Docket Nos.: 50-369
and 50-370

September 30, 1986

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Issuance of Amendment No.64 to Facility Operating License NPF-9 and Amendment No. 45to Facility Operating License NPF-17 - McGuire Nuclear Station, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No.64 to Facility Operating License NPF-9 and Amendment No.45 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications in response to your letters dated August 19, 1985, and supplemented April 17, 1986.

The amendments change the Technical Specifications (TS) to revise the limiting condition for operation action statements to increase the time allowance for restoration of boron concentration in an accumulator that is out of specification, to eliminate verification of boron concentration after a greater than 1% volume increase from the normal makeup source, and to reflect these changes in the TS Bases.

A copy of the related safety evaluation supporting Amendment No.64 to Facility Operating License NPF-9 and Amendment No.45 to Facility Operating License NPF-17 is enclosed.

Notice of issuance of amendments will be included in the Commission's next bi-weekly Federal Register notice.

Sincerely,

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Darl Hood, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Enclosures:
1. Amendment No. 64 to NPF-9
2. Amendment No. 45 to NPF-17
3. Safety Evaluation

cc w/enclosures: See next page

DISTRIBUTION:
See attached page

PWR#4/DPWR-A	PWR#4/DPWR-A	PWR#4/DPWR-A	PWR#4/DPWR-A
MDuncan/mac	DWigginton	DHood	BJYoungblood
09/17/86	09/17/86	09/17/86	09/29/86

Mr. H. B. Tucker
Duke Power Company

McGuire Nuclear Station

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DATED: September 30, 1986

AMENDMENT NO. 64 TO FACILITY OPERATING LICENSE NPF-9 - McGuire Nuclear Station, Unit 1
AMENDMENT NO. 45 TO FACILITY OPERATING LICENSE NPF-17 - McGuire Nuclear Station, Unit 2

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

DUKE POWER COMPANY

DOCKET NO. 50-369

McGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 64
License No. NPF-9

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the McGuire Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-9 filed by the Duke Power Company (the licensee) dated August 19, 1985, and supplemented April 17, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachments to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-9 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No.64, are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

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Darl Hood, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Attachment:
Technical Specification
Changes

Date of Issuance: September 30, 1986

Concurrence received on Transmittal Sheet subject to SER changes which have been made. DW

PWR#4/DPWR-A	PWR#4/DPWR-A	PWR#4/DPWR-A	OGC/BETH	PWR#4/DPWR-A
MDuncan:mac	DWigginton	DHood		BJYoungblood
09/17/86	09/17/86	09/17/86	09/ /86	09/29/86

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

DUKE POWER COMPANY

DOCKET NO. 50-370

McGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 45
License No. NPF-17

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the McGuire Nuclear Station, Unit 2 (the facility) Facility Operating License No. NPF-17 filed by the Duke Power Company (the licensee) dated August 19, 1985, and supplemented April 17, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachments to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-17 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 45 are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/S/

Darl Hood, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Attachment:
Technical Specification
Changes

Date of Issuance: September 30, 1986

Concurrence received on transmittal sheet subject to SER change which has been made. DW.

PWR#4/DPWR-A	PWR#4/DPWR-A	PWR#4/DPWR-A	OGC/BETH	PWR#4/DPWR-A
MDuncan:mac	DWigginton	DHood		BJYoungblood
09/17/86	09/17/86	09/17/86	09/ /86	09/29/86

ATTACHMENT TO LICENSE AMENDMENT NO. 64

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 45

FACILITY OPERATING LICENSE NO. NPF-17

DOCKET NO. 50-370

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Amended

3/4 5-1
3/4 5-2
3/4 5-2a
3/4 5-2b
B 3/4 5-1
B 3/4 5-2
B 3/4 5-3

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ACCUMULATORS

COLD LEG INJECTION

LIMITING CONDITION FOR OPERATION

3.5.1.1 Each cold leg injection accumulator shall be OPERABLE with:

a. The isolation valve open,

b. A contained borated water volume of between 6870 and 7342 gallons,

c. A boron concentration of between 1900 and 2100 ppm,

d. A nitrogen cover-pressure of between 585 and 639 psig, and

e. A water level and pressure channel OPERABLE.

APPLICABILITY: MODES 1, 2, and 3*. (UHI physically disconnected or isolation valves closed. Cold Leg Accumulators and discharge paths suitably modified.)

ACTION:

a. With one accumulator inoperable, except as a result of a closed isolation valve or boron concentration less than 1900 ppm, restore the inoperable accumulator to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

b. With one accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in at least HOT STANDBY within 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

c. With one accumulator inoperable due to boron concentration less than 1900 ppm and:

1) The volume weighted average boron concentration of the three limiting accumulators 1900 ppm or greater, restore the inoperable accumulator to OPERABLE status within 24 hours of the low boron determination or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

2) The volume weighted average boron concentration of the three limiting accumulators less than 1900 ppm but greater than 1500 ppm, restore the inoperable accumulator to OPERABLE status or return the volume weighted average boron concentration of the three limiting accumulators to greater than 1900 ppm and enter ACTION c.1 within 6 hours of the low boron determination or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

*Pressurizer pressure above 1000 psig.

LIMITING CONDITION FOR OPERATION (Continued)

3) The volume weighted average boron concentration of the three limiting accumulators 1500 ppm or less, return the volume weighted average boron concentration of the three limiting accumulator to greater than 1500 ppm and enter ACTION c.2 within 1 hour of the low boron determination or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.1.1.1 Each cold leg injection accumulator shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

1) Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and

2) Verifying that each cold leg injection accumulator isolation valve is open.

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 1% of tank volume not resulting from normal makeup by verifying the boron concentration of the accumulator solution; and

c. At least once per 31 days when the RCS pressure is above 2000 psig by verifying that power to the isolation valve operator is disconnected by removal of the breaker from the circuit.

4.5.1.1.2 Each cold leg injection accumulator water level and pressure channel shall be demonstrated OPERABLE:

a. At least once per 31 days by the performance of an ANALOG CHANNEL OPERATIONAL TEST, and

b. At least once per 18 months by the performance of a CHANNEL CALIBRATION.

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ACCUMULATORS

COLD LEG INJECTION

LIMITING CONDITION FOR OPERATION

3.5.1.2 Each cold leg injection accumulator shall be OPERABLE with:

a. The isolation valve open,

b. A contained borated water volume of between 8022 and 8256 gallons,

c. A boron concentration of between 1900 and 2100 ppm,

d. A nitrogen cover-pressure of between 430 and 484 psig, and

e. A water level and pressure channel OPERABLE.

APPLICABILITY: MODES 1, 2, and 3*. (UHI operability required).

ACTION:

a. With one accumulator inoperable, except as a result of a closed isolation valve or boron concentration less than 1900 ppm, restore the inoperable accumulator to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

b. With one accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in at least HOT STANDBY within 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

c. With one accumulator inoperable due to boron concentration less than 1900 ppm and:

   1) The volume weighted average boron concentration of the three limiting accumulators 1900 ppm or greater, restore the inoperable accumulator to OPERABLE status within 24 hours of the low boron determination or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

   2) The volume weighted average boron concentration of the three limiting accumulators less than 1900 ppm but greater than 1500 ppm, restore the inoperable accumulator to OPERABLE status or return the volume weighted average boron concentration of the three limiting accumulators to greater than 1900 ppm and enter ACTION c.1 within 6 hours of the low boron determination or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

*Pressurizer pressure above 1000 psig.

LIMITING CONDITION FOR OPERATION (Continued)

3) The volume weighted average boron concentration of the three limiting accumulators 1500 ppm or less, return the volume weighted average boron concentration of the three limiting accumulator to greater than 1500 ppm and enter ACTION c.2 within 1 hour of the low boron determination or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.1.2.1 Each cold leg injection accumulator shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

1) Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and

2) Verifying that each cold leg injection accumulator isolation valve is open.

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 1% of tank volume not resulting from normal makeup by verifying the boron concentration of the accumulator solution; and

c. At least once per 31 days when the RCS pressure is above 2000 psig by verifying that power to the isolation valve operator is disconnected by removal of the breaker from the circuit.

4.5.1.2.2 Each cold leg injection accumulator water level and pressure channel shall be demonstrated OPERABLE:

a. At least once per 31 days by the performance of an ANALOG CHANNEL OPERATIONAL TEST, and

b. At least once per 18 months by the performance of a CHANNEL CALIBRATION.

BASES

3/4.5.1 ACCUMULATORS

The OPERABILITY of each Reactor Coolant System (RCS) Cold Leg Accumulator ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration and pressure ensure that the assumptions used for accumulator injection in the safety analysis are met.

The allowed down time for the accumulators are variable based upon boron concentration to ensure that the reactor is shutdown following a LOCA and that any problems are corrected in a timely manner. Subcriticality is assured when boron concentration is above 1500 ppm, so additional down time is allowed when concentration is above 1500 ppm. A concentration of less than 1900 ppm in any single accumulator or as a volume weighted average may be indicative of a problem, such as valve leakage, but since reactor shutdown is assured, additional time is allowed to restore boron concentration in the accumulators.

The accumulator power operated isolation valves are considered to be "operating bypasses" in the context of IEEE Std. 279-1971, which requires that bypasses of a protective function be removed automatically whenever permissive conditions are not met. In addition, as these accumulator isolation valves fail to meet single failure criteria, removal of power to the valves is required.

The limits for operation with an accumulator inoperable for any reason except an isolation valve closed minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures. If a closed isolation valve cannot be immediately opened, the full capability of one accumulator is not available and prompt action is required to place the reactor in a mode where this capability is not required.

The original licensing bases of McGuire assumes both the UHI system and the Cold Leg Accumulators function to mitigate postulated accidents. Subsequent analyses, documented in "McGuire Nuclear Station, Safety Analysis for UHI Elimination" dated September 1985, and docketed by Duke letter dated October 2, 1985, support the determination that UHI is no longer required provided the Cold Leg Accumulator volume is adjusted to be consistent with that assumed in the Safety Analysis.

Accordingly, Specification 3/4.5.1.1 on pages 3/4 5-1, -2 is provided as the planned final condition of the cold leg injection system with water volume and nitrogen cover pressure as assumed in the Safety Analysis. It is applicable for the conditions of UHI being either physically removed or isolated. It has a prerequisite that the cold leg accumulators and discharge flow paths

ACCUMULATORS (Continued)

are consistent with assumptions used in the Safety Analysis. The actions required to align the plant configuration with the safety analyses assumptions are:

1. Replace flow restricting orifices in the Cold Leg Accumulators discharge piping to ensure actual accumulator discharge line resistances are within tolerance bands of ECCS analysis.

2. Reduce the nominal water level in the Cold Leg Accumulators and modify instrumentation, alarm functions, and procedures accordingly.

3. Increase the nominal gas cover pressure in the Cold Leg Accumulators and modify instrumentation, alarm functions, and procedures accordingly.

4. Ensure UHI isolation valves remain closed during operation.

Items 1, 2, 3 constitute modifications required by the phrase "Cold Leg Accumulator and discharge paths suitably modified" contained in the technical specifications. Item 4 is a requirement that will be implemented by administrative controls and is reflected in Technical Specification 3/4 5.1.4.

Specification 3/4.5.1.2 on page 3/4 5-2a, -2b is the Technical Specification requirements for the Cold Leg Injection with UHI system operable. As this is expected to be an interim condition, the pages have been renumbered with suffixes a, b. With respect to Technical Specifications for the UHI system, page 3/4 5-3 is provided as the planned final condition of the plant, that being with the UHI system deleted. New pages 3/4 5-4 is provided to cover the condition following modification of the cold leg accumulators and discharge paths. This new requirement is that the isolation valves be closed and remain closed. Surveillance once per shift (12 hours) is provided. New pages 3/4 5-3a duplicates the present Technical Specification for operability of the UHI system and is now Specification 3.5.1.3. As this is expected to be an interim condition the page has been renumbered to 3/4 5-3a. Page 3/4 5-3b provides the continuation of the surveillance requirements of Specification 4.5.1.2 when UHI system operability is required.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period.

ECCS SUBSYSTEMS (Continued)

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

The limitation for a maximum of one centrifugal charging pump and one Safety Injection pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and Safety Injection pumps except the required OPERABLE charging pump to be inoperable below 300°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance Requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5.4

[Deleted]

3/4.5.5 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank (RWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core, and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 8.5 and 10.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO.64 TO FACILITY OPERATING LICENSE NPF-9

AND AMENDMENT NO.45 TO FACILITY OPERATING LICENSE NPF-17

DUKE POWER COMPANY

DOCKET NOS. 50-369 AND 50-370

McGUIRE NUCLEAR STATION, UNITS 1 AND 2

INTRODUCTION

In the August 19, 1985 letter, Duke Power Company proposed a change to Technical Specification 3.5.1.1 to increase the time allowance for restoration of boron concentration in an accumulator that is out of specifications. Also proposed was a change to Technical Specification 4.5.1.1.1, which eliminates the need to verify boron concentration in the accumulator within six hours after a volume increase (greater than 1%) from normal makeup.

In the April 17, 1986 letter, Duke Power Company supplemented the proposed changes to the Technical Specification to establish a lower limit of 1500 ppm volume weighted average for the three limiting accumulators and action times and requirements in accordance with the suggested Technical Specification in an NRC letter to Duke Power Company dated December 5, 1985.

These changes proposed by the August 19, 1985 and April 17, 1986 letters are intended to reduce the number of unnecessary plant mode changes and provide the operator more time in which to diagnose and correct low boron concentration while maintaining plant conditions which satisfy safety analyses assumptions.

EVALUATION

Current Technical Specifications do not distinguish inoperable status of an accumulator due to reduced boron concentration from other inoperable conditions. The proposed technical specifications would draw this distinction.

In a large break LOCA analysis, the accumulator in the broken leg is assumed to dump out the break. The ECCS analysis is based on the average boron concentration of the three accumulators in the intact loops. Neutron Kinetics are not explicitly modelled in the large break LOCA ECCS analysis. Control rods are simply assumed to fail to insert. The reactor is then shutdown due to void formation during blowdown. Sufficient boron concentration is maintained in the accumulators and refueling water storage tank to ensure that the reactor does not return to criticality following refill and reflood. The magnitude of the required boron concentration is determined by separate analysis peripheral to the ECCS analyses. As long as the average value of boron concentration is preserved, variation in individual accumulators will not affect the LOCA analysis.

However, since the accumulators are part of the emergency core cooling system, reasonable time requirements for restoration of boron concentration in each accumulator are established.

The changes proposed by Duke Power Company specify time limitations on the permissible boron concentration in the accumulators. Presently, if boron concentration in any one accumulator is found to be below 1900 ppm, one hour is allowed for restoration of boron concentration to 1900 ppm. The proposed changes would vary this time allowance relative to boron concentration in the three limiting accumulators. Limiting is defined as the combination of the three accumulators which would deliver the minimum volume weighted average boron concentration. The accumulator which would have provided maximum boron delivery is assumed to be in the broken loop.

Specifically, if boron concentration in only one accumulator were found to be below 1900 ppm and if the volume weighted average boron concentration of the three limiting accumulators were greater than 1900 ppm, (the minimum boron concentration design limit), the licensee has proposed twenty-four hours to be allowed for restoration of the affected accumulator to a boron concentration of 1900 ppm. If this time limit were not met, the plant would be in HOT STANDBY in the next six hours, and pressurizer pressure reduced below 1000 psig in the following six hours. This time extension, from the current one to twenty-four hours, is acceptable because the volume weighted average of 1900 ppm boron in the limiting accumulators provides reactor shutdown capability without control rod availability and with the designated shutdown margin.

If boron concentration fell below 1900 ppm in a single accumulator and the volume weighted average boron concentration of the three limiting accumulators was less than 1900 ppm, six hours would be allowed for restoration of the volume weighted average to 1900 ppm. If this requirement were not met, the unit would be in HOT STANDBY in the next six hours and pressurizer pressure reduced below 1000 psig in the following six hours.

The impact of dilution of boron concentration below 1900 ppm raises questions on the ability of the three limiting accumulators to shutdown the reactor. The purpose of boron in the accumulator water is to maintain subcriticality of the reactor following a design basis LOCA. Although the design limit for boron concentration is 1900 ppm, as specified in McGuire Technical Specifications, the boron concentration necessary to maintain shutdown of the reactor at zero power, k eff = 1.0, all control rod assemblies out, including a 1% uncertainty is 1500 ppm at HOT and 1280 ppm, COLD. (Table 4.3.2-2 McGuire FSAR, 1984 Update). A 1900 ppm boron concentration gives a 4% subcriticality level. In order to dilute from 1900 ppm to 1500 ppm boron, the amount of water required would fill the entire volume of the limiting accumulators. Dual level and pressure controls on each accumulator will prevent extensive dilution of boron concentration in the accumulators. An extension from one to six hours as a time limit on raising volume weighted average boron concentration above 1900 ppm in the three limiting accumulators therefore seems reasonable.

However, if boron concentration drops below 1500 ppm in the limiting accumulators, the ability to shutdown the reactor at maximum criticality conditions without control rods is lost. Therefore, 1500 ppm is the lower limit on boron

concentration in the three limiting accumulators which would be permitted. If the volume weighted average boron concentration in the three limiting accumulators were to drop below 1500 ppm, one hour should be allowed for restoration of the volume weighted average 1500 ppm. If this requirement is not met, the unit should be in HOT STANDBY in the next six hours and pressurizer pressure reduced below 1000 psig in the following six hours. This additional constraint on boron concentration maintains the margin of safety necessary for reactor shutdown and is no more restrictive than the current Technical Specification. Accumulator check valve leakage, which appears to be the root cause of the desired Technical Specification modification, should not result in entering this action statement. This action statement would only be entered should inadvertent dilution from the accumulator fill subsystem occur.

In addition to the above arguments, the increase in probability of a LOCA when accumulator down time is increased from one to six and twenty-four hours is small. The loss of an accumulator due to decreased boron concentration over these time periods will have little effect on the safety of the plant.

The second change, concerning elimination of verification of boron concentration after a greater than 1% volume increase from normal makeup, is also reasonable. The normal makeup source, the refueling water storage tank, is specified to be maintained at 2000-2100 ppm boron and must be demonstrated as such once every seven days. No dilution can come from this source and thus, verification of this concentration level six hours after normal makeup is unnecessary.

Based on the foregoing review, the changes submitted by Duke Power Company to Technical Specifications 3.5.1.1 and 4.5.1.1.1 are acceptable.

ENVIRONMENTAL CONSIDERATION

These amendments involve changes to the installation or use of facilities' components located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The 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 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, 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 these amendments.

CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (51 FR 30569) on August 27, 1986, and consulted with the state of North Carolina. No public comments were received, and the state of North Carolina did not have any comments.

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.

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