

# Dry Fork Station journey to startup begins

By Erin Huntimer



**O**n the outside, the Dry Fork Station looks like it's ready to roll. But on the inside, much work remains before the new power plant can start generating electricity.

With operation a little more than a year away, the process of getting plant systems up and running, called commissioning, has begun. The first step was the backfeed of electricity through the switchyard to the high-voltage switchgear within the power plant. This milestone happened on Feb. 25. Up until that point, the temporary power supply for the construction site came from a substation owned by Basin Electric member Powder River Energy Corporation.

Doug Ramsey, Basin Electric construction manager at the Dry Fork Station, says the backfeed process included 35 of more than 640 steps on the checklist leading to commercial operation.

"Crews from Sargent and Lundy and Basin Electric proceeded with the backfeed process cautiously to make sure all protective relays along the way would trip if problems were encountered," Ramsey says. Detailed lock-out/tag-out

procedures were followed to ensure safety for all personnel on site.

Electricity was successfully fed through the reserve auxiliary transformer at 8:33 a.m. on Feb. 25. From there, the main breakers were closed on the 13.8-kilovolt switchgear, feeding electricity into the power plant. About 24 hours later, Ramsey says the reserve auxiliary transformer was de-energized, and samples of its oil were taken for testing before it was re-energized again about a week later.

Clyde Bush, Basin Electric vice president of coal-based resource development, says the high-voltage switchgear feeds the largest plant motors. Voltage is also reduced to more usable voltages throughout the plant to run the balance of lower horsepower plant equipment— all necessary to move into more complex steps in plant startup, like the production of demineralized water in April.

"After we have the power and the water available within the plant, we can then move to filling the boiler and the application of 150 percent of designed pressure – called a hydrostatic test – to prove the mechanical integrity of the boiler. This is an extremely high-pressure test

in excess of 4,000 pounds per square inch to validate the integrity," Bush says. This is scheduled for May.

Once they are confident in the physical integrity of the boiler, Bush says they can move on to the first fire of fuel in the boiler. In the case of the Dry Fork Station, the first fuel will be propane. This creates steam, which is necessary for the next step, called steam blows. Steam pressure is built in the boiler, and then released to the atmosphere through a rapid opening valve process. Bush says this helps clear debris from the boiler.

Once the boiler has been cleaned, both mechanically and chemically, it's time to introduce coal to the boiler for the first time. "We are then able to roll the turbine-generator for the first time," Bush says. The generator is then synced with the transmission system.

Once all plant systems have been brought into operation, they will be performance tested to ensure every piece of equipment meets the terms of the contracts.

Construction of the Dry Fork Station remains on schedule. As of early March, construction was about 76 percent complete. It's scheduled for commercial operation in May 2011.

# Other construction works in progress



## Culbertson Generation Station

Joe Fiedler, operation and maintenance supervisor, and Craig Muilenburg, construction coordinator, inspect the cooling water header pipe. As of mid February, GE personnel were completing installation and checkout of the LMS100 turbine and generator. The 95-megawatt peaking plant will be ready for commercial operation in September 2010.



## NextEra Energy Day County

NextEra Energy continues construction of its 99-megawatt wind project near Groton, SD. As of mid February, 13 of the 66 turbines had been erected. The project is scheduled to begin commercial operation in May 2010. Basin Electric will purchase the output of the project.



## Leland Olds Station emissions control

The scrubber project is 99 percent complete. Construction of the over-fire air system on Unit 2 is complete; it has been placed into operation. The Unit 2 scrubber tie-in will be completed during the fall 2010 maintenance outage. The Unit 1 scrubber will be tied in during the maintenance outage in 2011.



## Substations

Of the 13 substation addition and new construction projects scheduled for completion between 2008 and 2011, 10 have been put into service to date.

The dynamic var equipment at the Teckla, WY, substation was the tenth project to be placed into service on March 2. The next will be the Rhame, ND, substation (pictured here), scheduled to be energized in late March 2010.



## Antelope Valley Station lime slaking system

The 100-ton day bins for the lime have been installed. Siding installation continues. The slaking system adds lime to the power plant's scrubbers. It's scheduled for commercial operation in August 2010.