

April 2, 2008

Mr. Bruce H. Hamilton
Vice President
McGuire Nuclear Station
Duke Energy Carolinas, LLC
12700 Hagers Ferry Road
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, ISSUANCE
OF AMENDMENTS REGARDING A CHANGE TO THE UPDATED FINAL
SAFETY ANALYSIS REPORT (TAC NOS. MD8103 AND MD8104)

Dear Mr. Hamilton:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 246 to Renewed Facility Operating License NPF-9 and Amendment No. 226 to Renewed Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2 (McGuire 1 and 2). The amendments authorize a change to the Updated Final Safety Analysis Report (UFSAR) in response to your application dated February 15, 2008.

The amendments authorize a change to the UFSAR requiring an inspection of each ice condenser within 24 hours of experiencing a seismic event greater than or equal to an operating basis earthquake within the 5-week period after ice basket replenishment has been completed to confirm that adverse ice fallout has not occurred which could impede the ability of the ice condenser lower inlet doors to open. This action would be taken, in lieu of requiring a 5-week waiting period following ice basket replenishment, prior to beginning ascension to power operations.

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,

/RA/

John Stang, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosures:

1. Amendment No. 246 to NPF-9
2. Amendment No. 226 to NPF-17
3. Safety Evaluation

cc w/encls: See next page

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DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-369

MCGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 246
Renewed 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), Renewed Facility Operating License No. NPF-9, filed by the Duke Energy Carolinas, LLC formerly Duke Power Company LLC (licensee), dated February 15, 2008, 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 Renewed 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. 246, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. Further, Facility Operating License No. NPF-9 is hereby amended to authorize a change to the Updated Final Safety Analysis Report (UFSAR) to allow inspection of each ice condenser within 24 hours of experiencing a seismic event greater than or equal to an operating-basis earthquake within the 5-week period after ice basket replenishment has been completed to confirm that adverse ice fallout has not occurred which could impede the ability of the ice condenser lower inlet doors to open. This action would be taken, in lieu of requiring a 5-week waiting period following ice basket replenishment, prior to beginning ascension to power operations, as set forth in the license amendment application dated February 15, 2008, and evaluated in the safety evaluation dated April 2, 2008. The licensee shall update the UFSAR by adding a description of this change, as authorized by this amendment, and in accordance with 10 CFR 50.71(e).
4. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Melanie C. Wong, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-9
and the Technical Specifications

Date of Issuance: April 2, 2008

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-370

MCGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 226
Renewed 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), Renewed Facility Operating License No. NPF-17, filed by the Duke Energy Carolinas, LLC formerly Duke Power Company LLC (the licensee), dated February 15, 2008, 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 Renewed 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. 226, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. Further, Facility Operating License No. NPF-17 is hereby amended to authorize a change to the Updated Final Safety Analysis Report (UFSAR) to allow inspection of each ice condenser within 24 hours of experiencing a seismic event greater than or equal to an operating-basis earthquake within the 5-week period after ice basket replenishment has been completed to confirm that adverse ice fallout has not occurred which could impede the ability of the ice condenser lower inlet doors to open. This action would be taken, in lieu of requiring a 5-week waiting period following ice basket replenishment, prior to beginning ascension to power operations, as set forth in the license amendment application dated February 15, 2008, and evaluated in the safety evaluation dated April 2, 2008. The licensee shall update the UFSAR by adding a description of this change, as authorized by this amendment, and in accordance with 10 CFR 50.71(e).
4. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Melanie C. Wong, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-17
and the Technical Specifications

Date of Issuance: April 2, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 246
RENEWED FACILITY OPERATING LICENSE NO. NPF-9
DOCKET NO. 50-369
AND
LICENSE AMENDMENT NO. 226
RENEWED FACILITY OPERATING LICENSE NO. NPF-17
DOCKET NO. 50-370

Replace the following pages of the Renewed Facility Operating Licenses with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

Insert

License Pages

License Pages

NPF-9 page 3

NPF-9 page 3

NPF-17 page 3

NPF-17 page 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 246 TO RENEWED FACILITY OPERATING LICENSE NPF-9

AND

AMENDMENT NO. 226 TO RENEWED FACILITY OPERATING LICENSE NPF-17

DUKE ENERGY CAROLINAS, LLC

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

By application dated February 15, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080510250), Duke Energy Carolinas, LLC formerly Duke Power Company LLC (Duke, the licensee), requested changes to the Technical Specifications (TSs) for the McGuire Nuclear Station, Units 1 and 2 (McGuire 1 and 2).

The proposed changes would authorize a change to the Updated Final Safety Analysis Report (UFSAR) requiring an inspection of each ice condenser unit within 24 hours of experiencing a seismic event greater than or equal to an operating-basis earthquake (OBE) within the 5-week period after ice basket replenishment has been completed to confirm that adverse ice fallout has not occurred which could impede the ability of the ice condenser lower inlet doors to open. This action would be taken, in lieu of requiring a 5-week waiting period following ice basket replenishment, prior to beginning ascension to power operations following an outage.

The ice fusion issue was discussed in a public meeting at Nuclear Regulatory Commission (NRC) Headquarters on December 12, 2007. The proposed amendment is consistent with that discussion and with the follow-up actions described in the NRC staff's meeting summary dated December 20, 2007 (ADAMS Accession No. ML073550124).

2.0 REGULATORY EVALUATION

Section 3.1 of the McGuire 1 and 2 UFSAR, "Conformance with General Design Criteria (GDC) discusses briefly the design criteria for structures, systems, and components important to safety and how these criteria meet the NRC "General Design Criteria for Nuclear Power Plants" specified in Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50 (10 CFR Part 50). The proposed amendments do not alter or revise the current bounding safety analyses of record in any way. Consequently, McGuire 1 and 2 will remain in compliance with the applicable regulations and requirements including the following GDCs:

GDC 2, "Design Basis For Protection Against Natural Phenomena," which requires that structures, systems and components important to safety be designed to withstand the effects of natural phenomena such as earthquakes;

GDC 16, "Containment Design," which requires that the reactor containment and associated systems provide an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment;

GDC 38, "Containment Heat Removal," which requires that a system be provided to remove heat from the reactor containment; and

GDC 50, "Containment Design Basis," which requires that the reactor containment structure be designed with conservatism to accommodate applicable design parameters (pressure, temperature, leakage rate).

Other than what may be construed as licensing basis, there is no specific regulation, NRC policy, or guidance document that clearly and unambiguously pertains to ice condenser ice fusion time requirements.

3.0 TECHNICAL EVALUATION

3.1 Ice Condenser Design Features and Ice Bed Issues

In the February 15, 2008, application the licensee provided a general description of ice condenser design and its operation during a loss-of-coolant accident (LOCA) or a main steam line break (MSLB) accident. Since the purpose of the proposed amendments is not to change any design of the ice condenser, the licensee's general description is not repeated here.

The licensee stated that, as a result of sublimation of ice in the ice bed during normal operation, periodic addition of ice mass is necessary to ensure compliance with the TSs. At McGuire 1 and 2, this is accomplished by emptying and refilling select ice baskets during each refueling outage. The population of baskets affected during a given refueling outage is typically 10 to 20 percent of the total.

The term "ice fusion" refers to a condition in which an ice basket freshly loaded with flake ice achieves stability at the operating temperature of the ice condenser, i.e., when the ice freezes or otherwise solidifies such that it tends to stay in the ice basket when agitated. The design of the ice condenser lower inlet doors, as currently described in the UFSAR, includes sufficient clearance to accommodate ice fallout from baskets of fused ice in the event of a seismic disturbance occurring coincident with a LOCA or an MSLB.

If the ice in the baskets was not sufficiently fused during a design-basis earthquake (DBE), it is possible that an excessive amount of ice would fall from the baskets and impair operability of the ice condenser. Excessive ice fallout could potentially block the lower inlet doors, block the floor drains, restrict compression of the shock absorber assemblies, block flow channels, and decrease the ice mass in the ice baskets.

3.2 Brief Chronology of Ice Condenser Issues at McGuire 1 and 2

As part of the original ice condenser qualification program, seismic testing of fused ice baskets was conducted by Westinghouse to determine the amount of ice fallout from ice baskets subjected to simulated plant time-history seismic disturbances. Test results were reported in Topical Report WCAP-8110, Supplement 9, dated May 1974. The test program did not determine a minimum time requirement for ice fusion.

In a letter dated November 21, 1974, the Atomic Energy Commission's (AEC (now NRC)) issued a safety evaluation report (SER) on Supplement 9 of Topical Report WCAP-8110, stating that ". . . the data presented in WCAP-8110 Supplement 9 are adequate to conclude that land-based plants using ice condenser type containments should begin their initial ascent to power after a minimum of five weeks following ice loading." Despite what the AEC staff stated in the SER, the Westinghouse ice condenser program did not determine a minimum time requirement for ice fusion. The same November 21, 1974, letter above accepts the document as a topical report which may be referenced in license applications. The McGuire 1 and 2 UFSAR references WCAP-8110, Supplement 9-A.

The NRC accepted the McGuire 1 and 2 ice condenser design in NUREG-0422, "Safety Evaluation Report related to the operation of McGuire Nuclear Station, Units 1 and 2," Supplements 1-7. On July 8, 1981, and May 27, 1983, the NRC issued the operating license for McGuire 1 and 2, respectively. However, neither NUREG-0422 nor other Supplements issued by the NRC referenced Supplement 9 of Westinghouse Topical Report WCAP-8110. Further, neither NUREG-0422 nor its supplements specifically address ice storage time to achieve acceptable ice fusion prior to power ascension.

The licensee met with the NRC staff on December 12, 2007 (see meeting summary at ADAMS Accession No. ML073550124), to discuss ice fusion. During which the licensee indicated that it had elected to change the licensing basis set forth in the McGuire 1 and 2 UFSAR. The NRC staff, in the December 12, 2007, meeting with the licensee indicated that it would be receptive to the proposal for the licensee to submit an application for amendments to revise the licensing basis for ice condenser ice fusion. Accordingly, the NRC staff finds the licensee's February 15, 2008, application for amendments consistent with the agreement made in the December 12, 2007, meeting.

3.3 Licensee's Proposed Change to the Licensing Basis

The licensee proposed to revise the licensing basis as described in the UFSAR. The existing text of the McGuire 1 and 2 UFSAR, Section 6.2.2.8.1 and Section 6.7.8.1, respectively, entitled "Lower Inlet Doors, Design Basis, Interface Requirements," reads as follows

Sufficient clearance is required for the doors to open into the ice condenser. Items to be considered in this interface are floor clearance, lower support structure clearance and floor drain operation and sufficient clearance (approximately six inches) to accommodate ice fallout in the event of a seismic disturbance occurring coincident with a LOCA.

The licensee's proposed revision to this paragraph will read (new text in *italics*):

Sufficient clearance is required for the doors to open into the ice condenser. Items to be considered in this interface are floor clearance, lower support structure clearance and floor drain operation and sufficient clearance (approximately six inches) to accommodate ice fallout in the event of a seismic disturbance occurring coincident with a LOCA. *Original ice basket qualification testing (Topical Report WCAP-8110, Supplement 9-A), has shown freshly loaded ice is considered fused after five weeks. In the event of an earthquake (OBE or greater) which occurs within five weeks following the completion of ice basket replenishment, plant procedures require a visual inspection of applicable areas of the ice condenser within 24 hours to confirm that opening of the ice condenser lower inlet doors is not impeded by any ice fallout resulting from the seismic disturbance. This alternative method of compliance with the requirements of GDC 2 is credible based upon the reasonable assurance that the ice condenser doors will open following a seismic event during the 5 week period and the low probability of a seismic event occurring coincident with or subsequently followed by a Design Basis Accident.*

During its review of the UFSAR change against the requirements of 10 CFR 50.59, the licensee recognized that the interface requirements for the ice condenser lower inlet doors will no longer be met solely by the original qualification testing, but will also rely on conservatisms in the original ice basket seismic testing, the licensee's practical experience with ice fusion gained through decades of ice condenser operation, and design features of the ice condenser. Accordingly, and upon issuance of the requested amendment, the licensee will implement procedural requirements that, in the event of an OBE or greater seismic disturbance within 5 weeks of loading ice baskets, the ice condenser would be inspected within 24 hours to ensure that no ice fallout has occurred that could impede proper functioning of the ice condenser lower inlet doors.

3.4 NRC Staff's Evaluation of Proposed UFSAR Revision

3.4.1 Ice Fusion

The term "ice fusion" refers to a condition in which an ice basket freshly loaded with flake ice achieves stability at the operating temperature of the ice condenser, i.e., when the ice freezes or otherwise solidifies such that it tends to stay in the ice basket when agitated. The licensee stated that the design of the lower inlet doors, as currently described in the UFSAR, includes sufficient clearance to accommodate ice fallout from baskets of fused ice in the event of a seismic disturbance occurring coincident with a LOCA or an MSLB.

If the ice in the baskets was not sufficiently fused during a DBE, it is possible that an excessive amount of ice would fall from the baskets and impair operability of the ice condenser. Excessive ice fallout could potentially block the lower inlet doors, block the floor drains, restrict compression of the shock absorber assemblies, block flow channels, or decrease the ice mass in the ice baskets.

As stated in Section 3.2, the basis of the 5-week ice fusion time "requirement" was derived from the original seismic qualification of ice condenser ice baskets conducted by Westinghouse in 1974, even though determination of a minimum ice fusion time was not an objective of the test program. Instead, the results of acceptable ice fallout tests conducted on ice baskets loaded for periods of 6 to 7½ weeks were used by the AEC staff to establish a "preoperational limit for minimum storage time" of ice baskets prior to initial power ascension.

As a result of a recent review of the test results documented in WCAP-8110, Supplement 9, the licensee has concluded that the 5-week ice fusion time selected as the licensing basis is conservative and that the ice condenser design has substantial margin with respect to ice fallout. The licensee provided the following key considerations in reaching this conclusion:

- The test baskets floated freely in the lattice frames and were not fixed at one end as would be the case in an actual ice condenser. The floating end would have exacerbated the movement resulting from application of a given seismic excitation, which would have tended to amplify the ice fallout in the test compared to fallout from an actual plant event.
- The test basket was only six feet tall and had an open top, whereas an actual ice condenser basket typically has four vertically stacked 12-foot sections, with only the uppermost section having an open top. The majority of ice fallout during the tests occurred from the open top of the basket. Since proportionally less ice would be expected to fall out of the lower sections of an actual ice condenser basket, the percentage of ice falling out of the test basket section overstates what would likely occur during an actual seismic disturbance.
- The test baskets were each sequentially excited using seismic time histories from four different ice condenser plants, with the cumulative ice loss during the test sequence being used for comparison against the target criterion. This is a conservative approach in that the amount of ice loss after the first excitation cycle for each basket is not representative of a basket receiving its first seismic disturbance. The ability of the ice condenser baskets to meet the fallout criterion for cumulative seismic time histories indicates substantial margin in the design and suggests significant conservatism in the five-week ice fusion time allowance.

The NRC staff reviewed the analysis the licensee presented on ice fusion. The licensee's experience with ice behavior in its ice condensers has demonstrated that there is excessive conservatism in the 5-week ice fusion time "requirement." The NRC staff finds that the 5-week ice fusion time "requirement" for newly added ice contains conservatism, which can be eliminated without any negative impact on the performance of the ice condenser, provided the licensee inspects the ice condenser within 24 hours of a seismic event greater than the OBE. The inspection provides reasonable assurance the ice condenser will perform its intended function following a DBE. If the inspection finds excessive ice fall out or damage to the ice condenser the licensee will shutdown the unit and make the necessary repairs.

3.4.2 Effect of Ice Fallout on Lower Inlet Door Performance

The redundancy of flow paths in the ice condenser provides reasonable assurance that the ice condenser would perform its function even if some lower inlet doors were partially degraded.

The licensee performed analyses for McGuire 1 and 2 using the GOTHIC computer code to determine what fraction, if any, of the lower inlet doors could be completely blocked closed during the blow-down period of the limiting size large break LOCA. These analyses demonstrated that containment pressure will remain acceptable with 33 percent of the lower inlet doors completely blocked shut (i.e., will not open at all). However the GOTHIC computer code is not the code of record referenced in the McGuire 1 and 2 UFSAR.

The NRC staff reviewed the design of the lower inlet doors, and finds that the doors would require a large amount of ice to block their free movement. This large amount is not likely shaken loose from the ice baskets even in an OBE.

3.4.3 Blocking of Floor Drains

The licensee stated that, as discussed in the UFSAR, the impact of floor drain blockage by excessive ice fallout would be negligible. As discussed in the McGuire 1 and 2 UFSAR, containment peak pressure is not affected by drain performance. There are a total of 20 ice condenser floor drains among the 24 ice condenser bays. The ice condenser design is such that for blockage of any floor drain, water would flow to adjacent bays and eventually would spill over the lower inlet door openings if necessary. Additionally, any ice on the floor of the ice condenser would be melted by the rise in temperature of the ice condenser and flowing meltwater. The licensee thus surmised that there would be no adverse impact on the ice condenser function for blockage of the floor drains from fallout of ice in the ice baskets.

The NRC staff finds that any ice on the floor of the ice condenser will quickly melt in the post-LOCA or post-MSLB environment. This fact, plus the availability of multiple floor drains, will assure that the floor drains will not be blocked to hamper the design function of the ice condenser.

3.4.4 Blocking of Flow Channels

The licensee argued that the successful completion of McGuire 1 and 2 TSs Surveillance Requirement 3.6.12.3 ensures that the ice accumulation on the structural steel members comprising flow channels through the ice bed is less than or equal to a 15% blockage of the total flow area for each safety analysis section.

Therefore, it can be reasonably assumed that any loose, granular ice that would be shaken free during a seismic event from a recently replenished ice basket cannot block flow passages that were verified to be at least 85% clear during the preceding surveillance inspection.

The NRC staff finds that any ice on the flow channels of the ice condenser will quickly melt in the post-LOCA or post-MSLB environment. Thus, the flow channels will not be blocked by ice fallout to hamper the design function of the ice condenser.

3.4.5 Decrease of Ice Mass in the Ice Baskets

The licensee argued that any fallout from the ice baskets would remain within the ice condenser. Although the ice would no longer be in the ice baskets, its mass would remain available to absorb energy from a LOCA or an MSLB.

The NRC staff finds that ice fallout from the ice basket, regardless of quantity, is not a mechanism to reduce ice inventory in the ice condenser. Therefore, the required quantity of ice will continue to be present to ensure that the ice condenser design function is carried out in a LOCA or MSLB. In addition following a DBE the licensee's inspection procedure will require a visual inspection of all ice baskets which have been recently refilled to verify that the required amount of ice is in the basket. If the visual inspection determines that the basket has lost greater than 2 feet of ice the

licensee will weigh the basket to determine if it contains the proper amount of ice and refill any basket that does not contain the required amount of ice.

3.5 Summary of NRC Staff's Evaluation

As explained in Section 3.2 above, the original ice condenser basket seismic qualification, and the AEC/NRC review of the same, led to a 5-week storage time "requirement" for freshly loaded ice baskets prior to power ascension. However, conservatisms in the original testing and anecdotal evidence from ice condenser experience suggest that freshly loaded, wet flake ice will adequately solidify in the ice baskets much sooner than 5 weeks. In addition, design features of the ice condenser are such that the lower inlet doors will not be blocked by ice fallout from a seismic event.

The licensee's proposed change to the McGuire 1 and 2 licensing basis would permit ascent to power operation within the 5-week period following ice basket loading. Should a seismic disturbance occur within this period, there is a very small probability that the ice condenser may experience greater ice fallout from freshly loaded (i.e., less than 5 weeks) ice baskets than predicted by the original ice condenser qualification testing. This risk is mitigated by design features of the ice condenser, which are such that the ice condenser would perform its intended function even following ice fallout from a seismic event. The risk would be further limited by plant procedures that the licensee will implement that require prompt inspection of applicable portions of the ice condenser following an OBE or greater seismic disturbance.

Based on the above review, the NRC staff finds the revision to the McGuire 1 and 2 licensing basis and changes to the McGuire 1 and 2 UFSAR pertaining to ice condenser ice fusion time acceptable. The licensing basis regarding ice condenser ice fusion time is revised as depicted in the licensee's letter to the NRC, dated February 15, 2008. This revision to the licensing basis shall be incorporated into the Updated Final Safety Analysis Report in accordance with the scheduler requirements specified by 10 CFR 50.71.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission's regulations in 10 CFR 50.92(c), "Issuance of amendment," state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The NRC staff has reviewed the licensee's analysis against the standards of 10 CFR 50.92(c). The licensee's analysis is presented below.

- A. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The analyzed accidents of consideration in regard to changes potentially affecting the ice condenser are a loss of coolant accident and a steam or feedwater line break inside Containment. The ice condenser is an accident mitigator and is not postulated as being the initiator of a LOCA [loss-coolant-accident] or HELB [high-energy line break]. The ice condenser is structurally designed to withstand a Safe Shutdown Earthquake plus a Design Basis Accident and does not interconnect or interact with any systems that interconnect or interact with the Reactor Coolant, Main Steam or Feedwater systems. Because the proposed changes do not result in, or require any physical change to the ice condenser that could introduce an interaction with the Reactor Coolant, Main Steam or Feedwater systems, there can be no change in the probability of an accident previously evaluated.

Under the current licensing basis, the ice condenser ice baskets would be considered fully fused prior to power ascension and the ice condenser would perform its accident mitigation function even if a safe shutdown seismic event occurred coincident with or just preceding the accident. Under the proposed change, there is some finite probability that, within 24 hours following a seismic disturbance, a LOCA or HELB in Containment could occur within five weeks of the completion of ice basket replenishment. However, several factors provide defense-in-depth and tend to mitigate the potential consequences of the proposed change.

Design basis accidents are not assumed to occur simultaneously with a seismic event. Therefore, the coincident occurrence of a LOCA or HELB with a seismic event is strictly a function of the combined probability of the occurrence of independent events, which in this case is very low. Based on the Probabilistic Risk Assessment model and seismic hazard analysis, the combined probability of occurrence of a seismic disturbance greater than or equal to an OBE during the 5 week period following ice replenishment coincident with or subsequently followed by a LOCA or HELB during the time required to perform the proposed inspection (24 hours) and if required by Technical Specifications, complete Unit shutdown (37 hours), is less than 2.2E-09 for McGuire and Catawba. This probability is well below the threshold that is typically considered credible. Even if ice were to fall from ice baskets during a seismic event occurring coincident with or subsequently followed by an accident, the ice condenser would be expected to perform its intended safety function. The design of the lower inlet doors is such that complete blockage of flow into the ice condenser is not credible during a LOCA or HELB. The inherent redundancy of flow paths into the ice condenser provide reasonable assurance that it would perform its function even if some lower inlet doors were blocked closed.

Based on the above, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated. The ice condenser is expected to perform its intended safety function under all circumstances following a LOCA or HELB in Containment.

B. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change affects the assumed timing of a postulated seismic and design basis accident applied to the ice condenser and provides an alternate methodology to confirm the ice condenser lower inlet doors are capable of opening. As previously discussed, the ice condenser is not postulated as an initiator of any design basis accident. The proposed change does not impact any plant system, structure or component that is an accident initiator. The proposed change does not involve any hardware changes to the ice condenser or other changes that could create new accident mechanisms. Therefore, there can be no new or different accidents created from those previously identified and evaluated.

C. Does the proposed amendment involve a significant reduction in the margin of safety?

Response: No.

Margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the Reactor Coolant system, and the Containment system. The performance of the fuel cladding and the Reactor Coolant system will not be impacted by the proposed change.

The requirement to inspect the ice condensers within 24 hours of experiencing seismic activity greater than or equal to an OBE during the five (5) week period following the completion of ice basket replenishment will confirm that the ice condenser lower inlet doors are capable of opening. This inspection will confirm that the ice condenser doors remain fully capable of performing their intended safety function under credible circumstances.

The inherent redundancy of flow paths into the ice condenser provides reasonable assurance that it would perform its function even if some lower inlet doors were blocked closed. As such, the ice condenser has reasonable assurance of performing its intended function during the highly unlikely scenario in which a postulated accident (LOCA or HELB) occurs coincident with or subsequently following a seismic event.

The proposed change affects the assumed timing of a postulated seismic and design basis accident applied to the ice condenser and provides an alternate methodology in confirming the ice condenser lower inlet doors are capable of opening. As previously discussed, the combined probability of occurrence of a LOCA or HELB and a seismic disturbance greater than or equal to an OBE [operating basis earthquake] during the "period of potential exposure" is less than 2.2E-09 for McGuire and Catawba. This probability is well below the threshold that is considered credible.

Therefore, the proposed change does not involve a significant reduction in the margin of safety. The McGuire and Catawba ice condensers will perform their intended safety function under credible circumstances.

The changes proposed in this LAR [licensing action request] do not make any physical alteration to the ice condensers, nor does it affect the required functional capability of the ice condenser in any way. The intent of the proposed change to the UFSARs is to

eliminate an overly restrictive waiting period prior to Unit ascent to power operations following the completion of ice basket replenishment. The required inspection of the ice condenser following a seismic event greater than or equal to an OBE will confirm that the ice condenser lower inlet doors will continue to fully perform their safety function as assumed in the McGuire and Catawba safety analyses.

Thus, it can be concluded that the proposed change does not involve a significant reduction in the margin of safety.

The NRC staff has reviewed the licensee's analysis and, based on this review, has concluded that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff has made a final determination that the proposed amendment involves no significant hazards consideration.

5.0 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.

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. 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 (73 FR 10302). 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.

7.0 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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