

July 30, 1991

Docket Nos. 50-369  
and 50-370

Distribution  
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Mr. M.S. Tuckman  
Vice President -  
Nuclear Operations  
Duke Power Company  
P.O. Box 1007  
Charlotte, North Carolina 28201-1007

Dear Mr. Tuckman:

SUBJECT: ISSUANCE OF AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NPF-9 AND  
AMENDMENT NO. 105 TO FACILITY OPERATING LICENSE NPF-17 - MCGUIRE  
NUCLEAR STATION, UNITS 1 AND 2 (TAC 80532)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 123 to  
Facility Operating License NPF-9 and Amendment No.105 to Facility Operating  
License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amend-  
ments consist of changes to the Technical Specifications (TSs) in response to  
your application dated June 5, 1991.

The amendments revise TS 3/4.6.5.1 on a one-time basis to defer the mid-cycle  
ice weighing surveillance for McGuire Unit 2 until the next scheduled refueling  
outage, or outage of sufficient duration. The amendments only affect McGuire  
Unit 1 administratively because it shares a common TS document with Unit 2.

A copy of the related Safety Evaluation is also enclosed. Notice of issuance  
of the amendments will be included in the Commission's biweekly Federal Register  
notice.

Sincerely,

Timothy A. Reed, Project Manager  
Project Directorate II-3  
Division of Reactor Projects I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 123 to NPF-9
2. Amendment No. 105 to NPF-17
3. Safety Evaluation

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cc w/enclosures:

See next page

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Duke Power Company

McGuire Nuclear Station

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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. 123  
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 June 5, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and 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 attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-9 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 123, 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



David B. Matthews, Director  
Project Directorate II-3  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: July 30, 1991



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. 105  
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 June 5, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and 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 attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-17 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 105, 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



David B. Matthews, Director  
Project Directorate II-3  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: July 30, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 105

FACILITY OPERATING LICENSE NO. NPF-17

DOCKET NO. 50-370

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

Remove Page

3/4 6-34

Insert Page

3/4 6-34

## CONTAINMENT SYSTEMS

### 3/4.6.5 ICE CONDENSER

#### ICE BED

#### LIMITING CONDITION FOR OPERATION

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3.6.5.1 The ice bed shall be OPERABLE with:

- a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,
- b. Flow channels through the ice condenser,
- c. A maximum ice bed temperature of less than or equal to 27°F,
- d. A total ice weight of at least 2,099,790 pounds at a 95% level of confidence, and
- e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUT-DOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.5.1 The ice condenser shall be determined OPERABLE:

- a. At least once per 12 hours by using the Ice Bed Temperature Monitoring System to verify that the maximum ice bed temperature is less than or equal to 27°F,
- b. At least once per 9 months by:
  - 1) Chemical analyses which verify that at least nine representative samples of stored ice have a boron concentration of at least 1800 ppm as sodium tetraborate and a pH of 9.0 to 9.5 at 20°C;
  - \*2) Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1081 lbs of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of

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\*For Unit 2 only, this surveillance is not required to be performed until the next outage of sufficient duration, but no later than February 28, 1992.





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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NPF-9  
AND AMENDMENT NO. 105 TO FACILITY OPERATING LICENSE NPF-17  
DUKE POWER COMPANY  
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2  
DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

By letter dated June 5, 1991, Duke Power Company (the licensee) requested amendments to the Technical Specifications (TSs) appended to Facility Operating License Nos. NPF-9 and NPF-17 for the McGuire Nuclear Station, Units 1 and 2. The proposed amendments would revise TS 3/4.6.5.1 on a one-time basis to defer the mid-cycle ice weighing surveillance requirement (SR) for McGuire Unit 2 only until the next scheduled refueling outage presently scheduled for January 16, 1992. McGuire Unit 1 is affected by the amendments only administratively because it shares a common TS document with Unit 2.

2.1 BACKGROUND

The ice condenser functions primarily to absorb the thermal energy released following postulated design basis accidents to limit the peak containment pressure below the containment design pressure. To ensure that this function is accomplished successfully, the ice condenser must contain a sufficient inventory of ice to mitigate the worst case design basis events of either a loss-of-coolant accident (LOCA) or a main steam line break inside containment.

TS SR 4.6.5.1.b(2) requires that every nine months a sample of at least 144 ice baskets are weighed to verify 1081 lbs. of ice per basket at a 95% level of confidence. The 1081 lbs. of ice corresponds to a total ice condenser ice weight of 2,099,790 lbs. This total ice weight contains a 10% allowance for ice loss through sublimation and a 1.1% allowance for measurement uncertainties. The actual ice weight value assumed in the safety analysis is 1,890,000 lbs. of ice. By verifying 1081 lbs. of ice per basket, SR 4.6.5.1.b(2) ensures that sufficient ice will be available to mitigate any postulated design basis event within the next nine-month period between surveillance tests.

Duke Power Company has requested that SR 4.6.5.1.b(2) be deferred until the next scheduled refueling outage (currently scheduled for January 16, 1992), or the next outage of sufficient duration. The request stems from an operability concern involving the ice condenser ice basket U-bolts. In October 1990, broken U-bolts were discovered at both McGuire Units 1 and 2. The ensuing evaluation concluded that maintenance practices and on-line ice weighing techniques may

have contributed to the ice condenser U-bolt failures. In order to preclude a recurrence of U-bolt failures and call into question the ice condenser operability, Duke Power requested the subject one-time TS amendments to defer ice basket weighing rather than perform such weighing on-line.

The requested amendments defer, on a one-time basis, the ice basket weighing surveillance at McGuire Unit 2 since Duke Power plans to replace the U-bolt assemblies with a swivel mounting bracket capable of withstanding the loads incurred due to basket weighing and maintenance. The swivel mounting brackets are to be installed on both McGuire units beginning with the next scheduled refueling outages.

### 3.0 EVALUATION

To support the proposed one-time TS amendment to extend the Unit 2 ice basket weighing surveillance interval until the next refueling outage, the licensee examined the past operating experience at McGuire Unit 2 to determine the worst historical sublimation rates. The worst historical sublimation rates were then increased by a 150% multiplier. The NRC staff finds that the licensee's prediction of ice sublimation rates is conservative.

The licensee projected the end-of-cycle ice weights by using the as-left ice basket weights from the last ice weighings and the conservative sublimation rates. The licensee projected the ice weights to the current scheduled outage date (January 16, 1992), and to a delayed outage date (February 27, 1992). The NRC staff finds the licensee's projection of ice condenser ice basket weight to be conservative in that lower than expected amounts of ice are projected.

The licensee compared the projected ice weight against both the TS limit and against the safety margin ice weight. The safety margin ice weight is basically the equivalent of the 1,890,000 lbs. of total ice assumed in the FSAR analysis divided by 1944 ice baskets and increased by 1.1% for weighing measurement uncertainties. The TS limit is greater than the safety margin weight by a 10% allowance to account for sublimation losses during the operating cycle. At end-of-cycle, it is not necessary to account for additional ice sublimation and, therefore, a comparison against the safety margin weight ensures sufficient ice is available. The licensee's comparisons indicate that even with a conservative sublimation rate, the projected ice at end-of-cycle is greater than both the safety margin and TS minimum weights. The licensee's comparison of projected weight against the minimum TS and safety margin weights is valid assuming the next scheduled refueling outage begins on or before February 27, 1992. With this condition, the NRC staff finds the licensee's proposed TS amendments to be acceptable. Should the next scheduled refueling outage for Unit 2 be delayed beyond February 27, 1992, the licensee must re-visit the issue in order to demonstrate that sufficient ice continues to be available to mitigate the worst postulated containment pressure and temperature transients.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the North 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 a surveillance requirement. 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 (56 FR 29272). 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.

#### 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.

Principal Contributor: T. Reed, PDII-3/DRPE

Date: July 30, 1991

DATED: July 30, 1991

AMENDMENT NO.123 TO FACILITY OPERATING LICENSE NPF-9 - McGuire Nuclear Station, Unit 1  
AMENDMENT NO.105 TO FACILITY OPERATING LICENSE NPF-17 - McGuire Nuclear Station, Unit 2

DISTRIBUTION:

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