July 15, 1991

Docket Nos. 50-369
and 50-370

Distribution
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Mr. M.S. Tuckman
Vice President -
Nuclear Operations
Duke Power Company
P.O. Box 1007
Charlotte, North Carolina 28201-1007

Dear Mr. Tuckman:

SUBJECT: ISSUANCE OF AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NPF-9 AND AMENDMENT NO. 104 TO FACILITY OPERATING LICENSE NPF-17 - MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 (TACS 80129/80130)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 122 to Facility Operating License NPF-9 and Amendment No. 104 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated April 11, 1991, as supplemented July 3, 1991.

The amendments revise the carbon adsorber test method and methyl iodide penetration criteria, along with other administrative changes for TS 3/4.6.1.8, "Annulus Ventilation System," and TS 3/4.7.6, "Control Area Ventilation System."

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

Sincerely,

Timothy A. Reed, Project Manager
Project Directorate II-3
Division of Reactor Projects I/II

Enclosures:
1. Amendment No. 122 to NPF-9
2. Amendment No. 104 to NPF-17
3. Safety Evaluation

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Duke Power Company

McGuire Nuclear Station

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DATED: July 15, 1991

AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NPF-9 - McGuire Nuclear Station, Unit 1
AMENDMENT NO. 104 TO FACILITY OPERATING LICENSE NPF-17 - McGuire Nuclear Station, Unit 2

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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. 122
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 April 11, 1991, as supplemented July 3, 1991, 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-9 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 122, 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

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: July 15, 1991

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. 104
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 April 11, 1991, as supplemented July 3, 1991, 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. 104, 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

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: July 15, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 122

FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

TO LICENSE AMENDMENT NO. 104

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	Insert Pages
3/4 6-16	3/4 6-16
3/4 6-17	3/4 6-17
3/4 7-13	3/4 7-13
3/4 7-14	3/4 7-14
3/4 7-15	3/4 7-15
B 3/4 6-3	B 3/4 6-3
B 3/4 6-4	B 3/4 6-4
B 3/4 7-4	B 3/4 7-4

CONTAINMENT SYSTEMS

ANNULUS VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 Two independent Annulus Ventilation Systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one Annulus Ventilation System inoperable for reasons other than the pre-heaters tested in 4.6.1.8.a and 4.6.1.8.d.5, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the pre-heaters tested in 4.6.1.8.a and 4.6.1.8.d.5 inoperable, restore the inoperable pre-heaters to OPERABLE status within 7 days, or file a Special Report in accordance with Specification 6.9.2 within 30 days specifying the reason for inoperability and the planned actions to return the pre-heaters to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.6.1.8 Each Annulus Ventilation System shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS, by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the pre-heaters operating;

b. At least once per 18 months, or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system, by:

   1) Verifying that the ventilation system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 8000 cfm ± 10%;

   2) Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM D3803-89 has a methyl iodide penetration of less than 4%; and

   3) Verifying a system flow rate of 8000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation, by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM D3803-89, has a methyl iodide penetration of less than 4%;

d. At least once per 18 months, by:

1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge while operating the system at a flow rate of 8000 cfm ± 10%;

2) Verifying that the system starts automatically on any Phase B Isolation test signal;

3) Verifying that the filter cooling electric motor-operated bypass valves can be opened;

4) Verifying that each system produces a negative pressure of greater than or equal to 0.5 inch W.G. in the annulus within 22 seconds after a start signal and that this negative pressure goes to -3.5 inches W.G. within 48 seconds after the start signal. Verifying that upon reaching a negative pressure of -3.5 inches W.G. in the annulus, the system switches into its recirculation mode of operation and that the time required for the annulus pressure to increase to -0.5 inch W.G. is greater than or equal to 278 seconds;

5) Verifying that the pre-heaters dissipate 43.0 ± 6.4 kW at a nominal voltage of 600 VAC when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the HEPA filter bank satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1975 for DOP test aerosol while operating the system at a flow rate of 8000 cfm ± 10%; and

f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the charcoal adsorber satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1975 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 8000 cfm ± 10%.

3/4.7.6 CONTROL AREA VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Area Ventilation Systems shall be OPERABLE.

APPLICABILITY: ALL MODES

ACTION: (Units 1 and 2)

MODES 1, 2, 3 and 4:

a. With one Control Area Ventilation System inoperable for reasons other than the heaters specified in 4.7.6.a and 4.7.6.e.4, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the heaters tested in 4.7.6.b and 4.7.6.e.4 inoperable, restore the inoperable heaters to OPERABLE status within 7 days, or file a Special Report in accordance with Specification 6.9.2 within 30 days, specifying the reason for inoperability and the planned actions to return the heaters to OPERABLE status.

MODES 5 and 6:

a. With one Control Area Ventilation System inoperable for reasons other than the heaters specified in 4.7.6.a and 4.7.6.e.4, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE Control Area Ventilation System in the recirculation mode; and

b. With both Control Area Ventilation Systems inoperable for reasons other than the heaters specified in 4.7.6.a and 4.7.6.e.4, or with the OPERABLE Control Area Ventilation System, required to be in the recirculation mode by ACTION a., not capable of being powered by an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

c. The provisions of Specification 3.0.4 are not applicable.

d. With the heaters tested in 4.7.6.b and 4.7.6.e.4 inoperable, restore the inoperable heaters to OPERABLE status within 7 days, or file a Special Report in accordance with Specification 6.9.2 within 30 days, specifying the reason for inoperability and the planned acations to return the heaters to OPERABLE status.

SURVEILLANCE REQUIREMENTS (Continued)

SURVEILLANCE REQUIREMENTS

4.7.6 Each Control Area Ventilation System shall be demonstrated OPERABLE:

a. At least once per 12 hours, by verifying that the control room air temperature is less than or equal to 90°F;

b. At least once per 31 days on a STAGGERED TEST BASIS, by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the heaters operating;

c. At least once per 18 months, or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system, by:

1) Verifying that the system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance of Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 2000 cfm ± 10%;

2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM D3803-89, has a methyl iodide penetration of less than 0.95%; and

3) Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation, by verifying within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and tested per ASTM D3803-89, has a methyl iodide penetration of less than 0.95%;

e. At least once per 18 months, by:

1) Verifying that the pressure drop across the combined pre-filters, HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the system at a flow rate of 2000 cfm ± 10%;

SURVEILLANCE REQUIREMENTS (Continued)

2) Verifying that upon actuation of a diesel generator sequencer the system automatically switches into a mode of operation with flow through the HEPA filters and charcoal adsorber banks;

3) Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch W.G. relative to the outside atmosphere during system operation; and

4) Verifying that the heaters dissipate 10 ± 1.0 kW at a nominal voltage of 600 VAC when tested in accordance with ANSI N510-1975.

f. After each complete or partial replacement of a HEPA filter bank, by verifying that the HEPA filter bank satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1975 for a DOP test aerosol while operating the system at a flow rate of 2000 cfm ± 10%; and

g. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the charcoal adsorber satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1975 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 2000 cfm ± 10%.

3/4.6.1.7 REACTOR BUILDING STRUCTURAL INTEGRITY

This limitation ensures that the structural integrity of the containment reactor building will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to provide: (1) protection for the steel vessel from external missiles, (2) radiation shielding in the event of a LOCA, and (3) an annulus surrounding the steel vessel that can be maintained at a negative pressure during accident conditions. A visual inspection is sufficient to demonstrate this capability.

3/4.6.1.8 ANNULUS VENTILATION SYSTEM

The OPERABILITY of the Annulus Ventilation System ensures that during LOCA conditions, containment vessel leakage into the annulus will be filtered through the HEPA filters and charcoal adsorber trains prior to discharge to the atmosphere. Cumulative operation of the system with the heaters on for 10 hours over a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The specified laboratory test method, ASTM-3803-89, implies that heaters may be unavailable for controlling the relative humidity of the influent air entering the charcoal absorber section to $\leq$ 70 percent. This is acceptable since the accident analysis with appropriate absorber efficiencies for radioiodine in elemental and organic forms based on the above test shows that the control room radiation doses to be within the 10 CFR Part 50, Appendix A, GDC 19 limits during design basis LOCA conditions. However, specifications are included to ensure heater operability and corrections ACTIONS are identified to address the contigency of inoperable heaters; these are in place to increase the safety margin of the filters. Heater operation is not necessary to meet the assumptions used in the accident analyses and limit the SITE BOUNDARY radiation doses to within the dose guideline values of 10 CFR Part 100 during LOCA conditions.

3/4.6.1.9 CONTAINMENT VENTILATION SYSTEM

The containment purge supply and exhaust isolation valves for the lower compartment (24-inch) and instrument room (12-inch and 24-inch) are required to be sealed closed during plant operations since these valves have not been demonstrated capable of closing during a LOCA. Maintaining these valves sealed closed during plant operation ensures that excessive quantities of radioactive material will not be released via the Containment Purge System. To provide assurance that these containment valves cannot be inadvertently opened, the valves are sealed closed in accordance with Standard Review Plan 6.2.4 which includes mechanical devices to seal or lock the valve closed, or prevents power from being supplied to the valve operator.

The use of the containment purge lines is restricted to the purge supply and exhaust isolation valves in the upper compartment (24-inch) since, unlike the valves in the lower compartment and instrument room, the upper compartment valves will close during a LOCA. Therefore, the SITE BOUNDARY dose guideline values of 10 CFR Part 100 would not be exceeded in the event of an accident during containment purging operation. Operation with these valves open will be limited to 250 hours during a calendar year.

3/4.6.1.9 CONTAINMENT VENTILATION SYSTEM (Continued)

Leakage integrity tests with a maximum allowable leakage rate for containment purge supply and exhaust supply valves will provide early indication of resilient material seal degradation and will allow opportunity for repair before gross leakage failures could develop. The 0.60 L_a leakage limit of Specification 3.6.1.2b. shall not be exceeded when the leakage rates determined by the leakage integrity tests of these valves are added to the previously determined total for all valves and penetrations subject to Type B and C tests.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the Containment Spray System ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of GDC 54 thru 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

Containment isolation valves are listed in FSAR Table 6.2.4-1. Those valves with a required isolation time have a value given in the "MAX ISOLATION TIME (SEC)" column. Penetration test type (type B, type C, or None) is listed in the "TEST TYPE" column of the table for each containment penetration. Changes to the FSAR are made in accordance with 10 CFR 50.59.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions, Either recombiner unit is capable of controlling the expected hydrogen generation associated with: (1) zirconium-water reactions, (2) radiolytic decomposition of water, and (3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA", March 1971.

The OPERABILITY of at least 64 of 66 igniters ensures that the Distributed Ignition System will maintain an effective coverage throughout the containment. This system of igniters will initiate combustion of any significant amount of hydrogen released after a degraded core accident. This system is to ensure burning in a controlled manner as the hydrogen is released instead of allowing it to be ignited at high concentrations by a random ignition source.

STANDBY NUCLEAR SERVICE WATER POND (Continued)

The limitations on minimum water level and maximum temperature are based on providing a 30-day cooling water supply to safety-related equipment without exceeding their design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," March 1974. The Surveillance Requirements specified for the dam inspection will conform to the recommendations of Regulatory Guide 1.127, Revision 1, March 1978

3/4.7.6 CONTROL AREA VENTILATION SYSTEM

The OPERABILITY of the Control Area Ventilation System ensures that: (1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system, and (2) the control room will remain habitable for operations personnel during and following all credible accident conditions. Cumulative operation of the system with the heaters on for 10 hours over a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The specified laboratory test method, namely, ASTM D3803-89, implies that heaters may be unavailable for controlling the relative humidity of the influent air entering the charcoal absorber section to $\leq$ 70 percent. This is acceptable since accident analysis with appropriate absorber efficiencies for radioiodine in elemental and ogranic forms based on the above test shows the site boundary radiation doses to be within the 10 CFR Part 100 limits during design basis LOCA conditions. However, specifications are included to ensure heater operability and corrective ACTIONS are identified to address the contingency of inoperable heaters; these are in place to increase the safety margin of the filters. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criterion 19 of Appendix A, 10 CFR 50. ANSI N510-1975 will be used as a procedural guide for surveillance testing.

3/4.7.7 AUXILIARY BUILDING FILTERED VENTILATION EXHAUST SYSTEM

The OPERABILITY of the Auxiliary Building Filtered Ventilation Exhaust System ensures that radioactive materials leaking from the ECCS equipment within the auxiliary building following a LOCA are filtered prior to reaching the environment. The operation of this system and the resultant effect on offsite dosage calculations were assumed in the accident analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing. The methyl iodide penetration test criterion for the carbon samples has been established at 10% (i.e., 90% removal) which is greater than the iodine removal in the accident analysis.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NPF-9

AND AMENDMENT NO. 104 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 April 11, 1991, as supplemented July 3, 1991, Duke Power Company (the licensee) requested amendments to the Technical Specifications (TSs) appended to Facility Operating License Nos. NPF-9 and NPF-17 for the McGuire Nuclear Station, Units 1 and 2. The proposed amendments would revise TS 3/4.6.1.8, "Annulus Ventilation System," and TS 3/4.7.6, "Control Area Ventilation System."

Specifically, the licensee proposed to test, via a laboratory, representative carbon samples from the charcoal adsorbers of the subject ventilation systems per the ASTM D3803-89 method instead of the currently used Regulatory Guide 1.52, Revision 2 method as supplemented by ASTM D3803-86, Test Method A. Additionally, for the above laboratory tests, the licensee proposed higher methyl iodide penetrations through the carbon samples than those specified in the existing TSs (for the Annulus Ventilation System, 4 percent instead of the existing 0.71 percent; for the Control Area Ventilation System, 0.95 percent instead of the existing 0.175 percent). The licensee uses these acceptance criteria for assuming the same adsorption efficiencies of elemental and organic forms of radioiodine in their design basis offsite dose analysis (95 percent both for elemental and organic forms for the 2-inch charcoal adsorber in the Annulus Ventilation System and 99 percent both for the elemental and organic forms for the 4-inch charcoal adsorber in the Control Area Ventilation System). Also, the licensee proposed a new ACTION statement for the Annulus Ventilation and Control Area Ventilation heaters. The proposed ACTION allows continued plant operation provided the inoperable heaters are restored to operable status within 7 days or the licensee files a special report in accordance with Specification 6.9.2 with the NRC within 30 days specifying the reason for their inoperability and the planned actions to restore the pre-heaters to their operable status. In addition, the licensee proposed a few administrative changes for consistency with other proposed changes identified above and provided the associated BASES and justifications for the proposed TS changes.

The licensee's July 3, 1991, submittal provided supplemental information that was clarifying in nature and did not affect the scope of the noticed action or the NRC staff's proposed significant hazards consideration analysis.

2.0 EVALUATION

During a review of the heating, ventilating, and air conditioning (HVAC) systems at Catawba Nuclear Station, it was discovered that the pre-heaters in some engineered safety feature (ESF) filter units were not conservatively sized for all postulated operating modes. A station specific review revealed that this problem also applied to McGuire. The pre-heaters are used to control the relative humidity of the influent air entering the carbon adsorber. These filters were designed in a manner that assumes the heaters maintain the relative humidity of the air at 70% or less. Duke Power's review revealed that during postulated low voltage conditions with loss of one of the two offsite power sources and all plant auxiliaries of the unit aligned to the other power source through the remaining step-up transformer with a concurrent loss of coolant accident (LOCA), sufficient power may not be supplied to these heaters to enable them to maintain the less than or equal to 70% relative humidity. The affected systems are the Annulus Ventilation System and the Control Area Ventilation System.

After exploring different options to address this situation, the licensee elected to use the laboratory test method described in ASTM D3803-1989 for testing carbon samples taken from the annulus and Control Area Ventilation System charcoal adsorbers. The ASTM D3803-1989 testing method calls for testing the charcoal samples at 95 percent RH and 30°C, instead of maintaining the RH and $\leq$ 70 percent. The major difference between the proposed ASTM 3803-1989 test method and other methods currently available is that the proposed method requires a long pre-conditioning period (18 hours) for the carbon samples prior to the methyl iodide challenge portion of the test. Other methods currently available do not require the carbon samples to be pre-conditioned. The NRC staff finds the proposed laboratory testing method to be conservative and, therefore, acceptable.

The licensee proposed higher methyl iodide penetration limits (i.e., reduced carbon adsorber radioiodine removal efficiency) for testing of samples taken from the subject charcoal adsorbers even though the licensee did not change the assumed carbon adsorber efficiencies in the current design basis offsite dose calculation. The licensee provided the following justification:

(1) The 95 percent RH laboratory test is much more stringent since adsorption is strongly dependent upon humidity conditions of the influent air and the adsorption efficiency decreases with increased humidity.

(2) The proposed ASTM D3803-1989 method is a stringent procedure since it requires that the carbon sample be pre-conditioned by saturating it before testing it. The pre-conditioning is conservative since it will saturate the carbon beyond the conditions to which the subject charcoal adsorbers are expected to be exposed during design basis events. Therefore, radio-iodine penetration during an actual accident would be lower than that predicted by the laboratory test.

In addition, the NRC staff notes that the heaters will continue to be available and will be subject to periodic surveillance tests to maintain them in the desired state. Furthermore, except at times when there is an unlikely combination of adverse circumstances identified above, the heaters are expected to control the RH of the influent air entering the adsorber section at 70 percent or less.

For the above reasons, the NRC staff considers that it is unlikely that the subject charcoal adsorber efficiencies for elemental radioiodine during a postulated design basis accident at any time between two successive surveillance tests will dip below the assumed values for the species in the safety analysis, due to possible degradation of the adsorber with time. This is so, since, for a given charcoal adsorber condition, elemental iodine penetration is known to be much less than organic iodine penetration and the proposed acceptance criterion is tied to organic species penetration.

Regarding organic iodine, for want of data, the NRC staff cannot conclude that the marginal safety factors (penetration assumed in the design basis accident analysis/ penetration required to be demonstrated by laboratory test) integrated in the licensee's proposed methyl iodide penetration values are sufficient to account for possible degradation of the adsorbers with time even though such penetration values are demonstrated under test conditions more stringent than what can be expected during actual design basis accidents. This is true particularly during times when the heaters do not perform as designed. The staff considers that reduced adsorber efficiencies for the subject adsorbers for the organic species which reflect the proposed penetration values and a safety factor of five (staff generally uses this value for filters outside the containment) are more appropriate. Therefore, the staff independently reassessed the previously calculated design basis LOCA doses for the McGuire plants (the LOCA is the limiting accident). The staff performed such a reassessment to determine whether the proposed increases in the methyl iodide penetration values are acceptable.

The NRC staff reassessed the previously calculated design basis LOCA site boundary (site boundary, since it is the limiting case as shown in Table 15.4-6, NUREG-0422, Supplement No. 4, January 1981 and Table 15.6.4-9, UFSAR for McGuire, December 1987) and control room doses for the McGuire plants using 80 and 95 percent adsorption efficiencies for organic iodine for the charcoal adsorbers in the Annulus and Control Area Ventilation Systems, respectively. These efficiencies correspond to a safety factor of at least five applied on proposed methyl iodide penetration limits of 4 percent and 0.95 percent for the annulus and control area charcoal adsorbers respectively. The staff also used (1) a primary containment leak rate of 0.3 percent of containment volume per day for the first day instead of 0.2 percent per day originally used, to reflect the increase in the leak rate (Table 15.6.4-10, UFSAR, McGuire, December 1987), and (2) updated dose factors (unweighted values per committed dose equivalent per unit intake) in Publication No. 30 of the International Commission on Radiological Protection, "Limits for Intakes of Radionuclides by Workers." The updated dose factors are more realistic than those listed in Publication No. 2 which the staff used previously. The reassessment showed that the site boundary (0-2 hour) doses (whole body and thyroid) were within the 10 CFR Part 100 limits and the control room doses complied with General Design Criterion 19 limits. Based on the dose reassessment findings, the staff has determined that the proposed methyl iodide penetrations for the subject charcoal adsorbers are acceptable.

With regard to the heaters, the licensee's proposed change to the specified corrective ACTION for an inoperable ventilation system means that the specified ACTION (restoring the inoperable ventilation system to OPERABLE status within 7 days or being in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours) does not have to be entered into if the heaters in the subject system are inoperable. However, the licensee has proposed corrective ACTION (TS 3.6.1.8.b, 3.7.6.b and 3.7.6.d) which requires the licensee to restore the inoperable heaters to OPERABLE status within 7 days or to file a special report to NRC within 30 days in accordance with TS 6.9.2, specifying the reason for the heater inoperability and the planned actions to restore the heaters to their OPERABLE status. The NRC staff finds the proposed changes will keep the heaters in an OPERABLE status. The staff also finds the proposed corrective ACTIONS when heaters are found to be inoperable during surveillance tests to be consistent with their reduced importance because of the licensee's proposed method for laboratory testing. Based on the above considerations, the staff finds the proposed changes relating to the heaters acceptable.

The NRC staff finds other proposed changes (i.e., TS 4.6.1.8.d.5 and TS 4.7.6.e.4 which refer to heater performance verification at a nominal voltage of 600V AC; deletion of a footnote relating to Unit 1 on McGuire TS pages 3/4 6-16 and 6-17) either provide clarification as to how the heaters have to be tested or are administrative in nature. Therefore, the staff finds such proposed TS changes acceptable.

Discussion between the NRC staff and the licensee resulted in the licensee's supplemental response of July 3, 1991, to revise the wording of the BASES of TS 3/4.7.6 and 3/4.6.1.8 to reflect the findings of this safety evaluation. The staff considers the rewording of the BASES to be appropriate.

Based on the above findings, the staff concludes that the licensee's proposed changes to McGuire, Units 1 and 2, TS 3/4.6.1.8 and 3/4.7.6 (identified in their submittal dated April 11, 1991), dealing with the Annulus and Control Area Ventilation Systems are acceptable and, therefore, should be granted. The staff also concludes that the BASES as reworded in the licensee's July 3, 1991, submittal are acceptable.

3.0 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.

4.0 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 (56 FR 22463). 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.

5.0 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.

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Date: July 15, 1991