



WELL DETAILS: OTTESEN 23NA

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1245344.89	3202149.49	40° 0' 16.559 N	104° 46' 42.156 W

Project: WELD COUNTY
 Site: Ottesen Pad
 Well: OTTESEN 23NA
 Wellbore: OWB
 Design: Plan #2
 Lat: 40° 0' 16.559 N
 Long: 104° 46' 42.156 W
 GL: 5076.0
 KB: KB 20' @ 5096.0usft

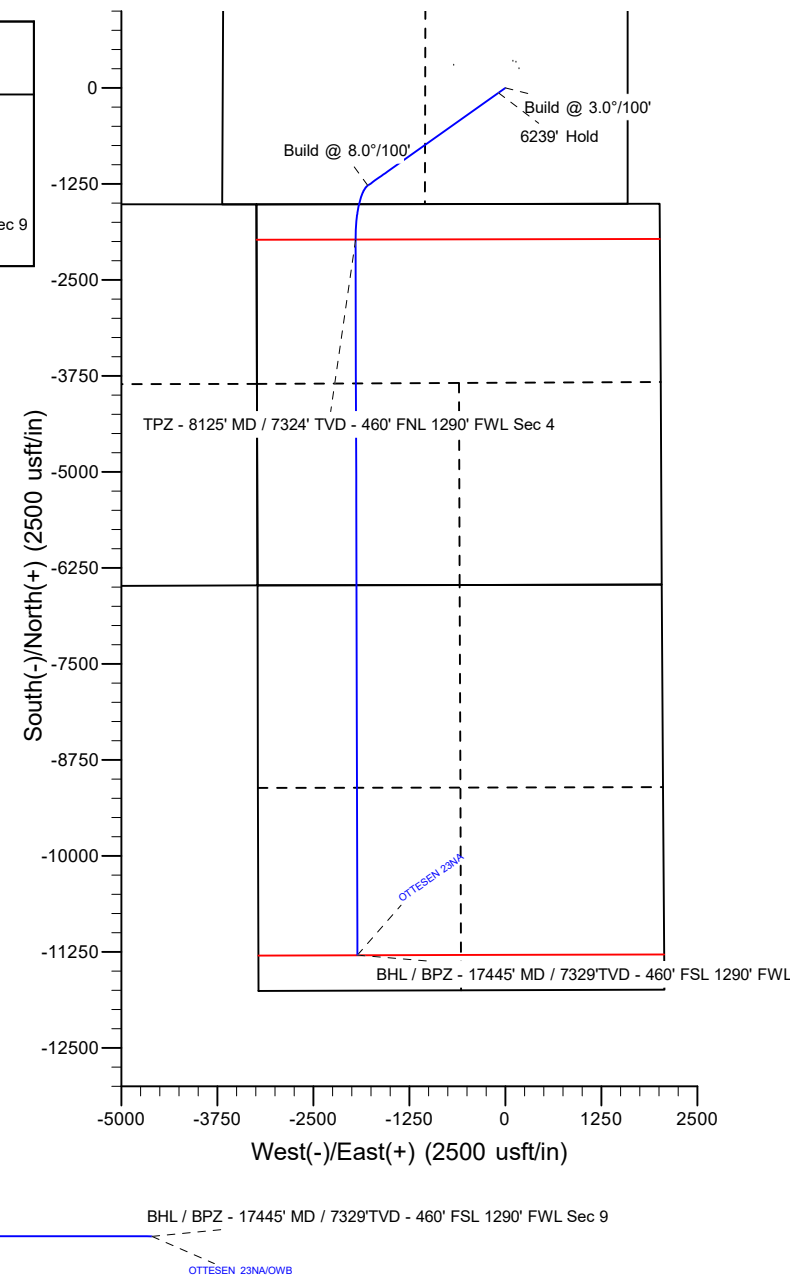
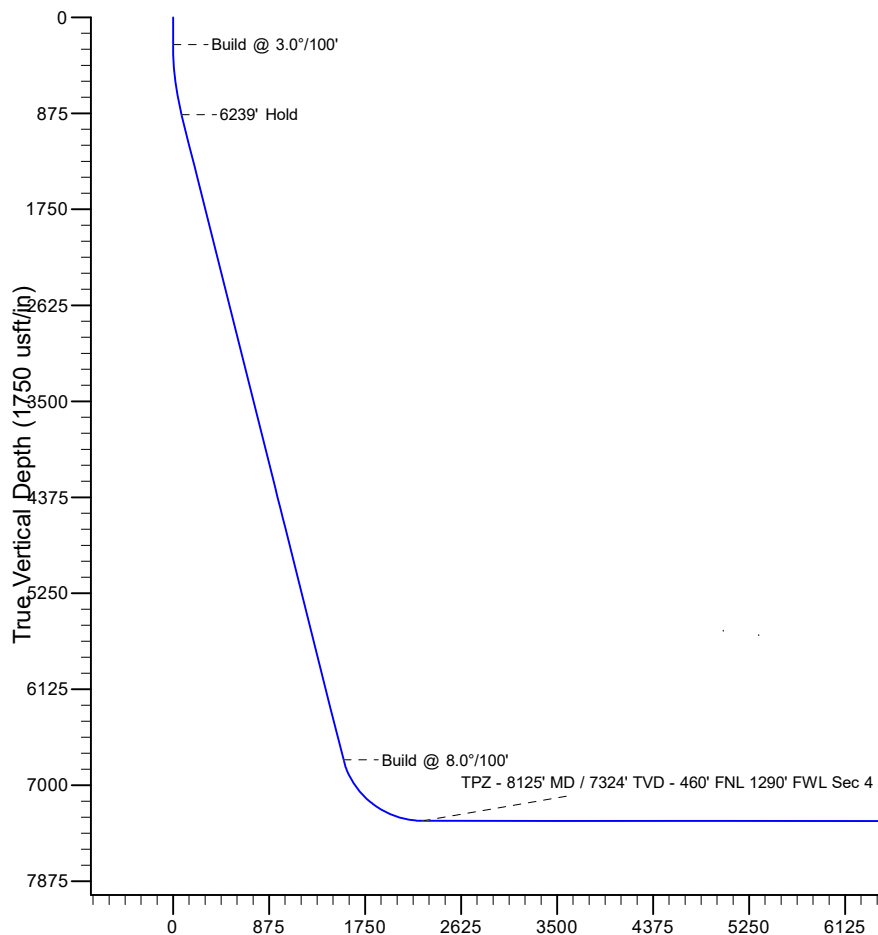


Azimuths to True North
 Magnetic North: 7.73°

Magnetic Field
 Strength: 51656.7nT
 Dip Angle: 66.30°
 Date: 4/12/2022
 Model: IGRF2000

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.0	Build @ 3.0°/100'
900.9	19.53	234.66	888.4	-63.5	-89.6	3.00	234.66	77.7	6239' Hold
7140.0	19.53	234.66	6768.6	-1270.0	-1790.7	0.00	0.00	1552.9	Build @ 8.0°/100'
8125.8	89.97	179.85	7324.0	-1972.8	-1949.7	8.00	-56.40	2272.4	TPZ - 8125' MD / 7324' TVD - 460' FNL 1290' FWL Sec 4
17445.5	89.97	179.85	7329.0	-11292.4	-1925.4	0.00	0.00	11455.4	BHL / BPZ - 17445' MD / 7329'TVD - 460' FSL 1290' FWL Sec 9



PDC Energy Inc.
Anticollision Risk Report

Company:	GWP - PLANNING DB	Local Co-ordinate Reference:	Well OTTESEN 23NA
Project:	WELD COUNTY	TVD Reference:	KB 20' @ 5096.0usft
Reference Site:	Ottesen Pad	MD Reference:	KB 20' @ 5096.0usft
Site Error:	0.0	North Reference:	True
Reference Well:	OTTESEN 23NA	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Risk Settings		
Vertical Depth for Analysis:	usft	(Below TVD Reference Datum)
Level of Acceptable Risk (1 in):		
Minimum Separation:	usft	

Survey Tool Program		Date	10/3/2022		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	17,445.5	Plan #2 (OWB)	MWD	OWSG MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottesen Offsets						
Bailey #1 - OWB - OWB	8,985.6	7,303.5	475.5	404.6	6.711 CC	
Bailey #1 - OWB - OWB	9,000.0	7,303.5	475.7	404.2	6.651 ES	
Bailey #1 - OWB - OWB	9,100.0	7,303.5	489.1	413.7	6.489 SF	
Great Western Sugar 3X - OWB - OWB	9,338.0	7,200.7	9,760.0	9,684.2	128.804 CC	
Great Western Sugar 3X - OWB - OWB	9,500.0	7,200.7	9,761.3	9,682.9	124.435 ES	
Great Western Sugar 3X - OWB - OWB	11,500.0	7,201.8	9,996.6	9,883.9	88.731 SF	
Grein #1 - OWB - OWB	8,912.6	7,247.4	2,896.2	2,826.4	41.499 CC	
Grein #1 - OWB - OWB	9,000.0	7,247.5	2,897.5	2,826.1	40.543 ES	
Grein #1 - OWB - OWB	10,300.0	7,248.2	3,211.4	3,118.0	34.370 SF	
OTTESEN LE 06-290HN - OWB - OWB	704.1	699.8	80.3	74.3	13.405 CC, ES	
OTTESEN LE 06-290HN - OWB - OWB	10,800.0	9,140.0	1,107.8	928.7	6.185 SF	
OTTESEN LE 06-290HNX - OWB - OWB	769.2	763.4	72.4	66.1	11.466 CC, ES	
OTTESEN LE 06-290HNX - OWB - OWB	2,600.0	2,629.3	223.6	196.4	8.240 SF	
OTTESEN LE 06-311HC - OWB - OWB	807.2	800.3	66.2	59.7	10.089 CC, ES	
OTTESEN LE 06-311HC - OWB - OWB	11,100.0	9,293.0	1,061.2	871.1	5.583 SF	
OTTESEN LE 06-311HN - OWB - OWB	855.0	845.4	56.4	49.5	8.141 CC, ES	
OTTESEN LE 06-311HN - OWB - OWB	11,300.0	9,346.0	1,153.9	959.2	5.927 SF	
OTTESEN LE 06-351HN - OWB - OWB	892.7	880.2	49.3	42.1	6.826 CC, ES	
OTTESEN LE 06-351HN - OWB - OWB	11,500.0	9,392.4	1,128.0	928.2	5.648 SF	
OTTESEN LE 06-351HNX - OWB - OWB	900.9	883.9	61.7	49.9	5.250 SF	
OTTESEN LE 06-351HNX - OWB - OWB	1,000.0	980.0	56.6	46.4	5.562 ES	
OTTESEN LE 06-351HNX - OWB - OWB	1,008.2	988.0	56.6	46.5	5.612 CC	
OTTESEN LE 06-370HC - OWB - OWB	900.9	885.2	44.6	33.6	4.032 SF	
OTTESEN LE 06-370HC - OWB - OWB	993.7	974.0	38.0	28.9	4.166 CC, ES	
OTTESEN LE 06-370HN - OWB - OWB	966.6	930.3	94.2	78.4	5.930 CC, ES	
OTTESEN LE 06-370HN - OWB - OWB	12,000.0	9,654.4	1,184.3	966.5	5.438 SF	
OTTESEN LE 09-362HC - OWB - OWB	0.0	0.5	269.7			
OTTESEN LE 09-362HC - OWB - OWB	250.0	249.7	271.0	267.6	81.709 ES	
OTTESEN LE 09-362HC - OWB - OWB	17,445.5	17,887.2	3,486.4	3,083.9	8.661 SF	
OTTESEN LE 09-363HN - OWB - OWB	0.0	0.5	239.4			

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

PDC Energy Inc.
Anticollision Risk Report

Company:	GWP - PLANNING DB	Local Co-ordinate Reference:	Well OTTESEN 23NA
Project:	WELD COUNTY	TVD Reference:	KB 20' @ 5096.0usft
Reference Site:	Ottesen Pad	MD Reference:	KB 20' @ 5096.0usft
Site Error:	0.0	North Reference:	True
Reference Well:	OTTESEN 23NA	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottesen Offsets						
OTTESEN LE 09-363HN - OWB - OWB	250.0	249.9	239.6	236.3	72.614 ES	
OTTESEN LE 09-363HN - OWB - OWB	17,445.5	17,453.0	3,131.1	2,731.5	7.836 SF	
OTTESEN LE 09-365HC - OWB - OWB	0.0	0.5	209.0			
OTTESEN LE 09-365HC - OWB - OWB	200.0	198.6	210.4	207.4	70.076 ES	
OTTESEN LE 09-365HC - OWB - OWB	17,445.5	17,612.3	2,798.0	2,400.3	7.035 SF	
OTTESEN LE 09-365HN - OWB - OWB	0.0	0.5	223.8			
OTTESEN LE 09-365HN - OWB - OWB	200.0	198.8	224.6	221.6	74.815 ES	
OTTESEN LE 09-365HN - OWB - OWB	17,445.5	17,626.0	2,859.6	2,455.9	7.083 SF	
OTTESEN LE 09-366HN - OWB - OWB	0.0	0.5	180.2			
OTTESEN LE 09-366HN - OWB - OWB	254.8	255.7	180.6	177.3	54.534 ES	
OTTESEN LE 09-366HN - OWB - OWB	17,445.5	17,533.2	2,369.6	1,969.0	5.914 SF	
OTTESEN LE 09-366HNN - OWB - OWB	0.0	0.5	195.0			
OTTESEN LE 09-366HNN - OWB - OWB	250.0	250.3	195.9	192.6	59.435 ES	
OTTESEN LE 09-366HNN - OWB - OWB	17,445.5	17,180.0	2,496.1	2,099.5	6.294 SF	
OTTESEN LE 09-368HC - OWB - OWB	0.0	0.5	149.9			
OTTESEN LE 09-368HC - OWB - OWB	200.0	199.5	150.6	147.6	50.092 ES	
OTTESEN LE 09-368HC - OWB - OWB	17,445.5	17,657.3	2,043.7	1,647.2	5.155 SF	
OTTESEN LE 09-368HN - OWB - OWB	0.0	0.5	164.7			
OTTESEN LE 09-368HN - OWB - OWB	250.0	249.8	164.9	161.6	49.958 ES	
OTTESEN LE 09-368HN - OWB - OWB	17,445.5	17,461.6	2,098.1	1,698.2	5.247 SF	

PDC Energy Inc.
Anticollision Risk Report

Company:	GWP - PLANNING DB	Local Co-ordinate Reference:	Well OTTESEN 23NA
Project:	WELD COUNTY	TVD Reference:	KB 20' @ 5096.0usft
Reference Site:	Ottesen Pad	MD Reference:	KB 20' @ 5096.0usft
Site Error:	0.0	North Reference:	True
Reference Well:	OTTESEN 23NA	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Ottesen Pad						
OTTESEN 15C - OWB - OWB	0.0	0.0	246.2			
OTTESEN 15C - OWB - OWB	300.0	300.8	247.1	243.9	77.001 ES	
OTTESEN 15C - OWB - OWB	1,700.0	1,734.0	424.0	403.7	20.970 SF	
OTTESEN 15C - OWB - Plan #2	0.0	0.0	246.2			
OTTESEN 15C - OWB - Plan #2	300.0	300.8	247.1	243.9	77.001 ES	
OTTESEN 15C - OWB - Plan #2	10,300.0	8,888.0	967.1	800.3	5.797 SF	
OTTESEN 16N - OWB - OWB	251.8	251.9	259.3	256.3	87.292 CC, ES	
OTTESEN 16N - OWB - OWB	1,700.0	1,735.0	501.5	481.2	24.719 SF	
OTTESEN 16N - OWB - Plan #2	251.8	251.9	259.3	256.3	87.292 CC, ES	
OTTESEN 16N - OWB - Plan #2	10,700.0	9,170.5	1,104.3	923.7	6.114 SF	
OTTESEN 17N - OWB - OWB	780.1	773.1	52.3	46.2	8.578 CC, ES	
OTTESEN 17N - OWB - OWB	900.9	887.9	64.2	55.0	7.034 SF	
OTTESEN 17N - OWB - Plan #2	780.1	773.1	52.3	46.2	8.578 CC, ES	
OTTESEN 17N - OWB - Plan #2	17,445.5	17,949.3	1,159.2	765.2	2.942 SF	
OTTESEN 18C - OWB - Plan #2	250.0	250.0	75.0	72.2	26.857 CC	
OTTESEN 18C - OWB - Plan #2	800.0	781.7	78.2	64.9	5.868 ES	
OTTESEN 18C - OWB - Plan #2	17,445.5	17,825.8	1,039.9	672.2	2.828 SF	
OTTESEN 19NA - OWB - Plan #2	250.0	250.0	60.0	57.2	21.473 CC	
OTTESEN 19NA - OWB - Plan #2	700.0	687.8	62.8	50.9	5.261 ES	
OTTESEN 19NA - OWB - Plan #2	17,445.5	17,654.9	759.8	360.9	1.905 Collision Risk Procedures Re	
OTTESEN 20N - OWB - Plan #2	250.0	250.0	45.0	42.2	16.117 CC	
OTTESEN 20N - OWB - Plan #2	700.0	690.9	47.4	35.6	4.004 ES	
OTTESEN 20N - OWB - Plan #2	17,445.5	17,784.3	614.5	248.8	1.680 Collision Risk Procedures Re	
OTTESEN 21N - OWB - OWB	551.5	550.2	17.2	12.5	3.653 CC, ES	
OTTESEN 21N - OWB - OWB	600.0	597.9	19.3	13.4	3.275 SF	
OTTESEN 21N - OWB - Plan #2	551.5	550.2	17.2	12.5	3.653 CC, ES	
OTTESEN 21N - OWB - Plan #2	17,445.5	17,854.9	412.2	48.4	1.133 Collision Avoidance Req. , S	
OTTESEN 22C - OWB - Plan #2	250.0	250.0	15.0	12.2	5.381 CC	
OTTESEN 22C - OWB - Plan #2	900.9	896.7	17.5	4.1	1.304 Collision Avoidance Req. , E	
OTTESEN 22C - OWB - Plan #2	7,140.0	7,135.1	101.7	18.4	1.222 Collision Avoidance Req. , S	
OTTESEN 24N - OWB - OWB	255.5	255.6	13.3	10.4	4.609 CC, ES	
OTTESEN 24N - OWB - OWB	400.0	399.8	19.1	14.0	3.772 SF	
OTTESEN 24N - OWB - Plan #2	255.5	255.6	13.3	10.4	4.609 CC	
OTTESEN 24N - OWB - Plan #2	17,445.5	17,737.0	294.5	-12.6	0.959 No-Go Zone - Stop Drilling ,	
OTTESEN 25N - OWB - Plan #2	250.0	250.0	30.2	27.4	10.801 CC	
OTTESEN 25N - OWB - Plan #2	700.0	705.4	33.1	22.1	3.000 ES	
OTTESEN 25N - OWB - Plan #2	17,445.5	17,469.0	414.2	32.0	1.084 Collision Avoidance Req. , S	
OTTESEN 26C - OWB - Plan #2	250.0	250.0	44.7	41.9	16.016 CC	
OTTESEN 26C - OWB - Plan #2	600.0	605.9	47.6	38.0	4.968 ES	
OTTESEN 26C - OWB - Plan #2	17,445.5	17,680.9	679.4	318.5	1.882 Collision Risk Procedures Re	
OTTESEN 27NA - OWB - OWB	0.0	0.0	60.1			
OTTESEN 27NA - OWB - OWB	250.0	250.0	60.8	58.0	21.539 ES	
OTTESEN 27NA - OWB - OWB	600.0	598.4	88.4	80.1	10.701 SF	
OTTESEN 27NA - OWB - Plan #2	0.0	0.0	60.1			
OTTESEN 27NA - OWB - Plan #2	250.0	250.0	60.8	58.0	21.539 ES	
OTTESEN 27NA - OWB - Plan #2	17,445.5	17,364.8	759.8	361.7	1.909 Collision Risk Procedures Re	
OTTESEN 28N - OWB - Plan #2	250.0	250.0	75.3	72.5	26.947 CC	
OTTESEN 28N - OWB - Plan #2	500.0	506.1	78.4	70.9	10.385 ES	
OTTESEN 28N - OWB - Plan #2	17,445.5	17,449.6	976.0	580.8	2.470 SF	
OTTESEN 29C - OWB - Plan #2	250.0	250.0	89.8	87.0	32.161 CC	
OTTESEN 29C - OWB - Plan #2	400.0	403.9	91.4	86.1	17.487 ES	
OTTESEN 29C - OWB - Plan #2	17,445.5	17,591.9	1,201.4	812.3	3.088 SF	
OTTESEN 30N - OWB - OWB	257.0	257.3	104.2	101.1	33.521 CC	

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

PDC Energy Inc.
Anticollision Risk Report

Company:	GWP - PLANNING DB	Local Co-ordinate Reference:	Well OTTESEN 23NA
Project:	WELD COUNTY	TVD Reference:	KB 20' @ 5096.0usft
Reference Site:	Ottesen Pad	MD Reference:	KB 20' @ 5096.0usft
Site Error:	0.0	North Reference:	True
Reference Well:	OTTESEN 23NA	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Ottesen Pad						
OTTESEN 30N - OWB - OWB	300.0	300.8	104.5	100.9	29.288 ES	
OTTESEN 30N - OWB - OWB	600.0	597.9	131.2	122.8	15.515 SF	
OTTESEN 30N - OWB - Plan #2	257.0	257.3	104.2	101.1	33.521 CC	
OTTESEN 30N - OWB - Plan #2	300.0	300.8	104.5	100.9	29.288 ES	
OTTESEN 30N - OWB - Plan #2	17,445.5	17,395.0	1,339.8	941.5	3.364 SF	
OTTESEN 31N - OWB - Plan #2	250.0	250.0	120.4	117.6	43.092 CC, ES	
OTTESEN 31N - OWB - Plan #2	17,445.5	17,390.0	1,535.4	1,137.3	3.856 SF	
OTTESEN 32NA - OWB - OWB	204.6	204.6	133.1	130.4	50.552 CC	
OTTESEN 32NA - OWB - OWB	250.0	249.8	133.2	130.3	46.040 ES	
OTTESEN 32NA - OWB - OWB	800.0	792.3	204.0	193.4	19.267 SF	
OTTESEN 32NA - OWB - Plan #2	204.6	204.6	133.1	130.4	50.552 CC	
OTTESEN 32NA - OWB - Plan #2	250.0	249.8	133.2	130.3	46.040 ES	
OTTESEN 32NA - OWB - Plan #2	17,444.5	17,211.7	1,709.6	1,311.1	4.290 SF	
OTTESEN FEDERAL 01N - OWB - Plan #2	1,031.7	1,016.8	89.5	77.3	7.346 CC	
OTTESEN FEDERAL 01N - OWB - Plan #2	1,100.0	1,083.4	90.2	76.7	6.684 ES	
OTTESEN FEDERAL 01N - OWB - Plan #2	1,300.0	1,277.3	102.9	85.0	5.734 SF	
OTTESEN FEDERAL 02NA - OWB - Plan #2	1,017.7	1,006.7	97.5	87.0	9.286 CC	
OTTESEN FEDERAL 02NA - OWB - Plan #2	1,100.0	1,087.3	98.2	86.3	8.227 ES	
OTTESEN FEDERAL 02NA - OWB - Plan #2	1,400.0	1,378.3	121.0	102.4	6.491 SF	
OTTESEN FEDERAL 03C - OWB - Plan #2	965.3	958.2	107.5	98.6	12.088 CC	
OTTESEN FEDERAL 03C - OWB - Plan #2	1,100.0	1,090.9	108.7	97.9	10.001 ES	
OTTESEN FEDERAL 03C - OWB - Plan #2	1,500.0	1,482.4	139.0	119.9	7.272 SF	
OTTESEN FEDERAL 04N - OWB - Plan #2	250.0	250.0	117.0	114.2	41.872 CC	
OTTESEN FEDERAL 04N - OWB - Plan #2	1,000.0	995.9	119.3	110.5	13.504 ES	
OTTESEN FEDERAL 04N - OWB - Plan #2	1,600.0	1,581.9	166.3	145.8	8.129 SF	
OTTESEN FEDERAL 05N - OWB - Plan #2	250.0	250.0	125.3	122.5	44.845 CC	
OTTESEN FEDERAL 05N - OWB - Plan #2	500.0	499.7	126.0	121.5	27.975 ES	
OTTESEN FEDERAL 05N - OWB - Plan #2	9,000.0	8,044.2	1,142.9	1,013.1	8.807 SF	
OTTESEN FEDERAL 06NA - OWB - Plan #2	250.0	250.0	134.5	131.7	48.155 CC	
OTTESEN FEDERAL 06NA - OWB - Plan #2	400.0	400.4	135.0	131.2	35.614 ES	
OTTESEN FEDERAL 06NA - OWB - Plan #2	9,300.0	8,142.3	1,252.7	1,113.9	9.029 SF	
OTTESEN FEDERAL 07C - OWB - Plan #2	250.0	250.0	145.5	142.7	52.069 CC	
OTTESEN FEDERAL 07C - OWB - Plan #2	400.0	401.0	146.1	142.2	37.968 ES	
OTTESEN FEDERAL 07C - OWB - Plan #2	9,200.0	8,145.1	1,039.5	904.9	7.725 SF	
OTTESEN FEDERAL 08N - OWB - Plan #2	250.0	250.0	156.5	153.8	56.041 CC	
OTTESEN FEDERAL 08N - OWB - Plan #2	400.0	401.6	157.3	153.4	40.147 ES	
OTTESEN FEDERAL 08N - OWB - Plan #2	9,500.0	8,254.3	1,165.8	1,021.8	8.096 SF	
OTTESEN FEDERAL 09N - OWB - Plan #2	250.0	250.0	168.2	165.4	60.220 CC	
OTTESEN FEDERAL 09N - OWB - Plan #2	400.0	402.1	169.1	165.1	42.391 ES	
OTTESEN FEDERAL 09N - OWB - Plan #2	9,600.0	8,309.2	1,119.8	973.2	7.638 SF	
OTTESEN FEDERAL 10NA - OWB - Plan #2	250.0	250.0	180.1	177.3	64.483 CC	
OTTESEN FEDERAL 10NA - OWB - Plan #2	400.0	402.6	181.1	177.1	44.649 ES	
OTTESEN FEDERAL 10NA - OWB - Plan #2	9,900.0	8,435.0	1,221.0	1,065.0	7.826 SF	
OTTESEN FEDERAL 11C - OWB - OWB	240.6	240.6	191.9	189.0	66.500 CC	
OTTESEN FEDERAL 11C - OWB - OWB	250.0	249.8	191.9	189.0	65.153 ES	
OTTESEN FEDERAL 11C - OWB - OWB	1,700.0	1,736.0	339.5	319.8	17.156 SF	
OTTESEN FEDERAL 11C - OWB - Plan #2	240.6	240.6	191.9	189.0	66.500 CC	
OTTESEN FEDERAL 11C - OWB - Plan #2	250.0	249.8	191.9	189.0	65.153 ES	
OTTESEN FEDERAL 11C - OWB - Plan #2	9,800.0	8,541.3	1,017.1	864.3	6.657 SF	
OTTESEN FEDERAL 12N - OWB - OWB	0.0	0.0	205.8			
OTTESEN FEDERAL 12N - OWB - OWB	300.0	300.3	206.9	203.8	67.910 ES	
OTTESEN FEDERAL 12N - OWB - OWB	1,700.0	1,742.0	467.2	447.8	24.081 SF	
OTTESEN FEDERAL 12N - OWB - Plan #1	3,692.9	3,856.9	163.4	119.7	3.733 CC	

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

PDC Energy Inc.

Anticollision Risk Report

Company:	GWP - PLANNING DB	Local Co-ordinate Reference:	Well OTTESSEN 23NA
Project:	WELD COUNTY	TVD Reference:	KB 20' @ 5096.0usft
Reference Site:	Ottesen Pad	MD Reference:	KB 20' @ 5096.0usft
Site Error:	0.0	North Reference:	True
Reference Well:	OTTESSEN 23NA	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottesen Pad						
OTTESSEN FEDERAL 12N - OWB - Plan #1	3,700.0	3,863.5	163.5	119.6	3.724 ES	
OTTESSEN FEDERAL 12N - OWB - Plan #1	3,800.0	3,957.9	167.2	121.9	3.693 SF	
OTTESSEN FEDERAL 13HN - OWB - Plan #2	250.0	250.0	219.1	216.3	78.426 CC	
OTTESSEN FEDERAL 13HN - OWB - Plan #2	400.0	404.1	220.4	216.2	52.020 ES	
OTTESSEN FEDERAL 13HN - OWB - Plan #2	10,200.0	8,613.1	1,098.4	934.3	6.694 SF	
OTTESSEN FEDERAL 14NA - OWB - Plan #2	250.0	250.0	232.4	229.6	83.187 CC	
OTTESSEN FEDERAL 14NA - OWB - Plan #2	400.0	404.5	233.8	229.5	54.568 ES	
OTTESSEN FEDERAL 14NA - OWB - Plan #2	10,500.0	8,759.3	1,192.1	1,018.4	6.865 SF	

Offset Design													Offset Site Error:	0.0 usft
Ottesen Offsets - Bailey #1 - OWB - OWB													Offset Well Error:	0.0 usft
Survey Program: 100-MWD														
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Distance								
				Reference (usft)	Offset (usft)	Between Centres (usft)	Wall-Wall Distance (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Riskd Separation Factor	Probability of Collision	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	3,728.5	3,728.5	3,727.0	1.4	2,628.904	0	< 1 in 1E+9		
100.0	100.0	79.0	79.0	0.5	1.0	3,728.4	3,728.4	3,725.5	2.9	1,294.528	0	< 1 in 1E+9		
200.0	200.0	179.0	179.0	1.3	1.6	3,728.4	3,728.4	3,725.2	3.2	1,155.972	0	< 1 in 1E+9		
250.0	250.0	229.0	229.0	1.4	1.8	3,728.4	3,728.4	3,724.2	3.6	1,045.871	0	< 1 in 1E+9		
300.0	300.0	279.0	279.0	1.5	2.0	3,727.8	3,727.8	3,717.2	5.5	671.865	0	< 1 in 1E+9		
400.0	399.8	378.8	378.8	3.2	2.4	3,722.7	3,722.7	3,705.1	7.5	497.238	0	< 1 in 1E+9		
500.0	499.3	478.3	478.3	4.9	2.7	3,712.6	3,712.6	3,688.5	9.0	412.837	0	< 1 in 1E+9		
600.0	598.0	577.0	577.0	6.2	2.9	3,697.4	3,697.4	3,667.0	10.2	359.435	0	< 1 in 1E+9		
700.0	695.8	674.8	674.8	7.2	3.2	3,677.3	3,677.3	3,640.8	11.4	321.260	0	< 1 in 1E+9		
800.0	792.4	771.4	771.4	8.2	3.4	3,652.2	3,652.2	3,609.6	12.4	291.441	0	< 1 in 1E+9		
900.9	888.4	867.4	867.4	9.0	3.6	3,622.0	3,622.0	3,576.9	13.0	275.380	0	< 1 in 1E+9		
1,000.0	981.8	960.8	960.8	9.5	3.8	3,589.9	3,589.9	3,544.1	13.5	263.906	0	< 1 in 1E+9		
1,100.0	1,076.0	1,055.0	1,055.0	9.7	4.0	3,557.6	3,557.6	3,511.4	13.9	252.902	0	< 1 in 1E+9		
1,200.0	1,170.3	1,149.3	1,149.3	10.0	4.2	3,525.3	3,525.3	3,478.6	14.4	242.372	0	< 1 in 1E+9		
1,300.0	1,264.5	1,243.5	1,243.5	10.3	4.4	3,493.0	3,493.0	3,445.9	14.9	232.315	0	< 1 in 1E+9		
1,400.0	1,358.8	1,337.8	1,337.8	10.6	4.5	3,460.8	3,460.8	3,413.1	15.4	222.724	0	< 1 in 1E+9		
1,500.0	1,453.0	1,432.0	1,432.0	10.9	4.7	3,428.5	3,428.5	3,380.4	15.9	213.590	0	< 1 in 1E+9		
1,600.0	1,547.3	1,526.3	1,526.3	11.2	4.9	3,396.3	3,396.3	3,347.7	16.4	204.899	0	< 1 in 1E+9		
1,700.0	1,641.5	1,620.5	1,620.5	11.6	5.0	3,364.1	3,364.1	3,315.0	16.9	196.637	0	< 1 in 1E+9		
1,800.0	1,735.8	1,714.8	1,714.8	12.0	5.2	3,332.0	3,332.0	3,282.3	17.5	188.786	0	< 1 in 1E+9		
1,900.0	1,830.0	1,809.0	1,809.0	12.3	5.3	3,299.8	3,299.8	3,249.7	18.0	181.327	0	< 1 in 1E+9		
2,000.0	1,924.3	1,903.3	1,903.3	12.7	5.5	3,267.7	3,267.7	3,217.0	18.6	174.243	0	< 1 in 1E+9		
2,100.0	2,018.5	1,997.5	1,997.5	13.1	5.6	3,235.6	3,235.6	3,184.4	19.1	167.514	0	< 1 in 1E+9		
2,200.0	2,112.8	2,091.8	2,091.8	13.5	5.8	3,203.6	3,203.6	3,151.8	19.7	161.119	0	< 1 in 1E+9		
2,300.0	2,207.0	2,186.0	2,186.0	13.9	5.9	3,171.5	3,171.5	3,119.3	20.2	155.040	0	< 1 in 1E+9		
2,400.0	2,301.2	2,280.2	2,280.2	14.4	6.1	3,139.5	3,139.5	3,086.7	20.8	149.260	0	< 1 in 1E+9		
2,500.0	2,395.5	2,374.5	2,374.5	14.8	6.2	3,107.5	3,107.5	3,054.2	21.4	143.761	0	< 1 in 1E+9		
2,600.0	2,489.7	2,468.7	2,468.7	15.2	6.3	3,075.6	3,075.6	3,021.7	22.0	138.526	0	< 1 in 1E+9		
2,700.0	2,584.0	2,563.0	2,563.0	15.7	6.5	3,043.7	3,043.7	2,989.2	22.6	133.540	0	< 1 in 1E+9		
2,800.0	2,678.2	2,657.2	2,657.2	16.1	6.6	3,011.8	3,011.8	2,956.8	23.1	128.787	0	< 1 in 1E+9		
2,900.0	2,772.5	2,751.5	2,751.5	16.6	6.7	2,980.0	2,980.0	2,924.4	23.7	124.255	0	< 1 in 1E+9		
3,000.0	2,866.7	2,845.7	2,845.7	17.0	6.8	2,948.1	2,948.1	2,892.1	24.3	119.929	0	< 1 in 1E+9		
3,100.0	2,961.0	2,940.0	2,940.0	17.5	7.0	2,916.4	2,916.4	2,859.7	24.9	115.799	0	< 1 in 1E+9		
3,200.0	3,055.2	3,034.2	3,034.2	17.9	7.1	2,884.6	2,884.6	2,827.4	25.5	111.851	0	< 1 in 1E+9		
3,300.0	3,149.5	3,128.5	3,128.5	18.4	7.2	2,852.9	2,852.9	2,795.2	26.1	108.075	0	< 1 in 1E+9		
3,400.0	3,243.7	3,222.7	3,222.7	18.9	7.3	2,821.3	2,821.3	2,762.9	26.7	104.462	0	< 1 in 1E+9		
3,500.0	3,338.0	3,317.0	3,317.0	19.4	7.5	2,789.7	2,789.7	2,730.8	27.3	101.002	0	< 1 in 1E+9		
3,600.0	3,432.2	3,411.2	3,411.2	19.9	7.6	2,758.1	2,758.1	2,698.6	27.9	97.686	0	< 1 in 1E+9		
3,700.0	3,526.5	3,505.5	3,505.5	20.5	7.7	2,726.5	2,726.5	2,666.5	28.5	94.506	0	< 1 in 1E+9		
3,800.0	3,620.7	3,599.7	3,599.7	21.1	7.8	2,695.1	2,695.1	2,634.5	29.1	91.454	0	< 1 in 1E+9		
3,900.0	3,715.0	3,694.0	3,694.0	21.7	7.9	2,663.6	2,663.6	2,602.5	29.7	88.525	0	< 1 in 1E+9		
4,000.0	3,809.2	3,788.2	3,788.2	22.3	8.0	2,632.2	2,632.2	2,570.5	30.3	85.709	0	< 1 in 1E+9		
4,100.0	3,903.5	3,882.5	3,882.5	22.9	8.2	2,600.9	2,600.9							

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