

CPI

Docket Nos: 50-369  
and 50-370

October 26, 1983

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. 26 to Facility Operating License  
NPF-9 and Amendment No. 7 to Facility Operating License  
NPF-17 - McGuire Nuclear Station, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 26 to Facility Operating License NPF-9 and Amendment No. 7 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amendments grant in part your request for amendment contained in your letter dated August 1, 1983, and supplemented September 7, 1983.

The amendments change the Technical Specifications related to the surveillance testing of Tubrine Overspeed Protection System valves and permit a one-time extension of surveillance interval for certain diesel generator tests. However, we are denying your request for a permanent change to this diesel surveillance frequency requirement. A Federal Register Notice of Denial will be issued shortly.

A copy of the related safety evaluation supporting Amendment No. 26 to Facility Operating License NPF-9 and Amendment No. 7 to Facility Operating License NPF-17 is enclosed.

Sincerely,

Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Enclosures:

1. Amendment No. 26 to NPF-9
2. Amendment No. 7 to NPF-17
3. Safety Evaluation

cc w/encl:  
See next page

LA:DL:LB #4  
MDunnean/hmc  
10/25/83

<sup>PAS</sup>  
DL:LB #4  
RBirke  
10/25/83

DL:LB #4  
EAdensam  
10/25/83

McGuire

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DUKE POWER COMPANY

DOCKET NO. 50-369

McGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 26  
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 (licensee) dated August 1, 1983, and supplemented September 7, 1983, 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 license amendment will not be inimical to the common defense and security or to the health and safety of the public;
  - 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. 26, are hereby incorporated into this 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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Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Attachment:  
Technical Specification  
Changes

Date of Issuance: October 26, 1983

LA:DL:LB #4  
MDuncan/hmc  
10/6/83

DL:LB #4  
RBirke1  
10/6/83

OELD  
10/ /83

DL:LB #4  
EAdensam  
10/25/83

DL:DL  
Novak  
10/24/83

*J. Seinto concurred  
to Egan 10/26/83*

DUKE POWER COMPANY

DOCKET NO. 50-370

McGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 7  
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 (licensee) dated August 1, 1983, and supplemented September 7, 1983, 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 license amendment will not be inimical to the common defense and security or to the health and safety of the public;
  - 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. 7, are hereby incorporated into this 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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Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Attachment:  
Technical Specification  
Changes

Date of Issuance: October 26, 1983

*rs*  
*I found concurred by phone 10/26/83*

LA:DL:LB #4  
MDuncan/hmc  
10/6/83

DL:LB #4  
RBirkel  
10/6/83

OELD  
10/ /83

DL:LB #4  
EAdensam  
10/17/83

AD:DL:DL  
TMovak  
10/17/83

ATTACHMENT TO LICENSE AMENDMENT NO. 26

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 7

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 a vertical line indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

<u>Amended</u> <u>Page</u>	<u>Overleaf</u> <u>Page</u>
3/4 3-79	
3/4 8-4	3/4 8-3

## INSTRUMENTATION

### 3/4.3.4 TURBINE OVERSPEED PROTECTION

#### LIMITING CONDITION FOR OPERATION

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3.3.4 At least one Turbine Overspeed Protection System shall be OPERABLE.

APPLICABILITY: MODE 1.

ACTION:

- a. With one stop valve or one governor valve per high pressure turbine steam lead inoperable and/or with one reheat stop valve or one reheat intercept valve per low pressure turbine steam lead inoperable, restore the inoperable valve(s) to OPERABLE status within 72 hours, or close at least one valve in the affected steam lead(s) or isolate the turbine from the steam supply within the next 6 hours.
- b. With the above required Turbine Overspeed Protection System otherwise inoperable, within 6 hours isolate the turbine from the steam supply.

#### SURVEILLANCE REQUIREMENTS

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4.3.4.1 The provisions of Specification 4.0.4 are not applicable.

4.3.4.2 The above required Turbine Overspeed Protection System shall be demonstrated OPERABLE:

- a. At least once per 31 days\* by cycling each of the following valves through at least one complete cycle from the running position:
  - 1) Four high pressure turbine stop valves.
  - 2) Four high pressure turbine governor valves,
  - 3) Six low pressure turbine reheat stop valves, and
  - 4) Six low pressure turbine reheat intercept valves.
- b. At least once per 31 days by direct observation of the movement of each of the above valves through one complete cycle from the running position,
- c. At least once per 18 months by performance of a CHANNEL CALIBRATION on the Turbine Overspeed Protection System, and
- d. At least once per 40 months by disassembling at least one of each of the above valves and performing a visual and surface inspection of valve seats, disks and stems and verifying no unacceptable flaws or corrosion.

\*This frequency of turbine valve testing is acceptable on an interim basis until staff review of the turbine missile generation probability analysis confirms the analysis results.



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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- 2) Verifying the fuel level in the fuel storage tank,
  - 3) Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank,
  - 4) Verifying the diesel starts from ambient condition and accelerates to at least 488 rpm in less than or equal to 11 seconds. The generator voltage and frequency shall be at least 4160 volts and 57 Hz within 11 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
    - a) Manual, or
    - b) Simulated loss-of-offsite power by itself, or
    - c) Simulated loss-of-offsite power in conjunction with an ESF Actuation test signal, or
    - d) An ESF Actuation test signal by itself.
  - 5) Verifying the generator is synchronized, loaded to greater than or equal to 3000 kW in less than or equal to 60 seconds, and to 4000 kW within 10 minutes and operates for at least 60 minutes, and
  - 6) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by removing accumulated water from the day tank;
- c. At least once per 92 days and from new fuel, by obtaining a sample of fuel oil in accordance with ASTM-D270-1975, and by verifying that the sample meets the following minimum requirements and is tested within the specified time limits:
- 1) As soon as sample is taken or prior to adding new fuel to the storage tank verify in accordance with the tests specified in ASTM-D975-77 that the sample has:
    - a) A water and sediment content of less than or equal to 0.05 volume percent,

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- b) A kinematic viscosity @ 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes, and
  - c) A specific gravity as specified by the manufacturer @ 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89 or an API gravity @ 60°F of greater than or equal to 27 degrees but less than or equal to 39 degrees.
- 2) Within 7 days after obtaining the sample, verify an impurity level of less than 2 mg of insolubles per 100 ml when tested in accordance with ASTM-D2274-70; and
  - 3) Within 14 days of obtaining the sample verify that the other properties specified in Table 1 of ASTM-D975-77 and Regulatory Guide 1.137, Revision 1, October 1979, Position 2.a., are met when tested in accordance with ASTM-D975-77.
- d. At least once per 18 months,\* during shutdown, by:
- 1) Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service;
  - 2) Verifying the generator capability to reject a load of greater than or equal to 576 kW while maintaining voltage at 4160 ± 420 volts and frequency at 60 ± 1.2 Hz;
  - 3) Verifying the generator capability to reject a load of 4000 kW without tripping. The generator voltage shall not exceed 4784 volts during and following the load rejection;
  - 4) Simulating a loss-of-offsite power by itself, and:
    - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and
    - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11 seconds, energizes the auto-connected blackout loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the blackout loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz during this test.

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\*The surveillance due on October 27, 1983 for McGuire Unit 1 may be extended until startup after the refueling outage at the end of Cycle 1A. This extension expires on March 31, 1984.

## SAFETY EVALUATION REPORT

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

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

DUKE POWER COMPANY

### INTRODUCTION

In a submittal dated August 1, 1983, supplemented by a letter dated September 7, 1983, the licensee submitted proposed changes to the Technical Specifications relating to the surveillance interval for certain diesel generator tests and surveillance testing of Turbine Overspeed Protection Systems valves. The licensee proposed a change to perform diesel generator surveillance from "18 months" to "refueling" and turbine valve surveillance testing frequency from once a week to once a month.

### EVALUATION

Technical Specification 4.8.1.1.2.d requires that at least once per 18 months during shutdown, the diesel generator is started with a simulated loss-of-offsite power and energizes the auto-connected loads through the load sequencer. This test is required with and without a concurrent ESF actuation signal. On McGuire Unit 1 the test was originally performed in March 1980, in preparation for initial operation. Since criticality did not occur until August 1981 the test was again completed in December 1981 during an extended outage for steam generator inspection. Performance of these tests was successful with no major problems. All components actuated and the diesel generator performed the load sequence within required tolerances. The December 1981 test was performed to realign performance of the periodic test during the expected first refueling outage in 1983. However, delays in completing the steam generator modifications have extended the first refueling cycle to early 1984. Currently this scheduled refueling is beyond the maximum time allowed between tests and, therefore, the deadline for performing the next test on Unit 1 is October 27, 1983. This would involve a special outage lasting about 1½ weeks. The licensee proposed amendment would change the test requirement to "During each shutdown for refueling...." The licensee states that this change in the technical specification if approved would require performance of this test more frequently than once per 18 months. The equilibrium refueling cycle for McGuire Units 1 and 2 is 274 Effective Full Power Days. The interval of time comprising a normal refueling cycle is an indeterminate variable and is dependent, among other factors, on the frequency of scheduled and unscheduled outages and average plant capacity factor. Because of these uncertainties, the staff does not agree with the licensee that changing the surveillance requirement as proposed will, in all cases, result in more frequent testing of the diesel generator. The present staff requirement to test the diesel generator on an 18 month interval was chosen on the basis of operating experience.

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To provide the necessary operational flexibility which may be required due to scheduling and performance considerations, Technical Specifications include a provision which permits any surveillance interval to be extended by 25% of the nominal interval provided that the total time interval does not exceed 3.25 times the specified surveillance interval over any three consecutive surveillance intervals.

The effect of extended outages was also considered during our development and establishment of the 18-month surveillance interval. We presumed that if a plant incurs an extended outage during a fuel cycle, the licensee would perform the appropriate surveillances during the extended outage so that required surveillance will not become due before completion of the fuel cycle.

In summary, while the licensee may anticipate refueling at McGuire at about 18 month intervals, some plants have gone for much longer periods between refueling outages because of extended outage for equipment modifications and repair. Thus, while in general testing at refueling outages and testing on an  $18 \pm 25\%$  month basis would result in a similar test frequency, there may be instances in which testing at refueling outages would result in a much longer interval than  $18 \pm 25\%$  months. We believe that the  $18 \pm 25\%$  month interval is the correct interval for testing diesels and that the potential for much longer periods under licensee's proposal is not acceptable.

On the other hand, a case by case extension of a few months would have no adverse effect on assuring diesel operability.

Since the maximum time allowed between diesel generator tests at McGuire Unit 1 will expire on October 27, 1983, and will require a forced plant shutdown to perform the required surveillance test, the staff approves a one-time extension to perform this test at the next refueling outage scheduled for early 1984. Based on previously performed successful tests and other system and component testing performed at more frequent intervals at McGuire, the staff concludes that an extension until startup after the refueling outage at the end of Cycle 1A with an expiration date of March 31, 1984, is acceptable and is of no consequence to plant safety. Accordingly, the licensee's request is granted in part.

Technical Specification 4.3.4.2.a requires that the Turbine Overspeed Protection System valves be surveillance tested by cycling at least once per 7 days. The licensee has proposed a change in the turbine valve testing frequency from once per 7 days to once per 31 days.

The staff's current position which requires weekly testing of turbine valves as stated in Standard Review Plan Section 10.2 "Steam Turbines" was established after extensive discussions with major steam turbine manufacturers and is based largely on engineering judgement and the recommendations of these manufacturers.

Westinghouse in a meeting with the staff on March 23, 1983, presented results of an ongoing study on the generation of turbine missiles being conducted on behalf of some licensees and applicants. This study specifically includes consideration of the testing requirements for the turbine overspeed protection valves and turbine valve arrangement of the type installed at McGuire Units 1 and 2. The results of this study are not final. Preliminary indications are that turbine valve operability and reliability will not be significantly affected by increasing the periodic valve testing from the present weekly to a much longer interval. However, in Westinghouse's judgement, lack of a significant number of valve failures, good operating experience, and a well-planned turbine valve maintenance and inspection program provide reasonable bases to increase the periodic test interval for turbines with valve arrangements as installed at McGuire, Units 1 and 2, from weekly to monthly. Westinghouse stated that they intend to make a formal recommendation to their customers who have turbines employing turbine valves and steam chest arrangements of the type installed at McGuire, Units 1 and 2, to change from periodic weekly to monthly valve testing. Since the March 1983 meeting, Westinghouse has issued this formal recommendation to their customers who have these types of turbines including the licensee's McGuire Units.

The staff has evaluated the information submitted by the licensee in the August 1 and September 7, 1983, letters and Westinghouse information presented at the March 23, 1983, meeting. Considering the information presented by the licensee and Westinghouse, and the staff's original basis for the technical specification, the staff concludes that the interval between periodic turbine valve testing can be increased for McGuire, Units 1 and 2, from weekly to monthly, on an interim basis, pending establishment of a new probabilistic turbine missile position which is currently being prepared by the staff, and completion of the review of the Westinghouse generic report on the subject without significantly affecting the capability of the turbine valves to function on demand.

In summary, the basis for considering technical specification relief at McGuire, Units 1 and 2, was:

1. Lack of a satisfactory statistical basis to determine frequency of turbine valve testing. Up to now, test frequency of these valves has been largely based on experience with turbine generators installed in fossil plants. The Westinghouse turbine missile study, when completed and evaluated by the staff, is intended to provide a basis to establish turbine valve test frequency for nuclear units.
2. The licensee maintenance, inspection, and turbine valve test program described in the McGuire FSAR and the proposed modification to the technical specifications appear to be satisfactory. This program performed on a periodic basis coupled with

monthly testing of all turbine valves is satisfactory to the staff on an interim basis pending completion of the turbine missile study.

3. The data and rationale presented by Westinghouse at the March 23, 1983, and other previous meetings with the staff and the staff's understanding of the data presented to date.
4. Testing of turbine control valves on base loaded turbine generators necessitates reduction of generator output for a period of several hours. The valve testing sequence during turbine operation requires placing the turbine on manual control and repositioning all turbine control valves in the steam chest to permit individual full valve stroking. All valves are aligned to equal position. Repositioning of the control valves (on a base load turbine generator) results in reduced steam flow to the turbine with a consequent reduction in generator output of about 5%. Testing of all turbine control valves is accomplished in a relatively short time (about 35 to 40 minutes). The bulk of the time consumed (approximately 2½ to 3 hours) is in slowly lowering reactor output to correspond with the reduced turbine generator output to permit control valve testing. On completion of valve tests a similar time period is consumed in slowly increasing reactor power to permit full load operation of the turbine generator. The lowering and increasing of reactor output must be accomplished slowly to minimize xenon spiking. This economic impact, although not a safety consideration, was factored into the staff action.
5. The staff's finding that the licensee uses an all volatile treatment program for maintaining secondary water chemistry.

On the basis of the above, the staff concludes extending the turbine valve testing interval at McGuire, Units 1 and 2, as stated is acceptable subject to the following conditions:

1. All turbine valves are to be tested at least once per 31 days.
2. The decreased frequency of turbine valve testing is acceptable on an interim basis until the turbine missile generation probability analysis performed by Westinghouse is reviewed by the staff to confirm that the study results support the verbal statements made by Westinghouse representatives in meetings with staff members.

The licensee has agreed to the interim condition.

ENVIRONMENTAL CONSIDERTION

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

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (48 FR 41533) on September 15, 1983, and consulted with the staff 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.

Date: October 26, 1983

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