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Reactor turbine badly damaged by heat surge

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FORT WORTH - The owner of the Comanche Peak nuclear power plant is investigating a possible error by plant operators that may have prompted the near destruction of a multimillion-dollar steam turbine and will idle the \$9.45 billion facility through the end of May. Records obtained from the Nuclear Regulatory Commission yesterday show that an unexplained heat surge inside one of the three turbines generating electricity from the Unit 1 reactor melted portions of the turbine's rotor blades. The surge also damaged the turbine casing, disintegrated a shroud that guards the blades of the giant turbine and scattered shards of metal throughout the equipment.

Officials of plant owner TU Electric said the turbine could have operated for months in its badly damaged condition. Contractors checking the equipment April 23 found that the rotor's 4-foot blades had expanded, bent and fused into the middle layer of heavy metal casings in the turbine. Plant spokesman Jerry Lee said the utility is shortening the rotor blades within the 4-ton turbine system to remove the damaged sections and may restart the plant by the end of May. TU Electric plans to replace the rotor system when the plant goes through a scheduled shutdown for refueling next fall.

Lee said replacing the massive rotor will cost several million dollars. A spokesman for the state Public Utility Commission in Austin said yesterday that ratepayers may have to pick up the tab for the damage and some of the lost revenues from the closure. The commission would decide that question when the utility seeks its next rate increase.

During peak summer months, the utility could spend more than \$1 million more per day to substitute natural gas for the plant's nuclear power, Lee said.

Lee said the problem never threatened the safety of the plant's reactor but so far has gone unexplained. A prevailing theory among utility investigators and NRC inspectors is that plant operators may have fired up the plant reactor without properly warming the turbines to handle the 508-degree steam used to turn the giant rotor blades.

Vibration sensors installed inside each turbine never showed the turbine operating beyond the equipment's specifications, Lee said. Maintenance workers spotted the problem, he said, when they tried to turn the turbine manually and heard the rotor blades "screech" against the damaged metal casing.

"It's not a safety-related problem, because it doesn't involve the nuclear side of the plant," Lee said. "But it stops us from producing electricity."

The incident has prompted a review by local nuclear watchdog groups and criticism of ongoing repairs of the rotor at the plant site.

"What we're concerned about is that this is another of their quick fixes . . .," said Betty Brink, a spokeswoman for Citizens for Fair Utility Regulation. "They should either buy another one or send it back to the factory to be machined properly."

Plant opponent Linda Porter said the shutdown first ordered in March is the 17th since the facility received its operating license last year.

TU Electric officials shut down the plant in March - two weeks before a scheduled 42-day maintenance period - when they discovered that high levels of salty water from nearby Squaw Creek Reservoir had breached the generator's condensing system.

TU Electric officials yesterday ordered Siemens Power Corp., which supplied the turbines, not to discuss the problem with a reporter and said the incident could lead to legal problems for the company.

Siemens workers were blamed for an accident that caused the spill of nearly 3,000 gallons of heavy oil at midnight Monday, while the workers were attempting to clean the system. The oil is used to run the turbine's hydraulic system.

Lee said the oil was cleaned up by late Tuesday. He said the spill was contained in the plant's draining system and never reached the grounds or Squaw Creek Reservoir, which supplies the plant's cooling water.