	6,625.6	6,625.0	28.8	1.8	-152.85	997.9	-4,248.1	3,124.1	3,104.9	19.17	162.948	
6,950.0	6,653.8	6,635.5	6,635.0	28.7	1.8	-150.87	997.8	-4,248.1	3,144.8	3,125.0	19.84	158.508	
6,975.0	6,665.5	6,644.5	6,644.0	28.7	1.8	-148.52	997.8	-4,248.2	3,166.2	3,145.5	20.67	153.180	
7,000.0	6,676.0	6,652.6	6,652.1	28.6	1.8	-145.67	997.8	-4,248.2	3,188.2	3,166.5	21.67	147.106	
7,025.0	6,685.3	6,659.7	6,659.2	28.6	1.8	-142.21	997.8	-4,248.3	3,210.6	3,187.8	22.85	140.492	
7,050.0	6,693.4	6,665.9	6,665.3	28.5	1.8	-137.96	997.8	-4,248.3	3,233.6	3,209.4	24.20	133.601	
7,075.0	6,700.2	6,671.0	6,670.5	28.5	1.8	-132.70	997.8	-4,248.3	3,256.9	3,231.2	25.69	126.779	
7,100.0	6,705.8	6,675.2	6,674.7	28.5	1.8	-126.18	997.8	-4,248.4	3,280.5	3,253.3	27.23	120.488	
7,125.0	6,710.0	6,678.4	6,677.8	28.5	1.8	-118.15	997.7	-4,248.4	3,304.4	3,275.7	28.65	115.351	
7,150.0	6,713.0	6,680.5	6,680.0	28.6	1.8	-108.51	997.7	-4,248.4	3,328.4	3,298.7	29.69	112.121	
7,175.0	6,714.7	6,681.6	6,681.1	28.6	1.8	-97.45	997.7	-4,248.4	3,352.6	3,322.5	30.15	111.208	
7,198.8	6,715.0	6,681.8	6,681.3	28.6	1.8	-86.18	997.7	-4,248.4	3,375.7	3,345.4	30.31	111.372	
7,200.0	6,715.0	6,681.8	6,681.3	28.6	1.8	-86.18	997.7	-4,248.4	3,376.8	3,346.5	30.31	111.398	
7,300.0	6,714.1	6,680.5	6,680.0	29.0	1.8	-86.09	997.7	-4,248.4	3,473.9	3,443.2	30.72	113.088	
7,400.0	6,713.2	6,679.2	6,678.7	29.7	1.8	-86.00	997.7	-4,248.4	3,571.1	3,539.7	31.39	113.783	
7,500.0	6,712.3	6,677.9	6,677.4	30.6	1.8	-85.91	997.7	-4,248.4	3,668.5	3,636.2	32.30	113.588	
7,600.0	6,711.3	6,676.7	6,676.2	31.7	1.8	-85.82	997.8	-4,248.4	3,766.0	3,732.5	33.43	112.650	
7,700.0	6,710.4	6,675.5	6,675.0	33.0	1.8	-85.74	997.8	-4,248.4	3,863.6	3,828.8	34.77	111.135	
7,800.0	6,709.5	6,674.3	6,673.7	34.5	1.8	-85.65	997.8	-4,248.3	3,961.3	3,925.1	36.28	109.200	
7,900.0	6,708.5	6,673.0	6,672.5	36.2	1.8	-85.57	997.8	-4,248.3	4,059.2	4,021.3	37.94	106.985	
8,000.0	6,707.6	6,671.9	6,671.3	38.0	1.8	-85.48	997.8	-4,248.3	4,157.2	4,117.4	39.74	104.606	
8,100.0	6,706.7	6,670.7	6,670.2	39.9	1.8	-85.40	997.8	-4,248.3	4,255.2	4,213.6	41.66	102.150	
8,200.0	6,705.8	6,669.5	6,669.0	41.9	1.8	-85.32	997.8	-4,248.3	4,353.3	4,309.7	43.67	99.684	
8,300.0	6,704.8	6,668.4	6,667.8	44.0	1.8	-85.24	997.8	-4,248.3	4,451.6	4,405.8	45.77	97.254	
8,400.0	6,703.9	6,667.2	6,666.7	46.2	1.8	-85.16	997.8	-4,248.3	4,549.9	4,501.9	47.95	94.892	
8,500.0	6,703.0	6,666.1	6,665.6	48.5	1.8	-85.08	997.8	-4,248.3	4,648.2	4,598.1	50.19	92.619	
8,600.0	6,702.1	6,665.0	6,664.5	50.8	1.8	-85.00	997.8	-4,248.3	4,746.7	4,694.2	52.48	90.445	
8,700.0	6,701.1	6,663.9	6,663.4	53.1	1.8	-84.93	997.8	-4,248.3	4,845.2	4,790.4	54.82	88.377	
8,800.0	6,700.2	6,662.8	6,662.3	55.5	1.8	-84.85	997.8	-4,248.3	4,943.7	4,886.5	57.21	86.416	
8,900.0	6,699.3	6,661.7	6,661.2	57.9	1.8	-84.78	997.8	-4,248.3	5,042.4	4,982.7	59.63	84.561	
9,000.0	6,698.3	6,660.6	6,660.1	60.4	1.8	-84.70	997.8	-4,248.3	5,141.0	5,079.0	62.08	82.809	
9,100.0	6,697.4	6,659.6	6,659.1	62.9	1.8	-84.63	997.8	-4,248.3	5,239.8	5,175.2	64.56	81.155	
9,200.0	6,696.5	6,658.5	6,658.0	65.4	1.8	-84.55	997.8	-4,248.2	5,338.5	5,271.5	67.07	79.595	
9,300.0	6,695.5	6,657.5	6,657.0	68.0	1.8	-84.48	997.8	-4,248.2	5,437.3	5,367.7	69.60	78.123	
9,400.0	6,694.6	6,656.5	6,656.0	70.5	1.8	-84.41	997.8	-4,248.2	5,536.2	5,464.1	72.15	76.734	
9,500.0	6,693.7	6,655.5	6,654.9	73.1	1.8	-84.34	997.8	-4,248.2	5,635.1	5,560.4	74.71	75.422	
9,600.0	6,692.8	6,654.5	6,653.9	75.7	1.8	-84.27	997.8	-4,248.2	5,734.0	5,656.7	77.30	74.183	
9,700.0	6,691.8	6,653.5	6,652.9	78.3	1.8	-84.20	997.8	-4,248.2	5,833.0	5,753.1	79.89	73.011	
9,800.0	6,690.9	6,652.5	6,652.0	80.9	1.8	-84.13	997.8	-4,248.2	5,932.0	5,849.5	82.50	71.903	
9,900.0	6,690.0	6,651.5	6,651.0	83.6	1.8	-84.06	997.8	-4,248.2	6,031.0	5,945.9	85.12	70.854	
10,000.0	6,689.0	6,650.5	6,650.0	86.2	1.8	-84.00	997.8	-4,248.2	6,130.1	6,042.4	87.75	69.859	
10,100.0	6,688.1	6,649.6	6,649.1	88.9	1.8	-83.93	997.8	-4,248.2	6,229.2	6,138.8	90.39	68.916	
10,200.0	6,687.2	6,648.6	6,648.1	91.6	1.8	-83.86	997.8	-4,248.2	6,328.3	6,235.3	93.04	68.020	
10,300.0	6,686.2	6,647.7	6,647.2	94.2	1.8	-83.80	997.8	-4,248.2	6,427.5	6,331.8	95.69	67.169	
10,400.0	6,685.3	6,646.8	6,646.3	96.9	1.8	-83.73	997.8	-4,248.2	6,526.7	6,428.3	98.35	66.359	
10,500.0	6,684.4	6,645.9	6,645.4	99.6	1.8	-83.67	997.8	-4,248.2	6,625.9	6,524.8	101.02	65.588	
10,600.0	6,683.4	6,645.0	6,644.4	102.3	1.8	-83.61	997.8	-4,248.2	6,725.1	6,621.4	103.70	64.853	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 100-GYD_CT

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,644.1	6,643.5	105.0	1.8	-83.54	997.8	-4,248.2	6,824.3	6,718.0	106.38	64.153	
10,800.0	6,681.6	6,643.2	6,642.7	107.7	1.8	-83.48	997.8	-4,248.2	6,923.6	6,814.6	109.06	63.484	
10,900.0	6,680.6	6,642.3	6,641.8	110.4	1.8	-83.42	997.8	-4,248.2	7,022.9	6,911.2	111.75	62.845	
11,000.0	6,679.7	6,641.4	6,640.9	113.1	1.8	-83.36	997.8	-4,248.2	7,122.2	7,007.8	114.44	62.233	
11,100.0	6,678.8	6,640.5	6,640.0	115.9	1.8	-83.30	997.8	-4,248.2	7,221.5	7,104.4	117.14	61.649	
11,200.0	6,677.8	6,639.7	6,639.2	118.6	1.8	-83.24	997.8	-4,248.1	7,320.9	7,201.1	119.84	61.088	
11,300.0	6,676.9	6,638.8	6,638.3	121.3	1.8	-83.18	997.8	-4,248.1	7,420.3	7,297.7	122.54	60.552	
11,400.0	6,676.0	6,638.0	6,637.5	124.1	1.8	-83.12	997.8	-4,248.1	7,519.6	7,394.4	125.25	60.037	
11,500.0	6,675.0	6,637.2	6,636.6	126.8	1.8	-83.06	997.8	-4,248.1	7,619.0	7,491.1	127.96	59.542	
11,600.0	6,674.1	6,636.3	6,635.8	129.5	1.8	-83.00	997.8	-4,248.1	7,718.4	7,587.8	130.67	59.068	
11,700.0	6,673.1	6,635.5	6,635.0	132.3	1.8	-82.94	997.8	-4,248.1	7,817.9	7,684.5	133.39	58.611	
11,800.0	6,672.2	6,634.7	6,634.2	135.0	1.8	-82.89	997.8	-4,248.1	7,917.3	7,781.2	136.10	58.172	
11,900.0	6,671.3	6,633.9	6,633.4	137.8	1.8	-82.83	997.8	-4,248.1	8,016.8	7,878.0	138.82	57.750	
12,000.0	6,670.3	6,633.1	6,632.6	140.5	1.8	-82.78	997.8	-4,248.1	8,116.2	7,974.7	141.54	57.343	
12,036.2	6,670.0	6,632.8	6,632.3	141.5	1.8	-82.76	997.8	-4,248.1	8,152.3	8,009.8	142.53	57.199	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-72.55	918.3	-2,922.0	3,063.0				
100.0	100.0	88.0	88.0	0.1	1.2	-83.16	918.3	-2,922.0	3,062.9	3,061.7	1.26	2,435.549	
200.0	200.0	188.0	188.0	0.2	3.3	-83.16	918.3	-2,922.0	3,062.9	3,059.4	3.52	870.055	
261.0	261.0	249.0	249.0	0.3	4.6	-83.17	918.3	-2,922.0	3,062.9	3,058.0	4.88	627.929	
300.0	300.0	288.0	288.0	0.4	5.4	-4.96	918.3	-2,922.0	3,062.5	3,056.8	5.77	530.381	
400.0	399.9	387.9	387.9	0.6	7.5	9.60	918.3	-2,922.0	3,059.2	3,051.2	8.04	380.672	
500.0	499.7	487.7	487.7	0.8	9.5	12.06	918.3	-2,922.0	3,052.2	3,042.0	10.25	297.689	
538.0	537.5	525.5	525.5	0.9	10.2	12.54	918.3	-2,922.0	3,048.6	3,037.5	11.08	275.097	
600.0	599.1	587.1	587.1	1.1	11.5	11.85	918.3	-2,922.0	3,041.5	3,029.0	12.44	244.437	
700.0	697.9	685.9	685.9	1.5	13.5	11.24	918.3	-2,922.0	3,026.5	3,012.0	14.58	207.531	
800.0	796.0	784.0	784.0	1.8	15.5	10.95	918.3	-2,922.0	3,007.4	2,990.8	16.65	180.668	
818.0	813.5	801.5	801.5	1.9	15.8	10.92	918.3	-2,922.0	3,003.6	2,986.5	17.01	176.594	
900.0	893.1	881.1	881.1	2.3	17.4	11.95	918.3	-2,922.0	2,984.2	2,965.5	18.68	159.747	
1,000.0	989.2	977.2	977.2	2.9	19.4	13.01	918.3	-2,922.0	2,957.0	2,936.3	20.63	143.332	
1,100.0	1,083.9	1,071.9	1,071.9	3.5	21.3	13.95	918.3	-2,922.0	2,925.8	2,903.3	22.47	130.197	
1,104.0	1,087.6	1,075.6	1,075.6	3.5	21.3	13.99	918.3	-2,922.0	2,924.4	2,901.9	22.54	129.726	
1,200.0	1,177.9	1,165.9	1,165.9	4.1	23.2	13.36	918.3	-2,922.0	2,892.6	2,868.0	24.60	117.566	
1,300.0	1,272.0	1,260.0	1,260.0	4.8	25.1	12.69	918.3	-2,922.0	2,859.6	2,832.8	26.71	107.069	
1,391.0	1,357.8	1,345.8	1,345.8	5.3	26.8	12.06	918.3	-2,922.0	2,829.7	2,801.1	28.64	98.785	
1,400.0	1,366.3	1,354.3	1,354.3	5.4	27.0	12.26	918.3	-2,922.0	2,826.8	2,797.9	28.86	97.945	
1,458.0	1,421.2	1,409.2	1,409.2	5.7	28.1	13.65	918.3	-2,922.0	2,808.5	2,778.2	30.26	92.807	
1,500.0	1,461.0	1,449.0	1,449.0	6.0	28.9	13.49	918.3	-2,922.0	2,795.6	2,764.5	31.16	89.718	
1,600.0	1,556.1	1,544.1	1,544.1	6.6	30.8	13.10	918.3	-2,922.0	2,765.2	2,731.9	33.31	83.022	
1,676.0	1,628.3	1,616.3	1,616.3	7.0	32.2	12.79	918.3	-2,922.0	2,742.2	2,707.3	34.94	78.477	
1,700.0	1,651.1	1,639.1	1,639.1	7.2	32.7	13.40	918.3	-2,922.0	2,735.0	2,699.5	35.48	77.082	
1,800.0	1,746.4	1,734.4	1,734.4	7.7	34.6	15.98	918.3	-2,922.0	2,705.4	2,667.7	37.74	71.692	
1,900.0	1,841.8	1,829.8	1,829.8	8.3	36.5	18.67	918.3	-2,922.0	2,676.7	2,636.7	40.01	66.904	
1,963.0	1,902.0	1,890.0	1,890.0	8.7	37.7	20.42	918.3	-2,922.0	2,659.1	2,617.6	41.45	64.155	
2,000.0	1,937.4	1,925.4	1,925.4	8.9	38.4	20.50	918.3	-2,922.0	2,648.9	2,606.6	42.28	62.647	
2,100.0	2,033.1	2,021.1	2,021.1	9.5	40.4	20.71	918.3	-2,922.0	2,621.7	2,577.2	44.54	58.856	
2,200.0	2,129.0	2,117.0	2,117.0	10.0	42.3	20.93	918.3	-2,922.0	2,595.2	2,548.4	46.82	55.433	
2,250.0	2,177.1	2,165.1	2,165.1	10.3	43.3	21.04	918.3	-2,922.0	2,582.2	2,534.3	47.96	53.845	
2,300.0	2,225.1	2,213.1	2,213.1	10.6	44.2	19.99	918.3	-2,922.0	2,569.2	2,520.2	49.02	52.417	
2,400.0	2,321.2	2,309.2	2,309.2	11.2	46.2	17.92	918.3	-2,922.0	2,542.7	2,491.6	51.12	49.738	
2,500.0	2,417.0	2,405.0	2,405.0	11.7	48.1	15.89	918.3	-2,922.0	2,515.5	2,462.3	53.21	47.271	
2,537.0	2,452.5	2,440.5	2,440.5	11.9	48.8	15.15	918.3	-2,922.0	2,505.2	2,451.2	53.98	46.407	
2,600.0	2,512.8	2,500.8	2,500.8	12.3	50.0	12.31	918.3	-2,922.0	2,487.4	2,432.2	55.20	45.061	
2,700.0	2,608.2	2,596.2	2,596.2	12.9	51.9	8.00	918.3	-2,922.0	2,458.0	2,400.9	57.10	43.048	
2,800.0	2,703.3	2,691.3	2,691.3	13.5	53.8	3.93	918.3	-2,922.0	2,427.2	2,368.2	58.95	41.172	
2,824.0	2,726.1	2,714.1	2,714.1	13.7	54.3	2.98	918.3	-2,922.0	2,419.6	2,360.2	59.39	40.740	
2,900.0	2,798.2	2,786.2	2,786.2	14.1	55.8	5.57	918.3	-2,922.0	2,395.8	2,334.6	61.25	39.116	
3,000.0	2,893.6	2,881.6	2,881.6	14.7	57.7	9.26	918.3	-2,922.0	2,366.0	2,302.3	63.71	37.137	
3,100.0	2,989.4	2,977.4	2,977.4	15.3	59.6	13.32	918.3	-2,922.0	2,337.8	2,271.6	66.19	35.322	
3,112.0	3,000.9	2,988.9	2,988.9	15.4	59.8	13.84	918.3	-2,922.0	2,334.6	2,268.1	66.48	35.115	
3,200.0	3,085.5	3,073.5	3,073.5	15.9	61.5	14.91	918.3	-2,922.0	2,311.0	2,242.5	68.54	33.717	
3,300.0	3,181.9	3,169.9	3,169.9	16.4	63.5	16.20	918.3	-2,922.0	2,285.1	2,214.2	70.89	32.235	
3,400.0	3,278.4	3,266.4	3,266.4	16.9	65.4	17.56	918.3	-2,922.0	2,260.0	2,186.8	73.25	30.856	
3,500.0	3,374.7	3,362.7	3,362.7	17.5	67.4	17.76	918.3	-2,922.0	2,234.3	2,159.2	75.07	29.761	
3,600.0	3,470.3	3,458.3	3,458.3	18.1	69.3	18.02	918.3	-2,922.0	2,206.2	2,129.4	76.83	28.713	
3,687.0	3,552.8	3,540.8	3,540.8	18.6	70.9	18.29	918.3	-2,922.0	2,179.9	2,101.6	78.31	27.837	
3,700.0	3,565.1	3,553.1	3,553.1	18.7	71.2	18.59	918.3	-2,922.0	2,175.8	2,097.2	78.60	27.681	
3,800.0	3,659.5	3,647.5	3,647.5	19.4	73.1	20.85	918.3	-2,922.0	2,144.7	2,063.8	80.89	26.514	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,741.9	3,741.9	20.0	75.0	23.13	918.3	-2,922.0	2,113.7	2,030.5	83.19	25.407	
3,974.0	3,823.6	3,811.6	3,811.6	20.5	76.4	24.82	918.3	-2,922.0	2,090.9	2,006.0	84.91	24.624	
4,000.0	3,848.1	3,836.1	3,836.1	20.7	76.9	24.64	918.3	-2,922.0	2,083.0	1,997.3	85.60	24.333	
4,100.0	3,942.9	3,930.9	3,930.9	21.3	78.8	23.90	918.3	-2,922.0	2,053.7	1,965.5	88.26	23.269	
4,200.0	4,038.5	4,026.5	4,026.5	21.9	80.7	23.00	918.3	-2,922.0	2,026.5	1,935.5	90.92	22.289	
4,263.0	4,099.0	4,087.0	4,087.0	22.3	81.9	22.33	918.3	-2,922.0	2,010.3	1,917.7	92.59	21.712	
4,300.0	4,134.7	4,122.7	4,122.7	22.5	82.6	21.30	918.3	-2,922.0	2,001.1	1,907.7	93.44	21.417	
4,400.0	4,231.2	4,219.2	4,219.2	23.0	84.6	18.37	918.3	-2,922.0	1,976.5	1,880.8	95.72	20.649	
4,500.0	4,328.0	4,316.0	4,316.0	23.5	86.5	15.17	918.3	-2,922.0	1,952.3	1,854.3	98.00	19.921	
4,549.0	4,375.5	4,363.5	4,363.5	23.8	87.5	13.51	918.3	-2,922.0	1,940.6	1,841.5	99.12	19.579	
4,600.0	4,425.0	4,413.0	4,413.0	24.0	88.5	13.42	918.3	-2,922.0	1,928.5	1,828.3	100.23	19.241	
4,700.0	4,521.9	4,509.9	4,509.9	24.5	90.4	13.23	918.3	-2,922.0	1,904.7	1,802.3	102.41	18.599	
4,800.0	4,618.8	4,606.8	4,606.8	25.0	92.4	13.05	918.3	-2,922.0	1,880.7	1,776.1	104.58	17.983	
4,837.0	4,654.7	4,642.7	4,642.7	25.2	93.1	12.98	918.3	-2,922.0	1,871.8	1,766.4	105.38	17.761	
4,900.0	4,715.7	4,703.7	4,703.7	25.5	94.3	12.65	918.3	-2,922.0	1,856.4	1,749.8	106.66	17.406	
5,000.0	4,812.4	4,800.4	4,800.4	26.0	96.3	12.15	918.3	-2,922.0	1,831.4	1,722.8	108.66	16.855	
5,100.0	4,908.9	4,896.9	4,896.9	26.6	98.2	11.69	918.3	-2,922.0	1,805.6	1,695.0	110.64	16.319	
5,125.0	4,932.9	4,920.9	4,920.9	26.7	98.7	11.59	918.3	-2,922.0	1,799.1	1,687.9	111.14	16.188	
5,200.0	5,005.4	4,993.4	4,993.4	27.0	100.1	14.43	918.3	-2,922.0	1,780.0	1,666.7	113.32	15.708	
5,300.0	5,102.4	5,090.4	5,090.4	27.5	102.1	18.83	918.3	-2,922.0	1,756.8	1,640.6	116.20	15.119	
5,400.0	5,199.9	5,187.9	5,187.9	28.0	104.1	24.09	918.3	-2,922.0	1,736.2	1,617.2	119.03	14.586	
5,412.0	5,211.7	5,199.7	5,199.7	28.1	104.3	24.79	918.3	-2,922.0	1,734.0	1,614.6	119.37	14.526	
5,500.0	5,297.9	5,285.9	5,285.9	28.4	106.0	27.61	918.3	-2,922.0	1,718.3	1,596.5	121.80	14.108	
5,581.0	5,377.7	5,365.7	5,365.7	28.7	107.6	30.81	918.3	-2,922.0	1,705.8	1,581.8	123.98	13.759	
5,600.0	5,396.4	5,384.4	5,384.4	28.8	108.0	29.65	918.3	-2,922.0	1,703.1	1,578.7	124.45	13.685	
5,700.0	5,495.3	5,483.3	5,483.3	29.1	110.0	21.89	918.3	-2,922.0	1,689.9	1,563.1	126.88	13.319	
5,800.0	5,594.6	5,582.6	5,582.6	29.4	112.0	10.15	918.3	-2,922.0	1,678.5	1,549.2	129.25	12.986	
5,900.0	5,694.1	5,682.1	5,682.1	29.6	114.0	-7.39	918.3	-2,922.0	1,668.7	1,537.2	131.55	12.685	
5,917.0	5,711.1	5,699.1	5,699.1	29.7	114.3	-11.00	918.3	-2,922.0	1,667.2	1,535.3	131.94	12.637	
6,000.0	5,793.7	5,781.7	5,781.7	29.8	116.0	-11.05	918.3	-2,922.0	1,660.1	1,526.4	133.71	12.415	
6,067.0	5,860.5	5,848.5	5,848.5	30.0	117.3	-11.09	918.3	-2,922.0	1,654.3	1,519.2	135.15	12.241	
6,100.0	5,893.4	5,881.4	5,881.4	30.0	118.0	-11.10	918.3	-2,922.0	1,651.7	1,515.7	135.94	12.150	
6,200.0	5,993.2	5,981.2	5,981.2	30.2	120.0	-11.11	918.3	-2,922.0	1,645.9	1,507.6	138.26	11.904	
6,300.0	6,093.2	6,081.2	6,081.2	30.3	122.0	-11.12	918.3	-2,922.0	1,643.5	1,503.1	140.42	11.704	
6,318.8	6,111.9	6,099.9	6,099.9	30.3	122.4	-63.08	918.3	-2,922.0	1,643.5	1,492.1	151.36	10.858	
6,400.0	6,193.2	6,181.2	6,181.2	30.4	124.0	-63.08	918.3	-2,922.0	1,643.5	1,490.4	153.07	10.737	
6,444.4	6,237.6	6,225.6	6,225.6	30.4	124.9	-63.08	918.3	-2,922.0	1,643.5	1,489.5	154.00	10.672	CC, ES, SF
6,450.0	6,243.2	6,231.2	6,231.2	30.4	125.0	-153.08	918.3	-2,922.0	1,643.5	1,499.9	143.59	11.446	
6,475.0	6,268.1	6,256.1	6,256.1	30.4	125.5	-153.05	918.3	-2,922.0	1,644.3	1,500.6	143.78	11.437	
6,500.0	6,293.0	6,281.0	6,281.0	30.4	126.0	-152.97	918.3	-2,922.0	1,646.3	1,502.7	143.66	11.460	
6,525.0	6,317.8	6,305.8	6,305.8	30.4	126.5	-152.86	918.3	-2,922.0	1,649.5	1,506.3	143.25	11.515	
6,550.0	6,342.3	6,330.3	6,330.3	30.4	127.0	-152.69	918.3	-2,922.0	1,653.8	1,511.3	142.56	11.601	
6,575.0	6,366.5	6,354.5	6,354.5	30.3	127.5	-152.48	918.3	-2,922.0	1,659.3	1,517.7	141.59	11.719	
6,600.0	6,390.4	6,378.4	6,378.4	30.2	128.0	-152.21	918.3	-2,922.0	1,665.9	1,525.6	140.35	11.870	
6,625.0	6,413.9	6,401.9	6,401.9	30.2	128.5	-151.90	918.3	-2,922.0	1,673.6	1,534.8	138.86	12.052	
6,650.0	6,436.9	6,424.9	6,424.9	30.1	128.9	-151.52	918.3	-2,922.0	1,682.4	1,545.3	137.16	12.267	
6,675.0	6,459.3	6,447.3	6,447.3	30.0	129.4	-151.07	918.3	-2,922.0	1,692.3	1,557.1	135.26	12.512	
6,700.0	6,481.1	6,469.1	6,469.1	29.9	129.8	-150.55	918.3	-2,922.0	1,703.3	1,570.1	133.20	12.787	
6,725.0	6,502.3	6,490.3	6,490.3	29.7	130.3	-149.95	918.3	-2,922.0	1,715.3	1,584.2	131.04	13.090	
6,750.0	6,522.7	6,510.7	6,510.7	29.6	130.7	-149.26	918.3	-2,922.0	1,728.2	1,599.4	128.83	13.415	
6,775.0	6,542.4	6,530.4	6,530.4	29.5	131.1	-148.47	918.3	-2,922.0	1,742.2	1,615.6	126.62	13.759	
6,800.0	6,561.2	6,549.2	6,549.2	29.4	131.4	-147.56	918.3	-2,922.0	1,757.1	1,632.6	124.51	14.112	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,825.0	6,579.1	6,567.1	6,567.1	29.3	131.8	-146.51	918.3	-2,922.0	1,772.9	1,650.3	122.59	14.462	
6,850.0	6,596.1	6,584.1	6,584.1	29.1	132.1	-145.31	918.3	-2,922.0	1,789.5	1,668.6	120.96	14.794	
6,875.0	6,612.1	6,600.1	6,600.1	29.0	132.5	-143.93	918.3	-2,922.0	1,807.0	1,687.3	119.75	15.090	
6,900.0	6,627.1	6,615.1	6,615.1	28.9	132.8	-142.33	918.3	-2,922.0	1,825.3	1,706.2	119.10	15.326	
6,925.0	6,641.0	6,629.0	6,629.0	28.8	133.0	-140.50	918.3	-2,922.0	1,844.3	1,725.1	119.14	15.479	
6,950.0	6,653.8	6,641.8	6,641.8	28.7	133.3	-138.37	918.3	-2,922.0	1,863.9	1,743.9	120.04	15.527	
6,975.0	6,665.5	6,653.5	6,653.5	28.7	133.5	-135.90	918.3	-2,922.0	1,884.2	1,762.3	121.93	15.454	
7,000.0	6,676.0	6,664.0	6,664.0	28.6	133.7	-133.03	918.3	-2,922.0	1,905.1	1,780.2	124.89	15.254	
7,025.0	6,685.3	6,673.3	6,673.3	28.6	133.9	-129.69	918.3	-2,922.0	1,926.4	1,797.5	128.98	14.936	
7,050.0	6,693.4	6,681.4	6,681.4	28.5	134.1	-125.79	918.3	-2,922.0	1,948.3	1,814.2	134.14	14.524	
7,075.0	6,700.2	6,688.2	6,688.2	28.5	134.2	-121.26	918.3	-2,922.0	1,970.5	1,830.4	140.17	14.059	
7,100.0	6,705.8	6,693.8	6,693.8	28.5	134.3	-116.03	918.3	-2,922.0	1,993.1	1,846.5	146.67	13.589	
7,125.0	6,710.0	6,698.0	6,698.0	28.5	134.4	-110.05	918.3	-2,922.0	2,016.0	1,862.9	153.05	13.172	
7,150.0	6,713.0	6,701.0	6,701.0	28.6	134.5	-103.34	918.3	-2,922.0	2,039.1	1,880.6	158.49	12.866	
7,175.0	6,714.7	6,702.7	6,702.7	28.6	134.5	-96.00	918.3	-2,922.0	2,062.3	1,900.3	162.07	12.725	
7,198.8	6,715.0	6,703.0	6,703.0	28.6	134.5	-88.61	918.3	-2,922.0	2,084.6	1,921.6	163.03	12.786	
7,200.0	6,715.0	6,703.0	6,703.0	28.6	134.5	-88.61	918.3	-2,922.0	2,085.7	1,922.6	163.03	12.793	
7,300.0	6,714.1	6,702.1	6,702.1	29.0	134.5	-88.54	918.3	-2,922.0	2,179.4	2,016.0	163.41	13.336	
7,400.0	6,713.2	6,701.2	6,701.2	29.7	134.5	-88.47	918.3	-2,922.0	2,273.6	2,109.6	164.06	13.859	
7,500.0	6,712.3	6,700.3	6,700.3	30.6	134.5	-88.40	918.3	-2,922.0	2,368.3	2,203.4	164.94	14.358	
7,600.0	6,711.3	6,699.3	6,699.3	31.7	134.5	-88.33	918.3	-2,922.0	2,463.5	2,297.4	166.06	14.835	
7,700.0	6,710.4	6,698.4	6,698.4	33.0	134.4	-88.25	918.3	-2,922.0	2,559.0	2,391.6	167.37	15.290	
7,800.0	6,709.5	6,697.5	6,697.5	34.5	134.4	-88.18	918.3	-2,922.0	2,654.8	2,485.9	168.86	15.722	
7,900.0	6,708.5	6,696.5	6,696.5	36.2	134.4	-88.11	918.3	-2,922.0	2,750.9	2,580.4	170.50	16.135	
8,000.0	6,707.6	6,695.6	6,695.6	38.0	134.4	-88.04	918.3	-2,922.0	2,847.3	2,675.1	172.28	16.528	
8,100.0	6,706.7	6,694.7	6,694.7	39.9	134.4	-87.97	918.3	-2,922.0	2,944.0	2,769.8	174.17	16.903	
8,200.0	6,705.8	6,693.8	6,693.8	41.9	134.3	-87.90	918.3	-2,922.0	3,040.8	2,864.7	176.17	17.261	
8,300.0	6,704.8	6,692.8	6,692.8	44.0	134.3	-87.82	918.3	-2,922.0	3,137.9	2,959.6	178.25	17.604	
8,400.0	6,703.9	6,691.9	6,691.9	46.2	134.3	-87.75	918.3	-2,922.0	3,235.1	3,054.7	180.40	17.933	
8,500.0	6,703.0	6,691.0	6,691.0	48.5	134.3	-87.68	918.3	-2,922.0	3,332.5	3,149.9	182.62	18.248	
8,600.0	6,702.1	6,690.1	6,690.1	50.8	134.3	-87.61	918.3	-2,922.0	3,430.0	3,245.1	184.90	18.551	
8,700.0	6,701.1	6,689.1	6,689.1	53.1	134.3	-87.54	918.3	-2,922.0	3,527.7	3,340.5	187.22	18.843	
8,800.0	6,700.2	6,688.2	6,688.2	55.5	134.2	-87.46	918.3	-2,922.0	3,625.5	3,435.9	189.58	19.124	
8,900.0	6,699.3	6,687.3	6,687.3	57.9	134.2	-87.39	918.3	-2,922.0	3,723.5	3,531.5	191.99	19.394	
9,000.0	6,698.3	6,686.3	6,686.3	60.4	134.2	-87.32	918.3	-2,922.0	3,821.5	3,627.1	194.42	19.656	
9,100.0	6,697.4	6,685.4	6,685.4	62.9	134.2	-87.25	918.3	-2,922.0	3,919.6	3,722.7	196.88	19.908	
9,200.0	6,696.5	6,684.5	6,684.5	65.4	134.2	-87.17	918.3	-2,922.0	4,017.8	3,818.5	199.37	20.153	
9,300.0	6,695.5	6,683.5	6,683.5	68.0	134.1	-87.10	918.3	-2,922.0	4,116.1	3,914.3	201.88	20.389	
9,400.0	6,694.6	6,682.6	6,682.6	70.5	134.1	-87.03	918.3	-2,922.0	4,214.5	4,010.1	204.41	20.618	
9,500.0	6,693.7	6,681.7	6,681.7	73.1	134.1	-86.96	918.3	-2,922.0	4,313.0	4,106.0	206.96	20.840	
9,600.0	6,692.8	6,680.8	6,680.8	75.7	134.1	-86.89	918.3	-2,922.0	4,411.5	4,202.0	209.52	21.055	
9,700.0	6,691.8	6,679.8	6,679.8	78.3	134.1	-86.81	918.3	-2,922.0	4,510.1	4,298.0	212.10	21.264	
9,800.0	6,690.9	6,678.9	6,678.9	80.9	134.0	-86.74	918.3	-2,922.0	4,608.8	4,394.1	214.69	21.467	
9,900.0	6,690.0	6,678.0	6,678.0	83.6	134.0	-86.67	918.3	-2,922.0	4,707.5	4,490.2	217.29	21.665	
10,000.0	6,689.0	6,677.0	6,677.0	86.2	134.0	-86.60	918.3	-2,922.0	4,806.3	4,586.4	219.90	21.857	
10,100.0	6,688.1	6,676.1	6,676.1	88.9	134.0	-86.52	918.3	-2,922.0	4,905.1	4,682.5	222.52	22.043	
10,200.0	6,687.2	6,675.2	6,675.2	91.6	134.0	-86.45	918.3	-2,922.0	5,003.9	4,778.8	225.15	22.225	
10,300.0	6,686.2	6,674.2	6,674.2	94.2	134.0	-86.38	918.3	-2,922.0	5,102.8	4,875.0	227.78	22.402	
10,400.0	6,685.3	6,673.3	6,673.3	96.9	133.9	-86.31	918.3	-2,922.0	5,201.8	4,971.4	230.43	22.575	
10,500.0	6,684.4	6,672.4	6,672.4	99.6	133.9	-86.23	918.3	-2,922.0	5,300.8	5,067.7	233.08	22.743	
10,600.0	6,683.4	6,671.4	6,671.4	102.3	133.9	-86.16	918.3	-2,922.0	5,399.8	5,164.1	235.73	22.907	
10,700.0	6,682.5	6,670.5	6,670.5	105.0	133.9	-86.09	918.3	-2,922.0	5,498.8	5,260.5	238.39	23.067	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,800.0	6,681.6	6,669.6	6,669.6	107.7	133.9	-86.02	918.3	-2,922.0	5,597.9	5,356.9	241.06	23.223	
10,900.0	6,680.6	6,668.6	6,668.6	110.4	133.8	-85.94	918.3	-2,922.0	5,697.1	5,453.3	243.72	23.375	
11,000.0	6,679.7	6,667.7	6,667.7	113.1	133.8	-85.87	918.3	-2,922.0	5,796.2	5,549.8	246.40	23.524	
11,100.0	6,678.8	6,666.8	6,666.8	115.9	133.8	-85.80	918.3	-2,922.0	5,895.4	5,646.3	249.07	23.669	
11,200.0	6,677.8	6,665.8	6,665.8	118.6	133.8	-85.73	918.3	-2,922.0	5,994.6	5,742.9	251.75	23.811	
11,300.0	6,676.9	6,664.9	6,664.9	121.3	133.8	-85.65	918.3	-2,922.0	6,093.8	5,839.4	254.44	23.950	
11,400.0	6,676.0	6,664.0	6,664.0	124.1	133.7	-85.58	918.3	-2,922.0	6,193.1	5,936.0	257.12	24.086	
11,500.0	6,675.0	6,663.0	6,663.0	126.8	133.7	-85.51	918.3	-2,922.0	6,292.4	6,032.6	259.81	24.219	
11,600.0	6,674.1	6,662.1	6,662.1	129.5	133.7	-85.43	918.3	-2,922.0	6,391.7	6,129.2	262.50	24.349	
11,700.0	6,673.1	6,661.1	6,661.1	132.3	133.7	-85.36	918.3	-2,922.0	6,491.0	6,225.8	265.19	24.477	
11,800.0	6,672.2	6,660.2	6,660.2	135.0	133.7	-85.29	918.3	-2,922.0	6,590.4	6,322.5	267.89	24.601	
11,900.0	6,671.3	6,659.3	6,659.3	137.8	133.7	-85.22	918.3	-2,922.0	6,689.7	6,419.1	270.58	24.723	
12,000.0	6,670.3	6,658.3	6,658.3	140.5	133.6	-85.14	918.3	-2,922.0	6,789.1	6,515.8	273.28	24.843	
12,036.2	6,670.0	6,658.0	6,658.0	141.5	133.6	-85.12	918.3	-2,922.0	6,825.1	6,550.9	274.26	24.886	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-INC — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-59.41	949.8	-1,606.4	1,866.2				
100.0	100.0	86.0	86.0	0.1	0.9	-70.01	949.8	-1,606.4	1,866.2	1,865.1	1.03	1,820.382	
200.0	200.0	186.0	186.0	0.2	3.1	-70.02	949.8	-1,606.4	1,866.1	1,862.8	3.28	568.743	
261.0	261.0	247.0	247.0	0.3	4.4	-70.03	949.8	-1,606.4	1,866.0	1,861.3	4.65	401.145	
300.0	300.0	286.0	286.0	0.4	5.2	8.19	949.8	-1,606.4	1,865.6	1,860.1	5.55	336.142	
400.0	399.9	385.9	385.9	0.6	7.2	22.79	949.8	-1,606.4	1,862.5	1,854.7	7.82	238.287	
500.0	499.7	485.7	485.7	0.8	9.3	25.33	949.8	-1,606.4	1,856.0	1,846.0	10.04	184.865	
538.0	537.5	523.5	523.5	0.9	10.0	25.87	949.8	-1,606.4	1,852.7	1,841.8	10.87	170.392	
600.0	599.1	585.1	585.1	1.1	11.3	25.28	949.8	-1,606.4	1,846.1	1,833.8	12.25	150.698	
700.0	697.9	683.9	683.9	1.5	13.3	24.88	949.8	-1,606.4	1,832.2	1,817.8	14.42	127.022	
800.0	796.0	782.0	782.0	1.8	15.2	24.88	949.8	-1,606.4	1,814.5	1,798.0	16.53	109.755	
818.0	813.5	799.5	799.5	1.9	15.6	24.90	949.8	-1,606.4	1,810.9	1,794.0	16.90	107.128	
900.0	893.1	879.1	879.1	2.3	17.2	26.22	949.8	-1,606.4	1,793.0	1,774.4	18.66	96.099	
1,000.0	989.2	975.2	975.2	2.9	19.1	27.70	949.8	-1,606.4	1,768.0	1,747.3	20.73	85.280	
1,100.0	1,083.9	1,069.9	1,069.9	3.5	21.0	29.14	949.8	-1,606.4	1,739.5	1,716.8	22.73	76.520	
1,104.0	1,087.6	1,073.6	1,073.6	3.5	21.1	29.20	949.8	-1,606.4	1,738.3	1,715.5	22.81	76.203	
1,200.0	1,177.9	1,163.9	1,163.9	4.1	22.9	28.94	949.8	-1,606.4	1,709.4	1,684.4	24.97	68.469	
1,300.0	1,272.0	1,258.0	1,258.0	4.8	24.8	28.66	949.8	-1,606.4	1,679.4	1,652.2	27.18	61.775	
1,391.0	1,357.8	1,343.8	1,343.8	5.3	26.6	28.40	949.8	-1,606.4	1,652.2	1,623.0	29.23	56.532	
1,400.0	1,366.3	1,352.3	1,352.3	5.4	26.7	28.63	949.8	-1,606.4	1,649.6	1,620.1	29.45	56.014	
1,458.0	1,421.2	1,407.2	1,407.2	5.7	27.8	30.14	949.8	-1,606.4	1,633.0	1,602.1	30.89	52.863	
1,500.0	1,461.0	1,447.0	1,447.0	6.0	28.6	30.15	949.8	-1,606.4	1,621.5	1,589.7	31.84	50.931	
1,600.0	1,556.1	1,542.1	1,542.1	6.6	30.5	30.16	949.8	-1,606.4	1,594.2	1,560.1	34.10	46.757	
1,676.0	1,628.3	1,614.3	1,614.3	7.0	32.0	30.17	949.8	-1,606.4	1,573.6	1,537.8	35.82	43.931	
1,700.0	1,651.1	1,637.1	1,637.1	7.2	32.5	30.86	949.8	-1,606.4	1,567.1	1,530.7	36.39	43.060	
1,800.0	1,746.4	1,732.4	1,732.4	7.7	34.4	33.80	949.8	-1,606.4	1,541.0	1,502.2	38.80	39.713	
1,900.0	1,841.8	1,827.8	1,827.8	8.3	36.3	36.87	949.8	-1,606.4	1,516.2	1,475.0	41.24	36.768	
1,963.0	1,902.0	1,888.0	1,888.0	8.7	37.5	38.86	949.8	-1,606.4	1,501.3	1,458.5	42.78	35.092	
2,000.0	1,937.4	1,923.4	1,923.4	8.9	38.2	39.11	949.8	-1,606.4	1,492.7	1,449.0	43.67	34.184	
2,100.0	2,033.1	2,019.1	2,019.1	9.5	40.1	39.78	949.8	-1,606.4	1,470.0	1,424.0	46.07	31.907	
2,200.0	2,129.0	2,115.0	2,115.0	10.0	42.1	40.46	949.8	-1,606.4	1,448.1	1,399.6	48.49	29.863	
2,250.0	2,177.1	2,163.1	2,163.1	10.3	43.0	40.81	949.8	-1,606.4	1,437.4	1,387.7	49.71	28.919	
2,300.0	2,225.1	2,211.1	2,211.1	10.6	44.0	40.03	949.8	-1,606.4	1,426.7	1,375.9	50.85	28.057	
2,400.0	2,321.2	2,307.2	2,307.2	11.2	45.9	38.53	949.8	-1,606.4	1,404.7	1,351.6	53.13	26.438	
2,500.0	2,417.0	2,403.0	2,403.0	11.7	47.9	37.08	949.8	-1,606.4	1,382.0	1,326.6	55.41	24.942	
2,537.0	2,452.5	2,438.5	2,438.5	11.9	48.6	36.57	949.8	-1,606.4	1,373.4	1,317.1	56.25	24.416	
2,600.0	2,512.8	2,498.8	2,498.8	12.3	49.8	34.16	949.8	-1,606.4	1,358.3	1,300.7	57.57	23.592	
2,700.0	2,608.2	2,594.2	2,594.2	12.9	51.7	30.56	949.8	-1,606.4	1,332.7	1,273.1	59.63	22.351	
2,800.0	2,703.3	2,689.3	2,689.3	13.5	53.6	27.22	949.8	-1,606.4	1,305.3	1,243.6	61.62	21.181	
2,824.0	2,726.1	2,712.1	2,712.1	13.7	54.1	26.45	949.8	-1,606.4	1,298.4	1,236.3	62.09	20.910	
2,900.0	2,798.2	2,784.2	2,784.2	14.1	55.5	29.36	949.8	-1,606.4	1,277.1	1,213.0	64.15	19.909	
3,000.0	2,893.6	2,879.6	2,879.6	14.7	57.5	33.49	949.8	-1,606.4	1,251.2	1,184.3	66.87	18.711	
3,100.0	2,989.4	2,975.4	2,975.4	15.3	59.4	38.01	949.8	-1,606.4	1,227.5	1,157.9	69.59	17.639	
3,112.0	3,000.9	2,986.9	2,986.9	15.4	59.6	38.58	949.8	-1,606.4	1,224.9	1,154.9	69.92	17.518	
3,200.0	3,085.5	3,071.5	3,071.5	15.9	61.3	40.17	949.8	-1,606.4	1,205.8	1,133.7	72.16	16.709	
3,300.0	3,181.9	3,167.9	3,167.9	16.4	63.3	42.05	949.8	-1,606.4	1,185.3	1,110.5	74.73	15.861	
3,400.0	3,278.4	3,264.4	3,264.4	16.9	65.2	44.02	949.8	-1,606.4	1,165.9	1,088.6	77.30	15.082	
3,500.0	3,374.7	3,360.7	3,360.7	17.5	67.1	45.02	949.8	-1,606.4	1,146.3	1,066.7	79.64	14.394	
3,600.0	3,470.3	3,456.3	3,456.3	18.1	69.1	46.18	949.8	-1,606.4	1,125.3	1,043.3	81.98	13.726	
3,687.0	3,552.8	3,538.8	3,538.8	18.6	70.7	47.32	949.8	-1,606.4	1,105.9	1,021.8	84.03	13.160	
3,700.0	3,565.1	3,551.1	3,551.1	18.7	71.0	47.73	949.8	-1,606.4	1,102.9	1,018.5	84.40	13.069	
3,800.0	3,659.5	3,645.5	3,645.5	19.4	72.9	50.88	949.8	-1,606.4	1,080.8	993.6	87.19	12.395	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,739.9	3,739.9	20.0	74.8	54.09	949.8	-1,606.4	1,059.9	969.8	90.02	11.773	
3,974.0	3,823.6	3,809.6	3,809.6	20.5	76.2	56.49	949.8	-1,606.4	1,045.2	953.1	92.13	11.344	
4,000.0	3,848.1	3,834.1	3,834.1	20.7	76.7	56.60	949.8	-1,606.4	1,040.2	947.4	92.86	11.203	
4,100.0	3,942.9	3,928.9	3,928.9	21.3	78.6	56.94	949.8	-1,606.4	1,022.2	926.5	95.64	10.688	
4,200.0	4,038.5	4,024.5	4,024.5	21.9	80.5	57.07	949.8	-1,606.4	1,005.6	907.2	98.41	10.218	
4,263.0	4,099.0	4,085.0	4,085.0	22.3	81.7	57.04	949.8	-1,606.4	995.9	895.7	100.15	9.943	
4,300.0	4,134.7	4,120.7	4,120.7	22.5	82.4	56.41	949.8	-1,606.4	990.3	889.2	101.09	9.797	
4,400.0	4,231.2	4,217.2	4,217.2	23.0	84.4	54.54	949.8	-1,606.4	975.2	871.6	103.60	9.413	
4,500.0	4,328.0	4,314.0	4,314.0	23.5	86.3	52.41	949.8	-1,606.4	959.9	853.8	106.11	9.046	
4,549.0	4,375.5	4,361.5	4,361.5	23.8	87.3	51.26	949.8	-1,606.4	952.3	845.0	107.33	8.873	
4,600.0	4,425.0	4,411.0	4,411.0	24.0	88.3	51.66	949.8	-1,606.4	944.4	835.8	108.63	8.694	
4,700.0	4,521.9	4,507.9	4,507.9	24.5	90.2	52.48	949.8	-1,606.4	929.1	817.9	111.20	8.356	
4,800.0	4,618.8	4,604.8	4,604.8	25.0	92.2	53.34	949.8	-1,606.4	914.0	800.2	113.77	8.034	
4,837.0	4,654.7	4,640.7	4,640.7	25.2	92.9	53.67	949.8	-1,606.4	908.4	793.7	114.72	7.919	
4,900.0	4,715.7	4,701.7	4,701.7	25.5	94.1	54.06	949.8	-1,606.4	899.0	782.7	116.32	7.729	
5,000.0	4,812.4	4,798.4	4,798.4	26.0	96.0	54.76	949.8	-1,606.4	883.8	764.9	118.86	7.435	
5,100.0	4,908.9	4,894.9	4,894.9	26.6	98.0	55.57	949.8	-1,606.4	868.4	746.9	121.43	7.151	
5,125.0	4,932.9	4,918.9	4,918.9	26.7	98.5	55.79	949.8	-1,606.4	864.5	742.4	122.07	7.082	
5,200.0	5,005.4	4,991.4	4,991.4	27.0	99.9	59.38	949.8	-1,606.4	853.7	729.4	124.32	6.867	
5,300.0	5,102.4	5,088.4	5,088.4	27.5	101.9	64.75	949.8	-1,606.4	842.1	714.9	127.24	6.618	
5,400.0	5,199.9	5,185.9	5,185.9	28.0	103.8	70.93	949.8	-1,606.4	833.6	703.5	130.07	6.409	
5,412.0	5,211.7	5,197.7	5,197.7	28.1	104.1	71.73	949.8	-1,606.4	832.8	702.4	130.40	6.386	
5,500.0	5,297.9	5,283.9	5,283.9	28.4	105.8	75.38	949.8	-1,606.4	827.8	695.1	132.72	6.237	
5,581.0	5,377.7	5,363.7	5,363.7	28.7	107.4	79.28	949.8	-1,606.4	824.6	689.8	134.78	6.118	
5,600.0	5,396.4	5,382.4	5,382.4	28.8	107.8	78.31	949.8	-1,606.4	824.0	688.7	135.25	6.092	
5,700.0	5,495.3	5,481.3	5,481.3	29.1	109.8	71.47	949.8	-1,606.4	820.2	682.6	137.63	5.959	
5,800.0	5,594.6	5,580.6	5,580.6	29.4	111.8	60.49	949.8	-1,606.4	815.4	675.5	139.92	5.828	
5,900.0	5,694.1	5,680.1	5,680.1	29.6	113.8	43.54	949.8	-1,606.4	809.5	667.4	142.09	5.697	
5,917.0	5,711.1	5,697.1	5,697.1	29.7	114.1	40.02	949.8	-1,606.4	808.4	665.9	142.45	5.675	
6,000.0	5,793.7	5,779.7	5,779.7	29.8	115.8	40.35	949.8	-1,606.4	802.8	658.5	144.30	5.563	
6,067.0	5,860.5	5,846.5	5,846.5	30.0	117.1	40.62	949.8	-1,606.4	798.3	652.5	145.79	5.476	
6,100.0	5,893.4	5,879.4	5,879.4	30.0	117.8	40.72	949.8	-1,606.4	796.3	649.7	146.59	5.432	
6,200.0	5,993.2	5,979.2	5,979.2	30.2	119.8	40.94	949.8	-1,606.4	791.8	642.9	148.92	5.317	
6,300.0	6,093.2	6,079.2	6,079.2	30.3	121.8	41.03	949.8	-1,606.4	790.0	638.9	151.11	5.228	
6,318.8	6,111.9	6,097.9	6,097.9	30.3	122.2	-10.93	949.8	-1,606.4	789.9	649.9	140.00	5.642	
6,400.0	6,193.2	6,179.2	6,179.2	30.4	123.8	-10.93	949.8	-1,606.4	789.9	648.2	141.75	5.573	
6,444.4	6,237.6	6,223.6	6,223.6	30.4	124.7	-10.93	949.8	-1,606.4	789.9	647.2	142.71	5.535	
6,444.4	6,237.6	6,223.6	6,223.6	30.4	124.7	-10.93	949.8	-1,606.4	789.9	647.2	142.71	5.535	CC
6,450.0	6,243.2	6,229.2	6,229.2	30.4	124.8	-100.93	949.8	-1,606.4	790.0	635.7	154.26	5.121	
6,475.0	6,268.1	6,254.1	6,254.1	30.4	125.3	-100.97	949.8	-1,606.4	790.1	635.4	154.75	5.106	
6,500.0	6,293.0	6,279.0	6,279.0	30.4	125.8	-101.08	949.8	-1,606.4	790.6	635.4	155.20	5.094	ES
6,525.0	6,317.8	6,303.8	6,303.8	30.4	126.3	-101.25	949.8	-1,606.4	791.3	635.6	155.61	5.085	
6,550.0	6,342.3	6,328.3	6,328.3	30.4	126.8	-101.47	949.8	-1,606.4	792.2	636.2	155.98	5.079	
6,575.0	6,366.5	6,352.5	6,352.5	30.3	127.3	-101.75	949.8	-1,606.4	793.5	637.2	156.31	5.077	SF
6,600.0	6,390.4	6,376.4	6,376.4	30.2	127.8	-102.06	949.8	-1,606.4	795.1	638.5	156.59	5.078	
6,625.0	6,413.9	6,399.9	6,399.9	30.2	128.3	-102.40	949.8	-1,606.4	797.0	640.2	156.82	5.083	
6,650.0	6,436.9	6,422.9	6,422.9	30.1	128.7	-102.76	949.8	-1,606.4	799.4	642.4	156.99	5.092	
6,675.0	6,459.3	6,445.3	6,445.3	30.0	129.2	-103.13	949.8	-1,606.4	802.1	645.0	157.13	5.105	
6,700.0	6,481.1	6,467.1	6,467.1	29.9	129.6	-103.50	949.8	-1,606.4	805.3	648.1	157.21	5.122	
6,725.0	6,502.3	6,488.3	6,488.3	29.7	130.0	-103.85	949.8	-1,606.4	809.0	651.7	157.25	5.144	
6,750.0	6,522.7	6,508.7	6,508.7	29.6	130.4	-104.17	949.8	-1,606.4	813.2	655.9	157.25	5.171	
6,775.0	6,542.4	6,528.4	6,528.4	29.5	130.8	-104.45	949.8	-1,606.4	817.9	660.7	157.23	5.202	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,547.2	6,547.2	29.4	131.2	-104.67	949.8	-1,606.4	823.3	666.1	157.18	5.238	
6,825.0	6,579.1	6,565.1	6,565.1	29.3	131.6	-104.81	949.8	-1,606.4	829.3	672.2	157.14	5.277	
6,850.0	6,596.1	6,582.1	6,582.1	29.1	131.9	-104.87	949.8	-1,606.4	836.0	678.9	157.12	5.321	
6,875.0	6,612.1	6,598.1	6,598.1	29.0	132.2	-104.83	949.8	-1,606.4	843.3	686.2	157.14	5.367	
6,900.0	6,627.1	6,613.1	6,613.1	28.9	132.5	-104.67	949.8	-1,606.4	851.4	694.2	157.21	5.416	
6,925.0	6,641.0	6,627.0	6,627.0	28.8	132.8	-104.38	949.8	-1,606.4	860.2	702.8	157.35	5.466	
6,950.0	6,653.8	6,639.8	6,639.8	28.7	133.1	-103.95	949.8	-1,606.4	869.6	712.1	157.59	5.518	
6,975.0	6,665.5	6,651.5	6,651.5	28.7	133.3	-103.36	949.8	-1,606.4	879.9	721.9	157.93	5.571	
7,000.0	6,676.0	6,662.0	6,662.0	28.6	133.5	-102.61	949.8	-1,606.4	890.8	732.4	158.38	5.624	
7,025.0	6,685.3	6,671.3	6,671.3	28.6	133.7	-101.68	949.8	-1,606.4	902.4	743.5	158.94	5.678	
7,050.0	6,693.4	6,679.4	6,679.4	28.5	133.9	-100.55	949.8	-1,606.4	914.8	755.2	159.58	5.732	
7,075.0	6,700.2	6,686.2	6,686.2	28.5	134.0	-99.23	949.8	-1,606.4	927.7	767.5	160.28	5.788	
7,100.0	6,705.8	6,691.8	6,691.8	28.5	134.1	-97.70	949.8	-1,606.4	941.3	780.3	161.00	5.847	
7,125.0	6,710.0	6,696.0	6,696.0	28.5	134.2	-95.95	949.8	-1,606.4	955.5	793.8	161.69	5.910	
7,150.0	6,713.0	6,699.0	6,699.0	28.6	134.3	-93.99	949.8	-1,606.4	970.2	807.9	162.27	5.979	
7,175.0	6,714.7	6,700.7	6,700.7	28.6	134.3	-91.83	949.8	-1,606.4	985.4	822.7	162.68	6.057	
7,198.8	6,715.0	6,701.0	6,701.0	28.6	134.3	-89.57	949.8	-1,606.4	1,000.3	837.4	162.85	6.142	
7,200.0	6,715.0	6,701.0	6,701.0	28.6	134.3	-89.57	949.8	-1,606.4	1,001.0	838.2	162.85	6.147	
7,300.0	6,714.1	6,700.1	6,700.1	29.0	134.3	-89.50	949.8	-1,606.4	1,067.0	903.8	163.23	6.537	
7,400.0	6,713.2	6,699.2	6,699.2	29.7	134.3	-89.43	949.8	-1,606.4	1,138.0	974.1	163.88	6.944	
7,500.0	6,712.3	6,698.3	6,698.3	30.6	134.3	-89.36	949.8	-1,606.4	1,213.1	1,048.3	164.77	7.363	
7,600.0	6,711.3	6,697.3	6,697.3	31.7	134.2	-89.29	949.8	-1,606.4	1,291.6	1,125.7	165.88	7.786	
7,700.0	6,710.4	6,696.4	6,696.4	33.0	134.2	-89.22	949.8	-1,606.4	1,372.9	1,205.7	167.20	8.211	
7,800.0	6,709.5	6,695.5	6,695.5	34.5	134.2	-89.16	949.8	-1,606.4	1,456.5	1,287.8	168.69	8.634	
7,900.0	6,708.5	6,694.5	6,694.5	36.2	134.2	-89.09	949.8	-1,606.4	1,542.0	1,371.7	170.34	9.053	
8,000.0	6,707.6	6,693.6	6,693.6	38.0	134.2	-89.02	949.8	-1,606.4	1,629.2	1,457.1	172.12	9.466	
8,100.0	6,706.7	6,692.7	6,692.7	39.9	134.1	-88.95	949.8	-1,606.4	1,717.8	1,543.8	174.02	9.871	
8,200.0	6,705.8	6,691.8	6,691.8	41.9	134.1	-88.88	949.8	-1,606.4	1,807.6	1,631.6	176.02	10.269	
8,300.0	6,704.8	6,690.8	6,690.8	44.0	134.1	-88.81	949.8	-1,606.4	1,898.4	1,720.3	178.10	10.659	
8,400.0	6,703.9	6,689.9	6,689.9	46.2	134.1	-88.74	949.8	-1,606.4	1,990.1	1,809.8	180.26	11.040	
8,500.0	6,703.0	6,689.0	6,689.0	48.5	134.1	-88.67	949.8	-1,606.4	2,082.5	1,900.1	182.49	11.412	
8,600.0	6,702.1	6,688.1	6,688.1	50.8	134.0	-88.61	949.8	-1,606.4	2,175.7	1,990.9	184.77	11.775	
8,700.0	6,701.1	6,687.1	6,687.1	53.1	134.0	-88.54	949.8	-1,606.4	2,269.4	2,082.3	187.09	12.130	
8,800.0	6,700.2	6,686.2	6,686.2	55.5	134.0	-88.47	949.8	-1,606.4	2,363.6	2,174.1	189.47	12.475	
8,900.0	6,699.3	6,685.3	6,685.3	57.9	134.0	-88.40	949.8	-1,606.4	2,458.3	2,266.4	191.87	12.812	
9,000.0	6,698.3	6,684.3	6,684.3	60.4	134.0	-88.33	949.8	-1,606.4	2,553.4	2,359.0	194.31	13.140	
9,100.0	6,697.4	6,683.4	6,683.4	62.9	134.0	-88.26	949.8	-1,606.4	2,648.8	2,452.0	196.78	13.461	
9,200.0	6,696.5	6,682.5	6,682.5	65.4	133.9	-88.19	949.8	-1,606.4	2,744.6	2,545.3	199.28	13.773	
9,300.0	6,695.5	6,681.5	6,681.5	68.0	133.9	-88.12	949.8	-1,606.4	2,840.6	2,638.8	201.79	14.077	
9,400.0	6,694.6	6,680.6	6,680.6	70.5	133.9	-88.05	949.8	-1,606.4	2,937.0	2,732.6	204.33	14.374	
9,500.0	6,693.7	6,679.7	6,679.7	73.1	133.9	-87.98	949.8	-1,606.4	3,033.5	2,826.6	206.88	14.663	
9,600.0	6,692.8	6,678.8	6,678.8	75.7	133.9	-87.92	949.8	-1,606.4	3,130.3	2,920.8	209.45	14.945	
9,700.0	6,691.8	6,677.8	6,677.8	78.3	133.8	-87.85	949.8	-1,606.4	3,227.3	3,015.2	212.04	15.220	
9,800.0	6,690.9	6,676.9	6,676.9	80.9	133.8	-87.78	949.8	-1,606.4	3,324.4	3,109.8	214.63	15.489	
9,900.0	6,690.0	6,676.0	6,676.0	83.6	133.8	-87.71	949.8	-1,606.4	3,421.7	3,204.5	217.24	15.751	
10,000.0	6,689.0	6,675.0	6,675.0	86.2	133.8	-87.64	949.8	-1,606.4	3,519.2	3,299.3	219.86	16.007	
10,100.0	6,688.1	6,674.1	6,674.1	88.9	133.8	-87.57	949.8	-1,606.4	3,616.8	3,394.3	222.49	16.256	
10,200.0	6,687.2	6,673.2	6,673.2	91.6	133.7	-87.50	949.8	-1,606.4	3,714.5	3,489.4	225.12	16.500	
10,300.0	6,686.2	6,672.2	6,672.2	94.2	133.7	-87.43	949.8	-1,606.4	3,812.4	3,584.6	227.77	16.738	
10,400.0	6,685.3	6,671.3	6,671.3	96.9	133.7	-87.36	949.8	-1,606.4	3,910.3	3,679.9	230.42	16.971	
10,500.0	6,684.4	6,670.4	6,670.4	99.6	133.7	-87.29	949.8	-1,606.4	4,008.4	3,775.3	233.08	17.198	
10,600.0	6,683.4	6,669.4	6,669.4	102.3	133.7	-87.22	949.8	-1,606.4	4,106.5	3,870.8	235.74	17.420	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,668.5	6,668.5	105.0	133.7	-87.15	949.8	-1,606.4	4,204.8	3,966.4	238.41	17.637	
10,800.0	6,681.6	6,667.6	6,667.6	107.7	133.6	-87.08	949.8	-1,606.4	4,303.1	4,062.0	241.08	17.849	
10,900.0	6,680.6	6,666.6	6,666.6	110.4	133.6	-87.01	949.8	-1,606.4	4,401.5	4,157.7	243.76	18.057	
11,000.0	6,679.7	6,665.7	6,665.7	113.1	133.6	-86.94	949.8	-1,606.4	4,500.0	4,253.5	246.44	18.260	
11,100.0	6,678.8	6,664.8	6,664.8	115.9	133.6	-86.87	949.8	-1,606.4	4,598.5	4,349.4	249.13	18.458	
11,200.0	6,677.8	6,663.8	6,663.8	118.6	133.6	-86.80	949.8	-1,606.4	4,697.1	4,445.3	251.82	18.653	
11,300.0	6,676.9	6,662.9	6,662.9	121.3	133.5	-86.73	949.8	-1,606.4	4,795.7	4,541.2	254.51	18.843	
11,400.0	6,676.0	6,662.0	6,662.0	124.1	133.5	-86.66	949.8	-1,606.4	4,894.4	4,637.2	257.20	19.029	
11,500.0	6,675.0	6,661.0	6,661.0	126.8	133.5	-86.59	949.8	-1,606.4	4,993.2	4,733.3	259.90	19.212	
11,600.0	6,674.1	6,660.1	6,660.1	129.5	133.5	-86.52	949.8	-1,606.4	5,092.0	4,829.4	262.60	19.391	
11,700.0	6,673.1	6,659.1	6,659.1	132.3	133.5	-86.45	949.8	-1,606.4	5,190.9	4,925.6	265.30	19.566	
11,800.0	6,672.2	6,658.2	6,658.2	135.0	133.4	-86.38	949.8	-1,606.4	5,289.8	5,021.7	268.01	19.737	
11,900.0	6,671.3	6,657.3	6,657.3	137.8	133.4	-86.32	949.8	-1,606.4	5,388.7	5,118.0	270.71	19.905	
12,000.0	6,670.3	6,656.3	6,656.3	140.5	133.4	-86.25	949.8	-1,606.4	5,487.7	5,214.2	273.42	20.070	
12,036.2	6,670.0	6,656.0	6,656.0	141.5	133.4	-86.22	949.8	-1,606.4	5,523.5	5,249.1	274.40	20.129	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	70.26	889.1	2,478.1	2,632.8				
100.0	100.0	90.0	90.0	0.1	0.9	59.67	889.1	2,478.1	2,632.7	2,631.7	1.02	2,580.175	
200.0	200.0	190.0	190.0	0.2	3.1	59.67	889.1	2,478.1	2,632.6	2,629.2	3.33	790.116	
261.0	261.0	251.0	251.0	0.3	4.4	59.68	889.1	2,478.1	2,632.4	2,627.7	4.69	560.739	
268.5	268.5	258.5	258.5	0.3	4.6	90.00	889.1	2,478.1	2,632.4	2,627.6	4.87	540.853	
300.0	300.0	290.0	290.0	0.4	5.2	137.89	889.1	2,478.1	2,632.6	2,627.0	5.59	470.630	
400.0	399.9	389.9	389.9	0.6	7.3	152.44	889.1	2,478.1	2,635.5	2,627.6	7.86	335.294	
500.0	499.7	489.7	489.7	0.8	9.3	154.84	889.1	2,478.1	2,641.9	2,631.8	10.08	262.001	
538.0	537.5	527.5	527.5	0.9	10.1	155.30	889.1	2,478.1	2,645.2	2,634.3	10.92	242.335	
600.0	599.1	589.1	589.1	1.1	11.3	154.54	889.1	2,478.1	2,651.9	2,639.6	12.29	215.764	
700.0	697.9	687.9	687.9	1.5	13.3	153.79	889.1	2,478.1	2,665.6	2,651.1	14.46	184.294	
800.0	796.0	786.0	786.0	1.8	15.3	153.33	889.1	2,478.1	2,683.1	2,666.5	16.57	161.903	
818.0	813.5	803.5	803.5	1.9	15.6	153.27	889.1	2,478.1	2,686.6	2,669.7	16.94	158.560	
900.0	893.1	883.1	883.1	2.3	17.2	154.11	889.1	2,478.1	2,704.4	2,685.7	18.67	144.883	
1,000.0	989.2	979.2	979.2	2.9	19.2	154.86	889.1	2,478.1	2,729.7	2,709.0	20.69	131.964	
1,100.0	1,083.9	1,073.9	1,073.9	3.5	21.1	155.42	889.1	2,478.1	2,759.0	2,736.4	22.60	122.070	
1,104.0	1,087.6	1,077.6	1,077.6	3.5	21.2	155.44	889.1	2,478.1	2,760.3	2,737.6	22.68	121.725	
1,200.0	1,177.9	1,167.9	1,167.9	4.1	23.0	154.98	889.1	2,478.1	2,790.3	2,765.5	24.81	112.472	
1,300.0	1,272.0	1,262.0	1,262.0	4.8	24.9	154.50	889.1	2,478.1	2,821.1	2,794.2	26.99	104.509	
1,391.0	1,357.8	1,347.8	1,347.8	5.3	26.6	154.05	889.1	2,478.1	2,848.9	2,819.9	29.00	98.226	
1,400.0	1,366.3	1,356.3	1,356.3	5.4	26.8	154.30	889.1	2,478.1	2,851.6	2,822.4	29.21	97.619	
1,458.0	1,421.2	1,411.2	1,411.2	5.7	27.9	155.95	889.1	2,478.1	2,868.8	2,838.2	30.56	93.864	
1,500.0	1,461.0	1,451.0	1,451.0	6.0	28.7	155.84	889.1	2,478.1	2,880.9	2,849.4	31.49	91.496	
1,600.0	1,556.1	1,546.1	1,546.1	6.6	30.6	155.59	889.1	2,478.1	2,909.5	2,875.9	33.69	86.363	
1,676.0	1,628.3	1,618.3	1,618.3	7.0	32.0	155.39	889.1	2,478.1	2,931.2	2,895.8	35.37	82.875	
1,700.0	1,651.1	1,641.1	1,641.1	7.2	32.5	156.03	889.1	2,478.1	2,938.0	2,902.1	35.88	81.872	
1,800.0	1,746.4	1,736.4	1,736.4	7.7	34.4	158.73	889.1	2,478.1	2,966.3	2,928.2	38.04	77.980	
1,900.0	1,841.8	1,831.8	1,831.8	8.3	36.3	161.47	889.1	2,478.1	2,994.6	2,954.4	40.20	74.495	
1,963.0	1,902.0	1,892.0	1,892.0	8.7	37.5	163.23	889.1	2,478.1	3,012.4	2,970.8	41.56	72.481	
2,000.0	1,937.4	1,927.4	1,927.4	8.9	38.3	163.31	889.1	2,478.1	3,022.8	2,980.4	42.38	71.324	
2,100.0	2,033.1	2,023.1	2,023.1	9.5	40.2	163.53	889.1	2,478.1	3,050.6	3,006.0	44.60	68.394	
2,200.0	2,129.0	2,119.0	2,119.0	10.0	42.1	163.75	889.1	2,478.1	3,077.7	3,030.9	46.83	65.716	
2,250.0	2,177.1	2,167.1	2,167.1	10.3	43.1	163.85	889.1	2,478.1	3,091.1	3,043.1	47.95	64.462	
2,300.0	2,225.1	2,215.1	2,215.1	10.6	44.1	162.75	889.1	2,478.1	3,104.3	3,055.3	49.05	63.293	
2,400.0	2,321.2	2,311.2	2,311.2	11.2	46.0	160.59	889.1	2,478.1	3,131.0	3,079.7	51.24	61.109	
2,500.0	2,417.0	2,407.0	2,407.0	11.7	47.9	158.51	889.1	2,478.1	3,157.7	3,104.2	53.42	59.111	
2,537.0	2,452.5	2,442.5	2,442.5	11.9	48.6	157.77	889.1	2,478.1	3,167.5	3,113.3	54.23	58.413	
2,600.0	2,512.8	2,502.8	2,502.8	12.3	49.8	154.92	889.1	2,478.1	3,184.4	3,128.8	55.65	57.220	
2,700.0	2,608.2	2,598.2	2,598.2	12.9	51.8	150.69	889.1	2,478.1	3,211.2	3,153.3	57.91	55.451	
2,800.0	2,703.3	2,693.3	2,693.3	13.5	53.7	146.80	889.1	2,478.1	3,238.0	3,177.8	60.16	53.822	
2,824.0	2,726.1	2,716.1	2,716.1	13.7	54.1	145.92	889.1	2,478.1	3,244.4	3,183.7	60.70	53.450	
2,900.0	2,798.2	2,788.2	2,788.2	14.1	55.6	148.73	889.1	2,478.1	3,264.8	3,202.4	62.36	52.353	
3,000.0	2,893.6	2,883.6	2,883.6	14.7	57.5	152.66	889.1	2,478.1	3,291.3	3,226.7	64.56	50.977	
3,100.0	2,989.4	2,979.4	2,979.4	15.3	59.4	156.88	889.1	2,478.1	3,317.4	3,250.6	66.79	49.671	
3,112.0	3,000.9	2,990.9	2,990.9	15.4	59.7	157.41	889.1	2,478.1	3,320.5	3,253.5	67.06	49.519	
3,200.0	3,085.5	3,075.5	3,075.5	15.9	61.4	158.56	889.1	2,478.1	3,343.1	3,274.1	69.02	48.435	
3,300.0	3,181.9	3,171.9	3,171.9	16.4	63.3	159.90	889.1	2,478.1	3,368.3	3,297.1	71.27	47.262	
3,400.0	3,278.4	3,268.4	3,268.4	16.9	65.2	161.29	889.1	2,478.1	3,393.0	3,319.5	73.52	46.149	
3,500.0	3,374.7	3,364.7	3,364.7	17.5	67.2	161.18	889.1	2,478.1	3,418.6	3,343.3	75.32	45.385	
3,600.0	3,470.3	3,460.3	3,460.3	18.1	69.1	161.10	889.1	2,478.1	3,446.6	3,369.5	77.05	44.733	
3,687.0	3,552.8	3,542.8	3,542.8	18.6	70.8	161.03	889.1	2,478.1	3,472.8	3,394.3	78.48	44.252	
3,700.0	3,565.1	3,555.1	3,555.1	18.7	71.0	161.31	889.1	2,478.1	3,476.8	3,398.1	78.73	44.159	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,649.5	3,649.5	19.4	72.9	163.42	889.1	2,478.1	3,508.3	3,427.6	80.69	43.476	
3,900.0	3,753.9	3,743.9	3,743.9	20.0	74.8	165.48	889.1	2,478.1	3,540.4	3,457.7	82.65	42.838	
3,974.0	3,823.6	3,813.6	3,813.6	20.5	76.2	166.98	889.1	2,478.1	3,564.5	3,480.4	84.08	42.393	
4,000.0	3,848.1	3,838.1	3,838.1	20.7	76.7	166.81	889.1	2,478.1	3,572.9	3,488.1	84.79	42.139	
4,100.0	3,942.9	3,932.9	3,932.9	21.3	78.6	166.10	889.1	2,478.1	3,603.9	3,516.4	87.51	41.183	
4,200.0	4,038.5	4,028.5	4,028.5	21.9	80.5	165.23	889.1	2,478.1	3,632.6	3,542.4	90.22	40.263	
4,263.0	4,099.0	4,089.0	4,089.0	22.3	81.7	164.59	889.1	2,478.1	3,649.4	3,557.5	91.92	39.702	
4,300.0	4,134.7	4,124.7	4,124.7	22.5	82.5	163.54	889.1	2,478.1	3,659.0	3,566.1	92.84	39.413	
4,400.0	4,231.2	4,221.2	4,221.2	23.0	84.4	160.56	889.1	2,478.1	3,683.9	3,588.5	95.31	38.651	
4,500.0	4,328.0	4,318.0	4,318.0	23.5	86.3	157.38	889.1	2,478.1	3,707.4	3,609.7	97.78	37.917	
4,549.0	4,375.5	4,365.5	4,365.5	23.8	87.3	155.75	889.1	2,478.1	3,718.5	3,619.6	98.99	37.566	
4,600.0	4,425.0	4,415.0	4,415.0	24.0	88.3	155.65	889.1	2,478.1	3,729.9	3,629.8	100.10	37.261	
4,700.0	4,521.9	4,511.9	4,511.9	24.5	90.2	155.44	889.1	2,478.1	3,752.3	3,650.0	102.29	36.682	
4,800.0	4,618.8	4,608.8	4,608.8	25.0	92.2	155.23	889.1	2,478.1	3,774.8	3,670.3	104.48	36.130	
4,837.0	4,654.7	4,644.7	4,644.7	25.2	92.9	155.16	889.1	2,478.1	3,783.1	3,677.9	105.29	35.931	
4,900.0	4,715.7	4,705.7	4,705.7	25.5	94.1	154.78	889.1	2,478.1	3,797.5	3,690.8	106.61	35.620	
5,000.0	4,812.4	4,802.4	4,802.4	26.0	96.1	154.21	889.1	2,478.1	3,820.7	3,712.0	108.70	35.149	
5,100.0	4,908.9	4,898.9	4,898.9	26.6	98.0	153.69	889.1	2,478.1	3,844.5	3,733.7	110.77	34.706	
5,125.0	4,932.9	4,922.9	4,922.9	26.7	98.5	153.56	889.1	2,478.1	3,850.5	3,739.2	111.29	34.599	
5,200.0	5,005.4	4,995.4	4,995.4	27.0	100.0	156.52	889.1	2,478.1	3,868.3	3,755.2	113.09	34.206	
5,300.0	5,102.4	5,092.4	5,092.4	27.5	101.9	161.02	889.1	2,478.1	3,890.9	3,775.4	115.52	33.683	
5,400.0	5,199.9	5,189.9	5,189.9	28.0	103.9	166.28	889.1	2,478.1	3,912.0	3,794.1	117.96	33.163	
5,412.0	5,211.7	5,201.7	5,201.7	28.1	104.1	166.98	889.1	2,478.1	3,914.5	3,796.2	118.26	33.101	
5,500.0	5,297.9	5,287.9	5,287.9	28.4	105.9	169.76	889.1	2,478.1	3,931.5	3,810.9	120.53	32.617	
5,581.0	5,377.7	5,367.7	5,367.7	28.7	107.5	172.91	889.1	2,478.1	3,945.6	3,823.0	122.60	32.183	
5,600.0	5,396.4	5,386.4	5,386.4	28.8	107.8	171.72	889.1	2,478.1	3,948.7	3,825.6	123.12	32.072	
5,700.0	5,495.3	5,485.3	5,485.3	29.1	109.8	163.90	889.1	2,478.1	3,963.0	3,837.2	125.78	31.507	
5,800.0	5,594.6	5,584.6	5,584.6	29.4	111.8	152.23	889.1	2,478.1	3,974.1	3,845.8	128.33	30.969	
5,900.0	5,694.1	5,684.1	5,684.1	29.6	113.8	134.86	889.1	2,478.1	3,982.1	3,851.4	130.74	30.457	
5,917.0	5,711.1	5,701.1	5,701.1	29.7	114.2	131.29	889.1	2,478.1	3,983.1	3,852.0	131.14	30.373	
6,000.0	5,793.7	5,783.7	5,783.7	29.8	115.8	131.37	889.1	2,478.1	3,987.9	3,855.0	132.97	29.992	
6,067.0	5,860.5	5,850.5	5,850.5	30.0	117.2	131.44	889.1	2,478.1	3,991.8	3,857.4	134.44	29.692	
6,100.0	5,893.4	5,883.4	5,883.4	30.0	117.8	131.49	889.1	2,478.1	3,993.6	3,858.5	135.19	29.541	
6,200.0	5,993.2	5,983.2	5,983.2	30.2	119.8	131.61	889.1	2,478.1	3,997.6	3,860.2	137.40	29.094	
6,300.0	6,093.2	6,083.2	6,083.2	30.3	121.8	131.66	889.1	2,478.1	3,999.1	3,859.6	139.54	28.660	
6,318.8	6,111.9	6,101.9	6,101.9	30.3	122.2	79.70	889.1	2,478.1	3,999.2	3,847.6	151.61	26.378	
6,400.0	6,193.2	6,183.2	6,183.2	30.4	123.9	79.70	889.1	2,478.1	3,999.2	3,845.9	153.32	26.084	
6,444.4	6,237.6	6,227.6	6,227.6	30.4	124.7	79.70	889.1	2,478.1	3,999.2	3,844.9	154.25	25.926	
6,450.0	6,243.2	6,233.2	6,233.2	30.4	124.9	-10.30	889.1	2,478.1	3,999.2	3,856.4	142.71	28.022	
6,475.0	6,268.1	6,258.1	6,258.1	30.4	125.4	-10.32	889.1	2,478.1	3,998.2	3,855.4	142.82	27.994	
6,500.0	6,293.0	6,283.0	6,283.0	30.4	125.9	-10.37	889.1	2,478.1	3,996.0	3,853.4	142.56	28.030	
6,525.0	6,317.8	6,307.8	6,307.8	30.4	126.4	-10.46	889.1	2,478.1	3,992.5	3,850.6	141.93	28.131	
6,550.0	6,342.3	6,332.3	6,332.3	30.4	126.9	-10.58	889.1	2,478.1	3,987.8	3,846.8	140.92	28.298	
6,575.0	6,366.5	6,356.5	6,356.5	30.3	127.3	-10.73	889.1	2,478.1	3,981.7	3,842.2	139.55	28.534	
6,600.0	6,390.4	6,380.4	6,380.4	30.2	127.8	-10.92	889.1	2,478.1	3,974.5	3,836.7	137.81	28.840	
6,625.0	6,413.9	6,403.9	6,403.9	30.2	128.3	-11.15	889.1	2,478.1	3,966.0	3,830.3	135.72	29.222	
6,650.0	6,436.9	6,426.9	6,426.9	30.1	128.8	-11.43	889.1	2,478.1	3,956.3	3,823.0	133.29	29.682	
6,675.0	6,459.3	6,449.3	6,449.3	30.0	129.2	-11.75	889.1	2,478.1	3,945.5	3,814.9	130.54	30.225	
6,700.0	6,481.1	6,471.1	6,471.1	29.9	129.6	-12.13	889.1	2,478.1	3,933.5	3,806.0	127.48	30.857	
6,725.0	6,502.3	6,492.3	6,492.3	29.7	130.1	-12.56	889.1	2,478.1	3,920.4	3,796.3	124.14	31.581	
6,750.0	6,522.7	6,512.7	6,512.7	29.6	130.5	-13.07	889.1	2,478.1	3,906.3	3,785.7	120.56	32.402	
6,775.0	6,542.4	6,532.4	6,532.4	29.5	130.9	-13.65	889.1	2,478.1	3,891.1	3,774.3	116.77	33.322	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,551.2	6,551.2	29.4	131.3	-14.32	889.1	2,478.1	3,874.9	3,762.1	112.84	34.341	
6,825.0	6,579.1	6,569.1	6,569.1	29.3	131.6	-15.10	889.1	2,478.1	3,857.8	3,749.0	108.83	35.449	
6,850.0	6,596.1	6,586.1	6,586.1	29.1	132.0	-16.01	889.1	2,478.1	3,839.8	3,734.9	104.83	36.630	
6,875.0	6,612.1	6,602.1	6,602.1	29.0	132.3	-17.07	889.1	2,478.1	3,820.9	3,720.0	100.96	37.846	
6,900.0	6,627.1	6,617.1	6,617.1	28.9	132.6	-18.32	889.1	2,478.1	3,801.3	3,703.9	97.38	39.035	
6,925.0	6,641.0	6,631.0	6,631.0	28.8	132.9	-19.80	889.1	2,478.1	3,780.9	3,686.6	94.30	40.092	
6,950.0	6,653.8	6,643.8	6,643.8	28.7	133.1	-21.57	889.1	2,478.1	3,759.8	3,667.8	92.01	40.863	
6,975.0	6,665.5	6,655.5	6,655.5	28.7	133.4	-23.71	889.1	2,478.1	3,738.1	3,647.2	90.86	41.140	
7,000.0	6,676.0	6,666.0	6,666.0	28.6	133.6	-26.34	889.1	2,478.1	3,715.8	3,624.5	91.32	40.689	
7,025.0	6,685.3	6,675.3	6,675.3	28.6	133.8	-29.59	889.1	2,478.1	3,693.1	3,599.1	93.93	39.319	
7,050.0	6,693.4	6,683.4	6,683.4	28.5	133.9	-33.69	889.1	2,478.1	3,669.8	3,570.6	99.23	36.983	
7,075.0	6,700.2	6,690.2	6,690.2	28.5	134.1	-38.93	889.1	2,478.1	3,646.3	3,538.6	107.69	33.858	
7,100.0	6,705.8	6,695.8	6,695.8	28.5	134.2	-45.69	889.1	2,478.1	3,622.4	3,502.9	119.45	30.326	
7,125.0	6,710.0	6,700.0	6,700.0	28.5	134.2	-54.44	889.1	2,478.1	3,598.2	3,464.4	133.86	26.880	
7,150.0	6,713.0	6,703.0	6,703.0	28.6	134.3	-65.53	889.1	2,478.1	3,573.9	3,425.1	148.76	24.025	
7,175.0	6,714.7	6,704.7	6,704.7	28.6	134.3	-78.81	889.1	2,478.1	3,549.5	3,389.6	159.89	22.199	
7,198.8	6,715.0	6,705.0	6,705.0	28.6	134.3	-92.56	889.1	2,478.1	3,526.1	3,363.4	162.71	21.671	
7,200.0	6,715.0	6,705.0	6,705.0	28.6	134.3	-92.56	889.1	2,478.1	3,525.0	3,362.3	162.71	21.664	
7,300.0	6,714.1	6,704.1	6,704.1	29.0	134.3	-92.48	889.1	2,478.1	3,427.1	3,264.0	163.10	21.012	
7,400.0	6,713.2	6,703.2	6,703.2	29.7	134.3	-92.41	889.1	2,478.1	3,329.4	3,165.6	163.76	20.331	
7,500.0	6,712.3	6,702.3	6,702.3	30.6	134.3	-92.34	889.1	2,478.1	3,231.8	3,067.2	164.66	19.628	
7,600.0	6,711.3	6,701.3	6,701.3	31.7	134.3	-92.26	889.1	2,478.1	3,134.4	2,968.6	165.78	18.907	
7,700.0	6,710.4	6,700.4	6,700.4	33.0	134.3	-92.19	889.1	2,478.1	3,037.1	2,870.0	167.10	18.175	
7,800.0	6,709.5	6,699.5	6,699.5	34.5	134.2	-92.12	889.1	2,478.1	2,940.0	2,771.4	168.61	17.437	
7,900.0	6,708.5	6,698.5	6,698.5	36.2	134.2	-92.04	889.1	2,478.1	2,843.1	2,672.8	170.26	16.698	
8,000.0	6,707.6	6,697.6	6,697.6	38.0	134.2	-91.97	889.1	2,478.1	2,746.4	2,574.4	172.05	15.963	
8,100.0	6,706.7	6,696.7	6,696.7	39.9	134.2	-91.90	889.1	2,478.1	2,650.0	2,476.1	173.96	15.233	
8,200.0	6,705.8	6,695.8	6,695.8	41.9	134.2	-91.82	889.1	2,478.1	2,553.9	2,377.9	175.97	14.513	
8,300.0	6,704.8	6,694.8	6,694.8	44.0	134.1	-91.75	889.1	2,478.1	2,458.0	2,280.0	178.07	13.804	
8,400.0	6,703.9	6,693.9	6,693.9	46.2	134.1	-91.67	889.1	2,478.1	2,362.5	2,182.3	180.24	13.108	
8,500.0	6,703.0	6,693.0	6,693.0	48.5	134.1	-91.60	889.1	2,478.1	2,267.4	2,085.0	182.47	12.426	
8,600.0	6,702.1	6,692.1	6,692.1	50.8	134.1	-91.53	889.1	2,478.1	2,172.8	1,988.0	184.76	11.760	
8,700.0	6,701.1	6,691.1	6,691.1	53.1	134.1	-91.45	889.1	2,478.1	2,078.6	1,891.5	187.10	11.109	
8,800.0	6,700.2	6,690.2	6,690.2	55.5	134.1	-91.38	889.1	2,478.1	1,985.0	1,795.5	189.49	10.476	
8,900.0	6,699.3	6,689.3	6,689.3	57.9	134.0	-91.30	889.1	2,478.1	1,892.1	1,700.2	191.91	9.859	
9,000.0	6,698.3	6,688.3	6,688.3	60.4	134.0	-91.23	889.1	2,478.1	1,799.9	1,605.5	194.36	9.261	
9,100.0	6,697.4	6,687.4	6,687.4	62.9	134.0	-91.16	889.1	2,478.1	1,708.6	1,511.7	196.84	8.680	
9,200.0	6,696.5	6,686.5	6,686.5	65.4	134.0	-91.08	889.1	2,478.1	1,618.3	1,418.9	199.34	8.118	
9,300.0	6,695.5	6,685.5	6,685.5	68.0	134.0	-91.01	889.1	2,478.1	1,529.2	1,327.3	201.87	7.575	
9,400.0	6,694.6	6,684.6	6,684.6	70.5	133.9	-90.93	889.1	2,478.1	1,441.6	1,237.1	204.42	7.052	
9,500.0	6,693.7	6,683.7	6,683.7	73.1	133.9	-90.86	889.1	2,478.1	1,355.6	1,148.6	206.99	6.549	
9,600.0	6,692.8	6,682.8	6,682.8	75.7	133.9	-90.78	889.1	2,478.1	1,271.8	1,062.2	209.57	6.068	
9,700.0	6,691.8	6,681.8	6,681.8	78.3	133.9	-90.71	889.1	2,478.1	1,190.4	978.2	212.17	5.611	
9,800.0	6,690.9	6,680.9	6,680.9	80.9	133.9	-90.64	889.1	2,478.1	1,112.1	897.3	214.78	5.178	
9,900.0	6,690.0	6,680.0	6,680.0	83.6	133.8	-90.56	889.1	2,478.1	1,037.5	820.1	217.40	4.772	
10,000.0	6,689.0	6,679.0	6,679.0	86.2	133.8	-90.49	889.1	2,478.1	967.4	747.4	220.04	4.397	
10,100.0	6,688.1	6,678.1	6,678.1	88.9	133.8	-90.41	889.1	2,478.1	903.1	680.4	222.68	4.056	
10,200.0	6,687.2	6,677.2	6,677.2	91.6	133.8	-90.34	889.1	2,478.1	845.7	620.4	225.33	3.753	
10,300.0	6,686.2	6,676.2	6,676.2	94.2	133.8	-90.26	889.1	2,478.1	796.8	568.8	227.99	3.495	
10,400.0	6,685.3	6,675.3	6,675.3	96.9	133.8	-90.19	889.1	2,478.1	757.9	527.3	230.66	3.286	
10,500.0	6,684.4	6,674.4	6,674.4	99.6	133.7	-90.11	889.1	2,478.1	730.8	497.5	233.33	3.132	
10,600.0	6,683.4	6,673.4	6,673.4	102.3	133.7	-90.04	889.1	2,478.1	716.7	480.7	236.01	3.037	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,651.9	6,682.9	6,672.9	6,672.9	103.7	133.7	-90.00	889.1	2,478.1	714.9	477.5	237.40	3.011	CC, ES
10,700.0	6,682.5	6,672.5	6,672.5	105.0	133.7	-89.96	889.1	2,478.1	716.5	477.8	238.70	3.002	SF
10,800.0	6,681.6	6,671.6	6,671.6	107.7	133.7	-89.89	889.1	2,478.1	730.0	488.6	241.39	3.024	
10,900.0	6,680.6	6,670.6	6,670.6	110.4	133.7	-89.81	889.1	2,478.1	756.7	512.6	244.08	3.100	
11,000.0	6,679.7	6,669.7	6,669.7	113.1	133.6	-89.74	889.1	2,478.1	795.1	548.3	246.78	3.222	
11,100.0	6,678.8	6,668.8	6,668.8	115.9	133.6	-89.66	889.1	2,478.1	843.7	594.2	249.48	3.382	
11,200.0	6,677.8	6,667.8	6,667.8	118.6	133.6	-89.59	889.1	2,478.1	900.8	648.6	252.19	3.572	
11,300.0	6,676.9	6,666.9	6,666.9	121.3	133.6	-89.51	889.1	2,478.1	964.9	710.0	254.90	3.785	
11,400.0	6,676.0	6,666.0	6,666.0	124.1	133.6	-89.44	889.1	2,478.1	1,034.7	777.1	257.61	4.017	
11,500.0	6,675.0	6,665.0	6,665.0	126.8	133.5	-89.36	889.1	2,478.1	1,109.2	848.8	260.33	4.261	
11,600.0	6,674.1	6,664.1	6,664.1	129.5	133.5	-89.29	889.1	2,478.1	1,187.4	924.3	263.05	4.514	
11,700.0	6,673.1	6,663.1	6,663.1	132.3	133.5	-89.21	889.1	2,478.1	1,268.6	1,002.9	265.77	4.773	
11,800.0	6,672.2	6,662.2	6,662.2	135.0	133.5	-89.14	889.1	2,478.1	1,352.4	1,083.9	268.49	5.037	
11,900.0	6,671.3	6,661.3	6,661.3	137.8	133.5	-89.06	889.1	2,478.1	1,438.3	1,167.1	271.22	5.303	
12,000.0	6,670.3	6,660.3	6,660.3	140.5	133.5	-88.99	889.1	2,478.1	1,525.9	1,251.9	273.95	5.570	
12,036.2	6,670.0	6,660.0	6,660.0	141.5	133.4	-88.96	889.1	2,478.1	1,558.0	1,283.0	274.94	5.667	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	76.15	889.2	3,606.1	3,714.1				
100.0	100.0	87.0	87.0	0.1	0.9	65.55	889.2	3,606.1	3,714.0	3,713.0	1.02	3,625.739	
200.0	200.0	187.0	187.0	0.2	3.1	65.55	889.2	3,606.1	3,713.9	3,710.6	3.29	1,127.610	
261.0	261.0	248.0	248.0	0.3	4.4	65.56	889.2	3,606.1	3,713.8	3,709.1	4.66	796.558	
266.9	266.9	253.9	253.9	0.3	4.5	90.00	889.2	3,606.1	3,713.8	3,709.0	4.80	773.904	
300.0	300.0	287.0	287.0	0.4	5.2	143.77	889.2	3,606.1	3,714.0	3,708.4	5.56	667.856	
400.0	399.9	386.9	386.9	0.6	7.2	158.31	889.2	3,606.1	3,717.0	3,709.2	7.83	474.869	
500.0	499.7	486.7	486.7	0.8	9.3	160.69	889.2	3,606.1	3,723.7	3,713.7	10.05	370.581	
538.0	537.5	524.5	524.5	0.9	10.0	161.14	889.2	3,606.1	3,727.2	3,716.3	10.88	342.608	
600.0	599.1	586.1	586.1	1.1	11.3	160.36	889.2	3,606.1	3,734.1	3,721.9	12.25	304.912	
700.0	697.9	684.9	684.9	1.5	13.3	159.58	889.2	3,606.1	3,748.4	3,734.0	14.40	260.227	
800.0	796.0	783.0	783.0	1.8	15.3	159.07	889.2	3,606.1	3,766.7	3,750.2	16.49	228.387	
818.0	813.5	800.5	800.5	1.9	15.6	158.99	889.2	3,606.1	3,770.4	3,753.5	16.86	223.627	
900.0	893.1	880.1	880.1	2.3	17.2	159.79	889.2	3,606.1	3,788.9	3,770.4	18.55	204.227	
1,000.0	989.2	976.2	976.2	2.9	19.1	160.49	889.2	3,606.1	3,815.2	3,794.7	20.53	185.841	
1,100.0	1,083.9	1,070.9	1,070.9	3.5	21.1	160.99	889.2	3,606.1	3,845.6	3,823.2	22.40	171.696	
1,104.0	1,087.6	1,074.6	1,074.6	3.5	21.1	161.01	889.2	3,606.1	3,846.9	3,824.4	22.47	171.202	
1,200.0	1,177.9	1,164.9	1,164.9	4.1	22.9	160.42	889.2	3,606.1	3,878.0	3,853.4	24.57	157.808	
1,300.0	1,272.0	1,259.0	1,259.0	4.8	24.8	159.81	889.2	3,606.1	3,909.9	3,883.2	26.73	146.292	
1,391.0	1,357.8	1,344.8	1,344.8	5.3	26.6	159.24	889.2	3,606.1	3,938.7	3,910.0	28.71	137.188	
1,400.0	1,366.3	1,353.3	1,353.3	5.4	26.7	159.47	889.2	3,606.1	3,941.5	3,912.6	28.92	136.296	
1,458.0	1,421.2	1,408.2	1,408.2	5.7	27.8	161.04	889.2	3,606.1	3,959.2	3,929.0	30.27	130.780	
1,500.0	1,461.0	1,448.0	1,448.0	6.0	28.6	160.89	889.2	3,606.1	3,971.7	3,940.6	31.19	127.349	
1,600.0	1,556.1	1,543.1	1,543.1	6.6	30.6	160.53	889.2	3,606.1	4,001.3	3,968.0	33.37	119.909	
1,676.0	1,628.3	1,615.3	1,615.3	7.0	32.0	160.25	889.2	3,606.1	4,023.6	3,988.6	35.03	114.853	
1,700.0	1,651.1	1,638.1	1,638.1	7.2	32.5	160.87	889.2	3,606.1	4,030.7	3,995.1	35.55	113.386	
1,800.0	1,746.4	1,733.4	1,733.4	7.7	34.4	163.47	889.2	3,606.1	4,059.8	4,022.1	37.70	107.690	
1,900.0	1,841.8	1,828.8	1,828.8	8.3	36.3	166.14	889.2	3,606.1	4,088.8	4,048.9	39.86	102.588	
1,963.0	1,902.0	1,889.0	1,889.0	8.7	37.5	167.85	889.2	3,606.1	4,107.0	4,065.7	41.22	99.639	
2,000.0	1,937.4	1,924.4	1,924.4	8.9	38.2	167.90	889.2	3,606.1	4,117.6	4,075.5	42.04	97.955	
2,100.0	2,033.1	2,020.1	2,020.1	9.5	40.2	168.04	889.2	3,606.1	4,145.8	4,101.6	44.25	93.692	
2,200.0	2,129.0	2,116.0	2,116.0	10.0	42.1	168.18	889.2	3,606.1	4,173.5	4,127.0	46.47	89.804	
2,250.0	2,177.1	2,164.1	2,164.1	10.3	43.1	168.25	889.2	3,606.1	4,187.1	4,139.5	47.59	87.986	
2,300.0	2,225.1	2,212.1	2,212.1	10.6	44.0	167.11	889.2	3,606.1	4,200.6	4,151.9	48.67	86.306	
2,400.0	2,321.2	2,308.2	2,308.2	11.2	46.0	164.88	889.2	3,606.1	4,227.8	4,176.9	50.84	83.167	
2,500.0	2,417.0	2,404.0	2,404.0	11.7	47.9	162.73	889.2	3,606.1	4,255.1	4,202.1	53.00	80.292	
2,537.0	2,452.5	2,439.5	2,439.5	11.9	48.6	161.95	889.2	3,606.1	4,265.2	4,211.4	53.79	79.289	
2,600.0	2,512.8	2,499.8	2,499.8	12.3	49.8	159.05	889.2	3,606.1	4,282.5	4,227.4	55.19	77.595	
2,700.0	2,608.2	2,595.2	2,595.2	12.9	51.7	154.71	889.2	3,606.1	4,310.2	4,252.8	57.41	75.081	
2,800.0	2,703.3	2,690.3	2,690.3	13.5	53.6	150.71	889.2	3,606.1	4,338.0	4,278.3	59.62	72.762	
2,824.0	2,726.1	2,713.1	2,713.1	13.7	54.1	149.80	889.2	3,606.1	4,344.7	4,284.5	60.15	72.232	
2,900.0	2,798.2	2,785.2	2,785.2	14.1	55.5	152.55	889.2	3,606.1	4,365.8	4,303.9	61.82	70.617	
3,000.0	2,893.6	2,880.6	2,880.6	14.7	57.5	156.40	889.2	3,606.1	4,393.1	4,329.1	64.05	68.593	
3,100.0	2,989.4	2,976.4	2,976.4	15.3	59.4	160.56	889.2	3,606.1	4,419.9	4,353.6	66.29	66.677	
3,112.0	3,000.9	2,987.9	2,987.9	15.4	59.6	161.08	889.2	3,606.1	4,423.1	4,356.6	66.56	66.454	
3,200.0	3,085.5	3,072.5	3,072.5	15.9	61.3	162.16	889.2	3,606.1	4,446.2	4,377.7	68.53	64.877	
3,300.0	3,181.9	3,168.9	3,168.9	16.4	63.3	163.44	889.2	3,606.1	4,471.9	4,401.2	70.78	63.177	
3,400.0	3,278.4	3,265.4	3,265.4	16.9	65.2	164.77	889.2	3,606.1	4,497.1	4,424.0	73.05	61.566	
3,500.0	3,374.7	3,361.7	3,361.7	17.5	67.1	164.63	889.2	3,606.1	4,523.1	4,448.3	74.82	60.454	
3,600.0	3,470.3	3,457.3	3,457.3	18.1	69.1	164.51	889.2	3,606.1	4,551.6	4,475.1	76.51	59.488	
3,687.0	3,552.8	3,539.8	3,539.8	18.6	70.7	164.41	889.2	3,606.1	4,578.2	4,500.3	77.92	58.758	
3,700.0	3,565.1	3,552.1	3,552.1	18.7	71.0	164.68	889.2	3,606.1	4,582.3	4,504.2	78.17	58.618	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,646.5	3,646.5	19.4	72.9	166.74	889.2	3,606.1	4,614.3	4,534.2	80.14	57.576	
3,900.0	3,753.9	3,740.9	3,740.9	20.0	74.8	168.75	889.2	3,606.1	4,646.8	4,564.7	82.10	56.597	
3,974.0	3,823.6	3,810.6	3,810.6	20.5	76.2	170.22	889.2	3,606.1	4,671.1	4,587.6	83.55	55.910	
4,000.0	3,848.1	3,835.1	3,835.1	20.7	76.7	170.03	889.2	3,606.1	4,679.7	4,595.4	84.26	55.540	
4,100.0	3,942.9	3,929.9	3,929.9	21.3	78.6	169.24	889.2	3,606.1	4,711.0	4,624.0	86.99	54.158	
4,200.0	4,038.5	4,025.5	4,025.5	21.9	80.5	168.30	889.2	3,606.1	4,740.0	4,650.3	89.70	52.840	
4,263.0	4,099.0	4,086.0	4,086.0	22.3	81.7	167.62	889.2	3,606.1	4,757.0	4,665.6	91.41	52.041	
4,300.0	4,134.7	4,121.7	4,121.7	22.5	82.4	166.55	889.2	3,606.1	4,766.7	4,674.4	92.32	51.631	
4,400.0	4,231.2	4,218.2	4,218.2	23.0	84.4	163.51	889.2	3,606.1	4,791.9	4,697.2	94.78	50.556	
4,500.0	4,328.0	4,315.0	4,315.0	23.5	86.3	160.28	889.2	3,606.1	4,815.9	4,718.7	97.24	49.524	
4,549.0	4,375.5	4,362.5	4,362.5	23.8	87.3	158.62	889.2	3,606.1	4,827.2	4,728.8	98.45	49.033	
4,600.0	4,425.0	4,412.0	4,412.0	24.0	88.3	158.49	889.2	3,606.1	4,838.9	4,739.3	99.56	48.600	
4,700.0	4,521.9	4,508.9	4,508.9	24.5	90.2	158.23	889.2	3,606.1	4,861.7	4,760.0	101.75	47.781	
4,800.0	4,618.8	4,605.8	4,605.8	25.0	92.2	157.98	889.2	3,606.1	4,884.6	4,780.7	103.93	46.997	
4,837.0	4,654.7	4,641.7	4,641.7	25.2	92.9	157.89	889.2	3,606.1	4,893.1	4,788.4	104.74	46.716	
4,900.0	4,715.7	4,702.7	4,702.7	25.5	94.1	157.48	889.2	3,606.1	4,907.7	4,801.7	106.06	46.274	
5,000.0	4,812.4	4,799.4	4,799.4	26.0	96.1	156.86	889.2	3,606.1	4,931.4	4,823.3	108.13	45.604	
5,100.0	4,908.9	4,895.9	4,895.9	26.6	98.0	156.29	889.2	3,606.1	4,955.7	4,845.5	110.20	44.971	
5,125.0	4,932.9	4,919.9	4,919.9	26.7	98.5	156.15	889.2	3,606.1	4,961.9	4,851.1	110.71	44.818	
5,200.0	5,005.4	4,992.4	4,992.4	27.0	99.9	159.08	889.2	3,606.1	4,980.0	4,867.5	112.54	44.249	
5,300.0	5,102.4	5,089.4	5,089.4	27.5	101.9	163.53	889.2	3,606.1	5,002.9	4,887.9	115.01	43.500	
5,400.0	5,199.9	5,186.9	5,186.9	28.0	103.9	168.76	889.2	3,606.1	5,024.3	4,906.8	117.49	42.764	
5,412.0	5,211.7	5,198.7	5,198.7	28.1	104.1	169.45	889.2	3,606.1	5,026.8	4,909.0	117.79	42.677	
5,500.0	5,297.9	5,284.9	5,284.9	28.4	105.8	172.20	889.2	3,606.1	5,043.9	4,923.8	120.08	42.004	
5,581.0	5,377.7	5,364.7	5,364.7	28.7	107.4	175.32	889.2	3,606.1	5,058.1	4,935.9	122.16	41.405	
5,600.0	5,396.4	5,383.4	5,383.4	28.8	107.8	174.14	889.2	3,606.1	5,061.2	4,938.5	122.68	41.256	
5,700.0	5,495.3	5,482.3	5,482.3	29.1	109.8	166.29	889.2	3,606.1	5,075.6	4,950.3	125.34	40.496	
5,800.0	5,594.6	5,581.6	5,581.6	29.4	111.8	154.58	889.2	3,606.1	5,086.9	4,959.1	127.88	39.778	
5,900.0	5,694.1	5,681.1	5,681.1	29.6	113.8	137.19	889.2	3,606.1	5,095.1	4,964.8	130.31	39.101	
5,917.0	5,711.1	5,698.1	5,698.1	29.7	114.1	133.62	889.2	3,606.1	5,096.2	4,965.5	130.70	38.990	
6,000.0	5,793.7	5,780.7	5,780.7	29.8	115.8	133.67	889.2	3,606.1	5,101.2	4,968.7	132.53	38.490	
6,067.0	5,860.5	5,847.5	5,847.5	30.0	117.1	133.72	889.2	3,606.1	5,105.3	4,971.3	134.01	38.096	
6,100.0	5,893.4	5,880.4	5,880.4	30.0	117.8	133.77	889.2	3,606.1	5,107.2	4,972.4	134.76	37.898	
6,200.0	5,993.2	5,980.2	5,980.2	30.2	119.8	133.88	889.2	3,606.1	5,111.2	4,974.3	136.98	37.313	
6,300.0	6,093.2	6,080.2	6,080.2	30.3	121.8	133.92	889.2	3,606.1	5,112.9	4,973.8	139.12	36.752	
6,318.8	6,111.9	6,098.9	6,098.9	30.3	122.2	81.96	889.2	3,606.1	5,113.0	4,961.1	151.81	33.680	
6,400.0	6,193.2	6,180.2	6,180.2	30.4	123.8	81.96	889.2	3,606.1	5,113.0	4,959.4	153.52	33.305	
6,444.4	6,237.6	6,224.6	6,224.6	30.4	124.7	81.96	889.2	3,606.1	5,113.0	4,958.5	154.45	33.104	
6,450.0	6,243.2	6,230.2	6,230.2	30.4	124.8	-8.04	889.2	3,606.1	5,112.9	4,970.6	142.30	35.931	
6,475.0	6,268.1	6,255.1	6,255.1	30.4	125.3	-8.06	889.2	3,606.1	5,112.0	4,969.6	142.40	35.899	
6,500.0	6,293.0	6,280.0	6,280.0	30.4	125.8	-8.10	889.2	3,606.1	5,109.8	4,967.6	142.12	35.954	
6,525.0	6,317.8	6,304.8	6,304.8	30.4	126.3	-8.16	889.2	3,606.1	5,106.2	4,964.8	141.46	36.097	
6,550.0	6,342.3	6,329.3	6,329.3	30.4	126.8	-8.26	889.2	3,606.1	5,101.4	4,961.0	140.42	36.330	
6,575.0	6,366.5	6,353.5	6,353.5	30.3	127.3	-8.37	889.2	3,606.1	5,095.4	4,956.4	139.00	36.657	
6,600.0	6,390.4	6,377.4	6,377.4	30.2	127.8	-8.52	889.2	3,606.1	5,088.1	4,950.9	137.21	37.081	
6,625.0	6,413.9	6,400.9	6,400.9	30.2	128.3	-8.70	889.2	3,606.1	5,079.5	4,944.5	135.06	37.610	
6,650.0	6,436.9	6,423.9	6,423.9	30.1	128.7	-8.91	889.2	3,606.1	5,069.8	4,937.3	132.55	38.250	
6,675.0	6,459.3	6,446.3	6,446.3	30.0	129.2	-9.16	889.2	3,606.1	5,058.9	4,929.2	129.69	39.008	
6,700.0	6,481.1	6,468.1	6,468.1	29.9	129.6	-9.45	889.2	3,606.1	5,046.8	4,920.3	126.50	39.895	
6,725.0	6,502.3	6,489.3	6,489.3	29.7	130.0	-9.78	889.2	3,606.1	5,033.7	4,910.7	123.01	40.920	
6,750.0	6,522.7	6,509.7	6,509.7	29.6	130.5	-10.17	889.2	3,606.1	5,019.4	4,900.2	119.24	42.096	
6,775.0	6,542.4	6,529.4	6,529.4	29.5	130.8	-10.62	889.2	3,606.1	5,004.1	4,888.9	115.21	43.434	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,548.2	6,548.2	29.4	131.2	-11.14	889.2	3,606.1	4,987.8	4,876.9	110.98	44.943	
6,825.0	6,579.1	6,566.1	6,566.1	29.3	131.6	-11.75	889.2	3,606.1	4,970.6	4,864.0	106.60	46.630	
6,850.0	6,596.1	6,583.1	6,583.1	29.1	131.9	-12.46	889.2	3,606.1	4,952.5	4,850.3	102.13	48.494	
6,875.0	6,612.1	6,599.1	6,599.1	29.0	132.3	-13.29	889.2	3,606.1	4,933.5	4,835.8	97.66	50.516	
6,900.0	6,627.1	6,614.1	6,614.1	28.9	132.6	-14.27	889.2	3,606.1	4,913.7	4,820.3	93.32	52.652	
6,925.0	6,641.0	6,628.0	6,628.0	28.8	132.8	-15.44	889.2	3,606.1	4,893.1	4,803.8	89.28	54.805	
6,950.0	6,653.8	6,640.8	6,640.8	28.7	133.1	-16.85	889.2	3,606.1	4,871.9	4,786.1	85.77	56.800	
6,975.0	6,665.5	6,652.5	6,652.5	28.7	133.3	-18.57	889.2	3,606.1	4,850.0	4,766.9	83.12	58.347	
7,000.0	6,676.0	6,663.0	6,663.0	28.6	133.5	-20.71	889.2	3,606.1	4,827.6	4,745.8	81.79	59.021	
7,025.0	6,685.3	6,672.3	6,672.3	28.6	133.7	-23.42	889.2	3,606.1	4,804.6	4,722.2	82.41	58.305	
7,050.0	6,693.4	6,680.4	6,680.4	28.5	133.9	-26.92	889.2	3,606.1	4,781.3	4,695.5	85.75	55.761	
7,075.0	6,700.2	6,687.2	6,687.2	28.5	134.0	-31.55	889.2	3,606.1	4,757.5	4,664.8	92.71	51.315	
7,100.0	6,705.8	6,692.8	6,692.8	28.5	134.1	-37.87	889.2	3,606.1	4,733.4	4,629.2	104.17	45.439	
7,125.0	6,710.0	6,697.0	6,697.0	28.5	134.2	-46.67	889.2	3,606.1	4,709.0	4,588.5	120.52	39.072	
7,150.0	6,713.0	6,700.0	6,700.0	28.6	134.3	-58.97	889.2	3,606.1	4,684.5	4,544.1	140.36	33.374	
7,175.0	6,714.7	6,701.7	6,701.7	28.6	134.3	-75.32	889.2	3,606.1	4,659.9	4,502.1	157.72	29.544	
7,198.8	6,715.0	6,702.0	6,702.0	28.6	134.3	-93.39	889.2	3,606.1	4,636.3	4,473.7	162.55	28.522	
7,200.0	6,715.0	6,702.0	6,702.0	28.6	134.3	-93.39	889.2	3,606.1	4,635.2	4,472.6	162.55	28.515	
7,300.0	6,714.1	6,701.1	6,701.1	29.0	134.3	-93.32	889.2	3,606.1	4,536.4	4,373.4	162.95	27.839	
7,400.0	6,713.2	6,700.2	6,700.2	29.7	134.3	-93.24	889.2	3,606.1	4,437.7	4,274.1	163.60	27.124	
7,500.0	6,712.3	6,699.3	6,699.3	30.6	134.3	-93.17	889.2	3,606.1	4,339.0	4,174.5	164.51	26.376	
7,600.0	6,711.3	6,698.3	6,698.3	31.7	134.2	-93.10	889.2	3,606.1	4,240.4	4,074.8	165.63	25.602	
7,700.0	6,710.4	6,697.4	6,697.4	33.0	134.2	-93.03	889.2	3,606.1	4,141.9	3,974.9	166.96	24.808	
7,800.0	6,709.5	6,696.5	6,696.5	34.5	134.2	-92.95	889.2	3,606.1	4,043.4	3,875.0	168.46	24.002	
7,900.0	6,708.5	6,695.5	6,695.5	36.2	134.2	-92.88	889.2	3,606.1	3,945.0	3,774.9	170.12	23.190	
8,000.0	6,707.6	6,694.6	6,694.6	38.0	134.2	-92.81	889.2	3,606.1	3,846.7	3,674.8	171.91	22.376	
8,100.0	6,706.7	6,693.7	6,693.7	39.9	134.2	-92.73	889.2	3,606.1	3,748.5	3,574.7	173.82	21.565	
8,200.0	6,705.8	6,692.8	6,692.8	41.9	134.1	-92.66	889.2	3,606.1	3,650.4	3,474.6	175.84	20.760	
8,300.0	6,704.8	6,691.8	6,691.8	44.0	134.1	-92.59	889.2	3,606.1	3,552.4	3,374.5	177.93	19.965	
8,400.0	6,703.9	6,690.9	6,690.9	46.2	134.1	-92.51	889.2	3,606.1	3,454.5	3,274.4	180.11	19.181	
8,500.0	6,703.0	6,690.0	6,690.0	48.5	134.1	-92.44	889.2	3,606.1	3,356.8	3,174.4	182.34	18.409	
8,600.0	6,702.1	6,689.1	6,689.1	50.8	134.1	-92.36	889.2	3,606.1	3,259.1	3,074.5	184.64	17.652	
8,700.0	6,701.1	6,688.1	6,688.1	53.1	134.0	-92.29	889.2	3,606.1	3,161.7	2,974.7	186.98	16.909	
8,800.0	6,700.2	6,687.2	6,687.2	55.5	134.0	-92.22	889.2	3,606.1	3,064.3	2,875.0	189.36	16.182	
8,900.0	6,699.3	6,686.3	6,686.3	57.9	134.0	-92.14	889.2	3,606.1	2,967.2	2,775.4	191.78	15.471	
9,000.0	6,698.3	6,685.3	6,685.3	60.4	134.0	-92.07	889.2	3,606.1	2,870.2	2,676.0	194.24	14.777	
9,100.0	6,697.4	6,684.4	6,684.4	62.9	134.0	-92.00	889.2	3,606.1	2,773.5	2,576.8	196.72	14.099	
9,200.0	6,696.5	6,683.5	6,683.5	65.4	133.9	-91.92	889.2	3,606.1	2,677.0	2,477.8	199.23	13.437	
9,300.0	6,695.5	6,682.5	6,682.5	68.0	133.9	-91.85	889.2	3,606.1	2,580.8	2,379.0	201.76	12.791	
9,400.0	6,694.6	6,681.6	6,681.6	70.5	133.9	-91.77	889.2	3,606.1	2,484.9	2,280.5	204.32	12.162	
9,500.0	6,693.7	6,680.7	6,680.7	73.1	133.9	-91.70	889.2	3,606.1	2,389.3	2,182.4	206.89	11.549	
9,600.0	6,692.8	6,679.8	6,679.8	75.7	133.9	-91.63	889.2	3,606.1	2,294.1	2,084.6	209.47	10.952	
9,700.0	6,691.8	6,678.8	6,678.8	78.3	133.9	-91.55	889.2	3,606.1	2,199.3	1,987.2	212.07	10.370	
9,800.0	6,690.9	6,677.9	6,677.9	80.9	133.8	-91.48	889.2	3,606.1	2,104.9	1,890.3	214.69	9.805	
9,900.0	6,690.0	6,677.0	6,677.0	83.6	133.8	-91.40	889.2	3,606.1	2,011.2	1,793.9	217.31	9.255	
10,000.0	6,689.0	6,676.0	6,676.0	86.2	133.8	-91.33	889.2	3,606.1	1,918.0	1,698.1	219.95	8.720	
10,100.0	6,688.1	6,675.1	6,675.1	88.9	133.8	-91.25	889.2	3,606.1	1,825.6	1,603.0	222.59	8.202	
10,200.0	6,687.2	6,674.2	6,674.2	91.6	133.8	-91.18	889.2	3,606.1	1,734.1	1,508.8	225.25	7.698	
10,300.0	6,686.2	6,673.2	6,673.2	94.2	133.7	-91.11	889.2	3,606.1	1,643.5	1,415.6	227.91	7.211	
10,400.0	6,685.3	6,672.3	6,672.3	96.9	133.7	-91.03	889.2	3,606.1	1,554.1	1,323.5	230.58	6.740	
10,500.0	6,684.4	6,671.4	6,671.4	99.6	133.7	-90.96	889.2	3,606.1	1,466.0	1,232.7	233.26	6.285	
10,600.0	6,683.4	6,670.4	6,670.4	102.3	133.7	-90.88	889.2	3,606.1	1,379.6	1,143.6	235.94	5.847	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,669.5	6,669.5	105.0	133.7	-90.81	889.2	3,606.1	1,295.1	1,056.5	238.63	5.427	
10,800.0	6,681.6	6,668.6	6,668.6	107.7	133.6	-90.73	889.2	3,606.1	1,213.0	971.6	241.33	5.026	
10,900.0	6,680.6	6,667.6	6,667.6	110.4	133.6	-90.66	889.2	3,606.1	1,133.7	889.7	244.03	4.646	
11,000.0	6,679.7	6,666.7	6,666.7	113.1	133.6	-90.58	889.2	3,606.1	1,058.0	811.3	246.73	4.288	
11,100.0	6,678.8	6,665.8	6,665.8	115.9	133.6	-90.51	889.2	3,606.1	986.6	737.2	249.44	3.955	
11,200.0	6,677.8	6,664.8	6,664.8	118.6	133.6	-90.43	889.2	3,606.1	920.6	668.4	252.15	3.651	
11,300.0	6,676.9	6,663.9	6,663.9	121.3	133.6	-90.36	889.2	3,606.1	861.1	606.2	254.86	3.379	
11,400.0	6,676.0	6,663.0	6,663.0	124.1	133.5	-90.28	889.2	3,606.1	809.6	552.1	257.58	3.143	
11,500.0	6,675.0	6,662.0	6,662.0	126.8	133.5	-90.21	889.2	3,606.1	767.8	507.5	260.30	2.950	
11,600.0	6,674.1	6,661.1	6,661.1	129.5	133.5	-90.13	889.2	3,606.1	737.3	474.2	263.03	2.803	
11,700.0	6,673.1	6,660.1	6,660.1	132.3	133.5	-90.06	889.2	3,606.1	719.4	453.7	265.75	2.707	
11,779.9	6,672.4	6,659.4	6,659.4	134.5	133.5	-90.00	889.2	3,606.1	715.0	447.1	267.93	2.669	CC
11,800.0	6,672.2	6,659.2	6,659.2	135.0	133.5	-89.98	889.2	3,606.1	715.3	446.8	268.48	2.664	ES, SF
11,900.0	6,671.3	6,658.3	6,658.3	137.8	133.4	-89.91	889.2	3,606.1	725.0	453.8	271.21	2.673	
12,000.0	6,670.3	6,657.3	6,657.3	140.5	133.4	-89.83	889.2	3,606.1	748.1	474.2	273.95	2.731	
12,036.2	6,670.0	6,657.0	6,657.0	141.5	133.4	-89.81	889.2	3,606.1	759.6	484.6	274.94	2.763	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-82.20	306.5	-2,236.4	2,257.3				
100.0	100.0	101.0	101.0	0.1	0.9	-92.80	306.5	-2,236.4	2,257.3	2,256.3	1.00	2,257.185	
200.0	200.0	201.0	201.0	0.2	3.3	-92.81	306.5	-2,236.4	2,257.4	2,253.9	3.48	649.413	
261.0	261.0	262.0	262.0	0.3	4.5	-92.81	306.5	-2,236.4	2,257.4	2,252.6	4.81	468.873	
300.0	300.0	301.0	301.0	0.4	5.3	-14.61	306.5	-2,236.4	2,257.1	2,251.4	5.71	395.086	
400.0	399.9	400.9	400.9	0.6	7.4	-0.07	306.5	-2,236.4	2,253.7	2,245.8	7.97	282.714	
500.0	499.7	500.7	500.7	0.8	9.4	2.34	306.5	-2,236.4	2,246.6	2,236.4	10.19	220.567	
538.0	537.5	538.5	538.5	0.9	10.2	2.80	306.5	-2,236.4	2,242.9	2,231.9	11.01	203.668	
600.0	599.1	600.1	600.1	1.1	11.4	2.05	306.5	-2,236.4	2,235.6	2,223.3	12.37	180.749	
700.0	697.9	698.9	698.9	1.5	13.4	1.33	306.5	-2,236.4	2,220.4	2,205.9	14.50	153.132	
800.0	796.0	797.0	797.0	1.8	15.4	0.90	306.5	-2,236.4	2,201.0	2,184.4	16.55	132.980	
818.0	813.5	814.5	814.5	1.9	15.8	0.84	306.5	-2,236.4	2,197.0	2,180.1	16.91	129.920	
900.0	893.1	894.1	894.1	2.3	17.4	1.72	306.5	-2,236.4	2,177.3	2,158.7	18.56	117.331	
1,000.0	989.2	990.2	990.2	2.9	19.3	2.57	306.5	-2,236.4	2,149.5	2,129.0	20.47	105.023	
1,100.0	1,083.9	1,084.9	1,084.9	3.5	21.2	3.27	306.5	-2,236.4	2,117.5	2,095.2	22.26	95.142	
1,104.0	1,087.6	1,088.6	1,088.6	3.5	21.3	3.30	306.5	-2,236.4	2,116.1	2,093.8	22.33	94.787	
1,200.0	1,177.9	1,178.9	1,178.9	4.1	23.1	2.57	306.5	-2,236.4	2,083.5	2,059.1	24.36	85.514	
1,300.0	1,272.0	1,273.0	1,273.0	4.8	25.0	1.79	306.5	-2,236.4	2,049.7	2,023.3	26.44	77.521	
1,391.0	1,357.8	1,358.8	1,358.8	5.3	26.7	1.05	306.5	-2,236.4	2,019.2	1,990.9	28.36	71.210	
1,400.0	1,366.3	1,367.3	1,367.3	5.4	26.9	1.26	306.5	-2,236.4	2,016.2	1,987.7	28.57	70.575	
1,458.0	1,421.2	1,422.2	1,422.2	5.7	28.0	2.65	306.5	-2,236.4	1,997.5	1,967.6	29.95	66.701	
1,500.0	1,461.0	1,462.0	1,462.0	6.0	28.8	2.44	306.5	-2,236.4	1,984.4	1,953.6	30.84	64.352	
1,600.0	1,556.1	1,557.1	1,557.1	6.6	30.7	1.95	306.5	-2,236.4	1,953.2	1,920.3	32.96	59.261	
1,676.0	1,628.3	1,629.3	1,629.3	7.0	32.2	1.56	306.5	-2,236.4	1,929.7	1,895.1	34.58	55.805	
1,700.0	1,651.1	1,652.1	1,652.1	7.2	32.6	2.14	306.5	-2,236.4	1,922.3	1,887.2	35.10	54.763	
1,800.0	1,746.4	1,747.4	1,747.4	7.7	34.5	4.65	306.5	-2,236.4	1,891.9	1,854.6	37.29	50.737	
1,900.0	1,841.8	1,842.8	1,842.8	8.3	36.5	7.28	306.5	-2,236.4	1,862.1	1,822.6	39.49	47.156	
1,963.0	1,902.0	1,903.0	1,903.0	8.7	37.7	9.00	306.5	-2,236.4	1,843.6	1,802.7	40.88	45.098	
2,000.0	1,937.4	1,938.4	1,938.4	8.9	38.4	9.06	306.5	-2,236.4	1,832.9	1,791.2	41.70	43.958	
2,100.0	2,033.1	2,034.1	2,034.1	9.5	40.3	9.22	306.5	-2,236.4	1,804.4	1,760.5	43.91	41.091	
2,200.0	2,129.0	2,130.0	2,130.0	10.0	42.2	9.39	306.5	-2,236.4	1,776.5	1,730.4	46.14	38.505	
2,250.0	2,177.1	2,178.1	2,178.1	10.3	43.2	9.47	306.5	-2,236.4	1,762.8	1,715.6	47.25	37.306	
2,300.0	2,225.1	2,226.1	2,226.1	10.6	44.2	8.37	306.5	-2,236.4	1,749.2	1,700.9	48.30	36.217	
2,400.0	2,321.2	2,322.2	2,322.2	11.2	46.1	6.18	306.5	-2,236.4	1,721.4	1,671.1	50.38	34.171	
2,500.0	2,417.0	2,418.0	2,418.0	11.7	48.0	4.02	306.5	-2,236.4	1,693.2	1,640.7	52.45	32.284	
2,537.0	2,452.5	2,453.5	2,453.5	11.9	48.7	3.23	306.5	-2,236.4	1,682.6	1,629.4	53.21	31.623	
2,600.0	2,512.8	2,513.8	2,513.8	12.3	49.9	0.27	306.5	-2,236.4	1,664.3	1,609.9	54.45	30.564	
2,700.0	2,608.2	2,609.2	2,609.2	12.9	51.9	-4.25	306.5	-2,236.4	1,634.5	1,578.1	56.42	28.973	
2,800.0	2,703.3	2,704.3	2,704.3	13.5	53.8	-8.57	306.5	-2,236.4	1,603.7	1,545.4	58.36	27.480	
2,824.0	2,726.1	2,727.1	2,727.1	13.7	54.2	-9.58	306.5	-2,236.4	1,596.2	1,537.4	58.82	27.135	
2,900.0	2,798.2	2,799.2	2,799.2	14.1	55.7	-7.11	306.5	-2,236.4	1,572.6	1,512.0	60.60	25.953	
3,000.0	2,893.6	2,894.6	2,894.6	14.7	57.6	-3.55	306.5	-2,236.4	1,542.7	1,479.7	62.94	24.510	
3,100.0	2,989.4	2,990.4	2,990.4	15.3	59.5	0.40	306.5	-2,236.4	1,514.0	1,448.7	65.30	23.184	
3,112.0	3,000.9	3,001.9	3,001.9	15.4	59.8	0.91	306.5	-2,236.4	1,510.6	1,445.1	65.59	23.032	
3,200.0	3,085.5	3,086.5	3,086.5	15.9	61.5	1.89	306.5	-2,236.4	1,486.4	1,418.8	67.59	21.991	
3,300.0	3,181.9	3,182.9	3,182.9	16.4	63.4	3.07	306.5	-2,236.4	1,459.6	1,389.7	69.88	20.888	
3,400.0	3,278.4	3,279.4	3,279.4	16.9	65.3	4.35	306.5	-2,236.4	1,433.5	1,361.4	72.17	19.863	
3,500.0	3,374.7	3,375.7	3,375.7	17.5	67.3	4.33	306.5	-2,236.4	1,406.7	1,332.8	73.88	19.040	
3,600.0	3,470.3	3,471.3	3,471.3	18.1	69.2	4.35	306.5	-2,236.4	1,377.4	1,301.8	75.50	18.242	
3,687.0	3,552.8	3,553.8	3,553.8	18.6	70.9	4.39	306.5	-2,236.4	1,349.9	1,273.0	76.84	17.567	
3,700.0	3,565.1	3,566.1	3,566.1	18.7	71.1	4.67	306.5	-2,236.4	1,345.6	1,268.5	77.11	17.450	
3,800.0	3,659.5	3,660.5	3,660.5	19.4	73.0	6.79	306.5	-2,236.4	1,312.9	1,233.7	79.20	16.577	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,900.0	3,753.9	3,754.9	3,754.9	20.0	74.9	8.95	306.5	-2,236.4	1,280.0	1,198.7	81.30	15.745	
3,974.0	3,823.6	3,824.6	3,824.6	20.5	76.3	10.57	306.5	-2,236.4	1,255.6	1,172.7	82.85	15.155	
4,000.0	3,848.1	3,849.1	3,849.1	20.7	76.8	10.39	306.5	-2,236.4	1,247.1	1,163.5	83.55	14.926	
4,100.0	3,942.9	3,943.9	3,943.9	21.3	78.7	9.62	306.5	-2,236.4	1,215.7	1,129.5	86.24	14.097	
4,200.0	4,038.5	4,039.5	4,039.5	21.9	80.6	8.69	306.5	-2,236.4	1,186.6	1,097.6	88.92	13.343	
4,263.0	4,099.0	4,100.0	4,100.0	22.3	81.9	8.00	306.5	-2,236.4	1,169.3	1,078.7	90.61	12.905	
4,300.0	4,134.7	4,135.7	4,135.7	22.5	82.6	6.94	306.5	-2,236.4	1,159.5	1,068.1	91.47	12.677	
4,400.0	4,231.2	4,232.2	4,232.2	23.0	84.5	3.89	306.5	-2,236.4	1,133.6	1,039.8	93.79	12.086	
4,500.0	4,328.0	4,329.0	4,329.0	23.5	86.5	0.55	306.5	-2,236.4	1,108.4	1,012.3	96.12	11.531	
4,549.0	4,375.5	4,376.5	4,376.5	23.8	87.4	-1.20	306.5	-2,236.4	1,096.4	999.1	97.27	11.272	
4,600.0	4,425.0	4,426.0	4,426.0	24.0	88.4	-1.40	306.5	-2,236.4	1,084.0	985.6	98.36	11.021	
4,700.0	4,521.9	4,522.9	4,522.9	24.5	90.4	-1.79	306.5	-2,236.4	1,059.5	959.0	100.49	10.543	
4,800.0	4,618.8	4,619.8	4,619.8	25.0	92.3	-2.20	306.5	-2,236.4	1,034.9	932.3	102.62	10.085	
4,837.0	4,654.7	4,655.7	4,655.7	25.2	93.0	-2.35	306.5	-2,236.4	1,025.8	922.4	103.40	9.920	
4,900.0	4,715.7	4,716.7	4,716.7	25.5	94.3	-2.85	306.5	-2,236.4	1,010.1	905.4	104.65	9.652	
5,000.0	4,812.4	4,813.4	4,813.4	26.0	96.2	-3.64	306.5	-2,236.4	984.6	877.9	106.62	9.235	
5,100.0	4,908.9	4,909.9	4,909.9	26.6	98.1	-4.41	306.5	-2,236.4	958.3	849.7	108.56	8.827	
5,125.0	4,932.9	4,933.9	4,933.9	26.7	98.6	-4.60	306.5	-2,236.4	951.6	842.6	109.05	8.727	
5,200.0	5,005.4	5,006.4	5,006.4	27.0	100.1	-1.88	306.5	-2,236.4	932.1	821.0	111.08	8.391	
5,300.0	5,102.4	5,103.4	5,103.4	27.5	102.0	2.41	306.5	-2,236.4	908.0	794.2	113.79	7.980	
5,400.0	5,199.9	5,200.9	5,200.9	28.0	104.0	7.63	306.5	-2,236.4	886.1	769.6	116.48	7.607	
5,412.0	5,211.7	5,212.7	5,212.7	28.1	104.2	8.33	306.5	-2,236.4	883.6	766.8	116.80	7.565	
5,500.0	5,297.9	5,298.9	5,298.9	28.4	106.0	11.16	306.5	-2,236.4	866.5	747.3	119.19	7.270	
5,581.0	5,377.7	5,378.7	5,378.7	28.7	107.6	14.40	306.5	-2,236.4	852.5	731.2	121.35	7.025	
5,600.0	5,396.4	5,397.4	5,397.4	28.8	107.9	13.24	306.5	-2,236.4	849.5	727.7	121.84	6.972	
5,700.0	5,495.3	5,496.3	5,496.3	29.1	109.9	5.46	306.5	-2,236.4	835.1	710.7	124.38	6.714	
5,800.0	5,594.6	5,595.6	5,595.6	29.4	111.9	-6.36	306.5	-2,236.4	823.1	696.3	126.85	6.489	
5,900.0	5,694.1	5,695.1	5,695.1	29.6	113.9	-24.04	306.5	-2,236.4	813.7	684.4	129.23	6.296	
5,917.0	5,711.1	5,712.1	5,712.1	29.7	114.3	-27.69	306.5	-2,236.4	812.3	682.7	129.63	6.267	
6,000.0	5,793.7	5,794.7	5,794.7	29.8	115.9	-27.93	306.5	-2,236.4	805.9	674.4	131.43	6.132	
6,067.0	5,860.5	5,861.5	5,861.5	30.0	117.3	-28.13	306.5	-2,236.4	800.7	667.8	132.88	6.025	
6,100.0	5,893.4	5,894.4	5,894.4	30.0	117.9	-28.19	306.5	-2,236.4	798.3	664.6	133.66	5.972	
6,200.0	5,993.2	5,994.2	5,994.2	30.2	119.9	-28.35	306.5	-2,236.4	793.1	657.2	135.93	5.834	
6,300.0	6,093.2	6,094.2	6,094.2	30.3	122.0	-28.41	306.5	-2,236.4	791.0	652.9	138.08	5.728	
6,318.8	6,111.9	6,112.9	6,112.9	30.3	122.3	-80.37	306.5	-2,236.4	790.9	638.3	152.61	5.182	
6,400.0	6,193.2	6,194.2	6,194.2	30.4	124.0	-80.37	306.5	-2,236.4	790.9	636.6	154.32	5.125	
6,444.4	6,237.6	6,238.6	6,238.6	30.4	124.9	-80.37	306.5	-2,236.4	790.9	635.7	155.25	5.094	
6,444.4	6,237.6	6,238.6	6,238.6	30.4	124.9	-80.37	306.5	-2,236.4	790.9	635.7	155.25	5.094	CC, ES, SF
6,450.0	6,243.2	6,244.2	6,244.2	30.4	125.0	-170.37	306.5	-2,236.4	791.0	649.7	141.26	5.599	
6,475.0	6,268.1	6,269.1	6,269.1	30.4	125.5	-170.36	306.5	-2,236.4	791.9	650.5	141.35	5.602	
6,500.0	6,293.0	6,294.0	6,294.0	30.4	126.0	-170.35	306.5	-2,236.4	794.1	653.1	141.05	5.630	
6,525.0	6,317.8	6,318.8	6,318.8	30.4	126.5	-170.32	306.5	-2,236.4	797.6	657.2	140.38	5.682	
6,550.0	6,342.3	6,343.3	6,343.3	30.4	127.0	-170.28	306.5	-2,236.4	802.4	663.1	139.32	5.759	
6,575.0	6,366.5	6,367.5	6,367.5	30.3	127.5	-170.22	306.5	-2,236.4	808.4	670.5	137.89	5.863	
6,600.0	6,390.4	6,391.4	6,391.4	30.2	127.9	-170.16	306.5	-2,236.4	815.7	679.6	136.08	5.994	
6,625.0	6,413.9	6,414.9	6,414.9	30.2	128.4	-170.07	306.5	-2,236.4	824.2	690.3	133.90	6.156	
6,650.0	6,436.9	6,437.9	6,437.9	30.1	128.9	-169.97	306.5	-2,236.4	833.9	702.6	131.35	6.349	
6,675.0	6,459.3	6,460.3	6,460.3	30.0	129.3	-169.85	306.5	-2,236.4	844.8	716.3	128.46	6.577	
6,700.0	6,481.1	6,482.1	6,482.1	29.9	129.8	-169.70	306.5	-2,236.4	856.8	731.6	125.22	6.843	
6,725.0	6,502.3	6,503.3	6,503.3	29.7	130.2	-169.53	306.5	-2,236.4	870.0	748.3	121.66	7.151	
6,750.0	6,522.7	6,523.7	6,523.7	29.6	130.6	-169.32	306.5	-2,236.4	884.2	766.4	117.80	7.506	
6,775.0	6,542.4	6,543.4	6,543.4	29.5	131.0	-169.07	306.5	-2,236.4	899.5	785.8	113.67	7.913	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,562.2	6,562.2	29.4	131.4	-168.77	306.5	-2,236.4	915.8	806.5	109.29	8.379	
6,825.0	6,579.1	6,580.1	6,580.1	29.3	131.7	-168.42	306.5	-2,236.4	933.0	828.3	104.72	8.910	
6,850.0	6,596.1	6,597.1	6,597.1	29.1	132.1	-167.99	306.5	-2,236.4	951.2	851.2	100.00	9.512	
6,875.0	6,612.1	6,613.1	6,613.1	29.0	132.4	-167.49	306.5	-2,236.4	970.2	875.0	95.20	10.191	
6,900.0	6,627.1	6,628.1	6,628.1	28.9	132.7	-166.87	306.5	-2,236.4	990.0	899.6	90.42	10.949	
6,925.0	6,641.0	6,642.0	6,642.0	28.8	133.0	-166.13	306.5	-2,236.4	1,010.6	924.8	85.78	11.782	
6,950.0	6,653.8	6,654.8	6,654.8	28.7	133.2	-165.22	306.5	-2,236.4	1,031.9	950.4	81.44	12.671	
6,975.0	6,665.5	6,666.5	6,666.5	28.7	133.5	-164.08	306.5	-2,236.4	1,053.8	976.1	77.64	13.573	
7,000.0	6,676.0	6,677.0	6,677.0	28.6	133.7	-162.63	306.5	-2,236.4	1,076.3	1,001.6	74.74	14.401	
7,025.0	6,685.3	6,686.3	6,686.3	28.6	133.9	-160.77	306.5	-2,236.4	1,099.3	1,026.1	73.24	15.010	
7,050.0	6,693.4	6,694.4	6,694.4	28.5	134.0	-158.28	306.5	-2,236.4	1,122.8	1,048.9	73.90	15.195	
7,075.0	6,700.2	6,701.2	6,701.2	28.5	134.2	-154.86	306.5	-2,236.4	1,146.7	1,068.9	77.76	14.747	
7,100.0	6,705.8	6,706.8	6,706.8	28.5	134.3	-149.94	306.5	-2,236.4	1,170.9	1,084.6	86.29	13.569	
7,125.0	6,710.0	6,711.0	6,711.0	28.5	134.4	-142.46	306.5	-2,236.4	1,195.4	1,094.0	101.37	11.793	
7,150.0	6,713.0	6,714.0	6,714.0	28.6	134.4	-130.43	306.5	-2,236.4	1,220.1	1,095.4	124.66	9.787	
7,175.0	6,714.7	6,715.7	6,715.7	28.6	134.5	-110.84	306.5	-2,236.4	1,244.9	1,092.6	152.31	8.173	
7,198.8	6,715.0	6,716.0	6,716.0	28.6	134.5	-84.96	306.5	-2,236.4	1,268.6	1,106.2	162.42	7.811	
7,200.0	6,715.0	6,716.0	6,716.0	28.6	134.5	-84.95	306.5	-2,236.4	1,269.7	1,107.3	162.42	7.817	
7,300.0	6,714.1	6,715.1	6,715.1	29.0	134.4	-84.56	306.5	-2,236.4	1,369.2	1,206.5	162.71	8.415	
7,400.0	6,713.2	6,714.2	6,714.2	29.7	134.4	-84.16	306.5	-2,236.4	1,468.8	1,305.5	163.25	8.997	
7,500.0	6,712.3	6,713.3	6,713.3	30.6	134.4	-83.76	306.5	-2,236.4	1,568.4	1,404.4	164.03	9.562	
7,600.0	6,711.3	6,712.3	6,712.3	31.7	134.4	-83.36	306.5	-2,236.4	1,668.0	1,503.0	165.02	10.108	
7,700.0	6,710.4	6,711.4	6,711.4	33.0	134.4	-82.96	306.5	-2,236.4	1,767.7	1,601.5	166.20	10.636	
7,800.0	6,709.5	6,710.5	6,710.5	34.5	134.3	-82.57	306.5	-2,236.4	1,867.5	1,699.9	167.55	11.146	
7,900.0	6,708.5	6,709.5	6,709.5	36.2	134.3	-82.17	306.5	-2,236.4	1,967.2	1,798.2	169.04	11.638	
8,000.0	6,707.6	6,708.6	6,708.6	38.0	134.3	-81.78	306.5	-2,236.4	2,067.0	1,896.4	170.65	12.112	
8,100.0	6,706.7	6,707.7	6,707.7	39.9	134.3	-81.38	306.5	-2,236.4	2,166.8	1,994.4	172.37	12.570	
8,200.0	6,705.8	6,706.8	6,706.8	41.9	134.3	-80.99	306.5	-2,236.4	2,266.6	2,092.5	174.18	13.013	
8,300.0	6,704.8	6,705.8	6,705.8	44.0	134.3	-80.59	306.5	-2,236.4	2,366.5	2,190.4	176.06	13.441	
8,400.0	6,703.9	6,704.9	6,704.9	46.2	134.2	-80.20	306.5	-2,236.4	2,466.3	2,288.3	178.00	13.855	
8,500.0	6,703.0	6,704.0	6,704.0	48.5	134.2	-79.81	306.5	-2,236.4	2,566.2	2,386.2	180.00	14.257	
8,600.0	6,702.1	6,703.1	6,703.1	50.8	134.2	-79.41	306.5	-2,236.4	2,666.0	2,484.0	182.04	14.646	
8,700.0	6,701.1	6,702.1	6,702.1	53.1	134.2	-79.02	306.5	-2,236.4	2,765.9	2,581.8	184.11	15.023	
8,800.0	6,700.2	6,701.2	6,701.2	55.5	134.2	-78.63	306.5	-2,236.4	2,865.8	2,679.6	186.21	15.390	
8,900.0	6,699.3	6,700.3	6,700.3	57.9	134.1	-78.24	306.5	-2,236.4	2,965.7	2,777.4	188.33	15.747	
9,000.0	6,698.3	6,699.3	6,699.3	60.4	134.1	-77.86	306.5	-2,236.4	3,065.6	2,875.1	190.47	16.095	
9,100.0	6,697.4	6,698.4	6,698.4	62.9	134.1	-77.47	306.5	-2,236.4	3,165.5	2,972.9	192.63	16.433	
9,200.0	6,696.5	6,697.5	6,697.5	65.4	134.1	-77.08	306.5	-2,236.4	3,265.4	3,070.6	194.79	16.764	
9,300.0	6,695.5	6,696.5	6,696.5	68.0	134.1	-76.70	306.5	-2,236.4	3,365.3	3,168.4	196.97	17.086	
9,400.0	6,694.6	6,695.6	6,695.6	70.5	134.1	-76.31	306.5	-2,236.4	3,465.2	3,266.1	199.14	17.401	
9,500.0	6,693.7	6,694.7	6,694.7	73.1	134.0	-75.93	306.5	-2,236.4	3,565.2	3,363.8	201.32	17.709	
9,600.0	6,692.8	6,693.8	6,693.8	75.7	134.0	-75.55	306.5	-2,236.4	3,665.1	3,461.6	203.51	18.010	
9,700.0	6,691.8	6,692.8	6,692.8	78.3	134.0	-75.17	306.5	-2,236.4	3,765.0	3,559.3	205.69	18.305	
9,800.0	6,690.9	6,691.9	6,691.9	80.9	134.0	-74.78	306.5	-2,236.4	3,865.0	3,657.1	207.86	18.594	
9,900.0	6,690.0	6,691.0	6,691.0	83.6	134.0	-74.41	306.5	-2,236.4	3,964.9	3,754.9	210.04	18.877	
10,000.0	6,689.0	6,690.0	6,690.0	86.2	133.9	-74.03	306.5	-2,236.4	4,064.8	3,852.6	212.20	19.156	
10,100.0	6,688.1	6,689.1	6,689.1	88.9	133.9	-73.65	306.5	-2,236.4	4,164.8	3,950.4	214.36	19.429	
10,200.0	6,687.2	6,688.2	6,688.2	91.6	133.9	-73.28	306.5	-2,236.4	4,264.7	4,048.2	216.51	19.697	
10,300.0	6,686.2	6,687.2	6,687.2	94.2	133.9	-72.90	306.5	-2,236.4	4,364.7	4,146.0	218.66	19.961	
10,400.0	6,685.3	6,686.3	6,686.3	96.9	133.9	-72.53	306.5	-2,236.4	4,464.6	4,243.8	220.79	20.221	
10,500.0	6,684.4	6,685.4	6,685.4	99.6	133.8	-72.16	306.5	-2,236.4	4,564.6	4,341.7	222.92	20.477	
10,600.0	6,683.4	6,684.4	6,684.4	102.3	133.8	-71.79	306.5	-2,236.4	4,664.5	4,439.5	225.03	20.729	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-INC

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,700.0	6,682.5	6,683.5	6,683.5	105.0	133.8	-71.42	306.5	-2,236.4	4,764.5	4,537.4	227.13	20.977	
10,800.0	6,681.6	6,682.6	6,682.6	107.7	133.8	-71.05	306.5	-2,236.4	4,864.5	4,635.2	229.22	21.222	
10,900.0	6,680.6	6,681.6	6,681.6	110.4	133.8	-70.69	306.5	-2,236.4	4,964.4	4,733.1	231.30	21.463	
11,000.0	6,679.7	6,680.7	6,680.7	113.1	133.7	-70.32	306.5	-2,236.4	5,064.4	4,831.0	233.36	21.702	
11,100.0	6,678.8	6,679.8	6,679.8	115.9	133.7	-69.96	306.5	-2,236.4	5,164.3	4,928.9	235.41	21.937	
11,200.0	6,677.8	6,678.8	6,678.8	118.6	133.7	-69.60	306.5	-2,236.4	5,264.3	5,026.8	237.45	22.170	
11,300.0	6,676.9	6,677.9	6,677.9	121.3	133.7	-69.24	306.5	-2,236.4	5,364.3	5,124.8	239.47	22.400	
11,400.0	6,676.0	6,677.0	6,677.0	124.1	133.7	-68.88	306.5	-2,236.4	5,464.2	5,222.7	241.48	22.628	
11,500.0	6,675.0	6,676.0	6,676.0	126.8	133.7	-68.52	306.5	-2,236.4	5,564.2	5,320.7	243.48	22.853	
11,600.0	6,674.1	6,675.1	6,675.1	129.5	133.6	-68.17	306.5	-2,236.4	5,664.2	5,418.7	245.46	23.076	
11,700.0	6,673.1	6,674.1	6,674.1	132.3	133.6	-67.81	306.5	-2,236.4	5,764.1	5,516.7	247.42	23.297	
11,800.0	6,672.2	6,673.2	6,673.2	135.0	133.6	-67.46	306.5	-2,236.4	5,864.1	5,614.7	249.37	23.516	
11,900.0	6,671.3	6,672.3	6,672.3	137.8	133.6	-67.11	306.5	-2,236.4	5,964.1	5,712.8	251.30	23.733	
12,000.0	6,670.3	6,671.3	6,671.3	140.5	133.6	-66.76	306.5	-2,236.4	6,064.0	5,810.8	253.22	23.948	
12,036.2	6,670.0	6,671.0	6,671.0	141.5	133.6	-66.64	306.5	-2,236.4	6,100.3	5,846.4	253.91	24.025	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-14.73	870.7	-228.9	900.4				
100.0	100.0	87.4	87.4	0.1	0.1	-25.34	870.6	-229.0	900.1	899.9	0.17	5,167.981	
200.0	200.0	187.1	187.1	0.2	0.2	-25.35	870.3	-229.0	899.6	899.1	0.42	2,143.395	
261.0	261.0	248.3	248.3	0.3	0.3	-25.36	870.2	-229.0	899.2	898.6	0.55	1,638.692	
300.0	300.0	287.4	287.4	0.4	0.3	52.87	870.1	-229.0	898.8	898.1	0.67	1,335.236	
400.0	399.9	387.4	387.4	0.6	0.4	67.63	869.8	-228.8	897.1	896.1	0.98	919.094	
500.0	499.7	486.4	486.4	0.8	0.4	70.51	869.6	-228.7	894.3	893.0	1.27	704.399	
538.0	537.5	524.0	524.0	0.9	0.5	71.21	869.5	-228.7	893.0	891.7	1.38	648.876	
600.0	599.1	585.5	585.5	1.1	0.5	70.95	869.4	-228.6	890.5	888.9	1.62	551.101	
700.0	697.9	681.6	681.6	1.5	0.5	71.23	869.4	-228.8	885.5	883.5	1.98	447.396	
800.0	796.0	779.6	779.6	1.8	0.5	72.10	869.5	-229.0	879.5	877.1	2.35	373.497	
818.0	813.5	797.3	797.3	1.9	0.5	72.30	869.5	-229.0	878.2	875.8	2.42	362.499	
900.0	893.1	877.6	877.6	2.3	0.6	74.46	869.6	-229.2	872.5	869.6	2.91	300.275	
1,000.0	989.2	973.9	973.9	2.9	0.6	77.07	869.6	-229.4	865.5	862.0	3.50	247.458	
1,100.0	1,083.9	1,068.1	1,068.1	3.5	0.6	79.74	869.6	-229.6	858.8	854.7	4.09	209.968	
1,104.0	1,087.6	1,071.8	1,071.8	3.5	0.6	79.85	869.6	-229.6	858.5	854.4	4.11	208.694	
1,200.0	1,177.9	1,161.2	1,161.2	4.1	0.7	81.16	869.7	-229.8	853.0	848.2	4.76	179.156	
1,300.0	1,272.0	1,254.3	1,254.3	4.8	0.7	82.51	870.0	-230.0	848.1	842.7	5.44	155.989	
1,391.0	1,357.8	1,339.1	1,339.1	5.3	0.7	83.73	870.3	-230.3	844.6	838.6	6.05	139.522	
1,400.0	1,366.3	1,347.5	1,347.5	5.4	0.7	84.09	870.3	-230.3	844.3	838.2	6.11	138.214	
1,458.0	1,421.2	1,401.7	1,401.7	5.7	0.8	86.48	870.6	-230.5	843.0	836.5	6.47	130.389	
1,500.0	1,461.0	1,440.7	1,440.7	6.0	0.8	87.10	870.8	-230.6	842.5	835.8	6.72	125.308	
1,592.1	1,548.5	1,526.5	1,526.5	6.5	0.8	88.47	871.5	-230.8	842.0	834.8	7.29	115.541	
1,600.0	1,556.1	1,534.0	1,534.0	6.6	0.8	88.59	871.5	-230.8	842.0	834.7	7.34	114.778	
1,676.0	1,628.3	1,605.6	1,605.5	7.0	0.8	89.72	872.2	-230.8	842.4	834.6	7.80	107.994	
1,700.0	1,651.1	1,628.4	1,628.4	7.2	0.8	90.73	872.4	-230.8	842.6	834.7	7.95	106.032	
1,800.0	1,746.4	1,723.6	1,723.6	7.7	0.8	94.94	873.2	-230.7	845.2	836.6	8.55	98.800	
1,900.0	1,841.8	1,819.6	1,819.6	8.3	0.9	99.20	874.1	-230.7	850.0	840.8	9.15	92.849	
1,963.0	1,902.0	1,882.8	1,882.8	8.7	0.9	101.95	874.6	-230.7	854.0	844.5	9.53	89.639	
2,000.0	1,937.4	1,919.5	1,919.5	8.9	0.9	102.67	874.7	-230.8	856.6	846.8	9.73	88.014	
2,100.0	2,033.1	2,017.7	2,017.7	9.5	0.9	104.54	875.0	-231.2	863.8	853.5	10.28	84.049	
2,200.0	2,129.0	2,114.0	2,114.0	10.0	1.0	106.30	875.2	-231.7	871.6	860.8	10.81	80.601	
2,250.0	2,177.1	2,161.5	2,161.5	10.3	1.0	107.15	875.3	-232.0	875.8	864.7	11.08	79.052	
2,300.0	2,225.1	2,209.2	2,209.2	10.6	1.0	106.84	875.4	-232.3	880.0	868.7	11.34	77.574	
2,400.0	2,321.2	2,306.3	2,306.3	11.2	1.0	106.31	875.8	-233.1	888.3	876.5	11.87	74.865	
2,500.0	2,417.0	2,402.7	2,402.6	11.7	1.0	105.83	876.1	-234.2	896.5	884.1	12.37	72.449	
2,537.0	2,452.5	2,438.0	2,437.9	11.9	1.1	105.66	876.2	-234.5	899.4	886.9	12.56	71.622	
2,600.0	2,512.8	2,498.0	2,498.0	12.3	1.1	103.93	876.5	-235.1	904.3	891.4	12.90	70.088	
2,700.0	2,608.2	2,591.7	2,591.7	12.9	1.1	101.45	876.9	-236.0	911.2	897.7	13.43	67.823	
2,800.0	2,703.3	2,685.1	2,685.0	13.5	1.1	99.34	877.6	-236.9	917.3	903.3	13.95	65.763	
2,824.0	2,726.1	2,707.2	2,707.1	13.7	1.1	98.88	877.8	-237.1	918.7	904.6	14.07	65.297	
2,900.0	2,798.2	2,775.8	2,775.7	14.1	1.2	102.51	878.7	-237.8	923.8	909.3	14.46	63.884	
3,000.0	2,893.6	2,865.0	2,865.0	14.7	1.2	107.44	880.3	-238.6	933.0	918.1	14.97	62.326	
3,100.0	2,989.4	2,954.7	2,954.6	15.3	1.2	112.61	882.5	-239.2	945.1	929.6	15.47	61.075	
3,112.0	3,000.9	2,965.6	2,965.4	15.4	1.2	113.25	882.8	-239.2	946.7	931.2	15.53	60.943	
3,200.0	3,085.5	3,047.4	3,047.3	15.9	1.2	115.36	885.3	-239.5	959.1	943.2	15.90	60.335	
3,300.0	3,181.9	3,148.4	3,148.2	16.4	1.3	117.85	888.3	-239.7	973.9	957.6	16.29	59.778	
3,400.0	3,278.4	3,250.7	3,250.4	16.9	1.3	120.35	890.4	-240.1	988.4	971.7	16.67	59.277	
3,500.0	3,374.7	3,349.8	3,349.5	17.5	1.3	121.29	892.3	-240.6	1,003.8	986.7	17.12	58.619	
3,600.0	3,470.3	3,452.6	3,452.3	18.1	1.4	122.35	893.9	-241.5	1,020.5	1,003.0	17.55	58.139	
3,687.0	3,552.8	3,540.9	3,540.6	18.6	1.4	123.33	894.8	-242.7	1,036.0	1,018.1	17.91	57.842	
3,700.0	3,565.1	3,553.7	3,553.4	18.7	1.4	123.76	894.9	-242.9	1,038.4	1,020.4	17.97	57.800	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,648.8	3,648.5	19.4	1.4	126.96	894.9	-243.6	1,057.7	1,039.4	18.38	57.558	
3,900.0	3,753.9	3,744.0	3,743.8	20.0	1.4	130.15	894.1	-243.1	1,078.8	1,060.0	18.77	57.479	
3,974.0	3,823.6	3,816.3	3,816.0	20.5	1.4	132.49	893.1	-242.7	1,095.2	1,076.2	19.05	57.493	
4,000.0	3,848.1	3,839.8	3,839.5	20.7	1.4	132.67	892.7	-242.5	1,101.1	1,082.0	19.13	57.566	
4,100.0	3,942.9	3,930.9	3,930.6	21.3	1.4	133.18	891.6	-241.9	1,123.0	1,103.5	19.42	57.811	
4,200.0	4,038.5	4,023.5	4,023.2	21.9	1.4	133.43	890.8	-241.3	1,143.6	1,123.9	19.72	57.995	
4,263.0	4,099.0	4,081.8	4,081.5	22.3	1.4	133.44	890.4	-240.8	1,155.9	1,136.0	19.90	58.077	
4,300.0	4,134.7	4,116.3	4,116.0	22.5	1.4	132.75	890.2	-240.4	1,162.9	1,142.8	20.01	58.125	
4,400.0	4,231.2	4,211.3	4,211.0	23.0	1.4	130.74	889.8	-239.5	1,181.0	1,160.7	20.28	58.241	
4,500.0	4,328.0	4,312.5	4,312.2	23.5	1.4	128.54	889.3	-238.8	1,197.6	1,177.0	20.53	58.343	
4,549.0	4,375.5	4,358.4	4,358.1	23.8	1.4	127.34	889.1	-238.6	1,205.2	1,184.5	20.65	58.362	
4,600.0	4,425.0	4,406.4	4,406.1	24.0	1.4	127.62	888.9	-238.3	1,213.0	1,192.2	20.80	58.329	
4,700.0	4,521.9	4,504.4	4,504.0	24.5	1.4	128.18	888.7	-237.8	1,228.6	1,207.5	21.08	58.294	
4,800.0	4,618.8	4,595.7	4,595.4	25.0	1.4	128.67	888.8	-237.3	1,244.6	1,223.3	21.36	58.266	
4,837.0	4,654.7	4,629.5	4,629.1	25.2	1.4	128.84	888.9	-237.1	1,250.8	1,229.3	21.47	58.262	
4,900.0	4,715.7	4,686.9	4,686.5	25.5	1.4	128.88	889.2	-236.6	1,261.4	1,239.8	21.67	58.200	
5,000.0	4,812.4	4,783.7	4,783.4	26.0	1.5	129.03	889.9	-235.7	1,279.0	1,257.0	21.99	58.171	
5,100.0	4,908.9	4,877.1	4,876.8	26.6	1.5	129.20	890.6	-234.9	1,297.1	1,274.8	22.30	58.171	
5,125.0	4,932.9	4,900.2	4,899.9	26.7	1.5	129.24	890.8	-234.6	1,301.8	1,279.4	22.38	58.179	
5,200.0	5,005.4	4,977.7	4,977.4	27.0	1.5	132.73	891.4	-233.9	1,315.7	1,293.3	22.49	58.506	
5,300.0	5,102.4	5,075.9	5,075.6	27.5	1.5	137.81	891.8	-233.1	1,334.0	1,311.3	22.66	58.862	
5,400.0	5,199.9	5,170.1	5,169.8	28.0	1.5	143.57	892.0	-232.2	1,352.1	1,329.3	22.86	59.140	
5,412.0	5,211.7	5,181.4	5,181.0	28.1	1.5	144.31	892.1	-232.1	1,354.3	1,331.4	22.89	59.169	
5,500.0	5,297.9	5,263.5	5,263.1	28.4	1.5	147.49	892.7	-231.2	1,369.9	1,346.9	23.01	59.533	
5,581.0	5,377.7	5,344.8	5,344.4	28.7	1.5	150.96	893.4	-230.2	1,383.4	1,360.3	23.11	59.866	
5,600.0	5,396.4	5,365.1	5,364.7	28.8	1.5	149.86	893.5	-230.0	1,386.3	1,363.2	23.13	59.940	
5,700.0	5,495.3	5,477.4	5,477.0	29.1	1.5	142.52	893.2	-228.7	1,399.4	1,376.2	23.21	60.284	
5,800.0	5,594.6	5,578.1	5,577.7	29.4	1.6	131.23	892.6	-228.3	1,408.3	1,385.0	23.28	60.482	
5,900.0	5,694.1	5,676.0	5,675.6	29.6	1.6	114.19	892.2	-227.8	1,413.9	1,390.5	23.34	60.571	
5,917.0	5,711.1	5,692.6	5,692.2	29.7	1.6	110.67	892.1	-227.7	1,414.5	1,391.2	23.35	60.578	
6,000.0	5,793.7	5,777.7	5,777.3	29.8	1.6	110.98	891.6	-227.2	1,417.3	1,393.8	23.48	60.372	
6,067.0	5,860.5	5,842.9	5,842.5	30.0	1.6	111.23	891.0	-226.8	1,419.5	1,395.9	23.58	60.203	
6,100.0	5,893.4	5,874.1	5,873.7	30.0	1.6	111.36	890.8	-226.5	1,420.6	1,396.9	23.61	60.168	
6,200.0	5,993.2	5,972.2	5,971.8	30.2	1.6	111.65	890.2	-225.7	1,423.1	1,399.4	23.70	60.043	
6,300.0	6,093.2	6,075.7	6,075.3	30.3	1.6	111.79	889.9	-225.1	1,424.4	1,400.6	23.80	59.858	
6,318.8	6,111.9	6,095.4	6,095.0	30.3	1.6	59.84	889.9	-225.1	1,424.4	1,396.7	27.73	51.361	
6,400.0	6,193.2	6,175.9	6,175.5	30.4	1.6	59.85	889.7	-224.8	1,424.6	1,396.7	27.83	51.195	
6,444.4	6,237.6	6,219.0	6,218.6	30.4	1.6	59.85	889.7	-224.7	1,424.7	1,396.8	27.88	51.106	
6,450.0	6,243.2	6,224.3	6,223.9	30.4	1.6	-30.15	889.7	-224.7	1,424.7	1,400.7	23.96	59.452	
6,475.0	6,268.1	6,248.0	6,247.6	30.4	1.6	-30.21	889.6	-224.5	1,423.9	1,400.0	23.92	59.522	
6,500.0	6,293.0	6,271.6	6,271.2	30.4	1.6	-30.36	889.6	-224.4	1,422.1	1,398.2	23.92	59.456	
6,525.0	6,317.8	6,295.1	6,294.7	30.4	1.6	-30.60	889.6	-224.2	1,419.1	1,395.2	23.95	59.261	
6,550.0	6,342.3	6,319.1	6,318.7	30.4	1.6	-30.94	889.5	-224.1	1,415.1	1,391.1	24.01	58.948	
6,575.0	6,366.5	6,343.1	6,342.7	30.3	1.6	-31.39	889.5	-223.9	1,410.0	1,385.9	24.09	58.530	
6,600.0	6,390.4	6,366.7	6,366.3	30.2	1.6	-31.94	889.5	-223.7	1,403.8	1,379.6	24.20	58.017	
6,625.0	6,413.9	6,389.9	6,389.5	30.2	1.6	-32.61	889.4	-223.5	1,396.5	1,372.2	24.32	57.415	
6,650.0	6,436.9	6,413.0	6,412.6	30.1	1.6	-33.39	889.4	-223.3	1,388.2	1,363.8	24.47	56.723	
6,675.0	6,459.3	6,435.9	6,435.5	30.0	1.7	-34.30	889.4	-223.1	1,379.0	1,354.3	24.65	55.942	
6,700.0	6,481.1	6,458.1	6,457.7	29.9	1.7	-35.35	889.3	-222.9	1,368.7	1,343.8	24.85	55.073	
6,725.0	6,502.3	6,479.7	6,479.3	29.7	1.7	-36.54	889.2	-222.7	1,357.5	1,332.4	25.08	54.116	
6,750.0	6,522.7	6,500.6	6,500.2	29.6	1.7	-37.89	889.2	-222.5	1,345.4	1,320.0	25.35	53.071	
6,775.0	6,542.4	6,520.8	6,520.4	29.5	1.7	-39.41	889.1	-222.3	1,332.4	1,306.8	25.65	51.941	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,540.2	6,539.7	29.4	1.7	-41.11	889.0	-222.2	1,318.7	1,292.7	25.99	50.732	
6,825.0	6,579.1	6,558.6	6,558.2	29.3	1.7	-43.00	889.0	-222.0	1,304.2	1,277.8	26.37	49.458	
6,850.0	6,596.1	6,576.1	6,575.7	29.1	1.7	-45.09	888.9	-221.9	1,288.9	1,262.2	26.78	48.133	
6,875.0	6,612.1	6,592.6	6,592.2	29.0	1.7	-47.39	888.9	-221.8	1,273.1	1,245.9	27.22	46.777	
6,900.0	6,627.1	6,607.5	6,607.1	28.9	1.7	-49.90	888.8	-221.7	1,256.6	1,229.0	27.67	45.419	
6,925.0	6,641.0	6,620.9	6,620.5	28.8	1.7	-52.60	888.8	-221.6	1,239.7	1,211.5	28.12	44.082	
6,950.0	6,653.8	6,633.4	6,632.9	28.7	1.7	-55.51	888.8	-221.5	1,222.2	1,193.7	28.57	42.786	
6,975.0	6,665.5	6,644.7	6,644.3	28.7	1.7	-58.63	888.7	-221.4	1,204.4	1,175.5	28.99	41.554	
7,000.0	6,676.0	6,654.9	6,654.5	28.6	1.7	-61.93	888.7	-221.3	1,186.3	1,156.9	29.36	40.407	
7,025.0	6,685.3	6,664.0	6,663.6	28.6	1.7	-65.39	888.7	-221.3	1,167.9	1,138.2	29.67	39.361	
7,050.0	6,693.4	6,672.0	6,671.6	28.5	1.7	-68.97	888.7	-221.2	1,149.3	1,119.4	29.91	38.425	
7,075.0	6,700.2	6,678.7	6,678.3	28.5	1.7	-72.62	888.7	-221.1	1,130.6	1,100.6	30.07	37.598	
7,100.0	6,705.8	6,684.3	6,683.9	28.5	1.7	-76.30	888.7	-221.1	1,111.9	1,081.7	30.16	36.869	
7,125.0	6,710.0	6,688.6	6,688.2	28.5	1.7	-79.95	888.7	-221.0	1,093.2	1,063.0	30.19	36.214	
7,150.0	6,713.0	6,691.7	6,691.3	28.6	1.7	-83.51	888.7	-221.0	1,074.5	1,044.3	30.18	35.600	
7,175.0	6,714.7	6,693.5	6,693.1	28.6	1.7	-86.94	888.7	-221.0	1,056.0	1,025.9	30.18	34.988	
7,198.8	6,715.0	6,694.1	6,693.7	28.6	1.7	-90.05	888.7	-221.0	1,038.6	1,008.4	30.21	34.381	
7,200.0	6,715.0	6,694.1	6,693.7	28.6	1.7	-90.05	888.7	-221.0	1,037.8	1,007.6	30.21	34.350	
7,300.0	6,714.1	6,694.1	6,693.7	29.0	1.7	-90.05	888.7	-221.0	967.7	937.1	30.61	31.610	
7,400.0	6,713.2	6,694.2	6,693.7	29.7	1.7	-90.05	888.7	-221.0	903.3	872.0	31.28	28.878	
7,500.0	6,712.3	6,694.2	6,693.8	30.6	1.7	-90.06	888.7	-221.0	845.8	813.6	32.19	26.276	
7,600.0	6,711.3	6,694.2	6,693.8	31.7	1.7	-90.06	888.7	-221.0	796.8	763.4	33.32	23.910	
7,700.0	6,710.4	6,694.2	6,693.8	33.0	1.7	-90.06	888.7	-221.0	757.8	723.2	34.66	21.865	
7,800.0	6,709.5	6,694.3	6,693.8	34.5	1.7	-90.06	888.7	-221.0	730.6	694.4	36.17	20.198	
7,900.0	6,708.5	6,694.3	6,693.9	36.2	1.7	-90.07	888.7	-221.0	716.4	678.6	37.84	18.932	
7,952.7	6,708.1	6,694.3	6,693.9	37.1	1.7	-90.07	888.7	-221.0	714.5	675.7	38.79	18.419	CC, ES
8,000.0	6,707.6	6,694.3	6,693.9	38.0	1.7	-90.07	888.7	-221.0	716.0	676.4	39.64	18.061	
8,100.0	6,706.7	6,694.4	6,693.9	39.9	1.7	-90.07	888.7	-221.0	729.5	687.9	41.56	17.551	
8,200.0	6,705.8	6,694.4	6,694.0	41.9	1.7	-90.07	888.7	-221.0	756.1	712.5	43.59	17.347	SF
8,300.0	6,704.8	6,694.4	6,694.0	44.0	1.7	-90.07	888.7	-221.0	794.4	748.7	45.69	17.386	
8,400.0	6,703.9	6,694.4	6,694.0	46.2	1.7	-90.08	888.7	-221.0	843.0	795.1	47.88	17.607	
8,500.0	6,703.0	6,694.5	6,694.0	48.5	1.7	-90.08	888.7	-221.0	900.0	849.9	50.12	17.956	
8,600.0	6,702.1	6,694.5	6,694.1	50.8	1.7	-90.08	888.7	-221.0	964.1	911.7	52.43	18.390	
8,700.0	6,701.1	6,694.5	6,694.1	53.1	1.7	-90.08	888.7	-221.0	1,033.9	979.1	54.78	18.874	
8,800.0	6,700.2	6,694.5	6,694.1	55.5	1.7	-90.08	888.7	-221.0	1,108.3	1,051.2	57.17	19.386	
8,900.0	6,699.3	6,694.6	6,694.1	57.9	1.7	-90.09	888.7	-221.0	1,186.5	1,126.9	59.61	19.906	
9,000.0	6,698.3	6,694.6	6,694.2	60.4	1.7	-90.09	888.7	-221.0	1,267.8	1,205.7	62.07	20.425	
9,100.0	6,697.4	6,694.6	6,694.2	62.9	1.7	-90.09	888.7	-221.0	1,351.6	1,287.0	64.57	20.934	
9,200.0	6,696.5	6,694.6	6,694.2	65.4	1.7	-90.09	888.7	-221.0	1,437.5	1,370.4	67.09	21.427	
9,300.0	6,695.5	6,694.7	6,694.2	68.0	1.7	-90.09	888.7	-221.0	1,525.0	1,455.4	69.63	21.903	
9,400.0	6,694.6	6,694.7	6,694.3	70.5	1.7	-90.09	888.7	-221.0	1,614.1	1,541.9	72.19	22.358	
9,500.0	6,693.7	6,694.7	6,694.3	73.1	1.7	-90.10	888.7	-221.0	1,704.3	1,629.5	74.77	22.793	
9,600.0	6,692.8	6,694.7	6,694.3	75.7	1.7	-90.10	888.7	-221.0	1,795.6	1,718.2	77.37	23.208	
9,700.0	6,691.8	6,694.8	6,694.3	78.3	1.7	-90.10	888.7	-221.0	1,887.8	1,807.8	79.98	23.602	
9,800.0	6,690.9	6,694.8	6,694.4	80.9	1.7	-90.10	888.7	-221.0	1,980.7	1,898.1	82.61	23.977	
9,900.0	6,690.0	6,694.8	6,694.4	83.6	1.7	-90.10	888.7	-221.0	2,074.3	1,989.0	85.25	24.333	
10,000.0	6,689.0	6,694.8	6,694.4	86.2	1.7	-90.10	888.7	-221.0	2,168.4	2,080.5	87.89	24.671	
10,100.0	6,688.1	6,694.9	6,694.4	88.9	1.7	-90.11	888.7	-221.0	2,263.1	2,172.5	90.55	24.992	
10,200.0	6,687.2	6,694.9	6,694.5	91.6	1.7	-90.11	888.7	-221.0	2,358.2	2,264.9	93.22	25.297	
10,300.0	6,686.2	6,694.9	6,694.5	94.2	1.7	-90.11	888.7	-221.0	2,453.7	2,357.8	95.90	25.587	
10,400.0	6,685.3	6,694.9	6,694.5	96.9	1.7	-90.11	888.7	-221.0	2,549.5	2,450.9	98.58	25.862	
10,500.0	6,684.4	6,695.0	6,694.5	99.6	1.7	-90.11	888.7	-221.0	2,645.6	2,544.4	101.27	26.124	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 100-GYD_CT

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,695.0	6,694.6	102.3	1.7	-90.11	888.7	-221.0	2,742.0	2,638.1	103.97	26.374	
10,700.0	6,682.5	6,695.0	6,694.6	105.0	1.7	-90.11	888.7	-221.0	2,838.7	2,732.0	106.67	26.612	
10,800.0	6,681.6	6,695.0	6,694.6	107.7	1.7	-90.12	888.7	-221.0	2,935.6	2,826.2	109.38	26.839	
10,900.0	6,680.6	6,695.1	6,694.6	110.4	1.7	-90.12	888.7	-221.0	3,032.7	2,920.6	112.09	27.055	
11,000.0	6,679.7	6,695.1	6,694.6	113.1	1.7	-90.12	888.7	-221.0	3,130.0	3,015.2	114.81	27.262	
11,100.0	6,678.8	6,695.1	6,694.7	115.9	1.7	-90.12	888.7	-221.0	3,227.4	3,109.9	117.53	27.459	
11,200.0	6,677.8	6,695.1	6,694.7	118.6	1.7	-90.12	888.7	-221.0	3,325.0	3,204.7	120.26	27.648	
11,300.0	6,676.9	6,695.1	6,694.7	121.3	1.7	-90.12	888.7	-221.0	3,422.7	3,299.7	122.99	27.829	
11,400.0	6,676.0	6,695.2	6,694.7	124.1	1.7	-90.12	888.7	-221.0	3,520.6	3,394.9	125.73	28.002	
11,500.0	6,675.0	6,695.2	6,694.8	126.8	1.7	-90.12	888.7	-221.0	3,618.6	3,490.1	128.46	28.168	
11,600.0	6,674.1	6,695.2	6,694.8	129.5	1.7	-90.13	888.7	-221.0	3,716.7	3,585.4	131.20	28.327	
11,700.0	6,673.1	6,695.2	6,694.8	132.3	1.7	-90.13	888.7	-221.0	3,814.8	3,680.9	133.95	28.480	
11,800.0	6,672.2	6,695.3	6,694.8	135.0	1.7	-90.13	888.7	-221.0	3,913.1	3,776.4	136.69	28.627	
11,900.0	6,671.3	6,695.3	6,694.9	137.8	1.7	-90.13	888.7	-221.0	4,011.5	3,872.0	139.44	28.768	
12,000.0	6,670.3	6,695.3	6,694.9	140.5	1.7	-90.13	888.7	-221.0	4,109.9	3,967.7	142.19	28.904	
12,036.2	6,670.0	6,695.3	6,694.9	141.5	1.7	-90.13	888.7	-221.0	4,145.6	4,002.4	143.19	28.951	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	51.46	889.0	1,116.0	1,426.8				
100.0	100.0	87.6	87.6	0.1	0.1	40.87	888.9	1,116.0	1,426.6	1,426.5	0.17	8,268.385	
200.0	200.0	186.3	186.3	0.2	0.2	40.88	888.6	1,116.1	1,426.3	1,425.9	0.41	3,451.569	
261.0	261.0	247.2	247.2	0.3	0.3	40.90	888.5	1,116.1	1,426.1	1,425.6	0.54	2,641.958	
275.1	275.1	261.3	261.3	0.3	0.3	91.02	888.5	1,116.1	1,426.1	1,425.5	0.58	2,444.346	
300.0	300.0	286.2	286.2	0.4	0.3	119.12	888.5	1,116.2	1,426.2	1,425.5	0.66	2,156.579	
400.0	399.9	390.6	390.6	0.6	0.4	133.74	888.2	1,116.2	1,428.2	1,427.2	0.96	1,484.644	
500.0	499.7	494.0	494.0	0.8	0.4	136.29	887.6	1,116.0	1,432.8	1,431.5	1.26	1,136.735	
538.0	537.5	532.8	532.8	0.9	0.5	136.81	887.4	1,115.9	1,435.3	1,433.9	1.37	1,046.834	
600.0	599.1	595.9	595.9	1.1	0.5	136.19	886.9	1,115.7	1,440.1	1,438.5	1.60	901.719	
700.0	697.9	698.1	698.0	1.5	0.5	135.72	886.2	1,115.2	1,450.3	1,448.3	1.96	740.093	
800.0	796.0	798.4	798.4	1.8	0.6	135.60	885.3	1,114.5	1,463.3	1,460.9	2.32	631.445	
818.0	813.5	816.1	816.1	1.9	0.6	135.60	885.1	1,114.4	1,465.9	1,463.5	2.38	615.651	
900.0	893.1	896.2	896.2	2.3	0.6	136.74	884.4	1,113.8	1,479.4	1,476.6	2.78	531.716	
1,000.0	989.2	994.0	993.9	2.9	0.7	137.91	883.4	1,113.1	1,499.1	1,495.8	3.27	458.289	
1,100.0	1,083.9	1,093.6	1,093.5	3.5	0.7	138.94	882.2	1,112.2	1,522.2	1,518.4	3.75	405.667	
1,104.0	1,087.6	1,097.5	1,097.5	3.5	0.7	138.98	882.1	1,112.2	1,523.2	1,519.4	3.77	403.882	
1,200.0	1,177.9	1,189.7	1,189.7	4.1	0.8	139.10	880.7	1,111.3	1,547.0	1,542.7	4.25	364.240	
1,300.0	1,272.0	1,287.0	1,286.9	4.8	0.8	139.20	879.0	1,110.4	1,571.4	1,566.7	4.71	333.615	
1,391.0	1,357.8	1,375.1	1,375.0	5.3	0.8	139.27	877.3	1,109.6	1,593.4	1,588.3	5.14	310.297	
1,400.0	1,366.3	1,383.8	1,383.7	5.4	0.9	139.56	877.1	1,109.5	1,595.5	1,590.4	5.17	308.520	
1,458.0	1,421.2	1,438.7	1,438.6	5.7	0.9	141.48	875.8	1,109.0	1,609.2	1,603.8	5.41	297.549	
1,500.0	1,461.0	1,478.2	1,478.0	6.0	0.9	141.58	874.9	1,108.7	1,618.9	1,613.3	5.59	289.748	
1,600.0	1,556.1	1,573.2	1,573.0	6.6	0.9	141.83	872.4	1,108.1	1,641.9	1,635.9	6.01	273.174	
1,676.0	1,628.3	1,645.9	1,645.8	7.0	1.0	142.00	870.4	1,107.6	1,659.4	1,653.1	6.33	262.197	
1,700.0	1,651.1	1,669.0	1,668.8	7.2	1.0	142.74	869.8	1,107.5	1,664.9	1,658.5	6.42	259.183	
1,800.0	1,746.4	1,768.7	1,768.4	7.7	1.0	145.85	866.9	1,106.9	1,688.1	1,681.3	6.81	247.732	
1,900.0	1,841.8	1,870.6	1,870.3	8.3	1.0	148.99	864.1	1,105.7	1,711.4	1,704.2	7.20	237.723	
1,963.0	1,902.0	1,933.7	1,933.4	8.7	1.1	150.97	862.4	1,104.8	1,726.1	1,718.7	7.44	232.000	
2,000.0	1,937.4	1,970.2	1,969.9	8.9	1.1	151.20	861.4	1,104.3	1,734.7	1,727.2	7.57	229.134	
2,100.0	2,033.1	2,067.8	2,067.4	9.5	1.1	151.78	858.7	1,102.7	1,757.7	1,749.7	7.92	221.814	
2,200.0	2,129.0	2,163.2	2,162.8	10.0	1.2	152.32	856.4	1,100.9	1,780.1	1,771.9	8.28	215.063	
2,250.0	2,177.1	2,210.5	2,210.0	10.3	1.2	152.58	855.3	1,100.1	1,791.2	1,782.8	8.45	211.891	
2,300.0	2,225.1	2,257.8	2,257.3	10.6	1.2	151.63	854.3	1,099.2	1,802.3	1,793.6	8.65	208.434	
2,400.0	2,321.2	2,352.5	2,352.0	11.2	1.2	149.80	852.2	1,097.6	1,824.4	1,815.4	9.03	202.048	
2,500.0	2,417.0	2,448.8	2,448.3	11.7	1.3	148.07	850.2	1,096.0	1,846.6	1,837.2	9.41	196.300	
2,537.0	2,452.5	2,485.1	2,484.5	11.9	1.3	147.45	849.4	1,095.4	1,854.7	1,845.2	9.54	194.318	
2,600.0	2,512.8	2,546.9	2,546.3	12.3	1.3	144.86	848.2	1,094.3	1,868.6	1,858.7	9.83	190.151	
2,700.0	2,608.2	2,647.2	2,646.6	12.9	1.3	141.07	846.0	1,092.4	1,890.2	1,879.9	10.27	184.121	
2,800.0	2,703.3	2,747.0	2,746.3	13.5	1.4	137.65	843.7	1,090.2	1,911.3	1,900.6	10.70	178.700	
2,824.0	2,726.1	2,770.0	2,769.4	13.7	1.4	136.88	843.2	1,089.7	1,916.3	1,905.5	10.80	177.478	
2,900.0	2,798.2	2,843.3	2,842.6	14.1	1.4	139.90	841.4	1,088.1	1,932.2	1,921.1	11.07	174.547	
3,000.0	2,893.6	2,941.0	2,940.2	14.7	1.4	144.10	838.8	1,086.0	1,953.2	1,941.8	11.43	170.927	
3,100.0	2,989.4	3,039.8	3,039.0	15.3	1.5	148.55	836.1	1,083.7	1,974.3	1,962.5	11.79	167.521	
3,112.0	3,000.9	3,051.6	3,050.8	15.4	1.5	149.11	835.8	1,083.4	1,976.8	1,965.0	11.83	167.123	
3,200.0	3,085.5	3,137.2	3,136.3	15.9	1.5	150.48	833.4	1,081.4	1,995.2	1,983.0	12.11	164.813	
3,300.0	3,181.9	3,225.8	3,224.8	16.4	1.5	152.02	831.1	1,079.3	2,015.8	2,003.4	12.42	162.237	
3,400.0	3,278.4	3,300.0	3,299.0	16.9	1.6	153.53	829.9	1,077.9	2,036.9	2,024.2	12.75	159.744	
3,500.0	3,374.7	3,375.0	3,374.0	17.5	1.6	153.51	829.4	1,077.2	2,060.0	2,046.9	13.16	156.539	
3,600.0	3,470.3	3,449.9	3,449.0	18.1	1.6	153.50	829.8	1,076.9	2,086.5	2,072.9	13.56	153.814	
3,687.0	3,552.8	3,517.8	3,516.8	18.6	1.6	153.50	830.6	1,077.2	2,112.0	2,098.1	13.91	151.808	
3,700.0	3,565.1	3,529.3	3,528.3	18.7	1.6	153.79	830.7	1,077.2	2,116.0	2,102.0	13.96	151.610	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,617.7	3,616.7	19.4	1.6	156.04	832.2	1,077.9	2,147.2	2,132.9	14.30	150.170	
3,900.0	3,753.9	3,706.3	3,705.3	20.0	1.6	158.23	833.7	1,078.7	2,179.4	2,164.8	14.64	148.909	
3,974.0	3,823.6	3,772.0	3,771.0	20.5	1.6	159.82	834.9	1,079.4	2,203.9	2,189.0	14.89	148.053	
4,000.0	3,848.1	3,795.1	3,794.0	20.7	1.6	159.70	835.3	1,079.7	2,212.5	2,197.5	14.96	147.865	
4,100.0	3,942.9	3,890.9	3,889.8	21.3	1.6	159.18	837.1	1,080.9	2,244.1	2,228.9	15.25	147.134	
4,200.0	4,038.5	3,974.5	3,973.4	21.9	1.6	158.47	838.3	1,082.2	2,273.7	2,258.2	15.54	146.333	
4,263.0	4,099.0	4,026.7	4,025.6	22.3	1.6	157.92	838.9	1,083.4	2,291.4	2,275.7	15.71	145.822	
4,300.0	4,134.7	4,057.5	4,056.4	22.5	1.6	156.92	839.2	1,084.2	2,301.6	2,285.7	15.83	145.387	
4,400.0	4,231.2	4,143.6	4,142.4	23.0	1.6	154.07	839.7	1,086.7	2,328.4	2,312.2	16.14	144.279	
4,500.0	4,328.0	4,233.5	4,232.3	23.5	1.6	151.05	840.0	1,089.8	2,354.2	2,337.7	16.43	143.262	
4,549.0	4,375.5	4,278.4	4,277.2	23.8	1.6	149.49	840.1	1,091.4	2,366.4	2,349.8	16.57	142.788	
4,600.0	4,425.0	4,325.6	4,324.3	24.0	1.6	149.46	840.3	1,093.1	2,379.0	2,362.2	16.73	142.185	
4,700.0	4,521.9	4,417.7	4,416.4	24.5	1.6	149.39	840.9	1,096.5	2,403.9	2,386.8	17.04	141.039	
4,800.0	4,618.8	4,500.0	4,498.6	25.0	1.6	149.29	841.7	1,099.7	2,429.1	2,411.7	17.36	139.911	
4,837.0	4,654.7	4,536.7	4,535.3	25.2	1.6	149.27	842.1	1,101.2	2,438.5	2,421.1	17.48	139.521	
4,900.0	4,715.7	4,590.3	4,588.8	25.5	1.6	148.94	842.9	1,103.5	2,454.9	2,437.2	17.71	138.643	
5,000.0	4,812.4	4,682.3	4,680.7	26.0	1.6	148.49	843.8	1,107.7	2,481.5	2,463.4	18.06	137.377	
5,100.0	4,908.9	4,774.8	4,773.1	26.6	1.6	148.12	843.0	1,112.6	2,508.8	2,490.4	18.41	136.264	
5,125.0	4,932.9	4,797.8	4,796.1	26.7	1.6	148.04	842.6	1,113.9	2,515.7	2,497.2	18.50	136.008	
5,200.0	5,005.4	4,864.1	4,862.2	27.0	1.6	151.21	841.2	1,117.7	2,536.4	2,517.8	18.61	136.256	
5,300.0	5,102.4	4,956.9	4,954.8	27.5	1.6	155.98	838.9	1,123.3	2,563.2	2,544.4	18.78	136.489	
5,400.0	5,199.9	5,065.1	5,062.7	28.0	1.6	161.54	835.8	1,129.9	2,588.7	2,569.8	18.95	136.617	
5,412.0	5,211.7	5,079.3	5,076.9	28.1	1.7	162.27	835.4	1,130.7	2,591.6	2,572.7	18.97	136.622	
5,500.0	5,297.9	5,183.6	5,181.0	28.4	1.7	165.30	831.9	1,136.3	2,612.0	2,592.9	19.07	136.939	
5,581.0	5,377.7	5,271.6	5,268.9	28.7	1.7	168.61	829.0	1,140.5	2,628.9	2,609.8	19.17	137.169	
5,600.0	5,396.4	5,291.9	5,289.1	28.8	1.7	167.46	828.3	1,141.4	2,632.6	2,613.4	19.19	137.180	
5,700.0	5,495.3	5,387.2	5,384.4	29.1	1.7	159.77	825.4	1,145.7	2,650.3	2,630.9	19.32	137.203	
5,800.0	5,594.6	5,514.8	5,511.8	29.4	1.7	148.26	822.1	1,150.7	2,664.2	2,644.8	19.41	137.260	
5,900.0	5,694.1	5,625.7	5,622.6	29.6	1.8	131.04	819.5	1,154.1	2,674.1	2,654.6	19.49	137.236	
5,917.0	5,711.1	5,643.9	5,640.8	29.7	1.8	127.49	819.1	1,154.6	2,675.4	2,655.9	19.50	137.223	
6,000.0	5,793.7	5,729.3	5,726.2	29.8	1.8	127.66	817.6	1,156.7	2,681.5	2,661.9	19.66	136.406	
6,067.0	5,860.5	5,793.7	5,790.6	30.0	1.8	127.78	816.8	1,158.3	2,686.5	2,666.7	19.79	135.742	
6,100.0	5,893.4	5,828.8	5,825.6	30.0	1.8	127.88	816.3	1,159.1	2,688.9	2,669.0	19.82	135.678	
6,200.0	5,993.2	5,939.0	5,935.7	30.2	1.8	128.10	815.5	1,161.4	2,694.3	2,674.4	19.89	135.430	
6,300.0	6,093.2	6,045.7	6,042.5	30.3	1.9	128.20	815.3	1,163.0	2,697.2	2,677.2	19.97	135.059	
6,318.8	6,111.9	6,064.4	6,061.2	30.3	1.9	76.25	815.3	1,163.3	2,697.5	2,666.7	30.84	87.461	
6,400.0	6,193.2	6,145.6	6,142.4	30.4	1.9	76.25	815.4	1,164.4	2,698.6	2,667.7	30.93	87.250	
6,444.4	6,237.6	6,190.2	6,186.9	30.4	1.9	76.26	815.5	1,165.0	2,699.2	2,668.2	30.98	87.136	
6,450.0	6,243.2	6,195.7	6,192.5	30.4	1.9	-13.74	815.5	1,165.1	2,699.3	2,679.1	20.15	133.962	
6,475.0	6,268.1	6,220.2	6,216.9	30.4	1.9	-13.76	815.5	1,165.4	2,698.7	2,678.6	20.04	134.677	
6,500.0	6,293.0	6,244.4	6,241.1	30.4	1.9	-13.83	815.6	1,165.8	2,696.8	2,676.9	19.95	135.155	
6,525.0	6,317.8	6,268.5	6,265.2	30.4	1.9	-13.93	815.7	1,166.1	2,693.7	2,673.9	19.89	135.428	
6,550.0	6,342.3	6,292.4	6,289.1	30.4	1.9	-14.09	815.7	1,166.4	2,689.4	2,669.6	19.84	135.544	
6,575.0	6,366.5	6,315.8	6,312.6	30.3	1.9	-14.29	815.8	1,166.8	2,683.8	2,664.0	19.80	135.550	
6,600.0	6,390.4	6,338.9	6,335.6	30.2	1.9	-14.53	815.9	1,167.1	2,677.0	2,657.3	19.76	135.479	
6,625.0	6,413.9	6,361.6	6,358.3	30.2	1.9	-14.84	815.9	1,167.5	2,669.0	2,649.3	19.72	135.349	
6,650.0	6,436.9	6,383.8	6,380.5	30.1	1.9	-15.19	816.0	1,167.8	2,659.8	2,640.1	19.68	135.160	
6,675.0	6,459.3	6,405.2	6,401.9	30.0	1.9	-15.62	816.0	1,168.2	2,649.5	2,629.9	19.64	134.901	
6,700.0	6,481.1	6,425.2	6,421.9	29.9	1.9	-16.10	816.1	1,168.5	2,638.0	2,618.4	19.61	134.555	
6,725.0	6,502.3	6,444.7	6,441.4	29.7	1.9	-16.67	816.2	1,168.8	2,625.5	2,605.9	19.58	134.076	
6,750.0	6,522.7	6,463.5	6,460.2	29.6	1.9	-17.31	816.2	1,169.2	2,611.9	2,592.3	19.58	133.415	
6,775.0	6,542.4	6,481.6	6,478.3	29.5	1.9	-18.06	816.3	1,169.5	2,597.3	2,577.7	19.60	132.514	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	6,500.0	6,496.7	29.4	1.9	-18.93	816.3	1,169.9	2,581.8	2,562.1	19.66	131.288	
6,825.0	6,579.1	6,517.1	6,513.8	29.3	1.9	-19.92	816.4	1,170.2	2,565.3	2,545.5	19.78	129.697	
6,850.0	6,596.1	6,520.0	6,516.7	29.1	1.9	-20.95	816.4	1,170.3	2,547.9	2,528.0	19.91	127.974	
6,875.0	6,612.1	6,520.0	6,516.7	29.0	1.9	-22.11	816.4	1,170.3	2,529.8	2,509.7	20.10	125.875	
6,900.0	6,627.1	6,520.0	6,516.7	28.9	1.9	-23.44	816.4	1,170.3	2,511.0	2,490.6	20.37	123.289	
6,925.0	6,641.0	6,520.0	6,516.7	28.8	1.9	-24.96	816.4	1,170.3	2,491.5	2,470.8	20.73	120.188	
6,950.0	6,653.8	6,520.0	6,516.7	28.7	1.9	-26.73	816.4	1,170.3	2,471.4	2,450.2	21.20	116.571	
6,975.0	6,665.5	6,520.0	6,516.7	28.7	1.9	-28.80	816.4	1,170.3	2,450.7	2,428.9	21.79	112.466	
7,000.0	6,676.0	6,520.0	6,516.7	28.6	1.9	-31.22	816.4	1,170.3	2,429.5	2,407.0	22.51	107.936	
7,025.0	6,685.3	6,520.0	6,516.7	28.6	1.9	-34.07	816.4	1,170.3	2,407.7	2,384.4	23.36	103.072	
7,050.0	6,693.4	6,520.0	6,516.7	28.5	1.9	-37.46	816.4	1,170.3	2,385.5	2,361.2	24.34	97.994	
7,075.0	6,700.2	6,520.0	6,516.7	28.5	1.9	-41.51	816.4	1,170.3	2,362.9	2,337.5	25.45	92.852	
7,100.0	6,705.8	6,520.0	6,516.7	28.5	1.9	-46.36	816.4	1,170.3	2,339.9	2,313.3	26.64	87.831	
7,125.0	6,710.0	6,520.0	6,516.7	28.5	1.9	-52.16	816.4	1,170.3	2,316.7	2,288.8	27.86	83.154	
7,150.0	6,713.0	6,520.0	6,516.7	28.6	1.9	-59.03	816.4	1,170.3	2,293.1	2,264.1	28.99	79.088	
7,175.0	6,714.7	6,520.0	6,516.7	28.6	1.9	-67.04	816.4	1,170.3	2,269.4	2,239.5	29.89	75.922	
7,198.8	6,715.0	6,520.0	6,516.7	28.6	1.9	-75.63	816.4	1,170.3	2,246.7	2,216.3	30.39	73.933	
7,200.0	6,715.0	6,520.0	6,516.7	28.6	1.9	-75.63	816.4	1,170.3	2,245.6	2,215.2	30.39	73.889	
7,300.0	6,714.1	6,520.0	6,516.7	29.0	1.9	-75.63	816.4	1,170.3	2,150.2	2,119.4	30.80	69.817	
7,400.0	6,713.2	6,520.0	6,516.7	29.7	1.9	-75.63	816.4	1,170.3	2,055.3	2,023.9	31.46	65.336	
7,500.0	6,712.3	6,520.0	6,516.7	30.6	1.9	-75.63	816.4	1,170.3	1,960.9	1,928.6	32.35	60.608	
7,600.0	6,711.3	6,520.0	6,516.7	31.7	1.9	-75.63	816.4	1,170.3	1,867.1	1,833.7	33.47	55.791	
7,700.0	6,710.4	6,520.0	6,516.7	33.0	1.9	-75.63	816.4	1,170.3	1,774.0	1,739.2	34.77	51.018	
7,800.0	6,709.5	6,520.0	6,516.7	34.5	1.9	-75.63	816.4	1,170.3	1,681.7	1,645.4	36.25	46.392	
7,900.0	6,708.5	6,520.0	6,516.7	36.2	1.9	-75.64	816.4	1,170.3	1,590.2	1,552.4	37.88	41.987	
8,000.0	6,707.6	6,520.0	6,516.7	38.0	1.9	-75.64	816.4	1,170.3	1,499.9	1,460.3	39.63	37.847	
8,100.0	6,706.7	6,520.0	6,516.7	39.9	1.9	-75.64	816.4	1,170.3	1,410.9	1,369.4	41.50	33.998	
8,200.0	6,705.8	6,520.0	6,516.7	41.9	1.9	-75.64	816.4	1,170.3	1,323.5	1,280.0	43.46	30.449	
8,300.0	6,704.8	6,520.0	6,516.7	44.0	1.9	-75.64	816.4	1,170.3	1,237.9	1,192.4	45.51	27.199	
8,400.0	6,703.9	6,520.0	6,516.7	46.2	1.9	-75.64	816.4	1,170.3	1,154.7	1,107.1	47.64	24.241	
8,500.0	6,703.0	6,520.0	6,516.7	48.5	1.9	-75.64	816.4	1,170.3	1,074.4	1,024.6	49.82	21.566	
8,600.0	6,702.1	6,520.0	6,516.7	50.8	1.9	-75.64	816.4	1,170.3	997.6	945.5	52.06	19.163	
8,700.0	6,701.1	6,520.0	6,516.7	53.1	1.9	-75.64	816.4	1,170.3	925.2	870.9	54.34	17.026	
8,800.0	6,700.2	6,520.0	6,516.7	55.5	1.9	-75.64	816.4	1,170.3	858.5	801.8	56.67	15.149	
8,900.0	6,699.3	6,520.0	6,516.7	57.9	1.9	-75.64	816.4	1,170.3	798.7	739.6	59.03	13.530	
9,000.0	6,698.3	6,520.0	6,516.7	60.4	1.9	-75.64	816.4	1,170.3	747.5	686.1	61.43	12.169	
9,100.0	6,697.4	6,520.0	6,516.7	62.9	1.9	-75.64	816.4	1,170.3	706.9	643.0	63.85	11.071	
9,200.0	6,696.5	6,520.0	6,516.7	65.4	1.9	-75.64	816.4	1,170.3	678.7	612.4	66.30	10.237	
9,300.0	6,695.5	6,520.0	6,516.7	68.0	1.9	-75.64	816.4	1,170.3	664.4	595.7	68.77	9.662	
9,345.5	6,695.1	6,520.0	6,516.7	69.1	1.9	-75.64	816.4	1,170.3	662.9	593.0	69.90	9.483	CC, ES
9,400.0	6,694.6	6,520.0	6,516.7	70.5	1.9	-75.64	816.4	1,170.3	665.1	593.9	71.26	9.334	
9,500.0	6,693.7	6,520.0	6,516.7	73.1	1.9	-75.64	816.4	1,170.3	680.6	606.9	73.76	9.228	SF
9,600.0	6,692.8	6,520.0	6,516.7	75.7	1.9	-75.64	816.4	1,170.3	710.1	633.8	76.28	9.308	
9,700.0	6,691.8	6,520.0	6,516.7	78.3	1.9	-75.64	816.4	1,170.3	751.7	672.9	78.82	9.537	
9,800.0	6,690.9	6,520.0	6,516.7	80.9	1.9	-75.64	816.4	1,170.3	803.7	722.4	81.37	9.877	
9,900.0	6,690.0	6,520.0	6,516.7	83.6	1.9	-75.64	816.4	1,170.3	864.2	780.3	83.93	10.296	
10,000.0	6,689.0	6,520.0	6,516.7	86.2	1.9	-75.64	816.4	1,170.3	931.5	845.0	86.51	10.769	
10,100.0	6,688.1	6,520.0	6,516.7	88.9	1.9	-75.64	816.4	1,170.3	1,004.3	915.2	89.09	11.273	
10,200.0	6,687.2	6,520.0	6,516.7	91.6	1.9	-75.64	816.4	1,170.3	1,081.5	989.8	91.68	11.796	
10,300.0	6,686.2	6,520.0	6,516.7	94.2	1.9	-75.64	816.4	1,170.3	1,162.1	1,067.8	94.28	12.326	
10,400.0	6,685.3	6,520.0	6,516.7	96.9	1.9	-75.64	816.4	1,170.3	1,245.5	1,148.7	96.88	12.856	
10,500.0	6,684.4	6,520.0	6,516.7	99.6	1.9	-75.64	816.4	1,170.3	1,331.3	1,231.8	99.50	13.380	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

Survey Program: 100-GYD_CT — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,600.0	6,683.4	6,520.0	6,516.7	102.3	1.9	-75.64	816.4	1,170.3	1,418.9	1,316.7	102.12	13.895	
10,700.0	6,682.5	6,520.0	6,516.7	105.0	1.9	-75.64	816.4	1,170.3	1,508.0	1,403.3	104.74	14.397	
10,800.0	6,681.6	6,520.0	6,516.7	107.7	1.9	-75.64	816.4	1,170.3	1,598.4	1,491.1	107.37	14.887	
10,900.0	6,680.6	6,520.0	6,516.7	110.4	1.9	-75.63	816.4	1,170.3	1,689.9	1,579.9	110.01	15.362	
11,000.0	6,679.7	6,520.0	6,516.7	113.1	1.9	-75.63	816.4	1,170.3	1,782.3	1,669.7	112.65	15.822	
11,100.0	6,678.8	6,520.0	6,516.7	115.9	1.9	-75.63	816.4	1,170.3	1,875.5	1,760.3	115.29	16.268	
11,200.0	6,677.8	6,520.0	6,516.7	118.6	1.9	-75.63	816.4	1,170.3	1,969.4	1,851.5	117.94	16.698	
11,300.0	6,676.9	6,520.0	6,516.7	121.3	1.9	-75.63	816.4	1,170.3	2,063.8	1,943.3	120.59	17.114	
11,400.0	6,676.0	6,520.0	6,516.7	124.1	1.9	-75.63	816.4	1,170.3	2,158.8	2,035.5	123.25	17.516	
11,500.0	6,675.0	6,520.0	6,516.7	126.8	1.9	-75.63	816.4	1,170.3	2,254.2	2,128.3	125.91	17.904	
11,600.0	6,674.1	6,520.0	6,516.7	129.5	1.9	-75.63	816.4	1,170.3	2,349.9	2,221.4	128.57	18.278	
11,700.0	6,673.1	6,520.0	6,516.7	132.3	1.9	-75.63	816.4	1,170.3	2,446.0	2,314.8	131.23	18.639	
11,800.0	6,672.2	6,520.0	6,516.7	135.0	1.9	-75.63	816.4	1,170.3	2,542.4	2,408.5	133.90	18.988	
11,900.0	6,671.3	6,520.0	6,516.7	137.8	1.9	-75.63	816.4	1,170.3	2,639.1	2,502.5	136.57	19.324	
12,000.0	6,670.3	6,520.0	6,516.7	140.5	1.9	-75.63	816.4	1,170.3	2,736.0	2,596.8	139.24	19.649	
12,036.2	6,670.0	6,520.0	6,516.7	141.5	1.9	-75.63	816.4	1,170.3	2,771.2	2,631.0	140.21	19.764	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-202ST - JOB #2016-52-135 - ORIGINAL V — **Offset Site Error:** 0.0 usft

Survey Program: 261-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
5,412.0	5,211.7	5,412.0	5,211.7	0.0	0.0	0.00	152.4	-1,366.4	0.0	0.0	0.00	N/A	CC
5,464.6	5,263.2	5,464.6	5,263.2	0.2	0.2	24.54	152.6	-1,377.0	0.0	-0.3	0.28	0.003	Level 1, SF
5,500.0	5,297.9	5,500.0	5,297.9	0.4	0.3	25.65	152.6	-1,383.7	0.0	-0.5	0.47	0.005	Level 1
5,581.0	5,377.7	5,581.0	5,377.7	0.7	0.6	28.64	152.0	-1,398.0	0.0	-0.9	0.89	0.010	Level 1
5,600.0	5,396.4	5,600.0	5,396.4	0.7	0.7	-68.69	151.8	-1,401.1	0.1	-1.3	1.36	0.038	Level 1
5,700.0	5,495.3	5,700.0	5,495.3	1.0	1.0	-87.07	150.0	-1,416.0	2.1	0.0	2.08	1.024	Level 2
5,800.0	5,594.6	5,799.9	5,594.4	1.3	1.3	-95.16	148.1	-1,428.8	6.3	3.7	2.60	2.418	
5,900.0	5,694.1	5,899.9	5,693.8	1.5	1.6	-108.35	147.1	-1,439.6	11.7	8.6	3.06	3.820	
5,917.0	5,711.1	5,916.9	5,710.7	1.6	1.6	-111.30	147.1	-1,441.2	12.7	9.6	3.14	4.064	
6,000.0	5,793.7	6,000.0	5,793.4	1.8	1.8	-111.10	147.0	-1,448.4	17.5	14.0	3.51	4.984	
6,067.0	5,860.5	6,067.1	5,860.5	1.9	1.9	-119.12	147.3	-1,451.1	20.3	16.6	3.78	5.381	
6,100.0	5,893.4	6,100.0	5,893.4	2.0	1.9	-125.64	147.4	-1,451.0	21.7	17.8	3.87	5.603	
6,200.0	5,993.2	6,198.1	5,991.2	2.1	1.9	-150.16	146.1	-1,443.8	28.8	25.0	3.82	7.551	
6,300.0	6,093.2	6,293.6	6,084.9	2.2	1.8	-173.65	144.2	-1,426.0	43.7	40.1	3.57	12.226	
6,318.8	6,111.9	6,311.1	6,101.9	2.3	1.7	130.93	143.8	-1,421.6	47.5	43.6	3.88	12.240	
6,400.0	6,193.2	6,384.8	6,172.3	2.3	1.6	119.73	141.9	-1,400.1	68.3	64.5	3.87	17.657	
6,444.4	6,237.6	6,422.7	6,207.7	2.4	1.6	115.65	140.6	-1,386.7	83.1	79.3	3.81	21.836	
6,450.0	6,243.2	6,427.3	6,212.0	2.4	1.6	25.11	140.4	-1,385.0	85.1	81.5	3.61	23.602	
6,475.0	6,268.1	6,448.2	6,231.1	2.4	1.6	23.09	139.6	-1,376.7	93.8	90.2	3.61	25.997	
6,500.0	6,293.0	6,469.0	6,250.0	2.4	1.6	21.56	138.7	-1,367.9	102.1	98.5	3.60	28.371	
6,525.0	6,317.8	6,489.8	6,268.6	2.4	1.6	20.33	137.8	-1,358.6	109.9	106.3	3.57	30.767	
6,550.0	6,342.3	6,510.6	6,286.9	2.4	1.6	19.30	137.0	-1,348.7	117.2	113.6	3.53	33.146	
6,575.0	6,366.5	6,531.4	6,304.8	2.3	1.6	18.43	136.4	-1,338.3	123.9	120.4	3.49	35.511	
6,600.0	6,390.4	6,559.0	6,328.2	2.3	1.6	17.52	135.6	-1,323.6	130.4	126.9	3.44	37.955	
6,625.0	6,413.9	6,572.6	6,339.5	2.3	1.6	17.04	135.3	-1,316.1	135.9	132.5	3.38	40.251	
6,650.0	6,436.9	6,592.9	6,356.1	2.3	1.5	16.50	134.9	-1,304.3	141.1	137.8	3.31	42.659	
6,675.0	6,459.3	6,613.2	6,372.2	2.2	1.5	16.04	134.6	-1,292.0	145.8	142.6	3.24	45.036	
6,700.0	6,481.1	6,633.5	6,388.0	2.2	1.5	15.64	134.3	-1,279.3	150.0	146.8	3.17	47.345	
6,725.0	6,502.3	6,655.0	6,404.3	2.2	1.5	15.30	134.0	-1,265.2	153.7	150.6	3.10	49.546	
6,750.0	6,522.7	6,673.6	6,417.9	2.2	1.5	15.03	133.8	-1,252.6	156.9	153.9	3.04	51.600	
6,775.0	6,542.4	6,693.4	6,432.0	2.2	1.5	14.78	133.7	-1,238.7	159.7	156.7	2.99	53.421	
6,800.0	6,561.2	6,713.1	6,445.6	2.1	1.4	14.57	133.6	-1,224.4	161.9	159.0	2.95	54.905	
6,825.0	6,579.1	6,732.9	6,458.7	2.1	1.4	14.38	133.6	-1,209.6	163.7	160.8	2.93	55.966	
6,850.0	6,596.1	6,750.0	6,469.6	2.1	1.4	14.23	133.7	-1,196.4	165.1	162.2	2.92	56.551	
6,875.0	6,612.1	6,773.2	6,483.9	2.1	1.4	14.09	133.8	-1,178.2	165.9	162.9	2.94	56.404	
6,900.0	6,627.1	6,793.7	6,496.0	2.0	1.4	14.03	133.9	-1,161.6	166.1	163.1	2.98	55.654	
6,925.0	6,641.0	6,814.1	6,507.7	2.0	1.3	14.02	134.1	-1,144.8	165.7	162.6	3.05	54.297	
6,950.0	6,653.8	6,834.6	6,518.8	2.0	1.3	14.07	134.2	-1,127.6	164.7	161.6	3.14	52.405	
6,975.0	6,665.5	6,856.9	6,530.5	1.9	1.3	14.18	134.4	-1,108.6	163.1	159.8	3.27	49.921	
7,000.0	6,676.0	6,881.0	6,542.9	1.9	1.3	14.38	134.7	-1,088.0	160.4	157.0	3.42	46.860	
7,025.0	6,685.3	6,905.0	6,555.2	1.9	1.3	14.67	135.2	-1,067.3	156.5	152.9	3.60	43.503	
7,050.0	6,693.4	6,928.8	6,567.2	1.9	1.2	15.08	135.8	-1,046.8	151.5	147.7	3.79	39.989	
7,075.0	6,700.2	6,951.9	6,578.7	1.9	1.2	15.61	136.4	-1,026.9	145.5	141.5	4.00	36.400	
7,100.0	6,705.8	6,974.1	6,589.6	1.8	1.2	16.29	137.2	-1,007.5	138.4	134.2	4.21	32.862	
7,125.0	6,710.0	6,996.2	6,600.1	1.8	1.2	17.18	137.9	-988.1	130.5	126.1	4.43	29.467	
7,150.0	6,713.0	7,018.0	6,610.3	1.8	1.2	18.32	138.7	-968.8	121.7	117.0	4.64	26.240	
7,175.0	6,714.7	7,037.0	6,619.0	1.8	1.2	19.66	139.4	-951.9	112.0	107.2	4.83	23.213	
7,198.8	6,715.0	7,059.8	6,629.1	1.8	1.2	21.69	140.2	-931.5	102.0	97.1	4.99	20.455	
7,200.0	6,715.0	7,060.8	6,629.5	1.8	1.2	21.78	140.2	-930.6	101.5	96.6	4.99	20.338	
7,300.0	6,714.1	7,145.8	6,664.7	1.8	1.3	32.59	142.7	-853.3	62.0	56.9	5.06	12.246	
7,400.0	6,713.2	7,231.8	6,688.5	1.9	1.4	53.11	141.4	-770.8	41.2	37.0	4.16	9.891	
7,427.1	6,712.9	7,256.2	6,692.0	2.0	1.5	58.68	139.9	-746.7	40.2	36.2	3.98	10.099	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-202ST - JOB #2016-52-135 - ORIGINAL V — **Offset Site Error:** 0.0 usft

Survey Program: 261-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
7,500.0	6,712.3	7,327.3	6,696.7	2.6	1.8	68.60	134.5	-676.0	42.7	38.3	4.36	9.791	
7,600.0	6,711.3	7,429.8	6,697.4	3.7	2.7	72.67	129.7	-573.7	46.6	40.3	6.28	7.422	
7,700.0	6,710.4	7,531.2	6,697.6	5.1	4.0	73.11	132.0	-472.2	44.1	35.3	8.76	5.031	
7,800.0	6,709.5	7,631.1	6,696.5	6.6	5.4	71.41	135.8	-372.4	40.6	29.0	11.56	3.507	
7,900.0	6,708.5	7,731.1	6,694.1	8.2	7.0	67.25	139.8	-272.5	37.3	22.8	14.51	2.569	
7,978.5	6,707.8	7,808.5	6,692.2	9.6	8.4	64.13	142.0	-195.3	35.8	19.0	16.88	2.124	
8,000.0	6,707.6	7,829.6	6,692.0	10.0	8.7	64.20	141.8	-174.2	35.9	18.4	17.57	2.046	
8,100.0	6,706.7	7,929.5	6,691.1	12.0	10.6	65.13	140.5	-74.2	37.1	16.0	21.09	1.761	
8,200.0	6,705.8	8,030.5	6,691.3	14.0	12.6	67.01	140.1	26.7	37.0	12.0	24.99	1.481	Level 3
8,300.0	6,704.8	8,130.5	6,692.6	16.1	14.7	69.88	140.7	126.7	35.7	6.4	29.27	1.219	Level 2
8,400.0	6,703.9	8,230.4	6,692.0	18.3	16.9	69.71	142.0	226.6	34.4	1.1	33.33	1.032	Level 2
8,458.0	6,703.4	8,288.0	6,691.6	19.6	18.2	69.77	142.2	284.2	34.1	-1.7	35.78	0.952	Level 1
8,500.0	6,703.0	8,329.8	6,691.6	20.5	19.1	70.65	141.9	326.0	34.2	-3.5	37.71	0.907	Level 1
8,600.0	6,702.1	8,429.9	6,690.9	22.8	21.4	71.37	141.2	426.1	34.8	-7.4	42.21	0.825	Level 1
8,700.0	6,701.1	8,530.2	6,692.2	25.2	23.7	75.16	140.7	526.4	34.7	-12.8	47.44	0.731	Level 1
8,800.0	6,700.2	8,630.2	6,693.8	27.6	26.1	79.22	140.5	626.4	34.3	-18.4	52.79	0.651	Level 1
8,900.0	6,699.3	8,730.4	6,693.1	30.0	28.6	79.49	141.1	726.6	33.6	-24.0	57.62	0.584	Level 1
9,000.0	6,698.3	8,830.4	6,690.1	32.6	31.0	75.33	142.6	826.5	32.7	-28.9	61.58	0.531	Level 1
9,100.0	6,697.4	8,930.2	6,689.6	35.1	33.5	75.97	143.1	926.3	32.0	-34.5	66.57	0.481	Level 1
9,114.6	6,697.3	8,944.7	6,689.7	35.5	33.9	76.24	143.1	940.8	32.0	-35.3	67.35	0.476	Level 1
9,200.0	6,696.5	9,029.9	6,689.2	37.6	36.1	76.95	142.6	1,026.0	32.4	-39.3	71.72	0.452	Level 1
9,300.0	6,695.5	9,130.1	6,686.8	40.1	38.6	74.53	142.4	1,126.1	33.0	-43.0	75.96	0.434	Level 1
9,400.0	6,694.6	9,230.3	6,685.9	42.7	41.2	74.59	142.6	1,226.4	32.7	-48.2	80.94	0.404	Level 1
9,494.7	6,693.7	9,324.8	6,684.5	45.1	43.6	73.35	143.2	1,320.9	32.4	-52.8	85.18	0.380	Level 1
9,500.0	6,693.7	9,330.1	6,684.3	45.3	43.8	73.21	143.2	1,326.2	32.4	-53.0	85.39	0.379	Level 1
9,600.0	6,692.8	9,430.4	6,682.2	47.9	46.4	70.94	143.5	1,426.4	32.5	-56.9	89.38	0.363	Level 1
9,700.0	6,691.8	9,530.7	6,683.0	50.5	49.0	73.50	144.3	1,526.7	31.1	-64.4	95.53	0.326	Level 1
9,800.0	6,690.9	9,630.7	6,683.2	53.1	51.6	74.76	145.9	1,626.7	29.4	-71.8	101.13	0.290	Level 1
9,900.0	6,690.0	9,730.7	6,681.1	55.7	54.3	71.28	148.1	1,726.6	27.6	-76.9	104.49	0.264	Level 1
10,000.0	6,689.0	9,830.7	6,678.5	58.4	56.9	66.24	150.4	1,826.6	26.0	-80.2	106.28	0.245	Level 1
10,100.0	6,688.1	9,930.6	6,678.3	61.0	59.6	66.27	151.8	1,926.4	24.4	-86.8	111.19	0.220	Level 1
10,200.0	6,687.2	10,030.8	6,678.1	63.7	62.2	66.60	153.2	2,026.7	22.9	-93.5	116.36	0.197	Level 1
10,300.0	6,686.2	10,130.7	6,678.7	66.4	64.9	68.82	154.8	2,126.5	20.8	-102.2	122.99	0.169	Level 1
10,388.3	6,685.4	10,218.7	6,679.1	68.7	67.3	71.68	155.2	2,214.5	20.0	-109.4	129.47	0.155	Level 1
10,400.0	6,685.3	10,230.3	6,679.3	69.0	67.6	72.53	155.1	2,226.1	20.1	-110.6	130.62	0.154	Level 1
10,500.0	6,684.4	10,330.5	6,679.9	71.7	70.3	77.12	154.8	2,326.3	19.9	-118.6	138.46	0.143	Level 1
10,549.2	6,683.9	10,379.6	6,680.1	73.1	71.6	78.87	154.9	2,375.4	19.7	-122.2	141.88	0.139	Level 1
10,600.0	6,683.4	10,430.2	6,680.7	74.4	72.9	82.17	154.5	2,426.1	19.9	-126.0	145.86	0.136	Level 1
10,700.0	6,682.5	10,530.2	6,681.6	77.1	75.6	87.37	153.6	2,526.1	20.7	-131.8	152.42	0.136	Level 1
10,800.0	6,681.6	10,630.3	6,680.7	79.8	78.3	87.69	152.9	2,626.1	21.3	-136.6	157.87	0.135	Level 1
10,900.0	6,680.6	10,730.2	6,680.3	82.5	81.0	89.06	152.2	2,726.0	22.1	-141.4	163.41	0.135	Level 1
11,000.0	6,679.7	10,830.5	6,679.4	85.2	83.8	89.23	151.7	2,826.3	22.5	-146.3	168.87	0.134	Level 1
11,100.0	6,678.8	10,931.1	6,679.2	88.0	86.5	91.39	154.0	2,926.9	20.2	-154.1	174.32	0.116	Level 1
11,200.0	6,677.8	11,031.0	6,678.6	90.7	89.2	92.67	157.1	3,026.7	17.2	-162.5	179.66	0.096	Level 1
11,300.0	6,676.9	11,130.7	6,676.2	93.4	91.9	87.06	159.9	3,126.4	14.4	-170.6	184.96	0.078	Level 1
11,320.4	6,676.7	11,151.0	6,675.8	94.0	92.5	86.27	160.0	3,146.6	14.2	-171.7	185.93	0.077	Level 1
11,400.0	6,676.0	11,230.2	6,675.2	96.2	94.7	87.28	158.7	3,225.8	15.5	-175.0	190.45	0.081	Level 1
11,500.0	6,675.0	11,330.1	6,675.8	98.9	97.4	92.44	156.1	3,325.7	18.1	-177.9	196.05	0.092	Level 1
11,600.0	6,674.1	11,430.2	6,675.4	101.6	100.1	93.66	153.7	3,425.8	20.5	-180.8	201.34	0.102	Level 1
11,700.0	6,673.1	11,530.3	6,675.8	104.4	102.9	96.68	152.0	3,525.9	22.4	-183.6	206.00	0.109	Level 1
11,800.0	6,672.2	11,630.5	6,674.1	107.1	105.6	94.69	150.8	3,626.0	23.5	-188.6	212.08	0.111	Level 1
11,900.0	6,671.3	11,730.5	6,670.2	109.9	108.4	87.45	150.1	3,726.0	24.1	-193.8	217.90	0.111	Level 1

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-202ST - JOB #2016-52-135 - ORIGINAL V

Offset Site Error: 0.0 usft

Survey Program: 261-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
12,000.0	6,670.3	11,830.5	6,665.9	112.6	111.1	79.69	149.6	3,825.8	25.0	-195.2	220.20	0.114	Level 1, ES
12,036.2	6,670.0	11,866.7	6,664.1	113.6	112.1	76.60	149.4	3,862.0	25.5	-194.4	219.86	0.116	Level 1

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.76	0.4	90.2	90.2				
100.0	100.0	100.0	100.0	0.1	0.1	79.22	0.4	90.2	90.2	90.0	0.20	461.520	
200.0	200.0	200.0	200.0	0.2	0.3	79.41	0.4	90.2	90.2	89.6	0.53	169.306	
261.0	261.0	261.0	261.0	0.3	0.5	79.59	0.4	90.2	90.1	89.4	0.74	122.077	
263.5	263.5	263.5	263.5	0.3	0.5	90.00	0.4	90.2	90.1	89.4	0.75	120.269	
300.0	300.0	300.0	300.0	0.4	0.5	157.93	0.4	90.2	90.4	89.5	0.91	98.854	
400.0	399.9	399.9	399.9	0.6	0.8	172.85	0.4	90.2	93.7	92.3	1.37	68.227	
500.0	499.7	499.7	499.7	0.8	1.0	175.63	0.4	90.2	100.8	98.9	1.82	55.254	
538.0	537.5	537.5	537.5	0.9	1.1	176.23	0.4	90.2	104.4	102.5	1.99	52.466	
600.0	599.1	599.1	599.1	1.1	1.2	175.73	0.4	90.2	111.7	109.4	2.29	48.850	
700.0	697.9	697.9	697.9	1.5	1.4	175.52	0.4	90.2	126.9	124.2	2.76	46.062	
800.0	796.0	796.0	796.0	1.8	1.7	175.66	0.4	90.2	146.3	143.1	3.21	45.617	
818.0	813.5	813.5	813.5	1.9	1.7	175.70	0.4	90.2	150.3	147.0	3.29	45.712	
900.0	893.1	893.1	893.1	2.3	1.9	176.98	0.4	90.2	169.9	166.2	3.69	46.055	
1,000.0	989.2	993.0	993.0	2.9	2.1	177.76	1.6	89.4	196.9	192.7	4.16	47.292	
1,100.0	1,083.9	1,093.1	1,092.9	3.5	2.3	177.57	5.8	86.6	226.0	221.4	4.61	49.012	
1,104.0	1,087.6	1,097.1	1,096.9	3.5	2.3	177.54	6.0	86.5	227.2	222.6	4.63	49.089	
1,200.0	1,177.9	1,193.5	1,193.0	4.1	2.6	175.62	12.8	81.9	255.3	250.2	5.13	49.727	
1,300.0	1,272.0	1,295.0	1,293.7	4.8	2.8	173.34	22.9	75.1	282.4	276.8	5.64	50.118	
1,391.0	1,357.8	1,388.0	1,385.6	5.3	3.1	171.05	34.8	67.1	305.3	299.2	6.15	49.648	
1,400.0	1,366.3	1,397.2	1,394.7	5.4	3.1	171.09	36.1	66.2	307.5	301.3	6.20	49.578	
1,458.0	1,421.2	1,456.9	1,453.4	5.7	3.3	171.27	45.1	60.1	320.6	314.0	6.57	48.822	
1,500.0	1,461.0	1,500.1	1,495.7	6.0	3.4	170.10	52.3	55.3	329.4	322.6	6.83	48.229	
1,600.0	1,556.1	1,597.2	1,590.7	6.6	3.8	167.55	69.1	44.0	350.2	342.7	7.49	46.757	
1,676.0	1,628.3	1,671.1	1,663.0	7.0	4.0	165.79	81.8	35.4	366.0	358.0	8.02	45.642	
1,700.0	1,651.1	1,694.4	1,685.8	7.2	4.1	165.94	85.9	32.7	371.0	362.8	8.18	45.333	
1,800.0	1,746.4	1,791.5	1,780.8	7.7	4.5	166.61	102.6	21.5	391.9	383.0	8.90	44.044	
1,900.0	1,841.8	1,888.6	1,875.7	8.3	4.9	167.35	119.4	10.2	412.9	403.3	9.64	42.829	
1,963.0	1,902.0	1,949.6	1,935.4	8.7	5.1	167.85	129.9	3.1	426.2	416.1	10.13	42.089	
2,000.0	1,937.4	1,985.5	1,970.5	8.9	5.3	167.23	136.1	-1.0	434.0	423.6	10.41	41.683	
2,100.0	2,033.1	2,082.4	2,065.3	9.5	5.7	165.65	152.8	-12.3	455.0	443.8	11.20	40.621	
2,200.0	2,129.0	2,179.5	2,160.3	10.0	6.1	164.19	169.6	-23.6	475.6	463.6	12.01	39.615	
2,250.0	2,177.1	2,228.1	2,207.8	10.3	6.3	163.50	177.9	-29.2	485.9	473.4	12.42	39.133	
2,300.0	2,225.1	2,276.7	2,255.4	10.6	6.5	161.66	186.3	-34.8	496.1	483.2	12.84	38.647	
2,400.0	2,321.2	2,372.0	2,348.7	11.2	6.9	158.26	202.6	-45.7	516.8	503.1	13.65	37.871	
2,500.0	2,417.0	2,464.9	2,440.0	11.7	7.2	155.42	216.3	-55.0	538.3	524.0	14.35	37.518	
2,537.0	2,452.5	2,500.0	2,474.7	11.9	7.3	154.50	220.8	-58.0	546.5	531.9	14.59	37.447	
2,600.0	2,512.8	2,557.7	2,531.8	12.3	7.4	151.54	227.5	-62.6	560.7	545.6	15.02	37.317	
2,700.0	2,608.2	2,650.1	2,623.6	12.9	7.7	147.52	236.3	-68.4	583.7	568.1	15.65	37.293	
2,800.0	2,703.3	2,741.5	2,714.7	13.5	7.9	144.26	242.5	-72.6	607.5	591.3	16.20	37.504	
2,824.0	2,726.1	2,763.3	2,736.4	13.7	7.9	143.59	243.7	-73.4	613.4	597.0	16.32	37.589	
2,900.0	2,798.2	2,831.8	2,804.9	14.1	8.0	147.03	246.3	-75.2	632.2	615.6	16.61	38.057	
3,000.0	2,893.6	2,921.3	2,894.4	14.7	8.2	151.80	247.8	-76.2	657.8	640.8	16.97	38.752	
3,100.0	2,989.4	3,016.3	2,989.4	15.3	8.3	156.86	247.8	-76.2	683.8	666.5	17.34	39.447	
3,112.0	3,000.9	3,027.9	3,000.9	15.4	8.3	157.47	247.8	-76.2	687.0	669.6	17.38	39.520	
3,200.0	3,085.5	3,112.5	3,085.5	15.9	8.5	159.19	247.8	-76.2	709.6	691.9	17.71	40.070	
3,300.0	3,181.9	3,208.8	3,181.9	16.4	8.7	161.09	247.8	-76.2	735.0	716.9	18.09	40.617	
3,400.0	3,278.4	3,305.3	3,278.4	16.9	8.8	162.95	247.8	-76.2	759.9	741.4	18.49	41.088	
3,500.0	3,374.7	3,401.6	3,374.7	17.5	9.0	163.29	247.8	-76.2	785.7	766.8	18.89	41.600	
3,600.0	3,470.3	3,497.2	3,470.3	18.1	9.2	163.66	247.8	-76.2	814.0	794.7	19.27	42.246	
3,687.0	3,552.8	3,579.7	3,552.8	18.6	9.3	163.99	247.8	-76.2	840.6	821.0	19.59	42.912	
3,700.0	3,565.1	3,592.0	3,565.1	18.7	9.3	164.33	247.8	-76.2	844.7	825.0	19.64	43.012	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,686.4	3,659.5	19.4	9.5	166.83	247.8	-76.2	876.6	856.6	20.03	43.765	
3,900.0	3,753.9	3,780.8	3,753.9	20.0	9.7	169.20	247.8	-76.2	909.1	888.7	20.43	44.493	
3,974.0	3,823.6	3,850.5	3,823.6	20.5	9.8	170.87	247.8	-76.2	933.5	912.8	20.74	45.016	
4,000.0	3,848.1	3,875.1	3,848.1	20.7	9.8	170.75	247.8	-76.2	942.1	921.2	20.87	45.134	
4,100.0	3,942.9	3,969.9	3,942.9	21.3	10.0	170.20	247.8	-76.2	973.5	952.1	21.39	45.513	
4,200.0	4,038.5	4,065.4	4,038.5	21.9	10.2	169.48	247.8	-76.2	1,002.6	980.7	21.90	45.780	
4,263.0	4,099.0	4,126.0	4,099.0	22.3	10.3	168.94	247.8	-76.2	1,019.7	997.5	22.22	45.896	
4,300.0	4,134.7	4,161.6	4,134.7	22.5	10.4	167.94	247.8	-76.2	1,029.4	1,007.0	22.40	45.958	
4,400.0	4,231.2	4,258.1	4,231.2	23.0	10.6	165.16	247.8	-76.2	1,054.8	1,031.9	22.88	46.100	
4,500.0	4,328.0	4,354.9	4,328.0	23.5	10.7	162.20	247.8	-76.2	1,079.0	1,055.7	23.35	46.205	
4,549.0	4,375.5	4,402.4	4,375.5	23.8	10.8	160.69	247.8	-76.2	1,090.4	1,066.9	23.58	46.245	
4,600.0	4,425.0	4,451.9	4,425.0	24.0	10.9	160.72	247.8	-76.2	1,102.2	1,078.4	23.80	46.307	
4,700.0	4,521.9	4,548.8	4,521.9	24.5	11.1	160.77	247.8	-76.2	1,125.4	1,101.2	24.24	46.429	
4,800.0	4,618.8	4,645.8	4,618.8	25.0	11.3	160.81	247.8	-76.2	1,148.7	1,124.0	24.68	46.550	
4,837.0	4,654.7	4,681.6	4,654.7	25.2	11.4	160.83	247.8	-76.2	1,157.4	1,132.5	24.84	46.594	
4,900.0	4,715.7	4,742.6	4,715.7	25.5	11.5	160.61	247.8	-76.2	1,172.3	1,147.1	25.12	46.662	
5,000.0	4,812.4	4,839.3	4,812.4	26.0	11.7	160.29	247.8	-76.2	1,196.4	1,170.9	25.57	46.793	
5,100.0	4,908.9	4,935.8	4,908.9	26.6	11.9	160.02	247.8	-76.2	1,221.3	1,195.3	26.01	46.951	
5,125.0	4,932.9	4,959.9	4,932.9	26.7	11.9	159.96	247.8	-76.2	1,227.6	1,201.5	26.12	46.995	
5,200.0	5,005.4	5,032.3	5,005.4	27.0	12.1	163.08	247.8	-76.2	1,246.2	1,219.8	26.43	47.159	
5,300.0	5,102.4	5,129.3	5,102.4	27.5	12.3	167.71	247.8	-76.2	1,269.6	1,242.7	26.85	47.287	
5,400.0	5,199.9	5,226.9	5,199.9	28.0	12.5	173.04	247.8	-76.2	1,291.3	1,264.0	27.29	47.319	
5,412.0	5,211.7	5,238.6	5,211.7	28.1	12.5	173.73	247.8	-76.2	1,293.8	1,266.4	27.34	47.317	
5,500.0	5,297.9	5,324.9	5,297.9	28.4	12.7	176.51	247.8	-76.2	1,311.0	1,283.3	27.73	47.284	
5,581.0	5,377.7	5,404.6	5,377.7	28.7	12.8	179.62	247.8	-76.2	1,325.3	1,297.2	28.07	47.213	
5,600.0	5,396.4	7,763.4	6,713.2	28.8	40.3	155.67	247.8	-1,405.0	1,320.3	1,275.2	45.13	29.253	
5,700.0	5,495.3	7,777.7	6,713.2	29.1	40.7	147.53	247.8	-1,419.3	1,221.6	1,175.8	45.76	26.696	
5,800.0	5,594.6	7,789.2	6,713.1	29.4	41.0	135.58	247.8	-1,430.8	1,122.4	1,076.2	46.23	24.277	
5,900.0	5,694.1	7,797.7	6,713.1	29.6	41.2	118.26	247.8	-1,439.3	1,022.9	976.5	46.38	22.053	
5,917.0	5,711.1	7,798.9	6,713.1	29.7	41.2	114.77	247.8	-1,440.5	1,005.9	959.6	46.34	21.706	
6,000.0	5,793.7	7,804.4	6,713.1	29.8	41.4	112.72	247.8	-1,446.0	923.2	875.2	48.02	19.227	
6,067.0	5,860.5	7,808.8	6,713.1	30.0	41.5	110.85	247.8	-1,450.4	856.4	806.9	49.52	17.294	
6,100.0	5,893.4	7,810.9	6,713.1	30.0	41.5	101.48	247.8	-1,452.5	823.5	767.6	55.92	14.727	
6,200.0	5,993.2	7,815.2	6,713.1	30.2	41.6	72.66	247.8	-1,456.8	723.8	654.0	69.80	10.370	
6,300.0	6,093.2	7,816.8	6,713.1	30.3	41.7	53.07	247.8	-1,458.4	624.2	552.5	71.79	8.695	
6,318.8	6,111.9	7,816.8	6,713.1	30.3	41.7	-1.37	247.8	-1,458.4	605.6	573.4	32.25	18.780	
6,400.0	6,193.2	7,816.6	6,713.1	30.4	41.7	-1.19	247.8	-1,458.2	525.1	492.8	32.32	16.244	
6,444.4	6,237.6	7,816.4	6,713.1	30.4	41.7	-1.08	247.8	-1,458.0	481.1	448.8	32.37	14.865	
6,450.0	6,243.2	7,816.4	6,713.1	30.4	41.7	-95.33	247.8	-1,458.0	475.6	404.6	71.04	6.695	
6,475.0	6,268.1	7,815.4	6,713.1	30.4	41.6	-112.03	247.8	-1,457.0	451.0	385.4	65.52	6.883	
6,500.0	6,293.0	7,813.0	6,713.1	30.4	41.6	-124.20	247.8	-1,454.7	426.4	367.6	58.82	7.250	
6,525.0	6,317.8	7,809.4	6,713.1	30.4	41.5	-132.55	247.8	-1,451.0	402.1	348.9	53.15	7.565	
6,550.0	6,342.3	7,804.5	6,713.1	30.4	41.4	-138.23	247.8	-1,446.1	378.0	329.2	48.86	7.737	
6,575.0	6,366.5	7,798.3	6,713.1	30.3	41.2	-142.12	247.8	-1,439.9	354.3	308.6	45.69	7.753	
6,600.0	6,390.4	7,790.9	6,713.1	30.2	41.0	-144.77	247.8	-1,432.5	331.0	287.6	43.36	7.633	
6,625.0	6,413.9	7,782.2	6,713.2	30.2	40.8	-146.54	247.8	-1,423.8	308.2	266.5	41.64	7.401	
6,650.0	6,436.9	7,772.3	6,713.2	30.1	40.5	-147.63	247.8	-1,413.9	285.9	245.6	40.37	7.082	
6,675.0	6,459.3	7,761.2	6,713.2	30.0	40.2	-148.18	247.8	-1,402.8	264.4	224.9	39.48	6.696	
6,700.0	6,481.1	7,748.9	6,713.3	29.9	39.9	-148.27	247.8	-1,390.6	243.5	204.6	38.91	6.258	
6,725.0	6,502.3	7,735.6	6,713.3	29.7	39.6	-147.95	247.8	-1,377.2	223.5	184.8	38.65	5.782	
6,750.0	6,522.7	7,721.1	6,713.3	29.6	39.2	-147.23	247.8	-1,362.7	204.3	165.6	38.68	5.282	
6,775.0	6,542.4	7,705.6	6,713.4	29.5	38.8	-146.11	247.8	-1,347.2	186.2	147.1	39.04	4.768	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	7,689.1	6,713.4	29.4	38.4	-144.60	247.8	-1,330.7	169.1	129.3	39.74	4.255	
6,825.0	6,579.1	7,671.6	6,713.5	29.3	38.0	-142.64	247.8	-1,313.2	153.2	112.4	40.79	3.755	
6,850.0	6,596.1	7,653.2	6,713.5	29.1	37.5	-140.23	247.8	-1,294.9	138.6	96.3	42.22	3.282	
6,875.0	6,612.1	7,634.0	6,713.6	29.0	37.0	-137.32	247.8	-1,275.6	125.3	81.3	44.02	2.847	
6,900.0	6,627.1	7,613.9	6,713.6	28.9	36.5	-133.88	247.8	-1,255.6	113.6	67.4	46.15	2.461	
6,925.0	6,641.0	7,593.1	6,713.7	28.8	36.0	-129.90	247.8	-1,234.8	103.4	54.9	48.54	2.130	
6,950.0	6,653.8	7,571.6	6,713.8	28.7	35.4	-125.42	247.8	-1,213.3	94.9	43.8	51.06	1.858	
6,975.0	6,665.5	7,549.5	6,713.8	28.7	34.9	-120.52	247.8	-1,191.1	88.0	34.5	53.54	1.644	
7,000.0	6,676.0	7,526.8	6,713.9	28.6	34.3	-115.34	247.8	-1,168.4	82.8	27.0	55.76	1.484	Level 3
7,025.0	6,685.3	7,503.6	6,714.0	28.6	33.7	-110.09	247.8	-1,145.2	79.0	21.4	57.54	1.372	Level 3
7,050.0	6,693.4	7,479.9	6,714.0	28.5	33.2	-105.02	247.8	-1,121.5	76.4	17.6	58.77	1.300	Level 3
7,075.0	6,700.2	7,455.8	6,714.1	28.5	32.6	-100.39	247.8	-1,097.4	74.9	15.4	59.44	1.260	Level 3
7,100.0	6,705.8	7,431.4	6,714.2	28.5	32.0	-96.42	247.8	-1,073.0	74.1	14.4	59.61	1.242	Level 2
7,125.0	6,710.0	7,406.8	6,714.3	28.5	31.4	-93.26	247.8	-1,048.4	73.7	14.3	59.41	1.240	Level 2, ES, SF
7,150.0	6,713.0	7,381.9	6,714.3	28.6	30.8	-91.04	247.8	-1,023.6	73.6	14.6	59.00	1.247	Level 2
7,169.0	6,714.4	7,363.0	6,714.4	28.6	30.4	-90.00	247.8	-1,004.7	73.6	14.9	58.62	1.255	Level 3, CC
7,175.0	6,714.7	7,357.0	6,714.4	28.6	30.2	-89.80	247.8	-998.6	73.6	15.1	58.49	1.258	Level 3
7,198.8	6,715.0	7,333.2	6,714.5	28.6	29.6	-89.56	247.8	-974.8	73.6	15.6	57.99	1.269	Level 3
7,200.0	6,715.0	7,332.0	6,714.5	28.6	29.6	-89.57	247.8	-973.6	73.6	15.6	57.96	1.269	Level 3
7,243.5	6,714.6	7,288.5	6,714.6	28.8	28.6	-89.98	247.8	-930.1	73.6	16.5	57.10	1.288	Level 3
7,300.0	6,714.1	7,232.0	6,714.8	29.0	27.3	-90.52	247.8	-873.6	73.6	17.5	56.03	1.313	Level 3
7,400.0	6,713.2	7,132.0	6,714.8	29.7	25.1	-91.23	247.8	-773.6	73.6	19.2	54.44	1.352	Level 3
7,436.9	6,712.8	7,095.1	6,712.8	30.0	24.3	-90.01	247.8	-736.8	73.6	19.6	54.01	1.362	Level 3
7,500.0	6,712.3	7,032.6	6,705.3	30.6	23.0	-84.58	247.8	-674.8	73.9	20.7	53.19	1.390	Level 3
7,600.0	6,711.3	6,937.4	6,683.5	31.7	21.2	-69.21	247.8	-582.2	79.1	29.1	50.02	1.582	
7,700.0	6,710.4	6,850.0	6,652.8	33.0	19.7	-51.82	247.8	-500.4	97.2	53.6	43.56	2.231	
7,800.0	6,709.5	6,769.4	6,615.9	34.5	18.6	-38.02	247.8	-428.8	131.2	94.4	36.80	3.565	
7,900.0	6,708.5	6,700.0	6,577.8	36.2	17.7	-29.20	247.8	-370.8	178.7	146.4	32.31	5.531	
8,000.0	6,707.6	6,636.8	6,538.4	38.0	17.0	-23.33	247.8	-321.4	236.4	206.8	29.58	7.991	
8,100.0	6,706.7	6,582.8	6,501.4	39.9	16.5	-19.55	247.8	-282.1	301.7	273.5	28.18	10.708	
8,200.0	6,705.8	6,535.9	6,466.9	41.9	16.1	-16.95	247.8	-250.3	372.8	345.3	27.50	13.556	
8,300.0	6,704.8	6,500.0	6,439.2	44.0	15.9	-15.30	247.8	-227.5	448.6	421.2	27.39	16.375	
8,400.0	6,703.9	6,450.0	6,398.7	46.2	15.6	-13.39	247.8	-198.2	528.0	500.9	27.14	19.458	
8,500.0	6,703.0	6,428.1	6,380.3	48.5	15.4	-12.67	247.8	-186.2	610.1	582.6	27.55	22.147	
8,600.0	6,702.1	6,400.0	6,356.3	50.8	15.3	-11.83	247.8	-171.7	694.7	666.9	27.89	24.913	
8,700.0	6,701.1	6,376.2	6,335.5	53.1	15.2	-11.19	247.8	-160.2	781.3	753.0	28.33	27.579	
8,800.0	6,700.2	6,350.0	6,312.1	55.5	15.1	-10.54	247.8	-148.3	869.5	840.8	28.76	30.230	
8,900.0	6,699.3	6,335.2	6,298.8	57.9	15.0	-10.21	247.8	-142.0	959.1	929.7	29.37	32.656	
9,000.0	6,698.3	6,317.9	6,282.9	60.4	14.9	-9.84	247.8	-134.9	1,049.7	1,019.8	29.95	35.055	
9,100.0	6,697.4	6,300.0	6,266.4	62.9	14.9	-9.48	247.8	-128.0	1,141.4	1,110.9	30.52	37.393	
9,200.0	6,696.5	6,300.0	6,266.4	65.4	14.9	-9.48	247.8	-128.0	1,234.0	1,202.7	31.32	39.400	
9,300.0	6,695.5	6,275.2	6,243.3	68.0	14.8	-9.01	247.8	-119.2	1,327.1	1,295.3	31.83	41.699	
9,400.0	6,694.6	6,250.0	6,219.4	70.5	14.7	-8.58	247.8	-111.0	1,421.1	1,388.8	32.34	43.941	
9,500.0	6,693.7	6,250.0	6,219.4	73.1	14.7	-8.58	247.8	-111.0	1,515.3	1,482.2	33.13	45.737	
9,600.0	6,692.8	6,250.0	6,219.4	75.7	14.7	-8.58	247.8	-111.0	1,610.2	1,576.2	33.92	47.465	
9,700.0	6,691.8	6,250.0	6,219.4	78.3	14.7	-8.58	247.8	-111.0	1,705.6	1,670.9	34.72	49.127	
9,800.0	6,690.9	6,225.3	6,195.8	80.9	14.6	-8.19	247.8	-103.8	1,801.0	1,765.8	35.24	51.108	
9,900.0	6,690.0	6,200.0	6,171.4	83.6	14.5	-7.82	247.8	-97.3	1,897.3	1,861.5	35.77	53.044	
10,000.0	6,689.0	6,200.0	6,171.4	86.2	14.5	-7.82	247.8	-97.3	1,993.3	1,956.8	36.55	54.529	
10,100.0	6,688.1	6,200.0	6,171.4	88.9	14.5	-7.82	247.8	-97.3	2,089.7	2,052.4	37.34	55.959	
10,200.0	6,687.2	6,200.0	6,171.4	91.6	14.5	-7.82	247.8	-97.3	2,186.5	2,148.4	38.14	57.335	
10,300.0	6,686.2	6,200.0	6,171.4	94.2	14.5	-7.82	247.8	-97.3	2,283.5	2,244.6	38.93	58.661	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,400.0	6,685.3	6,200.0	6,171.4	96.9	14.5	-7.82	247.8	-97.3	2,380.8	2,341.1	39.72	59.937	
10,500.0	6,684.4	6,200.0	6,171.4	99.6	14.5	-7.82	247.8	-97.3	2,478.3	2,437.8	40.52	61.166	
10,600.0	6,683.4	6,175.8	6,147.8	102.3	14.4	-7.50	247.8	-91.8	2,575.5	2,534.4	41.04	62.753	
10,700.0	6,682.5	6,171.3	6,143.3	105.0	14.4	-7.44	247.8	-90.9	2,673.1	2,631.3	41.78	63.976	
10,800.0	6,681.6	6,150.0	6,122.4	107.7	14.4	-7.18	247.8	-86.9	2,771.1	2,728.8	42.35	65.437	
10,900.0	6,680.6	6,150.0	6,122.4	110.4	14.4	-7.17	247.8	-86.9	2,868.9	2,825.8	43.14	66.509	
11,000.0	6,679.7	6,150.0	6,122.4	113.1	14.4	-7.17	247.8	-86.9	2,966.9	2,922.9	43.92	67.544	
11,100.0	6,678.8	6,150.0	6,122.4	115.9	14.4	-7.17	247.8	-86.9	3,064.9	3,020.2	44.71	68.545	
11,200.0	6,677.8	6,150.0	6,122.4	118.6	14.4	-7.17	247.8	-86.9	3,163.1	3,117.6	45.50	69.512	
11,300.0	6,676.9	6,150.0	6,122.4	121.3	14.4	-7.17	247.8	-86.9	3,261.4	3,215.1	46.30	70.448	
11,400.0	6,676.0	6,150.0	6,122.4	124.1	14.4	-7.17	247.8	-86.9	3,359.8	3,312.7	47.09	71.353	
11,500.0	6,675.0	6,150.0	6,122.4	126.8	14.4	-7.17	247.8	-86.9	3,458.3	3,410.5	47.88	72.229	
11,600.0	6,674.1	6,150.0	6,122.4	129.5	14.4	-7.17	247.8	-86.9	3,556.9	3,508.2	48.67	73.077	
11,700.0	6,673.1	6,150.0	6,122.4	132.3	14.4	-7.17	247.8	-86.9	3,655.6	3,606.1	49.47	73.898	
11,800.0	6,672.2	6,150.0	6,122.4	135.0	14.4	-7.17	247.8	-86.9	3,754.3	3,704.0	50.26	74.694	
11,900.0	6,671.3	6,150.0	6,122.4	137.8	14.4	-7.17	247.8	-86.9	3,853.1	3,802.0	51.06	75.466	
12,000.0	6,670.3	6,150.0	6,122.4	140.5	14.4	-7.17	247.8	-86.9	3,951.9	3,900.1	51.85	76.215	
12,036.2	6,670.0	6,128.3	6,101.0	141.5	14.3	-6.92	247.8	-83.5	3,987.4	3,935.5	51.87	76.873	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.98	0.0	30.1	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	79.57	0.0	30.1	30.1	29.9	0.20	153.784	
200.0	200.0	200.0	200.0	0.2	0.3	80.13	0.0	30.1	30.0	29.5	0.53	56.350	
261.0	261.0	261.0	261.0	0.3	0.5	80.66	0.0	30.1	30.0	29.2	0.74	40.590	
263.2	263.2	263.2	263.2	0.3	0.5	90.00	0.0	30.1	30.0	29.2	0.75	40.050	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	159.26	0.0	30.1	30.2	29.3	0.91	33.058	
400.0	399.9	399.9	399.9	0.6	0.8	174.73	0.0	30.1	33.5	32.2	1.37	24.424	
500.0	499.7	499.7	499.7	0.8	1.0	177.78	0.0	30.1	40.6	38.8	1.82	22.289	
538.0	537.5	538.1	538.1	0.9	1.1	178.48	0.0	29.8	44.1	42.1	1.99	22.214	
600.0	599.1	600.8	600.8	1.1	1.2	178.44	-0.3	28.3	49.9	47.7	2.27	22.033	
700.0	697.9	702.1	701.9	1.5	1.4	179.55	-1.3	23.1	60.1	57.4	2.70	22.249	
800.0	796.0	803.7	803.1	1.8	1.7	-178.59	-3.0	14.3	71.3	68.2	3.14	22.724	
818.0	813.5	822.0	821.3	1.9	1.7	-178.22	-3.4	12.3	73.4	70.2	3.22	22.823	
900.0	893.1	905.4	904.1	2.3	1.9	-175.45	-5.4	2.0	83.5	79.9	3.63	23.037	
1,000.0	989.2	1,007.5	1,004.8	2.9	2.2	-172.58	-8.5	-13.9	96.9	92.7	4.14	23.413	
1,100.0	1,083.9	1,109.8	1,105.2	3.5	2.6	-170.12	-12.2	-33.4	111.3	106.6	4.67	23.847	
1,104.0	1,087.6	1,113.8	1,109.2	3.5	2.6	-170.03	-12.4	-34.2	111.9	107.2	4.69	23.862	
1,200.0	1,177.9	1,212.6	1,205.2	4.1	3.0	-168.83	-16.7	-56.5	124.7	119.4	5.31	23.471	
1,300.0	1,272.0	1,316.0	1,305.0	4.8	3.6	-167.01	-21.8	-83.3	135.0	129.0	6.00	22.493	
1,391.0	1,357.8	1,410.4	1,395.2	5.3	4.1	-164.80	-27.2	-110.8	141.7	134.9	6.75	21.006	
1,400.0	1,366.3	1,419.8	1,404.1	5.4	4.1	-164.30	-27.7	-113.7	142.2	135.4	6.83	20.834	
1,458.0	1,421.2	1,478.4	1,459.6	5.7	4.5	-161.05	-31.3	-132.2	144.7	137.3	7.37	19.639	
1,500.0	1,461.0	1,520.2	1,499.2	6.0	4.8	-159.84	-33.8	-145.4	146.1	138.3	7.76	18.818	
1,600.0	1,556.1	1,619.8	1,593.4	6.6	5.4	-156.99	-39.9	-177.0	149.7	140.9	8.77	17.074	
1,676.0	1,628.3	1,695.4	1,665.0	7.0	5.9	-154.85	-44.5	-200.9	152.7	143.1	9.59	15.917	
1,700.0	1,651.1	1,719.3	1,687.6	7.2	6.0	-153.55	-46.0	-208.5	153.7	143.8	9.87	15.570	
1,800.0	1,746.4	1,818.9	1,781.9	7.7	6.7	-148.34	-52.1	-240.1	157.3	146.3	11.05	14.243	
1,900.0	1,841.8	1,918.7	1,876.3	8.3	7.4	-143.46	-58.2	-271.7	160.2	148.0	12.25	13.078	
1,963.0	1,902.0	1,981.5	1,935.8	8.7	7.8	-140.51	-62.0	-291.6	161.6	148.5	13.02	12.410	
2,000.0	1,937.4	2,018.4	1,970.7	8.9	8.0	-139.69	-64.3	-303.3	162.2	148.8	13.48	12.039	
2,100.0	2,033.1	2,118.2	2,065.1	9.5	8.7	-137.39	-70.4	-334.9	163.9	149.1	14.75	11.109	
2,200.0	2,129.0	2,218.0	2,159.6	10.0	9.4	-134.97	-76.5	-366.5	165.3	149.2	16.08	10.275	
2,250.0	2,177.1	2,267.8	2,206.8	10.3	9.7	-133.72	-79.5	-382.3	165.9	149.1	16.77	9.891	
2,300.0	2,225.1	2,317.7	2,253.9	10.6	10.1	-133.55	-82.6	-398.1	166.7	149.2	17.47	9.543	
2,400.0	2,321.2	2,417.4	2,348.3	11.2	10.7	-133.09	-88.7	-429.7	169.3	150.4	18.89	8.962	
2,500.0	2,417.0	2,517.0	2,442.6	11.7	11.4	-132.53	-94.7	-461.3	173.3	153.0	20.34	8.520	
2,537.0	2,452.5	2,553.8	2,477.4	11.9	11.7	-132.31	-97.0	-472.9	175.2	154.3	20.89	8.387	
2,600.0	2,512.8	2,616.5	2,536.7	12.3	12.1	-133.38	-100.8	-492.8	179.1	157.3	21.80	8.213	
2,700.0	2,608.2	2,715.7	2,630.7	12.9	12.8	-134.82	-106.9	-524.3	187.5	164.2	23.26	8.059	
2,800.0	2,703.3	2,814.7	2,724.4	13.5	13.5	-136.01	-112.9	-555.6	198.7	173.9	24.71	8.040	
2,824.0	2,726.1	2,838.4	2,746.8	13.7	13.6	-136.28	-114.4	-563.1	201.8	176.7	25.05	8.054	
2,900.0	2,798.2	2,913.5	2,817.9	14.1	14.1	-132.14	-119.0	-586.9	211.3	185.0	26.22	8.057	
3,000.0	2,893.6	3,012.6	2,911.7	14.7	14.8	-126.67	-125.0	-618.3	222.0	194.3	27.73	8.007	
3,100.0	2,989.4	3,111.9	3,005.7	15.3	15.5	-121.03	-131.1	-649.8	230.7	201.5	29.21	7.899	
3,112.0	3,000.9	3,123.9	3,017.0	15.4	15.6	-120.34	-131.8	-653.6	231.6	202.2	29.38	7.883	
3,200.0	3,085.5	3,211.4	3,099.8	15.9	16.2	-117.79	-137.2	-681.3	237.9	207.3	30.63	7.769	
3,300.0	3,181.9	3,310.8	3,193.9	16.4	16.9	-114.83	-143.3	-712.8	244.6	212.5	32.03	7.635	
3,400.0	3,278.4	3,410.3	3,288.1	16.9	17.6	-111.79	-149.3	-744.4	250.7	217.3	33.43	7.499	
3,500.0	3,374.7	3,509.8	3,382.3	17.5	18.3	-110.19	-155.4	-775.9	257.1	222.3	34.83	7.382	
3,600.0	3,470.3	3,609.4	3,476.6	18.1	18.9	-109.15	-161.5	-807.5	264.7	228.5	36.17	7.317	
3,687.0	3,552.8	3,696.1	3,558.6	18.6	19.5	-108.69	-166.8	-834.9	272.0	234.7	37.30	7.293	
3,700.0	3,565.1	3,709.0	3,570.8	18.7	19.6	-108.42	-167.6	-839.0	273.1	235.7	37.47	7.289	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,808.7	3,665.2	19.4	20.3	-106.44	-173.7	-870.6	281.4	242.5	38.83	7.245	
3,900.0	3,753.9	3,908.4	3,759.6	20.0	21.0	-104.62	-179.8	-902.2	288.6	248.4	40.18	7.183	
3,974.0	3,823.6	3,982.3	3,829.5	20.5	21.5	-103.38	-184.3	-925.6	293.4	252.2	41.17	7.126	
4,000.0	3,848.1	4,008.2	3,854.0	20.7	21.7	-103.61	-185.9	-933.8	295.0	253.5	41.50	7.108	
4,100.0	3,942.9	4,108.0	3,948.5	21.3	22.4	-104.27	-192.0	-965.5	301.0	258.2	42.80	7.033	
4,200.0	4,038.5	4,207.8	4,042.9	21.9	23.1	-104.63	-198.1	-997.1	307.0	262.8	44.15	6.954	
4,263.0	4,099.0	4,270.5	4,102.3	22.3	23.5	-104.73	-201.9	-1,017.0	310.7	265.7	45.01	6.903	
4,300.0	4,134.7	4,307.4	4,137.2	22.5	23.8	-105.32	-204.2	-1,028.6	313.0	267.5	45.48	6.882	
4,400.0	4,231.2	4,406.9	4,231.3	23.0	24.5	-106.97	-210.2	-1,060.2	320.1	273.3	46.76	6.845	
4,500.0	4,328.0	4,506.1	4,325.3	23.5	25.1	-108.68	-216.3	-1,091.6	328.4	280.4	48.02	6.839	
4,549.0	4,375.5	4,554.7	4,371.3	23.8	25.5	-109.55	-219.3	-1,107.0	333.0	284.3	48.63	6.847	
4,600.0	4,425.0	4,605.2	4,419.1	24.0	25.8	-108.89	-222.4	-1,123.0	338.0	288.7	49.26	6.861	
4,700.0	4,521.9	4,704.3	4,512.8	24.5	26.5	-107.68	-228.4	-1,154.4	348.1	297.6	50.47	6.897	
4,800.0	4,618.8	4,803.3	4,606.6	25.0	27.2	-106.56	-234.5	-1,185.8	358.6	307.0	51.65	6.943	
4,837.0	4,654.7	4,840.0	4,641.3	25.2	27.5	-106.17	-236.7	-1,197.4	362.6	310.5	52.08	6.962	
4,900.0	4,715.7	4,902.4	4,700.3	25.5	27.9	-105.75	-240.5	-1,217.2	369.6	316.8	52.82	6.998	
5,000.0	4,812.4	5,001.4	4,794.0	26.0	28.6	-105.19	-246.6	-1,248.6	381.2	327.3	53.97	7.064	
5,100.0	4,908.9	5,100.4	4,887.8	26.6	29.3	-104.76	-252.6	-1,279.9	393.5	338.4	55.11	7.140	
5,125.0	4,932.9	5,125.2	4,911.2	26.7	29.4	-104.67	-254.1	-1,287.8	396.7	341.3	55.40	7.161	
5,200.0	5,005.4	5,199.5	4,981.5	27.0	29.9	-101.47	-258.7	-1,311.3	405.6	349.3	56.30	7.205	
5,300.0	5,102.4	5,300.1	5,076.9	27.5	30.6	-96.44	-264.7	-1,342.8	415.8	358.4	57.42	7.241	
5,400.0	5,199.9	5,402.7	5,175.1	28.0	31.1	-90.74	-270.4	-1,371.9	423.4	365.1	58.37	7.254	
5,412.0	5,211.7	5,415.0	5,187.0	28.1	31.1	-90.00	-271.0	-1,375.2	424.2	365.7	58.48	7.253	
5,500.0	5,297.9	5,505.8	5,274.8	28.4	31.5	-86.87	-275.3	-1,397.7	428.7	369.6	59.18	7.245	
5,581.0	5,377.7	5,589.6	5,356.5	28.7	31.8	-83.46	-278.9	-1,416.0	431.8	372.0	59.76	7.225	
5,600.0	5,396.4	5,609.3	5,375.8	28.8	31.9	-84.54	-279.6	-1,420.0	432.4	372.5	59.89	7.220	
5,700.0	5,495.3	5,712.9	5,477.6	29.1	32.2	-91.90	-283.2	-1,438.7	436.3	375.8	60.49	7.213	
5,800.0	5,594.6	5,816.7	5,580.3	29.4	32.5	-103.29	-286.2	-1,453.8	441.4	380.5	60.98	7.240	
5,900.0	5,694.1	5,920.5	5,683.4	29.6	32.7	-120.54	-288.4	-1,465.3	447.8	386.5	61.36	7.298	
5,917.0	5,711.1	5,938.2	5,701.0	29.7	32.8	-124.11	-288.7	-1,466.8	449.0	387.6	61.41	7.312	
6,000.0	5,793.7	6,024.4	5,787.0	29.8	32.9	-124.13	-289.9	-1,473.0	454.7	392.9	61.72	7.366	
6,067.0	5,860.5	6,094.1	5,856.6	30.0	33.0	-124.37	-290.5	-1,476.2	458.8	396.8	61.97	7.403	
6,100.0	5,893.4	6,128.4	5,890.9	30.0	33.0	-124.57	-290.7	-1,477.1	460.5	398.4	62.11	7.415	
6,200.0	5,993.2	6,231.0	5,993.5	30.2	33.1	-125.17	-290.8	-1,477.8	464.0	401.6	62.46	7.429	
6,300.0	6,093.2	6,333.1	6,095.1	30.3	33.1	-126.50	-290.8	-1,469.1	465.1	402.5	62.67	7.422	
6,318.8	6,111.9	6,351.8	6,113.6	30.3	33.1	-178.85	-290.8	-1,466.0	465.1	431.1	34.01	13.675	
6,363.5	6,156.6	6,395.8	6,156.6	30.4	33.0	-180.00	-290.8	-1,456.7	465.0	431.0	33.99	13.680	
6,400.0	6,193.2	6,430.8	6,190.4	30.4	32.9	178.86	-290.8	-1,447.4	465.1	431.1	33.98	13.689	
6,444.4	6,237.6	6,472.0	6,229.5	30.4	32.8	177.26	-290.8	-1,434.4	465.6	431.6	33.99	13.699	
6,450.0	6,243.2	6,477.1	6,234.2	30.4	32.8	87.03	-290.8	-1,432.6	465.7	403.0	62.68	7.429	
6,475.0	6,268.1	6,500.0	6,255.5	30.4	32.8	86.04	-290.8	-1,424.3	466.2	403.6	62.63	7.444	
6,500.0	6,293.0	6,522.3	6,276.1	30.4	32.7	85.12	-290.8	-1,415.5	466.8	404.3	62.53	7.465	
6,525.0	6,317.8	6,544.9	6,296.5	30.4	32.6	84.24	-290.8	-1,406.0	467.5	405.1	62.41	7.491	
6,550.0	6,342.3	6,567.3	6,316.5	30.4	32.6	83.42	-290.8	-1,395.9	468.3	406.0	62.26	7.522	
6,575.0	6,366.5	6,589.7	6,336.2	30.3	32.5	82.65	-290.8	-1,385.1	469.1	407.0	62.08	7.557	
6,600.0	6,390.4	6,612.0	6,355.4	30.2	32.4	81.94	-290.8	-1,373.9	469.9	408.0	61.87	7.594	
6,625.0	6,413.9	6,634.3	6,374.3	30.2	32.4	81.29	-290.8	-1,362.0	470.6	409.0	61.65	7.634	
6,650.0	6,436.9	6,656.5	6,392.7	30.1	32.3	80.70	-290.8	-1,349.6	471.4	410.0	61.42	7.675	
6,675.0	6,459.3	6,678.7	6,410.7	30.0	32.2	80.18	-290.8	-1,336.7	472.1	410.9	61.17	7.717	
6,700.0	6,481.1	6,700.0	6,427.7	29.9	32.2	79.74	-290.8	-1,323.7	472.7	411.8	60.92	7.759	
6,725.0	6,502.3	6,723.0	6,445.5	29.7	32.1	79.33	-290.8	-1,309.2	473.3	412.6	60.66	7.802	
6,750.0	6,522.7	6,745.1	6,462.1	29.6	32.0	79.01	-290.8	-1,294.7	473.8	413.3	60.41	7.842	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,767.2	6,478.4	29.5	32.0	78.75	-290.8	-1,279.7	474.1	414.0	60.16	7.881	
6,800.0	6,561.2	6,789.3	6,494.1	29.4	31.9	78.56	-290.8	-1,264.2	474.4	414.5	59.93	7.917	
6,825.0	6,579.1	6,811.3	6,509.3	29.3	31.9	78.44	-290.8	-1,248.2	474.6	414.9	59.71	7.949	
6,850.0	6,596.1	6,833.4	6,524.1	29.1	31.8	78.39	-290.8	-1,231.8	474.7	415.2	59.50	7.978	
6,875.0	6,612.1	6,855.4	6,538.3	29.0	31.8	78.41	-290.8	-1,214.9	474.7	415.4	59.32	8.002	
6,900.0	6,627.1	6,877.5	6,552.0	28.9	31.7	78.49	-290.8	-1,197.6	474.5	415.4	59.17	8.020	
6,925.0	6,641.0	6,900.0	6,565.4	28.8	31.7	78.65	-290.8	-1,179.6	474.3	415.3	59.04	8.034	
6,950.0	6,653.8	6,921.7	6,577.8	28.7	31.7	78.87	-290.8	-1,161.8	474.0	415.0	58.95	8.040	
6,975.0	6,665.5	6,943.8	6,589.8	28.7	31.6	79.17	-290.8	-1,143.3	473.5	414.6	58.88	8.042	
7,000.0	6,676.0	6,965.9	6,601.3	28.6	31.6	79.53	-290.8	-1,124.4	473.0	414.1	58.85	8.037	
7,025.0	6,685.3	6,988.0	6,612.2	28.6	31.6	79.95	-290.8	-1,105.1	472.4	413.5	58.85	8.027	
7,050.0	6,693.4	7,010.2	6,622.6	28.5	31.6	80.44	-290.8	-1,085.5	471.7	412.8	58.89	8.011	
7,075.0	6,700.2	7,032.4	6,632.3	28.5	31.6	81.00	-290.8	-1,065.6	471.0	412.0	58.96	7.989	
7,100.0	6,705.8	7,054.7	6,641.4	28.5	31.7	81.62	-290.8	-1,045.3	470.2	411.2	59.05	7.963	
7,125.0	6,710.0	7,077.0	6,650.0	28.5	31.7	82.30	-290.8	-1,024.7	469.5	410.3	59.19	7.932	
7,150.0	6,713.0	7,100.0	6,658.1	28.6	31.7	83.06	-290.8	-1,003.1	468.7	409.3	59.34	7.898	
7,175.0	6,714.7	7,121.7	6,665.1	28.6	31.8	83.84	-290.8	-982.5	467.9	408.4	59.52	7.861	
7,198.8	6,715.0	7,143.2	6,671.4	28.6	31.9	84.65	-290.8	-962.1	467.2	407.5	59.71	7.824	
7,200.0	6,715.0	7,144.2	6,671.7	28.6	31.9	84.69	-290.8	-961.1	467.2	407.5	59.72	7.822	
7,300.0	6,714.1	7,237.3	6,691.7	29.0	32.2	87.25	-290.8	-870.2	465.5	404.8	60.71	7.668	
7,400.0	6,713.2	7,334.5	6,699.9	29.7	32.8	88.37	-290.8	-773.4	465.2	403.2	62.03	7.499	
7,449.8	6,712.7	7,384.0	6,699.8	30.1	33.2	88.41	-290.8	-724.0	465.2	402.3	62.86	7.400	
7,500.0	6,712.3	7,434.2	6,699.5	30.6	33.6	88.43	-290.8	-673.7	465.2	401.4	63.77	7.295	
7,600.0	6,711.3	7,534.2	6,698.8	31.7	34.5	88.46	-290.8	-573.7	465.2	399.2	65.92	7.056	
7,700.0	6,710.4	7,634.2	6,698.2	33.0	35.7	88.50	-290.8	-473.7	465.2	396.7	68.47	6.793	
7,800.0	6,709.5	7,734.2	6,697.5	34.5	37.1	88.53	-290.8	-373.7	465.1	393.8	71.37	6.517	
7,900.0	6,708.5	7,834.2	6,696.9	36.2	38.6	88.57	-290.8	-273.7	465.1	390.6	74.58	6.236	
8,000.0	6,707.6	7,934.2	6,696.3	38.0	40.2	88.60	-290.8	-173.7	465.1	387.1	78.07	5.958	
8,100.0	6,706.7	8,034.2	6,695.6	39.9	42.0	88.64	-290.8	-73.7	465.1	383.3	81.79	5.687	
8,200.0	6,705.8	8,134.2	6,695.0	41.9	43.9	88.67	-290.8	26.3	465.1	379.4	85.72	5.426	
8,300.0	6,704.8	8,234.2	6,694.3	44.0	45.9	88.71	-290.8	126.3	465.1	375.3	89.83	5.178	
8,400.0	6,703.9	8,334.2	6,693.7	46.2	48.0	88.74	-290.8	226.3	465.1	371.0	94.09	4.943	
8,500.0	6,703.0	8,434.2	6,693.0	48.5	50.1	88.78	-290.8	326.3	465.1	366.6	98.50	4.722	
8,600.0	6,702.1	8,534.2	6,692.4	50.8	52.3	88.81	-290.8	426.3	465.1	362.1	103.02	4.515	
8,700.0	6,701.1	8,634.2	6,691.8	53.1	54.6	88.85	-290.8	526.3	465.1	357.4	107.64	4.321	
8,800.0	6,700.2	8,734.2	6,691.1	55.5	56.9	88.88	-290.8	626.3	465.1	352.7	112.36	4.139	
8,900.0	6,699.3	8,834.2	6,690.5	57.9	59.2	88.92	-290.8	726.3	465.1	347.9	117.15	3.970	
9,000.0	6,698.3	8,934.2	6,689.8	60.4	61.6	88.95	-290.8	826.2	465.1	343.0	122.02	3.812	
9,100.0	6,697.4	9,034.2	6,689.2	62.9	64.1	88.98	-290.8	926.2	465.1	338.1	126.94	3.664	
9,200.0	6,696.5	9,134.2	6,688.5	65.4	66.5	89.02	-290.8	1,026.2	465.1	333.1	131.93	3.525	
9,300.0	6,695.5	9,234.2	6,687.9	68.0	69.0	89.05	-290.8	1,126.2	465.0	328.1	136.96	3.396	
9,400.0	6,694.6	9,334.2	6,687.2	70.5	71.5	89.09	-290.8	1,226.2	465.0	323.0	142.04	3.274	
9,500.0	6,693.7	9,434.2	6,686.6	73.1	74.1	89.12	-290.8	1,326.2	465.0	317.9	147.15	3.160	
9,600.0	6,692.8	9,534.2	6,685.9	75.7	76.6	89.16	-290.8	1,426.2	465.0	312.7	152.31	3.053	
9,700.0	6,691.8	9,634.2	6,685.3	78.3	79.2	89.19	-290.8	1,526.2	465.0	307.5	157.49	2.953	
9,800.0	6,690.9	9,734.2	6,684.6	80.9	81.8	89.23	-290.8	1,626.2	465.0	302.3	162.70	2.858	
9,900.0	6,690.0	9,834.2	6,684.0	83.6	84.4	89.26	-290.8	1,726.2	465.0	297.1	167.94	2.769	
10,000.0	6,689.0	9,934.2	6,683.3	86.2	87.0	89.30	-290.8	1,826.2	465.0	291.8	173.21	2.685	
10,100.0	6,688.1	10,034.2	6,682.7	88.9	89.6	89.33	-290.8	1,926.2	465.0	286.5	178.49	2.605	
10,200.0	6,687.2	10,134.2	6,682.0	91.6	92.3	89.37	-290.8	2,026.2	465.0	281.2	183.80	2.530	
10,300.0	6,686.2	10,234.2	6,681.4	94.2	94.9	89.40	-290.8	2,126.2	465.0	275.9	189.12	2.459	
10,400.0	6,685.3	10,334.2	6,680.7	96.9	97.6	89.44	-290.8	2,226.2	465.0	270.5	194.46	2.391	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	10,434.2	6,680.1	99.6	100.2	89.47	-290.8	2,326.2	465.0	265.2	199.82	2.327	
10,600.0	6,683.4	10,534.2	6,679.4	102.3	102.9	89.51	-290.8	2,426.2	465.0	259.8	205.19	2.266	
10,700.0	6,682.5	10,634.2	6,678.8	105.0	105.6	89.54	-290.8	2,526.2	465.0	254.4	210.57	2.208	
10,800.0	6,681.6	10,734.2	6,678.1	107.7	108.3	89.58	-290.8	2,626.2	465.0	249.0	215.97	2.153	
10,900.0	6,680.6	10,834.2	6,677.5	110.4	111.0	89.61	-290.8	2,726.2	465.0	243.6	221.37	2.100	
11,000.0	6,679.7	10,934.2	6,676.8	113.1	113.7	89.64	-290.8	2,826.2	465.0	238.2	226.79	2.050	
11,100.0	6,678.8	11,034.2	6,676.2	115.9	116.4	89.68	-290.8	2,926.2	465.0	232.8	232.22	2.002	
11,200.0	6,677.8	11,134.2	6,675.5	118.6	119.1	89.71	-290.8	3,026.2	465.0	227.3	237.66	1.957	
11,300.0	6,676.9	11,234.2	6,674.8	121.3	121.8	89.75	-290.8	3,126.2	465.0	221.9	243.10	1.913	
11,400.0	6,676.0	11,334.2	6,674.2	124.1	124.5	89.78	-290.8	3,226.2	465.0	216.4	248.55	1.871	
11,500.0	6,675.0	11,434.2	6,673.5	126.8	127.2	89.82	-290.8	3,326.2	465.0	211.0	254.01	1.831	
11,600.0	6,674.1	11,534.2	6,672.9	129.5	129.9	89.85	-290.8	3,426.2	465.0	205.5	259.48	1.792	
11,700.0	6,673.1	11,634.2	6,672.2	132.3	132.7	89.89	-290.8	3,526.2	465.0	200.0	264.95	1.755	
11,800.0	6,672.2	11,734.2	6,671.6	135.0	135.4	89.92	-290.8	3,626.2	465.0	194.5	270.43	1.719	
11,900.0	6,671.3	11,834.2	6,670.9	137.8	138.1	89.95	-290.8	3,726.2	465.0	189.0	275.91	1.685	
12,000.0	6,670.3	11,934.2	6,670.3	140.5	140.9	89.99	-290.8	3,826.2	465.0	183.6	281.40	1.652	
12,036.2	6,670.0	11,970.4	6,670.0	141.5	141.9	90.00	-290.8	3,862.4	465.0	181.6	283.39	1.641 SF	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.61	0.7	105.0	105.0				
100.0	100.0	100.0	100.0	0.1	0.1	79.06	0.7	105.0	105.0	104.8	0.20	537.036	
200.0	200.0	200.0	200.0	0.2	0.3	79.22	0.7	105.0	104.9	104.4	0.53	197.024	
261.0	261.0	261.0	261.0	0.3	0.5	79.37	0.7	105.0	104.9	104.1	0.74	142.073	
263.5	263.5	263.5	263.5	0.3	0.5	90.00	0.7	105.0	104.9	104.1	0.75	139.927	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	157.70	0.7	105.0	105.1	104.2	0.91	115.000	
400.0	399.9	399.9	399.9	0.6	0.8	172.57	0.7	105.0	108.4	107.0	1.37	78.977	
500.0	499.7	499.7	499.7	0.8	1.0	175.32	0.7	105.0	115.5	113.7	1.82	63.344	
538.0	537.5	537.5	537.5	0.9	1.1	175.90	0.7	105.0	119.2	117.2	1.99	59.876	
600.0	599.1	599.1	599.1	1.1	1.2	175.39	0.7	105.0	126.5	124.2	2.29	55.297	
700.0	697.9	697.9	697.9	1.5	1.4	175.16	0.7	105.0	141.6	138.9	2.76	51.411	
800.0	796.0	796.0	796.0	1.8	1.7	175.28	0.7	105.0	161.0	157.8	3.21	50.207	
818.0	813.5	813.5	813.5	1.9	1.7	175.32	0.7	105.0	165.0	161.7	3.29	50.190	
900.0	893.1	893.1	893.1	2.3	1.9	176.60	0.7	105.0	184.7	181.0	3.69	50.042	
1,000.0	989.2	989.2	989.2	2.9	2.1	177.75	0.7	105.0	212.5	208.3	4.16	51.032	
1,100.0	1,083.9	1,088.7	1,088.7	3.5	2.3	178.86	-0.3	104.1	243.6	239.0	4.60	52.971	
1,104.0	1,087.6	1,092.7	1,092.7	3.5	2.3	178.91	-0.4	104.0	244.9	240.3	4.62	53.060	
1,200.0	1,177.9	1,189.3	1,189.2	4.1	2.5	179.14	-3.9	100.7	274.8	269.7	5.07	54.164	
1,300.0	1,272.0	1,291.1	1,290.6	4.8	2.7	179.80	-10.1	94.9	303.7	298.2	5.52	55.067	
1,391.0	1,357.8	1,384.5	1,383.3	5.3	2.9	-179.29	-18.1	87.4	328.2	322.2	5.97	55.007	
1,400.0	1,366.3	1,393.7	1,392.5	5.4	2.9	-178.91	-19.0	86.6	330.5	324.5	6.01	54.970	
1,458.0	1,421.2	1,453.7	1,451.8	5.7	3.1	-176.44	-25.5	80.5	344.5	338.2	6.33	54.415	
1,500.0	1,461.0	1,497.4	1,494.9	6.0	3.2	-175.80	-30.8	75.6	353.9	347.3	6.56	53.973	
1,600.0	1,556.1	1,601.3	1,596.9	6.6	3.5	-174.08	-45.2	62.1	375.0	367.9	7.15	52.457	
1,676.0	1,628.3	1,674.9	1,668.8	7.0	3.8	-172.84	-56.4	51.7	390.6	383.0	7.63	51.205	
1,700.0	1,651.1	1,698.1	1,691.6	7.2	3.8	-171.80	-59.9	48.4	395.6	387.8	7.79	50.805	
1,800.0	1,746.4	1,795.2	1,786.5	7.7	4.2	-167.62	-74.7	34.6	416.0	407.5	8.48	49.077	
1,900.0	1,841.8	1,892.6	1,881.8	8.3	4.6	-163.67	-89.5	20.8	435.9	426.7	9.20	47.398	
1,963.0	1,902.0	1,954.0	1,941.9	8.7	4.8	-161.28	-98.8	12.0	448.2	438.5	9.66	46.374	
2,000.0	1,937.4	1,990.2	1,977.3	8.9	4.9	-160.84	-104.3	6.9	455.3	445.3	9.94	45.802	
2,100.0	2,033.1	2,088.0	2,072.9	9.5	5.3	-159.68	-119.2	-7.0	474.1	463.4	10.70	44.309	
2,200.0	2,129.0	2,185.8	2,168.7	10.0	5.7	-158.59	-134.1	-20.9	492.6	481.1	11.48	42.898	
2,250.0	2,177.1	2,234.8	2,216.6	10.3	6.0	-158.06	-141.5	-27.8	501.6	489.7	11.88	42.225	
2,300.0	2,225.1	2,281.6	2,262.4	10.6	6.1	-158.73	-148.5	-34.3	510.8	498.5	12.24	41.723	
2,400.0	2,321.2	2,373.3	2,352.5	11.2	6.4	-160.23	-160.6	-45.6	530.6	517.7	12.90	41.148	
2,500.0	2,417.0	2,464.7	2,442.9	11.7	6.7	-161.93	-170.6	-55.0	552.4	538.9	13.51	40.903	
2,537.0	2,452.5	2,500.0	2,477.9	11.9	6.8	-162.60	-173.9	-58.0	560.9	547.2	13.73	40.860	
2,600.0	2,512.8	2,555.5	2,533.1	12.3	6.9	-165.36	-178.4	-62.3	576.2	562.2	14.05	41.022	
2,700.0	2,608.2	2,645.6	2,622.9	12.9	7.2	-169.59	-184.1	-67.6	602.5	588.0	14.53	41.478	
2,800.0	2,703.3	2,734.8	2,711.9	13.5	7.3	-173.64	-187.7	-71.0	631.4	616.4	14.96	42.201	
2,824.0	2,726.1	2,756.0	2,733.1	13.7	7.4	-174.58	-188.3	-71.5	638.7	623.6	15.06	42.413	
2,900.0	2,798.2	2,823.2	2,800.3	14.1	7.5	-172.16	-189.3	-72.4	661.8	646.4	15.45	42.825	
3,000.0	2,893.6	2,916.5	2,893.6	14.7	7.7	-168.96	-189.4	-72.5	691.5	675.5	15.94	43.390	
3,100.0	2,989.4	3,012.3	2,989.4	15.3	7.8	-165.56	-189.4	-72.5	719.5	703.1	16.40	43.863	
3,112.0	3,000.9	3,023.9	3,000.9	15.4	7.8	-165.14	-189.4	-72.5	722.8	706.3	16.46	43.914	
3,200.0	3,085.5	3,108.5	3,085.5	15.9	8.0	-164.70	-189.4	-72.5	746.3	729.4	16.84	44.323	
3,300.0	3,181.9	3,204.8	3,181.9	16.4	8.1	-164.13	-189.4	-72.5	772.2	754.9	17.27	44.718	
3,400.0	3,278.4	3,301.3	3,278.4	16.9	8.3	-163.49	-189.4	-72.5	797.3	779.6	17.70	45.046	
3,500.0	3,374.7	3,397.6	3,374.7	17.5	8.5	-164.03	-189.4	-72.5	823.3	805.1	18.11	45.457	
3,600.0	3,470.3	3,493.2	3,470.3	18.1	8.7	-164.57	-189.4	-72.5	851.6	833.1	18.51	46.013	
3,687.0	3,552.8	3,575.7	3,552.8	18.6	8.8	-165.02	-189.4	-72.5	878.3	859.5	18.84	46.609	
3,700.0	3,565.1	3,588.0	3,565.1	18.7	8.8	-164.83	-189.4	-72.5	882.4	863.5	18.91	46.672	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,682.4	3,659.5	19.4	9.0	-163.42	-189.4	-72.5	914.2	894.8	19.39	47.148	
3,900.0	3,753.9	3,776.8	3,753.9	20.0	9.2	-162.07	-189.4	-72.5	946.0	926.2	19.87	47.617	
3,974.0	3,823.6	3,846.5	3,823.6	20.5	9.3	-161.11	-189.4	-72.5	969.6	949.4	20.22	47.960	
4,000.0	3,848.1	3,871.0	3,848.1	20.7	9.4	-161.54	-189.4	-72.5	977.9	957.5	20.34	48.086	
4,100.0	3,942.9	3,965.9	3,942.9	21.3	9.5	-163.16	-189.4	-72.5	1,008.3	987.5	20.80	48.476	
4,200.0	4,038.5	4,061.4	4,038.5	21.9	9.7	-164.81	-189.4	-72.5	1,036.8	1,015.5	21.27	48.732	
4,263.0	4,099.0	4,121.9	4,099.0	22.3	9.8	-165.89	-189.4	-72.5	1,053.6	1,032.1	21.58	48.829	
4,300.0	4,134.7	4,157.6	4,134.7	22.5	9.9	-167.14	-189.4	-72.5	1,063.3	1,041.5	21.73	48.927	
4,400.0	4,231.2	4,254.1	4,231.2	23.0	10.1	-170.60	-189.4	-72.5	1,088.9	1,066.7	22.16	49.144	
4,500.0	4,328.0	4,350.9	4,328.0	23.5	10.3	-174.17	-189.4	-72.5	1,113.8	1,091.2	22.60	49.295	
4,549.0	4,375.5	4,398.4	4,375.5	23.8	10.4	-175.97	-189.4	-72.5	1,125.8	1,103.0	22.81	49.346	
4,600.0	4,425.0	4,447.9	4,425.0	24.0	10.5	-176.20	-189.4	-72.5	1,138.2	1,115.2	23.04	49.399	
4,700.0	4,521.9	4,544.8	4,521.9	24.5	10.7	-176.63	-189.4	-72.5	1,162.7	1,139.2	23.49	49.501	
4,800.0	4,618.8	4,641.8	4,618.8	25.0	10.8	-177.05	-189.4	-72.5	1,187.2	1,163.3	23.94	49.601	
4,837.0	4,654.7	4,677.6	4,654.7	25.2	10.9	-177.21	-189.4	-72.5	1,196.3	1,172.2	24.10	49.638	
4,900.0	4,715.7	4,738.6	4,715.7	25.5	11.0	-177.69	-189.4	-72.5	1,212.0	1,187.7	24.38	49.718	
5,000.0	4,812.4	4,835.3	4,812.4	26.0	11.2	-178.42	-189.4	-72.5	1,237.6	1,212.8	24.82	49.868	
5,100.0	4,908.9	4,931.8	4,908.9	26.6	11.4	-179.10	-189.4	-72.5	1,263.9	1,238.6	25.26	50.043	
5,125.0	4,932.9	4,955.9	4,932.9	26.7	11.5	-179.27	-189.4	-72.5	1,270.6	1,245.2	25.37	50.091	
5,200.0	5,005.4	5,028.3	5,005.4	27.0	11.6	-176.54	-189.4	-72.5	1,290.1	1,264.3	25.77	50.067	
5,300.0	5,102.4	5,125.3	5,102.4	27.5	11.8	-172.38	-189.4	-72.5	1,314.1	1,287.8	26.29	49.992	
5,400.0	5,199.9	5,222.9	5,199.9	28.0	12.0	-167.47	-189.4	-72.5	1,335.8	1,309.1	26.78	49.875	
5,412.0	5,211.7	5,234.6	5,211.7	28.1	12.0	-166.83	-189.4	-72.5	1,338.3	1,311.4	26.84	49.858	
5,500.0	5,297.9	5,320.9	5,297.9	28.4	12.2	-164.39	-189.4	-72.5	1,355.1	1,327.9	27.24	49.746	
5,581.0	5,377.7	5,400.6	5,377.7	28.7	12.4	-161.55	-189.4	-72.5	1,368.8	1,341.2	27.59	49.614	
5,600.0	5,396.4	7,769.2	6,717.7	28.8	40.4	-119.45	-189.4	-1,406.1	1,364.6	1,303.7	60.89	22.411	
5,700.0	5,495.3	7,783.4	6,717.6	29.1	40.8	-118.95	-189.4	-1,420.4	1,269.1	1,204.0	65.10	19.493	
5,800.0	5,594.6	7,794.8	6,717.6	29.4	41.1	-123.31	-189.4	-1,431.8	1,174.4	1,106.4	68.01	17.268	
5,900.0	5,694.1	7,803.3	6,717.5	29.6	41.3	-134.57	-189.4	-1,440.3	1,080.9	1,011.1	69.76	15.495	
5,917.0	5,711.1	7,804.5	6,717.5	29.7	41.3	-137.22	-189.4	-1,441.4	1,065.2	995.2	69.96	15.225	
6,000.0	5,793.7	7,809.9	6,717.5	29.8	41.5	-136.47	-189.4	-1,446.8	989.0	918.6	70.37	14.055	
6,067.0	5,860.5	7,814.3	6,717.5	30.0	41.6	-135.86	-189.4	-1,451.2	928.3	857.6	70.69	13.133	
6,100.0	5,893.4	7,816.3	6,717.5	30.0	41.6	-134.64	-189.4	-1,453.2	898.7	827.7	70.97	12.662	
6,200.0	5,993.2	7,820.5	6,717.5	30.2	41.7	-131.16	-189.4	-1,457.5	809.7	738.2	71.58	11.312	
6,300.0	6,093.2	7,822.0	6,717.5	30.3	41.8	-128.17	-189.4	-1,459.0	722.5	650.6	71.84	10.056	
6,318.8	6,111.9	7,822.0	6,717.5	30.3	41.8	-179.64	-189.4	-1,459.0	706.3	674.8	31.53	22.400	
6,400.0	6,193.2	7,821.7	6,717.5	30.4	41.8	-179.69	-189.4	-1,458.6	638.0	606.4	31.66	20.155	
6,444.4	6,237.6	7,821.5	6,717.5	30.4	41.8	-179.71	-189.4	-1,458.5	602.1	570.3	31.73	18.977	
6,450.0	6,243.2	7,821.5	6,717.5	30.4	41.8	91.16	-189.4	-1,458.4	597.6	525.7	71.95	8.306	
6,475.0	6,268.1	7,820.4	6,717.5	30.4	41.7	94.79	-189.4	-1,457.4	578.0	506.3	71.74	8.057	
6,500.0	6,293.0	7,818.1	6,717.5	30.4	41.7	97.97	-189.4	-1,455.0	558.9	487.6	71.31	7.838	
6,525.0	6,317.8	7,814.4	6,717.5	30.4	41.6	100.69	-189.4	-1,451.4	540.3	469.6	70.73	7.640	
6,550.0	6,342.3	7,809.5	6,717.5	30.4	41.4	102.96	-189.4	-1,446.5	522.5	452.4	70.07	7.456	
6,575.0	6,366.5	7,803.3	6,717.5	30.3	41.3	104.80	-189.4	-1,440.2	505.4	436.0	69.39	7.283	
6,600.0	6,390.4	7,795.8	6,717.6	30.2	41.1	106.24	-189.4	-1,432.8	489.1	420.4	68.72	7.117	
6,625.0	6,413.9	7,787.1	6,717.6	30.2	40.9	107.30	-189.4	-1,424.1	473.8	405.7	68.09	6.958	
6,650.0	6,436.9	7,777.2	6,717.6	30.1	40.6	108.00	-189.4	-1,414.1	459.4	391.9	67.51	6.805	
6,675.0	6,459.3	7,766.1	6,717.7	30.0	40.3	108.39	-189.4	-1,403.0	446.0	379.1	66.99	6.659	
6,700.0	6,481.1	7,753.8	6,717.7	29.9	40.0	108.47	-189.4	-1,390.8	433.8	367.3	66.53	6.521	
6,725.0	6,502.3	7,740.4	6,717.8	29.7	39.7	108.29	-189.4	-1,377.4	422.7	356.5	66.12	6.392	
6,750.0	6,522.7	7,726.0	6,717.8	29.6	39.3	107.85	-189.4	-1,362.9	412.6	346.9	65.77	6.274	
6,775.0	6,542.4	7,710.4	6,717.9	29.5	38.9	107.20	-189.4	-1,347.4	403.7	338.3	65.45	6.169	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	7,693.9	6,718.0	29.4	38.5	106.35	-189.4	-1,330.9	395.9	330.8	65.16	6.076	
6,825.0	6,579.1	7,676.4	6,718.0	29.3	38.0	105.34	-189.4	-1,313.4	389.2	324.3	64.89	5.998	
6,850.0	6,596.1	7,658.0	6,718.1	29.1	37.6	104.18	-189.4	-1,295.0	383.5	318.9	64.62	5.935	
6,875.0	6,612.1	7,638.8	6,718.2	29.0	37.1	102.92	-189.4	-1,275.7	378.7	314.4	64.33	5.887	
6,900.0	6,627.1	7,618.7	6,718.2	28.9	36.6	101.59	-189.4	-1,255.7	374.8	310.8	64.02	5.855	
6,925.0	6,641.0	7,597.9	6,718.3	28.8	36.0	100.21	-189.4	-1,234.8	371.7	308.0	63.68	5.838	
6,950.0	6,653.8	7,576.4	6,718.4	28.7	35.5	98.82	-189.4	-1,213.3	369.3	306.0	63.30	5.834	SF
6,975.0	6,665.5	7,554.2	6,718.5	28.7	34.9	97.45	-189.4	-1,191.2	367.4	304.6	62.87	5.844	
7,000.0	6,676.0	7,531.5	6,718.6	28.6	34.4	96.14	-189.4	-1,168.5	366.1	303.7	62.41	5.866	
7,025.0	6,685.3	7,508.3	6,718.7	28.6	33.8	94.92	-189.4	-1,145.2	365.1	303.2	61.90	5.898	
7,050.0	6,693.4	7,484.6	6,718.8	28.5	33.2	93.82	-189.4	-1,121.5	364.5	303.1	61.37	5.938	
7,075.0	6,700.2	7,460.5	6,718.8	28.5	32.6	92.85	-189.4	-1,097.4	364.1	303.2	60.83	5.985	
7,100.0	6,705.8	7,436.1	6,718.9	28.5	32.0	92.04	-189.4	-1,073.1	363.8	303.6	60.26	6.037	
7,125.0	6,710.0	7,411.4	6,719.0	28.5	31.4	91.41	-189.4	-1,048.4	363.7	304.0	59.69	6.093	
7,150.0	6,713.0	7,386.6	6,719.1	28.6	30.8	90.96	-189.4	-1,023.6	363.6	304.5	59.13	6.149	
7,175.0	6,714.7	7,361.7	6,719.2	28.6	30.2	90.72	-189.4	-998.6	363.6	305.0	58.59	6.206	
7,192.8	6,715.1	7,343.9	6,719.3	28.6	29.8	90.67	-189.4	-980.8	363.6	305.4	58.20	6.247	
7,198.8	6,715.0	7,337.8	6,719.3	28.6	29.7	90.67	-189.4	-974.8	363.6	305.5	58.08	6.261	
7,200.0	6,715.0	7,336.7	6,719.3	28.6	29.6	90.68	-189.4	-973.6	363.6	305.6	58.05	6.264	
7,300.0	6,714.1	7,236.7	6,719.7	29.0	27.3	90.88	-189.4	-873.6	363.6	307.5	56.12	6.480	
7,400.0	6,713.2	7,136.5	6,719.8	29.7	25.1	91.05	-189.4	-773.5	363.6	309.1	54.53	6.669	
7,489.4	6,712.3	7,046.9	6,712.3	30.5	23.2	90.00	-189.4	-684.2	363.6	310.2	53.43	6.805	
7,500.0	6,712.3	7,036.4	6,710.7	30.6	23.0	89.76	-189.4	-673.9	363.6	310.3	53.31	6.820	
7,600.0	6,711.3	6,940.4	6,689.0	31.7	21.1	86.48	-189.4	-580.4	364.3	311.9	52.46	6.945	
7,700.0	6,710.4	6,850.0	6,657.4	33.0	19.5	81.67	-189.4	-495.8	368.1	316.3	51.78	7.109	
7,800.0	6,709.5	6,771.0	6,621.1	34.5	18.3	76.27	-189.4	-425.6	377.8	326.5	51.25	7.371	
7,900.0	6,708.5	6,700.0	6,582.2	36.2	17.4	70.72	-189.4	-366.3	395.9	345.2	50.67	7.813	
8,000.0	6,707.6	6,637.4	6,543.1	38.0	16.7	65.48	-189.4	-317.4	424.2	374.1	50.13	8.462	
8,100.0	6,706.7	6,583.1	6,505.9	39.9	16.2	60.86	-189.4	-277.9	462.9	413.2	49.69	9.316	
8,200.0	6,705.8	6,535.9	6,471.2	41.9	15.8	56.89	-189.4	-246.0	511.3	461.9	49.40	10.351	
8,300.0	6,704.8	6,500.0	6,443.4	44.0	15.5	53.94	-189.4	-223.3	568.1	518.6	49.52	11.474	
8,400.0	6,703.9	6,450.0	6,402.9	46.2	15.2	50.01	-189.4	-194.0	632.0	583.1	48.91	12.922	
8,500.0	6,703.0	6,427.9	6,384.3	48.5	15.1	48.35	-189.4	-181.9	701.5	651.9	49.59	14.144	
8,600.0	6,702.1	6,400.0	6,360.4	50.8	14.9	46.32	-189.4	-167.6	775.7	725.7	49.97	15.524	
8,700.0	6,701.1	6,375.9	6,339.3	53.1	14.8	44.65	-189.4	-156.0	853.6	803.1	50.51	16.901	
8,800.0	6,700.2	6,350.0	6,316.2	55.5	14.7	42.91	-189.4	-144.2	934.5	883.6	50.92	18.353	
8,900.0	6,699.3	6,335.0	6,302.6	57.9	14.6	41.94	-189.4	-137.8	1,018.0	966.1	51.87	19.627	
9,000.0	6,698.3	6,317.6	6,286.7	60.4	14.5	40.85	-189.4	-130.8	1,103.4	1,050.8	52.68	20.948	
9,100.0	6,697.4	6,300.0	6,270.5	62.9	14.5	39.78	-189.4	-124.0	1,190.6	1,137.2	53.45	22.276	
9,200.0	6,696.5	6,300.0	6,270.5	65.4	14.5	39.78	-189.4	-124.0	1,279.4	1,224.2	55.14	23.202	
9,300.0	6,695.5	6,275.0	6,247.1	68.0	14.4	38.33	-189.4	-115.1	1,369.1	1,313.6	55.48	24.676	
9,400.0	6,694.6	6,250.0	6,223.5	70.5	14.3	36.94	-189.4	-107.0	1,460.1	1,404.3	55.80	26.166	
9,500.0	6,693.7	6,250.0	6,223.5	73.1	14.3	36.94	-189.4	-107.0	1,551.7	1,494.2	57.44	27.012	
9,600.0	6,692.8	6,250.0	6,223.5	75.7	14.3	36.94	-189.4	-107.0	1,644.2	1,585.1	59.09	27.823	
9,700.0	6,691.8	6,250.0	6,223.5	78.3	14.3	36.94	-189.4	-107.0	1,737.6	1,676.8	60.76	28.600	
9,800.0	6,690.9	6,225.3	6,199.8	80.9	14.2	35.64	-189.4	-99.8	1,831.1	1,770.1	60.98	30.029	
9,900.0	6,690.0	6,200.0	6,175.4	83.6	14.1	34.37	-189.4	-93.4	1,925.6	1,864.5	61.16	31.487	
10,000.0	6,689.0	6,200.0	6,175.4	86.2	14.1	34.37	-189.4	-93.4	2,020.1	1,957.4	62.75	32.191	
10,100.0	6,688.1	6,200.0	6,175.4	88.9	14.1	34.37	-189.4	-93.4	2,115.2	2,050.8	64.36	32.865	
10,200.0	6,687.2	6,200.0	6,175.4	91.6	14.1	34.37	-189.4	-93.4	2,210.6	2,144.7	65.97	33.510	
10,300.0	6,686.2	6,200.0	6,175.4	94.2	14.1	34.37	-189.4	-93.4	2,306.5	2,238.9	67.58	34.128	
10,400.0	6,685.3	6,200.0	6,175.4	96.9	14.1	34.37	-189.4	-93.4	2,402.7	2,333.4	69.20	34.720	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,200.0	6,175.4	99.6	14.1	34.37	-189.4	-93.4	2,499.1	2,428.3	70.82	35.287	
10,600.0	6,683.4	6,175.9	6,151.9	102.3	14.0	33.23	-189.4	-88.0	2,595.4	2,524.5	70.86	36.625	
10,700.0	6,682.5	6,171.4	6,147.5	105.0	14.0	33.02	-189.4	-87.1	2,692.2	2,620.0	72.15	37.311	
10,800.0	6,681.6	6,150.0	6,126.5	107.7	14.0	32.07	-189.4	-83.1	2,789.4	2,717.0	72.34	38.560	
10,900.0	6,680.6	6,150.0	6,126.5	110.4	14.0	32.06	-189.4	-83.1	2,886.4	2,812.5	73.90	39.061	
11,000.0	6,679.7	6,150.0	6,126.5	113.1	14.0	32.06	-189.4	-83.1	2,983.7	2,908.2	75.46	39.542	
11,100.0	6,678.8	6,150.0	6,126.5	115.9	14.0	32.06	-189.4	-83.1	3,081.1	3,004.1	77.02	40.005	
11,200.0	6,677.8	6,150.0	6,126.5	118.6	14.0	32.06	-189.4	-83.1	3,178.7	3,100.1	78.58	40.451	
11,300.0	6,676.9	6,150.0	6,126.5	121.3	14.0	32.06	-189.4	-83.1	3,276.4	3,196.2	80.15	40.879	
11,400.0	6,676.0	6,150.0	6,126.5	124.1	14.0	32.06	-189.4	-83.1	3,374.2	3,292.5	81.72	41.292	
11,500.0	6,675.0	6,150.0	6,126.5	126.8	14.0	32.06	-189.4	-83.1	3,472.2	3,388.9	83.29	41.690	
11,600.0	6,674.1	6,150.0	6,126.5	129.5	14.0	32.06	-189.4	-83.1	3,570.3	3,485.4	84.86	42.074	
11,700.0	6,673.1	6,150.0	6,126.5	132.3	14.0	32.06	-189.4	-83.1	3,668.5	3,582.1	86.43	42.444	
11,800.0	6,672.2	6,150.0	6,126.5	135.0	14.0	32.06	-189.4	-83.1	3,766.8	3,678.8	88.01	42.802	
11,900.0	6,671.3	6,150.0	6,126.5	137.8	14.0	32.06	-189.4	-83.1	3,865.2	3,775.6	89.58	43.147	
12,000.0	6,670.3	6,150.0	6,126.5	140.5	14.0	32.06	-189.4	-83.1	3,963.6	3,872.5	91.16	43.480	
12,036.2	6,670.0	6,128.6	6,105.3	141.5	13.9	31.15	-189.4	-79.7	3,998.9	3,908.9	90.00	44.434	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.95	0.0	15.0	15.0				
100.0	100.0	100.0	100.0	0.1	0.1	79.73	0.0	15.0	15.0	14.8	0.20	76.850	
200.0	200.0	200.0	200.0	0.2	0.3	80.86	0.0	15.0	15.0	14.4	0.53	28.114	
261.0	261.0	261.0	261.0	0.3	0.5	81.93	0.0	15.0	14.9	14.2	0.74	20.226	
262.9	262.9	262.9	262.9	0.3	0.5	90.00	0.0	15.0	14.9	14.2	0.75	19.993	CC
300.0	300.0	300.0	300.0	0.4	0.5	160.90	0.0	15.0	15.2	14.3	0.91	16.619	
400.0	399.9	399.9	399.9	0.6	0.8	176.84	0.0	15.0	18.5	17.1	1.37	13.489	
500.0	499.7	500.5	500.5	0.8	1.0	-179.70	-0.1	13.3	23.9	22.1	1.80	13.246	
538.0	537.5	538.8	538.7	0.9	1.1	-178.77	-0.2	11.7	26.0	24.1	1.96	13.269	
600.0	599.1	601.3	601.1	1.1	1.2	-178.56	-0.4	8.0	29.7	27.5	2.24	13.271	
700.0	697.9	702.2	701.6	1.5	1.4	-177.21	-0.9	-0.9	36.4	33.7	2.69	13.516	
800.0	796.0	803.3	801.9	1.8	1.7	-175.29	-1.6	-13.3	44.0	40.8	3.15	13.977	
818.0	813.5	821.5	820.0	1.9	1.8	-174.92	-1.7	-15.9	45.4	42.2	3.23	14.072	
900.0	893.1	904.5	901.9	2.3	2.0	-172.34	-2.4	-29.2	52.5	48.8	3.66	14.350	
1,000.0	989.2	1,006.0	1,001.5	2.9	2.4	-169.96	-3.5	-48.7	61.9	57.7	4.19	14.766	
1,100.0	1,083.9	1,107.7	1,100.5	3.5	2.9	-168.18	-4.8	-71.8	72.2	67.4	4.74	15.231	
1,104.0	1,087.6	1,111.8	1,104.5	3.5	2.9	-168.12	-4.9	-72.8	72.6	67.8	4.76	15.249	
1,200.0	1,177.9	1,209.8	1,199.1	4.1	3.4	-167.41	-6.3	-98.5	81.3	75.9	5.40	15.048	
1,300.0	1,272.0	1,311.4	1,296.1	4.8	3.9	-165.83	-7.9	-128.3	87.2	81.1	6.11	14.290	
1,391.0	1,357.8	1,402.2	1,382.7	5.3	4.5	-164.25	-9.4	-155.5	92.0	85.2	6.82	13.489	
1,400.0	1,366.3	1,411.1	1,391.3	5.4	4.5	-163.84	-9.6	-158.2	92.5	85.6	6.90	13.407	
1,458.0	1,421.2	1,469.1	1,446.5	5.7	4.9	-161.23	-10.6	-175.6	94.8	87.4	7.38	12.850	
1,500.0	1,461.0	1,511.0	1,486.5	6.0	5.1	-160.48	-11.3	-188.2	96.1	88.4	7.73	12.428	
1,600.0	1,556.1	1,610.9	1,581.8	6.6	5.8	-158.66	-12.9	-218.1	99.2	90.6	8.62	11.515	
1,676.0	1,628.3	1,686.8	1,654.2	7.0	6.2	-157.25	-14.2	-240.9	101.6	92.3	9.33	10.888	
1,700.0	1,651.1	1,710.7	1,677.1	7.2	6.4	-156.18	-14.6	-248.1	102.4	92.8	9.57	10.696	
1,800.0	1,746.4	1,810.6	1,772.3	7.7	7.0	-152.01	-16.2	-278.1	104.9	94.3	10.56	9.932	
1,900.0	1,841.8	1,910.6	1,867.7	8.3	7.6	-148.29	-17.9	-308.1	106.4	94.8	11.53	9.223	
1,963.0	1,902.0	1,973.6	1,927.7	8.7	8.0	-146.15	-18.9	-327.0	106.8	94.6	12.14	8.799	
2,000.0	1,937.4	2,010.6	1,963.0	8.9	8.3	-145.81	-19.6	-338.1	106.9	94.4	12.49	8.556	
2,100.0	2,033.1	2,110.6	2,058.4	9.5	8.9	-144.74	-21.2	-368.1	106.7	93.2	13.48	7.915	
2,200.0	2,129.0	2,210.5	2,153.7	10.0	9.5	-143.47	-22.9	-398.1	106.0	91.5	14.52	7.300	
2,250.0	2,177.1	2,260.5	2,201.4	10.3	9.9	-142.74	-23.7	-413.1	105.5	90.4	15.07	7.001	
2,300.0	2,225.1	2,310.5	2,249.1	10.6	10.2	-143.05	-24.6	-428.1	105.0	89.4	15.63	6.721	
2,360.1	2,282.9	2,370.6	2,306.4	10.9	10.6	-143.27	-25.6	-446.1	104.8	88.5	16.33	6.419	
2,400.0	2,321.2	2,410.4	2,344.4	11.2	10.8	-143.34	-26.2	-458.1	104.9	88.1	16.82	6.239	
2,500.0	2,417.0	2,510.4	2,439.7	11.7	11.4	-143.27	-27.9	-488.1	105.9	87.8	18.10	5.853	
2,537.0	2,452.5	2,547.3	2,474.9	11.9	11.7	-143.16	-28.5	-499.2	106.6	88.0	18.60	5.733	
2,600.0	2,512.8	2,610.2	2,534.9	12.3	12.1	-144.29	-29.5	-518.1	108.3	88.9	19.46	5.568	
2,700.0	2,608.2	2,709.9	2,630.1	12.9	12.7	-145.50	-31.2	-548.0	113.1	92.2	20.92	5.407	
2,800.0	2,703.3	2,809.5	2,725.0	13.5	13.4	-146.16	-32.9	-577.9	120.4	97.9	22.44	5.362	
2,824.0	2,726.1	2,833.3	2,747.7	13.7	13.5	-146.27	-33.2	-585.0	122.5	99.7	22.81	5.369	
2,900.0	2,798.2	2,908.9	2,819.8	14.1	14.0	-141.70	-34.5	-607.7	128.9	104.9	24.05	5.361	
3,000.0	2,893.6	3,008.5	2,914.8	14.7	14.6	-135.87	-36.2	-637.6	135.6	110.0	25.60	5.298	
3,100.0	2,989.4	3,108.2	3,009.9	15.3	15.3	-130.05	-37.8	-667.5	140.3	113.2	27.10	5.176	
3,112.0	3,000.9	3,120.2	3,021.4	15.4	15.4	-129.35	-38.0	-671.1	140.7	113.4	27.28	5.157	
3,200.0	3,085.5	3,208.1	3,105.1	15.9	15.9	-126.68	-39.5	-697.5	143.3	114.7	28.55	5.019	
3,300.0	3,181.9	3,307.9	3,200.4	16.4	16.6	-123.54	-41.1	-727.4	145.6	115.6	30.02	4.851	
3,400.0	3,278.4	3,407.7	3,295.6	16.9	17.2	-120.25	-42.8	-757.4	147.2	115.7	31.50	4.674	
3,500.0	3,374.7	3,507.6	3,390.8	17.5	17.9	-118.57	-44.5	-787.4	149.3	116.3	32.97	4.529	
3,600.0	3,470.3	3,607.5	3,486.1	18.1	18.5	-117.75	-46.1	-817.4	152.7	118.5	34.27	4.456	
3,687.0	3,552.8	3,694.4	3,569.0	18.6	19.1	-117.71	-47.6	-843.4	156.7	121.4	35.29	4.441	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,700.0	3,565.1	3,707.4	3,581.4	18.7	19.1	-117.52	-47.8	-847.3	157.4	121.9	35.44	4.441	
3,800.0	3,659.5	3,807.3	3,676.7	19.4	19.8	-116.17	-49.5	-877.3	162.0	125.4	36.60	4.426	
3,900.0	3,753.9	3,907.2	3,772.0	20.0	20.4	-115.09	-51.1	-907.3	165.8	128.1	37.69	4.398	
3,974.0	3,823.6	3,981.2	3,842.5	20.5	20.9	-114.46	-52.3	-929.5	168.1	129.6	38.46	4.370	
4,000.0	3,848.1	4,007.1	3,867.3	20.7	21.1	-114.89	-52.8	-937.3	168.8	130.1	38.72	4.359	
4,100.0	3,942.9	4,107.1	3,962.6	21.3	21.7	-116.09	-54.4	-967.3	171.2	131.4	39.81	4.299	
4,200.0	4,038.5	4,207.1	4,057.9	21.9	22.4	-116.63	-56.1	-997.3	172.9	131.9	41.09	4.209	
4,263.0	4,099.0	4,270.0	4,118.0	22.3	22.8	-116.66	-57.1	-1,016.2	173.8	131.8	41.99	4.139	
4,300.0	4,134.7	4,307.0	4,153.2	22.5	23.0	-117.16	-57.8	-1,027.3	174.3	131.8	42.51	4.100	
4,400.0	4,231.2	4,406.8	4,248.5	23.0	23.7	-118.37	-59.4	-1,057.2	176.3	132.3	43.99	4.007	
4,500.0	4,328.0	4,506.5	4,343.6	23.5	24.3	-119.38	-61.1	-1,087.2	179.3	133.7	45.54	3.936	
4,549.0	4,375.5	4,555.4	4,390.1	23.8	24.6	-119.82	-61.9	-1,101.8	181.2	134.8	46.32	3.911	
4,600.0	4,425.0	4,606.1	4,438.6	24.0	24.9	-118.71	-62.7	-1,117.1	183.3	136.2	47.11	3.892	
4,700.0	4,521.9	4,705.7	4,533.5	24.5	25.6	-116.62	-64.4	-1,146.9	188.0	139.4	48.63	3.867	
4,800.0	4,618.8	4,805.3	4,628.5	25.0	26.2	-114.67	-66.1	-1,176.8	193.2	143.1	50.08	3.858	
4,837.0	4,654.7	4,842.1	4,663.7	25.2	26.5	-113.98	-66.7	-1,187.9	195.3	144.7	50.60	3.859	
4,900.0	4,715.7	4,904.9	4,723.5	25.5	26.9	-113.10	-67.7	-1,206.7	199.0	147.5	51.48	3.865	
5,000.0	4,812.4	5,004.4	4,818.5	26.0	27.5	-111.89	-69.4	-1,236.6	205.5	152.7	52.82	3.891	
5,100.0	4,908.9	5,104.0	4,913.4	26.6	28.2	-110.92	-71.0	-1,266.5	212.8	158.7	54.10	3.934	
5,125.0	4,932.9	5,128.9	4,937.2	26.7	28.3	-110.72	-71.4	-1,273.9	214.7	160.3	54.41	3.946	
5,200.0	5,005.4	5,203.6	5,008.4	27.0	28.8	-107.08	-72.7	-1,296.4	220.0	164.6	55.38	3.972	
5,300.0	5,102.4	5,303.2	5,103.4	27.5	29.4	-101.32	-74.3	-1,326.3	225.2	168.5	56.66	3.974	
5,400.0	5,199.9	5,402.9	5,198.5	28.0	30.1	-94.37	-76.0	-1,356.0	228.4	170.5	57.86	3.948	
5,412.0	5,211.7	5,414.8	5,210.0	28.1	30.1	-93.48	-76.2	-1,359.4	228.7	170.7	57.98	3.944	
5,500.0	5,297.9	5,502.9	5,294.7	28.4	30.5	-89.25	-77.5	-1,383.3	230.1	171.3	58.76	3.916	
5,581.0	5,377.7	5,584.1	5,373.5	28.7	30.8	-84.91	-78.6	-1,402.9	230.7	171.3	59.38	3.885	
5,600.0	5,396.4	5,603.2	5,392.1	28.8	30.9	-85.78	-78.8	-1,407.2	230.8	171.3	59.52	3.877	
5,700.0	5,495.3	5,703.8	5,490.6	29.1	31.3	-92.09	-80.0	-1,427.8	232.4	172.3	60.17	3.863	
5,800.0	5,594.6	5,804.6	5,589.9	29.4	31.6	-102.54	-80.9	-1,445.0	235.9	175.2	60.67	3.888	
5,900.0	5,694.1	5,905.6	5,689.9	29.6	31.8	-118.96	-81.7	-1,458.7	241.1	180.1	61.05	3.950	
5,917.0	5,711.1	5,922.7	5,707.0	29.7	31.9	-122.40	-81.8	-1,460.6	242.2	181.1	61.10	3.964	
6,000.0	5,793.7	6,006.7	5,790.5	29.8	32.0	-121.96	-82.2	-1,468.8	247.3	185.9	61.41	4.028	
6,067.0	5,860.5	6,074.5	5,858.1	30.0	32.1	-122.02	-82.5	-1,473.7	251.2	189.6	61.65	4.075	
6,100.0	5,893.4	6,107.9	5,891.5	30.0	32.2	-122.18	-82.6	-1,475.5	252.9	191.2	61.80	4.093	
6,200.0	5,993.2	6,209.2	5,992.7	30.2	32.3	-122.69	-82.8	-1,478.5	256.6	194.4	62.14	4.129	
6,300.0	6,093.2	6,310.7	6,094.2	30.3	32.4	-123.31	-82.8	-1,477.9	257.8	195.5	62.38	4.133	
6,318.8	6,111.9	6,330.0	6,113.5	30.3	32.4	-175.55	-82.8	-1,476.7	257.8	224.6	33.17	7.771	
6,400.0	6,193.2	6,412.2	6,194.9	30.4	32.3	-177.98	-82.8	-1,465.7	257.2	223.9	33.22	7.740	
6,442.2	6,235.4	6,453.6	6,235.4	30.4	32.2	-180.00	-82.8	-1,456.7	257.0	223.7	33.31	7.716	
6,444.4	6,237.6	6,455.8	6,237.5	30.4	32.2	179.88	-82.8	-1,456.1	257.0	223.7	33.31	7.715	
6,450.0	6,243.2	6,461.2	6,242.7	30.4	32.2	89.58	-82.8	-1,454.8	257.0	194.5	62.45	4.115	
6,475.0	6,268.1	6,485.3	6,265.9	30.4	32.2	88.30	-82.8	-1,448.2	257.1	194.7	62.37	4.122	
6,500.0	6,293.0	6,509.4	6,288.8	30.4	32.1	87.10	-82.8	-1,440.8	257.3	195.1	62.25	4.134	
6,525.0	6,317.8	6,533.3	6,311.3	30.4	32.1	86.00	-82.8	-1,432.8	257.6	195.5	62.09	4.149	
6,550.0	6,342.3	6,557.2	6,333.6	30.4	32.0	85.00	-82.8	-1,424.0	258.0	196.1	61.91	4.168	
6,575.0	6,366.5	6,581.1	6,355.4	30.3	31.9	84.10	-82.8	-1,414.5	258.4	196.7	61.70	4.188	
6,600.0	6,390.4	6,604.9	6,376.9	30.2	31.9	83.30	-82.8	-1,404.2	258.8	197.3	61.47	4.210	
6,625.0	6,413.9	6,628.6	6,398.0	30.2	31.8	82.61	-82.8	-1,393.3	259.2	198.0	61.22	4.233	
6,650.0	6,436.9	6,652.3	6,418.7	30.1	31.7	82.02	-82.8	-1,381.8	259.5	198.6	60.98	4.256	
6,675.0	6,459.3	6,676.0	6,438.9	30.0	31.6	81.53	-82.8	-1,369.5	259.8	199.1	60.73	4.279	
6,700.0	6,481.1	6,700.0	6,459.1	29.9	31.6	81.16	-82.8	-1,356.5	260.1	199.6	60.48	4.301	
6,725.0	6,502.3	6,723.3	6,478.2	29.7	31.5	80.89	-82.8	-1,343.1	260.3	200.0	60.24	4.321	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,750.0	6,522.7	6,746.9	6,497.1	29.6	31.4	80.74	-82.8	-1,329.0	260.4	200.4	60.02	4.339	
6,775.0	6,542.4	6,770.5	6,515.5	29.5	31.3	80.69	-82.8	-1,314.3	260.4	200.6	59.81	4.354	
6,800.0	6,561.2	6,794.1	6,533.4	29.4	31.3	80.75	-82.8	-1,298.9	260.4	200.8	59.62	4.367	
6,825.0	6,579.1	6,817.7	6,550.9	29.3	31.2	80.91	-82.8	-1,283.0	260.3	200.8	59.46	4.377	
6,850.0	6,596.1	6,841.3	6,567.8	29.1	31.1	81.19	-82.8	-1,266.4	260.1	200.7	59.32	4.384	
6,875.0	6,612.1	6,865.0	6,584.1	29.0	31.1	81.57	-82.8	-1,249.4	259.8	200.6	59.21	4.388	
6,900.0	6,627.1	6,888.7	6,599.9	28.9	31.0	82.07	-82.8	-1,231.7	259.5	200.4	59.12	4.389	
6,925.0	6,641.0	6,912.4	6,615.2	28.8	31.0	82.66	-82.8	-1,213.6	259.1	200.1	59.07	4.387	
6,950.0	6,653.8	6,936.1	6,629.8	28.7	30.9	83.37	-82.8	-1,194.9	258.8	199.7	59.04	4.383	
6,975.0	6,665.5	6,959.9	6,643.8	28.7	30.9	84.18	-82.8	-1,175.7	258.4	199.3	59.03	4.377	
7,000.0	6,676.0	6,983.8	6,657.3	28.6	30.9	85.09	-82.8	-1,156.0	258.0	198.9	59.04	4.369	
7,025.0	6,685.3	7,007.7	6,670.1	28.6	30.9	86.10	-82.8	-1,135.8	257.6	198.5	59.07	4.361	
7,050.0	6,693.4	7,031.6	6,682.2	28.5	30.9	87.21	-82.8	-1,115.1	257.3	198.2	59.11	4.353	
7,075.0	6,700.2	7,055.7	6,693.7	28.5	30.9	88.41	-82.8	-1,094.0	257.1	197.9	59.16	4.346	
7,100.0	6,705.8	7,079.8	6,704.5	28.5	30.9	89.70	-82.8	-1,072.4	257.0	197.8	59.22	4.340	
7,105.5	6,706.8	7,085.2	6,706.8	28.5	30.9	90.00	-82.8	-1,067.6	257.0	197.8	59.23	4.339	
7,125.0	6,710.0	7,104.0	6,714.6	28.5	30.9	91.08	-82.8	-1,050.4	257.0	197.8	59.26	4.337	
7,150.0	6,713.0	7,128.4	6,724.0	28.6	31.0	92.54	-82.8	-1,028.0	257.3	198.0	59.31	4.338	
7,175.0	6,714.7	7,152.8	6,732.7	28.6	31.0	94.07	-82.8	-1,005.1	257.7	198.4	59.33	4.343	
7,198.8	6,715.0	7,176.3	6,740.3	28.6	31.1	95.59	-82.8	-982.9	258.4	199.0	59.35	4.353	
7,200.0	6,715.0	7,177.4	6,740.6	28.6	31.1	95.67	-82.8	-981.8	258.4	199.0	59.35	4.354	
7,300.0	6,714.1	7,280.0	6,764.9	29.0	31.5	101.17	-82.8	-882.2	262.1	202.6	59.46	4.408	
7,400.0	6,713.2	7,388.1	6,774.9	29.7	32.1	103.50	-82.8	-774.7	264.3	204.0	60.33	4.381	
7,500.0	6,712.3	7,489.5	6,774.5	30.6	33.0	103.62	-82.8	-673.3	264.4	202.4	62.01	4.264	
7,600.0	6,711.3	7,589.5	6,774.0	31.7	34.0	103.71	-82.8	-573.3	264.5	200.4	64.11	4.126	
7,700.0	6,710.4	7,689.5	6,773.5	33.0	35.2	103.79	-82.8	-473.3	264.6	198.0	66.59	3.974	
7,800.0	6,709.5	7,789.5	6,772.9	34.5	36.6	103.87	-82.8	-373.3	264.7	195.3	69.41	3.814	
7,900.0	6,708.5	7,889.5	6,772.4	36.2	38.1	103.95	-82.8	-273.3	264.8	192.3	72.53	3.651	
8,000.0	6,707.6	7,989.5	6,771.8	38.0	39.8	104.03	-82.8	-173.3	264.9	189.0	75.91	3.489	
8,100.0	6,706.7	8,089.5	6,771.3	39.9	41.6	104.11	-82.8	-73.3	265.0	185.5	79.52	3.332	
8,200.0	6,705.8	8,189.5	6,770.7	41.9	43.5	104.19	-82.8	26.7	265.1	181.7	83.33	3.181	
8,300.0	6,704.8	8,289.5	6,770.2	44.0	45.6	104.27	-82.8	126.7	265.2	177.9	87.31	3.037	
8,400.0	6,703.9	8,389.5	6,769.7	46.2	47.6	104.35	-82.8	226.7	265.3	173.8	91.44	2.901	
8,500.0	6,703.0	8,489.5	6,769.1	48.5	49.8	104.43	-82.8	326.7	265.4	169.7	95.69	2.773	
8,600.0	6,702.1	8,589.5	6,768.6	50.8	52.0	104.51	-82.8	426.7	265.5	165.4	100.06	2.653	
8,700.0	6,701.1	8,689.5	6,768.0	53.1	54.3	104.60	-82.8	526.7	265.6	161.0	104.52	2.541	
8,800.0	6,700.2	8,789.5	6,767.5	55.5	56.6	104.68	-82.8	626.7	265.7	156.6	109.07	2.436	
8,900.0	6,699.3	8,889.5	6,767.0	57.9	59.0	104.76	-82.8	726.7	265.8	152.1	113.69	2.337	
9,000.0	6,698.3	8,989.5	6,766.4	60.4	61.4	104.84	-82.8	826.7	265.9	147.5	118.38	2.246	
9,100.0	6,697.4	9,089.5	6,765.9	62.9	63.8	104.92	-82.8	926.7	266.0	142.8	123.12	2.160	
9,200.0	6,696.5	9,189.5	6,765.3	65.4	66.3	105.00	-82.8	1,026.7	266.1	138.1	127.92	2.080	
9,300.0	6,695.5	9,289.5	6,764.8	68.0	68.8	105.08	-82.8	1,126.7	266.2	133.4	132.75	2.005	
9,400.0	6,694.6	9,389.5	6,764.3	70.5	71.3	105.16	-82.8	1,226.7	266.3	128.6	137.63	1.935	
9,500.0	6,693.7	9,489.5	6,763.7	73.1	73.9	105.24	-82.8	1,326.7	266.4	123.8	142.54	1.869	
9,600.0	6,692.8	9,589.5	6,763.2	75.7	76.4	105.32	-82.8	1,426.7	266.5	119.0	147.48	1.807	
9,700.0	6,691.8	9,689.5	6,762.6	78.3	79.0	105.40	-82.8	1,526.7	266.6	114.1	152.44	1.749	
9,800.0	6,690.9	9,789.5	6,762.1	80.9	81.6	105.49	-82.8	1,626.7	266.7	109.2	157.43	1.694	
9,900.0	6,690.0	9,889.5	6,761.5	83.6	84.2	105.57	-82.8	1,726.7	266.8	104.3	162.45	1.642	
10,000.0	6,689.0	9,989.5	6,761.0	86.2	86.8	105.65	-82.8	1,826.6	266.9	99.4	167.48	1.594	
10,100.0	6,688.1	10,089.5	6,760.5	88.9	89.4	105.73	-82.8	1,926.6	267.0	94.5	172.52	1.548	
10,200.0	6,687.2	10,189.5	6,759.9	91.6	92.1	105.81	-82.8	2,026.6	267.1	89.5	177.59	1.504	
10,300.0	6,686.2	10,289.5	6,759.4	94.2	94.7	105.89	-82.8	2,126.6	267.2	84.5	182.66	1.463	Level 3

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,400.0	6,685.3	10,389.5	6,758.8	96.9	97.4	105.97	-82.8	2,226.6	267.3	79.6	187.75	1.424	Level 3
10,500.0	6,684.4	10,489.5	6,758.3	99.6	100.1	106.05	-82.8	2,326.6	267.4	74.6	192.85	1.387	Level 3
10,600.0	6,683.4	10,589.5	6,757.8	102.3	102.7	106.13	-82.8	2,426.6	267.5	69.6	197.96	1.351	Level 3
10,700.0	6,682.5	10,689.5	6,757.2	105.0	105.4	106.21	-82.8	2,526.6	267.6	64.6	203.08	1.318	Level 3
10,800.0	6,681.6	10,789.5	6,756.7	107.7	108.1	106.29	-82.8	2,626.6	267.7	59.5	208.20	1.286	Level 3
10,900.0	6,680.6	10,889.5	6,756.1	110.4	110.8	106.37	-82.8	2,726.6	267.9	54.5	213.33	1.256	Level 3
11,000.0	6,679.7	10,989.5	6,755.6	113.1	113.5	106.45	-82.8	2,826.6	268.0	49.5	218.47	1.227	Level 2
11,100.0	6,678.8	11,089.5	6,755.1	115.9	116.2	106.53	-82.8	2,926.6	268.1	44.5	223.61	1.199	Level 2
11,200.0	6,677.8	11,189.5	6,754.5	118.6	118.9	106.62	-82.8	3,026.6	268.2	39.4	228.75	1.172	Level 2
11,300.0	6,676.9	11,289.5	6,754.0	121.3	121.6	106.70	-82.8	3,126.6	268.3	34.4	233.90	1.147	Level 2
11,400.0	6,676.0	11,389.5	6,753.4	124.1	124.3	106.78	-82.8	3,226.6	268.4	29.4	239.06	1.123	Level 2
11,500.0	6,675.0	11,489.5	6,752.9	126.8	127.1	106.86	-82.8	3,326.6	268.5	24.3	244.21	1.100	Level 2
11,600.0	6,674.1	11,589.5	6,752.3	129.5	129.8	106.94	-82.8	3,426.6	268.6	19.3	249.37	1.077	Level 2
11,700.0	6,673.1	11,689.5	6,751.8	132.3	132.5	107.02	-82.8	3,526.6	268.8	14.2	254.52	1.056	Level 2
11,800.0	6,672.2	11,789.5	6,751.3	135.0	135.3	107.10	-82.8	3,626.6	268.9	9.2	259.68	1.035	Level 2
11,900.0	6,671.3	11,889.5	6,750.7	137.8	138.0	107.18	-82.8	3,726.6	269.0	4.1	264.84	1.016	Level 2
12,000.0	6,670.3	11,989.5	6,750.2	140.5	140.7	107.26	-82.8	3,826.6	269.1	-0.9	270.01	0.997	Level 1
12,036.2	6,670.0	12,026.1	6,750.0	141.5	141.7	107.30	-82.7	3,863.2	269.1	-2.8	271.88	0.990	Level 1, ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.72	0.4	75.2	75.2				
100.0	100.0	100.0	100.0	0.1	0.1	79.20	0.4	75.2	75.2	75.0	0.20	384.586	
200.0	200.0	200.0	200.0	0.2	0.3	79.42	0.4	75.2	75.1	74.6	0.53	141.066	
261.0	261.0	261.0	261.0	0.3	0.5	79.63	0.4	75.2	75.1	74.3	0.74	101.703	
263.5	263.5	263.5	263.5	0.3	0.5	90.00	0.4	75.2	75.1	74.3	0.75	100.204	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	158.00	0.4	75.2	75.3	74.4	0.91	82.402	
400.0	399.9	399.9	399.9	0.6	0.8	172.99	0.4	75.2	78.6	77.2	1.37	57.273	
500.0	499.7	499.7	499.7	0.8	1.0	175.83	0.4	75.2	85.7	83.9	1.82	47.008	
538.0	537.5	537.5	537.5	0.9	1.1	176.44	0.4	75.2	89.4	87.4	1.99	44.913	
600.0	599.1	599.1	599.1	1.1	1.2	175.97	0.4	75.2	96.7	94.4	2.29	42.277	
700.0	697.9	697.9	697.9	1.5	1.4	175.81	0.4	75.2	111.9	109.1	2.76	40.609	
800.0	796.0	796.0	796.0	1.8	1.7	175.98	0.4	75.2	131.3	128.1	3.21	40.935	
818.0	813.5	814.2	814.2	1.9	1.7	176.03	0.4	75.2	135.2	131.9	3.29	41.137	
900.0	893.1	898.4	898.4	2.3	1.9	177.27	0.6	73.5	153.3	149.7	3.68	41.668	
1,000.0	989.2	1,001.6	1,001.5	2.9	2.1	178.24	1.5	68.2	176.1	172.0	4.13	42.638	
1,100.0	1,083.9	1,105.6	1,105.0	3.5	2.3	178.80	3.0	59.1	199.7	195.1	4.57	43.672	
1,104.0	1,087.6	1,109.8	1,109.2	3.5	2.3	178.81	3.1	58.7	200.6	196.0	4.59	43.712	
1,200.0	1,177.9	1,210.9	1,209.4	4.1	2.6	178.00	5.1	46.2	221.8	216.7	5.09	43.557	
1,300.0	1,272.0	1,317.8	1,314.9	4.8	2.9	177.18	7.9	29.2	240.0	234.4	5.58	42.998	
1,391.0	1,357.8	1,414.8	1,410.1	5.3	3.2	176.45	11.0	10.4	253.1	247.0	6.06	41.755	
1,400.0	1,366.3	1,423.8	1,418.9	5.4	3.3	176.64	11.3	8.5	254.3	248.2	6.11	41.617	
1,458.0	1,421.2	1,481.3	1,475.2	5.7	3.5	177.86	13.2	-3.3	261.2	254.8	6.42	40.658	
1,500.0	1,461.0	1,523.1	1,516.0	6.0	3.6	177.57	14.6	-11.8	265.8	259.2	6.64	40.021	
1,600.0	1,556.1	1,613.9	1,605.1	6.6	3.9	176.97	17.4	-29.1	278.2	271.0	7.14	38.961	
1,676.0	1,628.3	1,682.3	1,672.5	7.0	4.1	176.59	19.3	-40.3	289.5	282.0	7.50	38.572	
1,700.0	1,651.1	1,700.0	1,690.1	7.2	4.2	177.14	19.7	-42.9	293.4	285.8	7.61	38.543	
1,800.0	1,746.4	1,792.8	1,782.1	7.7	4.4	179.43	21.7	-55.0	311.2	303.1	8.10	38.407	
1,900.0	1,841.8	1,880.9	1,869.7	8.3	4.7	-178.32	23.1	-63.7	331.5	322.9	8.58	38.624	
1,963.0	1,902.0	1,935.9	1,924.5	8.7	4.8	-176.91	23.8	-67.7	345.5	336.7	8.88	38.899	
2,000.0	1,937.4	1,967.9	1,956.5	8.9	4.9	-177.02	24.1	-69.7	354.2	345.2	9.06	39.112	
2,100.0	2,033.1	2,053.8	2,042.4	9.5	5.0	-177.26	24.6	-73.0	379.3	369.7	9.52	39.831	
2,200.0	2,129.0	2,140.5	2,129.0	10.0	5.2	-177.42	24.8	-73.9	406.5	396.5	9.99	40.701	
2,250.0	2,177.1	2,188.6	2,177.1	10.3	5.3	-177.48	24.8	-73.9	420.3	410.1	10.22	41.112	
2,300.0	2,225.1	2,236.6	2,225.1	10.6	5.4	-178.73	24.8	-73.9	434.1	423.7	10.46	41.488	
2,400.0	2,321.2	2,332.6	2,321.2	11.2	5.5	178.95	24.8	-73.9	462.1	451.1	10.95	42.211	
2,500.0	2,417.0	2,428.5	2,417.0	11.7	5.7	176.82	24.8	-73.9	490.4	479.0	11.43	42.912	
2,537.0	2,452.5	2,464.0	2,452.5	11.9	5.8	176.08	24.8	-73.9	501.0	489.4	11.61	43.166	
2,600.0	2,512.8	2,524.3	2,512.8	12.3	5.9	173.29	24.8	-73.9	519.2	507.3	11.92	43.563	
2,700.0	2,608.2	2,619.7	2,608.2	12.9	6.1	169.27	24.8	-73.9	548.7	536.3	12.41	44.214	
2,800.0	2,703.3	2,714.8	2,703.3	13.5	6.3	165.75	24.8	-73.9	579.0	566.1	12.90	44.894	
2,824.0	2,726.1	2,737.5	2,726.1	13.7	6.3	164.97	24.8	-73.9	586.4	573.4	13.01	45.062	
2,900.0	2,798.2	2,809.7	2,798.2	14.1	6.5	168.10	24.8	-73.9	609.6	596.2	13.39	45.539	
3,000.0	2,893.6	2,905.1	2,893.6	14.7	6.7	172.25	24.8	-73.9	639.3	625.4	13.89	46.038	
3,100.0	2,989.4	3,000.9	2,989.4	15.3	6.9	176.50	24.8	-73.9	667.8	653.4	14.39	46.410	
3,112.0	3,000.9	3,012.4	3,000.9	15.4	6.9	177.02	24.8	-73.9	671.2	656.7	14.45	46.447	
3,200.0	3,085.5	3,097.0	3,085.5	15.9	7.1	178.07	24.8	-73.9	695.4	680.5	14.88	46.733	
3,300.0	3,181.9	3,193.3	3,181.9	16.4	7.3	179.27	24.8	-73.9	722.3	706.9	15.37	46.988	
3,400.0	3,278.4	3,289.9	3,278.4	16.9	7.5	-179.51	24.8	-73.9	748.3	732.5	15.86	47.177	
3,500.0	3,374.7	3,386.2	3,374.7	17.5	7.7	-179.65	24.8	-73.9	775.3	759.0	16.33	47.482	
3,600.0	3,470.3	3,481.7	3,470.3	18.1	7.9	-179.76	24.8	-73.9	804.7	787.9	16.78	47.954	
3,687.0	3,552.8	3,564.3	3,552.8	18.6	8.0	-179.85	24.8	-73.9	832.2	815.1	17.16	48.491	
3,700.0	3,565.1	3,576.5	3,565.1	18.7	8.1	-179.59	24.8	-73.9	836.5	819.3	17.23	48.555	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,671.0	3,659.5	19.4	8.3	-177.66	24.8	-73.9	869.4	851.6	17.73	49.035	
3,900.0	3,753.9	3,765.3	3,753.9	20.0	8.5	-175.83	24.8	-73.9	902.5	884.2	18.23	49.500	
3,974.0	3,823.6	3,835.1	3,823.6	20.5	8.6	-174.53	24.8	-73.9	927.1	908.5	18.60	49.836	
4,000.0	3,848.1	3,859.6	3,848.1	20.7	8.7	-174.82	24.8	-73.9	935.7	917.0	18.75	49.912	
4,100.0	3,942.9	3,954.4	3,942.9	21.3	8.9	-175.96	24.8	-73.9	967.5	948.1	19.30	50.125	
4,200.0	4,038.5	4,049.9	4,038.5	21.9	9.1	-177.17	24.8	-73.9	996.9	977.1	19.85	50.225	
4,263.0	4,099.0	4,110.5	4,099.0	22.3	9.2	-178.01	24.8	-73.9	1,014.3	994.1	20.19	50.235	
4,300.0	4,134.7	4,146.1	4,134.7	22.5	9.3	-179.14	24.8	-73.9	1,024.2	1,003.8	20.38	50.263	
4,400.0	4,231.2	4,242.7	4,231.2	23.0	9.5	177.71	24.8	-73.9	1,050.2	1,029.4	20.88	50.304	
4,500.0	4,328.0	4,339.5	4,328.0	23.5	9.7	174.43	24.8	-73.9	1,075.3	1,054.0	21.38	50.300	
4,549.0	4,375.5	4,387.0	4,375.5	23.8	9.8	172.77	24.8	-73.9	1,087.3	1,065.7	21.62	50.284	
4,600.0	4,425.0	4,436.4	4,425.0	24.0	9.9	172.66	24.8	-73.9	1,099.7	1,077.8	21.87	50.283	
4,700.0	4,521.9	4,533.4	4,521.9	24.5	10.1	172.47	24.8	-73.9	1,123.9	1,101.6	22.35	50.286	
4,800.0	4,618.8	4,630.3	4,618.8	25.0	10.3	172.27	24.8	-73.9	1,148.3	1,125.5	22.83	50.294	
4,837.0	4,654.7	4,666.2	4,654.7	25.2	10.4	172.20	24.8	-73.9	1,157.4	1,134.4	23.01	50.298	
4,900.0	4,715.7	4,727.2	4,715.7	25.5	10.5	171.84	24.8	-73.9	1,172.9	1,149.6	23.31	50.314	
5,000.0	4,812.4	4,823.9	4,812.4	26.0	10.7	171.31	24.8	-73.9	1,198.2	1,174.5	23.79	50.367	
5,100.0	4,908.9	4,920.3	4,908.9	26.6	10.9	170.83	24.8	-73.9	1,224.3	1,200.0	24.27	50.454	
5,125.0	4,932.9	4,944.4	4,932.9	26.7	11.0	170.72	24.8	-73.9	1,230.9	1,206.5	24.38	50.480	
5,200.0	5,005.4	5,016.8	5,005.4	27.0	11.1	173.65	24.8	-73.9	1,250.3	1,225.5	24.76	50.486	
5,300.0	5,102.4	5,113.9	5,102.4	27.5	11.4	178.04	24.8	-73.9	1,274.3	1,249.0	25.27	50.428	
5,400.0	5,199.9	5,211.4	5,199.9	28.0	11.6	-176.85	24.8	-73.9	1,296.3	1,270.6	25.77	50.303	
5,412.0	5,211.7	5,223.1	5,211.7	28.1	11.6	-176.18	24.8	-73.9	1,298.8	1,273.0	25.83	50.283	
5,500.0	5,297.9	5,309.4	5,297.9	28.4	11.8	-173.58	24.8	-73.9	1,316.1	1,289.9	26.25	50.141	
5,581.0	5,377.7	5,389.1	5,377.7	28.7	12.0	-170.61	24.8	-73.9	1,330.3	1,303.6	26.62	49.978	
5,600.0	5,396.4	5,407.9	5,396.4	28.8	12.0	-171.84	24.8	-73.9	1,333.3	1,306.6	26.70	49.935	
5,700.0	5,495.3	7,840.9	6,787.6	29.1	40.5	-144.43	24.8	-1,420.7	1,298.6	1,249.0	49.50	26.232	
5,800.0	5,594.6	7,852.3	6,787.6	29.4	40.8	-142.28	24.8	-1,432.0	1,200.0	1,141.4	58.55	20.495	
5,900.0	5,694.1	7,860.7	6,787.5	29.6	41.0	-146.51	24.8	-1,440.5	1,101.6	1,036.2	65.38	16.848	
5,917.0	5,711.1	7,861.9	6,787.5	29.7	41.0	-148.04	24.8	-1,441.7	1,084.9	1,018.6	66.23	16.380	
6,000.0	5,793.7	7,867.3	6,787.5	29.8	41.2	-146.60	24.8	-1,447.1	1,003.5	936.4	67.03	14.971	
6,067.0	5,860.5	7,871.7	6,787.5	30.0	41.3	-145.43	24.8	-1,451.5	937.9	870.3	67.65	13.864	
6,100.0	5,893.4	7,873.7	6,787.5	30.0	41.3	-143.11	24.8	-1,453.5	905.7	837.2	68.52	13.218	
6,200.0	5,993.2	7,878.0	6,787.5	30.2	41.4	-135.78	24.8	-1,457.7	807.9	737.4	70.58	11.447	
6,300.0	6,093.2	7,879.5	6,787.5	30.3	41.5	-128.39	24.8	-1,459.2	710.2	638.6	71.62	9.916	
6,318.8	6,111.9	7,879.4	6,787.5	30.3	41.5	-179.02	24.8	-1,459.2	691.9	660.6	31.33	22.083	
6,400.0	6,193.2	7,879.1	6,787.5	30.4	41.5	-179.13	24.8	-1,458.9	612.8	581.4	31.47	19.475	
6,444.4	6,237.6	7,879.0	6,787.5	30.4	41.5	-179.20	24.8	-1,458.7	569.8	538.3	31.54	18.066	
6,450.0	6,243.2	7,878.9	6,787.5	30.4	41.5	93.22	24.8	-1,458.7	564.5	492.6	71.82	7.859	
6,475.0	6,268.1	7,877.9	6,787.5	30.4	41.4	103.25	24.8	-1,457.7	540.4	469.6	70.84	7.629	
6,500.0	6,293.0	7,875.5	6,787.5	30.4	41.4	111.64	24.8	-1,455.3	516.5	447.9	68.62	7.528	
6,525.0	6,317.8	7,871.9	6,787.5	30.4	41.3	118.36	24.8	-1,451.7	492.9	427.0	65.92	7.478	
6,550.0	6,342.3	7,866.9	6,787.5	30.4	41.2	123.60	24.8	-1,446.7	469.6	406.4	63.23	7.428	
6,575.0	6,366.5	7,860.7	6,787.5	30.3	41.0	127.64	24.8	-1,440.5	446.7	386.0	60.77	7.351	
6,600.0	6,390.4	7,853.3	6,787.6	30.2	40.8	130.71	24.8	-1,433.0	424.3	365.7	58.64	7.236	
6,625.0	6,413.9	7,844.6	6,787.6	30.2	40.6	132.99	24.8	-1,424.3	402.5	345.7	56.83	7.082	
6,650.0	6,436.9	7,834.6	6,787.6	30.1	40.3	134.65	24.8	-1,414.4	381.3	326.0	55.32	6.892	
6,675.0	6,459.3	7,823.5	6,787.7	30.0	40.0	135.79	24.8	-1,403.3	360.8	306.7	54.09	6.670	
6,700.0	6,481.1	7,811.3	6,787.7	29.9	39.7	136.49	24.8	-1,391.0	341.1	288.0	53.10	6.423	
6,725.0	6,502.3	7,797.9	6,787.8	29.7	39.4	136.81	24.8	-1,377.6	322.2	269.9	52.34	6.157	
6,750.0	6,522.7	7,783.4	6,787.8	29.6	39.0	136.80	24.8	-1,363.2	304.3	252.6	51.77	5.878	
6,775.0	6,542.4	7,767.9	6,787.9	29.5	38.6	136.50	24.8	-1,347.7	287.4	236.0	51.39	5.592	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	7,751.3	6,788.0	29.4	38.2	135.92	24.8	-1,331.1	271.6	220.4	51.18	5.306	
6,825.0	6,579.1	7,733.9	6,788.0	29.3	37.7	135.11	24.8	-1,313.6	256.8	205.7	51.12	5.024	
6,850.0	6,596.1	7,715.5	6,788.1	29.1	37.3	134.07	24.8	-1,295.2	243.3	192.1	51.20	4.752	
6,875.0	6,612.1	7,696.2	6,788.2	29.0	36.8	132.83	24.8	-1,276.0	230.9	179.5	51.39	4.493	
6,900.0	6,627.1	7,676.1	6,788.3	28.9	36.3	131.41	24.8	-1,255.9	219.8	168.1	51.68	4.252	
6,925.0	6,641.0	7,655.3	6,788.3	28.8	35.7	129.86	24.8	-1,235.1	209.8	157.8	52.03	4.032	
6,950.0	6,653.8	7,633.8	6,788.4	28.7	35.2	128.19	24.8	-1,213.6	201.1	148.7	52.42	3.836	
6,975.0	6,665.5	7,611.7	6,788.5	28.7	34.6	126.46	24.8	-1,191.4	193.5	140.7	52.81	3.664	
7,000.0	6,676.0	7,588.9	6,788.6	28.6	34.1	124.72	24.8	-1,168.7	187.1	133.9	53.18	3.518	
7,025.0	6,685.3	7,565.7	6,788.7	28.6	33.5	123.00	24.8	-1,145.5	181.7	128.2	53.49	3.396	
7,050.0	6,693.4	7,542.0	6,788.8	28.5	32.9	121.38	24.8	-1,121.8	177.3	123.6	53.72	3.300	
7,075.0	6,700.2	7,517.9	6,788.8	28.5	32.3	119.91	24.8	-1,097.7	173.7	119.9	53.85	3.227	
7,100.0	6,705.8	7,493.5	6,788.9	28.5	31.7	118.65	24.8	-1,073.3	171.0	117.2	53.86	3.175	
7,125.0	6,710.0	7,468.9	6,789.0	28.5	31.1	117.63	24.8	-1,048.7	169.0	115.3	53.76	3.144	
7,150.0	6,713.0	7,444.1	6,789.1	28.6	30.5	116.91	24.8	-1,023.8	167.7	114.2	53.54	3.133	
7,175.0	6,714.7	7,419.1	6,789.2	28.6	29.9	116.50	24.8	-998.9	167.0	113.8	53.19	3.140	
7,192.6	6,715.1	7,401.5	6,789.3	28.6	29.5	116.42	24.8	-981.3	166.9	114.0	52.87	3.156	
7,198.8	6,715.0	7,395.3	6,789.3	28.6	29.4	116.43	24.8	-975.1	166.9	114.1	52.75	3.163	
7,200.0	6,715.0	7,394.1	6,789.3	28.6	29.3	116.43	24.8	-973.9	166.9	114.1	52.73	3.165	
7,300.0	6,714.1	7,294.1	6,789.7	29.0	27.0	116.83	24.8	-873.9	167.5	116.6	50.90	3.290	
7,400.0	6,713.2	7,191.9	6,789.8	29.7	24.8	117.14	24.8	-771.7	167.9	118.5	49.39	3.400	
7,500.0	6,712.3	7,081.1	6,778.4	30.6	22.4	113.91	24.8	-661.6	163.9	114.6	49.26	3.326	
7,600.0	6,711.3	6,975.9	6,752.0	31.7	20.4	105.27	24.8	-559.8	155.5	104.8	50.66	3.069	
7,700.0	6,710.4	6,879.9	6,715.1	33.0	18.8	91.83	24.8	-471.3	149.5	97.7	51.81	2.886	
7,711.9	6,710.3	6,869.2	6,710.3	33.2	18.7	90.01	24.8	-461.7	149.4	97.6	51.83	2.883	SF
7,800.0	6,709.5	6,794.9	6,672.9	34.5	17.6	76.17	24.8	-397.6	155.7	105.0	50.66	3.074	
7,900.0	6,708.5	6,721.1	6,629.4	36.2	16.7	61.90	24.8	-338.1	181.0	133.7	47.31	3.825	
8,000.0	6,707.6	6,657.7	6,587.2	38.0	16.1	50.89	24.8	-290.7	224.8	181.2	43.54	5.163	
8,100.0	6,706.7	6,600.0	6,545.3	39.9	15.6	42.52	24.8	-251.0	282.5	242.3	40.20	7.028	
8,200.0	6,705.8	6,550.0	6,506.6	41.9	15.2	36.57	24.8	-219.4	349.8	312.0	37.84	9.245	
8,300.0	6,704.8	6,517.2	6,480.0	44.0	15.0	33.26	24.8	-200.2	423.7	386.7	36.97	11.459	
8,400.0	6,703.9	6,482.7	6,451.2	46.2	14.8	30.22	24.8	-181.3	502.4	466.2	36.17	13.890	
8,500.0	6,703.0	6,450.0	6,423.0	48.5	14.7	27.70	24.8	-164.7	584.7	549.1	35.62	16.414	
8,600.0	6,702.1	6,426.7	6,402.5	50.8	14.6	26.10	24.8	-153.7	669.7	634.1	35.66	18.780	
8,700.0	6,701.1	6,400.0	6,378.5	53.1	14.4	24.44	24.8	-141.9	756.9	721.3	35.60	21.264	
8,800.0	6,700.2	6,383.5	6,363.5	55.5	14.4	23.49	24.8	-135.1	845.8	809.8	36.02	23.478	
8,900.0	6,699.3	6,365.5	6,346.9	57.9	14.3	22.53	24.8	-128.0	936.1	899.7	36.40	25.715	
9,000.0	6,698.3	6,350.0	6,332.5	60.4	14.2	21.75	24.8	-122.2	1,027.5	990.6	36.90	27.849	
9,100.0	6,697.4	6,350.0	6,332.5	62.9	14.2	21.75	24.8	-122.2	1,120.2	1,082.2	38.01	29.471	
9,200.0	6,696.5	6,321.8	6,306.1	65.4	14.1	20.44	24.8	-112.6	1,213.2	1,175.2	38.01	31.919	
9,300.0	6,695.5	6,300.0	6,285.3	68.0	14.0	19.51	24.8	-105.8	1,307.2	1,268.9	38.29	34.139	
9,400.0	6,694.6	6,300.0	6,285.3	70.5	14.0	19.51	24.8	-105.8	1,401.5	1,362.2	39.36	35.609	
9,500.0	6,693.7	6,300.0	6,285.3	73.1	14.0	19.51	24.8	-105.8	1,496.7	1,456.2	40.44	37.013	
9,600.0	6,692.8	6,280.3	6,266.4	75.7	14.0	18.74	24.8	-100.3	1,592.0	1,551.2	40.78	39.040	
9,700.0	6,691.8	6,272.0	6,258.4	78.3	14.0	18.43	24.8	-98.1	1,687.8	1,646.3	41.54	40.633	
9,800.0	6,690.9	6,250.0	6,237.1	80.9	13.9	17.64	24.8	-92.7	1,784.2	1,742.3	41.82	42.666	
9,900.0	6,690.0	6,250.0	6,237.1	83.6	13.9	17.64	24.8	-92.7	1,880.5	1,837.6	42.85	43.882	
10,000.0	6,689.0	6,250.0	6,237.1	86.2	13.9	17.64	24.8	-92.7	1,977.1	1,933.2	43.89	45.044	
10,100.0	6,688.1	6,250.0	6,237.1	88.9	13.9	17.64	24.8	-92.7	2,074.1	2,029.2	44.94	46.157	
10,200.0	6,687.2	6,250.0	6,237.1	91.6	13.9	17.64	24.8	-92.7	2,171.4	2,125.4	45.98	47.222	
10,300.0	6,686.2	6,250.0	6,237.1	94.2	13.9	17.64	24.8	-92.7	2,268.9	2,221.9	47.03	48.242	
10,400.0	6,685.3	6,228.5	6,216.1	96.9	13.8	16.93	24.8	-88.1	2,366.2	2,318.9	47.26	50.069	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,223.8	6,211.5	99.6	13.8	16.79	24.8	-87.2	2,463.9	2,415.8	48.11	51.209	
10,600.0	6,683.4	6,200.0	6,188.0	102.3	13.7	16.07	24.8	-83.0	2,562.1	2,513.8	48.28	53.066	
10,700.0	6,682.5	6,200.0	6,188.0	105.0	13.7	16.07	24.8	-83.0	2,659.9	2,610.6	49.29	53.965	
10,800.0	6,681.6	6,200.0	6,188.0	107.7	13.7	16.07	24.8	-83.0	2,757.9	2,707.6	50.30	54.829	
10,900.0	6,680.6	6,200.0	6,188.0	110.4	13.7	16.07	24.8	-83.0	2,856.0	2,804.7	51.31	55.660	
11,000.0	6,679.7	6,200.0	6,188.0	113.1	13.7	16.07	24.8	-83.0	2,954.3	2,902.0	52.33	56.460	
11,100.0	6,678.8	6,200.0	6,188.0	115.9	13.7	16.07	24.8	-83.0	3,052.6	2,999.3	53.34	57.230	
11,200.0	6,677.8	6,200.0	6,188.0	118.6	13.7	16.07	24.8	-83.0	3,151.1	3,096.8	54.36	57.972	
11,300.0	6,676.9	6,200.0	6,188.0	121.3	13.7	16.07	24.8	-83.0	3,249.7	3,194.3	55.37	58.687	
11,400.0	6,676.0	6,200.0	6,188.0	124.1	13.7	16.07	24.8	-83.0	3,348.3	3,291.9	56.39	59.376	
11,500.0	6,675.0	6,200.0	6,188.0	126.8	13.7	16.07	24.8	-83.0	3,447.1	3,389.7	57.41	60.041	
11,600.0	6,674.1	6,200.0	6,188.0	129.5	13.7	16.07	24.8	-83.0	3,545.9	3,487.4	58.43	60.683	
11,700.0	6,673.1	6,200.0	6,188.0	132.3	13.7	16.07	24.8	-83.0	3,644.7	3,585.3	59.45	61.304	
11,800.0	6,672.2	6,200.0	6,188.0	135.0	13.7	16.07	24.8	-83.0	3,743.7	3,683.2	60.48	61.903	
11,900.0	6,671.3	6,200.0	6,188.0	137.8	13.7	16.06	24.8	-83.0	3,842.6	3,781.1	61.50	62.482	
12,000.0	6,670.3	6,177.3	6,165.6	140.5	13.7	15.43	24.8	-79.8	3,941.2	3,879.7	61.50	64.084	
12,036.2	6,670.0	6,176.6	6,164.8	141.5	13.7	15.41	24.8	-79.7	3,977.1	3,915.3	61.83	64.321	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.65	0.4	60.2	60.2				
100.0	100.0	100.0	100.0	0.1	0.1	79.15	0.4	60.2	60.1	59.9	0.20	307.653	
200.0	200.0	200.0	200.0	0.2	0.3	79.43	0.4	60.2	60.1	59.6	0.53	112.826	
261.0	261.0	261.0	261.0	0.3	0.5	79.69	0.4	60.2	60.0	59.3	0.74	81.329	
263.5	263.5	263.5	263.5	0.3	0.5	90.00	0.4	60.2	60.0	59.3	0.75	80.137	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	158.10	0.4	60.2	60.3	59.4	0.91	65.950	
400.0	399.9	399.9	399.9	0.6	0.8	173.19	0.4	60.2	63.6	62.2	1.37	46.318	
500.0	499.7	499.7	499.7	0.8	1.0	176.11	0.4	60.2	70.7	68.9	1.82	38.763	
538.0	537.5	537.5	537.5	0.9	1.1	176.74	0.4	60.2	74.4	72.4	1.99	37.361	
600.0	599.1	599.1	599.1	1.1	1.2	176.30	0.4	60.2	81.7	79.4	2.29	35.706	
700.0	697.9	697.9	697.9	1.5	1.4	176.18	0.4	60.2	96.9	94.1	2.75	35.156	
800.0	796.0	799.3	799.3	1.8	1.7	176.87	-0.5	58.7	114.9	111.7	3.19	36.050	
818.0	813.5	817.6	817.6	1.9	1.7	177.09	-0.8	58.0	118.3	115.0	3.26	36.277	
900.0	893.1	901.1	900.9	2.3	1.9	179.41	-3.0	54.0	134.3	130.6	3.63	36.966	
1,000.0	989.2	1,002.9	1,002.4	2.9	2.1	-177.87	-7.4	46.1	155.2	151.1	4.09	37.944	
1,100.0	1,083.9	1,104.9	1,103.6	3.5	2.3	-175.25	-13.4	35.1	177.6	173.1	4.55	39.009	
1,104.0	1,087.6	1,109.0	1,107.6	3.5	2.3	-175.15	-13.7	34.6	178.6	174.0	4.57	39.049	
1,200.0	1,177.9	1,207.5	1,204.8	4.1	2.6	-173.80	-21.3	20.9	199.7	194.6	5.12	38.996	
1,300.0	1,272.0	1,310.9	1,306.3	4.8	3.0	-172.05	-31.0	3.3	219.2	213.5	5.70	38.419	
1,391.0	1,357.8	1,405.5	1,398.3	5.3	3.3	-170.17	-41.3	-15.5	234.7	228.4	6.33	37.091	
1,400.0	1,366.3	1,414.8	1,407.4	5.4	3.4	-169.71	-42.5	-17.5	236.2	229.8	6.40	36.915	
1,458.0	1,421.2	1,475.4	1,465.9	5.7	3.7	-166.67	-50.0	-31.2	244.4	237.5	6.86	35.633	
1,500.0	1,461.0	1,519.2	1,508.1	6.0	3.9	-165.54	-55.8	-41.7	249.5	242.3	7.20	34.641	
1,600.0	1,556.1	1,623.1	1,607.2	6.6	4.4	-162.60	-70.8	-69.0	260.5	252.4	8.12	32.080	
1,676.0	1,628.3	1,697.8	1,678.1	7.0	4.9	-160.44	-82.1	-89.5	268.6	259.7	8.87	30.275	
1,700.0	1,651.1	1,721.7	1,700.8	7.2	5.0	-159.12	-85.7	-96.1	271.2	262.1	9.12	29.736	
1,800.0	1,746.4	1,825.5	1,798.6	7.7	5.6	-153.37	-102.4	-126.4	280.9	270.6	10.28	27.330	
1,900.0	1,841.8	1,928.8	1,894.7	8.3	6.4	-147.34	-120.8	-159.6	288.7	277.1	11.61	24.866	
1,963.0	1,902.0	1,992.5	1,953.3	8.7	6.8	-143.43	-132.8	-181.5	292.8	280.3	12.52	23.390	
2,000.0	1,937.4	2,028.7	1,986.6	8.9	7.1	-142.07	-139.8	-194.1	295.2	282.1	13.06	22.605	
2,100.0	2,033.1	2,126.7	2,076.4	9.5	7.9	-138.47	-158.6	-228.2	302.1	287.5	14.56	20.752	
2,200.0	2,129.0	2,224.6	2,166.3	10.0	8.7	-134.95	-177.3	-262.3	309.7	293.6	16.10	19.230	
2,250.0	2,177.1	2,273.5	2,211.2	10.3	9.1	-133.23	-186.7	-279.3	313.7	296.8	16.89	18.576	
2,300.0	2,225.1	2,322.4	2,256.0	10.6	9.5	-132.64	-196.1	-296.3	318.1	300.5	17.67	18.005	
2,400.0	2,321.2	2,420.0	2,345.7	11.2	10.3	-131.51	-214.8	-330.3	328.6	309.4	19.23	17.084	
2,500.0	2,417.0	2,517.5	2,435.1	11.7	11.1	-130.47	-233.5	-364.3	341.2	320.4	20.79	16.411	
2,537.0	2,452.5	2,553.5	2,468.1	11.9	11.4	-130.11	-240.4	-376.8	346.4	325.0	21.36	16.215	
2,600.0	2,512.8	2,614.7	2,524.3	12.3	11.9	-131.02	-252.2	-398.1	356.1	333.8	22.31	15.965	
2,700.0	2,608.2	2,711.4	2,613.0	12.9	12.7	-132.36	-270.7	-431.7	374.2	350.5	23.77	15.741	
2,800.0	2,703.3	2,807.5	2,701.2	13.5	13.5	-133.57	-289.2	-465.2	395.6	370.4	25.19	15.701	
2,824.0	2,726.1	2,830.5	2,722.3	13.7	13.6	-133.85	-293.6	-473.2	401.1	375.6	25.53	15.715	
2,900.0	2,798.2	2,903.3	2,789.1	14.1	14.3	-129.74	-307.5	-498.5	418.6	391.9	26.70	15.678	
3,000.0	2,893.6	2,999.6	2,877.5	14.7	15.1	-124.27	-326.0	-532.1	440.2	412.0	28.23	15.597	
3,100.0	2,989.4	3,096.4	2,966.3	15.3	15.9	-118.65	-344.6	-565.7	460.1	430.4	29.72	15.480	
3,112.0	3,000.9	3,108.0	2,977.0	15.4	16.0	-117.96	-346.8	-569.8	462.4	432.5	29.90	15.464	
3,200.0	3,085.5	3,193.4	3,055.4	15.9	16.7	-115.48	-363.2	-599.5	478.8	447.6	31.13	15.379	
3,300.0	3,181.9	3,290.6	3,144.5	16.4	17.5	-112.68	-381.8	-633.3	497.1	464.6	32.51	15.290	
3,400.0	3,278.4	3,387.8	3,233.7	16.9	18.3	-109.88	-400.5	-667.1	515.2	481.3	33.87	15.209	
3,500.0	3,374.7	3,485.1	3,323.0	17.5	19.1	-108.23	-419.1	-701.0	533.7	498.5	35.23	15.150	
3,600.0	3,470.3	3,582.5	3,412.4	18.1	19.9	-106.88	-437.8	-734.9	553.3	516.8	36.55	15.137	
3,687.0	3,552.8	3,667.4	3,490.3	18.6	20.6	-105.95	-454.1	-764.4	571.2	533.5	37.70	15.151	
3,700.0	3,565.1	3,680.0	3,501.9	18.7	20.7	-105.62	-456.5	-768.9	573.9	536.0	37.89	15.147	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,777.7	3,591.5	19.4	21.6	-103.13	-475.3	-802.9	594.2	554.9	39.34	15.106	
3,900.0	3,753.9	3,875.6	3,681.4	20.0	22.4	-100.77	-494.0	-836.9	613.7	572.9	40.78	15.048	
3,974.0	3,823.6	3,948.2	3,748.0	20.5	23.0	-99.09	-508.0	-862.2	627.5	585.6	41.85	14.993	
4,000.0	3,848.1	3,973.7	3,771.4	20.7	23.2	-99.24	-512.9	-871.1	632.3	590.1	42.21	14.979	
4,100.0	3,942.9	4,071.8	3,861.4	21.3	24.0	-99.74	-531.7	-905.2	650.7	607.1	43.57	14.933	
4,200.0	4,038.5	4,169.6	3,951.2	21.9	24.9	-100.21	-550.4	-939.3	669.3	624.4	44.92	14.899	
4,263.0	4,099.0	4,231.1	4,007.6	22.3	25.4	-100.52	-562.2	-960.7	681.2	635.4	45.77	14.884	
4,300.0	4,134.7	4,267.2	4,040.7	22.5	25.7	-101.24	-569.1	-973.2	688.3	642.1	46.21	14.896	
4,400.0	4,231.2	4,364.4	4,129.9	23.0	26.5	-103.32	-587.8	-1,007.0	708.4	661.0	47.38	14.951	
4,500.0	4,328.0	4,461.2	4,218.7	23.5	27.3	-105.60	-606.4	-1,040.7	729.8	681.3	48.52	15.041	
4,549.0	4,375.5	4,508.5	4,262.1	23.8	27.7	-106.78	-615.4	-1,057.2	740.9	691.8	49.07	15.097	
4,600.0	4,425.0	4,557.6	4,307.2	24.0	28.1	-106.41	-624.9	-1,074.3	752.6	702.9	49.64	15.159	
4,700.0	4,521.9	4,654.0	4,395.6	24.5	28.9	-105.72	-643.3	-1,107.8	775.8	725.1	50.75	15.286	
4,800.0	4,618.8	4,750.3	4,484.0	25.0	29.8	-105.10	-661.8	-1,141.3	799.5	747.6	51.85	15.418	
4,837.0	4,654.7	4,785.9	4,516.7	25.2	30.1	-104.88	-668.6	-1,153.7	808.3	756.1	52.26	15.467	
4,900.0	4,715.7	4,846.6	4,572.3	25.5	30.6	-104.70	-680.3	-1,174.9	823.6	770.6	52.94	15.556	
5,000.0	4,812.4	4,942.8	4,660.7	26.0	31.4	-104.46	-698.7	-1,208.4	848.3	794.2	54.02	15.703	
5,100.0	4,908.9	5,039.0	4,748.9	26.6	32.2	-104.27	-717.2	-1,241.8	873.6	818.5	55.09	15.857	
5,125.0	4,932.9	5,063.0	4,771.0	26.7	32.4	-104.23	-721.8	-1,250.2	880.0	824.6	55.36	15.896	
5,200.0	5,005.4	5,139.4	4,841.1	27.0	33.0	-101.33	-736.4	-1,276.7	898.7	842.4	56.31	15.960	
5,300.0	5,102.4	5,253.8	4,947.4	27.5	33.8	-96.85	-756.8	-1,313.7	920.7	863.2	57.50	16.012	
5,400.0	5,199.9	5,370.1	5,057.1	28.0	34.4	-91.64	-775.5	-1,347.6	938.8	880.2	58.58	16.026	
5,412.0	5,211.7	5,384.1	5,070.4	28.1	34.5	-90.96	-777.6	-1,351.4	940.7	882.0	58.71	16.024	
5,500.0	5,297.9	5,487.9	5,169.7	28.4	35.0	-88.18	-792.1	-1,377.8	953.4	893.9	59.51	16.019	
5,581.0	5,377.7	5,584.1	5,262.6	28.7	35.4	-85.05	-804.1	-1,399.5	963.0	902.8	60.19	16.001	
5,600.0	5,396.4	5,606.7	5,284.6	28.8	35.5	-86.19	-806.7	-1,404.2	965.0	904.7	60.32	15.998	
5,700.0	5,495.3	5,726.2	5,401.4	29.1	35.9	-93.83	-819.0	-1,426.5	975.7	914.7	60.97	16.003	
5,800.0	5,594.6	5,846.2	5,519.5	29.4	36.3	-105.44	-829.0	-1,444.6	986.2	924.7	61.50	16.037	
5,900.0	5,694.1	5,966.6	5,638.9	29.6	36.6	-122.83	-836.6	-1,458.4	996.7	934.8	61.92	16.098	
5,917.0	5,711.1	5,987.1	5,659.3	29.7	36.6	-126.41	-837.6	-1,460.3	998.5	936.5	61.98	16.110	
6,000.0	5,793.7	6,087.4	5,759.2	29.8	36.8	-126.40	-841.7	-1,467.8	1,006.4	944.1	62.31	16.151	
6,067.0	5,860.5	6,168.6	5,840.3	30.0	36.9	-126.51	-843.9	-1,471.7	1,011.7	949.1	62.57	16.168	
6,100.0	5,893.4	6,208.6	5,880.3	30.0	36.9	-126.63	-844.5	-1,472.8	1,013.9	951.1	62.74	16.159	
6,200.0	5,993.2	6,321.8	5,993.5	30.2	37.0	-126.95	-844.9	-1,473.6	1,017.8	954.7	63.14	16.119	
6,300.0	6,093.2	6,423.3	6,094.5	30.3	37.0	-127.57	-844.9	-1,465.0	1,019.1	955.7	63.40	16.075	
6,318.8	6,111.9	6,441.9	6,112.9	30.3	37.0	-179.70	-844.9	-1,461.9	1,019.2	979.2	39.96	25.504	
6,345.7	6,138.8	6,468.4	6,138.8	30.3	36.9	180.00	-844.9	-1,456.7	1,019.1	979.2	39.93	25.521	
6,400.0	6,193.2	6,520.5	6,189.2	30.4	36.8	179.26	-844.9	-1,443.5	1,019.2	979.4	39.84	25.582	
6,444.4	6,237.6	6,561.5	6,228.2	30.4	36.8	178.54	-844.9	-1,430.7	1,019.5	979.8	39.74	25.656	
6,450.0	6,243.2	6,566.5	6,232.9	30.4	36.7	88.44	-844.9	-1,428.9	1,019.6	955.9	63.64	16.021	
6,475.0	6,268.1	6,589.1	6,253.9	30.4	36.7	87.99	-844.9	-1,420.7	1,019.8	956.2	63.66	16.020	
6,500.0	6,293.0	6,611.6	6,274.6	30.4	36.6	87.56	-844.9	-1,411.9	1,020.2	956.5	63.66	16.026	
6,525.0	6,317.8	6,634.0	6,294.9	30.4	36.6	87.16	-844.9	-1,402.5	1,020.5	956.9	63.62	16.040	
6,550.0	6,342.3	6,656.3	6,314.9	30.4	36.5	86.78	-844.9	-1,392.5	1,020.9	957.3	63.56	16.061	
6,575.0	6,366.5	6,678.6	6,334.5	30.3	36.4	86.43	-844.9	-1,381.9	1,021.2	957.8	63.47	16.089	
6,600.0	6,390.4	6,700.0	6,353.0	30.2	36.4	86.12	-844.9	-1,371.2	1,021.6	958.2	63.37	16.123	
6,625.0	6,413.9	6,723.1	6,372.6	30.2	36.3	85.81	-844.9	-1,358.9	1,022.0	958.8	63.23	16.162	
6,650.0	6,436.9	6,745.2	6,391.0	30.1	36.2	85.54	-844.9	-1,346.6	1,022.3	959.3	63.08	16.207	
6,675.0	6,459.3	6,767.3	6,409.0	30.0	36.2	85.30	-844.9	-1,333.8	1,022.7	959.8	62.91	16.256	
6,700.0	6,481.1	6,789.4	6,426.5	29.9	36.1	85.09	-844.9	-1,320.4	1,023.0	960.2	62.73	16.308	
6,725.0	6,502.3	6,811.4	6,443.6	29.7	36.0	84.91	-844.9	-1,306.5	1,023.2	960.7	62.53	16.363	
6,750.0	6,522.7	6,833.5	6,460.3	29.6	35.9	84.76	-844.9	-1,292.1	1,023.5	961.1	62.33	16.421	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,855.5	6,476.5	29.5	35.9	84.64	-844.9	-1,277.2	1,023.6	961.5	62.12	16.480	
6,800.0	6,561.2	6,877.5	6,492.2	29.4	35.8	84.56	-844.9	-1,261.9	1,023.8	961.9	61.90	16.538	
6,825.0	6,579.1	6,900.0	6,507.8	29.3	35.7	84.51	-844.9	-1,245.6	1,023.8	962.2	61.69	16.598	
6,850.0	6,596.1	6,921.5	6,522.2	29.1	35.7	84.49	-844.9	-1,229.7	1,023.9	962.4	61.48	16.653	
6,875.0	6,612.1	6,943.4	6,536.5	29.0	35.6	84.51	-844.9	-1,213.0	1,023.8	962.6	61.28	16.708	
6,900.0	6,627.1	6,965.4	6,550.2	28.9	35.6	84.55	-844.9	-1,195.8	1,023.8	962.7	61.09	16.759	
6,925.0	6,641.0	6,987.4	6,563.4	28.8	35.5	84.63	-844.9	-1,178.2	1,023.6	962.7	60.91	16.806	
6,950.0	6,653.8	7,009.4	6,576.0	28.7	35.5	84.74	-844.9	-1,160.2	1,023.5	962.7	60.75	16.847	
6,975.0	6,665.5	7,031.5	6,588.2	28.7	35.4	84.89	-844.9	-1,141.8	1,023.3	962.6	60.61	16.882	
7,000.0	6,676.0	7,053.5	6,599.7	28.6	35.4	85.06	-844.9	-1,123.0	1,023.0	962.5	60.49	16.912	
7,025.0	6,685.3	7,075.6	6,610.7	28.6	35.4	85.27	-844.9	-1,103.8	1,022.7	962.3	60.40	16.932	
7,050.0	6,693.4	7,100.0	6,622.1	28.5	35.3	85.53	-844.9	-1,082.3	1,022.4	962.1	60.33	16.947	
7,075.0	6,700.2	7,119.8	6,630.9	28.5	35.3	85.77	-844.9	-1,064.5	1,022.0	961.7	60.29	16.951	
7,100.0	6,705.8	7,142.0	6,640.1	28.5	35.3	86.07	-844.9	-1,044.3	1,021.7	961.4	60.28	16.948	
7,125.0	6,710.0	7,164.2	6,648.6	28.5	35.3	86.39	-844.9	-1,023.8	1,021.3	961.0	60.30	16.936	
7,150.0	6,713.0	7,186.5	6,656.6	28.6	35.3	86.74	-844.9	-1,003.0	1,020.9	960.6	60.35	16.916	
7,175.0	6,714.7	7,208.9	6,663.9	28.6	35.3	87.11	-844.9	-981.9	1,020.5	960.1	60.43	16.888	
7,198.8	6,715.0	7,230.2	6,670.3	28.6	35.3	87.50	-844.9	-961.5	1,020.2	959.7	60.54	16.853	
7,200.0	6,715.0	7,231.3	6,670.6	28.6	35.3	87.51	-844.9	-960.5	1,020.2	959.6	60.54	16.851	
7,300.0	6,714.1	7,324.1	6,691.1	29.0	35.5	88.71	-844.9	-870.0	1,019.4	958.1	61.35	16.617	
7,400.0	6,713.2	7,421.2	6,699.8	29.7	35.7	89.25	-844.9	-773.3	1,019.2	956.6	62.59	16.284	
7,450.8	6,712.7	7,471.7	6,699.8	30.1	35.9	89.27	-844.9	-722.9	1,019.2	955.8	63.43	16.069	
7,500.0	6,712.3	7,520.9	6,699.5	30.6	36.2	89.28	-844.9	-673.7	1,019.2	954.9	64.30	15.852	
7,600.0	6,711.3	7,620.9	6,698.9	31.7	36.8	89.30	-844.9	-573.7	1,019.2	952.8	66.42	15.345	
7,700.0	6,710.4	7,720.9	6,698.2	33.0	37.7	89.31	-844.9	-473.7	1,019.2	950.3	68.94	14.784	
7,800.0	6,709.5	7,820.9	6,697.6	34.5	38.7	89.33	-844.9	-373.7	1,019.2	947.4	71.81	14.193	
7,900.0	6,708.5	7,920.9	6,696.9	36.2	39.9	89.35	-844.9	-273.7	1,019.2	944.2	74.99	13.591	
8,000.0	6,707.6	8,020.9	6,696.3	38.0	41.4	89.36	-844.9	-173.7	1,019.2	940.8	78.45	12.992	
8,100.0	6,706.7	8,120.9	6,695.7	39.9	42.9	89.38	-844.9	-73.7	1,019.2	937.1	82.15	12.407	
8,200.0	6,705.8	8,220.9	6,695.0	41.9	44.7	89.40	-844.9	26.3	1,019.2	933.1	86.05	11.844	
8,300.0	6,704.8	8,320.9	6,694.4	44.0	46.5	89.41	-844.9	126.3	1,019.2	929.1	90.14	11.307	
8,400.0	6,703.9	8,420.9	6,693.7	46.2	48.5	89.43	-844.9	226.3	1,019.2	924.8	94.38	10.799	
8,500.0	6,703.0	8,520.9	6,693.1	48.5	50.5	89.44	-844.9	326.3	1,019.2	920.4	98.76	10.320	
8,600.0	6,702.1	8,620.9	6,692.4	50.8	52.7	89.46	-844.9	426.3	1,019.2	915.9	103.26	9.870	
8,700.0	6,701.1	8,720.9	6,691.8	53.1	54.9	89.48	-844.9	526.3	1,019.2	911.3	107.86	9.449	
8,800.0	6,700.2	8,820.9	6,691.1	55.5	57.2	89.49	-844.9	626.3	1,019.2	906.6	112.56	9.054	
8,900.0	6,699.3	8,920.9	6,690.5	57.9	59.5	89.51	-844.9	726.3	1,019.2	901.8	117.34	8.686	
9,000.0	6,698.3	9,020.9	6,689.9	60.4	61.8	89.52	-844.9	826.3	1,019.2	897.0	122.19	8.341	
9,100.0	6,697.4	9,120.9	6,689.2	62.9	64.2	89.54	-844.9	926.3	1,019.2	892.1	127.10	8.018	
9,200.0	6,696.5	9,220.9	6,688.6	65.4	66.7	89.55	-844.9	1,026.3	1,019.2	887.1	132.08	7.717	
9,300.0	6,695.5	9,320.9	6,687.9	68.0	69.2	89.57	-844.9	1,126.3	1,019.2	882.1	137.10	7.434	
9,400.0	6,694.6	9,420.9	6,687.3	70.5	71.6	89.59	-844.9	1,226.2	1,019.2	877.0	142.16	7.169	
9,500.0	6,693.7	9,520.9	6,686.6	73.1	74.2	89.60	-844.9	1,326.2	1,019.1	871.9	147.27	6.920	
9,600.0	6,692.8	9,620.9	6,686.0	75.7	76.7	89.62	-844.9	1,426.2	1,019.1	866.7	152.41	6.687	
9,700.0	6,691.8	9,720.9	6,685.3	78.3	79.3	89.63	-844.9	1,526.2	1,019.1	861.6	157.58	6.467	
9,800.0	6,690.9	9,820.9	6,684.7	80.9	81.8	89.65	-844.9	1,626.2	1,019.1	856.4	162.79	6.261	
9,900.0	6,690.0	9,920.9	6,684.0	83.6	84.4	89.67	-844.9	1,726.2	1,019.1	851.1	168.02	6.066	
10,000.0	6,689.0	10,020.9	6,683.4	86.2	87.0	89.68	-844.9	1,826.2	1,019.1	845.9	173.27	5.882	
10,100.0	6,688.1	10,120.9	6,682.7	88.9	89.7	89.70	-844.9	1,926.2	1,019.1	840.6	178.55	5.708	
10,200.0	6,687.2	10,220.9	6,682.1	91.6	92.3	89.71	-844.9	2,026.2	1,019.1	835.3	183.85	5.543	
10,300.0	6,686.2	10,320.9	6,681.4	94.2	94.9	89.73	-844.9	2,126.2	1,019.1	830.0	189.17	5.387	
10,400.0	6,685.3	10,420.9	6,680.8	96.9	97.6	89.75	-844.9	2,226.2	1,019.1	824.6	194.50	5.240	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	10,520.9	6,680.1	99.6	100.2	89.76	-844.9	2,326.2	1,019.1	819.3	199.85	5.099	
10,600.0	6,683.4	10,620.9	6,679.5	102.3	102.9	89.78	-844.9	2,426.2	1,019.1	813.9	205.21	4.966	
10,700.0	6,682.5	10,720.9	6,678.8	105.0	105.6	89.79	-844.9	2,526.2	1,019.1	808.5	210.59	4.839	
10,800.0	6,681.6	10,820.9	6,678.2	107.7	108.3	89.81	-844.9	2,626.2	1,019.1	803.1	215.98	4.719	
10,900.0	6,680.6	10,920.9	6,677.5	110.4	111.0	89.82	-844.9	2,726.2	1,019.1	797.7	221.38	4.603	
11,000.0	6,679.7	11,020.9	6,676.8	113.1	113.7	89.84	-844.9	2,826.2	1,019.1	792.3	226.79	4.494	
11,100.0	6,678.8	11,120.9	6,676.2	115.9	116.4	89.86	-844.9	2,926.2	1,019.1	786.9	232.21	4.389	
11,200.0	6,677.8	11,220.9	6,675.5	118.6	119.1	89.87	-844.9	3,026.2	1,019.1	781.5	237.65	4.288	
11,300.0	6,676.9	11,320.9	6,674.9	121.3	121.8	89.89	-844.9	3,126.2	1,019.1	776.0	243.09	4.192	
11,400.0	6,676.0	11,420.9	6,674.2	124.1	124.5	89.90	-844.9	3,226.2	1,019.1	770.6	248.53	4.100	
11,500.0	6,675.0	11,520.9	6,673.6	126.8	127.2	89.92	-844.9	3,326.2	1,019.1	765.1	253.99	4.012	
11,600.0	6,674.1	11,620.9	6,672.9	129.5	129.9	89.93	-844.9	3,426.2	1,019.1	759.6	259.45	3.928	
11,700.0	6,673.1	11,720.9	6,672.3	132.3	132.7	89.95	-844.9	3,526.2	1,019.1	754.2	264.92	3.847	
11,800.0	6,672.2	11,820.9	6,671.6	135.0	135.4	89.97	-844.9	3,626.2	1,019.1	748.7	270.40	3.769	
11,900.0	6,671.3	11,920.9	6,670.9	137.8	138.1	89.98	-844.9	3,726.2	1,019.1	743.2	275.88	3.694	
12,000.0	6,670.3	12,020.9	6,670.3	140.5	140.9	90.00	-844.9	3,826.2	1,019.1	737.7	281.36	3.622	
12,036.2	6,670.0	12,057.1	6,670.0	141.5	141.8	90.00	-844.9	3,862.4	1,019.1	735.7	283.35	3.597 SF	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.68	0.7	135.1	135.1				
100.0	100.0	100.0	100.0	0.1	0.1	79.12	0.7	135.1	135.1	134.9	0.20	690.902	
200.0	200.0	200.0	200.0	0.2	0.3	79.25	0.7	135.1	135.0	134.5	0.53	253.504	
261.0	261.0	261.0	261.0	0.3	0.5	79.37	0.7	135.1	135.0	134.2	0.74	182.821	
263.5	263.5	263.5	263.5	0.3	0.5	90.00	0.7	135.1	135.0	134.2	0.75	180.058	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	157.67	0.7	135.1	135.2	134.3	0.91	147.904	
400.0	399.9	399.9	399.9	0.6	0.8	172.46	0.7	135.1	138.5	137.1	1.37	100.888	
500.0	499.7	501.0	500.9	0.8	1.0	175.82	-1.0	134.6	145.1	143.3	1.80	80.719	
538.0	537.5	539.2	539.2	0.9	1.0	176.98	-2.5	134.2	148.5	146.5	1.95	76.022	
600.0	599.1	601.5	601.3	1.1	1.2	177.71	-6.1	133.2	154.9	152.7	2.23	69.516	
700.0	697.9	701.2	700.6	1.5	1.4	-179.86	-14.5	130.8	168.6	165.9	2.69	62.562	
800.0	796.0	799.7	798.4	1.8	1.6	-176.58	-26.1	127.6	186.6	183.4	3.18	58.578	
818.0	813.5	817.2	815.7	1.9	1.7	-175.94	-28.5	127.0	190.3	187.0	3.28	58.029	
900.0	893.1	896.6	894.1	2.3	1.9	-171.90	-40.6	123.6	209.2	205.5	3.76	55.652	
1,000.0	989.2	991.8	987.6	2.9	2.3	-167.43	-57.9	118.8	236.7	232.3	4.39	53.962	
1,100.0	1,083.9	1,085.6	1,079.4	3.5	2.7	-163.72	-76.7	113.6	268.9	263.9	5.04	53.363	
1,104.0	1,087.6	1,089.3	1,083.0	3.5	2.7	-163.59	-77.5	113.3	270.3	265.3	5.07	53.362	
1,200.0	1,177.9	1,178.8	1,170.6	4.1	3.0	-162.32	-95.4	108.4	303.6	297.9	5.77	52.587	
1,300.0	1,272.0	1,272.1	1,261.8	4.8	3.4	-161.35	-114.1	103.2	338.5	332.0	6.49	52.160	
1,391.0	1,357.8	1,356.9	1,344.8	5.3	3.8	-160.69	-131.0	98.5	370.3	363.1	7.17	51.619	
1,400.0	1,366.3	1,365.3	1,353.0	5.4	3.8	-160.38	-132.7	98.0	373.5	366.2	7.24	51.561	
1,458.0	1,421.2	1,419.7	1,406.1	5.7	4.1	-158.33	-143.6	95.0	393.1	385.4	7.70	51.088	
1,500.0	1,461.0	1,459.1	1,444.7	6.0	4.2	-158.03	-151.5	92.8	407.0	399.0	8.01	50.798	
1,600.0	1,556.1	1,553.2	1,536.7	6.6	4.7	-157.41	-170.3	87.5	440.1	431.3	8.77	50.180	
1,676.0	1,628.3	1,624.6	1,606.6	7.0	5.0	-157.03	-184.7	83.6	465.3	455.9	9.35	49.738	
1,700.0	1,651.1	1,647.2	1,628.7	7.2	5.1	-156.22	-189.2	82.3	473.2	463.6	9.55	49.560	
1,800.0	1,746.4	1,741.5	1,720.9	7.7	5.5	-152.97	-208.1	77.0	505.7	495.3	10.36	48.817	
1,900.0	1,841.8	1,836.3	1,813.6	8.3	5.9	-149.84	-227.0	71.8	537.2	526.0	11.17	48.075	
1,963.0	1,902.0	1,896.1	1,872.2	8.7	6.2	-147.91	-239.0	68.4	556.6	544.9	11.69	47.611	
2,000.0	1,937.4	1,931.3	1,906.6	8.9	6.4	-147.75	-246.1	66.5	567.8	555.8	11.99	47.359	
2,100.0	2,033.1	2,026.6	1,999.8	9.5	6.8	-147.33	-265.2	61.2	597.8	585.0	12.80	46.698	
2,200.0	2,129.0	2,122.1	2,093.2	10.0	7.2	-146.91	-284.3	55.9	627.3	613.6	13.62	46.061	
2,250.0	2,177.1	2,169.9	2,139.9	10.3	7.4	-146.70	-293.9	53.2	641.8	627.8	14.03	45.752	
2,300.0	2,225.1	2,217.6	2,186.7	10.6	7.6	-147.63	-303.4	50.6	656.4	642.0	14.42	45.517	
2,400.0	2,321.2	2,312.9	2,279.9	11.2	8.1	-149.43	-322.5	45.2	686.3	671.1	15.21	45.129	
2,500.0	2,417.0	2,407.9	2,372.8	11.7	8.5	-151.15	-341.5	40.0	717.0	701.1	15.99	44.840	
2,537.0	2,452.5	2,443.0	2,407.1	11.9	8.7	-151.77	-348.5	38.0	728.7	712.4	16.28	44.755	
2,600.0	2,512.8	2,502.5	2,465.3	12.3	8.9	-154.36	-360.5	34.7	748.9	732.2	16.74	44.744	
2,700.0	2,608.2	2,596.3	2,557.1	12.9	9.4	-158.18	-379.3	29.5	782.6	765.2	17.45	44.839	
2,800.0	2,703.3	2,689.4	2,648.1	13.5	9.8	-161.64	-397.9	24.3	818.2	800.1	18.16	45.060	
2,824.0	2,726.1	2,711.6	2,669.8	13.7	9.9	-162.42	-402.3	23.1	827.0	808.7	18.33	45.131	
2,900.0	2,798.2	2,782.1	2,738.8	14.1	10.2	-159.43	-416.5	19.1	854.6	835.6	19.00	44.986	
3,000.0	2,893.6	2,875.6	2,830.2	14.7	10.6	-155.35	-435.2	13.9	889.3	869.4	19.88	44.740	
3,100.0	2,989.4	2,969.8	2,922.4	15.3	11.1	-151.05	-454.1	8.7	922.1	901.3	20.75	44.437	
3,112.0	3,000.9	2,981.2	2,933.6	15.4	11.1	-150.52	-456.3	8.1	925.9	905.0	20.85	44.397	
3,200.0	3,085.5	3,064.7	3,015.2	15.9	11.5	-149.32	-473.1	3.4	953.3	931.7	21.58	44.182	
3,300.0	3,181.9	3,159.8	3,108.3	16.4	11.9	-147.93	-492.1	-1.9	983.7	961.3	22.40	43.915	
3,400.0	3,278.4	3,255.2	3,201.6	16.9	12.4	-146.48	-511.2	-7.2	1,013.2	990.0	23.22	43.627	
3,500.0	3,374.7	3,350.5	3,294.8	17.5	12.8	-146.11	-530.3	-12.5	1,043.3	1,019.3	24.01	43.457	
3,600.0	3,470.3	3,445.1	3,387.3	18.1	13.2	-145.78	-549.3	-17.8	1,075.5	1,050.7	24.77	43.414	
3,687.0	3,552.8	3,526.9	3,467.3	18.6	13.6	-145.53	-565.6	-22.3	1,105.1	1,079.7	25.42	43.472	
3,700.0	3,565.1	3,539.1	3,479.3	18.7	13.7	-145.26	-568.1	-23.0	1,109.7	1,084.1	25.54	43.452	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,632.9	3,571.0	19.4	14.1	-143.27	-586.9	-28.2	1,144.4	1,117.9	26.43	43.293	
3,900.0	3,753.9	3,726.8	3,662.9	20.0	14.5	-141.37	-605.7	-33.4	1,178.7	1,151.3	27.32	43.137	
3,974.0	3,823.6	3,796.4	3,730.9	20.5	14.8	-140.01	-619.6	-37.3	1,203.8	1,175.8	27.98	43.022	
4,000.0	3,848.1	3,820.9	3,754.9	20.7	15.0	-140.34	-624.5	-38.7	1,212.6	1,184.4	28.20	42.998	
4,100.0	3,942.9	3,915.3	3,847.3	21.3	15.4	-141.60	-643.4	-43.9	1,245.3	1,216.2	29.05	42.866	
4,200.0	4,038.5	4,010.3	3,940.2	21.9	15.8	-142.90	-662.4	-49.2	1,276.5	1,246.6	29.91	42.672	
4,263.0	4,099.0	4,074.0	4,002.5	22.3	16.1	-143.75	-675.1	-52.7	1,295.4	1,264.9	30.47	42.521	
4,300.0	4,134.7	4,116.6	4,044.3	22.5	16.2	-144.85	-683.1	-54.9	1,306.1	1,275.4	30.73	42.509	
4,400.0	4,231.2	4,232.5	4,158.6	23.0	16.6	-148.03	-701.6	-60.1	1,334.1	1,302.8	31.36	42.546	
4,500.0	4,328.0	4,349.4	4,274.6	23.5	16.8	-151.52	-715.7	-64.0	1,360.6	1,328.7	31.94	42.603	
4,549.0	4,375.5	4,407.0	4,331.9	23.8	16.9	-153.35	-721.0	-65.5	1,373.1	1,340.9	32.21	42.635	
4,600.0	4,425.0	4,467.1	4,391.9	24.0	17.1	-153.63	-725.4	-66.7	1,385.7	1,353.2	32.46	42.693	
4,700.0	4,521.9	4,585.3	4,509.9	24.5	17.2	-154.31	-730.4	-68.1	1,409.4	1,376.5	32.90	42.838	
4,800.0	4,618.8	4,694.3	4,618.8	25.0	17.4	-155.10	-731.2	-68.3	1,432.0	1,398.7	33.29	43.018	
4,837.0	4,654.7	4,730.1	4,654.7	25.2	17.4	-155.38	-731.2	-68.3	1,440.3	1,406.9	33.42	43.097	
4,900.0	4,715.7	4,791.1	4,715.7	25.5	17.5	-156.06	-731.2	-68.3	1,454.7	1,421.1	33.63	43.256	
5,000.0	4,812.4	4,887.8	4,812.4	26.0	17.6	-157.10	-731.2	-68.3	1,478.3	1,444.3	33.96	43.527	
5,100.0	4,908.9	4,984.3	4,908.9	26.6	17.7	-158.09	-731.2	-68.3	1,502.7	1,468.4	34.29	43.823	
5,125.0	4,932.9	5,008.4	4,932.9	26.7	17.7	-158.33	-731.2	-68.3	1,509.0	1,474.6	34.37	43.901	
5,200.0	5,005.4	5,080.8	5,005.4	27.0	17.8	-155.96	-731.2	-68.3	1,527.1	1,492.3	34.76	43.928	
5,300.0	5,102.4	5,177.8	5,102.4	27.5	17.9	-152.23	-731.2	-68.3	1,548.9	1,513.7	35.26	43.930	
5,400.0	5,199.9	5,275.4	5,199.9	28.0	18.0	-147.69	-731.2	-68.3	1,568.1	1,532.4	35.72	43.896	
5,412.0	5,211.7	5,287.1	5,211.7	28.1	18.0	-147.08	-731.2	-68.3	1,570.2	1,534.5	35.78	43.889	
5,500.0	5,297.9	5,373.4	5,297.9	28.4	18.1	-144.90	-731.2	-68.3	1,584.7	1,548.6	36.13	43.858	
5,581.0	5,377.7	5,453.1	5,377.7	28.7	18.2	-142.25	-731.2	-68.3	1,596.3	1,559.8	36.44	43.806	
5,600.0	5,396.4	7,825.8	6,717.7	28.8	41.8	-100.80	-731.2	-1,406.1	1,589.2	1,519.8	69.34	22.917	
5,700.0	5,495.3	7,840.1	6,717.6	29.1	42.1	-105.10	-731.2	-1,420.4	1,508.0	1,437.7	70.27	21.460	
5,800.0	5,594.6	7,851.5	6,717.6	29.4	42.4	-113.80	-731.2	-1,431.8	1,430.0	1,359.2	70.86	20.180	
5,900.0	5,694.1	7,860.0	6,717.5	29.6	42.6	-128.72	-731.2	-1,440.2	1,356.0	1,284.8	71.18	19.049	
5,917.0	5,711.1	7,861.1	6,717.5	29.7	42.7	-131.93	-731.2	-1,441.4	1,343.8	1,272.6	71.22	18.870	
6,000.0	5,793.7	7,866.5	6,717.5	29.8	42.8	-131.60	-731.2	-1,446.8	1,286.2	1,214.7	71.50	17.989	
6,067.0	5,860.5	7,870.9	6,717.5	30.0	42.9	-131.33	-731.2	-1,451.2	1,241.7	1,170.0	71.72	17.312	
6,100.0	5,893.4	7,872.9	6,717.5	30.0	43.0	-130.79	-731.2	-1,453.2	1,220.5	1,148.6	71.84	16.988	
6,200.0	5,993.2	7,877.2	6,717.5	30.2	43.1	-129.31	-731.2	-1,457.5	1,158.2	1,086.1	72.09	16.067	
6,300.0	6,093.2	7,878.7	6,717.5	30.3	43.1	-128.09	-731.2	-1,459.0	1,099.7	1,027.5	72.17	15.237	
6,318.8	6,111.9	7,878.7	6,717.5	30.3	43.1	-179.85	-731.2	-1,459.0	1,089.2	1,052.8	36.42	29.907	
6,400.0	6,193.2	7,878.4	6,717.5	30.4	43.1	-179.87	-731.2	-1,458.6	1,046.2	1,009.7	36.54	28.630	
6,444.4	6,237.6	7,878.2	6,717.5	30.4	43.1	-179.88	-731.2	-1,458.5	1,024.7	988.1	36.61	27.988	
6,450.0	6,243.2	7,878.1	6,717.5	30.4	43.1	90.46	-731.2	-1,458.4	1,022.1	949.8	72.24	14.149	
6,475.0	6,268.1	7,877.1	6,717.5	30.4	43.1	91.93	-731.2	-1,457.4	1,010.7	938.7	72.03	14.033	
6,500.0	6,293.0	7,874.7	6,717.5	30.4	43.0	93.22	-731.2	-1,455.0	999.9	928.2	71.75	13.936	
6,525.0	6,317.8	7,871.1	6,717.5	30.4	42.9	94.33	-731.2	-1,451.4	989.7	918.2	71.43	13.855	
6,550.0	6,342.3	7,866.2	6,717.5	30.4	42.8	95.28	-731.2	-1,446.5	980.0	909.0	71.07	13.789	
6,575.0	6,366.5	7,860.0	6,717.5	30.3	42.6	96.06	-731.2	-1,440.2	971.0	900.3	70.69	13.736	
6,600.0	6,390.4	7,852.5	6,717.6	30.2	42.5	96.67	-731.2	-1,432.8	962.7	892.4	70.29	13.695	
6,625.0	6,413.9	7,843.8	6,717.6	30.2	42.2	97.13	-731.2	-1,424.1	954.9	885.1	69.88	13.665	
6,650.0	6,436.9	7,833.9	6,717.6	30.1	42.0	97.43	-731.2	-1,414.1	947.9	878.4	69.47	13.646	
6,675.0	6,459.3	7,822.7	6,717.7	30.0	41.7	97.60	-731.2	-1,403.0	941.5	872.5	69.04	13.636	SF
6,700.0	6,481.1	7,810.5	6,717.7	29.9	41.4	97.64	-731.2	-1,390.8	935.8	867.1	68.62	13.637	
6,725.0	6,502.3	7,797.1	6,717.8	29.7	41.1	97.56	-731.2	-1,377.4	930.6	862.5	68.19	13.647	
6,750.0	6,522.7	7,782.6	6,717.8	29.6	40.7	97.37	-731.2	-1,362.9	926.1	858.4	67.77	13.667	
6,775.0	6,542.4	7,767.1	6,717.9	29.5	40.3	97.09	-731.2	-1,347.4	922.2	854.9	67.33	13.696	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	7,750.6	6,717.9	29.4	39.9	96.72	-731.2	-1,330.9	918.8	851.9	66.89	13.736	
6,825.0	6,579.1	7,733.1	6,718.0	29.3	39.5	96.28	-731.2	-1,313.4	916.0	849.5	66.44	13.786	
6,850.0	6,596.1	7,714.7	6,718.1	29.1	39.1	95.79	-731.2	-1,295.0	913.5	847.6	65.97	13.847	
6,875.0	6,612.1	7,695.4	6,718.2	29.0	38.6	95.26	-731.2	-1,275.7	911.5	846.1	65.49	13.918	
6,900.0	6,627.1	7,675.4	6,718.2	28.9	38.1	94.71	-731.2	-1,255.7	909.9	844.9	65.00	13.998	
6,925.0	6,641.0	7,654.5	6,718.3	28.8	37.6	94.13	-731.2	-1,234.8	908.7	844.2	64.50	14.089	
6,950.0	6,653.8	7,633.0	6,718.4	28.7	37.1	93.56	-731.2	-1,213.3	907.7	843.7	63.97	14.189	
6,975.0	6,665.5	7,610.9	6,718.5	28.7	36.6	93.01	-731.2	-1,191.2	906.9	843.5	63.43	14.298	
7,000.0	6,676.0	7,588.2	6,718.6	28.6	36.0	92.47	-731.2	-1,168.4	906.4	843.5	62.88	14.414	
7,025.0	6,685.3	7,564.9	6,718.6	28.6	35.5	91.98	-731.2	-1,145.2	906.0	843.7	62.32	14.537	
7,050.0	6,693.4	7,541.2	6,718.7	28.5	34.9	91.53	-731.2	-1,121.5	905.7	844.0	61.76	14.666	
7,075.0	6,700.2	7,517.2	6,718.8	28.5	34.4	91.14	-731.2	-1,097.4	905.6	844.4	61.19	14.800	
7,100.0	6,705.8	7,492.8	6,718.9	28.5	33.8	90.82	-731.2	-1,073.1	905.5	844.8	60.61	14.938	
7,125.0	6,710.0	7,468.1	6,719.0	28.5	33.3	90.56	-731.2	-1,048.4	905.4	845.3	60.06	15.076	
7,150.0	6,713.0	7,443.3	6,719.1	28.6	32.7	90.39	-731.2	-1,023.6	905.4	845.9	59.50	15.217	
7,175.0	6,714.7	7,418.3	6,719.2	28.6	32.2	90.29	-731.2	-998.6	905.4	846.4	58.95	15.358	
7,193.2	6,715.1	7,400.2	6,719.3	28.6	31.8	90.27	-731.2	-980.5	905.4	846.8	58.56	15.461	
7,198.8	6,715.0	7,394.5	6,719.3	28.6	31.6	90.27	-731.2	-974.8	905.4	846.9	58.44	15.492	
7,200.0	6,715.0	7,393.3	6,719.3	28.6	31.6	90.27	-731.2	-973.6	905.4	847.0	58.42	15.499	
7,300.0	6,714.1	7,293.4	6,719.7	29.0	29.5	90.35	-731.2	-873.6	905.4	848.9	56.49	16.026	
7,400.0	6,713.2	7,193.2	6,719.9	29.7	27.5	90.43	-731.2	-773.5	905.4	850.5	54.93	16.483	
7,494.0	6,712.3	7,099.0	6,712.3	30.5	25.8	90.00	-731.2	-679.6	905.4	851.6	53.80	16.828	
7,500.0	6,712.3	7,093.0	6,711.4	30.6	25.7	89.95	-731.2	-673.8	905.4	851.6	53.74	16.848	
7,600.0	6,711.3	6,996.8	6,690.2	31.7	24.2	88.66	-731.2	-579.9	905.6	852.6	53.01	17.084	
7,700.0	6,710.4	6,907.4	6,659.4	33.0	23.1	86.76	-731.2	-496.1	907.1	854.3	52.78	17.187	
7,800.0	6,709.5	6,826.6	6,622.7	34.5	22.2	84.50	-731.2	-424.1	910.9	857.9	52.99	17.191	
7,900.0	6,708.5	6,755.0	6,583.7	36.2	21.6	82.10	-731.2	-364.2	918.4	864.9	53.55	17.152	
8,000.0	6,707.6	6,692.3	6,544.7	38.0	21.1	79.72	-731.2	-315.1	930.7	876.3	54.39	17.113	
8,100.0	6,706.7	6,637.7	6,507.4	39.9	20.8	77.47	-731.2	-275.2	948.7	893.3	55.44	17.113	
8,200.0	6,705.8	6,590.3	6,472.6	41.9	20.5	75.41	-731.2	-243.0	972.9	916.3	56.65	17.175	
8,300.0	6,704.8	6,550.0	6,441.4	44.0	20.3	73.59	-731.2	-217.6	1,003.7	945.7	58.00	17.304	
8,400.0	6,703.9	6,513.1	6,411.6	46.2	20.1	71.88	-731.2	-195.7	1,040.8	981.4	59.44	17.511	
8,500.0	6,703.0	6,481.6	6,385.3	48.5	20.0	70.40	-731.2	-178.4	1,084.1	1,023.1	60.97	17.781	
8,600.0	6,702.1	6,450.0	6,358.2	50.8	19.9	68.90	-731.2	-162.2	1,133.2	1,070.7	62.50	18.133	
8,700.0	6,701.1	6,429.4	6,340.2	53.1	19.8	67.92	-731.2	-152.2	1,187.6	1,123.3	64.25	18.482	
8,800.0	6,700.2	6,400.0	6,314.0	55.5	19.7	66.52	-731.2	-139.0	1,246.8	1,181.0	65.80	18.947	
8,900.0	6,699.3	6,400.0	6,314.0	57.9	19.7	66.52	-731.2	-139.0	1,310.3	1,242.2	68.05	19.255	
9,000.0	6,698.3	6,370.8	6,287.4	60.4	19.6	65.12	-731.2	-126.8	1,377.3	1,307.7	69.59	19.793	
9,100.0	6,697.4	6,350.0	6,268.2	62.9	19.5	64.14	-731.2	-118.9	1,447.9	1,376.6	71.30	20.305	
9,200.0	6,696.5	6,350.0	6,268.2	65.4	19.5	64.14	-731.2	-118.9	1,521.4	1,447.8	73.59	20.674	
9,300.0	6,695.5	6,328.0	6,247.6	68.0	19.5	63.09	-731.2	-111.1	1,597.3	1,522.1	75.26	21.224	
9,400.0	6,694.6	6,300.0	6,221.1	70.5	19.4	61.78	-731.2	-102.1	1,675.8	1,599.1	76.71	21.847	
9,500.0	6,693.7	6,300.0	6,221.1	73.1	19.4	61.78	-731.2	-102.1	1,755.9	1,676.9	79.01	22.225	
9,600.0	6,692.8	6,300.0	6,221.1	75.7	19.4	61.78	-731.2	-102.1	1,837.9	1,756.6	81.32	22.603	
9,700.0	6,691.8	6,300.0	6,221.1	78.3	19.4	61.78	-731.2	-102.1	1,921.7	1,838.0	83.64	22.976	
9,800.0	6,690.9	6,278.1	6,200.1	80.9	19.3	60.76	-731.2	-95.7	2,006.5	1,921.2	85.21	23.546	
9,900.0	6,690.0	6,270.3	6,192.6	83.6	19.3	60.40	-731.2	-93.6	2,092.6	2,005.4	87.26	23.982	
10,000.0	6,689.0	6,250.0	6,173.0	86.2	19.3	59.47	-731.2	-88.6	2,180.0	2,091.2	88.83	24.543	
10,100.0	6,688.1	6,250.0	6,173.0	88.9	19.3	59.47	-731.2	-88.6	2,268.2	2,177.0	91.14	24.886	
10,200.0	6,687.2	6,250.0	6,173.0	91.6	19.3	59.47	-731.2	-88.6	2,357.2	2,263.8	93.47	25.221	
10,300.0	6,686.2	6,250.0	6,173.0	94.2	19.3	59.47	-731.2	-88.6	2,447.2	2,351.4	95.80	25.546	
10,400.0	6,685.3	6,250.0	6,173.0	96.9	19.3	59.47	-731.2	-88.6	2,537.8	2,439.7	98.13	25.861	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,250.0	6,173.0	99.6	19.3	59.47	-731.2	-88.6	2,629.2	2,528.7	100.47	26.167	
10,600.0	6,683.4	6,228.6	6,152.1	102.3	19.2	58.50	-731.2	-83.8	2,720.7	2,618.8	101.89	26.702	
10,700.0	6,682.5	6,224.0	6,147.6	105.0	19.2	58.30	-731.2	-82.9	2,813.1	2,709.0	104.02	27.044	
10,800.0	6,681.6	6,200.0	6,124.0	107.7	19.2	57.23	-731.2	-78.5	2,906.2	2,800.9	105.24	27.615	
10,900.0	6,680.6	6,200.0	6,124.0	110.4	19.2	57.23	-731.2	-78.5	2,999.3	2,891.8	107.55	27.887	
11,000.0	6,679.7	6,200.0	6,124.0	113.1	19.2	57.23	-731.2	-78.5	3,092.8	2,983.0	109.87	28.151	
11,100.0	6,678.8	6,200.0	6,124.0	115.9	19.2	57.23	-731.2	-78.5	3,186.8	3,074.6	112.18	28.407	
11,200.0	6,677.8	6,200.0	6,124.0	118.6	19.2	57.23	-731.2	-78.5	3,281.1	3,166.6	114.51	28.654	
11,300.0	6,676.9	6,200.0	6,124.0	121.3	19.2	57.23	-731.2	-78.5	3,375.7	3,258.9	116.83	28.893	
11,400.0	6,676.0	6,200.0	6,124.0	124.1	19.2	57.23	-731.2	-78.5	3,470.6	3,351.5	119.16	29.125	
11,500.0	6,675.0	6,200.0	6,124.0	126.8	19.2	57.23	-731.2	-78.5	3,565.8	3,444.3	121.49	29.350	
11,600.0	6,674.1	6,200.0	6,124.0	129.5	19.2	57.23	-731.2	-78.5	3,661.3	3,537.4	123.83	29.568	
11,700.0	6,673.1	6,200.0	6,124.0	132.3	19.2	57.23	-731.2	-78.5	3,757.0	3,630.8	126.16	29.779	
11,800.0	6,672.2	6,200.0	6,124.0	135.0	19.2	57.23	-731.2	-78.5	3,852.9	3,724.4	128.50	29.983	
11,900.0	6,671.3	6,200.0	6,124.0	137.8	19.2	57.23	-731.2	-78.5	3,949.0	3,818.1	130.84	30.181	
12,000.0	6,670.3	6,200.0	6,124.0	140.5	19.2	57.23	-731.2	-78.5	4,045.3	3,912.1	133.18	30.374	
12,036.2	6,670.0	6,200.0	6,124.0	141.5	19.2	57.23	-731.2	-78.5	4,080.2	3,946.2	134.03	30.442	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.55	0.4	45.1	45.1				
100.0	100.0	100.0	100.0	0.1	0.1	79.08	0.4	45.1	45.1	44.9	0.20	230.720	
200.0	200.0	200.0	200.0	0.2	0.3	79.45	0.4	45.1	45.0	44.5	0.53	84.585	
261.0	261.0	261.0	261.0	0.3	0.5	79.81	0.4	45.1	45.0	44.3	0.74	60.956	
263.4	263.4	263.4	263.4	0.3	0.5	90.00	0.4	45.1	45.0	44.2	0.75	60.072	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	158.28	0.4	45.1	45.2	44.3	0.91	49.499	
400.0	399.9	399.9	399.9	0.6	0.8	173.53	0.4	45.1	48.5	47.2	1.37	35.365	
500.0	499.7	499.7	499.7	0.8	1.0	176.55	0.4	45.1	55.6	53.8	1.82	30.519	
538.0	537.5	537.5	537.5	0.9	1.1	177.20	0.4	45.1	59.3	57.4	1.99	29.811	
600.0	599.1	599.1	599.1	1.1	1.2	176.78	0.4	45.1	66.6	64.3	2.29	29.136	
700.0	697.9	700.4	700.4	1.5	1.4	177.25	-0.3	43.5	80.3	77.5	2.73	29.368	
800.0	796.0	802.1	801.9	1.8	1.6	178.83	-2.3	38.5	95.1	91.9	3.15	30.180	
818.0	813.5	820.4	820.2	1.9	1.7	179.18	-2.8	37.3	97.9	94.7	3.23	30.335	
900.0	893.1	903.9	903.3	2.3	1.9	-178.03	-5.6	30.2	111.2	107.5	3.62	30.734	
1,000.0	989.2	1,005.9	1,004.6	2.9	2.1	-174.94	-10.3	18.5	128.6	124.5	4.10	31.352	
1,100.0	1,083.9	1,108.1	1,105.5	3.5	2.4	-172.11	-16.3	3.4	147.5	142.9	4.61	32.028	
1,104.0	1,087.6	1,112.2	1,109.5	3.5	2.4	-172.00	-16.6	2.7	148.3	143.7	4.63	32.053	
1,200.0	1,177.9	1,210.9	1,206.2	4.1	2.8	-170.49	-23.7	-15.1	165.8	160.6	5.23	31.732	
1,300.0	1,272.0	1,314.3	1,306.9	4.8	3.2	-168.51	-32.5	-37.1	181.4	175.5	5.88	30.840	
1,391.0	1,357.8	1,408.8	1,398.1	5.3	3.7	-166.32	-41.7	-60.2	193.3	186.7	6.59	29.330	
1,400.0	1,366.3	1,418.2	1,407.1	5.4	3.7	-165.84	-42.7	-62.6	194.3	187.7	6.67	29.145	
1,458.0	1,421.2	1,478.5	1,464.8	5.7	4.0	-162.57	-49.2	-79.0	200.1	192.9	7.19	27.825	
1,500.0	1,461.0	1,522.3	1,506.4	6.0	4.3	-161.24	-54.2	-91.6	203.5	195.9	7.59	26.806	
1,600.0	1,556.1	1,625.9	1,604.1	6.6	4.9	-157.69	-67.1	-123.6	210.3	201.6	8.66	24.281	
1,676.0	1,628.3	1,700.9	1,674.4	7.0	5.4	-155.00	-76.8	-147.9	215.3	205.7	9.55	22.538	
1,700.0	1,651.1	1,724.5	1,696.6	7.2	5.6	-153.53	-79.8	-155.6	216.9	207.1	9.85	22.022	
1,800.0	1,746.4	1,823.3	1,789.1	7.7	6.3	-147.61	-92.6	-187.6	223.7	212.6	11.13	20.091	
1,900.0	1,841.8	1,922.2	1,881.8	8.3	7.0	-142.00	-105.4	-219.6	230.1	217.7	12.47	18.462	
1,963.0	1,902.0	1,984.7	1,940.3	8.7	7.4	-138.60	-113.5	-239.8	234.0	220.6	13.32	17.561	
2,000.0	1,937.4	2,021.3	1,974.7	8.9	7.7	-137.53	-118.2	-251.7	236.2	222.3	13.83	17.074	
2,100.0	2,033.1	2,120.4	2,067.6	9.5	8.4	-134.66	-131.0	-283.8	242.1	226.9	15.23	15.895	
2,200.0	2,129.0	2,219.5	2,160.4	10.0	9.1	-131.82	-143.9	-315.9	248.2	231.5	16.67	14.890	
2,250.0	2,177.1	2,269.0	2,206.9	10.3	9.5	-130.42	-150.3	-332.0	251.3	233.9	17.40	14.443	
2,300.0	2,225.1	2,318.5	2,253.2	10.6	9.8	-130.12	-156.7	-348.0	254.6	236.5	18.13	14.048	
2,400.0	2,321.2	2,417.4	2,346.0	11.2	10.6	-129.55	-169.5	-380.0	262.5	243.0	19.59	13.405	
2,500.0	2,417.0	2,516.2	2,438.5	11.7	11.3	-129.01	-182.2	-412.0	272.1	251.1	21.04	12.932	
2,537.0	2,452.5	2,552.7	2,472.7	11.9	11.5	-128.82	-187.0	-423.8	276.1	254.5	21.58	12.793	
2,600.0	2,512.8	2,614.8	2,530.9	12.3	12.0	-130.01	-195.0	-444.0	283.6	261.2	22.48	12.619	
2,700.0	2,608.2	2,713.0	2,623.0	12.9	12.7	-131.72	-207.7	-475.8	298.0	274.1	23.88	12.479	
2,800.0	2,703.3	2,810.8	2,714.6	13.5	13.4	-133.26	-220.3	-507.4	315.2	289.9	25.24	12.486	
2,824.0	2,726.1	2,834.2	2,736.5	13.7	13.6	-133.61	-223.4	-515.0	319.7	294.2	25.56	12.507	
2,900.0	2,798.2	2,908.3	2,806.0	14.1	14.2	-129.73	-233.0	-539.0	333.9	307.2	26.69	12.508	
3,000.0	2,893.6	3,006.2	2,897.7	14.7	14.9	-124.53	-245.6	-570.7	350.8	322.7	28.16	12.458	
3,100.0	2,989.4	3,104.5	2,989.8	15.3	15.6	-119.15	-258.3	-602.6	365.8	336.2	29.60	12.356	
3,112.0	3,000.9	3,116.3	3,000.9	15.4	15.7	-118.48	-259.9	-606.4	367.4	337.7	29.78	12.340	
3,200.0	3,085.5	3,203.0	3,082.2	15.9	16.3	-116.17	-271.1	-634.5	379.3	348.4	30.97	12.247	
3,300.0	3,181.9	3,301.5	3,174.5	16.4	17.1	-113.52	-283.8	-666.4	392.4	360.1	32.32	12.139	
3,400.0	3,278.4	3,400.1	3,266.9	16.9	17.8	-110.84	-296.6	-698.3	404.9	371.3	33.66	12.030	
3,500.0	3,374.7	3,498.8	3,359.4	17.5	18.5	-109.41	-309.4	-730.3	417.9	382.9	35.01	11.936	
3,600.0	3,470.3	3,597.5	3,451.9	18.1	19.3	-108.35	-322.1	-762.3	431.9	395.5	36.32	11.889	
3,687.0	3,552.8	3,683.5	3,532.5	18.6	19.9	-107.70	-333.3	-790.1	444.8	407.3	37.45	11.876	
3,700.0	3,565.1	3,696.3	3,544.5	18.7	20.0	-107.40	-334.9	-794.3	446.8	409.1	37.63	11.871	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,795.2	3,637.2	19.4	20.7	-105.18	-347.7	-826.3	461.4	422.4	39.04	11.819	
3,900.0	3,753.9	3,894.2	3,730.0	20.0	21.5	-103.09	-360.5	-858.4	475.1	434.7	40.44	11.749	
3,974.0	3,823.6	3,967.6	3,798.7	20.5	22.0	-101.63	-370.0	-882.1	484.7	443.2	41.48	11.686	
4,000.0	3,848.1	3,993.4	3,822.9	20.7	22.2	-101.81	-373.3	-890.5	488.0	446.1	41.82	11.668	
4,100.0	3,942.9	4,092.5	3,915.8	21.3	22.9	-102.42	-386.2	-922.6	500.5	457.4	43.15	11.601	
4,200.0	4,038.5	4,191.5	4,008.6	21.9	23.7	-102.93	-399.0	-954.7	513.1	468.6	44.48	11.536	
4,263.0	4,099.0	4,253.8	4,067.0	22.3	24.1	-103.22	-407.0	-974.8	521.1	475.8	45.32	11.499	
4,300.0	4,134.7	4,290.4	4,101.3	22.5	24.4	-103.94	-411.8	-986.7	525.9	480.1	45.76	11.491	
4,400.0	4,231.2	4,389.0	4,193.7	23.0	25.1	-105.97	-424.5	-1,018.6	539.6	492.7	46.96	11.492	
4,500.0	4,328.0	4,487.3	4,285.8	23.5	25.9	-108.16	-437.2	-1,050.5	554.7	506.6	48.13	11.524	
4,549.0	4,375.5	4,535.3	4,330.9	23.8	26.2	-109.29	-443.5	-1,066.0	562.6	513.9	48.70	11.551	
4,600.0	4,425.0	4,585.3	4,377.7	24.0	26.6	-108.88	-449.9	-1,082.2	571.0	521.7	49.29	11.584	
4,700.0	4,521.9	4,683.3	4,469.5	24.5	27.3	-108.12	-462.6	-1,113.9	587.7	537.3	50.43	11.653	
4,800.0	4,618.8	4,781.3	4,561.3	25.0	28.1	-107.43	-475.3	-1,145.7	604.9	553.3	51.57	11.730	
4,837.0	4,654.7	4,817.5	4,595.3	25.2	28.3	-107.19	-480.0	-1,157.4	611.3	559.3	51.98	11.759	
4,900.0	4,715.7	4,879.2	4,653.1	25.5	28.8	-106.99	-487.9	-1,177.4	622.4	569.7	52.69	11.813	
5,000.0	4,812.4	4,977.1	4,744.9	26.0	29.5	-106.73	-500.6	-1,209.1	640.6	586.8	53.80	11.906	
5,100.0	4,908.9	5,075.0	4,836.6	26.6	30.2	-106.53	-513.3	-1,240.8	659.4	604.5	54.91	12.008	
5,125.0	4,932.9	5,099.4	4,859.5	26.7	30.4	-106.49	-516.4	-1,248.7	664.2	609.0	55.19	12.035	
5,200.0	5,005.4	5,172.9	4,928.4	27.0	31.0	-103.52	-525.9	-1,272.5	678.1	622.0	56.12	12.084	
5,300.0	5,102.4	5,271.0	5,020.3	27.5	31.7	-98.85	-538.6	-1,304.3	694.8	637.5	57.31	12.123	
5,400.0	5,199.9	5,377.7	5,120.9	28.0	32.3	-93.26	-551.9	-1,337.4	709.1	650.7	58.36	12.149	
5,412.0	5,211.7	5,390.7	5,133.2	28.1	32.4	-92.53	-553.4	-1,341.2	710.5	652.1	58.49	12.149	
5,500.0	5,297.9	5,486.4	5,224.6	28.4	32.8	-89.45	-563.9	-1,367.6	720.4	661.2	59.25	12.159	
5,581.0	5,377.7	5,575.1	5,310.1	28.7	33.2	-86.06	-572.7	-1,389.5	727.9	668.0	59.88	12.155	
5,600.0	5,396.4	5,595.9	5,330.3	28.8	33.3	-87.14	-574.6	-1,394.3	729.5	669.4	60.02	12.154	
5,700.0	5,495.3	5,705.9	5,437.5	29.1	33.7	-94.49	-583.8	-1,417.3	738.1	677.5	60.66	12.169	
5,800.0	5,594.6	5,816.3	5,545.9	29.4	34.1	-105.81	-591.4	-1,436.5	747.4	686.2	61.17	12.217	
5,900.0	5,694.1	5,927.1	5,655.4	29.6	34.4	-122.94	-597.6	-1,451.9	757.1	695.5	61.58	12.295	
5,917.0	5,711.1	5,945.9	5,674.1	29.7	34.4	-126.49	-598.5	-1,454.1	758.8	697.2	61.64	12.312	
6,000.0	5,793.7	6,038.2	5,765.8	29.8	34.6	-126.29	-602.2	-1,463.3	766.7	704.7	61.96	12.375	
6,067.0	5,860.5	6,113.0	5,840.3	30.0	34.8	-126.28	-604.3	-1,468.8	772.3	710.1	62.22	12.413	
6,100.0	5,893.4	6,149.8	5,877.1	30.0	34.8	-126.35	-605.2	-1,470.8	774.7	712.3	62.37	12.421	
6,200.0	5,993.2	6,261.7	5,988.9	30.2	34.9	-126.56	-606.5	-1,474.3	779.5	716.7	62.75	12.422	
6,300.0	6,093.2	6,366.8	6,094.0	30.3	35.0	-126.78	-606.7	-1,473.7	781.0	718.0	63.01	12.395	
6,318.8	6,111.9	6,385.9	6,113.1	30.3	35.0	-178.84	-606.7	-1,472.5	781.0	743.9	37.16	21.017	
6,400.0	6,193.2	6,467.7	6,194.1	30.4	34.9	-179.63	-606.7	-1,461.7	780.9	743.7	37.17	21.009	
6,424.9	6,218.0	6,492.1	6,218.0	30.4	34.9	180.00	-606.7	-1,456.7	780.9	743.7	37.14	21.023	
6,444.4	6,237.6	6,511.1	6,236.5	30.4	34.9	179.67	-606.7	-1,452.2	780.9	743.8	37.12	21.039	
6,450.0	6,243.2	6,516.4	6,241.6	30.4	34.9	89.57	-606.7	-1,450.8	780.9	717.7	63.22	12.351	
6,475.0	6,268.1	6,540.4	6,264.7	30.4	34.8	89.15	-606.7	-1,444.3	780.9	717.7	63.23	12.350	
6,500.0	6,293.0	6,564.4	6,287.5	30.4	34.8	88.76	-606.7	-1,437.1	781.0	717.8	63.21	12.356	
6,525.0	6,317.8	6,588.2	6,310.0	30.4	34.7	88.40	-606.7	-1,429.1	781.2	718.0	63.16	12.367	
6,550.0	6,342.3	6,612.0	6,332.1	30.4	34.7	88.07	-606.7	-1,420.4	781.3	718.2	63.09	12.384	
6,575.0	6,366.5	6,635.7	6,353.9	30.3	34.6	87.78	-606.7	-1,411.0	781.5	718.5	62.99	12.407	
6,600.0	6,390.4	6,659.4	6,375.3	30.2	34.5	87.51	-606.7	-1,400.8	781.6	718.7	62.86	12.433	
6,625.0	6,413.9	6,683.0	6,396.3	30.2	34.4	87.29	-606.7	-1,390.1	781.7	719.0	62.72	12.464	
6,650.0	6,436.9	6,706.6	6,417.0	30.1	34.4	87.09	-606.7	-1,378.6	781.9	719.3	62.56	12.498	
6,675.0	6,459.3	6,730.2	6,437.2	30.0	34.3	86.94	-606.7	-1,366.5	782.0	719.6	62.38	12.535	
6,700.0	6,481.1	6,753.7	6,456.9	29.9	34.2	86.82	-606.7	-1,353.7	782.1	719.9	62.19	12.575	
6,725.0	6,502.3	6,777.3	6,476.3	29.7	34.1	86.73	-606.7	-1,340.3	782.1	720.1	61.99	12.616	
6,750.0	6,522.7	6,800.0	6,494.5	29.6	34.1	86.69	-606.7	-1,326.8	782.2	720.4	61.79	12.658	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,775.0	6,542.4	6,824.3	6,513.6	29.5	34.0	86.67	-606.7	-1,311.7	782.2	720.6	61.58	12.702	
6,800.0	6,561.2	6,847.8	6,531.5	29.4	33.9	86.70	-606.7	-1,296.4	782.1	720.8	61.37	12.745	
6,825.0	6,579.1	6,871.3	6,548.9	29.3	33.9	86.76	-606.7	-1,280.6	782.1	720.9	61.16	12.788	
6,850.0	6,596.1	6,894.9	6,565.8	29.1	33.8	86.87	-606.7	-1,264.2	782.0	721.1	60.96	12.829	
6,875.0	6,612.1	6,918.4	6,582.2	29.0	33.7	87.00	-606.7	-1,247.3	781.9	721.2	60.77	12.868	
6,900.0	6,627.1	6,942.0	6,598.0	28.9	33.7	87.17	-606.7	-1,229.8	781.8	721.2	60.58	12.905	
6,925.0	6,641.0	6,965.6	6,613.2	28.8	33.6	87.38	-606.7	-1,211.8	781.7	721.3	60.42	12.938	
6,950.0	6,653.8	6,989.3	6,627.9	28.7	33.5	87.63	-606.7	-1,193.2	781.5	721.3	60.27	12.968	
6,975.0	6,665.5	7,013.0	6,642.0	28.7	33.5	87.90	-606.7	-1,174.2	781.4	721.3	60.14	12.993	
7,000.0	6,676.0	7,036.7	6,655.4	28.6	33.5	88.22	-606.7	-1,154.6	781.2	721.2	60.03	13.014	
7,025.0	6,685.3	7,060.5	6,668.3	28.6	33.4	88.56	-606.7	-1,134.6	781.1	721.2	59.95	13.030	
7,050.0	6,693.4	7,084.4	6,680.5	28.5	33.4	88.93	-606.7	-1,114.0	781.0	721.1	59.89	13.041	
7,075.0	6,700.2	7,108.3	6,692.0	28.5	33.4	89.34	-606.7	-1,093.0	780.9	721.1	59.86	13.046	
7,100.0	6,705.8	7,132.4	6,702.9	28.5	33.4	89.77	-606.7	-1,071.6	780.9	721.0	59.86	13.046	
7,112.5	6,708.0	7,144.4	6,708.0	28.5	33.4	90.00	-606.7	-1,060.8	780.9	721.0	59.86	13.044	
7,125.0	6,710.0	7,156.5	6,713.1	28.5	33.4	90.24	-606.7	-1,049.7	780.9	721.0	59.88	13.041	
7,150.0	6,713.0	7,180.8	6,722.5	28.6	33.4	90.72	-606.7	-1,027.4	780.9	721.0	59.93	13.030	
7,175.0	6,714.7	7,205.1	6,731.3	28.6	33.4	91.24	-606.7	-1,004.7	781.1	721.0	60.01	13.015	
7,198.8	6,715.0	7,228.4	6,739.0	28.6	33.4	91.75	-606.7	-982.7	781.3	721.1	60.12	12.995	
7,200.0	6,715.0	7,229.6	6,739.3	28.6	33.4	91.78	-606.7	-981.6	781.3	721.1	60.13	12.994	
7,300.0	6,714.1	7,331.9	6,764.2	29.0	33.7	93.66	-606.6	-882.4	782.5	721.7	60.81	12.868	
7,400.0	6,713.2	7,439.9	6,774.8	29.7	34.1	94.51	-606.6	-775.1	783.3	721.2	62.04	12.626	
7,500.0	6,712.3	7,541.7	6,774.6	30.6	34.7	94.56	-606.6	-673.3	783.3	719.6	63.75	12.287	
7,600.0	6,711.3	7,641.7	6,774.0	31.7	35.5	94.59	-606.6	-573.3	783.4	717.5	65.87	11.892	
7,700.0	6,710.4	7,741.7	6,773.5	33.0	36.5	94.62	-606.6	-473.3	783.4	715.0	68.38	11.456	
7,800.0	6,709.5	7,841.7	6,772.9	34.5	37.7	94.65	-606.6	-373.3	783.4	712.2	71.25	10.996	
7,900.0	6,708.5	7,941.7	6,772.4	36.2	39.1	94.68	-606.6	-273.3	783.5	709.0	74.42	10.527	
8,000.0	6,707.6	8,041.7	6,771.9	38.0	40.6	94.70	-606.6	-173.3	783.5	705.6	77.87	10.061	
8,100.0	6,706.7	8,141.7	6,771.3	39.9	42.3	94.73	-606.6	-73.3	783.5	702.0	81.56	9.606	
8,200.0	6,705.8	8,241.7	6,770.8	41.9	44.1	94.76	-606.6	26.7	783.6	698.1	85.46	9.169	
8,300.0	6,704.8	8,341.7	6,770.2	44.0	46.0	94.79	-606.6	126.7	783.6	694.0	89.53	8.752	
8,400.0	6,703.9	8,441.7	6,769.7	46.2	48.1	94.82	-606.6	226.7	783.6	689.8	93.77	8.357	
8,500.0	6,703.0	8,541.7	6,769.2	48.5	50.2	94.85	-606.6	326.7	783.6	685.5	98.14	7.985	
8,600.0	6,702.1	8,641.7	6,768.6	50.8	52.3	94.87	-606.6	426.7	783.7	681.1	102.63	7.636	
8,700.0	6,701.1	8,741.6	6,768.1	53.1	54.6	94.90	-606.6	526.7	783.7	676.5	107.22	7.309	
8,800.0	6,700.2	8,841.6	6,767.6	55.5	56.9	94.93	-606.6	626.7	783.7	671.8	111.91	7.004	
8,900.0	6,699.3	8,941.6	6,767.0	57.9	59.2	94.96	-606.6	726.7	783.8	667.1	116.67	6.718	
9,000.0	6,698.3	9,041.6	6,766.5	60.4	61.6	94.99	-606.6	826.7	783.8	662.3	121.51	6.451	
9,100.0	6,697.4	9,141.6	6,765.9	62.9	64.0	95.02	-606.6	926.7	783.8	657.4	126.40	6.201	
9,200.0	6,696.5	9,241.6	6,765.4	65.4	66.5	95.04	-606.6	1,026.7	783.9	652.5	131.36	5.968	
9,300.0	6,695.5	9,341.6	6,764.8	68.0	68.9	95.07	-606.6	1,126.7	783.9	647.6	136.36	5.749	
9,400.0	6,694.6	9,441.6	6,764.3	70.5	71.4	95.10	-606.6	1,226.7	783.9	642.5	141.41	5.544	
9,500.0	6,693.7	9,541.6	6,763.8	73.1	74.0	95.13	-606.6	1,326.7	784.0	637.5	146.49	5.352	
9,600.0	6,692.8	9,641.6	6,763.2	75.7	76.5	95.16	-606.6	1,426.7	784.0	632.4	151.61	5.171	
9,700.0	6,691.8	9,741.6	6,762.7	78.3	79.1	95.19	-606.6	1,526.7	784.1	627.3	156.77	5.001	
9,800.0	6,690.9	9,841.6	6,762.1	80.9	81.7	95.21	-606.6	1,626.7	784.1	622.1	161.95	4.842	
9,900.0	6,690.0	9,941.6	6,761.6	83.6	84.3	95.24	-606.6	1,726.7	784.1	617.0	167.16	4.691	
10,000.0	6,689.0	10,041.6	6,761.1	86.2	86.9	95.27	-606.6	1,826.7	784.2	611.8	172.39	4.549	
10,100.0	6,688.1	10,141.6	6,760.5	88.9	89.5	95.30	-606.6	1,926.7	784.2	606.5	177.65	4.414	
10,200.0	6,687.2	10,241.6	6,760.0	91.6	92.1	95.33	-606.6	2,026.6	784.2	601.3	182.92	4.287	
10,300.0	6,686.2	10,341.6	6,759.4	94.2	94.8	95.36	-606.6	2,126.6	784.3	596.1	188.21	4.167	
10,400.0	6,685.3	10,441.6	6,758.9	96.9	97.4	95.38	-606.6	2,226.6	784.3	590.8	193.52	4.053	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	10,541.6	6,758.4	99.6	100.1	95.41	-606.6	2,326.6	784.3	585.5	198.84	3.945	
10,600.0	6,683.4	10,641.6	6,757.8	102.3	102.8	95.44	-606.6	2,426.6	784.4	580.2	204.18	3.842	
10,700.0	6,682.5	10,741.6	6,757.3	105.0	105.4	95.47	-606.6	2,526.6	784.4	574.9	209.53	3.744	
10,800.0	6,681.6	10,841.6	6,756.7	107.7	108.1	95.50	-606.6	2,626.6	784.4	569.6	214.89	3.650	
10,900.0	6,680.6	10,941.6	6,756.2	110.4	110.8	95.53	-606.6	2,726.6	784.5	564.2	220.26	3.562	
11,000.0	6,679.7	11,041.6	6,755.6	113.1	113.5	95.56	-606.6	2,826.6	784.5	558.9	225.64	3.477	
11,100.0	6,678.8	11,141.6	6,755.1	115.9	116.2	95.58	-606.6	2,926.6	784.6	553.5	231.03	3.396	
11,200.0	6,677.8	11,241.6	6,754.6	118.6	118.9	95.61	-606.6	3,026.6	784.6	548.2	236.43	3.318	
11,300.0	6,676.9	11,341.6	6,754.0	121.3	121.6	95.64	-606.6	3,126.6	784.6	542.8	241.84	3.244	
11,400.0	6,676.0	11,441.6	6,753.5	124.1	124.3	95.67	-606.6	3,226.6	784.7	537.4	247.25	3.174	
11,500.0	6,675.0	11,541.6	6,752.9	126.8	127.1	95.70	-606.6	3,326.6	784.7	532.0	252.68	3.106	
11,600.0	6,674.1	11,641.6	6,752.4	129.5	129.8	95.73	-606.6	3,426.6	784.7	526.6	258.11	3.040	
11,700.0	6,673.1	11,741.6	6,751.8	132.3	132.5	95.76	-606.6	3,526.6	784.8	521.2	263.54	2.978	
11,800.0	6,672.2	11,841.6	6,751.3	135.0	135.2	95.78	-606.6	3,626.6	784.8	515.8	268.98	2.918	
11,900.0	6,671.3	11,941.6	6,750.8	137.8	138.0	95.81	-606.6	3,726.6	784.9	510.4	274.42	2.860	
12,000.0	6,670.3	12,041.6	6,750.2	140.5	140.7	95.84	-606.6	3,826.6	784.9	505.0	279.87	2.804	
12,036.2	6,670.0	12,077.9	6,750.0	141.5	141.7	95.85	-606.6	3,862.8	784.9	503.1	281.85	2.785	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.65	0.7	120.0	120.0				
100.0	100.0	100.0	100.0	0.1	0.1	79.10	0.7	120.0	120.0	119.8	0.20	613.968	
200.0	200.0	200.0	200.0	0.2	0.3	79.24	0.7	120.0	120.0	119.4	0.53	225.264	
261.0	261.0	261.0	261.0	0.3	0.5	79.37	0.7	120.0	119.9	119.2	0.74	162.447	
263.5	263.5	263.5	263.5	0.3	0.5	90.00	0.7	120.0	119.9	119.2	0.75	159.992	CC, ES
300.0	300.0	300.0	300.0	0.4	0.5	157.68	0.7	120.0	120.2	119.3	0.91	131.452	
400.0	399.9	401.4	401.4	0.6	0.8	173.30	-0.9	119.4	122.8	121.5	1.35	91.050	
500.0	499.7	502.6	502.4	0.8	1.0	178.23	-5.9	117.5	128.2	126.5	1.77	72.331	
538.0	537.5	540.9	540.6	0.9	1.0	179.97	-8.7	116.4	131.1	129.1	1.94	67.499	
600.0	599.1	603.1	602.5	1.1	1.2	-178.38	-14.2	114.2	136.9	134.6	2.24	60.998	
700.0	697.9	702.7	701.3	1.5	1.5	-174.63	-25.6	109.8	149.6	146.8	2.76	54.144	
800.0	796.0	801.0	798.4	1.8	1.8	-170.30	-40.0	104.2	167.0	163.7	3.32	50.296	
818.0	813.5	818.5	815.7	1.9	1.8	-169.51	-42.9	103.1	170.7	167.2	3.43	49.777	
900.0	893.1	897.7	893.4	2.3	2.1	-164.89	-57.2	97.6	189.3	185.3	3.98	47.553	
1,000.0	989.2	993.2	986.8	2.9	2.5	-160.37	-75.7	90.4	216.5	211.8	4.69	46.172	
1,100.0	1,083.9	1,087.7	1,079.2	3.5	2.9	-157.19	-94.0	83.3	247.9	242.5	5.39	45.953	
1,104.0	1,087.6	1,091.5	1,082.9	3.5	3.0	-157.09	-94.8	83.0	249.3	243.8	5.42	45.963	
1,200.0	1,177.9	1,181.6	1,171.1	4.1	3.3	-156.36	-112.2	76.2	281.5	275.4	6.18	45.591	
1,300.0	1,272.0	1,275.6	1,263.0	4.8	3.8	-155.84	-130.4	69.2	315.2	308.3	6.94	45.443	
1,391.0	1,357.8	1,361.0	1,346.6	5.3	4.1	-155.53	-147.0	62.8	346.0	338.3	7.66	45.182	
1,400.0	1,366.3	1,369.5	1,354.8	5.4	4.2	-155.25	-148.6	62.1	349.0	341.3	7.73	45.149	
1,458.0	1,421.2	1,424.2	1,408.4	5.7	4.4	-153.42	-159.2	58.0	367.9	359.7	8.20	44.856	
1,500.0	1,461.0	1,463.9	1,447.2	6.0	4.6	-153.23	-166.9	55.0	381.2	372.7	8.53	44.690	
1,600.0	1,556.1	1,558.6	1,539.8	6.6	5.0	-152.86	-185.3	47.9	412.9	403.6	9.32	44.310	
1,676.0	1,628.3	1,630.5	1,610.2	7.0	5.3	-152.63	-199.2	42.5	437.1	427.1	9.92	44.038	
1,700.0	1,651.1	1,653.2	1,632.4	7.2	5.4	-151.88	-203.6	40.8	444.6	434.5	10.13	43.913	
1,800.0	1,746.4	1,748.2	1,725.3	7.7	5.9	-148.83	-222.0	33.7	475.6	464.7	10.97	43.377	
1,900.0	1,841.8	1,843.5	1,818.5	8.3	6.3	-145.88	-240.5	26.5	505.6	493.8	11.81	42.819	
1,963.0	1,902.0	1,903.7	1,877.4	8.7	6.6	-144.06	-252.2	22.0	523.9	511.6	12.34	42.458	
2,000.0	1,937.4	1,939.2	1,912.1	8.9	6.7	-143.95	-259.1	19.3	534.5	521.9	12.65	42.263	
2,100.0	2,033.1	2,035.0	2,005.8	9.5	7.2	-143.64	-277.6	12.1	562.8	549.4	13.48	41.746	
2,200.0	2,129.0	2,131.0	2,099.7	10.0	7.6	-143.32	-296.3	4.9	590.7	576.3	14.32	41.240	
2,250.0	2,177.1	2,179.1	2,146.7	10.3	7.8	-143.16	-305.6	1.3	604.4	589.6	14.74	40.992	
2,300.0	2,225.1	2,227.1	2,193.7	10.6	8.1	-144.13	-314.9	-2.3	618.1	603.0	15.15	40.807	
2,400.0	2,321.2	2,322.9	2,287.5	11.2	8.5	-145.99	-333.5	-9.5	646.4	630.4	15.96	40.511	
2,500.0	2,417.0	2,418.5	2,380.9	11.7	8.9	-147.77	-352.0	-16.7	675.6	658.8	16.76	40.304	
2,537.0	2,452.5	2,453.7	2,415.4	11.9	9.1	-148.40	-358.8	-19.4	686.6	669.5	17.06	40.247	
2,600.0	2,512.8	2,513.6	2,474.0	12.3	9.4	-151.01	-370.4	-23.9	705.9	688.4	17.53	40.268	
2,700.0	2,608.2	2,608.1	2,566.4	12.9	9.8	-154.86	-388.7	-31.0	738.1	719.8	18.27	40.407	
2,800.0	2,703.3	2,701.8	2,658.0	13.5	10.2	-158.35	-406.9	-38.0	772.3	753.3	18.99	40.665	
2,824.0	2,726.1	2,724.1	2,679.9	13.7	10.3	-159.14	-411.2	-39.7	780.8	761.6	19.16	40.744	
2,900.0	2,798.2	2,795.1	2,749.3	14.1	10.6	-156.22	-425.0	-45.0	807.3	787.4	19.85	40.660	
3,000.0	2,893.6	2,895.3	2,847.5	14.7	11.0	-152.25	-443.6	-52.3	840.3	819.5	20.73	40.534	
3,100.0	2,989.4	3,000.1	2,950.8	15.3	11.3	-148.30	-459.8	-58.5	870.3	848.8	21.48	40.519	
3,112.0	3,000.9	3,012.7	2,963.3	15.4	11.4	-147.83	-461.6	-59.2	873.7	852.1	21.56	40.520	
3,200.0	3,085.5	3,106.0	3,055.8	15.9	11.6	-147.11	-472.7	-63.5	897.6	875.5	22.12	40.586	
3,300.0	3,181.9	3,212.5	3,161.9	16.4	11.8	-146.45	-481.9	-67.1	923.0	900.3	22.69	40.680	
3,400.0	3,278.4	3,319.3	3,268.5	16.9	12.0	-145.94	-487.4	-69.2	946.5	923.3	23.20	40.802	
3,500.0	3,374.7	3,425.5	3,374.7	17.5	12.1	-146.73	-489.3	-70.0	969.7	946.1	23.61	41.075	
3,600.0	3,470.3	3,521.1	3,470.3	18.1	12.2	-147.55	-489.3	-70.0	994.7	970.7	23.97	41.497	
3,687.0	3,552.8	3,603.6	3,552.8	18.6	12.3	-148.25	-489.3	-70.0	1,018.4	994.1	24.26	41.972	
3,700.0	3,565.1	3,615.9	3,565.1	18.7	12.4	-148.12	-489.3	-70.0	1,022.0	997.7	24.32	42.016	

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
3,800.0	3,659.5	3,710.3	3,659.5	19.4	12.5	-147.14	-489.3	-70.0	1,050.2	1,025.4	24.79	42.359	
3,900.0	3,753.9	3,804.7	3,753.9	20.0	12.6	-146.18	-489.3	-70.0	1,078.4	1,053.2	25.25	42.705	
3,974.0	3,823.6	3,874.4	3,823.6	20.5	12.7	-145.51	-489.3	-70.0	1,099.3	1,073.7	25.59	42.963	
4,000.0	3,848.1	3,898.9	3,848.1	20.7	12.7	-146.03	-489.3	-70.0	1,106.5	1,080.8	25.69	43.070	
4,100.0	3,942.9	3,993.8	3,942.9	21.3	12.8	-148.03	-489.3	-70.0	1,133.6	1,107.5	26.11	43.425	
4,200.0	4,038.5	4,089.3	4,038.5	21.9	12.9	-150.04	-489.3	-70.0	1,159.2	1,132.7	26.53	43.694	
4,263.0	4,099.0	4,149.8	4,099.0	22.3	13.0	-151.32	-489.3	-70.0	1,174.5	1,147.7	26.80	43.820	
4,300.0	4,134.7	4,185.5	4,134.7	22.5	13.0	-152.67	-489.3	-70.0	1,183.3	1,156.4	26.92	43.949	
4,400.0	4,231.2	4,282.0	4,231.2	23.0	13.2	-156.39	-489.3	-70.0	1,207.0	1,179.7	27.26	44.269	
4,500.0	4,328.0	4,378.8	4,328.0	23.5	13.3	-160.23	-489.3	-70.0	1,230.5	1,202.9	27.62	44.550	
4,549.0	4,375.5	4,426.3	4,375.5	23.8	13.4	-162.16	-489.3	-70.0	1,241.9	1,214.1	27.80	44.673	
4,600.0	4,425.0	4,475.8	4,425.0	24.0	13.4	-162.51	-489.3	-70.0	1,253.8	1,225.8	27.99	44.801	
4,700.0	4,521.9	4,572.7	4,521.9	24.5	13.6	-163.19	-489.3	-70.0	1,277.2	1,248.9	28.35	45.049	
4,800.0	4,618.8	4,669.7	4,618.8	25.0	13.7	-163.85	-489.3	-70.0	1,300.9	1,272.2	28.72	45.293	
4,837.0	4,654.7	4,705.5	4,654.7	25.2	13.7	-164.09	-489.3	-70.0	1,309.7	1,280.8	28.86	45.383	
4,900.0	4,715.7	4,766.5	4,715.7	25.5	13.8	-164.71	-489.3	-70.0	1,324.8	1,295.8	29.08	45.555	
5,000.0	4,812.4	4,863.2	4,812.4	26.0	14.0	-165.65	-489.3	-70.0	1,349.6	1,320.2	29.44	45.848	
5,100.0	4,908.9	4,959.7	4,908.9	26.6	14.1	-166.54	-489.3	-70.0	1,375.2	1,345.4	29.79	46.162	
5,125.0	4,932.9	4,983.8	4,932.9	26.7	14.1	-166.75	-489.3	-70.0	1,381.7	1,351.9	29.88	46.244	
5,200.0	5,005.4	5,056.2	5,005.4	27.0	14.3	-164.26	-489.3	-70.0	1,400.7	1,370.4	30.26	46.285	
5,300.0	5,102.4	5,153.2	5,102.4	27.5	14.4	-160.38	-489.3	-70.0	1,423.7	1,393.0	30.75	46.303	
5,400.0	5,199.9	5,250.8	5,199.9	28.0	14.5	-155.71	-489.3	-70.0	1,444.3	1,413.0	31.21	46.280	
5,412.0	5,211.7	5,262.5	5,211.7	28.1	14.6	-155.09	-489.3	-70.0	1,446.5	1,415.3	31.26	46.275	
5,500.0	5,297.9	5,348.8	5,297.9	28.4	14.7	-152.82	-489.3	-70.0	1,462.2	1,430.6	31.61	46.252	
5,581.0	5,377.7	5,428.5	5,377.7	28.7	14.8	-150.11	-489.3	-70.0	1,474.8	1,442.9	31.92	46.201	
5,600.0	5,396.4	5,447.3	5,396.4	28.8	14.8	-151.38	-489.3	-70.0	1,477.5	1,445.5	31.98	46.198	
5,700.0	5,495.3	7,884.1	6,787.6	29.1	41.3	-109.36	-489.3	-1,420.7	1,442.7	1,373.7	68.98	20.913	
5,800.0	5,594.6	7,895.5	6,787.6	29.4	41.6	-116.77	-489.3	-1,432.0	1,355.5	1,285.4	70.09	19.339	
5,900.0	5,694.1	7,904.0	6,787.5	29.6	41.8	-130.59	-489.3	-1,440.5	1,270.8	1,200.1	70.73	17.968	
5,917.0	5,711.1	7,905.2	6,787.5	29.7	41.8	-133.63	-489.3	-1,441.7	1,256.7	1,185.9	70.80	17.751	
6,000.0	5,793.7	7,910.6	6,787.5	29.8	42.0	-133.20	-489.3	-1,447.1	1,189.1	1,118.0	71.11	16.723	
6,067.0	5,860.5	7,915.0	6,787.5	30.0	42.1	-132.84	-489.3	-1,451.5	1,136.0	1,064.7	71.36	15.921	
6,100.0	5,893.4	7,917.0	6,787.5	30.0	42.1	-132.08	-489.3	-1,453.5	1,110.3	1,038.8	71.51	15.527	
6,200.0	5,993.2	7,921.2	6,787.5	30.2	42.2	-129.94	-489.3	-1,457.7	1,034.0	962.1	71.83	14.395	
6,300.0	6,093.2	7,922.7	6,787.5	30.3	42.3	-128.12	-489.3	-1,459.2	960.3	888.4	71.94	13.349	
6,318.8	6,111.9	7,922.7	6,787.5	30.3	42.3	-179.78	-489.3	-1,459.2	946.9	913.2	33.64	28.149	
6,400.0	6,193.2	7,922.4	6,787.5	30.4	42.3	-179.80	-489.3	-1,458.9	890.7	857.0	33.76	26.383	
6,444.4	6,237.6	7,922.2	6,787.5	30.4	42.3	-179.82	-489.3	-1,458.7	861.7	827.9	33.83	25.473	
6,450.0	6,243.2	7,922.2	6,787.5	30.4	42.3	90.73	-489.3	-1,458.7	858.2	786.2	72.01	11.918	
6,475.0	6,268.1	7,921.1	6,787.5	30.4	42.2	93.04	-489.3	-1,457.7	842.6	770.8	71.77	11.740	
6,500.0	6,293.0	7,918.8	6,787.5	30.4	42.2	95.11	-489.3	-1,455.3	827.4	756.0	71.42	11.586	
6,525.0	6,317.8	7,915.1	6,787.5	30.4	42.1	96.93	-489.3	-1,451.7	812.9	741.9	70.99	11.452	
6,550.0	6,342.3	7,910.2	6,787.5	30.4	42.0	98.51	-489.3	-1,446.7	799.0	728.5	70.50	11.334	
6,575.0	6,366.5	7,904.0	6,787.5	30.3	41.8	99.85	-489.3	-1,440.5	785.8	715.8	69.97	11.229	
6,600.0	6,390.4	7,896.5	6,787.6	30.2	41.6	100.97	-489.3	-1,433.0	773.3	703.8	69.44	11.136	
6,625.0	6,413.9	7,887.8	6,787.6	30.2	41.4	101.86	-489.3	-1,424.3	761.5	692.6	68.89	11.053	
6,650.0	6,436.9	7,877.9	6,787.6	30.1	41.1	102.54	-489.3	-1,414.4	750.5	682.1	68.36	10.979	
6,675.0	6,459.3	7,866.8	6,787.7	30.0	40.9	103.03	-489.3	-1,403.3	740.3	672.5	67.83	10.913	
6,700.0	6,481.1	7,854.5	6,787.7	29.9	40.5	103.34	-489.3	-1,391.0	730.9	663.6	67.33	10.856	
6,725.0	6,502.3	7,841.1	6,787.8	29.7	40.2	103.49	-489.3	-1,377.6	722.3	655.5	66.83	10.807	
6,750.0	6,522.7	7,826.7	6,787.8	29.6	39.8	103.49	-489.3	-1,363.2	714.5	648.1	66.36	10.767	
6,775.0	6,542.4	7,811.1	6,787.9	29.5	39.4	103.35	-489.3	-1,347.6	707.4	641.5	65.90	10.736	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
6,800.0	6,561.2	7,794.6	6,788.0	29.4	39.0	103.09	-489.3	-1,331.1	701.2	635.7	65.45	10.713	
6,825.0	6,579.1	7,777.1	6,788.0	29.3	38.6	102.74	-489.3	-1,313.6	695.6	630.6	65.01	10.700	
6,850.0	6,596.1	7,758.7	6,788.1	29.1	38.1	102.30	-489.3	-1,295.2	690.7	626.1	64.57	10.696 SF	
6,875.0	6,612.1	7,739.5	6,788.2	29.0	37.6	101.79	-489.3	-1,276.0	686.4	622.3	64.13	10.703	
6,900.0	6,627.1	7,719.4	6,788.2	28.9	37.1	101.24	-489.3	-1,255.9	682.8	619.1	63.69	10.720	
6,925.0	6,641.0	7,698.6	6,788.3	28.8	36.6	100.65	-489.3	-1,235.1	679.6	616.4	63.24	10.747	
6,950.0	6,653.8	7,677.1	6,788.4	28.7	36.1	100.05	-489.3	-1,213.6	677.0	614.2	62.78	10.783	
6,975.0	6,665.5	7,654.9	6,788.5	28.7	35.6	99.45	-489.3	-1,191.4	674.8	612.5	62.32	10.828	
7,000.0	6,676.0	7,632.2	6,788.6	28.6	35.0	98.87	-489.3	-1,168.7	673.0	611.1	61.84	10.883	
7,025.0	6,685.3	7,609.0	6,788.7	28.6	34.4	98.32	-489.3	-1,145.5	671.5	610.1	61.34	10.947	
7,050.0	6,693.4	7,585.3	6,788.7	28.5	33.9	97.82	-489.3	-1,121.8	670.3	609.4	60.84	11.017	
7,075.0	6,700.2	7,561.2	6,788.8	28.5	33.3	97.38	-489.3	-1,097.7	669.4	609.0	60.34	11.094	
7,100.0	6,705.8	7,536.8	6,788.9	28.5	32.7	97.01	-489.3	-1,073.3	668.7	608.8	59.82	11.178	
7,125.0	6,710.0	7,512.2	6,789.0	28.5	32.1	96.72	-489.3	-1,048.7	668.2	608.9	59.30	11.267	
7,150.0	6,713.0	7,487.3	6,789.1	28.6	31.5	96.52	-489.3	-1,023.8	667.8	609.0	58.79	11.360	
7,175.0	6,714.7	7,462.4	6,789.2	28.6	31.0	96.41	-489.3	-998.9	667.6	609.4	58.28	11.456	
7,192.6	6,715.1	7,444.7	6,789.3	28.6	30.6	96.38	-489.3	-981.2	667.6	609.7	57.92	11.526	
7,198.8	6,715.0	7,438.5	6,789.3	28.6	30.4	96.39	-489.3	-975.1	667.6	609.8	57.80	11.551	
7,200.0	6,715.0	7,437.4	6,789.3	28.6	30.4	96.39	-489.3	-973.9	667.6	609.8	57.77	11.556	
7,300.0	6,714.1	7,337.4	6,789.7	29.0	28.2	96.50	-489.3	-873.9	667.8	611.9	55.85	11.956	
7,400.0	6,713.2	7,235.6	6,789.9	29.7	26.0	96.59	-489.3	-772.1	667.9	613.7	54.24	12.314	
7,500.0	6,712.3	7,124.7	6,779.1	30.6	23.8	95.77	-489.3	-661.8	666.9	614.0	52.90	12.607	
7,600.0	6,711.3	7,019.2	6,753.2	31.7	21.9	93.63	-489.3	-559.7	664.9	612.8	52.17	12.745	
7,700.0	6,710.4	6,922.8	6,716.7	33.0	20.5	90.55	-489.3	-470.5	663.5	611.5	52.00	12.759	
7,715.9	6,710.3	6,908.5	6,710.3	33.3	20.3	90.00	-489.3	-457.7	663.5	611.4	52.03	12.753	
7,800.0	6,709.5	6,837.4	6,674.6	34.5	19.5	86.97	-489.3	-396.3	664.8	612.5	52.26	12.721	
7,900.0	6,708.5	6,763.2	6,631.0	36.2	18.7	83.29	-489.3	-336.2	670.9	618.1	52.81	12.704	
8,000.0	6,707.6	6,700.0	6,589.2	38.0	18.2	79.80	-489.3	-288.9	683.7	630.2	53.56	12.764	
8,100.0	6,706.7	6,650.0	6,553.3	39.9	17.9	76.85	-489.3	-254.2	704.5	649.9	54.55	12.914	
8,200.0	6,705.8	6,600.0	6,515.0	41.9	17.6	73.78	-489.3	-222.0	733.7	678.1	55.51	13.217	
8,300.0	6,704.8	6,550.0	6,474.6	44.0	17.3	70.64	-489.3	-192.6	771.3	714.9	56.40	13.676	
8,400.0	6,703.9	6,523.3	6,452.2	46.2	17.2	68.94	-489.3	-178.1	816.8	759.0	57.80	14.130	
8,500.0	6,703.0	6,500.0	6,432.2	48.5	17.0	67.46	-489.3	-166.1	869.5	810.2	59.28	14.667	
8,600.0	6,702.1	6,467.0	6,403.3	50.8	16.9	65.38	-489.3	-150.3	928.4	867.9	60.47	15.352	
8,700.0	6,701.1	6,450.0	6,388.1	53.1	16.8	64.31	-489.3	-142.6	992.8	930.7	62.10	15.988	
8,800.0	6,700.2	6,423.6	6,364.1	55.5	16.7	62.66	-489.3	-131.4	1,061.8	998.3	63.41	16.744	
8,900.0	6,699.3	6,400.0	6,342.4	57.9	16.6	61.20	-489.3	-122.2	1,134.7	1,069.9	64.77	17.518	
9,000.0	6,698.3	6,400.0	6,342.4	60.4	16.6	61.20	-489.3	-122.2	1,211.0	1,144.1	66.96	18.087	
9,100.0	6,697.4	6,374.8	6,318.9	62.9	16.6	59.67	-489.3	-113.2	1,290.0	1,221.7	68.22	18.910	
9,200.0	6,696.5	6,350.0	6,295.5	65.4	16.5	58.19	-489.3	-105.1	1,371.5	1,302.1	69.44	19.752	
9,300.0	6,695.5	6,350.0	6,295.5	68.0	16.5	58.19	-489.3	-105.1	1,454.9	1,383.2	71.63	20.312	
9,400.0	6,694.6	6,350.0	6,295.5	70.5	16.5	58.19	-489.3	-105.1	1,540.2	1,466.3	73.83	20.860	
9,500.0	6,693.7	6,329.1	6,275.5	73.1	16.4	56.96	-489.3	-98.9	1,626.8	1,551.6	75.14	21.650	
9,600.0	6,692.8	6,320.0	6,266.8	75.7	16.4	56.44	-489.3	-96.4	1,714.7	1,637.8	76.94	22.287	
9,700.0	6,691.8	6,300.0	6,247.4	78.3	16.3	55.30	-489.3	-91.3	1,804.0	1,725.8	78.21	23.066	
9,800.0	6,690.9	6,300.0	6,247.4	80.9	16.3	55.30	-489.3	-91.3	1,893.9	1,813.5	80.40	23.556	
9,900.0	6,690.0	6,300.0	6,247.4	83.6	16.3	55.30	-489.3	-91.3	1,984.9	1,902.2	82.60	24.029	
10,000.0	6,689.0	6,300.0	6,247.4	86.2	16.3	55.30	-489.3	-91.3	2,076.6	1,991.8	84.81	24.485	
10,100.0	6,688.1	6,300.0	6,247.4	88.9	16.3	55.30	-489.3	-91.3	2,169.1	2,082.1	87.03	24.923	
10,200.0	6,687.2	6,278.4	6,226.4	91.6	16.3	54.09	-489.3	-86.4	2,261.8	2,173.7	88.10	25.673	
10,300.0	6,686.2	6,273.1	6,221.2	94.2	16.3	53.80	-489.3	-85.3	2,355.3	2,265.3	90.01	26.167	
10,400.0	6,685.3	6,250.0	6,198.5	96.9	16.2	52.54	-489.3	-80.9	2,449.5	2,358.6	90.91	26.945	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Offset Design SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

Offset Site Error: 0.0 usft

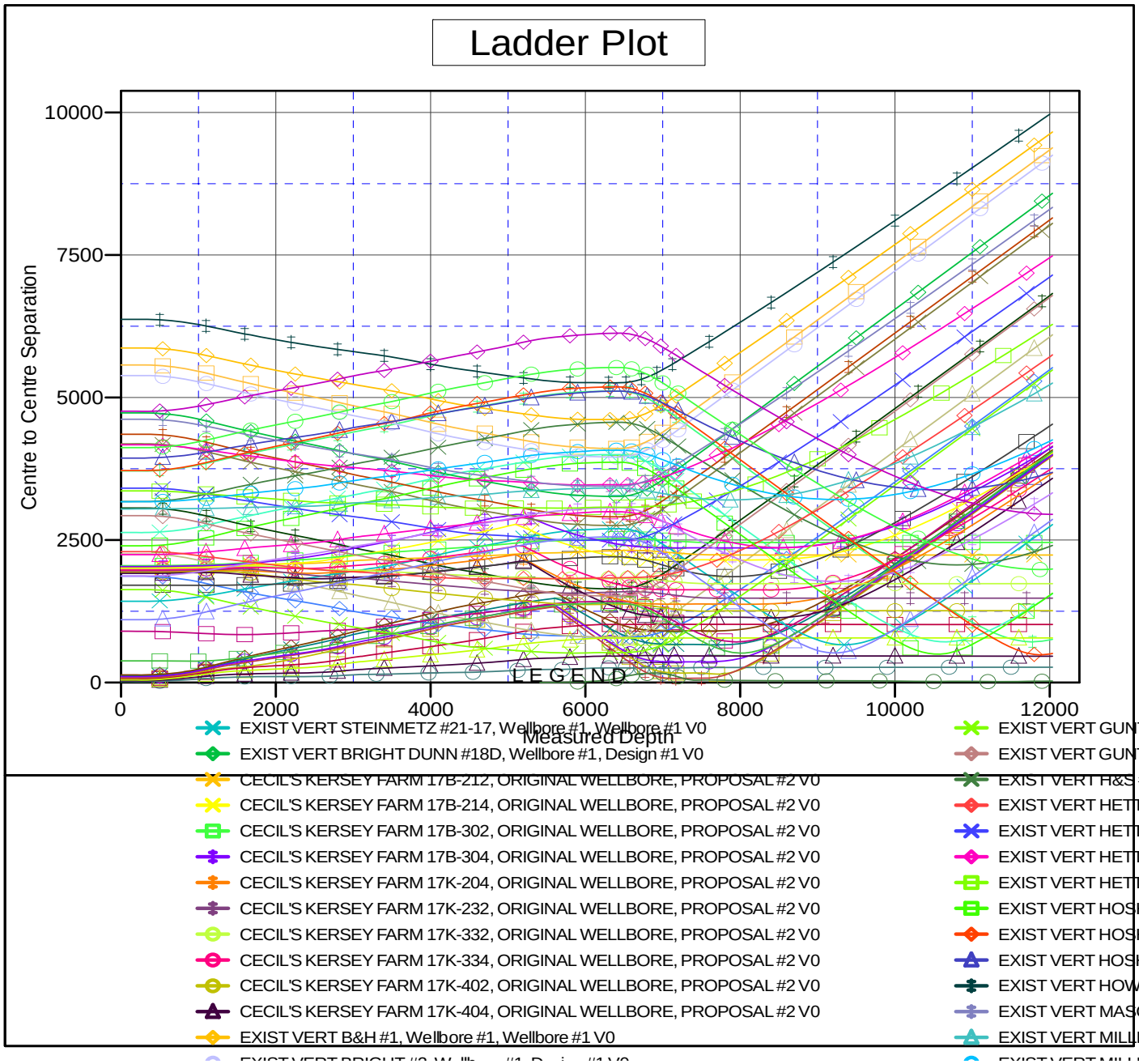
Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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)	Separation Factor	Warning
10,500.0	6,684.4	6,250.0	6,198.5	99.6	16.2	52.54	-489.3	-80.9	2,543.7	2,450.6	93.08	27.327	
10,600.0	6,683.4	6,250.0	6,198.5	102.3	16.2	52.54	-489.3	-80.9	2,638.4	2,543.1	95.26	27.695	
10,700.0	6,682.5	6,250.0	6,198.5	105.0	16.2	52.54	-489.3	-80.9	2,733.4	2,636.0	97.45	28.050	
10,800.0	6,681.6	6,250.0	6,198.5	107.7	16.2	52.54	-489.3	-80.9	2,828.8	2,729.1	99.64	28.390	
10,900.0	6,680.6	6,250.0	6,198.5	110.4	16.2	52.54	-489.3	-80.9	2,924.5	2,822.6	101.83	28.718	
11,000.0	6,679.7	6,250.0	6,198.5	113.1	16.2	52.54	-489.3	-80.9	3,020.4	2,916.4	104.03	29.034	
11,100.0	6,678.8	6,250.0	6,198.5	115.9	16.2	52.54	-489.3	-80.9	3,116.7	3,010.4	106.23	29.338	
11,200.0	6,677.8	6,250.0	6,198.5	118.6	16.2	52.54	-489.3	-80.9	3,213.1	3,104.7	108.44	29.631	
11,300.0	6,676.9	6,250.0	6,198.5	121.3	16.2	52.54	-489.3	-80.9	3,309.8	3,199.1	110.64	29.914	
11,400.0	6,676.0	6,250.0	6,198.5	124.1	16.2	52.54	-489.3	-80.9	3,406.6	3,293.8	112.85	30.186	
11,500.0	6,675.0	6,228.6	6,177.4	126.8	16.2	51.41	-489.3	-77.5	3,503.3	3,389.7	113.53	30.857	
11,600.0	6,674.1	6,226.0	6,174.8	129.5	16.1	51.28	-489.3	-77.1	3,600.4	3,484.8	115.53	31.164	
11,700.0	6,673.1	6,223.5	6,172.4	132.3	16.1	51.15	-489.3	-76.8	3,697.6	3,580.1	117.53	31.462	
11,800.0	6,672.2	6,221.2	6,170.1	135.0	16.1	51.02	-489.3	-76.5	3,795.0	3,675.4	119.53	31.749	
11,900.0	6,671.3	6,200.0	6,149.0	137.8	16.1	49.94	-489.3	-73.9	3,892.8	3,772.7	120.08	32.417	
12,000.0	6,670.3	6,200.0	6,149.0	140.5	16.1	49.94	-489.3	-73.9	3,990.3	3,868.1	122.24	32.644	
12,036.2	6,670.0	6,200.0	6,149.0	141.5	16.1	49.94	-489.3	-73.9	4,025.7	3,902.7	123.02	32.725	

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 4633.0usft (ENS 135)	Coordinates are relative to: SCHAUMBERG 17F-202ST
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000	Grid Convergence at Surface is: 0.59°



Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SCHAUMBERG 17F-202ST
Project:	WELD COUNTY, COLORADO	**TVD Reference:**	KB @ 4633.0usft (ENS 135)
Reference Site:	SW NW SEC. 17 T5N R64W 6th P.M.	**MD Reference:**	KB @ 4633.0usft (ENS 135)
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	SCHAUMBERG 17F-202ST	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	JOB #2016-52-135 - SIDETRACK	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3 - SIDETRACK	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 4633.0usft (ENS 135)	Coordinates are relative to: SCHAUMBERG 17F-202ST
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000	Grid Convergence at Surface is: 0.59°