Jeffrey Energy Center earns PRB Coal Users’ Group award
Jeffrey Energy Center garners user group's Plant of the Year award

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Each year the Powder River Basin (PRB) Coal Users' Group recognizes one powerplant as its PRB Plant of the Year. The stringent selection criteria are based on plant safety, plant performance, environmental achievements, and overall plant cleanliness. The selection is made following a rigorous inspection of the entire plant, employee interviews, and records inspection by the Users' Group's Board of Directors.

For 2003, the PRB Coal Users' Group selected Westar Energy's Jeffrey Energy Center (JEC) in St. Marys, Kansas. A key reason for the selection was JEC's outstanding safety record in the handling and burning of PRB coal. Ken Jobba, vice chairman of the PRB Coal Users' Group, explains, "I use Jeffrey as my benchmark when I visit other PRB coal-burning plants. They have to meet Jeffrey's standards to be considered for Plant of the Year."

**A '70s Hit**

Construction of Jeffrey Energy Center, the largest coal-fired plant in Kansas, began in 1974 on 10,500 acres of land northwest of St. Marys. The center's three 800-MW generating units were completed in 1978, 1980, and 1983, so by now the staff are well acquainted with the trials and tribulations of burning coal.

Industry recognition as a pacesetter plant was earned through company and employee dedication to finding and adopting the safest possible coal-handling practices. JEC has undertaken a number of projects and process changes to further improve the handling of PRB coal, including:

- Adding wash-down systems in its cascades, transfer buildings, and rotary car dumper.
- Replacing the original 10 vibratory feeders with belt feeders.
- Replacing the original belt skirt board systems.

- Adding enhancements to fire-detection and suppression systems and replacing many of the original dust collectors with best available technology.

JEC's efforts at improving plant safety are reflected in a three-year recordable accident rate of 3.0 incidents per 200,000 man-hours—an enviable record by any standard.

Safe handling of PRB coal extends beyond just adding new equipment. The operators strictly adhere to standardized operating processes that embed safety into every action. The JEC plant staff understand that safety begins with the individual worker and has instituted a number of process changes to continuously improve worker safety. These include:

- Consolidating fuel-handling, fuel-maintenance, fuel-operations, and plant-cleaning crews into one multi-skilled organization.
- Improving predictive maintenance programs for fuel-handling equipment.
- Continuing development of its workforce's skills and abilities.

“Improved working conditions make for more rewarding work,” asserts Dave Neufeld, JEC’s executive director. “Sweeping the coal dust around the conveyor system was a full-time job. Now we are able to do a better job in just a couple of hours.”

Wash-down systems have been installed in all of Jeffrey's enclosed conveyors and transfer buildings. These spray systems in the conveyor system and transfer building structures mean the entire building can be thoroughly washed down in minutes, doing a better job in remote areas than the traditional manual washing with hoses. Plant cleanliness, especially at the transfer points and dumper building, was remarkably improved.

Reducing coal dust collected at the transfer points is a major priority at JEC.

1. **Plant of the Year**

A key ingredient of Jeffrey Energy Center’s success is a preoccupation with safety, reflected by a three-year recordable accident rate of 3.0 incidents per 200,000 man-hours—an enviable record by any standard. Worker cross-training, standardized operating processes, and continuing employee development also contributed to the success. Courtesy: Jeffrey Energy Center

![Jeffrey Energy Center](image-url)
The process improvements began with replacement of the original 10 vibratory feeders with belt feeders to improve reliability and reduce maintenance in the fuel-handling system. Also, the original convey- or belt skirt board systems were doubled in height and properly sized to length based on induced-air requirements.

Open I-beams in the structural supports of the coal silo roofs were grouted at a 70- degree angle to eliminate areas where coal dust could build up. A silo fire-suppression/wash-down system also was installed below the silo roof beams. The system is activated manually from outside the cascade room and uses F-500, a firefighting agent that reduces the amount of water required to rapidly and effectively extinguish a fire. The fire-suppression and fire-detection systems also were enhanced at the turbines, lube oil systems, dust collectors, boiler burner corners, station transformers, and control rooms.

New “best available technology” dust-collec- tion systems were installed at the dumper building and at all fuel-yard transfer points. These larger, more appropriately sized dust collectors and better-designed ductwork replaced what was installed when the plant was built in 1978. Another key safety upgrade was relocating the original dust collectors from inside the transfer buildings to outside.

Consolidated forces

All fuel-handling operation and main- tenance has been consolidated into one department to maximize cross-training opportunities. Operators who traditionally only ran the stacker reclaimers or other heavy equipment now help in the mainte- nance of the equipment, operate the dumper and all of the belt systems, and do predictive maintenance. Traditional heavy- equipment operators and building-mainte- nance personnel now are cross-trained in the maintenance of the fuel-handling equipment and are certified to operate all fuel-handling systems. The end result has been elimination of the traditional craft boundaries, resulting in a win-win situa- tion for all.

Workers experience greater job satisfac- tion, and the plant has reduced the cost of fuel handling. Predictive maintenance of fuel-handling systems also has been signifi- cantly improved. The crews take routine vibration information on all the conveying system bearings and gearboxes and regular oil samples from all the gearboxes and heavy equipment and will soon be adding infrared scans to their job description. Spec- ific results tell the story: Pulley shaft fail- ures have been virtually eliminated, and gearbox availability has been improved.

In 2002, Jeffrey Energy Center’s 248 dedi- cated employees handled 10.7 million tons of coal, producing 15.3 million net MWh—a new plant record. The plant avail- ability factor for 2002 was 93% (also a new plant record), forced outage rate (FOR) was 0.9%, and capacity factor was 80%. JEC’s summer FOR was a mere 0.85%—com- pared with an industry average of 4.9%. JEC recorded O&M expenses of $2.04/net MWh in 2002.

“The key to our success has been the employees,” Neufeld proudly points out.