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

March 2, 1989

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. 93 TO FACILITY OPERATING LICENSE NPF-9 AND AMENDMENT NO. 74 TO FACILITY OPERATING LICENSE NPF-17 - MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 (TACS 56472 and 56473)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 93 to Facility Operating License NPF-9 and Amendment No. 74 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TS) in response to your application dated January 27, 1988, which superseded your application of October 31, 1984.

The amendments change Technical Specification (TS) 3/4.7.13, "Groundwater Level" to eliminate inconsistencies between the TS and the capabilities of the groundwater monitoring system as installed.

The Safety Evaluation Report included with these amendments (pages 5 and 6) discusses the times available to shutdown the units and take actions to control the source of groundwater rise. The available time is based upon a maximum calculated rate of rise which is due to natural sources. Other potential sources are not included because design features for underground piping preclude development of significant seepage pathways, making such a scenario quite unlikely. A more likely scenario for exceeding the maximum rate of rise would be a careless open excavation that could allow intense precipitation to overwhelm the groundwater control system. Such matters are appropriate for control by administrative procedure. The NRC would expect you to take appropriate precautions to preclude the potential for this scenario in the event the need for significant excavation near the Auxiliary Building should arise in the future.

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A copy of the related safety evaluation supporting Amendment No. 93 to Facility Operating License NPF-9 and Amendment No. 74 to Facility Operating License NPF-17 is enclosed.

Also enclosed is a copy of a related notice which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original Signed By:

Darl Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 93 to NPF-9
2. Amendment No. 74 to NPF-17
3. Safety Evaluation

cc w/enclosures:
See next page

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MRood:	DHood:sw	DMatthews
2/1 /89	2/1 /89	2/23/89

DATED: March 2, 1989

AMENDMENT NO. 93 TO FACILITY OPERATING LICENSE NPF-9 - McGuire Nuclear Station, Unit 1
AMENDMENT NO. 74 TO FACILITY OPERATING LICENSE NPF-17 - McGuire Nuclear Station, Unit 2

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Mr. H. B. Tucker
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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. 93
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 January 27, 1988, and supplemented April 26, June 21 and August 25, 1988, 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, as amended, 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.

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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. 93 , 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

Original Signed By:

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: March 2, 1989

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LA:PDII-3	PM:PDII-3	GSGB/NRR	OGC-WF	D:PDII-3
MRood	DHood:sw	GBagchi	BMBordenick	DMatthews
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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. 74
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 January 27, 1988, and supplemented April 26, June 21, and August 25, 1988, 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, as amended, 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 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. 74, 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

Original Signed By:

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: March 2, 1989

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LA:PDII-3	PM:PDII-3	GSGB/NRER	OGC-WF	D:PDII-3
MRood	DHood:sw	GBagchi		DMatthews
2/1/89	1/19/89	1/19/89	2/4/89	2/23/89

ATTACHMENT TO LICENSE AMENDMENT NO. 93

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 74

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. The corresponding overleaf pages are also provided to maintain document completeness.

Amended Page	Overleaf Page
XII	
3/4 7-44	3/4 7-43
3/4 7-45	3/4 7-46
B 3/4 7-8	B 3/4 7-7

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

SECTION		PAGE
3/4.7.5	STANDBY NUCLEAR SERVICE WATER POND	3/4 7-12
3/4.7.6	CONTROL AREA VENTILATION SYSTEM	3/4 7-13
3/4.7.7	AUXILIARY BUILDING FILTERED VENTILATION EXHAUST SYSTEM	3/4 7-16
3/4.7.8	SNUBBERS	3/4 7-18
TABLE 3.7-4a	SAFETY-RELATED HYDRAULIC SNUBBERS (UNITS 1 AND 2)	3/4 7-23
TABLE 3.7-4b	SAFETY-RELATED MECHANICAL SNUBBERS (UNITS 1 AND 2)	3/4 7-26
FIGURE 4.7-1	SAMPLING PLAN FOR SNUBBER FUNCTIONAL TEST	3/4 7-29
3/4.7.9	SEALED SOURCE CONTAMINATION	3/4 7-30
3/4.7.10	FIRE SUPPRESSION SYSTEMS	
	Fire Suppression Water System	3/4 7-32
	Spray and/or Sprinkler Systems	3/4 7-34
	Halon Systems	3/4 7-36
	Fire Hose Stations	3/4 7-37
TABLE 3.7-5	FIRE HOSE STATIONS	3/4 7-38
3/4.7.11	FIRE BARRIER PENETRATIONS	3/4 7-40
3/4/7.12	AREA TEMPERATURE MONITORING	3/4 7-42
TABLE 3.7-6	AREA TEMPERATURE MONITORING	3/4 7-43
3/4.7.13	GROUNDWATER LEVEL	3/4 7-44
TABLE 3.7-7	AUXILIARY BUILDING GROUNDWATER LEVEL MONITORS	3/4 7-45
3/4.8	ELECTRICAL POWER SYSTEMS	
3/4.8.1	A.C. SOURCES	
	Operating	3/4 8-1
TABLE 4.8-1	DIESEL GENERATOR TEST SCHEDULE	3/4 8-8

TABLE 3.7-6

AREA TEMPERATURE MONITORING

	AREA	TEMPERATURE LIMIT (°F)
1.	Containment Spray Pump Rooms - Unit 1	145
	- Unit 2	145
2.	Miscellaneous Terminal Cabinets	
	a. TB208-209 (Turbine Bldg. - Unit 1)	150
	b. TB1208-1209 (Turbine Bldg. - Unit 2)	150
	c. TB496 (Fuel Bldg. - Unit 1)	150
	d. TB1496 (Fuel Bldg. - Unit 2)	150
3.	Residual Heat Removal Pump Rooms - Unit 1	145
	- Unit 2	145
4.	Diesel Generator Rooms - Unit 1	125
	- Unit 2	125
5.	Spent Fuel Pool Cooling Pump Room - Unit 1	145
	- Unit 2	145

3/4.7.13 GROUNDWATER LEVEL

LIMITING CONDITION FOR OPERATION

3.7.13 The groundwater level shall be maintained at elevations less than the values in Table 3.7-7 for the five (5) Auxiliary Building monitors listed in Table 3.7-7.

APPLICABILITY: At all times.

ACTION: For Units 1 and 2.

If groundwater level for any three (3) of the five (5) monitors is above the values shown in Table 3.7-7, take the following actions:

1. Within one hour, reduce the groundwater level to below the values shown in Table 3.7-7; or,

2. Be in at least HOT STANDBY within 6 hours, and HOT SHUTDOWN within the next 6 hours, and COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.13.1 During each shift, the groundwater level shall be demonstrated to be within the values of Table 3.7-7 by the absence of alarms or by visual observation of the monitor level gauge.

4.7.13.2 Each groundwater level monitor instrument/loop for locations listed in Table 3.7-7 shall be demonstrated OPERABLE at least once per year by the performance of a loop calibration and operational test.

TABLE 3.7-7

AUXILIARY BUILDING GROUNDWATER LEVEL MONITORS

LOCATION	INTERIOR/ EXTERIOR ELEVATION	UNIT
	(Feet - Mean Seal Level)	
PP51	Interior 731' - 0"	1
QQ56	Interior 731' - 0"	1 & 2
PP-61	Interior 731' - 0"	2
West Wall	Exterior 731' - 0"	1
East Wall	Exterior 731' - 0"	2

TABLE 3.7-7

GROUNDWATER LEVEL MONITORS

LOCATION	INTERIOR/ EXTERIOR	ACCESSIBLE/ INACCESSIBLE	APPLICABILITY
Unit 1 Reactor Building	Exterior	Inaccessible	Unit 1
Auxiliary Bldg - West Wall	Exterior	Inaccesible	Unit 1
AA-40, Elev. 736'	Interior	Accessible	Unit 1
DD-42, Elev. 736'	Interior	Accessible	Unit 1
PP-51, Elev. 716'	Interior	Accessible	Unit 1
Unit 2 Reactor Building	Exterior	Inaccessible	Unit 2
Auxiliary Bldg - East wall	Exterior	Inacessible	Unit 2
BB-72, Elev. 736'	Interior	Accessible	Unit 2
DD-69, Elev. 736'	Interior	Accessible	Unit 2
PP-61, Elev. 716'	Interior	Accessible	Unit 2
QQ-56, Elev. 716'	Interior	Inaccessible	Units 1 and 2*

*No ACTION required if the monitors at PP-51, Elev. 716' (Unit 1 only) and pp-61, Elev. 716' (Unit 2 only) are OPERABLE.

FIRE SUPPRESSION SYSTEMS (Continued)

The Surveillance Requirements provide assurance that the minimum OPERABILITY requirements of the Fire Suppression Systems are met. An allowance is made for ensuring a sufficient volume of Halon in the Halon storage tanks by verifying either the weight or the level of the tanks. Level measurements are made by either a U.L. or F.M. approved method.

In the event the Fire Suppression Water System becomes inoperable, immediate corrective measures must be taken since this system provides the major fire suppression capability of the plant.

3/4.7.11 FIRE BARRIER PENETRATIONS

The functional integrity of the penetration fire barriers ensures that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. This design feature minimizes the possibility of a single fire rapidly involving several areas of the facility prior to detection and extinguishment. The penetration fire barriers are a passive element in the facility fire protection program and are subject to periodic inspections.

Fire barrier penetrations, including cable penetration barriers, fire doors and dampers are considered functional when the visually observed condition is the same as the as-designed condition. For those fire barrier penetrations that are not in the as-designed condition, an evaluation shall be performed to show that the modification has not degraded the fire rating of the fire barrier penetration.

During periods of time when a barrier is not functional, either: (1) a continuous fire watch is required to be maintained in the vicinity of the affected barrier, or (2) the fire detectors on at least one side of the affected barrier must be verified OPERABLE and an hourly fire watch patrol established until the barrier is restored to functional status.

3/4.7.12 AREA TEMPERATURE MONITORING

The area temperature limitations ensure that safety-related equipment will not be subjected to temperatures in excess of their environmental qualification temperatures. Exposure to excessive temperatures may degrade equipment and can cause a loss of its OPERABILITY. The temperature limits include an allowance for instrument error of 3.9°F.

3/4.7/13 GROUNDWATER LEVEL

This Technical Specification is provided to ensure that groundwater levels will be monitored and prevented from rising to the potential failure limit for the McGuire Units 1 and 2 Auxiliary Buildings. This potential failure limit is based on engineering calculations that have determined that the Auxiliary Buildings are susceptible to overturning due to buoyancy at elevation 737 feet Mean Sea Level(MSL). Under the requirements of this Technical Specification, if groundwater level exceeds elevation 731 feet MSL, (3 out of 5 Tech Spec groundwater monitor alarms), and cannot be reduced in one (1) hour, McGuire must begin reducing Units 1 and 2 to Mode 5, Cold Shutdown.

This Technical Specification is provided to ensure that groundwater levels will be monitored and prevented from rising to the potential failure limit for the McGuire Units 1 and 2 Auxiliary Buildings. This potential failure limit is based on engineering calculations that have determined that the Auxiliary Buildings are susceptible to overturning due to buoyancy at elevation 737 feet Mean Sea Level (MSL). Under the requirements of this Technical Specification, if groundwater monitor alarms), and cannot be reduced in one (1) hour, McGuire must begin reducing Units 1 and 2 to Mode 5, Cold Shutdown.

Analysis performed by Design Engineering determined that the Reactor and Diesel Generator Buildings are designed to withstand hydrostatic loadings due to groundwater levels up to elevation 760 feet MSL; therefore, no Technical Specification requirements are specified for these structures.

Elevation 731 feet MSL is the Technical Specification action level of the five Technical Specification groundwater monitors listed in Table 3.7-7. The East Wall exterior monitor alarm at elevation 731 feet MSL is the Alert alarm due to the groundwater well being bored to a depth of 730 feet MSL because of underground rock formation below the well. The other four (4) monitors are Hi-Hi alarms at elevation 731 feet (MSL).

The East Wall exterior monitor was originally on the exterior of the Unit 2 Auxiliary Building and subsequently was enclosed by the construction of the Equipment Staging Building.

As required by Operations procedures, any alarms on non-Technical Specification groundwater monitors will also be investigated. Additionally, if three (3) out of the five (5) Technical Specification Groundwater monitors alarm at levels below the Technical Specification action levels, Operations will contact Duke Design Engineering (Civil) for investigation and resolution of the increased groundwater level.

If one or more of the 5 Technical Specification groundwater monitors is determined to be inoperable, the monitor(s) will be considered to be indicating above the 731'-0" level until repaired and returned to an operable status.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 93 TO FACILITY OPERATING LICENSE NPF-9

AND AMENDMENT NO. 74 TO FACILITY OPERATING LICENSE NPF-17

DUKE POWER COMPANY

DOCKET NOS. 50-369 AND 50-370

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

1.0 INTRODUCTION

The Reactor and Auxiliary Building complex for the McGuire Nuclear Station incorporates a permanent groundwater dewatering (underdrain) system that was originally designed to preclude groundwater from rising above a "structural distress" level of elevation 732 ft. mean sea level (MSL) or 28 feet below the site grade level of 760 feet MSL. The underdrain system incorporates a 6 inch by 6 inch channel grid system beneath the Reactor and Auxiliary Building basemats, 3 sumps in the Auxiliary Building, each with redundunt 250 gpm pumps and level alarms, a peripheral exterior wall drain system and 11 groundwater level monitors.

By letter dated October 31, 1984, the licensee, Duke Power Company (Duke), requested changes to Technical Specification (TS) 3/4.7.13 "Groundwater Level" and referenced Table 3.7-7 "Groundwater Level Monitors," to eliminate inconsistencies between the TS and the capabilities of the Groundwater Monitoring System as installed. By letter dated July 15, 1985, Duke provided additional information in support of the proposed TS changes.

On July 9, 1987, Duke and NRC representatives met at the McGuire site to observe and discuss the Groundwater Monitoring System. Subsequently a revised application was submitted by a Duke letter dated January 27, 1988, that superseded the previous application of October 1984. The new application represented a significant revision to the groundwater monitoring program in the form of the deletion of 6 of the 11 monitoring wells from the TS and the requirement for 3 of the 5 remaining wells (around the Auxiliary Building) to exceed the Hi-Hi alarm level (elevation 731 feet MSL) before initiation of plant shutdown. This change was the result of a new structural analysis by Duke supporting structural distress levels to a higher elevation (738 feet MSL) and demonstrating that only the Auxiliary Building could experience excessive buoyancy forces as a result of groundwater rise.

The NRC staff met again with Duke on April 12 and 13, 1988 to discuss the proposed changes to TS 3/4.7.13 and to audit Duke's structural evaluations. As a result of this meeting and by letter dated April 26, 1988, Duke proposed additional revisions to its application of January 27, 1988.

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By letter dated June 21, 1988, Duke responded to staff concerns regarding removal of the 6 groundwater monitors from TS 3/4.7.13. Duke explained that although the TS action statements would be based upon fewer monitors, each of the 11 monitors would continue to be used to provide indications of groundwater level in the areas of the Reactor Buildings and Diesel Generator Buildings, and would be maintained operable. Duke further noted that this would be incorporated into the "Selected Licensee Commitment" section of the McGuire FSAR during the 1989 annual update.

By letter dated August 25, 1988, Duke transmitted additional supporting information that included: (1) a draft of the planned McGuire FSAR update for sections regarding groundwater control and instrumentation; (2) the draft Selected Licensee Commitment for the Groundwater Level Monitoring System; and (3) the Groundwater Monitor Loop Calibration procedure that contains steps to address the penetration tubing for interior groundwater monitors at McGuire.

2.0 SYSTEM DESCRIPTION

The McGuire Nuclear Station site is located within the groundwater region of Charlotte, North Carolina which is part of the Piedmont Groundwater Province. The occurrence, location and movement of unconfined groundwater at the McGuire site is controlled primarily by the water level in Lake Norman which borders the north side of the McGuire site. The only other expected groundwater recharge areas near the McGuire powerblock are adjacent to the Standby Nuclear Service Water Pond and the Waste Water Collection Basin.

Since the lower elevations of some Category 1 structures are below the natural water table, a permanent Category 1 Groundwater Drainage System was installed during initial construction to lower the water table (reference McGuire FSAR Figure 2B-3). The groundwater system was designed to relieve subsurface hydrostatic loadings by collecting groundwater in wall drains, basemat flow channels and sumps, then pumping the collected water from the sumps to the surface water drainage system, thereby creating a depression in the water table in the vicinity of the powerblock. The Groundwater Drainage System is a safety-related (ANS Safety Class 3) system as it protects Seismic Category 1 structures by limiting structural stresses exerted upon the Auxiliary and Reactor Buildings due to hydrostatic pressures and uplift forces as a result of high groundwater levels. Presently, during normal operation of the underdrain system, groundwater level is maintained at or below elevation 712 feet MSL in the Auxiliary Building areas and elevation 717 feet MSL in the Reactor Building areas.

The underdrain system consists of a grid of interconnected flow channels (reference McGuire FSAR Figures 2.4.13-1 and 2.4.13-2) at the top of rock or fill concrete and below the building foundation slabs, which drains the entire foundation of the Auxiliary and Reactor Buildings, with the exception of deeper pits that are designed for full hydrostatic loads. All channels in the grid system gravity drain to 3 groundwater sumps (A, B, and C) in the lower elevation of the Auxiliary Building. An exterior wall drain composed of two separate flow mediums of zoned sand and stone filter, and a metal perforated pipe extends around the foundation perimeter and drains to groundwater sump C. The zoned

wall filter and perforated pipe are not required on the south side of the Auxiliary Building due to the adjacent Turbine Building which prevents any groundwater rise from exceeding elevation 735 feet MSL. In the event a single flow channel or wall drain becomes blocked, groundwater will flow to the groundwater sumps through redundant drain routes. Groundwater collected in the underdrain sumps is pumped to the Yard Storm Drain System or to the Turbine Building sumps via sump pumps located in the Auxiliary Building (underdrain sumps A, B, and C). There are 6 groundwater sump pumps available and the 3 underdrain sumps are interconnected by drainage channels. Therefore, the many redundant features ensure the function of the groundwater drainage system.

The groundwater level monitoring program for the Auxiliary and Reactor Building areas defined in existing TS 3/4.7.13 requires the groundwater level monitoring portion of the groundwater system to continuously monitor groundwater levels in the zoned wall filter. An audible alarm (annunciator) is provided in the Control Room in the event of a sufficient rise in groundwater to reach the alarm setpoint. Eleven permanent groundwater monitors are installed around the perimeter of the Auxiliary, Reactor and Diesel Generator Building walls. Seven interior monitors, instrumented through the walls, are mounted inside the Auxiliary and Diesel Generator Buildings. Four exterior monitors instrumented in cased wells are located on the east and west sides of the Auxiliary and Reactor Buildings, (reference McGuire FSAR Figure 2.4.13-1). There are no monitors on the south side of the Auxiliary Building and none are needed because of the adjacent Turbine Building and associated underground structures (reference McGuire FSAR Figure 2.5.1-1).

Each groundwater monitor has 3 setpoints: (1) Alert, (2) Hi, and (3) Hi-Hi. Any single alarm or any combination of alarms will alert Control Room personnel to a rise in groundwater level at preset alarm levels by an audible and visual alarm indication. Operations staff use the McGuire procedure, "Annunciator Response for Panel 1AD-8," to respond to groundwater monitor alarms. The procedure provides instructions for Alert, Hi, and Hi-Hi alarm levels. The Alert level alarm occurs 2 feet above the floor slab and results in the dispatch of an operator to check the groundwater monitor panel and the actual monitor that is in alarm. For the Hi level groundwater alarm, which is set at 5 feet above the floor slab, the procedure requirements are the same. For the Hi-Hi level groundwater alarm, which is set at 15 feet above the floor slab, the procedure refers to the TS and requires that the Operations Shift Supervisor be informed. If the alarm occurs without previous alarms at the Alert and Hi levels, Instrument and Electrical personnel are also to be contacted. At the Hi-Hi level alarm, the existing TS requires the unit to be in at least Hot Standby within 6 hours and in Cold Shutdown within the next 30 hours.

3.0 EVALUATION

Duke has proposed the following changes to TS 3/4.7.13:

Change 1 — Delete the exterior groundwater monitors next to each Reactor Building, and delete the 4 interior groundwater monitors in the Diesel Generator Building, leaving only the 5 monitors for the Auxiliary Building;

Change 2 — Revise the groundwater level control strategy based upon a single alarm level (731 feet MSL) for the Auxiliary Building monitors. Require that if groundwater level should exceed elevation 731 feet MSL as indicated by 3 of 5 monitor alarms (as noted below), and cannot be reduced in one hour, the McGuire Station (both units) must be in at least hot standby within 6 hours, and hot shutdown within the next 6 hours, and cold shutdown within the following 30 hours. Change the associated surveillance requirements to require that (1) the groundwater level be demonstrated each shift to be below elevation 731 MSL and (2) the groundwater level monitor instrument/loop for the specified locations be demonstrated operable annually by loop calibration or operational test;

Change 3 — Change the unit shutdown requirement from 1 alarmed monitor to 3 alarmed monitors out of a total of 5 for the Auxiliary Building.

Additionally, associated TS Bases 3/4 7-8 is revised and supplemented consistent with the above changes to better explain the groundwater system and its operation.

Our evaluation of each of these changes is presented below:

Change 1:

The Reactor Buildings have been analyzed and qualified by Duke Design Engineers for a maximum groundwater level of 760 feet MSL without adverse effects from lateral pressures, uplift, or overturning due to buoyancy. The staff has reviewed and concurred in these analyses.

Duke states that the Diesel Generator Buildings are not specifically designed for lateral pressures due to a hydrostatic loading with a groundwater level of 760 feet MSL; however, the Diesel Generator Buildings were designed for loading cases that exceed the groundwater loadings that could occur. Duke has also determined that hydrostatic loads due to groundwater are negligible compared to the design loads for these buildings. The Diesel Generator Buildings have been analyzed by Duke for uplift and overturning due to buoyancy and were found structurally acceptable for a groundwater elevation up to top of grade, which is 760 feet MSL. The staff has audited these analyses and calculations and concludes that the Diesel Generator Buildings are stable for all groundwater levels.

Based on Duke Design Engineering analyses and staff audit, both the Reactor and Diesel Generator Buildings are designed for a groundwater elevation of 760 feet MSL which is also the full pond level for Lake Norman; therefore, it is not necessary to continue monitoring the groundwater monitors next to either Reactor Building or the 4 interior groundwater monitors inside either Diesel Generator Building for purposes of structural protection. Accordingly, they can be deleted from McGuire TS 3/4.7.13. However, as discussed later, these should and will be retained in Duke's administrative procedures for the groundwater monitoring program.

Change 2:

Currently, as required by TS 3/4.7.13, action is required when the groundwater level alarm "Alert" is activated. In the proposed TS, action is not required until 3 of 5 TS groundwater monitors for the Auxiliary Building alarm at elevation 731 feet MSL.

The Auxiliary Building has been analyzed by Duke for uplift and overturning in addition to local hydrostatic stresses that could be induced laterally on the exterior walls. The exterior walls are qualified for a lateral hydrostatic load due to a maximum groundwater elevation of 760 feet MSL (full pond level of Lake Norman). The governing failure mode of the Auxiliary Building is overturning of the building and would require an increase in groundwater around the entire perimeter or a large portion of the perimeter of the Auxiliary Building to cause this effect. Elevation 737 feet MSL has been calculated to be the maximum level that groundwater could rise before overturning would be initiated. The staff audited these analyses and found them to be acceptable.

The revised TS would require that groundwater level be demonstrated each shift to be below elevation 731 feet MSL, and that action be taken to put both McGuire units in Mode 5, Cold Shutdown, within 42 hours after 3 of the 5 groundwater alarms for the Auxiliary Building are activated at 731 feet MSL. The minimum elevation for groundwater to initiate an overturning failure of the Auxiliary Building is elevation 737 feet MSL. Therefore, action is initiated at a groundwater level at least 6 feet below the potential failure limit of 737 feet MSL.

The current TS has an "alert" level that is 2 feet above floor level. This is inconsistent with the actual installation conditions for the interior monitors. The interior monitors are in the exterior walls at 2 feet 8 inches above floor level and the pressure sensors are located at 3 or 4 feet above floor level. Thus, the lowest possible level alarm for these monitors is about 3 or 4 feet above floor level. The proposed change to substitute a new single alarm level at 731 feet MSL eliminates this inconsistency. The existing TS was originally designed to facilitate cold shutdown before ground water level exceeded the structural distress level at any individual wall section or monitor. The basis for the existing TS is that exterior Auxiliary Building walls were not capable of withstanding the full hydrostatic load for groundwater at elevation 760 feet MSL. However, as previously discussed, the recent Duke analysis audited by the staff has shown that the exterior walls can withstand the full hydrostatic load (elevation 760 feet MSL); thus, the early indications of groundwater rise are not as important and existing TS requirements to calculate rate of rise are no longer necessary. The overall underdrain system capacity is very large in comparison to the potential groundwater inflow rate and there will be adequate time for corrective action and plant shutdown, even from the highest alarm level. Isolated (localized) groundwater rise on a segment of the building perimeter is no longer a significant safety concern. Rather, it is an indication of a partial system degradation with a need for maintenance or corrective action in accordance with Duke's administration procedures.

Using McGuire FSAR Figure 2B-8 (Volume 2, Appendix B), Duke estimated that it would take approximately 9.5 days for the groundwater to rise from elevation 731 feet MSL to elevation 737 feet MSL. Therefore, the time duration of 42 hours, proposed by Duke, to bring the units to Mode 5, Cold Shutdown, is sufficient to safely shutdown the plant and establish decay heat removal, and to take action(s) to eliminate the source of groundwater rise. The staff concurs that the duration provided is acceptable, but we note that the groundwater rebound is based on normal conditions. Groundwater rates of rise could be greater if a piping pathway developed along a water pipeline. However, the pipes are designed with cut-off plates to preclude development of seepage pathways and therefore this scenario is very unlikely.

The associated surveillance requirements for the proposed TS change would require the groundwater level monitor instrument/loop for the specified locations to be demonstrated operable annually by loop calibration or operational test. Duke notes that the groundwater monitoring instrumentation at McGuire has proven to be highly reliable. On the basis of this favorable operating experience with the groundwater level monitoring instrumentation, we agree with Duke that an annual demonstration of operability is sufficient.

Change 3:

Presently, TS 3/4.7.13 requires that various specified actions be taken when 1 of 11 alarms is activated at elevations 716 feet MSL, 721 feet MSL, and 731 feet MSL. The proposed TS would require 3 of the 5 groundwater monitor alarms for the Auxiliary Building to be activated before action to shut down the units is required. As specified in the previous discussion, the exterior Auxiliary Building walls are structurally acceptable for hydrostatic pressure from a groundwater elevation of 760 feet MSL (full pond level of Lake Norman). Therefore, the additional groundwater monitors (the other 6 of the total 11 used for the Reactor and Diesel Generator Buildings) are not necessary for TS monitoring of the Auxiliary Building; however, they will be retained in the administrative procedures for the monitoring program and used by Duke as an indication of any localized groundwater increases. The failure mode of overturning of the Auxiliary Building would require that groundwater be at elevation 737 feet MSL around the entire perimeter or a large portion of the perimeter of the Auxiliary Building to cause a buoyancy effect on the building. This, however, is not a realistic event because the Reactor Buildings and Turbine Building shield portions of the Auxiliary Building perimeter from potential groundwater increases. Nevertheless, Duke has conservatively assumed the Auxiliary Building to be subject to overturning due to groundwater buoyancy force. The proposed TS revision would provide assurance that groundwater would be properly monitored and prevented from ever reaching the potential failure limit.

As shown in McGuire FSAR Figure 2.4.13-1, there is 1 exterior groundwater monitor on the West exterior wall of the Auxiliary Building (Column Line 49); and, 1 exterior groundwater monitor on the East exterior wall of the Auxiliary Building (Column Line 63). Additionally, there are 3 interior monitors located along the North exterior wall of the Auxiliary Building, (on Column Lines PP & QQ) which is the side of the Auxiliary Building adjacent to Lake Norman. This layout of 5 groundwater monitors provides for monitoring on all sides of the

Auxiliary Building that are not bordered by the Turbine Building and Reactor Buildings. By requiring 3 of the 5 groundwater monitors to be activated at elevation 731 feet MSL before any action is required, the proposed TS provides for a more realistic indication of a potential groundwater buoyancy effect on the Auxiliary Building. Any 3 alarmed groundwater monitors would mean that the groundwater rise is spread out over a relatively wide area. The revision to the TS would be conservative in that there may be 3 alarmed groundwater monitors which might indicate groundwater on only 2 sides of the Auxiliary Building; thus, having a non-buoyancy effect. Nonetheless, the proposed TS would require both Units 1 and 2 to go to Mode 5, Cold Shutdown, until resolution of the increased groundwater has been achieved. We find this to be both prudent and acceptable.

Thus, on the basis of our review of each of the above 3 changes, we find the proposed TS 3/4.7.13 to be based upon a conservative analysis of limiting structural concerns due to groundwater, and to provide for reliable and timely indications of the need for actions to place the facility in a safer condition before groundwater levels sufficient to cause these limiting structural concerns could be reached. The proposed changes are, therefore, acceptable.

4.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.32 the Commission has determined that issuing these amendments will have no significant impact on the environment (54 FR 8850).

5.0 CONCLUSION

The Commission issued a Notice of Consideration of Issuance of Amendments to Facility Operating Licenses and Opportunity for Hearing which was published in the Federal Register (53 FR 18206) on April 21, 1988. The Commission 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: D. Hood, PD#II-3/DRP-I/II
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S. Chan, ESGB

Dated: March 2, 1989

7590-01

UNITED STATES NUCLEAR REGULATORY COMMISSION

DUKE POWER COMPANY

DOCKET NOS. 50-369 AND 50-370

NOTICE OF ISSUANCE OF AMENDMENTS TO

FACILITY OPERATING LICENSES

The U.S. Nuclear Regulatory Commission (Commission) has issued Amendment No. 93 to Facility Operating License No. NPF-9, and Amendment No. 74 to Facility Operating License No. NPF-17 issued to Duke Power Company, (the licensee) which revised the Technical Specifications (TS) for operation of the McGuire Nuclear Station, Units 1 and 2, (the facility) located in Mecklenburg County, North Carolina. The amendments were effective as of the date of issuance.

The amendments change TS 3/4 7.13, "Groundwater Level" to eliminate inconsistencies between the TS and the capabilities of the groundwater monitoring system as installed.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments.

Notice of Consideration of Issuance of Amendments and Opportunity for Hearing in connection with this action was published in the FEDERAL REGISTER on April 21, 1988 (53 FR 18206). No request for a hearing or petition for leave to intervene was filed following this notice.

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The Commission has prepared an Environmental Assessment related to the action and has concluded that an environmental impact statement is not warranted and that the issuance of these amendments will not have a significant adverse effect on the quality of the human environment. (54 FR 8850)

For further details with respect to the action see (1) the application for amendments dated January 27, 1988, as supplemented April 26, June 21, and August 25, 1988, (2) Amendment No. 93 to License No. NPF-9 and Amendment No. 74 to License No. NPF-17 and (3) the Commission's related Safety Evaluation and Environmental Assessment. All of these items are available for public inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C., and at the Atkins Library, University of North Carolina, Charlotte (UNCC Station), North Carolina 28223. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Reactor Projects I/II.

Dated at Rockville, Maryland, this 2nd day of March 1989.

FOR THE NUCLEAR REGULATORY COMMISSION

Darl Hood

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Office of Nuclear Reactor Regulation

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