



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 156 TO FACILITY OPERATING LICENSE NO. DPR-38
AMENDMENT NO. 156 TO FACILITY OPERATING LICENSE NO. DPR-47
AMENDMENT NO. 153 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

1.0 Introduction

By letter dated August 15, 1984, Duke Power Company (the licensee) proposed changes to the Technical Specifications (TSs) of Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station, Units Nos. 1, 2 and 3. These amendments would consist of changes to the Station's common TSs. The current proposed amendments would authorize changes to the TSs to add limiting conditions for operation and surveillance requirements for the low temperature overpressure protection (LTOP) system. By letter and Safety Evaluation (SE) dated August 8, 1983, the NRC staff approved the LTOP system for Oconee but requested certain changes to the TSs. The August 15, 1984 application is in partial response to that request.

Other changes requested in the August 15, 1984, submittal concern the 1) minimum operator staffing requirements and 2) reactor building purge system. Item No. 1 was reviewed by a separate SE and approved by License Amendments Nos. 136, 136 and 133 issued on April 1, 1985. Item No. 2 was revised by proposed amendment request dated July 3, 1985, and we have resumed our review.

2.0 Discussion

The August 8, 1983, SE approved the LTOP but required a number of provisions for prevention of pressure transients to be incorporated into the plant operating procedures. The SE also requested that these provisions and the pilot-operated relief valve (PORV) setpoint be included in the TSs. These provisions include:

1. The Oconee Overpressure Protection System is to be manually enabled prior to the reactor coolant system temperature dropping below 325°F during plant cooldown.

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2. The plant is to be operated with a steam or nitrogen blanket in the pressurizer at all times except for system hydrostatic tests. At system pressures above 100 psig the pressurizer water level is maintained at or below the level corresponding to the high level alarm. At system pressures less than or equal to 100 psig the pressurizer water level is maintained below the level corresponding to the high high level alarm.
3. The makeup tank water level is to be maintained below the level corresponding to the high level alarm.
4. The core flood tank discharge valves are closed and the circuit breakers for the motor operators are "racked out" before the Reactor Coolant System (RCS) pressure is decreased to 600 psig.
5. During a plant cooldown, the Engineered Safeguard Actuation of the High Pressure Injection (HPI) System is bypassed at 1750 psig. Prior to going below 325°F, the circuit breakers for the four HPI motor operated valves are "locked out" with the valves in the closed position.
6. The operating makeup pump is to be secured when the last reactor coolant pump is secured.

The licensee proposed changes to the TSs for items 1, 2 and 5 above. Items 3, 4 and 6 were not addressed. In his submittal, the licensee stated that he considers these three as unnecessary in that failure to perform the action does not create an unsafe condition. The staff agrees with this statement. He considers these items to be administrative and an unnecessary burden to the TSs. The NRC staff has reviewed the licensee's letter and agrees that maximum tank water level, core flood tank discharge valves and operation of the last makeup pump may be administratively controlled by operating procedures.

Several instances of reactor vessel overpressurization have occurred in pressurized water reactors (PWRs) that have caused the TS limits implementing Appendix G to 10 CFR Part 50 to be exceeded. These limits are pressure-temperature curves. These incidents generally occur during cold shutdown while the primary system was in a water-solid condition. At relatively low temperatures, the reactor vessel material toughness, i.e., resistance to brittle fracture, is reduced from that which exists at normal operating temperature and where the primary system is completely filled with water, i.e., in a "water-solid" condition.

The NRC staff requested the licensee, along with other PWR licensees, to determine susceptibility to overpressurization events and perform an analysis of these possible events, and required the licensee to propose interim and permanent modifications to the systems and procedures to reduce the likelihood and consequences of such events.

Along with interim measures, the hardware changes involved the installation of a dual setpoint on the pressurizer PORV. This dual setpoint feature enables the setpoint of the PORV to be reduced to 500 psig upon reducing the RCS temperature to 325°F. For plants (like Oconee) where Babcock and Wilcox

(B&W) is the Nuclear Steam System Supplier, a primary factor concerning overpressure protection is that they always (except hydro tests) maintain a steam or gas volume in the pressurizer which retards the pressure increase and allows time for operators to take action to terminate the pressure increase before exceeding any limits. Operating with a vapor space precludes the plant from being in a water-solid condition, allows the operator time to respond to a pressure transient and is therefore considered a prime subsystem.

The active subsystem uses the pressurizer PORV which provides high pressure protection during normal plant operation. The PORV actuation circuitry has been modified to provide a second, lower setpoint (500 psig) that is used during low-temperature operations. The low setpoint is manually enabled at 325°F by positioning a key-operated switch in the control room.

3.0 Evaluation

The proposed changes to the TSs include the following:

1. Updating and submitting for approval the pressure limit curves as the ductility of the pressure vessel decreases with core life;
2. Enabling the LTOPS prior to cooling the RCS below 325°F;
3. Having a low temperature setpoint of 500 psig on the PORV;
4. Having a steam bubble or nitrogen blanket in the pressurizer with a pressurizer level less than or equal to 260 inches, and an RCS pressure less than 400 psig when the RCS is less than or equal to 325°F;
5. Deactivating both trains of the HPI System when the RCS is at or below 325°F;
6. Performing an operability test on the PORV prior to each startup from cold shutdown;
7. Performing a calibration of the actuation circuit each refueling outage; and
8. Performing an inspection of the PORV at least once every two refueling cycles.

We have reviewed the proposed changes to the TSs and find them acceptable.

4.0 Environmental Consideration

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have 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 these amendments involve no significant hazards

consideration and there has been no public comment on such finding. Accordingly, these 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 these amendments.

5.0 Conclusion

We have 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, and (2) 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: March 30, 1987

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