



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 222 TO FACILITY OPERATING LICENSE DPR-38,

AMENDMENT NO. 222 TO FACILITY OPERATING LICENSE DPR-47,
AND AMENDMENT NO. 219 TO FACILITY OPERATING LICENSE DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

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

1.0 INTRODUCTION

By letter dated February 15, 1996, which was supplemented by letter dated February 18, 1997, the Duke Power Company (licensee), submitted a request for changes to the Oconee Nuclear Station (ONS), Units 1, 2, and 3, Technical Specifications (TS). The requested changes would add operability requirements to TS 3.7 for the Keowee Hydro units during periods of commercial power operation. These requirements are based on lake levels and the power level of the Keowee Hydro units. In addition, two surveillances would be added to TS 4.6. The first surveillance addresses periodic testing of the circuitry that was added by the modification approved in the staff's safety evaluation dated August 15, 1995. The second surveillance would add a load rejection surveillance to ensure that the response of the Keowee Hydro units is bounded by the design criteria used to develop the Keowee commercial power operating restrictions.

The supplemental information supplied by letter dated February 18, 1997, did not affect the proposed no significant hazards consideration determination or the scope of the initial February 15, 1996, application.

2.0 BACKGROUND

During design basis reviews performed by the licensee for the emergency power system, a potential problem of overspeed during commercial operation by the Keowee units was identified following a load rejection. This potential overspeed problem could prevent the emergency power system from performing its safety function. In order to prevent this problem from occurring, simultaneous generation to the grid by both Keowee Hydro units was prohibited. In addition, load restrictions were placed on the Keowee unit generating to the grid.

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Another part of the corrective action included development of a design modification to add overfrequency protection to the emergency power system. This modification prevents a Keowee unit from supplying emergency power following a load rejection until the Keowee unit reaches an acceptable speed. This modification also enhances the runaway governor protection by detecting a governor failure during an emergency start of Keowee.

The staff reviewed the electrical schematics and supporting information for the new circuitry design modification that prohibits overfrequency effects during overspeed conditions and detects governor failure. This review found that the new circuitry, intended as part of the corrective action for overfrequency and overspeed concerns, does indeed eliminate those concerns and is acceptable. Further, the staff discussed with the licensee the planned testing, periodic surveillance, and technical specification changes needed to support the overfrequency hardware modification and administrative control on commercial operation of the Keowee units. The licensee addressed these topics in an action plan attached to a letter dated April 19, 1995. The staff reviewed this action plan and supporting calculation for the Keowee commercial operating limits and found that the action plan implementation and installation of hardware modification will ensure that the Keowee units are capable of performing their intended safety function within the time required to meet the plant's accident analysis following a load rejection scenario. This review and evaluation is documented in an NRC safety evaluation attached to License Amendment Nos. 210, 210, and 207, issued August 15, 1995. As part of the action plan, the licensee committed to amend the Oconee TS to address operability restrictions for Keowee commercial generation and attendant surveillance requirements for the hardware modification.

3.0 STAFF EVALUATION

The proposed TS amendment would add the following as TS Section 3.7.1(k):

During periods of commercial power generation, the operability of the Keowee Hydro units shall be based on lake levels and the power level of the Keowee Hydro units. The Keowee Hydro operating restrictions for commercial power generation shall be contained in the ONS Selected Licensee Commitment manual.

The above limiting condition for operation would be added to ensure that the Keowee units are capable of performing their emergency power functions from an initial condition of commercial power generation. During periods of commercial power generation, the Keowee units are operated within the acceptable region of the Keowee operating restrictions. The Keowee operating restrictions and the associated control logic prohibit overfrequency effects of a load rejected Keowee unit from being applied to Oconee. These Keowee operating restrictions for commercial power generation are determined by curves contained in the Selected Licensee Commitment (SLC) manual. These curves provide acceptable operating regions for the Keowee lake levels and identify Keowee dual- and single-unit power levels that are applicable for these regions.

During our evaluation of the proposed amendments, the staff expressed concern about the adequacy of the evaluation process that would be used to make changes to the commercial operating restriction curves in the SLC manual. Specifically, the concern was expressed that the probability of occurrence of a malfunction of the Keowee units may be increased due to changes that result in less conservative restrictions and, as such, involve an unreviewed safety question. By letter dated February 18, 1997, the licensee provided a response to this concern and explained that changes to the Keowee commercial operating restrictions would be performed in accordance with 10 CFR 50.59, which would include an evaluation to determine if any unreviewed safety questions existed. Thus, should an unreviewed safety question result from this evaluation by the licensee, a license amendment for staff review would be required. This resolved the concern.

In addition to the above limiting condition for operation, the proposed TS amendment would add the following TS surveillances as TS Sections 4.6.13 and 4.6.14, respectively:

At least once every 18 months, the ability of the Keowee Hydro units to supply emergency power from an initial condition of commercial power generation shall be verified.

and

At least once every 18 months, the Keowee Hydro units load rejection response will be verified to be bounded by the design criteria used to develop the Keowee operating restrictions.

The proposed surveillance addition in TS 4.6.13 is designed to ensure that the Keowee Hydro units are operable during periods of commercial power generation. For this surveillance, the associated protection circuitry is tested at least once every 18 months. This surveillance ensures that the adverse effects of overspeed following a load rejection will be precluded and the appropriate emergency power paths will be aligned. In addition, the speed-sensing governor failure logic is verified during this surveillance. Failure to meet the acceptance criteria will be evaluated in the licensee's corrective action program to determine the impact on the operability of the emergency power paths. Further, the Keowee Watt/Var meter, frequency relays, and governor magnetic speed switch will be calibrated prior to the performance of this surveillance. These actions are consistent with the staff-reviewed action plan.

The proposed surveillance TS 4.6.14 would verify that the Keowee Hydro units response to a load rejection is bounded by the design criteria used to develop the Keowee operating restrictions. For this surveillance, a maximum-power, dual-unit load rejection test will be performed at least once every 18 months. A power level for the dual-unit load rejection will be established based on the operating conditions for the day of the test. In addition, a revision of the operating restrictions for simultaneous operation of both Keowee units will require that a maximum-power, dual-unit load rejection test be performed

before implementing the revision. A revision of the operating restrictions for a single Keowee unit will require only a maximum-power, single-unit load rejection, as defined by the conditions for the day of the test. However, if a load rejection test is performed to support a revision to the operating restrictions, then no additional load rejection test will be required until the next surveillance. The Keowee Watt/Var meter and frequency relays will be calibrated before the performance of this surveillance. These actions are also consistent with the staff-reviewed action plan.

Based on our review, the staff concludes that the proposed TS amendments are consistent with the staff-reviewed action plan, supporting calculation, and licensing basis, and resolve any outstanding concerns associated with overfrequency and overspeed following load rejection of the Keowee units. Therefore, the TS amendments are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the South Carolina State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (61 FR 13523 dated March 27, 1996). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: March 20, 1997