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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 10, 1997

MEMORANDUM TO: Chairman Jackson
Commissioner Rogers
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan

FROM: Hugh L. Thompson, Jr.
Acting Executive Director for Operations

SUBJECT: STATUS OF RECENT DESIGN INSPECTIONS

Recently, the staff initiated the design inspection program utilizing architectural engineering contractors. The following provides the Commission with some early insights from these inspection efforts.

NRC recently contracted with Stone & Webster and Sargent & Lundy in order to provide two pressurized water reactor (PWR) teams and one boiling water reactor (BWR) team for performing design inspections. The purpose of the inspections is to determine if the plants meet their original design and licensing bases. The teams review relevant portions of the FSAR, design basis documents, drawings, calculations, modification packages, surveillance procedures, and other design documents. Each team has five architectural engineering (AE) design experts and an NRR team leader. The inspection cycle includes 4 weeks on-site, 3 weeks in-office preparation/review, and 2 weeks of inspector report preparation.

As of February 3, three design inspections (St. Lucie, WNP2, and TMI) have been completed and are in the report preparation stage. Three additional design inspections (ANO-1, Perry, and Farley) are in the inspection preparation stage. During all three inspections completed thus far, there were findings concerning design controls for calculations; including missing calculations, non-conservative or incorrect assumptions, inadequate testing, and incorrect inputs. In addition, there were a number of inconsistencies between FSARs and the actual plant. These findings demonstrated document control weaknesses but did not impact system operability.

There were a few findings that involved operational concerns and examples are provided below.

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TMI

The systems selected for the TMI inspection were the high pressure and low pressure injection systems. The team identified issues regarding the analysis for switchover of ECCS pumps suction from the borated water storage tank (BWST) to the reactor building sump under post accident conditions. As a result, the licensee evaluated the condition, issued a 10 CFR 50.72 notification on December 21, 1996, and revised operating procedures to address the immediate operability concern. Longer term corrective actions include revising the switchover analysis and system operating procedures as appropriate. The licensee estimates that these actions will require about 6 additional months of effort.

ST. LUCIE

The systems selected for the St. Lucie inspection were the emergency feedwater system for Unit 1 and the component cooling water system for Unit 2. Although errors were made in the original design of both systems, the overall conservatisms resulted in adequate design margin. The licensee, in general, adhered to its design and licensing bases. One finding, identified by the licensee during preparation for the inspection, involved a lack of operating procedures for transferring DC control power to the turbine driven emergency feedwater control valves. During the inspection, the licensee determined that the circuit breakers used to perform the transfer had never been tested; the circuit breakers were tested and failed to operate. The licensee took appropriate short term corrective actions and is developing more broad scope actions as a result of this finding. Also, the team noted recent reliability of the turbine driven auxiliary feedwater pump has been poor, with seven failures on demand in the last 14 months. The licensee is aware of this issue and has appropriately classified this system under the maintenance rule.

WNP-2

The systems selected for the WNP-2 inspection were the automatic depressurization (ADS), residual heat removal, and standby service water systems. Overall, the team determined that each system was capable of performing its intended safety function. However, the team identified several design discrepancies, the most significant affecting the ADS. The licensee, as part of a design modification, introduced a failure such that the valves would not operate as a group using the manual initiate button. The operators have been trained on an alternate method of manual initiation until the design error can be corrected.

The staff will review Design Inspection findings to identify potential generic issues and will issue appropriate generic communications to address those issues. Design Inspection activities including findings of potential generic interest are scheduled to be discussed at the Regulatory Information Conference on April 1, 1997. Three additional Design Inspections (ANO-1, Perry, and Farley) have started or will start in February.

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