

May 28, 2008

Mr. J. R. Morris
Site Vice President
Catawba Nuclear Station
Duke Energy Carolinas, LLC
4800 Concord Road
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENTS REGARDING CHANGES TO THE UPDATE FINAL SAFETY
ANALYSIS REPORT (TAC NOS. MD8101 AND MD8102)

Dear Mr. Morris:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 241 to Renewed Facility Operating License NPF-35 and Amendment No. 236 to Renewed Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2, respectively. The amendments consist of changes to the licensing bases in response to your application dated February 15, 2008.

The amendments authorize a change to the Update Final Safety Analysis Report 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. The related Safety Evaluation is enclosed.

A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

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

Docket Nos. 50-413 and 50-414

Enclosures:

1. Amendment No. 241 to NPF-35
2. Amendment No. 236 to NPF-52
3. Safety Evaluation

cc w/encls: See next page

May 28, 2008

Mr. J. R. Morris
Vice President
Catawba Nuclear Station
Duke Energy Carolinas, LLC
4800 Concord Road
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS REGARDING CHANGES TO THE UPDATE FINAL SAFETY ANALYSIS REPORT (TAC NOS. MD8101 AND MD8102)

Dear Mr. Morris:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 241 to Renewed Facility Operating License NPF-35 and Amendment No. 236 to Renewed Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2, respectively. The amendments consist of changes to the licensing bases in response to your application dated February 15, 2008.

The amendments authorize a change to the Update Final Safety Analysis Report 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. The related Safety Evaluation is 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. 50-413 and 50-414

Enclosures:

1. Amendment No. 241 to NPF-35
2. Amendment No. 236 to NPF-52
3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:

Public
LPL2-1 R/F
RidsNrrDorlLpl2-1
RidsNrrPMJStang

RidsAcrsAcnwMailCenter
GHill (4)
RidsNrrDirsltsb
RidsRgn2MailCenter

RidsOgcRp
RidsNrrLAMO'Brien
RidsNrrDorlDpr

Package No.: ML08130004
Amendment No.: ML081300037
Tech Spec No.: ML081300035

OFFICE	NRR/LPL2-1/PM	NRR/LPL2-1/LA	NRR/SBPB/BC	OGC	NRR/LPL2-1/BC
NAME	JStang	MO'Brien, GKL for	DHarrison	MSimon	MWong
DATE	05/14/08	05/14/08	05/28/08	05/28/08	05/28/08

OFFICIAL RECORD COPY

DUKE POWER COMPANY LLC
NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION
SALUDA RIVER ELECTRIC COOPERATIVE, INC.
DOCKET NO. 50-413
CATAWBA NUCLEAR STATION, UNIT 1
AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 241
Renewed License No. NPF-35

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 1 (the facility) Renewed Facility Operating License No. NPF-35 filed by the Duke Power Company LLC, acting for itself, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc. (licensees), 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 License as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-35 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 241, which are attached hereto, are hereby incorporated into this license. Duke Power Company LLC shall operate the facility in accordance with the Technical Specifications.

3. Further, Facility Operating License No. NPF-35 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 May 28, 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-35
and the Technical Specifications

Date of Issuance: May 28, 2008

DUKE POWER COMPANY LLC
NORTH CAROLINA MUNICIPAL POWER AGENCY NO. 1
PIEDMONT MUNICIPAL POWER AGENCY
DOCKET NO. 50-414
CATAWBA NUCLEAR STATION, UNIT 2
AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 236
Renewed License No. NPF-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 2 (the facility) Renewed Facility Operating License No. NPF-52 filed by the Duke Power Company LLC, acting for itself, North Carolina Municipal Power Agency No. 1 and Piedmont Municipal Power Agency (licensees), 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 license as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 236, which are attached hereto, are hereby incorporated into this license. Duke Power Company LLC shall operate the facility in accordance with the Technical Specifications.

3. Further, Facility Operating License No. NPF-52 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 May 28, 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-52
and the Technical Specifications

Date of Issuance: May 28, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 241
RENEWED FACILITY OPERATING LICENSE NO. NPF-35
DOCKET NO. 50-413
AND LICENSE AMENDMENT NO. 236
RENEWED FACILITY OPERATING LICENSE NO. NPF-52
DOCKET NO. 50-414

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

License Pages

NPF-35 page 4

NPF-52 page 4

Insert

License Pages

NPF-35 page 4

NPF-52 page 4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 241 TO RENEWED FACILITY OPERATING LICENSE NPF-35

AND

AMENDMENT NO. 236 TO RENEWED FACILITY OPERATING LICENSE NPF-52

DUKE POWER COMPANY LLC

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

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 requested approval of change to licensing bases for the Catawba Nuclear Station, Units 1 and 2 (Catawba 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 the U.S. 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 Catawba 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, Catawba 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 high energy line break. 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 Technical Specifications (TSs). At Catawba 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 high energy line break.

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 Catawba 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 (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 5-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 November 21, 1974, letter above accepts the document as a topical report which may be referenced in license applications. The Catawba 1 and 2 UFSAR references WCAP-8110, Supplement 9-A.

The NRC accepted the Catawba 1 and 2 ice condenser design in NUREG-0954, "Safety Evaluation Report related to the operation of Catawba Nuclear Station, Units 1 and 2," Supplements 1-6. On January 17, 1985 and May 15, 1986, the NRC issued the operating license for Catawba 1 and 2, respectively. However, neither NUREG-0954 nor other Supplements issued by the NRC referenced Supplement 9 of Westinghouse Topical Report WCAP-8110. Further, neither NUREG-0954 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 ADAMS Accession No. ML073550124), to discuss ice fusion. During this meeting the licensee indicated that it had elected to change the licensing basis set forth in the Catawba 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 Catawba 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 5-weeks. In the event of an earthquake (OBE or greater) which occurs within 5-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 high energy line break.

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 fallout 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 Catawba 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). The NRC staff notes the GOTHIC computer code is not the code of record referenced in the Catawba 1 and 2 UFSAR for small break LOCA.

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.

3.4.2 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 Catawba 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-high energy line break 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.

3.4.3 Blocking of Flow Channels

The licensee stated that the successful completion of Catawba 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. In addition, flow channels will be inspected for blockage in the required post-seismic event inspection of the ice condenser.

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-high energy line break 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 stated 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 high energy line break. In addition, following an OBE 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 Catawba 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 Catawba 1 and 2 licensing basis and changes to the Catawba 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 update requirements specified by 10 CFR 50.71(e).

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the South 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 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.

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: John F. Stang

Date: May 28, 2008

Catawba Nuclear Station, Units 1 & 2
cc:

Page 1 of 2

Site Vice President
Catawba Nuclear Station
Duke Power Company, LLC
4800 Concord Road
York, SC 29745

Associate General Counsel and Managing
Attorney
Duke Energy Carolinas, LLC
526 South Church Street - EC07H
Charlotte, North Carolina 28202

Regulatory Compliance
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745

North Carolina Municipal Power
Agency Number 1
1427 Meadowwood Boulevard
P.O. Box 29513
Raleigh, North Carolina 27626

County Manager of York County
York County Courthouse
York, South Carolina 29745

Piedmont Municipal Power Agency
121 Village Drive
Greer, South Carolina 29651

Assistant Attorney General
North Carolina Department of Justice
P.O. Box 629
Raleigh, North Carolina 27602

NCEM REP Program Manager
4713 Mail Service Center
Raleigh, North Carolina 27699-4713

North Carolina Electric Membership Corp.
P.O. Box 27306
Raleigh, North Carolina 27611

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
4830 Concord Road
York, South Carolina 29745

Assistant Director
Division of Waste Management
Bureau of Land and Waste Management
Dept. of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201-1708

Manager
Nuclear Regulatory Issues
and Industry Affairs
Duke Energy Corporation
526 South Church Street
Mail Stop EC05P
Charlotte, North Carolina 28202

Saluda River Electric
P.O. Box 929
Laurens, South Carolina 29360

Vice President
Customer Relations and Sales
Westinghouse Electric Company
6000 Fairview Road
12th Floor
Charlotte, North Carolina 28210

Owners Group (NCEMC)
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745

Senior Counsel
Duke Energy Carolinas, LLC
526 South Church Street - EC07H
Charlotte, NC 28202

Catawba Nuclear Station, Units 1 & 2

Page 2 of 2

cc:

Division of Radiation Protection
NC Dept. of Environment, Health,
and Natural Resources
3825 Barrett Drive
Raleigh, North Carolina 27609-7721

Group Vice President, Nuclear Generation
and Chief Nuclear Officer
P.O. Box 1006-EC07H
Charlotte, NC 28201-1006