

PDC ENERGY

**WELD COUNTY, COLORADO
SE SE SEC. 21 T5N R64W 6th P.M.
CHESNUT 21W-434**

ORIGINAL WELLBORE

14 November, 2015

Plan: PROPOSAL #3



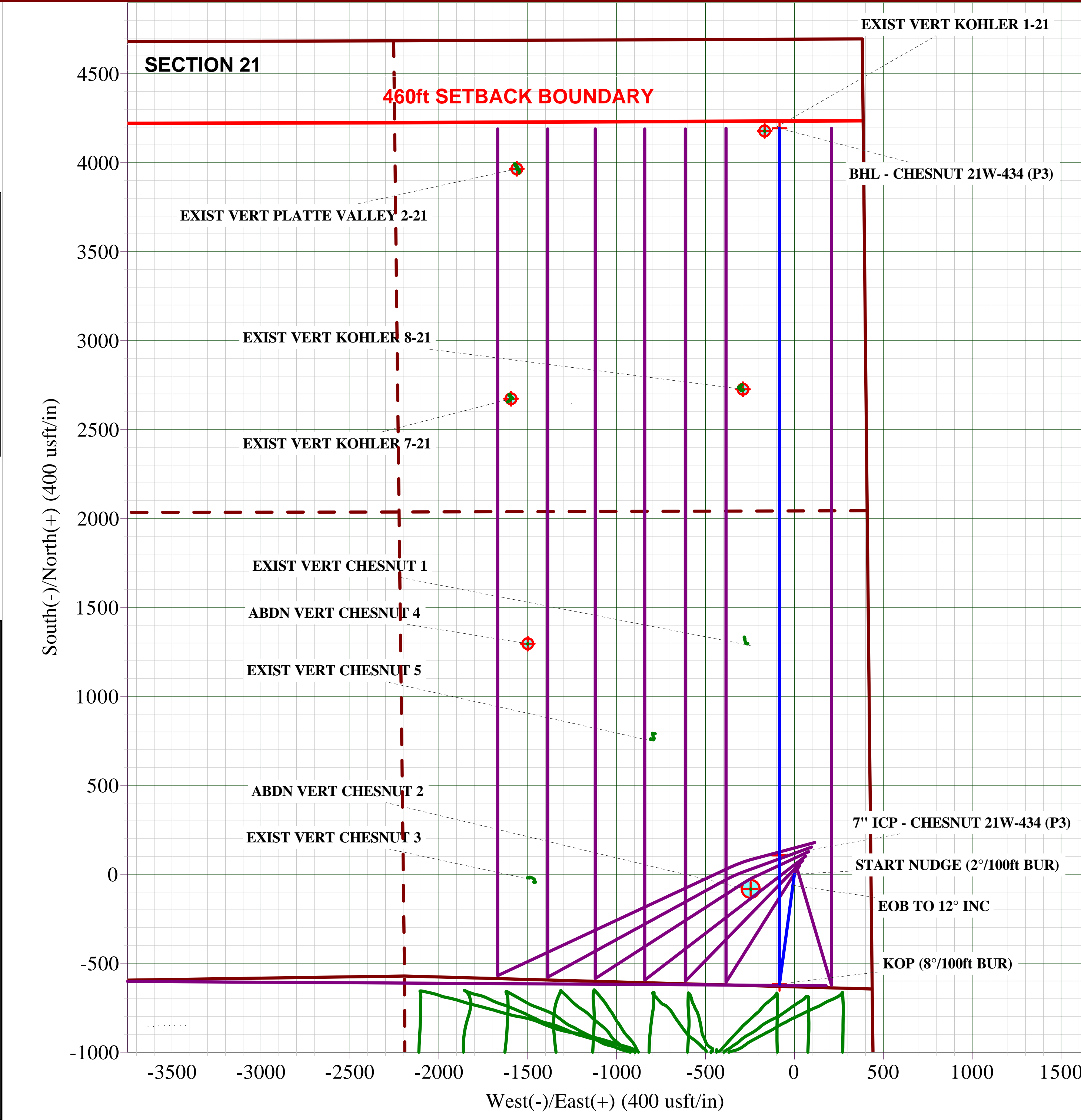
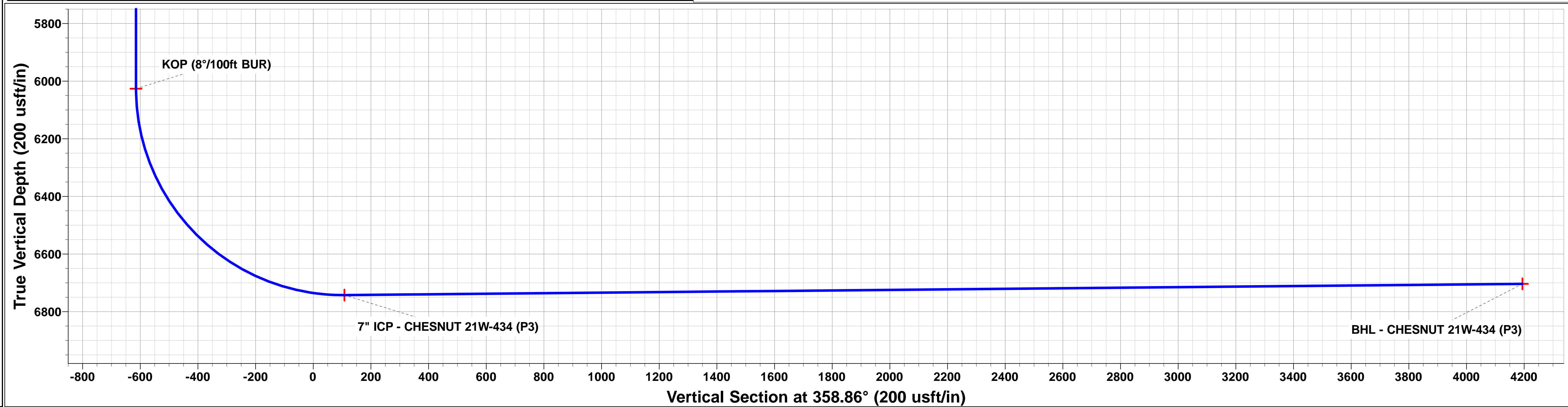
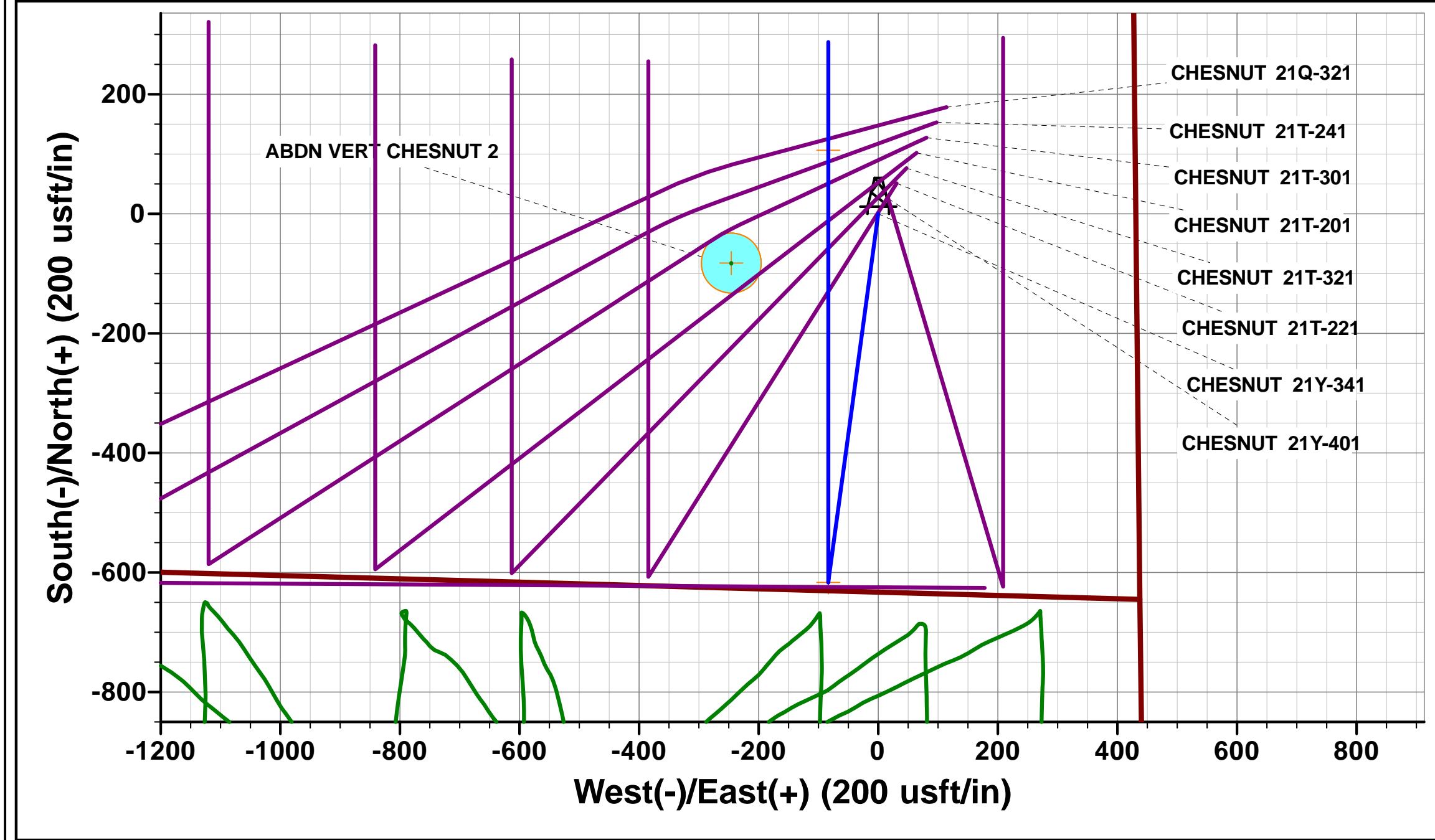
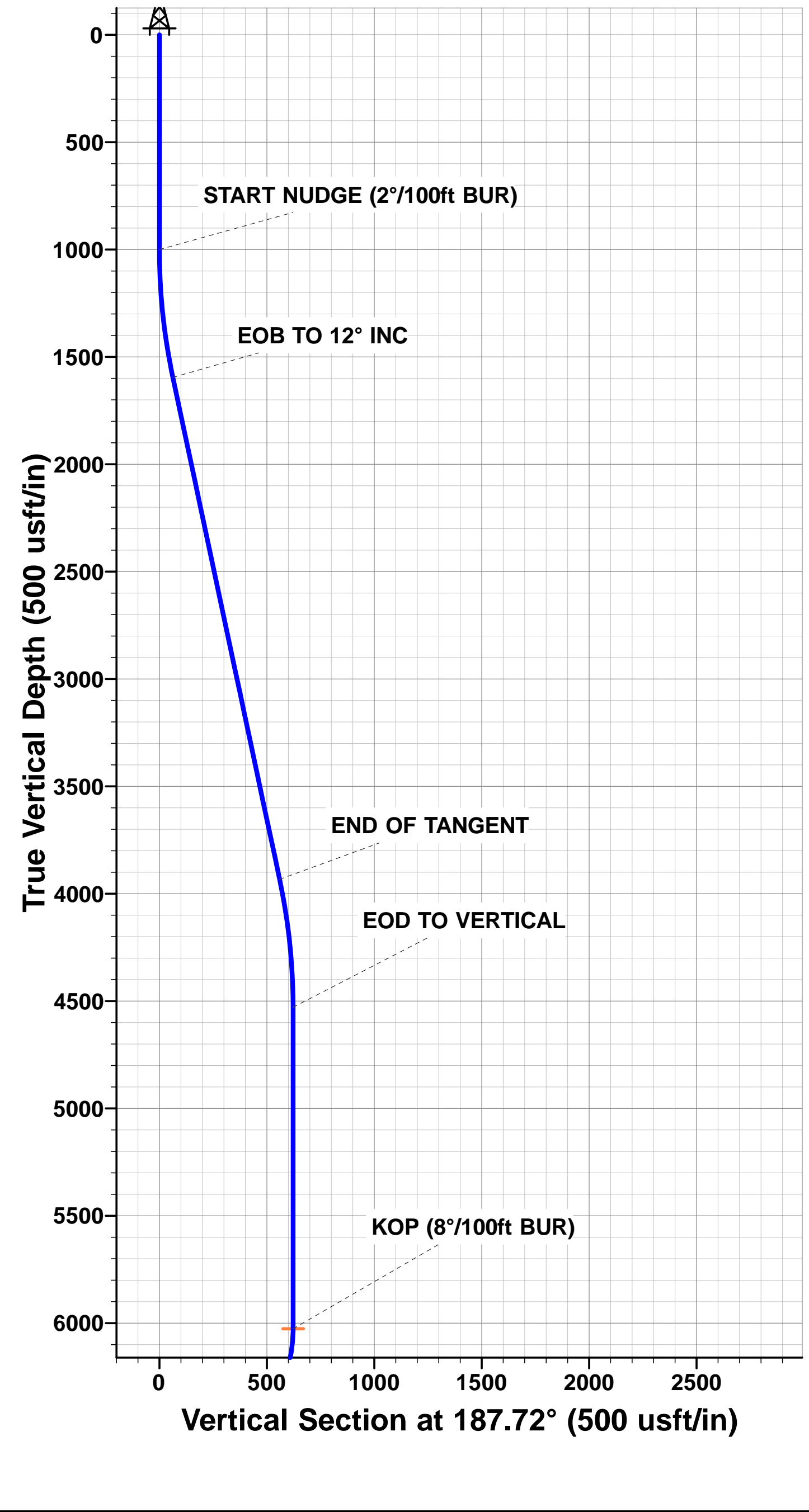


Project: WELD COUNTY, COLORADO
Site: SE SE SEC. 21 T5N R64W 6th P.M.
Well: CHESNUT 21W-434
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #3

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
1000.0	1000.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1595.7	1600.1	12.00	187.72	-62.1	-8.4	-61.9	62.6	EOB TO 12° INC	
3933.1	3989.7	12.00	187.72	-554.4	-75.2	-552.8	559.5	END OF TANGENT	
4528.8	4589.8	0.00	0.00	-616.5	-83.6	-614.7	622.1	EOD TO VERTICAL	
6026.3	6087.3	0.00	0.00	-616.5	-83.6	-614.7	622.1	KOP (8°/100ft BUR)	
6742.5	7219.0	90.54	0.00	106.4	-83.6	108.1	1345.0	7" ICP - CHESNUT 21W-434 (P3)	
6703.5	11306.0	90.55	0.00	4193.2	-83.6	4194.1	5431.9	BHL - CHESNUT 21W-434 (P3)	

PROPOSED LOCAL COORDINATES:	
SHL: 634ft FSL & 431t FEL Sec 21	
7" ICP: 740.4ft FSL & 514.6ft FEL Sec 21	
BHL: 500ft FNL & 470ft FEL Sec 21	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CHESNUT 21W-434 (P3)	6026.3	-616.5	-83.6	40.377528	-104.547140
BHL - CHESNUT 21W-434 (P3)	6703.5	4193.2	-83.6	40.390730	-104.547140
7" ICP - CHESNUT 21W-434 (P3)	6742.5	106.4	-83.6	40.379512	-104.547140



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21W-434
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4657.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4657.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21W-434	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #3		

Project	WELD COUNTY, COLORADO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	SE SE SEC. 21 T5N R64W 6th P.M.		
Site Position:		Northing:	1,382,418.54 usft
From:	Map	Easting:	3,265,539.58 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.379223
		Longitude:	-104.546846
		Grid Convergence:	0.62 °

Well	CHESNUT 21W-434		
Well Position	+N/-S	-1.1 usft	Northing:
	+E/-W	1.6 usft	Easting:
Position Uncertainty		0.0 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	15/05/2015	8.31	66.92	52,645

Design	PROPOSAL #3			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	358.86

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.0	0.00	0.00	0.0	-4,657.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	-3,657.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,600.1	12.00	187.72	1,595.7	-3,061.8	-62.1	-8.4	2.00	2.00	0.00	187.72	
3,989.7	12.00	187.72	3,933.1	-724.4	-554.4	-75.2	0.00	0.00	0.00	0.00	
4,589.8	0.00	0.00	4,528.8	-128.7	-616.5	-83.6	2.00	-2.00	0.00	180.00	
6,087.3	0.00	0.00	6,026.3	1,368.8	-616.5	-83.6	0.00	0.00	0.00	0.00	KOP - CHESNUT 2
7,219.0	90.54	0.00	6,742.5	2,085.0	106.5	-83.6	8.00	8.00	0.00	0.00	
11,306.0	90.55	0.00	6,703.5	2,046.0	4,193.2	-83.6	0.00	0.00	0.00	4.10	BHL - CHESNUT 2

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21W-434
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4657.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4657.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21W-434	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #3		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	4,657.50	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,557.50	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,457.50	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,357.50	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,257.50	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,157.50	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,057.50	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	3,957.50	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	3,857.50	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	3,757.50	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
1,000.0	0.00	0.00	1,000.0	3,657.50	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	2.00	187.72	1,100.0	3,557.52	-1.7	-0.2	-1.7	2.00	2.00	0.00
1,200.0	4.00	187.72	1,199.8	3,457.66	-6.9	-0.9	-6.9	2.00	2.00	0.00
1,300.0	6.00	187.72	1,299.5	3,358.05	-15.6	-2.1	-15.5	2.00	2.00	0.00
1,400.0	8.00	187.72	1,398.7	3,258.80	-27.6	-3.7	-27.5	2.00	2.00	0.00
1,500.0	10.00	187.72	1,497.5	3,160.03	-43.1	-5.8	-43.0	2.00	2.00	0.00
1,600.0	12.00	187.72	1,595.6	3,061.88	-62.0	-8.4	-61.9	2.00	2.00	0.00
EOB TO 12° INC										
1,600.1	12.00	187.72	1,595.7	3,061.78	-62.1	-8.4	-61.9	1.66	1.66	0.00
1,700.0	12.00	187.72	1,693.4	2,964.06	-82.6	-11.2	-82.4	0.00	0.00	0.00
1,800.0	12.00	187.72	1,791.3	2,866.25	-103.2	-14.0	-102.9	0.00	0.00	0.00
1,900.0	12.00	187.72	1,889.1	2,768.43	-123.9	-16.8	-123.5	0.00	0.00	0.00
2,000.0	12.00	187.72	1,986.9	2,670.62	-144.5	-19.6	-144.0	0.00	0.00	0.00
2,100.0	12.00	187.72	2,084.7	2,572.81	-165.1	-22.4	-164.6	0.00	0.00	0.00
2,200.0	12.00	187.72	2,182.5	2,474.99	-185.7	-25.2	-185.1	0.00	0.00	0.00
2,300.0	12.00	187.72	2,280.3	2,377.18	-206.3	-28.0	-205.7	0.00	0.00	0.00
2,400.0	12.00	187.72	2,378.1	2,279.36	-226.9	-30.8	-226.2	0.00	0.00	0.00
2,500.0	12.00	187.72	2,476.0	2,181.55	-247.5	-33.6	-246.8	0.00	0.00	0.00
2,600.0	12.00	187.72	2,573.8	2,083.74	-268.1	-36.4	-267.3	0.00	0.00	0.00
2,700.0	12.00	187.72	2,671.6	1,985.92	-288.7	-39.1	-287.9	0.00	0.00	0.00
2,800.0	12.00	187.72	2,769.4	1,888.11	-309.3	-41.9	-308.4	0.00	0.00	0.00
2,900.0	12.00	187.72	2,867.2	1,790.29	-329.9	-44.7	-328.9	0.00	0.00	0.00
3,000.0	12.00	187.72	2,965.0	1,692.48	-350.5	-47.5	-349.5	0.00	0.00	0.00
3,100.0	12.00	187.72	3,062.8	1,594.66	-371.1	-50.3	-370.0	0.00	0.00	0.00
3,200.0	12.00	187.72	3,160.6	1,496.85	-391.7	-53.1	-390.6	0.00	0.00	0.00
3,300.0	12.00	187.72	3,258.5	1,399.04	-412.3	-55.9	-411.1	0.00	0.00	0.00
3,400.0	12.00	187.72	3,356.3	1,301.22	-432.9	-58.7	-431.7	0.00	0.00	0.00
3,500.0	12.00	187.72	3,454.1	1,203.41	-453.5	-61.5	-452.2	0.00	0.00	0.00
3,600.0	12.00	187.72	3,551.9	1,105.59	-474.1	-64.3	-472.8	0.00	0.00	0.00
3,700.0	12.00	187.72	3,649.7	1,007.78	-494.7	-67.1	-493.3	0.00	0.00	0.00
3,800.0	12.00	187.72	3,747.5	909.97	-515.4	-69.9	-513.9	0.00	0.00	0.00
3,900.0	12.00	187.72	3,845.3	812.15	-536.0	-72.7	-534.4	0.00	0.00	0.00
END OF TANGENT										
3,989.7	12.00	187.72	3,933.1	724.41	-554.4	-75.2	-552.8	0.00	0.00	0.00
4,000.0	11.80	187.72	3,943.2	714.33	-556.5	-75.5	-554.9	2.00	-2.00	0.00
4,100.0	9.80	187.72	4,041.4	616.11	-575.1	-78.0	-573.4	2.00	-2.00	0.00
4,200.0	7.80	187.72	4,140.2	517.29	-590.3	-80.0	-588.5	2.00	-2.00	0.00
4,300.0	5.80	187.72	4,239.5	418.00	-602.0	-81.6	-600.2	2.00	-2.00	0.00
4,400.0	3.80	187.72	4,339.1	318.35	-610.3	-82.8	-608.5	2.00	-2.00	0.00
4,500.0	1.80	187.72	4,439.0	218.48	-615.1	-83.4	-613.3	2.00	-2.00	0.00
EOD TO VERTICAL										
4,589.8	0.00	0.00	4,528.8	128.69	-616.5	-83.6	-614.7	2.00	-2.00	0.00
4,600.0	0.00	0.00	4,539.0	118.49	-616.5	-83.6	-614.7	0.00	0.00	0.00

Planning Report



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Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4657.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21W-434	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #3		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,700.0	0.00	0.00	4,639.0	18.49	-616.5	-83.6	-614.7	0.00	0.00	0.00
4,800.0	0.00	0.00	4,739.0	-81.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,839.0	-181.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,939.0	-281.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,100.0	0.00	0.00	5,039.0	-381.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,200.0	0.00	0.00	5,139.0	-481.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,300.0	0.00	0.00	5,239.0	-581.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,400.0	0.00	0.00	5,339.0	-681.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,500.0	0.00	0.00	5,439.0	-781.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,600.0	0.00	0.00	5,539.0	-881.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,700.0	0.00	0.00	5,639.0	-981.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,800.0	0.00	0.00	5,739.0	-1,081.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
5,900.0	0.00	0.00	5,839.0	-1,181.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
6,000.0	0.00	0.00	5,939.0	-1,281.51	-616.5	-83.6	-614.7	0.00	0.00	0.00
KOP (8°/100ft BUR)										
6,087.3	0.00	0.00	6,026.3	-1,368.81	-616.5	-83.6	-614.7	0.00	0.00	0.00
6,100.0	1.02	0.00	6,039.0	-1,381.51	-616.4	-83.6	-614.6	8.01	8.01	0.00
6,200.0	9.02	0.00	6,138.5	-1,481.04	-607.6	-83.6	-605.9	8.00	8.00	0.00
6,300.0	17.02	0.00	6,235.9	-1,578.40	-585.1	-83.6	-583.4	8.00	8.00	0.00
6,400.0	25.02	0.00	6,329.2	-1,671.67	-549.3	-83.6	-547.5	8.00	8.00	0.00
6,500.0	33.02	0.00	6,416.5	-1,759.04	-500.8	-83.6	-499.1	8.00	8.00	0.00
6,600.0	41.02	0.00	6,496.3	-1,838.83	-440.7	-83.6	-438.9	8.00	8.00	0.00
6,700.0	49.02	0.00	6,567.0	-1,909.46	-370.0	-83.6	-368.3	8.00	8.00	0.00
6,800.0	57.02	0.00	6,627.1	-1,969.57	-290.2	-83.6	-288.5	8.00	8.00	0.00
6,900.0	65.02	0.00	6,675.5	-2,017.98	-202.8	-83.6	-201.1	8.00	8.00	0.00
7,000.0	73.02	0.00	6,711.3	-2,053.76	-109.5	-83.6	-107.8	8.00	8.00	0.00
7,100.0	81.02	0.00	6,733.7	-2,076.21	-12.1	-83.6	-10.5	8.00	8.00	0.00
7,200.0	89.02	0.00	6,742.4	-2,084.89	87.4	-83.6	89.1	8.00	8.00	0.00
7" ICP - CHESNUT 21W-434 (P3)										
7,219.0	90.54	0.00	6,742.5	-2,084.97	106.4	-83.6	108.1	8.00	8.00	0.00
7,300.0	90.54	0.00	6,741.7	-2,084.20	187.4	-83.6	189.0	0.00	0.00	0.00
7,400.0	90.54	0.00	6,740.8	-2,083.26	287.4	-83.6	289.0	0.00	0.00	0.00
7,500.0	90.54	0.00	6,739.8	-2,082.32	387.4	-83.6	389.0	0.00	0.00	0.00
7,600.0	90.54	0.00	6,738.9	-2,081.37	487.4	-83.6	489.0	0.00	0.00	0.00
7,700.0	90.54	0.00	6,737.9	-2,080.43	587.4	-83.6	588.9	0.00	0.00	0.00
7,800.0	90.54	0.00	6,737.0	-2,079.48	687.4	-83.6	688.9	0.00	0.00	0.00
7,900.0	90.54	0.00	6,736.0	-2,078.54	787.4	-83.6	788.9	0.00	0.00	0.00
8,000.0	90.54	0.00	6,735.1	-2,077.59	887.4	-83.6	888.9	0.00	0.00	0.00
8,100.0	90.54	0.00	6,734.1	-2,076.64	987.4	-83.6	988.8	0.00	0.00	0.00
8,200.0	90.54	0.00	6,733.2	-2,075.69	1,087.4	-83.6	1,088.8	0.00	0.00	0.00
8,300.0	90.54	0.00	6,732.2	-2,074.75	1,187.4	-83.6	1,188.8	0.00	0.00	0.00
8,400.0	90.54	0.00	6,731.3	-2,073.80	1,287.4	-83.6	1,288.8	0.00	0.00	0.00
8,500.0	90.54	0.00	6,730.3	-2,072.85	1,387.4	-83.6	1,388.7	0.00	0.00	0.00
8,600.0	90.54	0.00	6,729.4	-2,071.90	1,487.3	-83.6	1,488.7	0.00	0.00	0.00
8,700.0	90.54	0.00	6,728.4	-2,070.95	1,587.3	-83.6	1,588.7	0.00	0.00	0.00
8,800.0	90.54	0.00	6,727.5	-2,070.00	1,687.3	-83.6	1,688.7	0.00	0.00	0.00
8,900.0	90.55	0.00	6,726.5	-2,069.05	1,787.3	-83.6	1,788.6	0.00	0.00	0.00
9,000.0	90.55	0.00	6,725.6	-2,068.10	1,887.3	-83.6	1,888.6	0.00	0.00	0.00
9,100.0	90.55	0.00	6,724.6	-2,067.14	1,987.3	-83.6	1,988.6	0.00	0.00	0.00
9,200.0	90.55	0.00	6,723.7	-2,066.19	2,087.3	-83.6	2,088.6	0.00	0.00	0.00
9,300.0	90.55	0.00	6,722.7	-2,065.24	2,187.3	-83.6	2,188.5	0.00	0.00	0.00
9,400.0	90.55	0.00	6,721.8	-2,064.28	2,287.3	-83.6	2,288.5	0.00	0.00	0.00
9,500.0	90.55	0.00	6,720.8	-2,063.33	2,387.3	-83.6	2,388.5	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21W-434
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4657.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4657.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21W-434	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #3		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,600.0	90.55	0.00	6,719.9	-2,062.37	2,487.3	-83.6	2,488.5	0.00	0.00	0.00
9,700.0	90.55	0.00	6,718.9	-2,061.42	2,587.3	-83.6	2,588.5	0.00	0.00	0.00
9,800.0	90.55	0.00	6,718.0	-2,060.46	2,687.3	-83.6	2,688.4	0.00	0.00	0.00
9,900.0	90.55	0.00	6,717.0	-2,059.51	2,787.3	-83.6	2,788.4	0.00	0.00	0.00
10,000.0	90.55	0.00	6,716.0	-2,058.55	2,887.3	-83.6	2,888.4	0.00	0.00	0.00
10,100.0	90.55	0.00	6,715.1	-2,057.59	2,987.3	-83.6	2,988.4	0.00	0.00	0.00
10,200.0	90.55	0.00	6,714.1	-2,056.63	3,087.3	-83.6	3,088.3	0.00	0.00	0.00
10,300.0	90.55	0.00	6,713.2	-2,055.67	3,187.3	-83.6	3,188.3	0.00	0.00	0.00
10,400.0	90.55	0.00	6,712.2	-2,054.72	3,287.3	-83.6	3,288.3	0.00	0.00	0.00
10,500.0	90.55	0.00	6,711.3	-2,053.76	3,387.3	-83.6	3,388.3	0.00	0.00	0.00
10,600.0	90.55	0.00	6,710.3	-2,052.80	3,487.3	-83.6	3,488.2	0.00	0.00	0.00
10,700.0	90.55	0.00	6,709.3	-2,051.83	3,587.3	-83.6	3,588.2	0.00	0.00	0.00
10,800.0	90.55	0.00	6,708.4	-2,050.87	3,687.2	-83.6	3,688.2	0.00	0.00	0.00
10,900.0	90.55	0.00	6,707.4	-2,049.91	3,787.2	-83.6	3,788.2	0.00	0.00	0.00
11,000.0	90.55	0.00	6,706.4	-2,048.95	3,887.2	-83.6	3,888.1	0.00	0.00	0.00
11,100.0	90.55	0.00	6,705.5	-2,047.99	3,987.2	-83.6	3,988.1	0.00	0.00	0.00
11,200.0	90.55	0.00	6,704.5	-2,047.02	4,087.2	-83.6	4,088.1	0.00	0.00	0.00
11,300.0	90.55	0.00	6,703.6	-2,046.06	4,187.2	-83.6	4,188.1	0.00	0.00	0.00
BHL - CHESNUT 21W-434 (P3)										
11,306.0	90.55	0.00	6,703.5	-2,046.00	4,193.2	-83.6	4,194.1	0.00	0.00	0.00

Plan Annotations					
MD (usft)	TVD (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,000.0	1,000.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1,600.1	1,595.7	-62.1	-8.4	EOB TO 12° INC	
3,989.7	3,933.1	-554.4	-75.2	END OF TANGENT	
4,589.8	4,528.8	-616.5	-83.6	EOD TO VERTICAL	
6,087.3	6,026.3	-616.5	-83.6	KOP (8°/100ft BUR)	
7,219.0	6,742.5	106.4	-83.6	7" ICP - CHESNUT 21W-434 (P3)	
11,306.0	6,703.5	4,193.2	-83.6	BHL - CHESNUT 21W-434 (P3)	