

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20535

JUN 12 1981

Docket Nos.: 50-491/493

Mr. L. C. Dail, Vice President
Design Engineering
Duke Power Company
P. O. Box 33189
Charlotte, North Carolina 28242

Dear Mr. Dail:

SUBJECT: TMI-2 ACTION PLAN ITEM I.G.1 - SPECIAL LOW POWER TESTING

NUREG-0737 "Clarification of TMI Action Plan Requirements" and NUREG-0694 "TMI Related Requirements for New Operating Licenses", Item I.G.1, calls for the implementation of "a special low power testing program approved by NRC to be conducted at power levels no greater than 5 percent for the purposes of providing meaningful technical information beyond that obtained in the normal startup test program and to provide supplemental training". Some PWR applicants have committed to a series of natural circulation tests. To date such tests have been performed at the Sequoyah 1, North Anna 2, and Salem 2 facilities. Based on the success of the programs at these plants, the staff has concluded that augmented natural circulation training should be performed for all future PWR operating licenses. This is to be implemented by including descriptions of natural circulation tests in your FSAR (Chapter 14 - Initial Test Program). If they are not already included in your FSAR, the natural circulation tests and associated training should be included either by modifying existing or adding new test descriptions in accordance with Regulatory Guide 1.70, Paragraph 14.2.12. The tests should fulfill the following objectives:

Training

Each licensed reactor operator (RO or SRO who performs RO or SRO duties, respectively) should participate in the initiation, maintenance and recovery from natural circulation mode. Operators should be able to recognize when natural circulation has stabilized, and should be able to control saturation margin, RCS pressure, and heat removal rate without exceeding specified operating limits.

Testing

The tests should demonstrate the following plant characteristics: length of time required to stabilize natural circulation, core flow distribution, ability to establish and maintain natural circulation with and without

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onsite and offsite power, the ability to uniformly borate and cool down to hot shutdown conditions using natural circulation, and subcooling monitor performance.

If these tests have been performed at a comparable prototype plant, they need be repeated only to the extent necessary to accomplish the above training objectives.

Procedure Validation

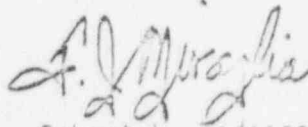
The tests should make maximum practical use of written plant procedures to validate the completeness and accuracy of the procedures.

The natural circulation tests require a source of actual or simulated decay heat. The tests may be performed during initial startup using nuclear heat to simulate decay heat, or may be performed later in the initial fuel cycle when actual decay heat is adequate to permit meaningful testing. If the test objectives are not compromised, pump heat during forced circulation operation could provide an acceptable source of simulated decay heat (e.g., the Loss-of-Onsite and Offsite A/C Test performed at North Anna 2).

Applicants who perform a natural circulation boron-mixing and cooldown test to demonstrate compliance with Branch Technical Position RSB BTP 5-1 may use that test to accomplish some or all of the above training and testing objectives.

This guidance is provided for all PWR OL applicants. Regulatory Guide 1.68 and/or the Standard Review Plan will be revised at a future date to include natural circulation testing and the associated training. OL applicants should submit test descriptions in accordance with Regulatory Guide 1.70, Paragraph 14.2.12, as part of their FSAR or an amendment thereto. Detailed test procedures should be made available for NRC review 60 days prior to scheduled test performance (see Regulatory Guide 1.68, Appendix B). When required by 10 CFR 50.59, a safety analysis must be prepared and distributed in accordance with the requirements stated therein.

Sincerely,



for Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

cc: See next page

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