

PDC ENERGY

**WELD COUNTY, COLORADO
SE SE SEC. 21 T5N R64W 6th P.M.
CHESNUT 21X-214**

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-214
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #3

ANNOTATIONS

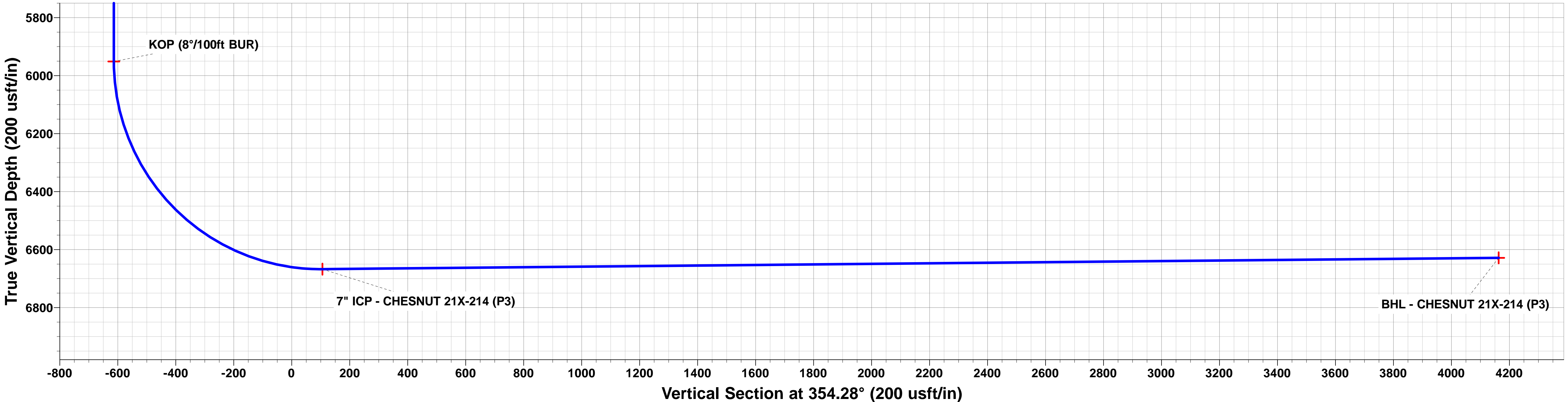
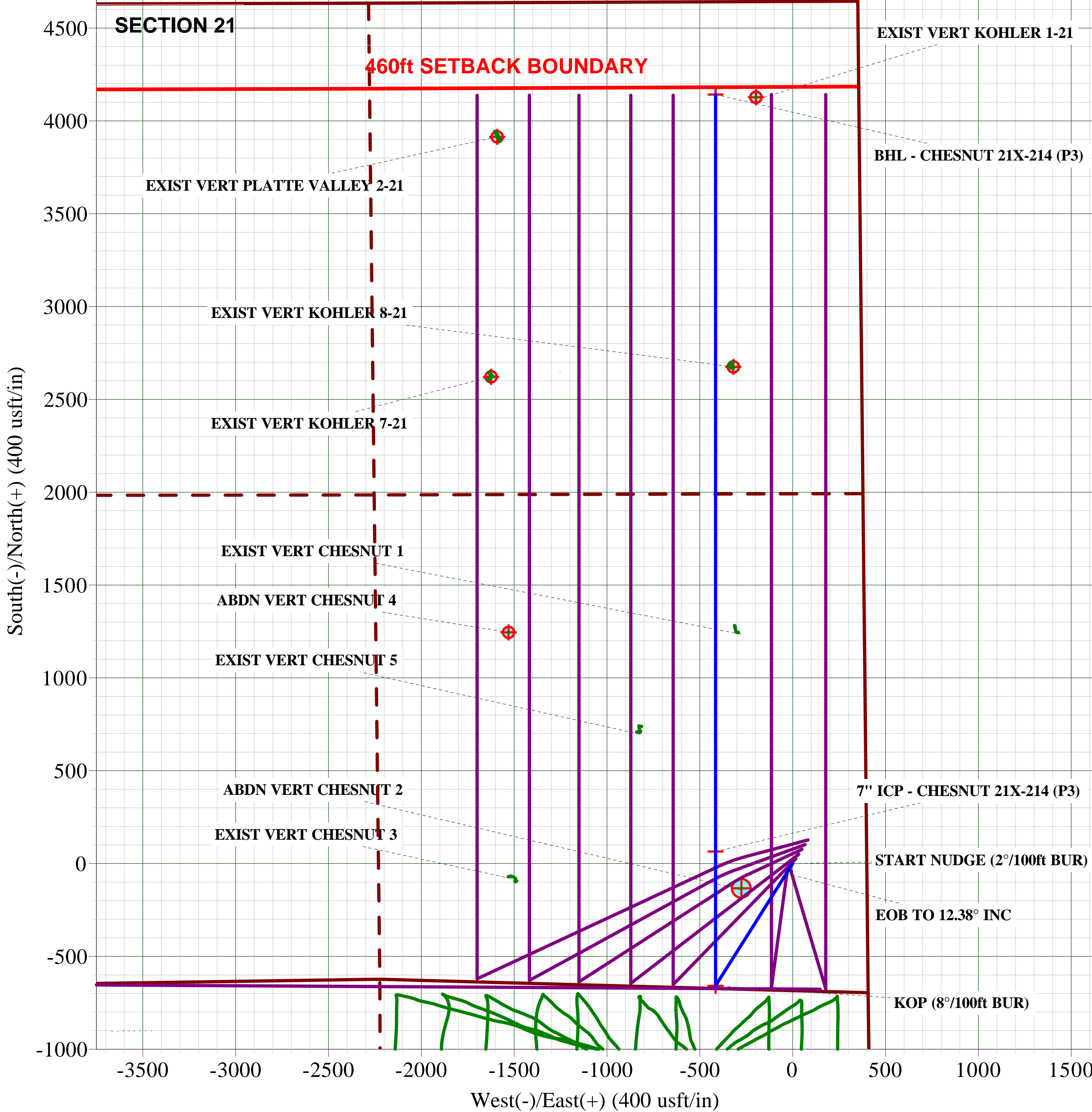
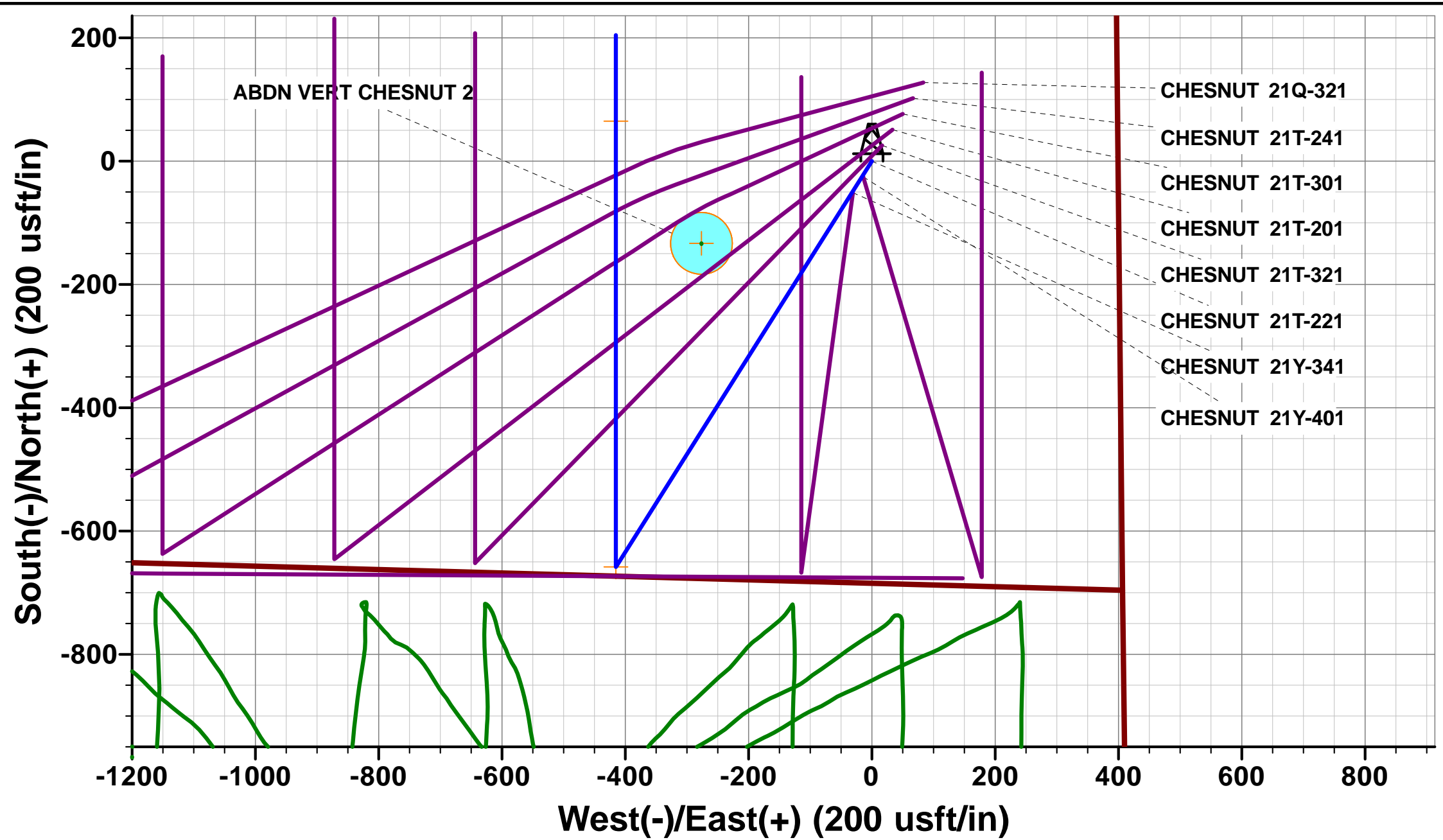
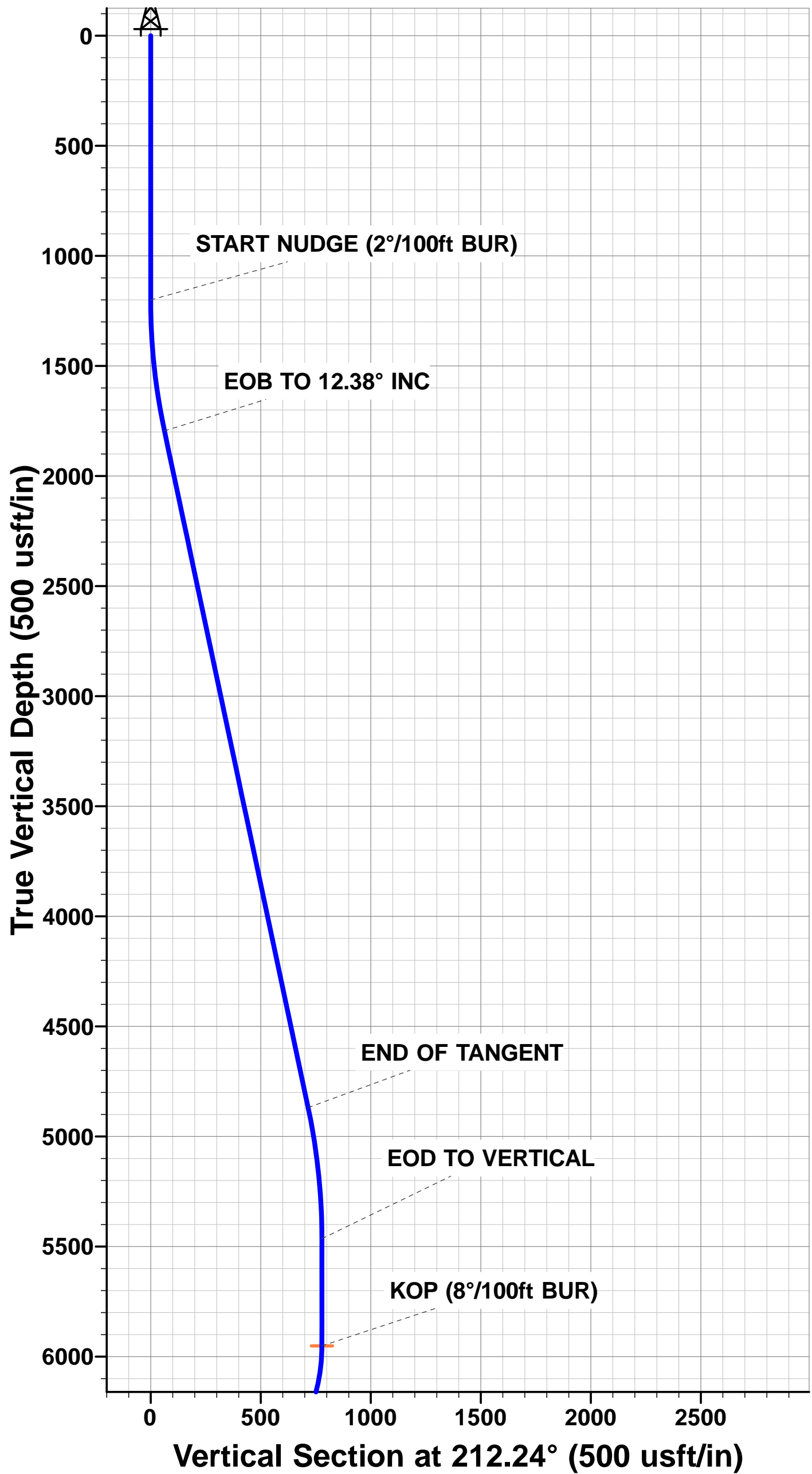
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
1200.0	1200.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1795.4	1799.8	12.00	212.24	-52.9	-33.4	-49.3	62.6	EOB TO 12.38° INC
4868.9	4941.9	12.00	212.24	-605.3	-381.7	-564.2	715.6	END OF TANGENT
5464.3	5541.7	0.00	0.00	-658.2	-415.1	-613.5	778.2	EOD TO VERTICAL
5951.3	6028.7	0.00	0.00	-658.2	-415.1	-613.5	778.2	KOP (8°/100ft BUR)
6667.5	7160.5	90.55	0.00	64.8	-415.1	105.9	1501.2	7" ICP - CHESNUT 21X-214 (P3)
6628.5	11238.1	90.55	0.00	4142.2	-415.1	4163.0	5578.6	BHL - CHESNUT 21X-214 (P3)

PROPOSED LOCAL COORDINATES:

SHL: 685ft FSL & 397t FEL Sec 21
7" ICP: 749.9ft FSL & 812.1ft FEL Sec 21
BHL: 500ft FNL & 770ft FEL Sec 21

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CHESNUT 21X-214 (P3)	5951.3	-658.2	-415.1	40.377553	-104.548220
BHL - CHESNUT 21X-214 (P3)	6628.5	4142.2	-415.1	40.390730	-104.548220
7" ICP - CHESNUT 21X-214 (P3)	6667.5	64.9	-415.1	40.379538	-104.548220



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21X-214
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4656.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4656.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-214	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-214		
Well Position	+N/-S	49.9 usft	Northing:
	+E/-W	32.2 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	354.28

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	-4,656.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	-3,456.5	0.0	0.0	0.00	0.00	0.00	0.00	
1,799.8	12.00	212.24	1,795.4	-2,861.1	-52.9	-33.4	2.00	2.00	0.00	212.24	
4,941.9	12.00	212.24	4,868.9	212.4	-605.3	-381.7	0.00	0.00	0.00	0.00	
5,541.7	0.00	0.00	5,464.3	807.8	-658.2	-415.1	2.00	-2.00	0.00	180.00	
6,028.7	0.00	0.00	5,951.3	1,294.8	-658.2	-415.1	0.00	0.00	0.00	0.00	KOP - CHESNUT 2
7,160.5	90.55	0.00	6,667.5	2,011.0	64.9	-415.1	8.00	8.00	0.00	0.00	
11,238.1	90.55	0.00	6,628.5	1,972.0	4,142.2	-415.1	0.00	0.00	0.00	165.42	BHL - CHESNUT 2

Planning Report



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Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4656.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4656.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-214	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	4,656.50	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,556.50	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,456.50	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,356.50	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,256.50	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,156.50	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,056.50	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	3,956.50	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	3,856.50	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	3,756.50	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	3,656.50	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	3,556.50	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
1,200.0	0.00	0.00	1,200.0	3,456.50	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	2.00	212.24	1,300.0	3,356.52	-1.5	-0.9	-1.4	2.00	2.00	0.00
1,400.0	4.00	212.24	1,399.8	3,256.66	-5.9	-3.7	-5.5	2.00	2.00	0.00
1,500.0	6.00	212.24	1,499.5	3,157.05	-13.3	-8.4	-12.4	2.00	2.00	0.00
1,600.0	8.00	212.24	1,598.7	3,057.80	-23.6	-14.9	-22.0	2.00	2.00	0.00
1,700.0	10.00	212.24	1,697.5	2,959.03	-36.8	-23.2	-34.3	2.00	2.00	0.00
EOB TO 12.38° INC										
1,799.8	12.00	212.24	1,795.4	2,861.07	-52.9	-33.4	-49.3	2.00	2.00	0.00
1,800.0	12.00	212.24	1,795.6	2,860.88	-53.0	-33.4	-49.4	0.00	0.00	0.00
1,900.0	12.00	212.24	1,893.4	2,763.06	-70.5	-44.5	-65.7	0.00	0.00	0.00
2,000.0	12.00	212.24	1,991.3	2,665.24	-88.1	-55.6	-82.1	0.00	0.00	0.00
2,100.0	12.00	212.24	2,089.1	2,567.43	-105.7	-66.7	-98.5	0.00	0.00	0.00
2,200.0	12.00	212.24	2,186.9	2,469.61	-123.3	-77.7	-114.9	0.00	0.00	0.00
2,300.0	12.00	212.24	2,284.7	2,371.80	-140.8	-88.8	-131.3	0.00	0.00	0.00
2,400.0	12.00	212.24	2,382.5	2,273.98	-158.4	-99.9	-147.7	0.00	0.00	0.00
2,500.0	12.00	212.24	2,480.3	2,176.16	-176.0	-111.0	-164.1	0.00	0.00	0.00
2,600.0	12.00	212.24	2,578.2	2,078.35	-193.6	-122.1	-180.5	0.00	0.00	0.00
2,700.0	12.00	212.24	2,676.0	1,980.53	-211.2	-133.2	-196.8	0.00	0.00	0.00
2,800.0	12.00	212.24	2,773.8	1,882.71	-228.7	-144.3	-213.2	0.00	0.00	0.00
2,900.0	12.00	212.24	2,871.6	1,784.90	-246.3	-155.3	-229.6	0.00	0.00	0.00
3,000.0	12.00	212.24	2,969.4	1,687.08	-263.9	-166.4	-246.0	0.00	0.00	0.00
3,100.0	12.00	212.24	3,067.2	1,589.26	-281.5	-177.5	-262.4	0.00	0.00	0.00
3,200.0	12.00	212.24	3,165.1	1,491.45	-299.1	-188.6	-278.8	0.00	0.00	0.00
3,300.0	12.00	212.24	3,262.9	1,393.63	-316.6	-199.7	-295.2	0.00	0.00	0.00
3,400.0	12.00	212.24	3,360.7	1,295.82	-334.2	-210.8	-311.5	0.00	0.00	0.00
3,500.0	12.00	212.24	3,458.5	1,198.00	-351.8	-221.9	-327.9	0.00	0.00	0.00
3,600.0	12.00	212.24	3,556.3	1,100.18	-369.4	-233.0	-344.3	0.00	0.00	0.00
3,700.0	12.00	212.24	3,654.1	1,002.37	-387.0	-244.0	-360.7	0.00	0.00	0.00
3,800.0	12.00	212.24	3,752.0	904.55	-404.5	-255.1	-377.1	0.00	0.00	0.00
3,900.0	12.00	212.24	3,849.8	806.73	-422.1	-266.2	-393.5	0.00	0.00	0.00
4,000.0	12.00	212.24	3,947.6	708.92	-439.7	-277.3	-409.9	0.00	0.00	0.00
4,100.0	12.00	212.24	4,045.4	611.10	-457.3	-288.4	-426.3	0.00	0.00	0.00
4,200.0	12.00	212.24	4,143.2	513.28	-474.9	-299.5	-442.6	0.00	0.00	0.00
4,300.0	12.00	212.24	4,241.0	415.47	-492.4	-310.6	-459.0	0.00	0.00	0.00
4,400.0	12.00	212.24	4,338.8	317.65	-510.0	-321.7	-475.4	0.00	0.00	0.00
4,500.0	12.00	212.24	4,436.7	219.84	-527.6	-332.7	-491.8	0.00	0.00	0.00
4,600.0	12.00	212.24	4,534.5	122.02	-545.2	-343.8	-508.2	0.00	0.00	0.00
4,700.0	12.00	212.24	4,632.3	24.20	-562.8	-354.9	-524.6	0.00	0.00	0.00
4,800.0	12.00	212.24	4,730.1	-73.61	-580.3	-366.0	-541.0	0.00	0.00	0.00
4,900.0	12.00	212.24	4,827.9	-171.43	-597.9	-377.1	-557.3	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21X-214
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4656.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4656.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-214	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)
END OF TANGENT										
4,941.9	12.00	212.24	4,868.9	-212.41	-605.3	-381.7	-564.2	0.00	0.00	0.00
5,000.0	10.83	212.24	4,925.9	-269.36	-615.0	-387.9	-573.3	2.00	-2.00	0.00
5,100.0	8.83	212.24	5,024.4	-367.89	-629.5	-397.0	-586.7	2.00	-2.00	0.00
5,200.0	6.83	212.24	5,123.5	-466.95	-641.0	-404.2	-597.5	2.00	-2.00	0.00
5,300.0	4.83	212.24	5,222.9	-566.43	-649.6	-409.7	-605.5	2.00	-2.00	0.00
5,400.0	2.83	212.24	5,322.7	-666.20	-655.2	-413.2	-610.8	2.00	-2.00	0.00
5,500.0	0.83	212.24	5,422.6	-766.14	-657.9	-414.9	-613.3	2.00	-2.00	0.00
EOD TO VERTICAL										
5,541.7	0.00	0.00	5,464.3	-807.84	-658.2	-415.1	-613.5	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,522.6	-866.14	-658.2	-415.1	-613.5	0.00	0.00	0.00
5,700.0	0.00	0.00	5,622.6	-966.14	-658.2	-415.1	-613.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,722.6	-1,066.14	-658.2	-415.1	-613.5	0.00	0.00	0.00
5,900.0	0.00	0.00	5,822.6	-1,166.14	-658.2	-415.1	-613.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,922.6	-1,266.14	-658.2	-415.1	-613.5	0.00	0.00	0.00
KOP (8°/100ft BUR)										
6,028.7	0.00	0.00	5,951.3	-1,294.84	-658.2	-415.1	-613.5	0.00	0.00	0.00
6,100.0	5.71	0.00	6,022.5	-1,366.03	-654.6	-415.1	-610.0	8.00	8.00	0.00
6,200.0	13.71	0.00	6,121.0	-1,464.51	-637.8	-415.1	-593.2	8.00	8.00	0.00
6,300.0	21.71	0.00	6,216.2	-1,559.70	-607.4	-415.1	-563.0	8.00	8.00	0.00
6,400.0	29.71	0.00	6,306.2	-1,649.73	-564.1	-415.1	-519.9	8.00	8.00	0.00
6,500.0	37.71	0.00	6,389.3	-1,732.85	-508.6	-415.1	-464.7	8.00	8.00	0.00
6,600.0	45.71	0.00	6,463.9	-1,807.44	-442.1	-415.1	-398.5	8.00	8.00	0.00
6,700.0	53.71	0.00	6,528.6	-1,872.06	-365.9	-415.1	-322.7	8.00	8.00	0.00
6,800.0	61.71	0.00	6,581.9	-1,925.44	-281.5	-415.1	-238.7	8.00	8.00	0.00
6,900.0	69.71	0.00	6,623.0	-1,966.55	-190.4	-415.1	-148.1	8.00	8.00	0.00
7,000.0	77.71	0.00	6,651.1	-1,994.58	-94.5	-415.1	-52.6	8.00	8.00	0.00
7,100.0	85.71	0.00	6,665.5	-2,008.99	4.4	-415.1	45.8	8.00	8.00	0.00
7" ICP - CHESNUT 21X-214 (P3)										
7,160.5	90.55	0.00	6,667.5	-2,010.96	64.8	-415.1	105.9	8.00	8.00	0.00
7,200.0	90.55	0.00	6,667.1	-2,010.59	104.3	-415.1	145.2	0.01	0.01	0.00
7,300.0	90.55	0.00	6,666.1	-2,009.63	204.3	-415.1	244.7	0.00	0.00	0.00
7,400.0	90.55	0.00	6,665.2	-2,008.67	304.3	-415.1	344.2	0.00	0.00	0.00
7,500.0	90.55	0.00	6,664.2	-2,007.71	404.3	-415.1	443.7	0.00	0.00	0.00
7,600.0	90.55	0.00	6,663.2	-2,006.75	504.3	-415.1	543.2	0.00	0.00	0.00
7,700.0	90.55	0.00	6,662.3	-2,005.79	604.3	-415.1	642.7	0.00	0.00	0.00
7,800.0	90.55	0.00	6,661.3	-2,004.83	704.3	-415.1	742.2	0.00	0.00	0.00
7,900.0	90.55	0.00	6,660.4	-2,003.87	804.3	-415.1	841.7	0.00	0.00	0.00
8,000.0	90.55	0.00	6,659.4	-2,002.91	904.3	-415.1	941.2	0.00	0.00	0.00
8,100.0	90.55	0.00	6,658.5	-2,001.96	1,004.3	-415.1	1,040.7	0.00	0.00	0.00
8,200.0	90.55	0.00	6,657.5	-2,001.00	1,104.3	-415.1	1,140.2	0.00	0.00	0.00
8,300.0	90.55	0.00	6,656.5	-2,000.04	1,204.3	-415.1	1,239.7	0.00	0.00	0.00
8,400.0	90.55	0.00	6,655.6	-1,999.08	1,304.3	-415.1	1,339.2	0.00	0.00	0.00
8,500.0	90.55	0.00	6,654.6	-1,998.13	1,404.3	-415.1	1,438.7	0.00	0.00	0.00
8,600.0	90.55	0.00	6,653.7	-1,997.17	1,504.3	-415.1	1,538.2	0.00	0.00	0.00
8,700.0	90.55	0.00	6,652.7	-1,996.21	1,604.3	-415.1	1,637.7	0.00	0.00	0.00
8,800.0	90.55	0.00	6,651.8	-1,995.26	1,704.3	-415.1	1,737.2	0.00	0.00	0.00
8,900.0	90.55	0.00	6,650.8	-1,994.30	1,804.3	-415.1	1,836.7	0.00	0.00	0.00
9,000.0	90.55	0.00	6,649.8	-1,993.34	1,904.3	-415.1	1,936.2	0.00	0.00	0.00
9,100.0	90.55	0.00	6,648.9	-1,992.39	2,004.3	-415.1	2,035.7	0.00	0.00	0.00
9,200.0	90.55	0.00	6,647.9	-1,991.43	2,104.3	-415.1	2,135.2	0.00	0.00	0.00
9,300.0	90.55	0.00	6,647.0	-1,990.48	2,204.2	-415.1	2,234.6	0.00	0.00	0.00
9,400.0	90.55	0.00	6,646.0	-1,989.52	2,304.2	-415.1	2,334.1	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CHESNUT 21X-214
Company:	PDC ENERGY	TVD Reference:	KB-EST @ 4656.5usft
Project:	WELD COUNTY, COLORADO	MD Reference:	KB-EST @ 4656.5usft
Site:	SE SE SEC. 21 T5N R64W 6th P.M.	North Reference:	True
Well:	CHESNUT 21X-214	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	90.55	0.00	6,645.1	-1,988.57	2,404.2	-415.1	2,433.6	0.00	0.00	0.00
9,600.0	90.55	0.00	6,644.1	-1,987.61	2,504.2	-415.1	2,533.1	0.00	0.00	0.00
9,700.0	90.55	0.00	6,643.2	-1,986.66	2,604.2	-415.1	2,632.6	0.00	0.00	0.00
9,800.0	90.55	0.00	6,642.2	-1,985.70	2,704.2	-415.1	2,732.1	0.00	0.00	0.00
9,900.0	90.55	0.00	6,641.2	-1,984.75	2,804.2	-415.1	2,831.6	0.00	0.00	0.00
10,000.0	90.55	0.00	6,640.3	-1,983.79	2,904.2	-415.1	2,931.1	0.00	0.00	0.00
10,100.0	90.55	0.00	6,639.3	-1,982.84	3,004.2	-415.1	3,030.6	0.00	0.00	0.00
10,200.0	90.55	0.00	6,638.4	-1,981.89	3,104.2	-415.1	3,130.1	0.00	0.00	0.00
10,300.0	90.55	0.00	6,637.4	-1,980.93	3,204.2	-415.1	3,229.6	0.00	0.00	0.00
10,400.0	90.55	0.00	6,636.5	-1,979.98	3,304.2	-415.1	3,329.1	0.00	0.00	0.00
10,500.0	90.55	0.00	6,635.5	-1,979.03	3,404.2	-415.1	3,428.6	0.00	0.00	0.00
10,600.0	90.55	0.00	6,634.6	-1,978.07	3,504.2	-415.1	3,528.1	0.00	0.00	0.00
10,700.0	90.55	0.00	6,633.6	-1,977.12	3,604.2	-415.1	3,627.6	0.00	0.00	0.00
10,800.0	90.55	0.00	6,632.7	-1,976.17	3,704.2	-415.1	3,727.1	0.00	0.00	0.00
10,900.0	90.55	0.00	6,631.7	-1,975.22	3,804.2	-415.1	3,826.6	0.00	0.00	0.00
11,000.0	90.55	0.00	6,630.8	-1,974.27	3,904.2	-415.1	3,926.1	0.00	0.00	0.00
11,100.0	90.55	0.00	6,629.8	-1,973.31	4,004.2	-415.1	4,025.6	0.00	0.00	0.00
11,200.0	90.55	0.00	6,628.9	-1,972.36	4,104.2	-415.1	4,125.1	0.00	0.00	0.00
BHL - CHESNUT 21X-214 (P3)										
11,238.1	90.55	0.00	6,628.5	-1,972.00	4,142.2	-415.1	4,163.0	0.00	0.00	0.00

Plan Annotations					
MD (usft)	TVD (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,200.0	1,200.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1,799.8	1,795.4	-52.9	-33.4	EOB TO 12.38° INC	
4,941.9	4,868.9	-605.3	-381.7	END OF TANGENT	
5,541.7	5,464.3	-658.2	-415.1	EOD TO VERTICAL	
6,028.7	5,951.3	-658.2	-415.1	KOP (8°/100ft BUR)	
7,160.5	6,667.5	64.8	-415.1	7" ICP - CHESNUT 21X-214 (P3)	
11,238.1	6,628.5	4,142.2	-415.1	BHL - CHESNUT 21X-214 (P3)	