

PDC ENERGY

**WELD COUNTY, COLORADO
SE SE SEC. 21 T5N R64W 6th P.M.
CHESNUT 21W-304**

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-304
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #3

ANNOTATIONS

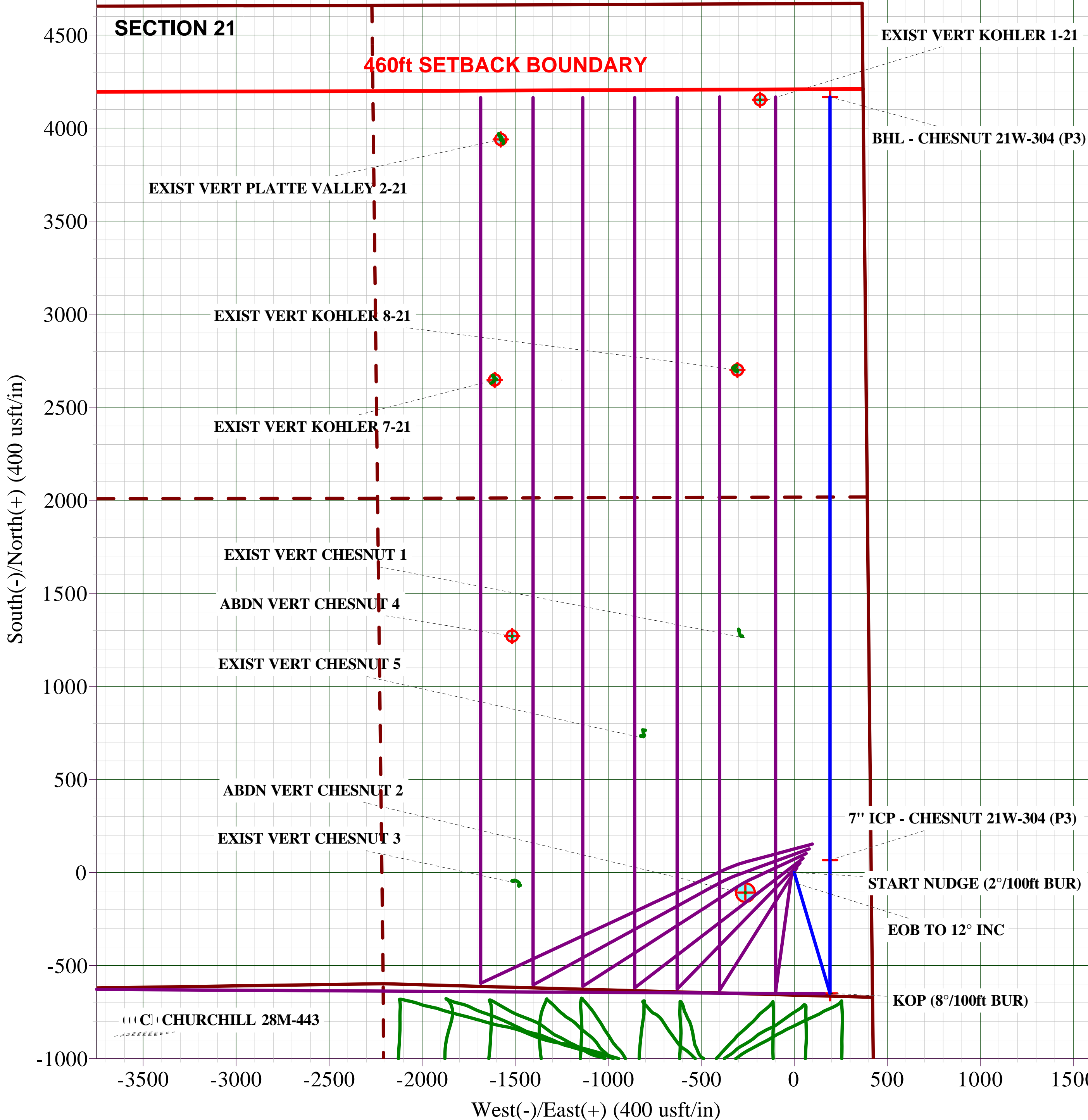
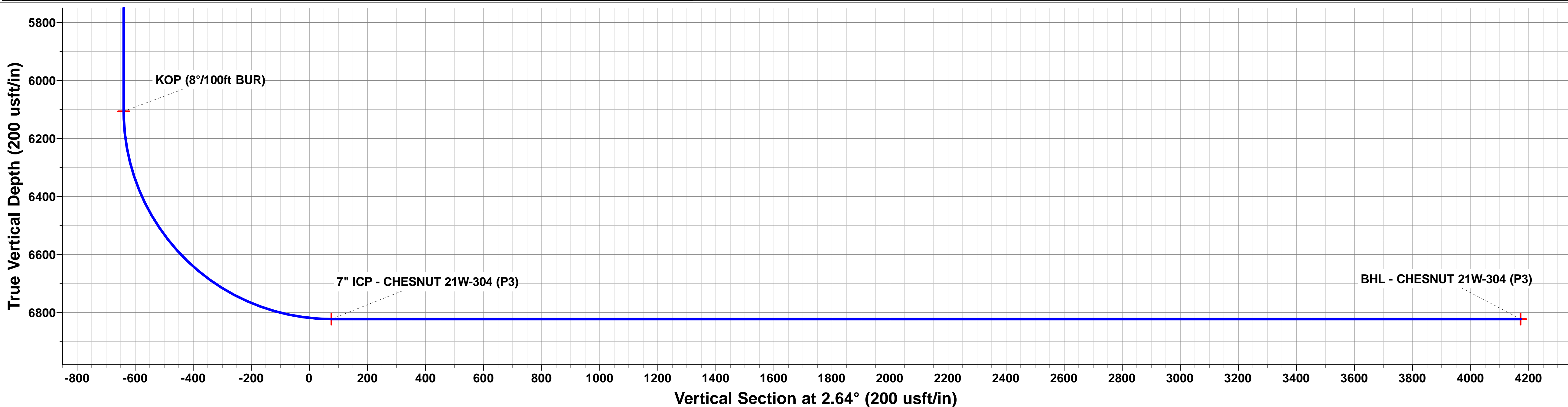
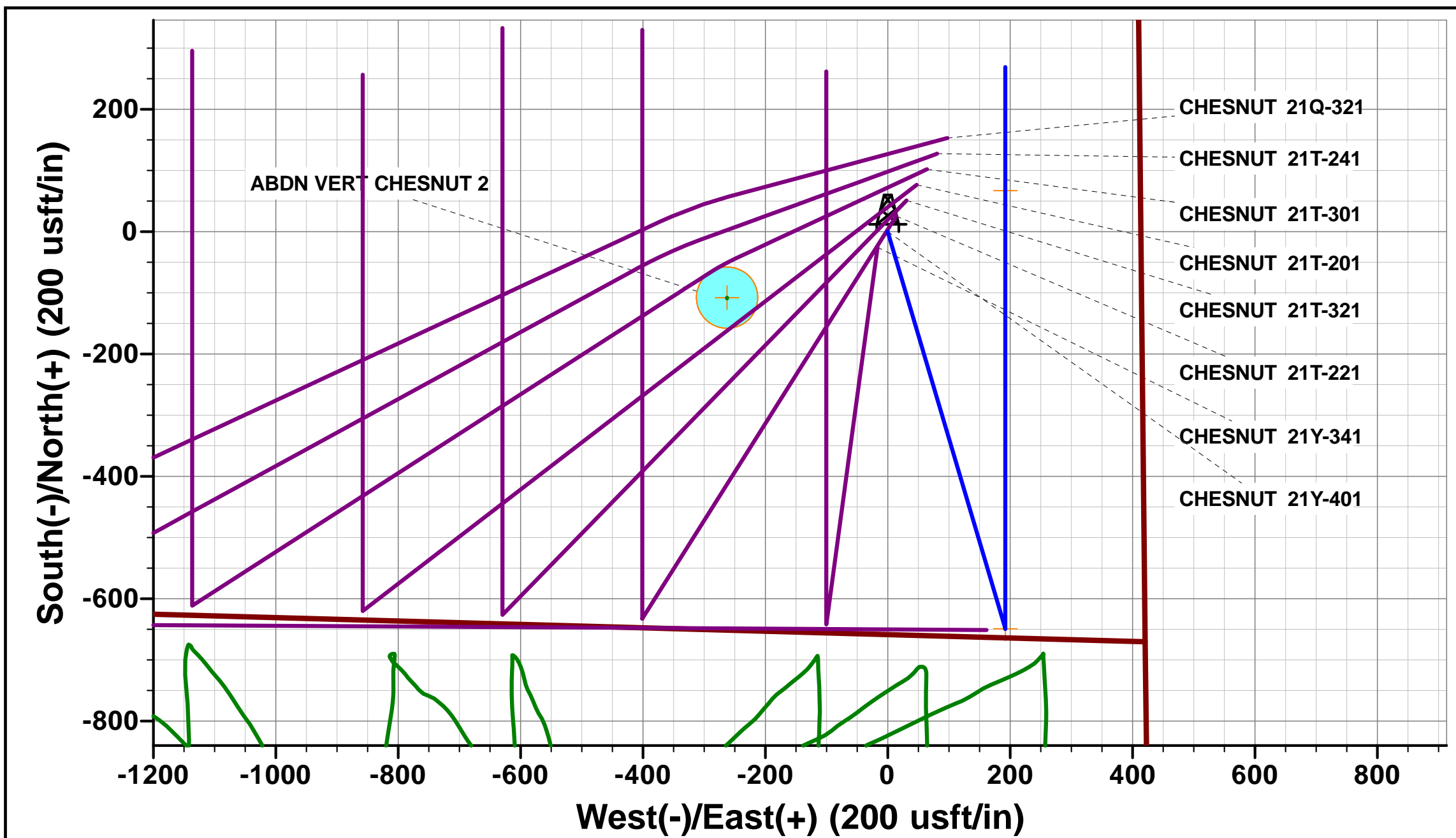
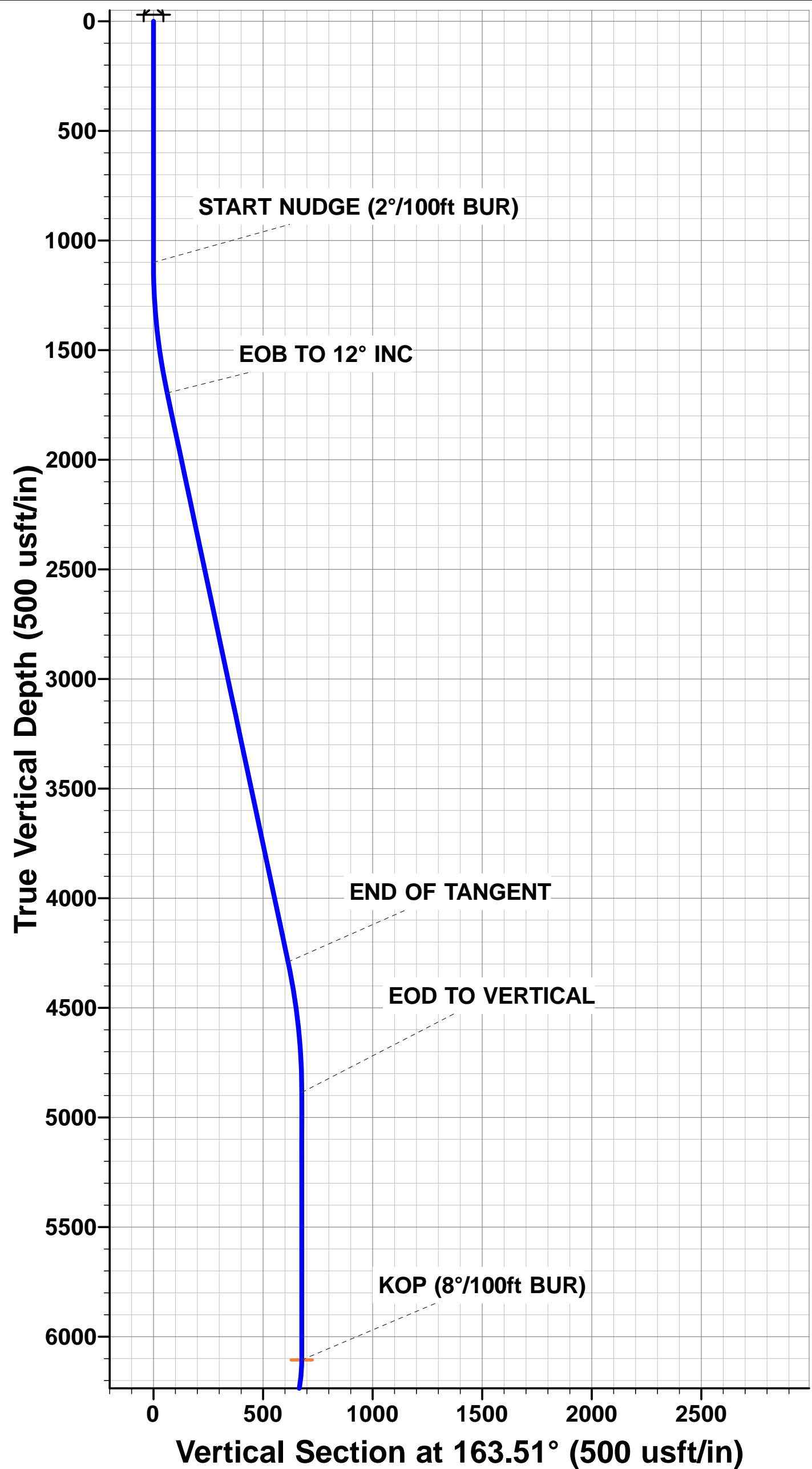
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
1100.0	1100.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1695.8	1700.2	12.00	163.51	-60.1	17.8	-59.2	62.6	EOB TO 12° INC
4290.5	4352.9	12.00	163.51	-589.0	174.4	-580.4	614.3	END OF TANGENT
4886.3	4953.1	0.00	0.00	-649.1	192.2	-639.6	677.0	EOD TO VERTICAL
6106.3	6173.1	0.00	0.00	-649.1	192.2	-639.6	677.0	KOP (8°/100ft BUR)
6822.5	7298.1	90.00	0.00	67.1	192.2	75.9	1393.2	7" ICP - CHESNUT 21W-304 (P3)
6822.5	11398.7	90.00	0.00	4167.7	192.2	4172.2	5493.8	BHL - CHESNUT 21W-304 (P3)

PROPOSED LOCAL COORDINATES:

SHL: 659ft FSL & 414ft FEL Sec 21
7" ICP: 726.1ft FSL & 221.8ft FEL Sec 21
BHL: 500ft FNL & 177ft FEL Sec 21

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CHESNUT 21W-304 (P3)	6106.3	-649.1	192.2	40.377508	-104.546090
BHL - CHESNUT 21W-304 (P3)	6822.5	4167.7	192.2	40.390730	-104.546090
7" ICP - CHESNUT 21W-304 (P3)	6822.5	67.1	192.2	40.379474	-104.546090



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21W-304
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-304	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-304		
Well Position	+N/-S	24.4 usft	Northing:
	+E/-W	18.3 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	31/08/2015	8.28	66.92	52,611

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	2.64	

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	
1,100.0	0.00	0.00	1,100.0	-3,557.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,700.2	12.00	163.51	1,695.8	-2,961.7	-60.1	17.8	2.00	2.00	0.00	163.51	
4,352.9	12.00	163.51	4,290.5	-367.0	-589.0	174.4	0.00	0.00	0.00	0.00	
4,953.1	0.00	0.00	4,886.3	228.8	-649.1	192.2	2.00	-2.00	0.00	180.00	
6,173.1	0.00	0.00	6,106.3	1,448.8	-649.1	192.2	0.00	0.00	0.00	0.00	KOP - CHESNUT 2
7,298.1	90.00	0.00	6,822.5	2,165.0	67.1	192.2	8.00	8.00	0.00	0.00	
11,398.7	90.00	0.00	6,822.5	2,165.0	4,167.7	192.2	0.00	0.00	0.00	0.00	BHL - CHESNUT 2

Planning Report



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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-304	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
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
START NUDGE (2°/100ft BUR)										
1,100.0	0.00	0.00	1,100.0	3,557.50	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	2.00	163.51	1,200.0	3,457.52	-1.7	0.5	-1.6	2.00	2.00	0.00
1,300.0	4.00	163.51	1,299.8	3,357.66	-6.7	2.0	-6.6	2.00	2.00	0.00
1,400.0	6.00	163.51	1,399.5	3,258.05	-15.0	4.5	-14.8	2.00	2.00	0.00
1,500.0	8.00	163.51	1,498.7	3,158.80	-26.7	7.9	-26.3	2.00	2.00	0.00
1,600.0	10.00	163.51	1,597.5	3,060.03	-41.7	12.4	-41.1	2.00	2.00	0.00
1,700.0	12.00	163.51	1,695.6	2,961.88	-60.0	17.8	-59.1	2.00	2.00	0.00
EOB TO 12° INC										
1,700.2	12.00	163.51	1,695.8	2,961.68	-60.1	17.8	-59.2	1.62	1.62	0.00
1,800.0	12.00	163.51	1,793.4	2,864.06	-80.0	23.7	-78.8	0.00	0.00	0.00
1,900.0	12.00	163.51	1,891.3	2,766.25	-99.9	29.6	-98.4	0.00	0.00	0.00
2,000.0	12.00	163.51	1,989.1	2,668.44	-119.8	35.5	-118.1	0.00	0.00	0.00
2,100.0	12.00	163.51	2,086.9	2,570.62	-139.8	41.4	-137.7	0.00	0.00	0.00
2,200.0	12.00	163.51	2,184.7	2,472.81	-159.7	47.3	-157.4	0.00	0.00	0.00
2,300.0	12.00	163.51	2,282.5	2,375.00	-179.7	53.2	-177.0	0.00	0.00	0.00
2,400.0	12.00	163.51	2,380.3	2,277.18	-199.6	59.1	-196.7	0.00	0.00	0.00
2,500.0	12.00	163.51	2,478.1	2,179.37	-219.6	65.0	-216.3	0.00	0.00	0.00
2,600.0	12.00	163.51	2,575.9	2,081.55	-239.5	70.9	-236.0	0.00	0.00	0.00
2,700.0	12.00	163.51	2,673.8	1,983.74	-259.4	76.8	-255.6	0.00	0.00	0.00
2,800.0	12.00	163.51	2,771.6	1,885.93	-279.4	82.7	-275.3	0.00	0.00	0.00
2,900.0	12.00	163.51	2,869.4	1,788.11	-299.3	88.6	-294.9	0.00	0.00	0.00
3,000.0	12.00	163.51	2,967.2	1,690.30	-319.3	94.5	-314.6	0.00	0.00	0.00
3,100.0	12.00	163.51	3,065.0	1,592.49	-339.2	100.4	-334.2	0.00	0.00	0.00
3,200.0	12.00	163.51	3,162.8	1,494.67	-359.1	106.3	-353.9	0.00	0.00	0.00
3,300.0	12.00	163.51	3,260.6	1,396.86	-379.1	112.2	-373.5	0.00	0.00	0.00
3,400.0	12.00	163.51	3,358.5	1,299.05	-399.0	118.2	-393.2	0.00	0.00	0.00
3,500.0	12.00	163.51	3,456.3	1,201.23	-419.0	124.1	-412.8	0.00	0.00	0.00
3,600.0	12.00	163.51	3,554.1	1,103.42	-438.9	130.0	-432.4	0.00	0.00	0.00
3,700.0	12.00	163.51	3,651.9	1,005.61	-458.8	135.9	-452.1	0.00	0.00	0.00
3,800.0	12.00	163.51	3,749.7	907.79	-478.8	141.8	-471.7	0.00	0.00	0.00
3,900.0	12.00	163.51	3,847.5	809.98	-498.7	147.7	-491.4	0.00	0.00	0.00
4,000.0	12.00	163.51	3,945.3	712.16	-518.7	153.6	-511.0	0.00	0.00	0.00
4,100.0	12.00	163.51	4,043.1	614.35	-538.6	159.5	-530.7	0.00	0.00	0.00
4,200.0	12.00	163.51	4,141.0	516.54	-558.5	165.4	-550.3	0.00	0.00	0.00
4,300.0	12.00	163.51	4,238.8	418.72	-578.5	171.3	-570.0	0.00	0.00	0.00
END OF TANGENT										
4,352.9	12.00	163.51	4,290.5	366.98	-589.0	174.4	-580.4	0.00	0.00	0.00
4,400.0	11.06	163.51	4,336.7	320.83	-598.1	177.1	-589.3	2.00	-2.00	0.00
4,500.0	9.06	163.51	4,435.1	222.37	-614.8	182.0	-605.8	2.00	-2.00	0.00
4,600.0	7.06	163.51	4,534.1	123.37	-628.3	186.0	-619.0	2.00	-2.00	0.00
4,700.0	5.06	163.51	4,633.6	23.93	-638.4	189.0	-629.0	2.00	-2.00	0.00

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Well:	CHESNUT 21W-304	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)
4,800.0	3.06	163.51	4,733.3	-75.81	-645.2	191.0	-635.7	2.00	-2.00	0.00
4,900.0	1.06	163.51	4,833.2	-175.74	-648.6	192.1	-639.1	2.00	-2.00	0.00
EOD TO VERTICAL										
4,953.1	0.00	0.00	4,886.3	-228.84	-649.1	192.2	-639.6	2.00	-2.00	0.00
5,000.0	0.00	0.00	4,933.2	-275.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,100.0	0.00	0.00	5,033.2	-375.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,133.2	-475.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,233.2	-575.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,333.2	-675.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,433.2	-775.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,533.2	-875.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,633.2	-975.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,733.2	-1,075.74	-649.1	192.2	-639.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,833.2	-1,175.74	-649.1	192.2	-639.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,933.2	-1,275.74	-649.1	192.2	-639.6	0.00	0.00	0.00
6,100.0	0.00	0.00	6,033.2	-1,375.74	-649.1	192.2	-639.6	0.00	0.00	0.00
KOP (8°/100ft BUR)										
6,173.1	0.00	0.00	6,106.3	-1,448.84	-649.1	192.2	-639.6	0.00	0.00	0.00
6,200.0	2.16	0.00	6,133.2	-1,475.73	-648.6	192.2	-639.0	8.01	8.01	0.00
6,300.0	10.16	0.00	6,232.6	-1,575.08	-637.9	192.2	-628.3	8.00	8.00	0.00
6,400.0	18.16	0.00	6,329.5	-1,671.96	-613.4	192.2	-603.9	8.00	8.00	0.00
6,500.0	26.16	0.00	6,422.0	-1,764.50	-575.8	192.2	-566.3	8.00	8.00	0.00
6,600.0	34.16	0.00	6,508.4	-1,850.90	-525.6	192.2	-516.2	8.00	8.00	0.00
6,700.0	42.16	0.00	6,587.0	-1,929.47	-463.8	192.2	-454.5	8.00	8.00	0.00
6,800.0	50.16	0.00	6,656.2	-1,998.68	-391.8	192.2	-382.5	8.00	8.00	0.00
6,900.0	58.16	0.00	6,714.7	-2,057.20	-310.8	192.2	-301.6	8.00	8.00	0.00
7,000.0	66.16	0.00	6,761.4	-2,103.87	-222.4	192.2	-213.3	8.00	8.00	0.00
7,100.0	74.16	0.00	6,795.3	-2,137.79	-128.4	192.2	-119.5	8.00	8.00	0.00
7,200.0	82.16	0.00	6,815.8	-2,158.29	-30.7	192.2	-21.8	8.00	8.00	0.00
7" ICP - CHESNUT 21W-304 (P3)										
7,298.1	90.00	0.00	6,822.5	-2,165.00	67.1	192.2	75.9	8.00	8.00	0.00
7,300.0	90.00	0.00	6,822.5	-2,165.00	69.0	192.2	77.8	0.00	0.00	0.00
7,400.0	90.00	0.00	6,822.5	-2,165.00	169.0	192.2	177.7	0.00	0.00	0.00
7,500.0	90.00	0.00	6,822.5	-2,165.00	269.0	192.2	277.6	0.00	0.00	0.00
7,600.0	90.00	0.00	6,822.5	-2,165.00	369.0	192.2	377.5	0.00	0.00	0.00
7,700.0	90.00	0.00	6,822.5	-2,165.00	469.0	192.2	477.4	0.00	0.00	0.00
7,800.0	90.00	0.00	6,822.5	-2,165.00	569.0	192.2	577.3	0.00	0.00	0.00
7,900.0	90.00	0.00	6,822.5	-2,165.00	669.0	192.2	677.2	0.00	0.00	0.00
8,000.0	90.00	0.00	6,822.5	-2,165.00	769.0	192.2	777.1	0.00	0.00	0.00
8,100.0	90.00	0.00	6,822.5	-2,165.00	869.0	192.2	877.0	0.00	0.00	0.00
8,200.0	90.00	0.00	6,822.5	-2,165.00	969.0	192.2	976.9	0.00	0.00	0.00
8,300.0	90.00	0.00	6,822.5	-2,165.00	1,069.0	192.2	1,076.8	0.00	0.00	0.00
8,400.0	90.00	0.00	6,822.5	-2,165.00	1,169.0	192.2	1,176.7	0.00	0.00	0.00
8,500.0	90.00	0.00	6,822.5	-2,165.00	1,269.0	192.2	1,276.5	0.00	0.00	0.00
8,600.0	90.00	0.00	6,822.5	-2,165.00	1,369.0	192.2	1,376.4	0.00	0.00	0.00
8,700.0	90.00	0.00	6,822.5	-2,165.00	1,469.0	192.2	1,476.3	0.00	0.00	0.00
8,800.0	90.00	0.00	6,822.5	-2,165.00	1,569.0	192.2	1,576.2	0.00	0.00	0.00
8,900.0	90.00	0.00	6,822.5	-2,165.00	1,669.0	192.2	1,676.1	0.00	0.00	0.00
9,000.0	90.00	0.00	6,822.5	-2,165.00	1,769.0	192.2	1,776.0	0.00	0.00	0.00
9,100.0	90.00	0.00	6,822.5	-2,165.00	1,869.0	192.2	1,875.9	0.00	0.00	0.00
9,200.0	90.00	0.00	6,822.5	-2,165.00	1,969.0	192.2	1,975.8	0.00	0.00	0.00
9,300.0	90.00	0.00	6,822.5	-2,165.00	2,069.0	192.2	2,075.7	0.00	0.00	0.00
9,400.0	90.00	0.00	6,822.5	-2,165.00	2,169.0	192.2	2,175.6	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21W-304
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-304	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)
9,500.0	90.00	0.00	6,822.5	-2,165.00	2,269.0	192.2	2,275.5	0.00	0.00	0.00
9,600.0	90.00	0.00	6,822.5	-2,165.00	2,369.0	192.2	2,375.4	0.00	0.00	0.00
9,700.0	90.00	0.00	6,822.5	-2,165.00	2,469.0	192.2	2,475.3	0.00	0.00	0.00
9,800.0	90.00	0.00	6,822.5	-2,165.00	2,569.0	192.2	2,575.2	0.00	0.00	0.00
9,900.0	90.00	0.00	6,822.5	-2,165.00	2,669.0	192.2	2,675.1	0.00	0.00	0.00
10,000.0	90.00	0.00	6,822.5	-2,165.00	2,769.0	192.2	2,775.0	0.00	0.00	0.00
10,100.0	90.00	0.00	6,822.5	-2,165.00	2,869.0	192.2	2,874.8	0.00	0.00	0.00
10,200.0	90.00	0.00	6,822.5	-2,165.00	2,969.0	192.2	2,974.7	0.00	0.00	0.00
10,300.0	90.00	0.00	6,822.5	-2,165.00	3,069.0	192.2	3,074.6	0.00	0.00	0.00
10,400.0	90.00	0.00	6,822.5	-2,165.00	3,169.0	192.2	3,174.5	0.00	0.00	0.00
10,500.0	90.00	0.00	6,822.5	-2,165.00	3,269.0	192.2	3,274.4	0.00	0.00	0.00
10,600.0	90.00	0.00	6,822.5	-2,165.00	3,369.0	192.2	3,374.3	0.00	0.00	0.00
10,700.0	90.00	0.00	6,822.5	-2,165.00	3,469.0	192.2	3,474.2	0.00	0.00	0.00
10,800.0	90.00	0.00	6,822.5	-2,165.00	3,569.0	192.2	3,574.1	0.00	0.00	0.00
10,900.0	90.00	0.00	6,822.5	-2,165.00	3,669.0	192.2	3,674.0	0.00	0.00	0.00
11,000.0	90.00	0.00	6,822.5	-2,165.00	3,769.0	192.2	3,773.9	0.00	0.00	0.00
11,100.0	90.00	0.00	6,822.5	-2,165.00	3,869.0	192.2	3,873.8	0.00	0.00	0.00
11,200.0	90.00	0.00	6,822.5	-2,165.00	3,969.0	192.2	3,973.7	0.00	0.00	0.00
11,300.0	90.00	0.00	6,822.5	-2,165.00	4,069.0	192.2	4,073.6	0.00	0.00	0.00
BHL - CHESNUT 21W-304 (P3)										
11,398.7	90.00	0.00	6,822.5	-2,165.00	4,167.7	192.2	4,172.2	0.00	0.00	0.00

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,100.0	1,100.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,700.2	1,695.8	-60.1	17.8	EOB TO 12° INC
4,352.9	4,290.5	-589.0	174.4	END OF TANGENT
4,953.1	4,886.3	-649.1	192.2	EOD TO VERTICAL
6,173.1	6,106.3	-649.1	192.2	KOP (8°/100ft BUR)
7,298.1	6,822.5	67.1	192.2	7" ICP - CHESNUT 21W-304 (P3)
11,398.7	6,822.5	4,167.7	192.2	BHL - CHESNUT 21W-304 (P3)