

Docket No. 50-369  
and 50-370

June 20, 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. 58 TO FACILITY OPERATING LICENSE NPF-9 AND  
AMENDMENT NO. 39 TO FACILITY OPERATING LICENSE NPF-17 - MCGUIRE  
NUCLEAR STATION, UNITS 1 AND 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 58 to Facility Operating License NPF-9 and Amendment No. 39 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amendments consist of a change to the Technical Specifications in response to your application dated May 20, 1986.

The amendments change Figure 5.1-4 of the Technical Specifications to permit a one-time discharge to the Catawba River of wastewater from the Conventional Wastewater Basin containing very low concentrations of tritium. The amendments are effective as of the dates of issuance.

A copy of the related safety evaluation supporting Amendment No. 58 to Facility Operating License NPF-9 and Amendment No. 39 to Facility Operating License NPF-17 is enclosed.

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

Sincerely,  
151

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

Enclosures:

1. Amendment No. 58 to NPF-9
2. Amendment No. 39 to NPF-17
3. Safety Evaluation

DISTRIBUTION:

<u>Docket File</u>	DHood
NRC PDR	MDuncan
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PD#4 R/F	OELD
BJYoungblood	EJordan
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LHarmon	TBarnhart (8)
OPA	LFMB
NThompson	

cc w/enclosures: See next page

DSH  
PWR#4/DPWR-A  
DHood/lr  
06/11/86

DSH  
PWR#4/DPWR-A  
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PWC  
PWR#4/DPWR-A  
BJYoungblood  
06/12/86

8606260170 860620  
PDR ADOCK 05000369  
P PDR

*Handwritten notes and signatures:*  
6/20/86  
resolved DSH 6/20/86  
6/18

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

FOR THE NUCLEAR REGULATORY COMMISSION

151

B. J. Youngblood, Director  
PWR Project Directorate #4  
Division of PWR Licensing-A

Attachment:  
Technical Specification  
Changes

Date of Issuance: June 20, 1986

DSIT  
PWR#4/DPWR-A  
DHood/lr  
06/11/86

DSIT/m  
PWR#4/DPWR-A  
MDuncan  
06/11/86

OELD  
06/16/86

resubmit  
DSIT  
6/20/86  
PWR  
PWR#4/DPWR-A  
BJYoungblood  
06/12/86

*Handwritten notes:*  
OK  
Yes  
4/21/86  
M Duncan  
2/28/86

*Handwritten signature:* BJ Youngblood

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

FOR THE NUCLEAR REGULATORY COMMISSION

151

B. J. Youngblood, Director  
PWR Project Directorate #4  
Division of PWR Licensing-A

Attachment:  
Technical Specification  
Changes

Date of Issuance: June 20, 1986

DSH  
PWR#4/DPWR-A  
DHood/lr  
06/11/86

DSH for  
PWR#4/DPWR-A  
MDuncan  
06/11/86

~~OEL  
JOHNSON  
06/16/86~~  
GJ  
6/20/86  
w/changes  
met  
revised  
DSH  
6/20/86

PWT  
PWR#4/DPWR-A  
for BYoungblood  
06/12/86



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

June 20, 1986

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and 50-370

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

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A copy of the related safety evaluation supporting Amendment No. 58 to Facility Operating License NPF-9 and Amendment No. 39 to Facility Operating License NPF-17 is enclosed.

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

Sincerely,

A handwritten signature in black ink that reads "Darl Hood". The signature is stylized with a large, sweeping "D" and "H".

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

Enclosures:

1. Amendment No. 58 to NPF-9
2. Amendment No. 39 to NPF-17
3. Safety Evaluation

cc w/enclosures: See next page

Mr. H. B. Tucker  
Duke Power Company

McGuire Nuclear Station

cc:

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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. 58  
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 May 20, 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 change 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. 58, 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

*Paul W. Connor*  
for B. J. Youngblood, Director  
PWR Project Directorate #4  
Division of PWR Licensing-A

Attachment:  
Technical Specification  
Changes

Date of Issuance: June 20, 1986

ATTACHMENT TO LICENSE AMENDMENT NO. 58

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 39

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 page is identified by Amendment number and contains vertical lines indicating the areas of change. The corresponding over-leaf page is also provided to maintain document completeness.

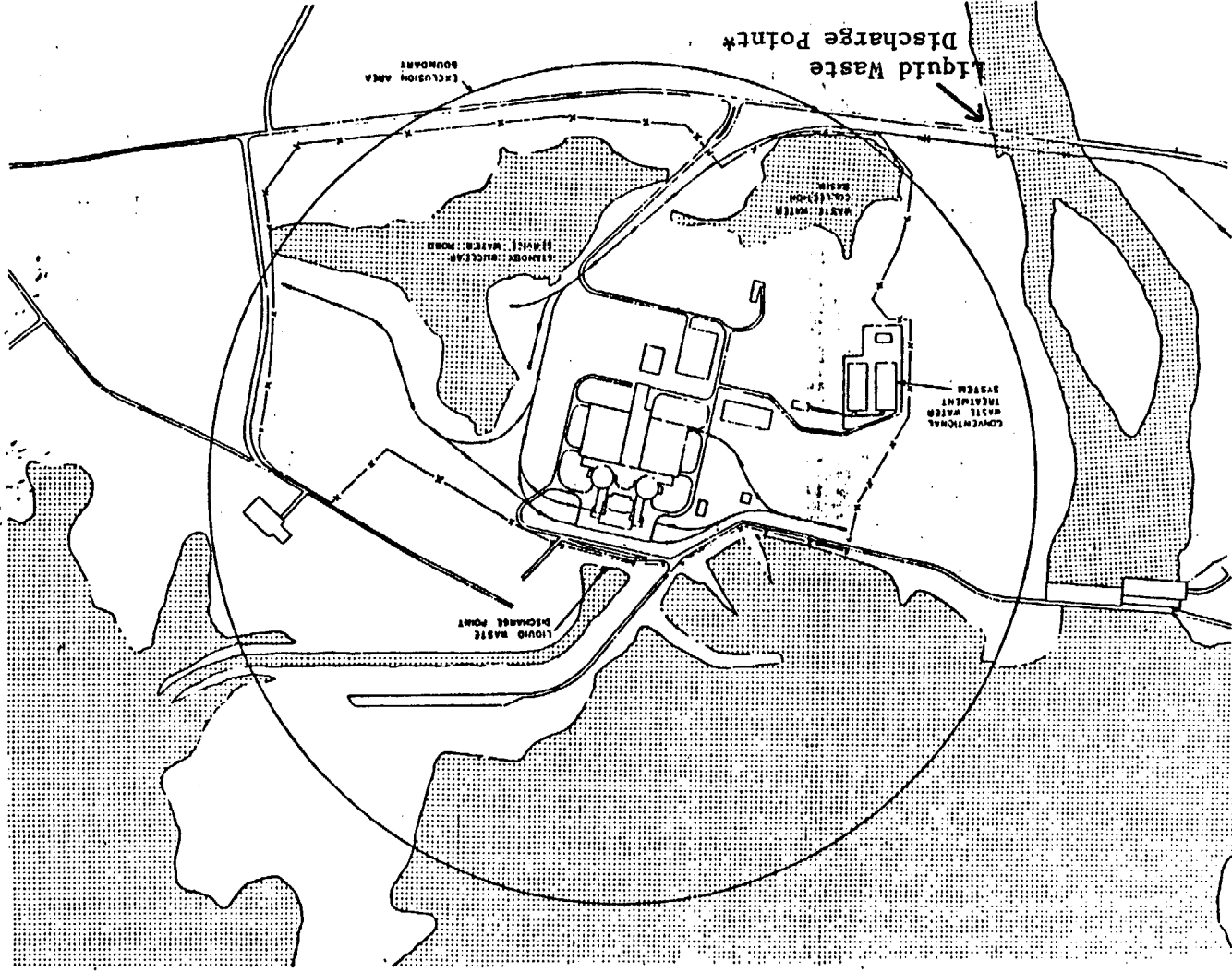
Amended  
Page


5-5

Overleaf  
Page

5-6






 SITE BOUNDARY FOR  
 LIQUID EFFLUENTS  
 McGUIRE NUCLEAR STATION

\*This discharge point is authorized for a one-time discharge of water from the Conventional Wastewater Basin which contains trace amounts of tritium in addition to the normally processed effluents of the Waste Water Collection Basin, effective June 20, 1986.

FIGURE 5.1-4

## DESIGN FEATURES

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### 5.2.1.2 REACTOR BUILDING

- a. Nominal annular space = 5 feet.
- b. Annulus nominal volume = 427,000 cubic feet.
- c. Nominal outside height (measured from top of foundation base to the top of the dome) = 177 feet.
- d. Nominal inside diameter = 125 feet.
- e. Cylinder wall minimum thickness = 3 feet.
- f. Dome minimum thickness = 2.25 feet.
- g. Dome inside radius = 87 feet.

### DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment is designed and shall be maintained for a maximum internal pressure of 15.0 psig and a temperature of 250°F.

### 5.3 REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1 The core shall contain 193 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 144 inches and contain a maximum total weight of 1766 grams uranium. The initial core loading shall have a maximum enrichment of 3.15 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 3.5 weight percent U-235.

#### CONTROL ROD ASSEMBLIES

5.3.2 The core shall contain 53 full-length and no part-length control rod assemblies. The full-length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material for Unit 1 control rods shall be 80% silver, 15% indium, and 5% cadmium. The nominal values of absorber material for Unit 2 control rods shall be 100% boron carbide ( $B_4C$ ) for 102 inches and 80% silver, 15% indium, and 5% cadmium for the 40-inch tip. All control rods shall be clad with stainless steel tubing.



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. 39  
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 May 20, 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 change 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. 39, 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

*Paul W. Youngblood*  
for B. J. Youngblood, Director  
PWR Project Directorate #4  
Division of PWR Licensing-A

Attachment:  
Technical Specification  
Changes

Date of Issuance: June 20, 1986



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 58 TO FACILITY OPERATING LICENSE NPF-9  
AND AMENDMENT NO. 39 TO FACILITY OPERATING LICENSE NPF-17

DUKE POWER COMPANY

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

INTRODUCTION

These amendments authorize a one-time release of the existing contents of the Conventional (non-radioactive) Wastewater Basin, containing trace amounts of tritium, into the Catawba River. Technical Specification (TS) 3.11.1.1 and its referenced Figure 5.1-4, "Site Boundary for Liquid Effluents" define the authorized discharge point for radioactive material released in liquid effluents to unrestricted areas as being only to Lake Norman. The authorization is accomplished by the addition of a footnote to TS Figure 5.1-4 at the discharge point for the Conventional Wastewater Basin into the Catawba River, stating that this discharge point is authorized for a one-time discharge of water which contains trace amounts of tritium in addition to the normally processed effluents of the Waste Water Collection Basin, effective the date of Commission approval. The change does not affect any existing limits or procedures regarding the processing of conventional (i.e., non-radioactive) contaminants. These revisions to the technical specifications are made in response to the licensee's application for amendments dated May 20, 1986.

EVALUATION

Non-radioactive chemical wastes from the McGuire Station (e.g., turbine building drains, water treatment system filter backwashes, demineralizer regeneration wastes) are routed through the Conventional Waste Water Treatment System (CWTS) and subjected to physicochemical treatment. The CWTS includes a Basin of two parallel stream settling ponds with a capacity of about 2 million gallons each. Upon completion of treatment, the discharges from this system are released to the Catawba River downstream of Cowans Ford Dam. The discharge from the CWTS may also be mixed with water from the Standby Nuclear Service Water Pond to dilute waste concentrations prior to discharge to the river. Waste containing radioactive material is not intended for the CWTS; rather such waste is routed to separate Liquid Radwaste Systems (see FSAR Section 11.2) for recycling, processing, and disposal.

By letter dated May 20, 1986, the licensee noted that tritium, but no other radionuclide, had entered the Basin and had subsequently been diluted to a concentration of  $1.4 \times 10^{-5}$  microcuries per milliliter. The licensee proposed to discharge the 4 million gallons of water in the Basin, along with its tritium, to the river at a rate of 500 gpm over a duration of 133 hours. The Basin discharge would also be mixed by at least equal flow from the Standby Nuclear Service Water Pond, such that the tritium concentration at the river release point would be no more than  $7 \times 10^{-6}$  microcuries per milliliter. This

concentration is well within the limit of  $3 \times 10^{-3}$  microcuries per milliliter specified by 10 CFR 20.106 and associated Appendix B, Table II, for tritium concentrations in water released to an unrestricted area. The total amount of tritium to be released (about 0.25 curies) is small compared to the normal release of tritium from the plant (about 2.5 curies per day).

The NRC has evaluated doses resulting from the proposed discharge using models and assumptions in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Release of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I." For tritium the dominant exposure pathway is drinking water. The fish consumption pathway also makes a small contribution to the dose. Other potential pathways (such as due to irrigation or swimming) are negligible because of the properties of tritium, i.e. tritium does not accumulate either in the food chain or the body and it does not constitute a significant source of external radiation. The total body dose to a child or infant assumed to drink water from the river release point and to consume fish located at this release point was calculated by the Commission to be about 0.01 millirem. Corresponding doses to an adult or teenager were lower (i.e., about 0.008 and 0.006 millirem, respectively). Section II.A of Appendix I to 10 CFR 50 states that the calculated annual total quantity of all radioactive material above background to be released from each nuclear power reactor to unrestricted areas should not result in an estimated annual dose or dose commitment from liquid effluents for any individual in an unrestricted area from all pathways of exposure in excess of 3 millirems to the total body. The biological characteristics of tritium are such that other requirements of Appendix I regarding organ doses are not limiting. Because the doses calculated for the proposed river discharge represent only a very small contribution to this annual dose criterion of Appendix I, we find the proposed action to be consistent with Appendix I criterion.

The licensee calculated similar but lower doses in its letter of May 20, 1986. Unlike the licensee's calculations, the NRC results conservatively assume no credit for dilution of the tritium concentration within the river. Nevertheless, we find that the discharge concentrations of tritium and resultant doses determined by the NRC are sufficiently low as to represent no significant safety concern, and, therefore, are acceptable.

#### FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission has determined that the amendments involve no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the amendments does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The Commission has provided guidance for the application of these criteria by providing examples of amendments that are considered not likely to involve significant hazards considerations (51 FR 7744). The changes do not match any of the examples. However, based upon our review of the amendment requests and

our independent dose calculations discussed above, we find that the action is limited to the one-time release of very low concentrations of tritium within the Conventional Wastewater Basin which are well below limits permitted by 10 CFR 20, and if discharged to the Catawba River as proposed, would result in insignificant doses consistent with the guidance of Appendix I to 10 CFR 50. No changes in plant design, limiting safety system setpoints or allowable values, limiting conditions for operations or plant operating procedures would result from the proposed action.

Therefore, based on these considerations and the three criteria given above, the Commission has determined that the amendments involve no significant hazards considerations.

#### ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.32, the Commission has determined that issuance of the amendments will have no significant impact on the environment (51 FR 19431).

#### FINDINGS OF EXIGENT CIRCUMSTANCES

The unintentional release of tritium into the Conventional Wastewater Basin has created the need for prompt approval of the requested change to the technical specification. Unless the existing contents of the Basin can be discharged to the Catawba River as authorized by these amendments, the lack of available volume in the Basin will impair the station's ability to process conventional (non-radiological) liquid waste as required by the NPDES permit issued by the state of North Carolina. Accordingly, those activities at the station which would otherwise be conducted during the current refueling outages of both

Units 1 and 2 and which result in the generation of or the need to process significant quantities of conventional waste must be curtailed or deferred. Therefore, the date for completion of refueling activities and station restart would have to be extended if the proposed change is not authorized in a timely manner.

The licensee contacted the Commission promptly after first becoming aware of the presence of tritium in the Basin, and also promptly advised the Commission of the need for change to the technical specification on an expedited basis. The licensee has deferred those activities which would create conventional waste where such can reasonably be deferred without significant impact on the refueling outage time. These best efforts by the licensee provided the Commission an opportunity for noticing the proposed action subject to a public comment period less than the usual 30 days. Accordingly, we conclude that the licensee has not delayed its application to take advantage of the Exigency License Amendment provisions of 10 CFR 50.91 and has used its best efforts to provide a reasonable opportunity (at least 15 days) for public noticing and comment.

#### CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards considerations which was published in the Federal Register

(51 FR 19637) on May 30, 1986. We have also determined that this action involves no significant hazards considerations and the exigency circumstances exist which justify taking this action on an expedited basis. We have 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.

Principal Contributors: Darl S. Hood, PWR #4 PWR Licensing-A  
C. Willis, Plant Systems Branch, PWR-A

Dated: June 20 ,1986