

PDC ENERGY

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

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
1300.0	1300.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1953.7	1959.5	13.19	224.26	-54.1	-52.7	-45.1	75.6	EOB TO 13.19° INC	
5344.6	5442.3	13.19	224.26	-623.3	-607.4	-519.1	870.3	END OF TANGENT	
5998.3	6101.8	0.00	224.26	-677.4	-660.2	-564.2	945.9	EOD TO VERTICAL	
6028.3	6131.8	0.00	0.00	-677.4	-660.2	-564.2	945.9	KOP (8°/100ft BUR)	
6744.5	7264.6	90.62	0.00	46.6	-660.2	150.6	1669.9	7" ICP - CHESNUT 21X-434 (P3)	
6700.4	11331.3	90.62	0.00	4113.1	-660.2	4165.7	5736.4	BHL - CHESNUT 21X-434 (P3)	

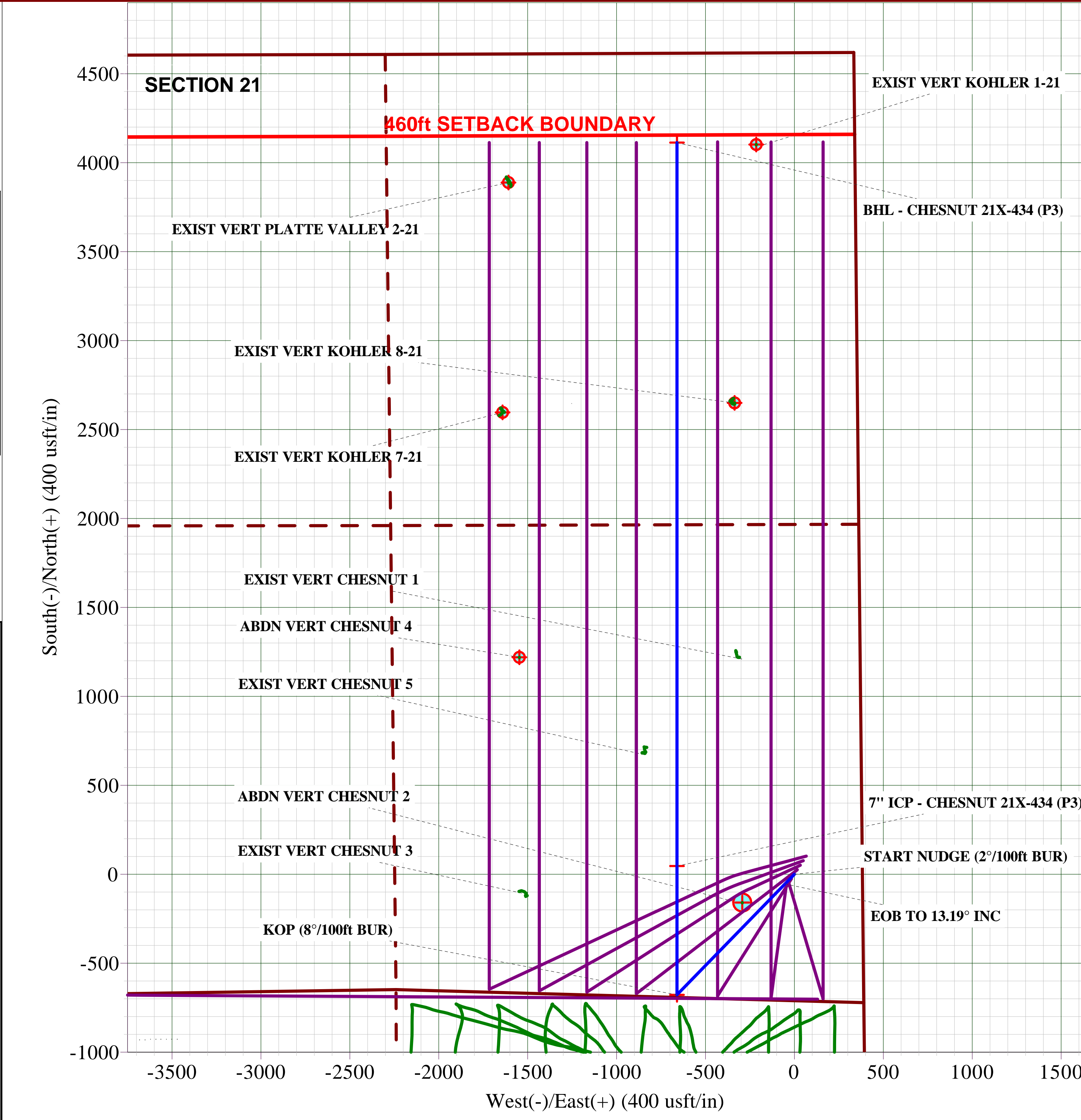
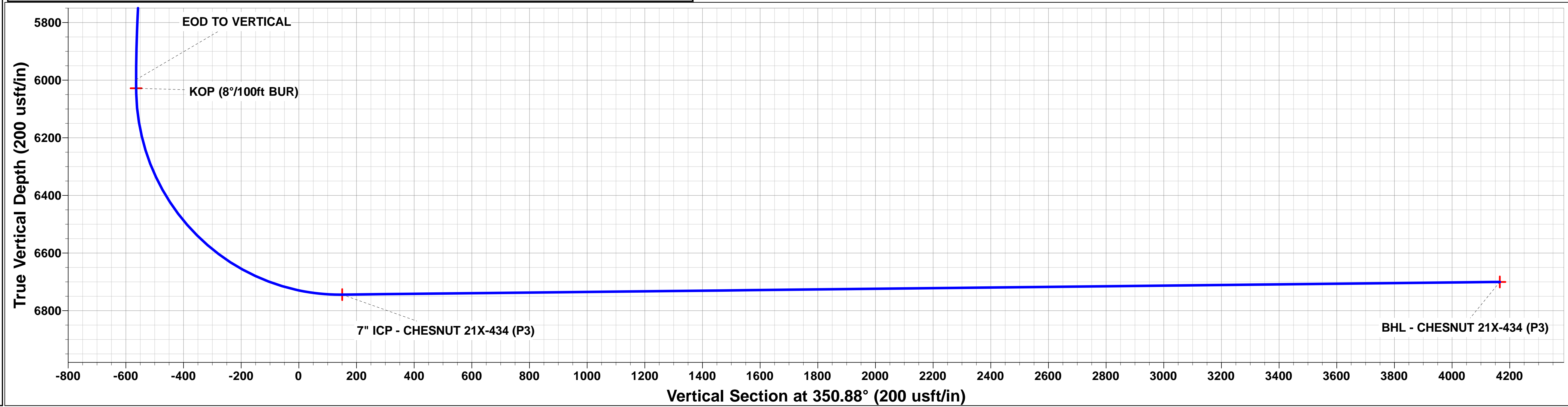
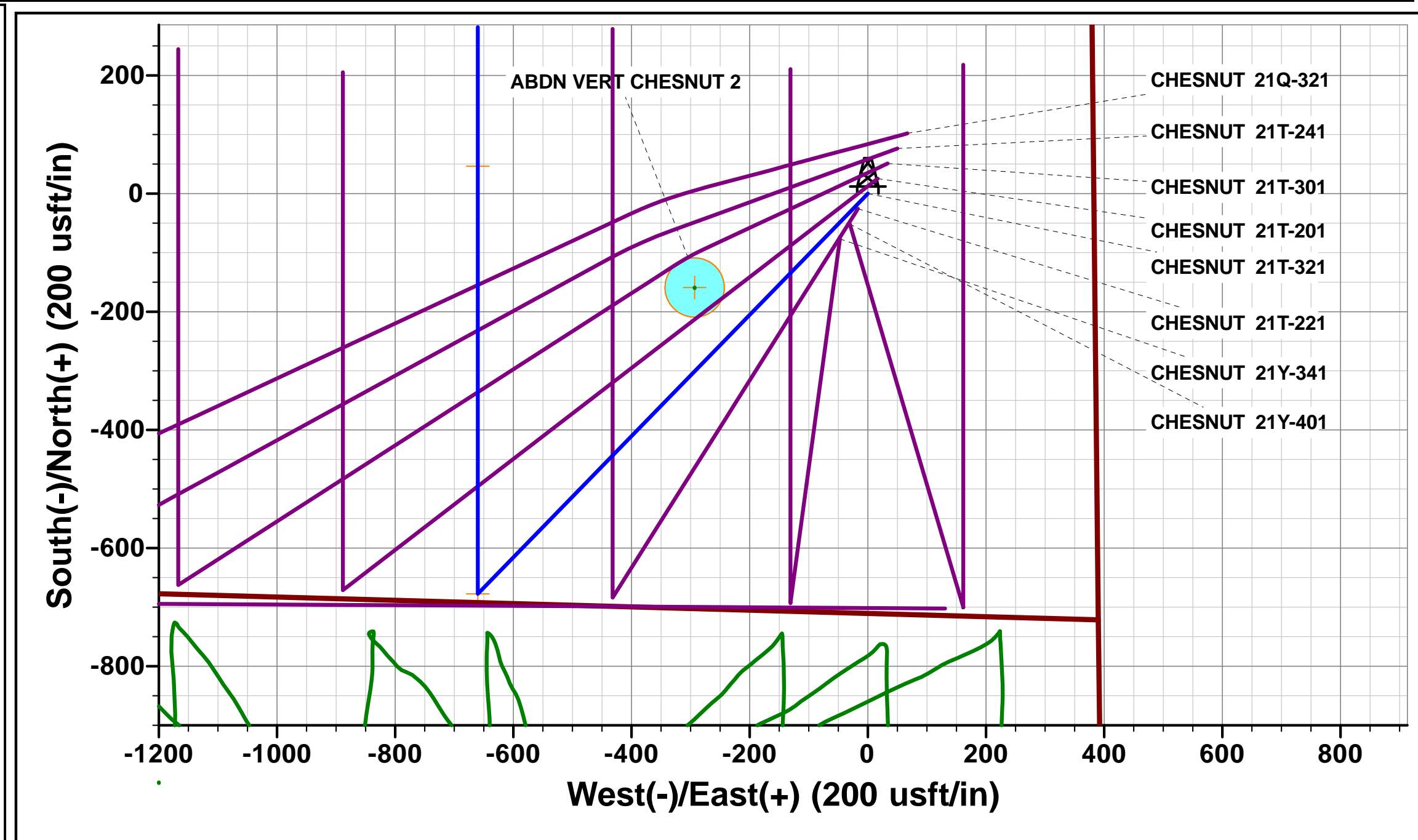
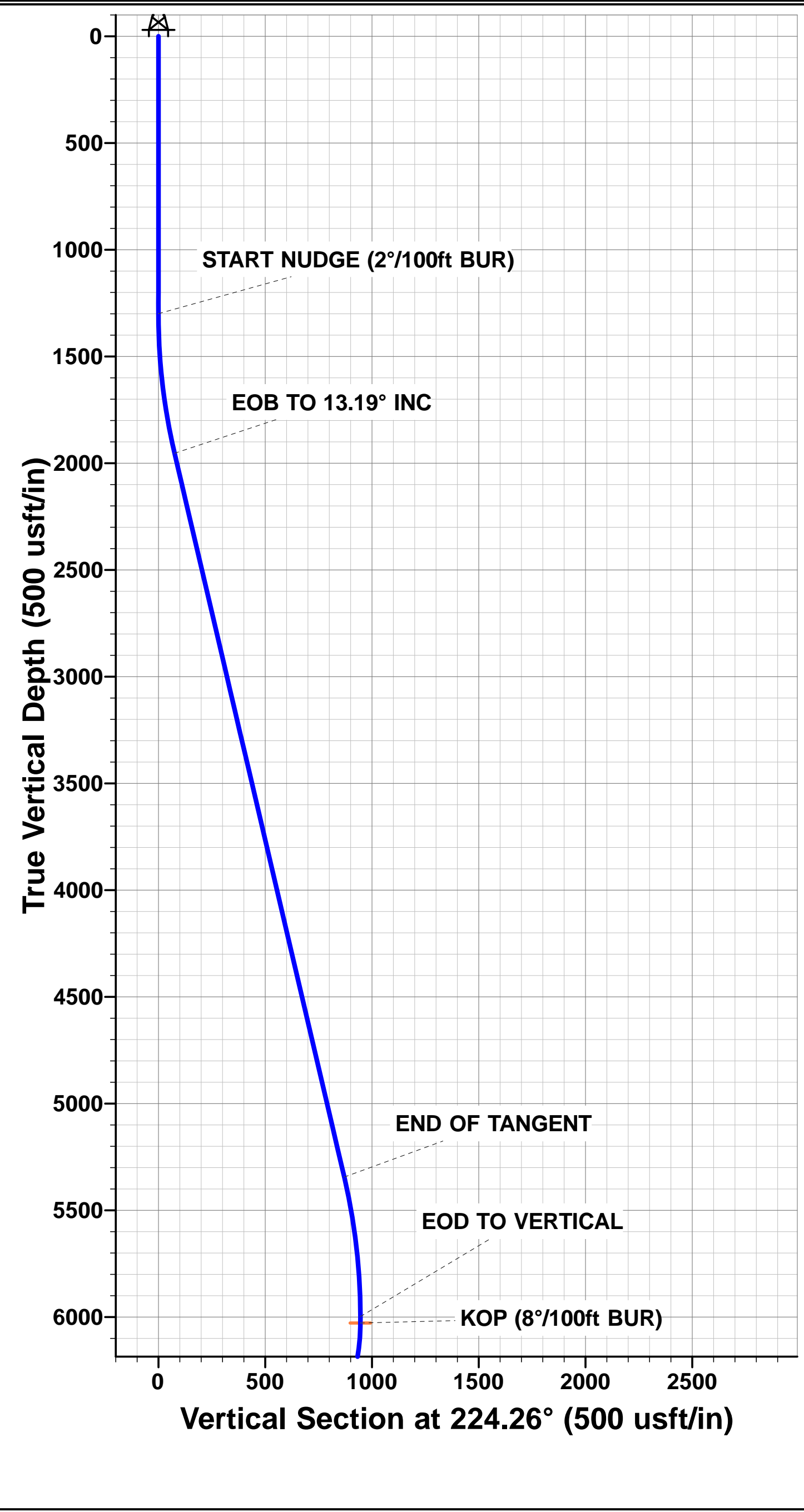
PROPOSED LOCAL COORDINATES:

SHL: 711ft FSL & 381t FEL Sec 21

7" ICP: 757.5ft FSL & 1041.2ft FEL Sec 21

BHL: 500ft FNL & 1000ft FEL Sec 21

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CHESNUT 21X-434 (P3)	6028.3	-677.4	-660.2	40.377571	-104.549040
BHL - CHESNUT 21X-434 (P3)	6700.5	4113.1	-660.2	40.390720	-104.549040
7" ICP - CHESNUT 21X-434 (P3)	6744.5	46.5	-660.2	40.379558	-104.549040



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21X-434
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4654.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4654.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-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 21X-434		
Well Position	+N/-S	75.4 usft	Northing:
	+E/-W	49.0 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	350.88

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	-4,654.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	-3,354.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,959.5	13.19	224.26	1,953.7	-2,700.8	-54.1	-52.8	2.00	2.00	0.00	224.26	
5,442.3	13.19	224.26	5,344.6	690.1	-623.3	-607.4	0.00	0.00	0.00	0.00	
6,101.8	0.00	0.00	5,998.3	1,343.8	-677.4	-660.2	2.00	-2.00	0.00	180.00	
6,131.8	0.00	0.00	6,028.3	1,373.8	-677.4	-660.2	0.00	0.00	0.00	0.00	KOP - CHESNUT 2
7,264.6	90.62	0.00	6,744.5	2,090.0	46.6	-660.2	8.00	8.00	0.00	0.00	
11,331.3	90.62	0.00	6,700.5	2,046.0	4,113.1	-660.2	0.00	0.00	0.00	0.00	BHL - CHESNUT 2

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21X-434
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4654.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4654.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-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	4,654.50	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,554.50	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,454.50	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,354.50	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,254.50	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,154.50	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,054.50	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	3,954.50	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	3,854.50	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	3,754.50	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	3,654.50	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	3,554.50	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	3,454.50	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
1,300.0	0.00	0.00	1,300.0	3,354.50	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	2.00	224.26	1,400.0	3,254.52	-1.2	-1.2	-1.0	2.00	2.00	0.00
1,500.0	4.00	224.26	1,499.8	3,154.66	-5.0	-4.9	-4.2	2.00	2.00	0.00
1,600.0	6.00	224.26	1,599.5	3,055.05	-11.2	-11.0	-9.4	2.00	2.00	0.00
1,700.0	8.00	224.26	1,698.7	2,955.80	-20.0	-19.5	-16.6	2.00	2.00	0.00
1,800.0	10.00	224.26	1,797.5	2,857.03	-31.2	-30.4	-26.0	2.00	2.00	0.00
1,900.0	12.00	224.26	1,895.6	2,758.88	-44.8	-43.7	-37.3	2.00	2.00	0.00
EOB TO 13.19° INC										
1,959.5	13.19	224.26	1,953.7	2,700.81	-54.1	-52.7	-45.1	2.00	2.00	0.00
2,000.0	13.19	224.26	1,993.1	2,661.38	-60.7	-59.2	-50.6	0.00	0.00	0.00
2,100.0	13.19	224.26	2,090.5	2,564.02	-77.1	-75.1	-64.2	0.00	0.00	0.00
2,200.0	13.19	224.26	2,187.8	2,466.66	-93.4	-91.1	-77.8	0.00	0.00	0.00
2,300.0	13.19	224.26	2,285.2	2,369.29	-109.8	-107.0	-91.4	0.00	0.00	0.00
2,400.0	13.19	224.26	2,382.6	2,271.93	-126.1	-122.9	-105.0	0.00	0.00	0.00
2,500.0	13.19	224.26	2,479.9	2,174.57	-142.5	-138.8	-118.6	0.00	0.00	0.00
2,600.0	13.19	224.26	2,577.3	2,077.21	-158.8	-154.8	-132.3	0.00	0.00	0.00
2,700.0	13.19	224.26	2,674.7	1,979.85	-175.1	-170.7	-145.9	0.00	0.00	0.00
2,800.0	13.19	224.26	2,772.0	1,882.49	-191.5	-186.6	-159.5	0.00	0.00	0.00
2,900.0	13.19	224.26	2,869.4	1,785.12	-207.8	-202.5	-173.1	0.00	0.00	0.00
3,000.0	13.19	224.26	2,966.7	1,687.76	-224.2	-218.5	-186.7	0.00	0.00	0.00
3,100.0	13.19	224.26	3,064.1	1,590.40	-240.5	-234.4	-200.3	0.00	0.00	0.00
3,200.0	13.19	224.26	3,161.5	1,493.04	-256.8	-250.3	-213.9	0.00	0.00	0.00
3,300.0	13.19	224.26	3,258.8	1,395.68	-273.2	-266.2	-227.5	0.00	0.00	0.00
3,400.0	13.19	224.26	3,356.2	1,298.32	-289.5	-282.2	-241.1	0.00	0.00	0.00
3,500.0	13.19	224.26	3,453.5	1,200.95	-305.9	-298.1	-254.8	0.00	0.00	0.00
3,600.0	13.19	224.26	3,550.9	1,103.59	-322.2	-314.0	-268.4	0.00	0.00	0.00
3,700.0	13.19	224.26	3,648.3	1,006.23	-338.6	-330.0	-282.0	0.00	0.00	0.00
3,800.0	13.19	224.26	3,745.6	908.87	-354.9	-345.9	-295.6	0.00	0.00	0.00
3,900.0	13.19	224.26	3,843.0	811.51	-371.2	-361.8	-309.2	0.00	0.00	0.00
4,000.0	13.19	224.26	3,940.4	714.15	-387.6	-377.7	-322.8	0.00	0.00	0.00
4,100.0	13.19	224.26	4,037.7	616.78	-403.9	-393.7	-336.4	0.00	0.00	0.00
4,200.0	13.19	224.26	4,135.1	519.42	-420.3	-409.6	-350.0	0.00	0.00	0.00
4,300.0	13.19	224.26	4,232.4	422.06	-436.6	-425.5	-363.6	0.00	0.00	0.00
4,400.0	13.19	224.26	4,329.8	324.70	-452.9	-441.4	-377.3	0.00	0.00	0.00
4,500.0	13.19	224.26	4,427.2	227.34	-469.3	-457.4	-390.9	0.00	0.00	0.00
4,600.0	13.19	224.26	4,524.5	129.98	-485.6	-473.3	-404.5	0.00	0.00	0.00
4,700.0	13.19	224.26	4,621.9	32.61	-502.0	-489.2	-418.1	0.00	0.00	0.00
4,800.0	13.19	224.26	4,719.2	-64.75	-518.3	-505.2	-431.7	0.00	0.00	0.00
4,900.0	13.19	224.26	4,816.6	-162.11	-534.7	-521.1	-445.3	0.00	0.00	0.00
5,000.0	13.19	224.26	4,914.0	-259.47	-551.0	-537.0	-458.9	0.00	0.00	0.00

Planning Report



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Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4654.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4654.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-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)
5,100.0	13.19	224.26	5,011.3	-356.83	-567.3	-552.9	-472.5	0.00	0.00	0.00
5,200.0	13.19	224.26	5,108.7	-454.19	-583.7	-568.9	-486.1	0.00	0.00	0.00
5,300.0	13.19	224.26	5,206.1	-551.56	-600.0	-584.8	-499.8	0.00	0.00	0.00
5,400.0	13.19	224.26	5,303.4	-648.92	-616.4	-600.7	-513.4	0.00	0.00	0.00
END OF TANGENT										
5,442.3	13.19	224.26	5,344.6	-690.10	-623.3	-607.4	-519.1	0.00	0.00	0.00
5,500.0	12.04	224.26	5,400.9	-746.41	-632.3	-616.2	-526.6	2.00	-2.00	0.00
5,600.0	10.04	224.26	5,499.1	-844.55	-646.0	-629.6	-538.1	2.00	-2.00	0.00
5,700.0	8.04	224.26	5,597.8	-943.31	-657.2	-640.6	-547.4	2.00	-2.00	0.00
5,800.0	6.04	224.26	5,697.0	-1,042.55	-666.0	-649.1	-554.7	2.00	-2.00	0.00
5,900.0	4.04	224.26	5,796.7	-1,142.16	-672.3	-655.2	-560.0	2.00	-2.00	0.00
6,000.0	2.04	224.26	5,896.5	-1,242.01	-676.1	-658.9	-563.1	2.00	-2.00	0.00
6,100.0	0.04	224.26	5,996.5	-1,341.99	-677.4	-660.2	-564.2	2.00	-2.00	0.00
EOD TO VERTICAL										
6,101.8	0.00	224.26	5,998.3	-1,343.79	-677.4	-660.2	-564.2	2.00	-2.00	0.00
KOP (8°/100ft BUR)										
6,131.8	0.00	0.00	6,028.3	-1,373.79	-677.4	-660.2	-564.2	0.00	0.00	0.00
6,200.0	5.46	0.00	6,096.4	-1,441.89	-674.2	-660.2	-561.0	8.00	8.00	0.00
6,300.0	13.46	0.00	6,194.9	-1,540.45	-657.7	-660.2	-544.8	8.00	8.00	0.00
6,400.0	21.46	0.00	6,290.3	-1,635.77	-627.8	-660.2	-515.2	8.00	8.00	0.00
6,500.0	29.46	0.00	6,380.5	-1,725.99	-584.8	-660.2	-472.8	8.00	8.00	0.00
6,600.0	37.46	0.00	6,463.8	-1,809.35	-529.7	-660.2	-418.4	8.00	8.00	0.00
6,700.0	45.46	0.00	6,538.7	-1,884.24	-463.6	-660.2	-353.1	8.00	8.00	0.00
6,800.0	53.46	0.00	6,603.7	-1,949.19	-387.7	-660.2	-278.1	8.00	8.00	0.00
6,900.0	61.46	0.00	6,657.4	-2,002.94	-303.4	-660.2	-195.0	8.00	8.00	0.00
7,000.0	69.46	0.00	6,698.9	-2,044.45	-212.5	-660.2	-105.2	8.00	8.00	0.00
7,100.0	77.46	0.00	6,727.4	-2,072.90	-116.8	-660.2	-10.7	8.00	8.00	0.00
7,200.0	85.46	0.00	6,742.2	-2,087.75	-17.9	-660.2	86.9	8.00	8.00	0.00
7" ICP - CHESNUT 21X-434 (P3)										
7,264.6	90.62	0.00	6,744.5	-2,089.95	46.6	-660.2	150.6	7.99	7.99	0.00
7,300.0	90.62	0.00	6,744.1	-2,089.57	82.0	-660.2	185.6	0.00	0.00	0.00
7,400.0	90.62	0.00	6,743.0	-2,088.49	182.0	-660.2	284.3	0.00	0.00	0.00
7,500.0	90.62	0.00	6,741.9	-2,087.41	282.0	-660.2	383.0	0.00	0.00	0.00
7,600.0	90.62	0.00	6,740.8	-2,086.33	382.0	-660.2	481.8	0.00	0.00	0.00
7,700.0	90.62	0.00	6,739.7	-2,085.24	482.0	-660.2	580.5	0.00	0.00	0.00
7,800.0	90.62	0.00	6,738.7	-2,084.16	582.0	-660.2	679.2	0.00	0.00	0.00
7,900.0	90.62	0.00	6,737.6	-2,083.08	682.0	-660.2	778.0	0.00	0.00	0.00
8,000.0	90.62	0.00	6,736.5	-2,082.00	781.9	-660.2	876.7	0.00	0.00	0.00
8,100.0	90.62	0.00	6,735.4	-2,080.92	881.9	-660.2	975.4	0.00	0.00	0.00
8,200.0	90.62	0.00	6,734.3	-2,079.83	981.9	-660.2	1,074.2	0.00	0.00	0.00
8,300.0	90.62	0.00	6,733.3	-2,078.75	1,081.9	-660.2	1,172.9	0.00	0.00	0.00
8,400.0	90.62	0.00	6,732.2	-2,077.67	1,181.9	-660.2	1,271.6	0.00	0.00	0.00
8,500.0	90.62	0.00	6,731.1	-2,076.59	1,281.9	-660.2	1,370.3	0.00	0.00	0.00
8,600.0	90.62	0.00	6,730.0	-2,075.50	1,381.9	-660.2	1,469.1	0.00	0.00	0.00
8,700.0	90.62	0.00	6,728.9	-2,074.42	1,481.9	-660.2	1,567.8	0.00	0.00	0.00
8,800.0	90.62	0.00	6,727.8	-2,073.34	1,581.9	-660.2	1,666.5	0.00	0.00	0.00
8,900.0	90.62	0.00	6,726.8	-2,072.26	1,681.9	-660.2	1,765.3	0.00	0.00	0.00
9,000.0	90.62	0.00	6,725.7	-2,071.18	1,781.9	-660.2	1,864.0	0.00	0.00	0.00
9,100.0	90.62	0.00	6,724.6	-2,070.09	1,881.9	-660.2	1,962.7	0.00	0.00	0.00
9,200.0	90.62	0.00	6,723.5	-2,069.01	1,981.9	-660.2	2,061.5	0.00	0.00	0.00
9,300.0	90.62	0.00	6,722.4	-2,067.93	2,081.9	-660.2	2,160.2	0.00	0.00	0.00
9,400.0	90.62	0.00	6,721.3	-2,066.85	2,181.9	-660.2	2,258.9	0.00	0.00	0.00
9,500.0	90.62	0.00	6,720.3	-2,065.77	2,281.9	-660.2	2,357.7	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21X-434
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4654.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4654.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-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	90.62	0.00	6,719.2	-2,064.68	2,381.9	-660.2	2,456.4	0.00	0.00	0.00
9,700.0	90.62	0.00	6,718.1	-2,063.60	2,481.8	-660.2	2,555.1	0.00	0.00	0.00
9,800.0	90.62	0.00	6,717.0	-2,062.52	2,581.8	-660.2	2,653.8	0.00	0.00	0.00
9,900.0	90.62	0.00	6,715.9	-2,061.44	2,681.8	-660.2	2,752.6	0.00	0.00	0.00
10,000.0	90.62	0.00	6,714.9	-2,060.36	2,781.8	-660.2	2,851.3	0.00	0.00	0.00
10,100.0	90.62	0.00	6,713.8	-2,059.27	2,881.8	-660.2	2,950.0	0.00	0.00	0.00
10,200.0	90.62	0.00	6,712.7	-2,058.19	2,981.8	-660.2	3,048.8	0.00	0.00	0.00
10,300.0	90.62	0.00	6,711.6	-2,057.11	3,081.8	-660.2	3,147.5	0.00	0.00	0.00
10,400.0	90.62	0.00	6,710.5	-2,056.03	3,181.8	-660.2	3,246.2	0.00	0.00	0.00
10,500.0	90.62	0.00	6,709.4	-2,054.95	3,281.8	-660.2	3,345.0	0.00	0.00	0.00
10,600.0	90.62	0.00	6,708.4	-2,053.86	3,381.8	-660.2	3,443.7	0.00	0.00	0.00
10,700.0	90.62	0.00	6,707.3	-2,052.78	3,481.8	-660.2	3,542.4	0.00	0.00	0.00
10,800.0	90.62	0.00	6,706.2	-2,051.70	3,581.8	-660.2	3,641.1	0.00	0.00	0.00
10,900.0	90.62	0.00	6,705.1	-2,050.62	3,681.8	-660.2	3,739.9	0.00	0.00	0.00
11,000.0	90.62	0.00	6,704.0	-2,049.53	3,781.8	-660.2	3,838.6	0.00	0.00	0.00
11,100.0	90.62	0.00	6,703.0	-2,048.45	3,881.8	-660.2	3,937.3	0.00	0.00	0.00
11,200.0	90.62	0.00	6,701.9	-2,047.37	3,981.8	-660.2	4,036.1	0.00	0.00	0.00
11,300.0	90.62	0.00	6,700.8	-2,046.29	4,081.8	-660.2	4,134.8	0.00	0.00	0.00
BHL - CHESNUT 21X-434 (P3)										
11,331.3	90.62	0.00	6,700.4	-2,045.95	4,113.1	-660.2	4,165.7	0.00	0.00	0.00

Plan Annotations					
MD (usft)	TVD (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,300.0	1,300.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1,959.5	1,953.7	-54.1	-52.7	EOB TO 13.19° INC	
5,442.3	5,344.6	-623.3	-607.4	END OF TANGENT	
6,101.8	5,998.3	-677.4	-660.2	EOD TO VERTICAL	
6,131.8	6,028.3	-677.4	-660.2	KOP (8°/100ft BUR)	
7,264.6	6,744.5	46.6	-660.2	7" ICP - CHESNUT 21X-434 (P3)	
11,331.3	6,700.4	4,113.1	-660.2	BHL - CHESNUT 21X-434 (P3)	