

Sequoyah 2

2Q/2009 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Reactor trip due to inadequate plant operating procedures

On April 28, 2009, with Unit 1 operating at approximately 27 percent RTP during startup from a refueling outage, a moisture separator reheater (MSR) shell side relief valve lifted. Operators responded by reducing power to approximately 18 percent RTP in accordance with plant procedures. With the affected relief valve still open, operators tripped the turbine in accordance with plant procedures. Approximately 10 minutes after the turbine trip occurred, two of the three parallel “strings” of intermediate pressure feedwater heaters had automatically isolated due to high level on the shell side of the #2 heaters in each string, with the third string isolation imminent for the same reason. Operators responded in accordance with plant procedures by manually tripping the reactor due to imminent loss of condensate supply to the main feedwater pumps, and, thus, main feedwater supply to the steam generators.

The inspectors reviewed the UFSAR and noted that following a turbine trip from an initial power level below 50 percent, the reactor will not be tripped, but instead the reactor plant is designed to be maintained in a stable and controlled manner by plant systems.

This event was entered into the licensee’s corrective action program as PERs 169863 and 169976. The licensee evaluation determined that the heater string isolations occurred due to an elevation difference between the #2 heaters and the #3 heater drain tank (HDT), combined with the lack of residual extraction steam pressure (to overcome the elevation difference) following a turbine trip from low power. This configuration resulted in the inventory in the #3 HDT gravity draining back to fill the #2 heaters, which caused the heater string isolations to occur when heater shell side levels reached their respective high level setpoints. This susceptibility was identified by the licensee in 1998 following a similar event.

A nominal operating level in the #3 HDT must be established prior to placing the #3 HDT pump(s) in service, which is required for power operation above approximately 80 percent RTP, as noted in the UFSAR section 10.4.9.3: “With all drains from the No. 3 heater drain tank being bypassed to the condenser (and being passed through the hotwell, demineralized condensate, and condensate booster pumps) the Condensate-Feedwater System can deliver approximately 82 percent (Unit 2) and 81.6 percent (Unit 1) guaranteed flow to the steam generators.”

Licensee procedure 0-GO-5, “Normal Power Operation,” Revision 60, which was in effect at the time of the event, directed operators to establish level in the #3 HDT when increasing power from 30 percent power. Approximately two weeks later, the inspectors noted that licensee Procedure 0-GO-4, “Power Ascension From Less Than 5% Reactor Power to 30% Reactor Power,” Revision 59, which was also in effect at the time of the event, contained similar requirements regarding the operation of #3 HDT.

Three days after the event took place, as an interim corrective action, the licensee revised Procedure 0-GO-5 to require that the #3 HDT remain drained and bypassed to the condenser until power exceeds ~45-50 percent power. The licensee had identified this, as well, as the similar deficiency in Procedure 0-GO-4, and revised Procedure 0-GO-4 on May 14, 2009, to also require that the #3 HDT remain drained and bypassed to the condenser until power exceeds ~45-50 percent power.

Since plant systems are designed to prevent a reactor trip following a turbine trip from less than 50 percent power, the inspectors concluded that the operating procedures in effect at the time of the event were inadequate. This was reasonably within the licensee’s ability to foresee and correct, and should have been prevented, since the issue was identified following a similar event in 1998. However, corrective actions to eliminate this susceptibility by

controlling, via operating procedures, the power level at which the #3 HDT would be placed in service were not taken at that time.

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Jan 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Pressurizer Pressure Transient due to Inadequate Maintenance Procedure

Green. A Green self-revealing non-cited violation of Unit 2 Technical Specification 6.8.1 was identified for the licensee's failure to have an adequate procedure to ensure replacement of the pressurizer pressure master controller would not adversely impact plant stability. Specifically, on January 7, 2009, operators placed a pressurizer spray valve controller in automatic while the master controller was in manual with a large demand output signal present. This resulted in the spray valve fully opening and an associated reactor coolant system pressure transient. Operators immediately restored pressure to its normal value, and the finding was entered into the licensee's corrective action program as Problem Evaluation Report (PER) 160504.

The finding was greater than minor because it was associated with the procedure quality attribute of the initiating events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Using Manual Chapter 0609, "Significance Determination Process," Attachment 4, the finding was determined to have very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating systems will not be available. The cause of this finding was determined to be in the cross-cutting area of human performance associated with work practices and the aspect of human error prevention, in that, during the pre-job brief, the operators discussed minimizing the master controller demand signal but failed to self and peer check to ensure that the procedural steps were consistent with the appropriate actions [H.4(a)] (Section 1R19).

Inspection Report# : [2009002](#) (*pdf*)

Mitigating Systems

Significance: SL-IV Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Notify the Commission Within 30 Days After a Licensed Operator Was Diagnosed With a Permanent Physical Medical Condition

The NRC identified a non-cited violation (NCV) of 10 CFR 55.25 and § 50.74 for failure to notify the Commission within 30 days after a licensed operator developed a permanent change in his physical condition. The licensee entered this finding into their corrective action program as problem evaluation report 158614.

This finding was evaluated using the traditional enforcement process because the licensee's failure to report the changes in medical condition impacted the Commission's ability to perform its regulatory function associated with operator licensing. Using Supplement I, "Reactor Operations," of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV violation because the change in the operator's physical condition did not impact his ability to perform licensed duties.

The cause of the finding was the licensee failed to understand that all permanent conditions, disabilities, and incapacities must be reported to the NRC for evaluation, regardless of whether the operator had exceeded the specific minimum requirement or the related disqualifying condition threshold in ANSI/ANS-3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants."

Inspection Report# : [2008005](#) (*pdf*)

Barrier Integrity

Significance:  Dec 14, 2007

Identified By: NRC

Item Type: FIN Finding

Procedure 0-MA-REM-000-001.0, Extended Station Blackout, Did Not Close Hydrogen Igniter Breakers

Green. An NRC inspector identified a Green finding for the licensee's failure to implement a docketed commitment made to the NRC. Specifically, the licensee did not adequately revise procedures in accordance with a self-imposed standard to provide backup power to at least one train of hydrogen igniters in response to Generic Safety Issue – 189 “Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident.” The revised procedures failed to close the supply breaker to the hydrogen igniter. The licensee entered this issue into their corrective action program as Problem Evaluation Report 144301.

The finding is more than minor because it is associated with the Procedure Quality attribute of the Reactor Safety/Barrier Integrity Cornerstone. The inadequate procedure affects the cornerstone objective to provide reasonable assurance that physical design barriers, specifically maintaining the functionality of containment, protect the public from radio nuclide releases caused by accidents or events. For this finding, the accident sequences are associated with station blackouts. A Phase 3 Significance Determination Process evaluation was required to ascertain the safety significance. A regional senior reactor analyst performed a Phase 3 evaluation and determined that this performance deficiency was of very low safety significance (Green) (Section 40A5.5).

Inspection Report# : [2009002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : August 31, 2009