**The Challenges Never End: Coal Handling Crews Provide 7-day Coverage to Feed Plant Morrow**
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Electric generating plants are designed to convert the potential energy stored in one physical source into electric energy to meet consumer demand. Energy can be released from coal, natural gas, wood or some other fuel through the heat generated by combustion. Energy can also come from harnessing controlled nuclear reactions, collecting heat from the sun, or by mechanically capturing the flow of water.

For a power plant that generates large amounts of electricity around the clock, a continuous supply of fuel is a necessity. No fuel means no electric output. Maintaining an uninterrupted supply of fuel requires planning, effort and coordination on a scale that the average consumer would probably not expect.

South Mississippi Electric purchases approximately one million tons of coal each year through contracts with suppliers in central Appalacia. Norfolk Southern delivers coal to Plant Morrow using two 105-car trains (SME owns the railcars) that run on separate four-day schedules. When a train arrives at the plant, 12,000 tons of coal are unloaded into the trestle. A two-man crew must be available whenever a train arrives to unload.

Depending on the time of year and how the plant is being dispatched, the coal crews have the responsibility of ensuring that Units 1 and 2 have the fuel needed to operate as demand grows throughout the day. Coal and Utility Foreman Roy Richardson coordinates continuously with the railroad, keeping track of when the trains will arrive and making arrangements for unloading upon arrival. Ideally, when the coal is released from a train, it can be transferred via conveyors to the sixth floor of the plant where it is distributed to six different storage bunkers that feed the two units.

“There is always coal to move in order to make way for the next delivery,” said Richardson. “If the newly arrived coal cannot be routed from the trestle directly to the plant, we must move it to the stockpile.”

As of mid-June, about 380,000 tons of coal were stockpiled. That amount varies during the year based on demand, natural gas prices, and other economic factors. During full summer operating conditions, the plant can easily use a trainload of coal in about three days, allowing it to go straight from the trestle to the bunkers. Unpredictable train schedules, however, require adjustments in the process. Naturally, if the trestle area is full, a second train cannot be unloaded until the coal is moved.

“The crews try to move coal to and from the pile as strategically as possible,” said Richardson. “They must find a balance between having the unloading area ready to receive new loads and pushing coal off the pile when the need arises.” Heavy equipment operators use massive bulldozers to push the coal from one place to another. It takes two operators about 48 to 72 hours to move a full trainload from the trestle to the stockpile. On the other hand, it takes about three to four hours to push enough coal from the stockpile back to the conveyors that feed the bunkers. Under full load, the bunkers are filled an

average of six different times per day, so depending on the conditions and timing, crews might be manning the dozers many hours of the day.

“The amount of coal that is handled on a daily basis is remarkable,” said Trevor Cameron, coal and utility supervisor. “Our main responsibility is to keep the plant fueled, and that takes around-the-clock moving and handling of literally tons of coal. By the year’s end, one million tons of coal will have been handled in some way by the workers in the coal yard.

“The guys in the coal yard are responsible for so much,” Cameron added. “From moving the coal from place to place, to cleaning and maintaining the equipment, this is definitely not the most glamorous department, but they keep everything moving regardless of the challenges.”

Not only do the crews handle the fresh coal, they are also responsible for disposing of the byproducts from burning the coal (fly ash and bottom ash) as well as byproduct from the scrubber process. “The coal yard is a vital part of plant operations,” said Richardson. “We ensure that the initial product arrives in the plant properly, and we follow all of the regulations for disposing what is left after it is burned.”

Fly ash is collected from the boiler exhaust gases by electrostatic precipitators and transferred to silos on the plant site. It is marketed by Separation Technologies, Inc. (STI) as an ingredient in concrete products. Nearly all of the fly ash is sold, while some high carbon ash remains onsite and is deposited in the landfill. Bottom ash is also sold and used in manufacturing concrete blocks. The limestone solid that is recovered from the scrubbing process is also landfilled and must eventually be covered with clay, dirt, and grass.

Another important part of the coal handling department is the railcar maintenance group, which services all 230 railcars owned by SME. Railcars are rotated into and out of the trains at the plant so that the three mechanics can perform continual maintenance according to standards set by the American Association of Railcars. Norfolk Southern also performs mechanical inspections on the railcars at various locations along the rail route; if a car does not meet the standards, it must be pulled from the train and repaired at a high cost to the Association.

“Plant Morrow runs two 105-car trains, giving us a leeway of twenty railcars,” said Joey Ward, environmental and fuels manager. “When a train arrives at the plant, the crews are given four hours to unload the coal, inspect the cars, pull the ones that need repairs and replace them with maintenance cars. The railcar maintenance crew does an exceptional job of servicing the railcars and reducing the likelihood of our cars having to be pulled while in transit.”

**Transporting and Preparing Coal Is a Complicated Process**

Overall, Plant Morrow has well over a mile of conveyors—a total of 6,500 feet (13,000 feet of belt)—that carry coal and byproducts around the plant site. The distance from the trestle to the sixth-floor bunkers is 2,250 feet.

Coal yard crews control the series of belts from a touch-screen control monitor. Conveyor 1 runs the length of the trestle and works with a rotary plow to move the coal to Conveyor 2, which comes from underground and loads Conveyor 3A. Conveyor 3A serves as the main conveyor for feeding the plant, while 3B works as a backup conveyor.

If the coal is to be stockpiled rather than sent to the plant, it is routed to Conveyor 6, which dumps the coal at the base of the pile. From there, the heavy equipment operators push the coal up on the pile until the need arises to push it back and onto the main conveyor.

Coal transported to the plant remains on Conveyor 3A until it is distributed to either Conveyors 4 (A, B, or C) or Conveyors 5 (A, B, or C) that feed the three bunkers for Units 1 and 2, respectively.

From the bunkers located near the top of the plant, the coal drops to gravimetric feeders, which control the rate and weight of the coal flow. The coal is then dried, crushed, and sent to the ball tube mills on the ground floor, where it is pulverized into a fine powder.

Heated air is used to transport the pulverized coal upward from the ball tube mills through classifiers, which sort the particles. Larger particles are sent back to the ball tube mills for further crushing, while the powder-sized particles are blown through tubes to the fourth-floor burner deck and then into both sides of the boiler furnace.