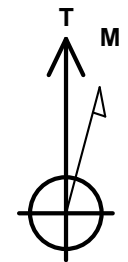


ANNOTATIONS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation		
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.0	START 1ST NUDGE (2.00°/100ft)		
350.0	5.00	0.00	349.7	10.9	0.0	2.6	10.9	EOB TO 5.00° INC		
912.3	5.00	0.00	909.8	59.9	0.0	14.2	59.9	START TURN (2.00°/100ft)		
1081.9	5.00	321.00	1078.8	73.6	-4.8	12.7	74.7	EOT TO 321° AZI/START 2nd NUDGE (2.00°/100ft)		
2218.0	27.71	317.51	2161.9	310.0	-217.2	-137.8	392.6	EOB TO 27.71°		
5281.1	27.71	317.51	4873.6	1360.4	-1179.3	-824.3	1817.0	START DROP (2.00°/100ft)		
6666.7	0.00	0.00	6205.8	1602.7	-1401.3	-982.7	2145.6	EOD TO VERTICAL		
6966.7	0.00	0.00	6505.8	1602.7	-1401.3	-982.7	2145.6	KOP (8.00°/100ft)		
8091.8	90.01	89.33	7222.0	1611.1	-685.1	-284.8	2861.9	EP/LP/START BUILD (2.00°/100ft)		
8248.7	93.14	89.33	7217.7	1612.9	-528.3	-132.0	3018.7	EOB TO 93.14° INC		
9446.9	93.14	89.33	7152.0	1626.9	668.0	1033.7	4215.0	END OF TANGENT		
9596.7	90.15	89.33	7147.7	1628.7	817.8	1179.6	4364.8	START DROP (2.00°/100ft)		
15771.5	90.15	89.33	7132.0	1701.2	6992.1	7196.0	10539.5	TD/BHL		

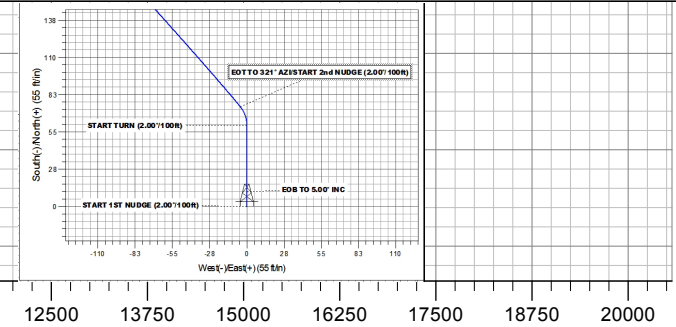
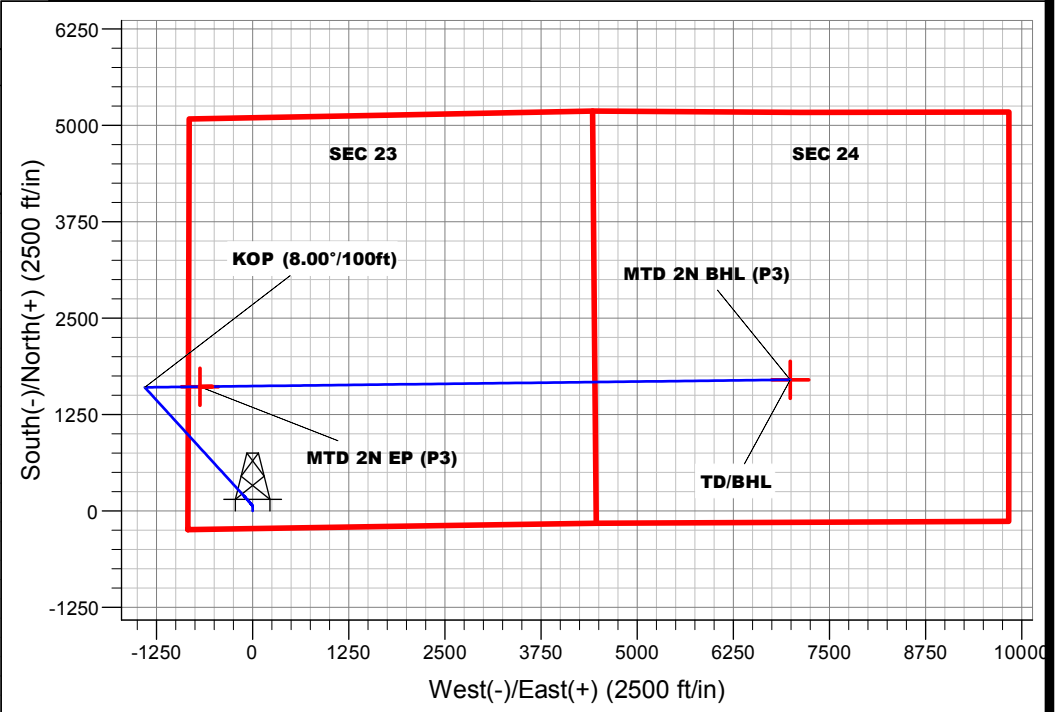
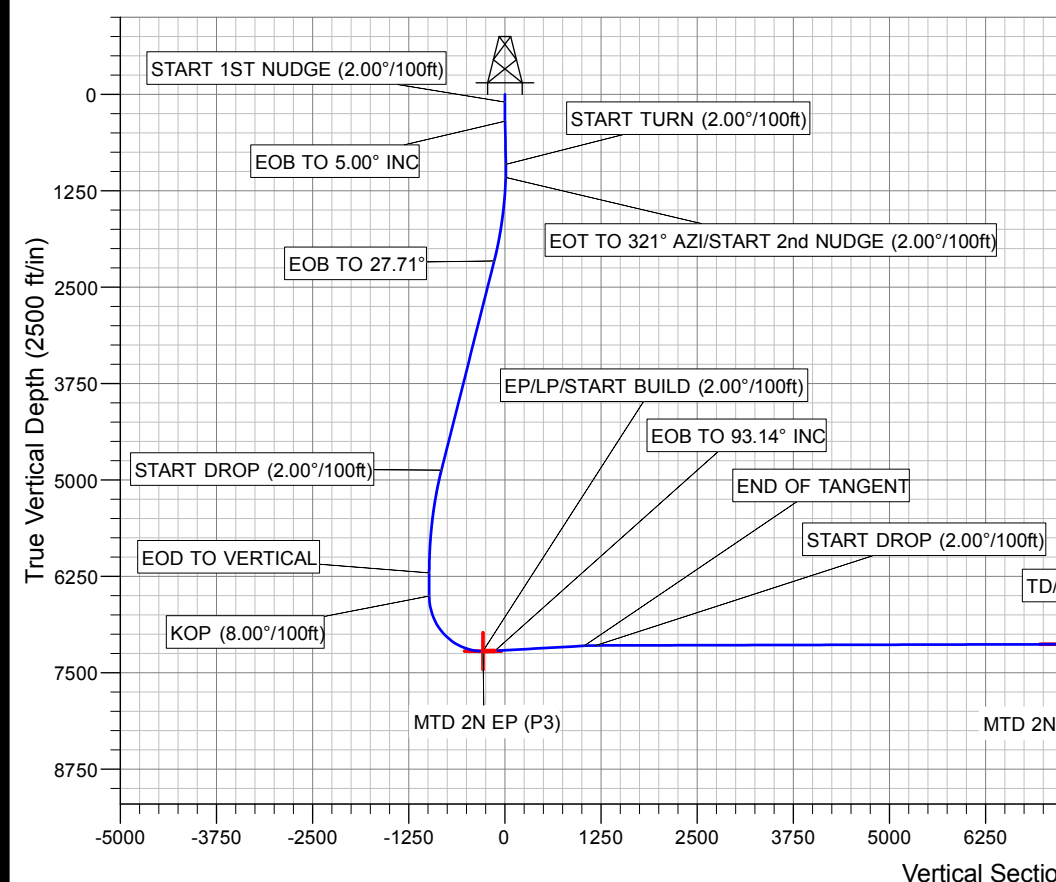


Azimuths to True North
 Magnetic North: 8.05°

Magnetic Field
 Strength: 52294.7nT
 Dip Angle: 66.94°
 Date: 1/7/2019
 Model: IGRF2015

SHL FOOTAGE: SEC 23			
228	FSL	841	FWL
BHL FOOTAGE: SEC 24			
1850	FSL	2542	FWL
EP FOOTAGE: SEC 23			
1850	FSL	150	FWL

DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MTD 2N BHL (P3)	7132.0	1701.2	6992.1	40.5586890	-104.7260832
MTD 2N EP (P3)	7222.0	1611.1	-685.1	40.5584444	-104.7537120



PDC ENERGY

**WELD COUNTY, COLORADO (TRUE)
SW SW SEC. 23 T7N R66W 6th P.M. (MTD)
MTD 2N**

**ORIGINAL WELLBORE
PROPOSAL #3**

Anticollision Report

30 August, 2019



PDC Energy
Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well MTD 2N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB 23' @ 4922.0ft (Original Well Elev)
Reference Site:	SW SW SEC. 23 T7N R66W 6th P.M. (MTD)	MD Reference:	KB 23' @ 4922.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	MTD 2N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM
Reference Design:	PROPOSAL #3	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.0 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	8/30/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	15,771.4	PROPOSAL #3 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SW SEC. 23 T7N R66W 6th P.M. (MTD)						
ABDN HZ PAWNEE HILLS BIG BEAR #1 - Wellbore #1	7,267.8	10,928.0	1,332.5	1,296.1	36.606	CC, ES
ABDN HZ PAWNEE HILLS BIG BEAR #1 - Wellbore #1	8,000.0	10,928.0	1,741.6	1,687.9	32.379	SF
ABDN VERT DALTON #13-24 - Wellbore #1 - Wellbore #	13,740.7	7,084.4	182.0	8.7	1.050	Level 2, CC, ES, SF
ABDN VERT HASBROUCK #1 - Wellbore #1 - Design #1	6,966.7	6,499.8	1,463.9	1,307.6	9.366	CC, ES
ABDN VERT HASBROUCK #1 - Wellbore #1 - Design #1	7,100.0	6,632.3	1,475.6	1,316.5	9.271	SF
ABDN VERT MAGNUSON #1-23 - Wellbore #1 - Wellbor	2,277.2	2,190.8	43.5	29.9	3.205	CC, ES, SF
ABDN VERT RUSCO #44-23 - Wellbore #1 - Design #1	12,595.4	7,119.1	1,023.3	742.4	3.643	CC
ABDN VERT RUSCO #44-23 - Wellbore #1 - Design #1	12,600.0	7,119.1	1,023.3	742.3	3.641	ES
ABDN VERT RUSCO #44-23 - Wellbore #1 - Design #1	12,700.0	7,118.8	1,028.6	746.0	3.639	SF
ABDN VERT TRACY #32-23 - Wellbore #1 - Wellbore #1	11,416.6	7,145.1	1,629.6	1,506.9	13.284	CC
ABDN VERT TRACY #32-23 - Wellbore #1 - Wellbore #1	11,500.0	7,144.1	1,631.8	1,506.8	13.061	ES
ABDN VERT TRACY #32-23 - Wellbore #1 - Wellbore #1	11,800.0	7,140.4	1,674.1	1,543.2	12.789	SF
EXIST HZ DALTON #24L-201 - Wellbore #1 - Wellbore #	14,543.5	8,686.8	103.2	28.1	1.374	Level 3, CC, ES, SF
EXIST HZ DALTON #24L-441 - Wellbore #1 - Wellbore #	13,800.0	8,795.8	278.0	208.4	3.993	SF
EXIST HZ DALTON #24L-441 - Wellbore #1 - Wellbore #	13,858.0	8,796.4	271.9	204.1	4.014	CC, ES
EXIST HZ DALTON #24Q-441 - Wellbore #1 - Wellbore #	15,200.0	8,815.2	268.0	189.5	3.411	ES, SF
EXIST HZ DALTON #24Q-441 - Wellbore #1 - Wellbore #	15,211.5	8,815.0	267.8	189.7	3.428	CC
EXIST HZ DALTON 24Q-241 - Wellbore #1 - Wellbore #1	15,600.0	8,660.5	111.9	28.9	1.348	Level 3, SF
EXIST HZ DALTON 24Q-241 - Wellbore #1 - Wellbore #1	15,623.8	8,660.9	109.4	28.6	1.354	Level 3, CC, ES
EXIST HZ MAGNUSON #23I-221 - Wellbore #1 - Wellbo	8,100.0	8,728.8	44.3	-15.9	0.736	Level 1, ES, SF
EXIST HZ MAGNUSON #23I-221 - Wellbore #1 - Wellbo	8,135.1	8,729.5	26.8	-1.8	0.937	Level 1, CC
EXIST HZ MAGNUSON #23I-421 - Wellbore #1 - Wellbo	100.0	90.5	129.0	128.9	1,481.294	CC, ES
EXIST HZ MAGNUSON #23I-421 - Wellbore #1 - Wellbo	8,300.0	8,867.4	292.5	239.0	5.461	SF
EXIST HZ MAGNUSON 23L-201 - Wellbore #1 - Wellbor	100.0	90.7	92.9	92.8	974.122	CC
EXIST HZ MAGNUSON 23L-201 - Wellbore #1 - Wellbor	9,200.0	8,747.0	115.6	64.1	2.242	SF
EXIST HZ MAGNUSON 23L-201 - Wellbore #1 - Wellbor	9,263.8	8,747.4	96.4	60.0	2.649	ES
EXIST HZ MAGNUSON 23L-421 - Wellbore #1 - Wellbor	609.3	604.6	53.4	50.9	21.158	CC, ES
EXIST HZ MAGNUSON 23L-421 - Wellbore #1 - Wellbor	10,100.0	8,979.9	322.6	270.4	6.180	SF
EXIST HZ TRACY #23M-203 - Wellbore #1 - Wellbore #1	10,500.0	10,506.6	142.6	55.0	1.629	SF
EXIST HZ TRACY #23M-203 - Wellbore #1 - Wellbore #1	10,600.0	10,509.5	96.8	38.0	1.647	ES
EXIST HZ TRACY #23M-203 - Wellbore #1 - Wellbore #1	10,604.9	10,509.6	96.6	38.9	1.673	CC
EXIST HZ TRACY #23U-203 - Wellbore #1 - Wellbore #1	13,224.0	10,493.3	125.7	49.3	1.645	CC, ES, SF
EXIST HZ TRACY #31-23H - Wellbore #1 - Wellbore #1	11,800.0	10,366.6	139.5	59.5	1.744	SF
EXIST HZ TRACY #31-23H - Wellbore #1 - Wellbore #1	11,872.4	10,366.1	119.2	54.6	1.845	CC, ES
EXIST HZ WAAG #15 - Wellbore #1 - Wellbore #1	15,771.5	11,925.0	724.2	583.2	5.136	CC, ES, SF
EXIST HZ WAAG #16 - Wellbore #1 - Wellbore #1	15,771.5	12,150.0	729.7	620.6	6.693	CC, ES, SF
EXIST HZ WAAG #17 - Wellbore #1 - Wellbore #1	15,771.5	12,050.0	671.6	587.7	8.003	CC, ES, SF

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

PDC Energy
Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well MTD 2N
Project:	WELD COUNTY, COLORADO (TRUE)	TVD Reference:	KB 23' @ 4922.0ft (Original Well Elev)
Reference Site:	SW SW SEC. 23 T7N R66W 6th P.M. (MTD)	MD Reference:	KB 23' @ 4922.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	MTD 2N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM
Reference Design:	PROPOSAL #3	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SW SEC. 23 T7N R66W 6th P.M. (MTD)						
EXIST HZ WAAG #18 - Wellbore #1 - Wellbore #1	15,771.5	12,065.0	758.2	553.6	3.705	CC, ES, SF
EXIST HZ WAAG #19 - ORIGINAL WELLBORE - ORIGI	15,771.5	11,443.0	1,420.4	1,277.7	9.952	CC, ES, SF
EXIST HZ WAAG #19 - SIDETRACK - SIDETRACK	15,771.5	12,080.0	862.1	644.2	3.956	CC, ES, SF
EXIST HZ WAAG #20 - Wellbore #1 - Wellbore #1	15,771.5	11,856.0	945.2	678.6	3.546	CC, ES, SF
EXIST HZ WAAG #21 - Wellbore #1 - Wellbore #1	15,771.5	11,876.0	1,205.5	902.7	3.981	CC, ES, SF
EXIST HZ WAAG #22 - Wellbore #1 - Wellbore #1	15,771.5	12,063.0	1,370.9	1,057.7	4.376	CC, ES, SF
EXIST HZ WAAG #23 - Wellbore #1 - Wellbore #1	15,771.5	11,876.0	1,568.3	1,246.0	4.865	CC, ES, SF
EXIST HZ WAAG #24 - Wellbore #1 - Wellbore #1	15,771.5	11,810.0	1,799.2	1,460.8	5.316	CC, ES, SF
EXIST HZ WAAG #25 - Wellbore #1 - Wellbore #1	15,771.5	12,011.0	1,918.8	1,581.7	5.692	CC, ES, SF
EXIST VERT DALTON #14-24 - Wellbore #1 - Design #1	13,734.0	7,096.2	1,331.6	1,018.6	4.254	CC, ES
EXIST VERT DALTON #14-24 - Wellbore #1 - Design #1	13,800.0	7,096.0	1,333.2	1,018.8	4.241	SF
EXIST VERT DALTON #23-24 - Wellbore #1 - Design #1	15,420.2	7,090.9	310.4	-49.3	0.863	Level 1, CC, ES, SF
EXIST VERT DALTON #24-24 - Wellbore #1 - Design #1	15,045.3	7,092.8	1,364.9	1,015.6	3.908	CC
EXIST VERT DALTON #24-24 - Wellbore #1 - Design #1	15,100.0	7,092.7	1,366.0	1,015.6	3.898	ES, SF
EXIST VERT RUSCO #33-23 - Wellbore #1 - Design #1	11,396.9	7,122.1	112.8	-135.6	0.454	Level 1, CC
EXIST VERT RUSCO #33-23 - Wellbore #1 - Design #1	11,400.0	7,122.1	112.9	-135.7	0.454	Level 1, ES, SF
EXIST VERT RUSCO #43-23 - Wellbore #1 - Design #1	12,759.9	7,117.7	12.3	-274.1	0.043	Level 1, CC, ES, SF
MTD 1N - ORIGINAL WELLBORE - PROPOSAL #2	912.3	912.3	17.0	12.6	3.885	CC, ES
MTD 1N - ORIGINAL WELLBORE - PROPOSAL #2	15,771.5	15,787.1	438.6	27.4	1.067	Level 2, SF
MTD 3N - ORIGINAL WELLBORE - PROPOSAL #2	800.4	800.4	17.0	13.2	4.521	CC, ES
MTD 3N - ORIGINAL WELLBORE - PROPOSAL #2	15,768.9	15,507.0	438.5	23.0	1.055	Level 2, SF
MTD 4N - ORIGINAL WELLBORE - PROPOSAL #2	685.2	685.3	34.0	30.9	10.843	CC
MTD 4N - ORIGINAL WELLBORE - PROPOSAL #2	700.0	699.9	34.1	30.8	10.593	ES
MTD 4N - ORIGINAL WELLBORE - PROPOSAL #2	15,771.5	15,433.1	819.8	379.2	1.861	SF