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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 41 TO LICENSE NO. DPR-38

AMENDMENT NO. 41 TO LICENSE NO. DPR-47

AND AMENDMENT NO. 38 TO LICENSE NO. DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3

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

Introduction

By letter dated November 1, 1976, Duke Power Company (the licensee) submitted an application for amendment to Facility License Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station. The application proposes to revise the Technical Specifications common to these licenses in several areas.

Discussion

The following changes to the Technical Specifications have been proposed by the licensee:

1. Technical Specification 3.2.2 would be revised to allow a 72 hour period of time to restore operability of a source of concentrated boric acid, and a one hour period of time to restore the borated water storage tank to operability.

2. Technical Specification 3.5.2.5.b would be revised to allow a two hour period for restoration of control rod group overlap.

3. Technical Specification 3.5.2.5.d(2) concerning xenon reactivity would be revised to provide a clearer understanding of the intent of the specification.

4. Technical Specification 3.5.1.4 would be revised to permit the use of the key-operated bypass switch during power operation.

5. Technical Specification 6.6.2.2.c and d would be revised to delete certain reporting requirements when a measured level of radioactivity in any environmental medium exceeds the control station value by a specified amount.

6. Technical Specifications 3.5.2.7, 6.4.1, 6.4.3, 6.5.2, Table 4.11-1, and Figure 6.1-1 would be revised to reflect administrative changes.

Evaluation

1. Operability of Boric Acid Sources

The existing Technical Specifications require redundant sources of concentrated soluble boric acid (CSBA) for each of the Oconee Units. These sources include borated water storage tanks (BWST) and either the boric acid mix tanks (BAMT) or the concentrated boric acid storage tank (CBAST). Any one of these tanks is sufficient to borate the reactor coolant system (RCS) to a 1% $\Delta k/k$ shutdown margin in a cold, end-of-life condition.

As the Technical Specifications are now written, a second source of CSBA shall be available and operable whenever the reactor is critical. This second source is in addition to the BWST which must also be available and operable.

The licensee initially proposed that Technical Specification 3.2.2 be revised to allow time to restore sources of CSBA to operable conditions. We have discussed modifications to the proposed Technical Specifications which are agreeable to the licensee and are acceptable to us.

The bases for our finding the proposal, as modified, satisfactory are as follows:

A. The proposed Technical Specications as modified require a hot shutdown within 12 hours if the second source of CSBA can't be restored in 72 hours, and in addition to the hot shutdown, require the reactor to be borated to an equivalent 1% $\Delta k/k$ shutdown margin at 200°F. The need for this extra shutdown margin is justified since the second source of CSBA normally used for boration during cooldowns is unavailable. If an uncontrolled cooldown were to occur, a criticality accident could result if the reactor were not sufficiently borated before the transient started.

B. The proposed Technical Specifications as modified also limit the period for which the plant may remain in a hot shutdown condition while attempting to restore the second source of CSBA to 7 days. Further, if the second source of CSBA can't be regained in this time period, the reactor must be brought to a cold shutdown condition within the next 30 hours.

Although the Oconee plants are capable of a faster shutdown rate, the licensee expressed a strong conviction that a 12 hour period to attain a hot shutdown condition would be preferable and safe. We concur that a 12 hour period is safe. However, in the event that the BWST is not operable, we require the reactor to be placed in a hot standby condition within 6 hours since the normal source of ECCS water has been lost.

In summary, we have agreed upon the following requirements:

A. If the second source of CSBA is not restored to operability within 72 hours, the reactor shall be in a hot shutdown condition within an additional 12 hours.

B. While in a hot shutdown condition, the reactor shall be borated to a shutdown margin equivalent to 1% $\Delta k/k$ at 200°F.

C. The second source of CSBA must be restored within 7 days, or the reactor shall be placed in a cold shutdown condition within an additional 30 hours.

D. If the second source of CSBA is available, but the BWST becomes unavailable or inoperable, it shall be restored within 1 hour, or the reactor shall be placed in a hot shutdown condition within an additional 6 hours, and a cold shutdown condition within an additional 30 hours.

Based on our review of the proposed changes as modified, we conclude that they are acceptable.

2. Control Rod Group Overlap

The reactor has 8 groups of control rods (4 safety groups 2 regulating groups, 1 xenon transient override group and 1 axial power shaping group). Some of these groups are designed to be sequentially withdrawn. The present Technical Specifications allow these groups

an overlap of 25% ± 5%, with no required action specified if this limit is exceeded. If the limit is exceeded, immediate action should be taken to establish a satisfactory overlap. Further, if the overlap problem cannot be corrected within 2 hours, then the reactor should be placed in a hot shutdown condition within the next several hours.

We have discussed this need to proceed to hot shutdown with the licensee and have agreed upon the following revised proposed change:

> If the group overlap of 25% ± 5% cannot be regained in 2 hours, the reactor should be placed in a hot shutdown condition within an additional 12 hours.

Based on our review of the proposed change, we conclude that it is acceptable.

3. Changes in Power Level vs. Xenon Transients

A reactor must be kept below a certain core thermal power called the power level cutoff (PLC), unless several requirements are satisfied. One of the requirements is that the amount of xenon reactivity in the core must have passed its final maximum (or minimum) quantity, and be approaching the amount associated with steady state operation at the PLC.

Since the present Technical Specifications do not clearly state this requirement, the licensee has proposed new wording. We find the licensee's proposed wording to be an acceptable clarification.

4. Key-Operated Shutdown Bypass Switch

The four reactor protective channels are each provided with two key-operated bypass switches, a channel bypass switch and a shutdown bypass switch.

The shutdown bypass switch enables the trips for power imbalance/flow, power/RC pumps, and reactor pressure-temperature to be bypassed after the reactor has been shutdown and depressurized to a pressure lower than the low reactor coolant pressure trip point (1800 psig). The purpose of this bypass function is to enable the performance of certain control rod drive tests. A high reactor pressure trip bistable is incorporated in the shutdown bypass circuitry. The set point of this high pressure bistable (1720 psig) is below the low reactor pressure trip point. Thus if pressure is increased with the shutdown bypass in operation, the channel will trip when the shutdown bypass high pressure bistable trips.

There are four shutdown bypass keys in the control room under administrative control. Each reactor protective channel key-operated shutdown bypass switch is provided with alarm and lights to indicate when the shutdown bypass switch is used. The use of the shutdown bypass switch alone during power operation will cause the channel to trip.

The channel bypass switch enables a protective channel to be bypassed without initiating a trip. The key switch is used to bypass a channel during on-line testing. During this test, the reactor protective system will operate in a two-out-of-three coincidence logic.

There is only one accessible channel bypass key in the control room under administrative control and thus only one channel can be locked in the untripped state at any one time. Actuation of this bypass switch is indicated by alarm and lights.

The proposed change, i.e., operation of the shutdown bypass switch in conjunction with the channel bypass switch, will allow the licensee to perform calibration of the reactor protective system during power operation.

Based on our review, we find that:

A. Complete calibration and testing of the reactor protective system, channel by channel, can be performed.

B. The use of a key-operated shutdown bypass switch for on-line testing or maintenance during power operation has no significance when used in conjunction with a key-operated channel bypass switch since the channel trip relay is locked in the untripped state.

C. The use of the key-operated shutdown bypass alone during power operation will cause the channel to trip.

D. Although there are four shutdown bypass keys and only one channel bypass key, if the channel bypass is unlocked prior to unlocking the shutdown bypass during power operation, the channel will trip. Therefore, no more than one channel can be bypassed at any time.

E. The status of all bypasses is indicated by alarms and lights.

F. The above detailed characteristics of the reactor protective system conform with General Design Criterion 21, IEEE Std. 279-1971, and Safety Guide 22 (Regulatory Guide 1.22) dated February 17, 1972.

Based on our review, we conclude that this change is acceptable.

5. Reporting Requirements When a Level of Radioactivity Exceeds a Control Station Value

The licensee initially proposed that reporting required be revised to call for a report when levels of radioactivity exceed 50 times a control value in any environmental medium.

The existing Technical Specifications require a one week report whenever a measured level exceeds ten times the control station value and a 30 day report whenever a measured level exceeds four times the control station value.

The licensee, has agreed to amend the proposed revision as follows:

A. Delete the 30-day reporting requirement when a measured level of radioactivity in any environmental medium other than those associated with radioiodine exceed 4 times the control station value.

B. Change the reporting requirement level from 10 times control to 50 times control for samples in the aquatic environment upstream of the bridge on Highway 183 over the Keowee River (within the prompt dilution area).

The proposed deletion of a reporting requirement associated with a measured level of radioactivity in an environmental sampling medium greater than 4 times the control value is in keeping with current NRC guidelines, Regulatory Guide 4.8. In many instances the variation in background levels could result in measurements that exceed 4 times the control value. Also, these levels are of negligible dose consequence; hence, reporting such levels does not provide any useful or meaningful data.

The proposed change of reporting requirement level from 10 times control to 50 times control for aquatic samples within the prompt dilution area of the Oconee discharge does not reduce the effectiveness of the monitoring program. These samples are taken coincident with radioactive effluent releases. Consequently the levels of radioactivity measured are representative of the effluent release level after a prompt dilution in the Keowee River and are expected to be greater than 10 times control station values. Increasing the reporting level from 10 to 50 times control values will still provide adequate assurance that anomalous levels of radioactivity in aquatic samples are reported while eliminating the reporting of levels that are expected during acceptable releases due to sampling method (coincident with effluent release) and location (prompt dilution area).

We find these changes to be acceptable.

6. Administrative Changes

Several miscellaneous changes have been made which are only administrative in nature. We find these changes to be acceptable.

Environmental Considerations

We have determined that the 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.

Date: June 16, 1977