

SEP 15 1982

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Docket Nos. 50-250
50-251

Dr. Robert E. Uhrig, Vice President
Advanced Systems and Technology
Florida Power and Light Company
Post Office Box 529100
Miami, Florida 33152

Dear Dr. Uhrig:

RE: TMI ACTION PLAN ITEM II.E.1.2, AUXILIARY (EMERGENCY FEEDWATER SYSTEMS
AUTOMATIC INITIATION AND FLOW INDICATION

NUREG-0737 Item II.E.1.2 requires that the Auxiliary Feedwater Systems (AFWS) in pressurized water reactor facilities be upgraded where necessary to ensure safety grade automatic initiation and flow indication. We have reviewed your submittals for Turkey Point, Units 3 and 4, in relation to the long term safety grade requirements for the automatic initiation and flow indication of the AFWS.

Based on our review, we have concluded that the automatic initiation and flow indication portions of the AFWS comply with the long term safety grade requirements and are acceptable.

The enclosed Safety Evaluation Report provides the details of our review.

Sincerely,

Original signed by:
S. A. Varga

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Enclosure:
Safety Evaluation Report

cc: See next page

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DATE	9/13/82	9/15/82					



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SAFETY EVALUATION

TURKEY POINT UNITS 3 & 4 AUXILIARY FEEDWATER

AUTOMATIC INITIATION AND FLOW INDICATION

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 Turkey Point 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 - 273/284).

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

EVALUATION

The attached TER provides a technical evaluation of the electrical, instrumentation, and control design aspects of the Turkey Point Units 3 & 4 AFWS with regard to automatic initiation and flow indication. The AFWS flow path to each steam generator contains two normally closed flow control valves (one train "A" valve and one train "B" valve) in parallel. Both valves are commanded to open on an automatic start signal. As flow increases above the setpoint (400 gpm per steam generator), AFWS flow controllers (one per valve) modulate the valve positions to

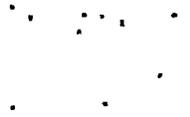


maintain desired flow. These valves fail closed on loss of air or electrical power.

As noted on page 8 of the TER, if all of the flow controllers are set for zero flow, no AFWS flow will be initiated to the steam generators on an automatic start signal. This is, in effect, a bypass of the AFWS automatic start signal. There is no annunciation of this condition provided in the control room. The 400 gpm setpoint is administratively established as part of Operating Procedure #202.1 (Reactor Startup-Cold Condition to Hot Shutdown Condition).

If all of the flow controllers were set at zero flow, the operator would be able to detect this via the AFWS flow indication (one flow channel per steam generator) and the flow controller output signals (although this is indirect indication of valve position). One of the first priorities of the operator is to verify that AFWS flow to the steam generators has been established. If the operator failed to diagnose this situation (i.e., all discharge valves closed), a low steam generator water level alarm would sound in the control room, after which the operator would still have sufficient time to determine the situation and take the necessary actions to establish flow. Based on the above, the staff finds this aspect of the Turkey Point AFWS design to be acceptable.

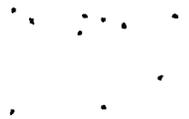
The Turkey Point AFWS design uses three turbine driven pumps which are shared between units. As noted in the TER there is no diversity of pump power supplies, however, since there are multiple sources of steam for these pumps which must



be available in accordance with the Turkey Point Technical Specifications, the Auxiliary Systems Branch (ASB) has found this arrangement to be acceptable.

Page 7 of the TER lists a channel bypass provided for periodic testing of the AFWS and for removal of a channel from service for maintenance purposes. It is stated in the TER that placing a channel in bypass changes the coincidence logic from two-out-of-three to two-out-of-two to accomplish an AFWS automatic start. This was based on a description of this bypass contained in Florida Power & Light (FPL) Company Letter L-81-36 dated February 3, 1981. In actuality, this is not a bypass since removing a channel from service places that channel in the tripped condition, thereby changing the coincidence logic from two-out-of-three to one-out-of-two. FPL should amend the February 3, 1981 letter to accurately describe how the AFWS actuation logic is affected when a channel is removed from service. In addition, the conclusion portions of the TER (pages 9 and 13) indicate that control room annunciation of these "bypasses" should be, but is not, provided. It is our understanding, following telephone conversations with the licensee (Florida Power and Light - FP&L), that annunciation (both alarm and light indication) is automatically provided whenever a channel is placed in the tripped condition. Based on the above, we find this design aspect to be acceptable.

We have reviewed the Turkey Point Units 3 & 4 Technical Specifications regarding surveillance requirements for the AFWS instrument channels (used for both automatic start and flow indication) and the automatic actuation logic. Based on conversations with FP&L during which they stated that Item 24 (Logic Channels) of Table 4.1-1 (Minimum Frequencies for Checks, Calibrations, and Test of Instrument Channels) includes testing of the AFWS automatic actuation logic, we find the



Turkey Point Technical Specification surveillance requirements concerning the AFWS to be acceptable.

The environmental qualification of safety related systems including AFWS circuits and components is being reviewed by the Equipment 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 Turkey Point should be in conformance with these requirements and implemented in accordance with the schedule for implementation of the referenced R.G.

CONCLUSION

Based on our review of the Franklin Research Center TER and subsequent conversations with the licensee, we conclude that the Turkey Point Units 3 & 4 AFWS automatic initiation and flow indication systems comply with the staff's long term safety grade requirements, and therefore, are acceptable.

Principal Contributor: R. Kendall

