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Mr. W. G. Council, Vice President
Nuclear Engineering and Operations
Connecticut Yankee Atomic Power Company
Post Office Box 270
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Dear Mr. Council:

SUBJECT: AUXILIARY FEEDWATER SYSTEM AUTOMATIC INITIATION AND FLOW INDICATION (TMI ACTION PLAN ITEM II.E.1.2) - HADDAM NECK

We have completed our review of the electrical instrumentation, and control aspects of the Haddam Neck Plant Auxiliary Feedwater System (AFWS). The enclosed Safety Evaluation Report is based on our review of the Technical Evaluation Report (enclosed) prepared by Franklin Research Center (FRC). The FRC review consisted of an evaluation of the Haddam Neck AFWS design against the long term safety grade requirements of NUREG-0578, Sections 2.1.7.a and 2.1.7.b and subsequent clarifications developed by the staff with regard to conformance to IEEE Standard 279-1971. These clarifications are listed in NUREG-0737 (Clarifications of TMI Action Plan Requirements), Section II.E.1.2.

Based on our review of the FRC TER, we have concluded that the Haddam Neck auxiliary feedwater automatic initiation and flow indication systems comply with the staff's long term safety grade requirements.

Sincerely,

Original signed by
Dennis M. Crutchfield, Chief
Operating Reactors Branch #5,
Division of Licensing

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Enclosures:

- 1. Safety Evaluation Report
- 2. Technical Evaluation Report

cc w/enclosures:
See next page

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October 5, 1982

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SAFETY EVALUATION
HADDAM NECK - AUXILIARY FEEDWATER
AUTOMATIC INITIATION AND FLOW INDICATION
TMI ACTION PLAN ITEM II.E.1.2

INTRODUCTION AND SUMMARY

To improve the reliability of Auxiliary Feedwater Systems (AFWS) at pressurized water reactor (PWR) facilities, the staff is requiring licensees to upgrade the system where necessary to ensure safety grade automatic initiation and flow indication. The criteria for this upgrading are contained in NUREG-0737 (Clarifications of TMI Action Plan Requirements), Section II.E.1.2.

The evaluation of the Haddam Neck AFWS design was performed for the NRC by Franklin Research Center (FRC) as part of a technical assistance contract program. The results of the FRC evaluation are reported in the attached Technical Evaluation Report (TER - C5257 - 294).

Based on our review of the FRC TER and subsequent conversations with the licensee, we conclude that AFWS automatic initiation and flow indication designs are acceptable.

EVALUATION

The attached TER provides a technical evaluation of the electrical, instrumentation, and control aspects of the Haddam Neck AFWS with

regard to automatic initiation and flow indication. As noted in the TER, the automatic initiation system can be bypassed to allow manual control of the AFWS under certain plant conditions, such as start-up. The requirements for indication of bypasses fall under IEEE Standard 279-1971 Section 4.13 which states that if the protection action of some part of the system has been bypassed or deliberately rendered inoperative for any purpose, this fact shall be continuously indicated in the control room. Since this bypass is used under certain limited conditions, indication of this bypass condition should be provided in the control room in order to remind the operator to restore the automatic initiation capability of the AFWS. The licensee has indicated, in letters dated August 30, 1982 and September 13, 1982 from W. G. Council to D. Crutchfield, that whenever the mode switch places the AFW system in a non-automatic status, annunciation and indication are automatically provided in the control room. This design is acceptable.

The current Technical Specifications for the steam-driven auxiliary feedwater system (as stated in Section 4.8 - Auxiliary Steam Generator Feedwater System) and the flow indication system (as stated in Table 4.2-1 - Minimum Frequencies for Testing, Calibrating and/or Checking Instrument Channels) are acceptable.

The environmental qualification of safety related systems including AFWS circuits and components is being reviewed by the Environmental Qualification Branch as part of their review of licensee responses to "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors," issued to the licensee in NRR letter dated March 5, 1980.

In order to adequately determine from the control room the performance of the AFWS, steam generator level instrumentation is used, in addition to flow indication. The requirements for this steam generator level instrumentation are specified in Regulatory Guide 1.97 Revision 2 (R.G. 1.97 - "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following An Accident"). The steam generator level instrumentation at Haddam Neck should be in conformance with these requirements and implemented in accordance with the schedule indicated in the referenced regulatory guide.

CONCLUSION

Based on our review of the Franklin Research Center TER, we conclude that the Haddam Neck AFWS automatic initiation and flow indication systems comply with the staff's long-term safety grade requirements.

Based upon information provided by the licensee, in letters dated August 30 and September 13, 1982, the staff concluded that the technical issues have been resolved in an acceptable manner.