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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 62 TO FACILITY OPERATING LICENSE NO. DPR-38

AMENDMENT NO. 62 TO FACILITY OPERATING LICENSE NO. DPR-47

AMENDMENT NO. 59 TO FACILITY OPERATING LICENSE NO. DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS NOS. 1, 2 AND 3

DOCKETS NOS. 50-269, 50-270 AND 50-287

Introduction

By letter dated June 22, 1978, Duke Power Company (licensee) requested a change to the Oconee Nuclear Station Technical Specifications. This change would extend by seven days the current surveillance interval for Rod 6 of Safety Group 4 of the Oconee Nuclear Station, Unit No. 2 (Oconee-2) control rod system.

Background

Oconee-2 is presently operating at full power with an electrical short in a portion of the stator coil of Rod 6 of Safety Group 4 of the control rod system. Rod 6, however, is being maintained in its proper fully withdrawn position during reactor operation by one phase of the multiphase rod power supply. Oconee-2 Technical Specification 4.1 requires that each of the control rods be tested biweekly for proper operation. This test involves movement of each control rod over a short portion of its travel. The licensee states that the next test for Rod 6 of Safety Group 4 is presently required to be performed by June 27, 1978. The licensee further states, however, that performance of the test will cause Rod 6 to drop into the core and that this, in turn, would require the reactor to be shutdown in order to repair the shorted stator.* The licensee states that shutdown of Oconee-2 at this time would have a significant and adverse effect on the generating capability of Duke Power's grid system.**

*With one safety rod fully inserted and unable to be withdrawn, the facility Technical Specifications would require reactor shutdown to meet limiting conditions on control rod insertion and quadrant tilt.

**Because of the high power demand which normally occurs Monday through Friday.

To reduce the impact of a unit shutdown on the Duke Power grid system, the licensee has requested that the current surveillance interval for Rod 6, Safety Group 4, of the Oconee-2 control rod system be extended by seven days. This would extend the date by which the test of this rod must be completed to July 4, 1978. The licensee would then have the opportunity to schedule this test and the attendant reactor outage during the holiday weekend of July 1 to 4 when power demands are normally lower and the impact on the grid would be reduced. Only Rod 6 of Safety Group 4 for Oconee-2 is affected by the licensee's request, and the licensee states that all other rods would be tested in accordance with the present schedule by June 27, 1978.

Evaluation

The purpose of periodic testing of control rods is to provide assurance of their ability to perform their assigned safety function. The assigned safety function of Safety Rods is to fall rapidly into the core upon receipt of a reactor trip signal. The periodic testing of rods by means of rod movement demonstrates this ability by verifying the freedom of movement of the rod and the operability of the control circuitry. In the present instance, the degraded condition of Rod 6 was determined not by the required periodic testing, but as the result of supplementary electrical circuit measurements performed by the licensee several days prior to the scheduled test. Based on these measurements, the licensee concluded that attempts to operate Rod 6 as required by normal "exercising" would almost certainly cause the rod to drop into the core. The licensee also concluded, however, that the circuit fault would not prevent the rod from dropping into the core if a valid reactor trip signal was received.

Oconee 2 Technical Specification 3.5.2.2.b states "If a control rod cannot be exercised, or if it cannot be located with absolute or relative position indications or in or out limit lights, the rod shall be declared to be inoperable." The specifications also require certain actions to be taken in the event of an inoperable rod. These include verification of the required shutdown margin, exercising of all other rods within 24 hours and weekly (instead of biweekly) thereafter until the condition is remedied, and reduction of power to 60% of license power (under certain conditions).

In the present instance, despite his conclusion that the rod probably could not be exercised in the normal fashion, the licensee did not recognize that Rod 6 of Safety Group 4 should, per the Technical Specifications, be declared inoperable. Accordingly, he did not perform the actions prescribed for this condition by the Technical Specifications. Instead, as noted above, he notified the NRC of the condition and requested that the exercising test be delayed by seven days to permit the probable reactor shutdown to occur during a period of reduced electrical demand.

With respect to the licensee's failure to declare Rod 6 to be inoperable and take the prescribed followup actions, we conclude that the licensee was and is in violation of the literal interpretation of inoperability as stated in Specification 3.5.2.2.b and, hence, also in violation of Specifications 3.5.2.2.f, h and i. On the other hand, with respect to whether failure to observe these Technical Specifications constitutes a significant hazard to the health and safety of the public, the following considerations apply:

1. While the information obtained by the licensee through electrical measurements indicated that movement of the rod could not be limited to short distances, as required by normal exercising, it did not indicate to the licensee any mechanical binding or that the rod could not perform its assigned safety function of falling freely into the core upon receipt of a reactor trip signal.

2. Based on our review of the control drive design and the associated reactor trip circuitry, we agree with the licensee's conclusion that the circuit fault discovered in Rod 6 would not prevent the rod from performing its assigned safety function.

3. While Specification 3.5.2.2.f requires that if a control rod is declared inoperable in the withdrawn position an evaluation shall be initiated immediately to verify the existence of 1% $\Delta k/k$ hot shutdown margin, the requirement is based on the assumption that the inoperable rod is immovable and therefore cannot contribute to the required shutdown. In the present instance, although the determination of shutdown margin was not made because the licensee (contrary to the staff's position) did not consider Rod 6 to be inoperable, this omission did not constitute a hazard to the health and safety of the public because the rod was movable and could perform its assigned safety function and thus did not reduce the available shutdown margin.

4. While Specification 3.5.2.2.i requires a reduction in power to 60% of that allowable for the existing operating conditions if a rod is declared inoperable, this requirement is based on the assumption that the inoperable rod is improperly aligned with respect to allowable limits and therefore could produce power peaks which would adversely affect the integrity of the fuel. A significant power reduction is thus an effective means, provided other limits are met, for compensating for the local power peaks. However, because Rod 6 was not misaligned in the present instance, but rather was fully withdrawn and properly aligned, it had no effect on the power distribution. Therefore, the failure of the licensee to reduce power in accordance with Specification 3.5.2.2.i did not affect the integrity of the reactor fuel and thus did not constitute a hazard to the health and safety of the public.

Inasmuch as the licensee erred in not declaring Rod 6 to be inoperable, we believe that his request for a seven day extension of the surveillance interval for Rod 6 is inappropriate. Instead we believe the appropriate action is for the licensee to continue to conform to the requirements of his Technical Specifications with a temporary waiver of those requirements which would not affect the safety of operation. Accordingly, we are modifying the Technical Specifications to provide that the power reduction to 60% called for by Specification 3.5.2.2.i is not required for the current inoperable status of Rod 6 of Safety Group 4 of Oconee 2 for the limited period through July 1, 1978 or until the licensee obtains information indicating that the rod may not be capable of performing its assigned safety function, whichever occurs first. We also note in conformance with the position given in Specification 4.0.3 of the

Standard Technical Specifications for Babcock and Wilcox-designed reactors that surveillance need not be performed on components that have been declared inoperable. The reduction in the term of the relief from seven days to four days (until July 1, 1978) is based on our understanding that the licensee's purpose of effecting an outage during a weekend can be equally well served by this reduced term. These changes to the licensee's original proposal have been discussed with and agreed to by the licensee.

It is noted that under these provisions the licensee could continue to operate beyond July 1, 1978 with Rod 6 inoperable if he chose to reduce power to 60%. This has been discussed with the licensee and he has agreed to shutdown Oconee 2 to repair Rod 6 by July 2, 1978. This commitment was confirmed by the licensee by letter dated June 28, 1978.

Therefore, based on the above considerations, we conclude for these specific circumstances that failure to declare Rod 6 of Safety Group 4 inoperable and failure to observe the related Technical Specification provisions did not constitute a significant hazard to the health and safety of the public.

With respect to whether this four day relief would significantly affect the ability to safely shutdown the reactor and thereby constitute a significant hazard to the health and safety of the public, the following considerations apply:

1. The amendment applies only to Rod 6 of the Safety Group 4.

2. The Technical Specifications governing inoperable rods require increased surveillance of other rods, thereby providing a high degree of assurance of operability.

3. The corresponding surveillance interval checking for stuck rods for similar plants currently being licensed is 31 days.

4. Review of Licensee Event Reports for the Oconee units reveals that the control rod drive units are highly reliable with respect to rod insertion. Further, in discussion with the licensee's representatives they have stated that they are not aware of any instance during either testing or operation at any Oconee unit where a control rod has failed to insert into the core upon receipt of a trip signal. They also state that on each of the several previous instances when a control rod suffered a similar fault (shorted stator coils), the rods were capable of being dropped into the core.

5. We require that control systems be designed such that the reactor can be safely shutdown even with the most reactive control rod stuck in the fully withdrawn position.

Based on the above considerations, we conclude that providing the indicated relief for four days would not significantly affect the assurance of the capability of Rod 6 of Safety Group 4 to perform its assigned safety function. We also conclude that even if Rod 6 of Group 4 should fail to insert upon demand, there is a high degree of assurance that the reactor could be safely shutdown. Accordingly, we further conclude that continued operation at 100% rated thermal power for four days on this one occasion would not endanger the health and safety of the public.

Environmental Consideration

We have determined that these amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact, and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: July 6, 1978

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKETS NOS. 50-269, 50-270 AND 50-287

DUKE POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendments Nos. 62, 62 and 59 to Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55, respectively, issued to Duke Power Company for operation of the Oconee Nuclear Station, Units Nos. 1, 2 and 3, located in Oconee County, South Carolina. The amendments are effective as of June 27, 1978.

These amendments revise the Station's common Technical Specifications to permit on a one time basis, conditional relief from the power reduction requirement of Specification 3.5.2.2.i with respect to the inoperability of Rod 6 of Group 4 of the Oconee Nuclear Station, Unit No. 2, control rod system from June 27, 1978 to July 1, 1978. These amendments are issued as the result of the discovery of electrical fault in the drive motor for Rod 6 of Group 4 of the Oconee Nuclear Station, Unit No. 2 control rod drive system.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

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The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated June 22, 1978, as supplemented June 28, 1978, (2) Emergency Authorization dated June 27, 1978, (3) Amendments Nos. 62 , 62, and 59 to Licenses Nos. DPR-38, DPR-47 and DPR-55, respectively, and (4) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. and at the Oconee County Library, 201 South Spring Street, Walhalla, South Carolina 29691. A copy of items (2) through (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 6th day of July 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid

Robert W. Reid, Chief
Operating Reactors Branch #4
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