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ACCESSION NBR: 8807290296 DOC. DATE: 88/07/15 NOTARIZED: NO DOCKET #
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SUBJECT: Forwards info re test results indicating low flow through plant standby shutdown facility condensers.

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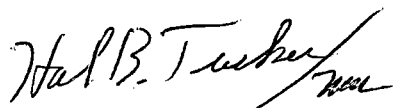
Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
SSF HVAC

Gentlemen:

The attached information is provided concerning test results indicating low flow through the Oconee Nuclear Station Standby Shutdown Facility (SSF) HVAC condensers. This incident was reported via the Emergency Notification System on June 15, 1988 pursuant to 10 CFR 50.72(b)(1)(ii)(B). Currently, procedural changes have been implemented which justify operability of the SSF with lakewater temperature less than or equal to 85 degrees F. In addition, Duke is analyzing the operation of Oconee, including the SSF, for lakewater temperatures greater than 85 degrees F should such conditions ever occur.

Further evaluation is necessary for a more thorough determination of the root cause of this event. Duke currently anticipates completion of the evaluation and submittal of Licensee Event Report 269/88-08 by December 1, 1988.

Very truly yours,



Hal B. Tucker

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LOW FLOW THROUGH SSF HVAC CONDENSERS

BACKGROUND:

The SSF is designed to mitigate the consequences of postulated fire or flooding incidents or acts of industrial sabotage to one or more of the three units at Oconee. The SSF contains, within seismically designed structures a reactor coolant volume control system for maintenance of primary system coolant during hot shutdown conditions; a steam generator volume control system for secondary system heat removal capabilities; independent emergency sources of AC and DC electrical power and associated electrical distribution systems; and various support systems. The SSF is designed to provide an alternate and independent means to achieve and maintain hot shutdown conditions for one or more of the three Oconee units. The SSF is in addition to and supplements the current shutdown capability described in the Oconee FSAR. It would be operated only in the event installed normal and emergency systems are inoperable. Manual operator action is required to actuate the systems.

The SSF HVAC system includes two SSF HVAC Service Water pumps which circulate Condenser Cooling Water (CCW) through two condensers.

SSF HVAC pumps are tested every three months as specified in the ONS Inservice Inspection Program Manual in accordance with Section XI of the ASME Boiler and Pressure Vessel Code Subsection IWP.

DESCRIPTION OF OCCURRENCE:

The Oconee FSAR (as updated through 1986) stated in various tables that a lake temperature of 75 degrees F was used for certain original equipment design and analysis. Subsequently, Design Engineering studies and historical data indicated that 75 degrees F was not a conservative value. On July 23, 1987 a 10 CFR 50.59 evaluation was completed regarding the impact on station systems and component operability on operation and design basis accidents of selected lake temperatures above 75 degrees F. Within the evaluation, the SSF was determined to be available for station blackout events. The only adverse impact of increased lake water temperature on the SSF involved the HVAC system. In order to compensate, it was necessary to operate both SSF HVAC service water pumps during SSF operations and to administratively trip the security computer as necessary. The SSF Emergency Operating Procedure was changed to include installation of a jumper to allow simultaneous operation of both service water pumps. Thus, safety related SSF equipment would be protected from high ambient temperature conditions.

On March 1, 1988 the SSF HVAC Service Water System was tested by Performance personnel. On March 3, 1988 during review of test results it was discovered that only 34.5 gpm total flow was indicated through both HVAC condensers with both pumps running and bypasses closed. These condensers are required to pass at least 41 gpm total at an elevated lakewater temperature of 85 degrees F and at lower suction pressures in order to maintain adequate SSF control room temperatures during an SSF event. Further testing and analysis indicated that the system during an SSF event would deliver 24 gpm total with one pump running and 25.9 gpm with both pumps running.

On March 4, 1988 evaluation of the low condenser flows by Oconee Compliance and General Office (GO) Licensing personnel determined that this incident would be reported as a supplement to LER 269/87-04 regarding degraded performance of Reactor Building Cooling Units (RBCUs) and Low Pressure Injection (LPI) coolers.

An operability evaluation of the SSF HVAC system was completed on April 13, 1988, amended on May 27, 1988 and clarified on June 8, 1988. Results of the evaluation indicated:

- o With existing operating procedures and under current low condenser flow conditions, the SSF HVAC system was operable to a maximum lakewater temperature of 67 degrees F;
- o The SSF HVAC system is operable up to a lake temperature of 85 degrees F with an operating procedure revision requiring diversion of SSF Diesel Service Water discharge to the yard instead of recirculating it back to SSF suction piping;
- o Shedding of the security computer load when the SSF control room reaches a temperature of 85 degrees F is required to maintain operability.

On June 15, 1988 after further review by Oconee Compliance and GO Licensing personnel it was determined that this incident should be reported pursuant to 10 CFR 50.72. This incident was reported via the ENS.

CAUSE OF OCCURRENCE:

Troubleshooting tests of the SSF ASW system have indicated differential pressures (DP) across portions of the system to be higher than expected. Thus far, Design Engineering personnel have determined:

- o Vendor specified DP across the condensers was inaccurate. Actual DP is higher;
- o SSF HVAC service water system flow instrumentation indicates lower flow than actual. A correlation between instrument readings and actual flows was developed for test purposes for a range of flows;
- o There is higher than expected DP between SSF HVAC pump discharge and the flow instrument. The cause is unknown. (This may be due to service induced fouling);
- o There is higher than expected DP in the condenser discharge lines. The cause is unknown. (This may be due to air coming out of solution under vacuum or service induced fouling).

There was no component failure involved, this incident is not NPRDS reportable. There were no releases of radioactive materials, radiation exposures, or personnel injuries as a result of this incident. This incident is reportable pursuant to 10 CFR 50.73 as a condition that was outside the design basis of the SSF.

CORRECTIVE ACTION:

The immediate corrective action was for Design Engineering to perform an operability evaluation.

Subsequent corrective action was to implement necessary procedure changes.

Further evaluation is necessary for a more thorough determination of the root cause of this event.

Duke currently anticipates completion of the evaluation and submittal of LER 269/88-08 by December 1, 1988.

ANALYSIS OF OCCURRENCE:

At the time of discovery of low flow in the SSF HVAC condensers, the SSF was capable of performing its intended safety function at the existing lakewater temperatures. In its current configuration, the SSF is capable of performing its intended safety function with a lake water temperature less than or equal to 85 degrees F. As such, the health and safety of the public were not affected by this incident.