

August 2, 1995

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Mr. T. C. McMeekin  
Vice President, McGuire Site  
Duke Power Company  
12700 Hagers Ferry Road  
Huntersville, NC 28078-8985

SUBJECT: ISSUANCE OF AMENDMENTS - McGUIRE NUCLEAR STATION, UNITS 1 AND 2  
(TAC NOS. M90557 AND M90558)

Dear Mr. McMeekin:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 157 to Facility Operating License NPF-9 and Amendment No. 139 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated September 28, 1994, as supplemented by letters dated May 3 and June 14, 1995.

The amendments revise TS Tables 3.3-3, 3.3-4, 3.3-5, and 4.3-2 of the Engineered Safety Features Actuation System Instrumentation tables to update the "Loss of Power" function.

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

Sincerely,

/s/

Victor Nerses, Senior Project Manager  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosures:

- 1. Amendment No. 157 to NPF-9
- 2. Amendment No. 139 to NPF-17
- 3. Safety Evaluation

cc w/encl: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

August 2, 1995

Mr. T. C. McMeekin  
Vice President, McGuire Site  
Duke Power Company  
12700 Hagers Ferry Road  
Huntersville, NC 28078-8985

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Sincerely,

A handwritten signature in cursive script that reads "Victor Nerses".

Victor Nerses, Senior Project Manager  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosures:

1. Amendment No. 157 to NPF-9
2. Amendment No. 139 to NPF-17
3. Safety Evaluation

cc w/encl: See next page

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Duke Power Company

McGuire Nuclear Station

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

DUKE POWER COMPANY

DOCKET NO. 50-369

McGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 157  
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 September 28, 1994, as supplemented by letters dated May 3 and June 14, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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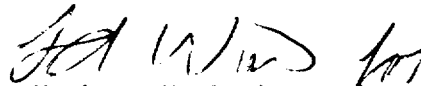
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-9 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 157, 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 and shall be implemented within 60 days from the date of issuance, or 60 days after the completion date of the Unit 2 modification, whichever is later.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: August 2, 1995



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

DUKE POWER COMPANY

DOCKET NO. 50-370

McGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139  
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 September 28, 1994, as supplemented by letters dated May 3 and June 14, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

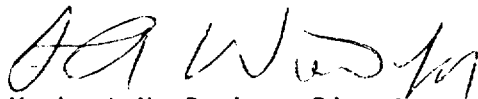
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-17 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 139 , 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 and shall be implemented within 60 days from the date of issuance, or 60 days after the completion date of the Unit 2 modification, whichever is later.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: August 2, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 157

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 139

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.

Remove Pages

3/4 3-22

3/4 3-28

3/4 3-29

3/4 3-32

3/4 3-37

Insert Pages

3/4 3-22

3/4 3-28\*

3/4 3-28a

3/4 3-29

3/4 3-32

3/4 3-37

\* no areas of change - overflow reflected with changes on 3/4 3-28a



TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
7. Auxiliary Feedwater (continued)					
f. Station Blackout (Note 1) Start Motor-Driven Pumps and Turbine-Driven Pump					
1) 4 kV Loss of Voltage	3/Bus	2/Bus Either Bus	2/Bus	1, 2, 3	19
2) 4 kV Degraded Voltage	3/Bus	2/Bus Either Bus	2/Bus	1, 2, 3	19
g. Trip of All Main Feedwater Pumps Start Motor- Driven Pumps	2-1/MFWP	2-1/MFWP	2-1/MFWP	1, 2 <sup>#</sup>	27
8. Automatic Switchover to Recirculation RWS Level	3	2	2	1, 2, 3	15
9. Loss of Power					
a. 4 kV Loss of Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	15a
b. 4 kV Degraded Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	15a
10. Engineered Safety Features Actuation System Interlocks					
a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	20
b. Low-Low T <sub>avg</sub> , P-12	4	2	3	1, 2, 3	20
c. Reactor Trip, P-4	2	2	2	1, 2, 3	22
d. Steam Generator Level, P-14	3/stm gen.	2/stm gen. in any operating stm gen.	2/stm gen. in each operating stm gen.	1, 2, 3	20

McGUIRE - UNITS 1 and 2

3/4 3-22

Amendment No. 157  
Amendment No. 139  
(Unit 1)  
(Unit 2)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
7. Auxiliary Feedwater		
a. Manual Initiation	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.
c. Steam Generator Water Level--Low-Low		
1) Start Motor-Driven Pumps	$\geq 12\%$ of span from 0 to 30% of RATED THERMAL POWER, increasing linearly to $\geq 40.0\%$ of span at 100% of RATED THERMAL POWER.	$\geq 11\%$ of span from 0 to 30% of RATED THERMAL POWER, increasing linearly to $\geq 39.0\%$ of span at 100% of RATED THERMAL POWER.
2) Start Turbine-Driven Pumps	12% of span from 0 to 30% of RATED THERMAL POWER, increasing linearly to $\geq 40.0\%$ of span at 100% of RATED THERMAL POWER.	$\geq 11\%$ of span from 0 to 30% of RATED THERMAL POWER, increasing linearly to $\geq 39.0\%$ of span at 100% of RATED THERMAL POWER.
d. Auxiliary Feedwater Suction Pressure - Low (Suction Supply Automatic Realignment)	$\geq 2$ psig	$\geq 1$ psig
e. Safety Injection - Start Motor-Driven Pumps	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values	

McGUIRE - UNITS 1 and 2

3/4 3-28

Amendment No. 157  
Amendment No. 139

(Unit 1)  
(Unit 2)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
7. Auxiliary Feedwater (continued)		
f. Station Blackout - Start Motor-Driven Pumps and Turbine-Driven Pump (Note 1)		
Unit 1		
1) 4 kV Loss of Voltage	3174 ± 45 volts with a 8.5 ± 0.5 second time delay	≥ 3122 volts
2) 4 kV Degraded Voltage	≥ 3678.5 volts with ≤ 11 second with SI and ≤ 600 second without SI time delays	≥ 3661 volts
Unit 2		
1) 4 kV Loss of Voltage	3157 ± 45 volts with a 8.5 ± 0.5 second time delay	≥ 3108 volts
2) 4 kV Degraded Voltage	≥ 3703 volts with ≤ 11 second with SI and ≤ 600 second without SI time delays	≥ 3685.5 volts
g. Trip of Main Feedwater Pumps - Start Motor-Driven Pumps	N.A.	N.A.

McGUIRE - UNITS 1 and 2

3/4 3-28a

Amendment No. 157 (Unit 1)  
Amendment No. 139 (Unit 2)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
8. Automatic Switchover to Recirculation		
RWST Level	≥ 90 inches	≥ 80 inches
9. Loss of Power		
Unit 1		
a) 4 kV Loss of Voltage	3174 ± 45 volts with a 8.5 ± 0.5 second time delay	≥ 3122 volts
b) 4 kV Degraded Voltage	≥ 3678.5 volts with ≤ 11 second with SI and ≤ 600 second without SI time delays	≥ 3661 volts
Unit 2		
a) 4 kV Loss of Voltage	3157 ± 45 volts with a 8.5 ± 0.5 second time delay	≥ 3108 volts
b) 4 kV Degraded Voltage	≥ 3703 volts with ≤ 11 second with SI and ≤ 600 second without SI time delays	≥ 3685.5 volts
10. Engineered Safety Features Actuation System Interlocks		
a. Pressurizer Pressure, P-11	≤ 1955 psig	≤ 1965 psig
b. T <sub>avg</sub> , P-12	≥ 553°F	≥ 551°F
c. Reactor Trip, P-4	N.A.	N.A.
d. Steam Generator Level, P-14	See Item 5. above for all Trip Setpoints and Allowable Values.	
Note 1:	The turbine driven pump will not start on a blackout signal coincident with a safety injection signal.	

McGUIRE - UNITS 1 and 2

3/4 3-29

Amendment No. 157  
Amendment No. 139  
(Unit 1)  
(Unit 2)

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
7. <u>Steam Generator Water Level Low</u>	
a. Motor-driven Auxiliary Feedwater Pumps	≤ 60
b. Turbine-driven Auxiliary Feedwater Pumps	≤ 60
8. <u>Negative Steam Line Pressure Rate - High</u> <u>Steam Line Isolation</u>	≤ 10
9. <u>Start Permissive</u> Containment Pressure Control System	N.A.
10. <u>Termination</u> Containment Pressure Control System	N.A.
11. <u>Auxiliary Feedwater Suction Pressure - Low</u> Auxiliary Feedwater Pumps (Suction Supply Automatic Realignment)	≤ 13
12. <u>RWST Level</u> Automatic Switchover to Recirculation	≤ 60
13. <u>Station Blackout</u>	
a. Start Motor-Driven Auxiliary Feedwater Pumps	≤ 60
b. Start Turbine-Driven Auxiliary Feedwater Pump (6)	≤ 60
14. <u>Trip of Main Feedwater Pumps</u> Start Motor-Driven Auxiliary Feedwater Pumps	≤ 60
15. <u>Loss of Power</u>	
a. 4 kV Loss of Voltage	≤ 11
b. 4kV Degraded Voltage	≤ 11 with SI, and ≤ 600 without SI

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION  
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>ANALOG CHANNEL OPERATIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>ACTUATION LOGIC TEST</u>	<u>MASTER RELAY TEST</u>	<u>SLAVE RELAY TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
7. Auxiliary Feedwater								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Auxiliary Feedwater Suction Pressure-Low	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
e. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements							
f. Station Blackout	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
g. Trip of Main Feedwater Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2
8. Automatic Switchover to Recirculation RSWT Level								
	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
9. Loss of Power								
a. 4 kV Loss of Voltage	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 4 kV Degraded Voltage	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3, 4

McGUIRE - UNITS 1 and 2

3/4 3-37

Amendment No. 157  
139 (Unit 1)  
(Unit 2)



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NPF-9  
AND AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NPF-17  
DUKE POWER COMPANY  
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2  
DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

By letter dated September 28, 1994, as supplemented by letters dated May 3 and June 14, 1995, Duke Power Company (the licensee) submitted a request for changes to the McGuire Nuclear Station, Units 1 and 2, Technical Specifications (TS). The requested changes would revise TS Tables 3.3-3, 3.3-4, 3.3-5, and 4.3-2 of the Engineered Safety Features Actuation System Instrumentation tables to update the "Loss of Power" function. The May 3 and June 14, 1995, letters provided clarifying information that did not change the scope of the September 28, 1994, application and the initial proposed no significant hazards consideration determination.

Each nuclear unit has two redundant and independent 4160-volt essential auxiliary power systems (EAPSs) that normally receive power from the 6900-volt normal auxiliary power systems (NAPSs). All of the vital loads required to mitigate an accident and to achieve a safe shutdown are fed from the 4160-volt EAPS, either at 4160 volts or through transformers at a lower voltage. The 4160-volt EAPS is provided with an emergency diesel generator (EDG) that automatically starts and supplies power in the event that power from the 6900-volt NAPS is not available.

In January 1991, the licensee identified a discrepancy between its Calculation MCC-1381.05-00-0094, "Protective Relay Setting Calculation for Essential Switchgear," and the setting specified in the TS regarding undervoltage relay settings. The calculation specified an undervoltage setpoint of 84.1 percent of 4160V and an allowable undervoltage value of 80 percent of 4160V. The TS, Table 3.3-4, "Engineered Safety Features Actuation System (ESFAS) Instrumentation Trip Setpoint," specified a minimum undervoltage setpoint of 79.1 percent of 4160V and an allowable undervoltage value of 76.9 percent of 4160V. As a result of this finding, the procedure for testing these relays was revised to change the allowable undervoltage from 76.9 percent to 79.1 percent of 4160V and to indicate that an alarm would be added to warn the operators of a degraded-voltage condition.

In July 1991, the NRC staff completed an Electrical Distribution System Functional Inspection (EDSFI) at McGuire. The staff acknowledged the licensee's intention to add the alarm and additional instrumentation to detect a degraded-voltage condition at the end of fuel cycle 9 of each unit.

By letter dated September 28, 1994, the licensee proposed changes to TS 3.3-2; Table 3.3-3, "ESFAS Instrumentation;" Table 3.3-4, "ESFAS Instrumentation Trip Setpoints;" Table 3.3-5, "ESF Response Times;" and Table 4.3-2, "ESFAS Instrumentation Surveillance Requirements," to update its existing one-level undervoltage protection scheme to a two-level undervoltage protection scheme.

The current loss of power function includes only one level of undervoltage protection. The licensee proposes to update this existing level of undervoltage protection exclusively for loss of voltage and to add a second level of undervoltage protection exclusively for degraded voltage to detect the existence of a degraded-voltage condition on the 4160-volt safety buses.

The following table compares the existing and the proposed TS undervoltage instrumentation trip setpoints:

Existing TS (Both units)	Proposed TS (Unit 1)	Proposed TS (Unit 2)
UV Trip Setpoint	Set DV $\geq$ 3678.5 volts (88.4%)	Set DV $\geq$ 3703 volts (89%)
Maximum 3637 volts (87.4%)	Allowable DV $\geq$ 3661 volts (88%)	Allowable DV $\geq$ 3685.5 volts (88.6%)
Minimum UV 3291 volts (79.1%)	Set LV $\leq$ 3220 volts (77.4%)	Set LV $\leq$ 3202.5 volts (77%)
Allowable UV $\geq$ 3200 volts (76.9%)	Allowable LV $\leq$ 3227 volts (77.5%)	Allowable LV $\leq$ 3206 volts (77.1%)

For the existing TS, UV (undervoltage) relays isolate offsite power from the bus in a maximum of  $8.5 \pm 0.5$  seconds.

For the proposed TS, DV (degraded voltage) relays would initiate alarms in the control room in a maximum of 11 seconds and isolate offsite power from the bus in either a minimum of 11 seconds with a concurrent safety injection (SI) signal or a maximum of 600 seconds (from the start of the first time delay) without a concurrent SI signal. The LV (loss-of-voltage) relays would isolate offsite power from the bus in a maximum of  $8.5 \pm 0.5$  seconds.

## 2.0 DISCUSSION AND EVALUATION

These TS changes add an additional level of undervoltage protective relaying on the 4160-volt EAPS buses 1ETA, 1ETB, 2ETA, and 2ETB and revise the setpoints for the existing protective relaying.



The purpose for the protective relaying added by these TS changes is to detect a degraded-voltage condition, which may prevent nuclear safety-related plant equipment required for safe plant shutdown and/or accident mitigation from performing its intended safety functions. The concern to be mitigated by the implementation of these TS changes is the potential for having a persisting degraded-voltage level that is above the setpoint of the existing loss-of-voltage relaying but below a level at which damage to operating safety-related equipment may occur over a period of time.

The licensee proposes to install a voltage sensing relay on each of three phases for each bus previously mentioned. If two out of three relays on a bus detect degraded voltage, two timing relays are started. One timing relay ensures that the degraded voltage is not a short-duration transient. If the degraded voltage persists until after this relay has completed its timing cycle, an annunciator alarm is activated. The second timer continues its timing cycle to allow a period in which the operators can implement actions to correct the degraded condition. If the degraded condition remains present until the completion of the second timing cycle, separation from the offsite power grid and connection to the EDG occur automatically. In addition, at any time after the first timing cycle and before the end of the second timing cycle, separation from offsite power will occur automatically in the event of an SI signal. After being isolated from offsite power, 4160-volt buses will automatically be supplied with emergency power from EDGs, and their SI loads will be energized by the EDG load sequencer.

Branch Technical Position (BTP) PSB-1, "Adequacy of Station Electrical Distribution System Voltages," provided the criteria for degraded-voltage protection. In a letter dated May 3, 1995, the licensee responded to the staff's request for additional information to address how the proposed degraded-grid voltage protection would conform to the requirements of BTP PSB-1. The staff reviewed the licensee's response and concluded that the licensee adequately addressed these requirements.

However, the staff had concerns regarding the proposed degraded-grid and loss-of-voltage relay setpoints. The first concern was that, as submitted by the licensee, the proposed TS for degraded-voltage conditions would isolate offsite power from the Class 1E 4.16-kV buses in a minimum 11 seconds with a concurrent SI signal. Since a minimum of 11 seconds would permit loading of SI loads in excess of 11 seconds, this could result in loading of these loads in excess of the time assumed in an accident analysis. The second concern was that the proposed loss-of-voltage specified a range of allowable values that permits a setting as low as zero volts. If the grid voltage was below the proposed degraded-grid setpoints but above the proposed loss-of-voltage setpoints that permit a setting as low as zero volts, the potential that safety-related motors could be damaged during the 600-second time delay would be greatly increased.

In a discussion with the licensee, the staff also expressed its concerns and requested the licensee to provide additional information demonstrating that the maximum 600-second time delay without a concurrent SI signal would ensure

that all connected Class 1E loads were not damaged and would not trip for voltage that could exist down to a level just above the loss-of-voltage setpoint.

The licensee responded to the staff's concerns and request for additional information in a letter dated June 14, 1995. The licensee stated that the design basis of the first time delay is that the critical restraint was considered to be providing a time delay that would prevent actuation during normal system operations. The intent was to limit the response to a safety injection to within 11 seconds, if possible, considering the longest motor start transient. Indeed, the time delay could be set less than 11 seconds to confirm a degraded-voltage condition. Because the system will not respond to an SI until the time delay expires, the SI actuation would be enabled in less than or equal to 11 seconds. Therefore, the ESFAS table should specify a "less than or equal to" sign instead of a "greater than or equal to" sign. The use of the "greater than or equal to" sign was unintentional. On the basis of this information, the staff concludes that the response to its first concern is satisfactory.

Regarding the staff's second concern, the licensee stated that in order to ensure a minimum setting, the trip setpoints for the loss-of-voltage relays will be changed from the proposed  $\leq 3220V$  for Unit 1 to  $3174 \pm 45$  Vac and  $\leq 3202.5V$  for Unit 2 to  $3157 \pm 45$  Vac. This tolerance envelops the expected variance of the relay setting as defined in Calculation MCC-1381.05-00-0094. In addition, the allowable values will be changed from the proposed  $\leq 3227V$  for Unit 1 to  $\geq 3122V$  and from  $\leq 3206$  for Unit 2 to  $\geq 3108V$ . The allowable value is equal to the relay setting minus the channel uncertainty as defined in Calculation MCC-1381.05-00-0094. On the basis of this information, the staff concludes that the response to its second concern is satisfactory.

In response to the staff's request for additional information regarding the 600-second time delay without a concurrent SI signal, the licensee stated that the 600-second time limit acknowledges that loads cannot be operated continuously below the dropout setpoint and gives the operator time to improve the voltage before transferring to the alternate source. Equipment will not be damaged and no appreciable reduction in service life will result from operation of such short duration. Some of the loads required for SI are not normally connected to the power system, so they would not be exposed to the lower voltage during this period. If an SI signal is received, the 4kV-system will separate from the offsite power before mitigation loads are added to the system. Part of the McGuire design philosophy is to provide safety-related motor loads with a long time overcurrent protection set at 150 percent of the rated full-load amperes and below the motor damage curve. This practice provides enough margin to allow motors to operate at the degraded-voltage setpoint for 600 seconds without damage. It is preferable to make all attempts to improve the offsite voltage rather than send the plant through a loss-of-power transient on the 4kV-systems. Before the degraded voltage is sensed at the plant, the Transmission Control Center (TCC) will already be taking action to improve grid voltage because it will be below the normal operating range. The TCC has specific guidance on the voltage requirement for the plant and predetermined contingency plans on how to maintain those values.

A part of the contingency plan is to start Cowans Ford Hydroelectric Station, which is connected directly to the plant switchyard. This station takes approximately 6 minutes to come on line. On the basis of this discussion, the staff concludes that the response to the staff's request for additional information is adequate.

### 3.0 STAFF CONCLUSION

On the basis of its review of the information in the licensee's submittal and supplemental information submitted by the licensee, the staff concludes that the proposed TS changes are acceptable.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the North Carolina State official was notified of the proposed issuance of the amendments. The State official had no comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 65811 dated December 21, 1994). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: D. Nguyen

Date: August 2, 1995