

June 5, 1984

Docket Nos: 50-369 and 50-370

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. 33 to Facility Operating License NPF-9 and Amendment No. 14 to Facility Operating License NPF-17 - McGuire Nuclear Station, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 33 to Facility Operating License NPF-9 and Amendment No. 14 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 application dated November 18, 1983. These amendments are effective 30 days after their date of issuance.

The amendments change the Technical Specifications to replace diesel fuel oil tests with a series of different tests ensuring quality fuel oil for use in the emergency diesel generators.

A copy of the related safety evaluation report supporting Amendment No. 33 to Facility Operating License NPF-9 and Amendment No. 14 to Facility Operating License NPF-17 is enclosed.

Sincerely,

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

Enclosures:

- 1. Amendment No. 33 to NPF-9
- 2. Amendment No. 14 to NPF-17

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3. Safety Evaluation

cc w/encl: See next page

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Mr. H. B. Tucker, Vice President Nuclear Production Department Duke Power Company 422 South Church Street Charlotte, North Carolina 28242 Mr. A. Carr cc: Duke Power Company P.O. Box 33189 422 South Church Street 28242 Charlotte, North Carolina Mr. F. J. Twogood Power Systems Division Westinghouse Electric Corp. P.O. Box 355 Pittsburgh, Pennsylvania 15230 Mr. G. A. Copp Duke Power Company Nuclear Production Department P.O. Box 33189 Charlotte, North Carolina 28242 J. Michael McGarry, III, Esq. Bishop, Liberman, Cook, Purcell & Reynolds 1200 Seventeenth Street, N.W. Washington, D. C. 20036 Mr. Wm. Orders Senior Resident Inspector c/o U.S. Nuclear Regulatory Commission Route 4, Box 529 Hunterville, North Carolina 28078 James P. O'Reilly, Regional Admin. U.S. Nuclear Regulatory Commission, Region II 101 Marietta Street, N. W. Suite 2900 Atlanta, Georgia 30323 Dr. John M. Barry Department of Environmental Health Mecklenburg County 1200 Blythe Boulevard Charlotte, North Carolina 28203

Attorney General Department of Justice Justice Building Raleigh, North Carolina 27602 Office of Intergovernmental Relations 116 West Jones Street Raleigh, North Carolina 27603 County Manager of Mecklenburg County 720 East Fourth Street Charlotte, North Carolina 28202 **EIS** Coordinator U.S. Environmental Protection Agency **Region IV Office** 345 Courtland Street, N.E. Atlanta, Georgia 30308 Chairman, North Carolina Utilities Commission 430 North Salisbury Street Dobbs Building Raleigh, North Carolina 27602 R. S. Howard **Operating Plants Projects** Regional Manager Westinghouse Electric Corporation -R&D 701 P.O. Box 2728 Pittsburgh, Pennsylvania 15230 Mr. Dayne H. Brown, Chief Radiation Protection Branch Division of Facility Services Department of Human Resources P.O. Box 12200 Raleigh, North Carolina 27605



DUKE POWER COMPANY

DOCKET NO. 50-369

MCGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 33 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 November 18, 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. 33, 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 30 days after 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

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Date of Issuance: June 5, 1984



DUKE POWER COMPANY

DOCKET NO. 50-370

MCGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 14 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 November 18, 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.14, 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 30 days after 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

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Date of Issuance: June 5, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 33

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FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 14

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.

Amended Page	<u>Overleaf</u> Page
3/4 8-3 3/4 8-4 3/4 8-6	3/4 8-5

SURVEILLANCE REQUIREMENTS (Continued)

- 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. By removing accumulated water:
 - From the day tank at least once per 31 days and after each occasion when the diesel is operated for greater than 1 hour, and
 - 2) From the storage tank at least once per 31 days.
- c. By sampling new fuel oil in accordance with ASTM D4057-81 prior to addition to the storage tanks and:
 - By verifying in accordance with the tests specified in ASTM D975-81 prior to addition to the storage tanks that the sample has:
 - a) An API Gravity of within 0.3 degrees at 60°F or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89 or an API gravity at 60°F of greater than or equal to 27 degrees but less than or equal to 39 degrees.

McGUIRE - UNITS 1 and 2

Amendment No. 14 (Unit 2) Amendment No. 33 (Unit 1)

SURVEILLANCE REQUIREMENTS (Continued)

- b) A kinematic vicosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes, if gravity was not determined by comparison with the supplier's certification.
- c) A flash point equal to or greater than $125^{\circ}F$, and
- d) A clear and bright appearance with proper color when tested in accordance with ASTM D4176-82.
- 2) By verifying within 31 days of obtaining the sample that the other properties specified in Table 1 of ASTM D975-81 are met when tested in accordance with ASTM D975-81 except that the analysis for sulfur may be performed in accordance with ASTM D1552-79 or ASTM D2622-82.
- d. At least once every 31 days by obtaining a sample of fuel oil from the storage tanks in accordance with ASTM D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM D2276-78, Method A.
- e. At least once per 18 months, during shutdown, by:
 - 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 \pm 420 volts and frequency at 60 \pm 1.2 Hz;
 - 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 \pm 420 volts and 60 \pm 1.2 Hz during this test.

SURVEILLANCE REQUIREMENTS (Continued)

- 5) Verifying that on an ESF actuation test signal, without loss-ofoffsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be at least 4160 volts and 57 Hz within 11 seconds after the auto-start signal; the steady-state generator voltage and frequency shall be maintained within 4160 \pm 420 volts and 60 \pm 1.2 Hz during this test;
- 6) Verifying that on a simulated loss of the diesel generator, with offsite power not available, the loads are shed from the emergency busses and that subsequent loading of the diesel generator is in accordance with design requirements;
- 7) Simulating a loss-of-offsite power in conjunction with an ESF actuation test signal, and
 - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses;
 - 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 emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 \pm 420 volts and 60 + 1.2 Hz during this test; and
 - c) Verifying that all automatic diesel generator trips, except engine overspeed, lube oil pressure, and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a Safety Injection Actuation signal.
- 8) Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to greater than or equal to 4400 kW and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4000 kW. The generator voltage and frequency shall be at least 4160 volts and 57 Hz within 11 seconds after the start signal. The steady-state generator voltage and frequency shall be maintained within 4160 ± 420 volts and 60 ± 1.2 Hz during this test. Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2d.7)b);

SURVEILLANCE REQUIREMENTS (Continued)

- 9) Verifying that the auto-connected loads to each diesel generator do not exceed the 2-hour rating of 4400 kW;
- 10) Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its standby status.
- Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;
- 12) Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines;
- 13) Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block are within the tolerances shown in Table 4.8-2;
- 14) Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
 - a) Turning gear engaged, and
 - b) Emergency stop.
- 15) Verifying that with all diesel generator air start receivers pressurized to less than or equal to 220 psig and the compressors secured, the diesel generator starts at least 2 times from ambient conditions and accelerates to at least 488 rpm in less than or equal to 11 seconds.
- f. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 488 rpm in less than or equal to 11 seconds; and
- g. At least once per 10 years by:



SAFETY EVALUATION REPORT

RELATED TO AMENDMENT NO. 33 TO FACILITY OPERATING LICENSE NPF-9

AND TO AMENDMENT NO. 14 TO FACILITY OPERATING LICENSE NPF-17

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DUKE POWER COMPANY

Introduction

By letter dated November 18, 1983, Duke Power Company proposed changes to the surveillance requirements for diesel fuel oil in Technical Specification 4.8.1.1.2 for McGuire Nuclear Station Units 1 and 2. Additional information was contained in a letter dated March 20, 1984.

In general, the proposed changes involve replacing fuel oil tests presently required by the Technical Specifications with different tests which the licensee states (1) are more effective in detecting unsatisfactory fuel oil, (2) can be performed onsite, and (3) are simpler and less expensive to perform.

Evaluation

The most significant change is the deletion of requirements for testing stored fuel oil in accordance with American Society for Testing Materials (ASTM) D2274-70 every 92 days. In lieu of the test, the licensee proposes to test stored fuel oil for particulate concentrations every 31 days in accordance with ASTM D2276-78. The rationale for this change is that the proposed test addresses the actual condition of the fuel oil that will be pumped to the diesel generators in terms of particulate (solid) matter which could impair diesel generator operation or result in diesel generator unavailability. The current surveillance requirements (ASTM D2274-70) are oriented to predicting the tendency of fuel oil to oxidize and form particulates during long term storage, but do not address particulates that may already exist. In addition, ASTM D2274-70 test results may not accurately correlate with actual fuel condition because test results tend to vary depending on factors such as storage conditions. Also, the proposed ASTM D2276-78 tests would be performed every 31 days as opposed to every 92 days for ASTM D2274-70. The more frequent testing for actual particulates in the stored fuel oil would provide better data on fuel condition at the time of test as well as the tendency for formation of particulates under site storage conditions. The proposed tests would, therefore, be more conservative in establishing adequacy of stored fuel than the present requirements. In its review of the licensee's justification, the staff discussed the comparability of ASTM D2274-70 and ASTM D2276-78 with the licensee and his consultant, with representatives of the U.S. Naval Research Laboratory and with the U.S. Navy Petroleum Office. Based on the discussions, the staff agrees with the licensee that the proposal for testing per ASTM D2276-78 every 31 days in lieu of ASTM D2274-70 every 92 days is more conservative and is, therefore, acceptable.

8406210012 840605 PDR ADDCK 05000369 P PDR Other proposed changes include (a) replacing the Water Sediment test by centrifuge on new fuel per ASTM D1796 with the Clear and Bright test per ASTM D4176-82, (b) use of optional methods of verifying fuel gravity by testing and comparing with the supplier's certification, (c) allowing sulfur analysis to be performed in accordance with ASTM D1552 or ASTM D2262, and (d) extending the time limit for obtaining ASTM D975 test results on new fuel from 14 days to 31 days. The staff has reviewed the Clear and Bright test (ASTM 4176-82) including a demonstration of the test principles at the Naval Fuel Laboratory, Norfolk, Virginia. Based on our review and the demonstration, the staff concurs with the licensee and concludes that the Clear and Bright test is more sensitive in determining the presence of water and sediment in fuel oil than the Water and Sediment test by centrifuge (ASTM D1796), and the proposed change is, therefore, acceptable.

The use of optional methods of verifying new fuel gravity prior to storing by testing and comparing with the supplier's certification is proposed by the licensee as a means of simplifying new fuel acceptance procedures. The justification for this change is that any contamination of fuel oil during transportation would be indicated by changes in flash point, gravity or viscosity, or appearance. Incorrect flash point will be detected by testing as discussed later in this report. Any contamination which will alter the fuel oil appearance will be detected by the Clear and Bright test discussed previously in this report. With tests for flash point and appearance as additional indicators, a verification of fuel oil gravity by testing and comparing to the supplier's certification will provide the necessary assurance that the new fuel is within specification limits. The staff concurs with the licensee's proposal and concludes that the verification of fuel oil gravity by optional methods is acceptable.

ASTM D975 requirements are such that testing new fuel oil for sulfur content may only be performed in accordance with ASTM D129. Federal diesel specification VV-F-800C and ASTM D396, Specification for Fuel Oil, however, allow the use of ASTM D1552 and ASTM D2262 tests for sulfur determination in No. 2 grade fuel oil. The staff recognizes both of the above fuel oil specifications and believes that obtaining test results by their use will be equivalent to results obtained by use of ASTM D129 and, therefore, concludes that the proposed alternate methods of determining sulfur are acceptable.

At present, the Technical Specifications require new fuel oil to be tested for conformance to the limits of the respective fuel oil properties listed in Table 1 of ASTM D975, and the test results to be available within 14 days following fuel oil delivery. Under the licensee's proposed surveillance program, the fuel oil properties which, if not in conformance with requirements, would have the most detrimental and immediate impact on diesel generator operation (flash point, viscosity or gravity, water and sediment) are checked for conformance to ASTM D975 limits immediately prior to accepting the new fuel. The remaining fuel oil properties are those which might impact diesel generator performance only on a long term basis. Therefore, the licensee's proposal to extend the time for obtaining test results for the remaining fuel oil properties from 14 days to 31 days would not adversely affect diesel generator reliability. The staff concurs with the licensee and concludes that this time extension is acceptable.

The proposed changes to the Technical Specifications include deleting the requirement for testing of fuel oil in accordance with ASTM D975 requirements on a 92 day basis. The licensee's rationale for this deletion is that the fuel oil properties which can affect diesel generator performance (flash point, cetane number, viscosity, cloud point) do not change during storage. If these properties are within specification when the fuel oil is placed in storage, they will remain within specification unless other non-specification petroleum products are added to the storage tanks. The addition of non-specification petroleum products is precluded by the licensee's proposed new fuel surveillance program as detailed above. Over prolonged periods stored fuel can oxidize and form particulates which, in significant concentrations, could impair diesel generator performance. Particulate concentrations and bacteria concentrations are the only things that will change in stored fuel oil. Particulate concentrations will be monitored every 31 days as discussed previously in this report. Bacteria growth will be prevented by periodic removal of water from the storage tanks as discussed later in this report. Considering that the fuel oil properties will not change in storage, and that fuel oil conditions which could affect diesel generator operation will be closely monitored (on a 31 day basis), further testing of stored fuel in accordance with ASTM D975 every 92 days will not provide any additional data nor improve diesel generator reliability and, therefore, can be deleted. The staff concurs with the licensee's justification and concludes that the proposed deletion is acceptable.

The licensee has also proposed two additions to the fuel oil surveillance Technical Specifications. These include (a) testing new fuel for flash point before acceptance, and (b) testing for and draining water from the fuel oil storage tanks every 31 days. The flash point test provides an additional indication that new fuel oil is within specification limits, thereby reducing the possibility of adding "bad fuel" to the fuel oil already in storage. The requirement to drain accumulated water from the storage tanks every 31 days will be of considerable value in reducing the possibility of bacteria contamination of the stored fuel, in minimizing the formation of corrosion products on the bottom of the storage tank, and in preventing water from contaminating the fuel oil transfer system and the diesel generator fuel systems. Both of the above additions represent a more conservative approach to maintaining quality diesel fuel and diesel generator reliability. The staff concurs with the licensee and, therefore, concludes the above additions are acceptable.

Conclusion

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (49 FR 3347) on January 26, 1984, and consulted with the state of North Carolina. No public comments were received, and the state of North Carolina did not have any comments.

The staff finds that the changes to the present surveillance requirements for diesel fuel oil in Technical Specification 4.8.1.1.2 as proposed by the licensee for McGuire Nuclear Station Units 1 and 2 will result in a more conservative approach to fuel oil surveillance. The added conservatism coupled with the simplified testing of fuel oil will provide immediate assurance in acceptance of quality fuel oil on delivery and maintenance of high quality stored fuel; this should increase diesel generator availability. Therefore, the licensee's proposed Technical Specification changes to the diesel fuel oil surveillance requirements are acceptable.

Environmental Consideration

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 $\S51.5(d)(4)$, that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

Safety Conclusion

In conclusion the staff finds the proposed changes to the plant technical specifications to be acceptable and 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: E. Tomlinson, Power Systems Branch, DSI R. Birkel, Licensing Branch #4, DL

Dated: June 5, 1984

June 5, 1984

AMENDMENT NO. 33 TO FACILITY OPERATING LICENSE NPF-9 - McGUIRE NUCLEAR STATION, UNIT 1 AMENDMENT NO. 14 TO FACILITY OPERATING LICENSE NPF-17 - McGUIRE NUCLEAR STATION, UNIT 2

DISTRIBUTION:

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