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

June 28, 2010

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 TECHNICAL SPECIFICATION CHANGES ASSOCIATED WITH VERIFICATION OF ICE CONDENSOR DOOR OPERABILITY (TAC NOS. MD9796 and MD9797)

Dear Mr. Hamilton:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 256 to Renewed Facility Operating License NPF-9 and Amendment No. 236 to Renewed Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated October 2, 2008, as supplemented by letters dated August 25, 2009, and October 23, 2009.

The amendments revise the TSs associated with the verification of the ice condenser door operability and TS surveillance requirements 3.6.13.5 and 3.6.13.6.

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.

If you have any questions, please call me at 301-415-1119.

Sincerely,

Jon Thompson

Jon Thompson, 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. 256 to NPF-9
2. Amendment No. 236 to NPF-17
3. Safety Evaluation

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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-369

MCGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 256
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 (licensee), dated October 2, 2008, as supplemented by letters dated August 25, 2009, and October 23, 2009, 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. 256 , are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for

Gloria Kulesa, 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: June 28, 2010

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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-370

MCGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 236
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 (the licensee), dated October 2, 2008, as supplemented by letters dated August 25, 2009, and October 23, 2009, 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. 236 , are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for

Gloria Kulesa, 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: June 28, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 256

RENEWED FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

LICENSE AMENDMENT NO. 236

RENEWED FACILITY OPERATING LICENSE NO. NPF-17

DOCKET NO. 50-370

Replace the following pages of the Renewed Facility Operating Licenses and the Appendix A Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
Licenses	Licenses
NPF-9, page 3	NPF-9, page 3
NPF-17, page 3	NPF-17, page 3
TSs	TSs
3.6.13-1	3.6.13-1
3.6.13-2	3.6.13-2
3.6.13-3	3.6.13-3

(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproducts and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2; and;

(6) Pursuant to the Act and 10 CFR Parts 30 and 40, to receive, possess and process for release or transfer such byproduct material as may be produced by the Duke Training and Technology Center.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at a reactor core full steady state power level of 3411 megawatts thermal (100%).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 256, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than June 12, 2021, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproducts and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2; and,

(6) Pursuant to the Act and 10 CFR Parts 30 and 40, to receive, possess and process for release or transfer such byproduct material as may be produced by the Duke Training and Technology Center.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at a reactor core full steady state power level of 3411 megawatts thermal (100%).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 236 , are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than March 3, 2023, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59, and otherwise complies with the requirements in that section.

3.6 CONTAINMENT SYSTEMS

3.6.13 Ice Condenser Doors

LCO 3.6.13 The ice condenser lower inlet doors, intermediate deck doors, and top deck doors shall be OPERABLE and closed.

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

ACTIONS

----------NOTE----------

1. Separate Condition entry is allowed for each ice condenser door.
2. Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or top deck door for short durations to perform required surveillances, minor maintenance such as ice removal or routine tasks such as system walkdowns.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ice condenser lower inlet doors inoperable due to being physically restrained from opening.	A.1 Restore lower inlet door to OPERABLE status.	1 hour
B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.	B.1 Verify maximum ice bed temperature is ≤ 27°F. AND B.2 Restore ice condenser door to OPERABLE status and closed positions.	Once per 4 hours 14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Restore ice condenser door to OPERABLE status and closed position.	48 hours
D. Required Action and associated Completion Time of Condition A or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.13.1 Verify all lower inlet doors indicate closed by the Inlet Door Position Monitoring System.	12 hours
SR 3.6.13.2 Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	7 days
SR 3.6.13.3 Verify, by visual inspection, each top deck door: a. Is in place; and b. Has no condensation, frost, or ice formed on the door that would restrict its opening.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.13.4	Verify, by visual inspection, each lower inlet door is not impaired by ice, frost, or debris.	18 months
SR 3.6.13.5	Verify torque required to cause each lower inlet door to begin to open is ≤ 675 in-lb, and verify free movement of the door.	18 months
SR 3.6.13.6	(deleted)	
SR 3.6.13.7	Verify for each intermediate deck door: a. No visual evidence of structural deterioration; b. Free movement of the vent assemblies; and c. Free movement of the door.	18 months

UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 256 TO RENEWED FACILITY OPERATING LICENSE NPF-9

AND

AMENDMENT NO. 236 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 October 2, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082900532), as supplemented by letters dated August 25, 2009 (ADAMS Accession No. ML093430506), and October 23, 2009 (ADAMS Accession No. ML093430689), Duke Energy Carolinas, 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 supplements dated August 25, 2009, and October 23, 2009, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published the *Federal Register* on March 8, 2010 (75 FR 10508).

The proposed changes would revise the TSs associated with the verification of the ice condenser door operability and TS surveillance requirements (SRs) 3.6.13.5 and 3.6.13.6.

2.0 REGULATORY EVALUATION

The licensee addressed the regulatory requirements applicable to the proposed amendment in Section 4.0 of Attachment 1 to the application dated October 2, 2008. As described in the attachment and confirmed in Section 3.1, "Conformance with General Design Criteria," of the applicable Updated Final Safety Analysis Report(s) (UFSARs), McGuire 1 and 2 are designed to meet the General Design Criteria (GDC) specified in Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50 (10 CFR Part 50). The regulatory requirements, criteria, and guidance applied by the NRC staff in the review of the proposed changes are as follows:

- Criterion 16, "Containment design," insofar as it requires that the containment and its associated systems (e.g., penetrations) be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

- Criterion 38, "Containment heat removal," insofar as it requires that a system to remove heat from the reactor containment shall be provided to reduce rapidly, consistent with the functioning of other safety systems, the containment pressure and temperature following any loss-of-coolant accident and maintain them at acceptably low levels.

- Criterion 40, "Testing of containment heat removal systems," insofar as it requires that the containment heat removal system shall be designed to permit periodic pressure and functional testing.

- Criterion 50, "Containment design basis," insofar as it requires that the containment and its penetrations accommodate without exceeding the design leakage rate, and with sufficient margin, the calculated pressure and temperature conditions resulting from any loss-of-coolant accident (LOCA).

Section 182a of the Atomic Energy Act (Act) requires applicants for nuclear power plant operating licenses to include TS as part of the license. These TS are derived from the plant safety analyses.

The regulation at 10 CFR 50.36 contains the requirements for the content of the TS. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits (SLs), limiting safety system settings (LSSSs), and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls.

The regulation at 10 CFR 50.36(c)2(ii) lists the criteria used to determine whether or not LCOs must be established in the TSs for items related to plant operation. If the item falls in to one of the four categories below, an LCO must be established in the TSs to ensure the lowest functional capability or performance level of equipment required for safe operation of the facility will be met. The four criteria are:

Criterion 1 Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2 A process variable, design feature, or operating restriction that is an initial condition of a design basis accident (DBA) or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 3 A structure, system, or component (SSC) that is part of the primary success path and which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4 An SSC which operating experience or probabilistic risk assessment (PRA) has shown to be significant to public health and safety.

The regulation at 10 CFR 50.36 does not specify each particular requirement to be included in a plant's TSs, nor does it specify the format of a plant's TS. Rather, the NRC staff publishes generic guidance on TS format and content. The NRC staff published a set of Standard Technical Specifications (STS) in NUREG-1431, Rev. 3 "Standard Technical Specifications, Westinghouse Plants." The STS are a guide to what a plant's TS should contain with regard to format and content. The STS are not requirements in a regulatory sense, but licensees adopting portions of the improved STS to existing technical specifications should adopt all related requirements, as applicable, to achieve a high degree of standardization and consistency.

The NRC staff reviewed the proposed changes for compliance with 10 CFR 50.36 and agreement with the precedent as established in STS. In general, licensees cannot justify technical specification changes solely on the basis of adopting the model STS. To ensure this, the NRC staff makes a determination that proposed changes maintain adequate safety. Changes that result in relaxation (less restrictive condition) of current TS requirements require detailed justification.

Licensees may propose revisions to the TSs to adopt improved STS format and content provided that plant-specific review supports a finding of continued adequate safety because: (1) the change is editorial, administrative or provides clarification (i.e., no requirements are materially altered), (2) the change is more restrictive than the licensee's current requirement, or (3) the change is less restrictive than the licensee's current requirement, but nonetheless still affords adequate assurance of safety when judged against current regulatory standards. The NRC staff reviews the proposed revision and determines whether or not the proposed revision is acceptable. If the NRC staff determines that the proposed revision is acceptable, then the NRC staff changes the licensee's TSs. The detailed application of this general framework, and additional specialized guidance, are discussed in Section 4.0 in the context of specific proposed changes.

The NRC staff's review also considered the relevant information contained in ANSI N18.2 – 1973, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants."

3.0 TECHNICAL EVALUATION

The proposed changes apply to TS 3.6.13, "Ice Condenser Doors." Specifically, the licensee is proposing to adopt the "Standard Technical Specifications, Westinghouse Plants," in NUREG-1431, Rev. 3, to clarify that Condition A of TS 3.6.13 only applies to lower inlet doors and that entry into Condition B for intermediate and top deck doors is not required during performance of certain surveillances, maintenance, or other routine tasks. Additionally, the licensee is proposing to include the verification of free door movement during the lower inlet door (LID) initial opening torque surveillance in SR 3.6.13.5 and eliminate the LID torque surveillance in SR 3.6.13.6. The licensee stated that the proposed changes clarify the intent of the ice condenser door TS SRs and align the ice condenser door operability more closely with the safety analysis and licensing basis for McGuire 1 and 2. For the proposed adoption of NUREG-1431, Rev. 3 wording, the licensee cited Sequoyah and Watts Bar nuclear plants as having obtained NRC staff approval for similar changes. For changes related to LID torque SRs, there were no precedents cited by the licensee.

McGuire 1 and 2 both employ a four-loop pressurized water reactor (PWR) designed and supplied by Westinghouse Electric Corporation (Westinghouse). The containment of these units consists of a steel containment vessel, and a reinforced concrete structure enclosing the steel vessel with an annular space in between. The purpose of the containment is to ensure that an acceptable upper limit of leakage of radioactive material is not exceeded under design accident conditions. The release of fission products from the containment is also limited by reducing the containment temperature and pressure. This is accomplished by the ice condenser system, containment spray system, and the containment air return fans.

The ice condenser is a low temperature heat sink, consisting of borated ice in a cold storage compartment, located inside the containment. In the application dated October 2, 2008, the licensee provided a general description of the McGuire 1 and 2 ice condenser designs and their operation during DBAs, portions of which are included here to the extent necessary for this safety evaluation.

The ice condenser is an annular compartment enclosing approximately 300° of the perimeter of the containment, extending from the upper containment compartment to the lower containment compartment. The top of the ice condenser compartment is approximately at the same elevation as the base of the containment polar crane located in the upper containment compartment. The bottom of the ice condenser compartment penetrates the operating deck so that a portion of it extends to the lower containment compartment. A divider barrier separates the upper and lower containment compartments. The divider barrier, which includes the pressurizer, steam generators, and reactor vessel enclosures, is designed to provide a reasonably tight seal against leakage. However, potential leakage paths exist at all the joints between the operating deck and the pump access hatches and reactor vessel enclosure slabs. In addition, holes are provided in the bottom of the refueling cavity to allow water from containment sprays in the upper containment compartment to drain to the sump in the lower containment compartment. The total of all deck leakage flow areas is approximately 5 square feet (sq. ft.).

The ice condenser doors consist of the LIDs, the intermediate deck doors, and the top deck doors. The LIDs are located below the operating deck, along the inner perimeter wall of the ice condenser compartment. The LIDs form a barrier between the lower containment compartment atmosphere and the interior of the ice condenser. The top deck doors are located on the top of the ice condenser compartment and they form a barrier between the interior of the ice condenser and the upper containment compartment atmosphere. The intermediate deck doors are located below the top deck doors and they form the floor of a plenum between the upper part of the ice condenser and the top deck doors. This plenum area is used to facilitate surveillance and maintenance of the ice bed and it also contains the air handling units that remove the heat from the ice bed during normal operation. The functions of the ice condenser doors are to seal the ice condenser from air leakage and provide thermal/humidity barriers, open in the event of a DBA line-break events postulated to occur in the lower containment, and direct the steam-air mixture from the line-break into the ice bed, where the ice would absorb energy and limit containment peak pressure and temperature during the accident transient. The ice baskets are held in the ice bed within the ice condenser, located between the top of the LID plenum and the intermediate deck doors, and are arranged to promote heat transfer from steam to ice. The LIDs are initially held shut by the cold head of air behind the doors and will break loose from the door seals at approximately 1 pound per square foot (psf). An additional pressure differential of 1 psf will fully open the doors. In the event of a large-break DBA, the 48 LIDs (24 pairs) open quickly due to the

pressure rise in the lower containment compartment. This allows steam and air to flow from the lower containment compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. The ice, together with containment spray, serves as a containment heat removal system and is adequate to absorb the initial blowdown of steam and water from a DBA, as well as any additional heat loads that would enter containment from the residual heat in the reactor core, the hot piping and components, and the secondary system including the steam generators, during several hours following initial blowdown. The containment spray also captures particulate matter, which is held in suspension in the containment sump. During the post-blowdown period, the air return system (ARS) returns upper containment compartment air through the divider barrier to the lower containment compartment. This serves to equalize the pressures in containment and to continue circulating heated air and steam from the lower containment to the upper containment through the ice condenser, where the heat continues to be removed by the remaining ice.

The ice melt from the ice condenser compartment, flows to lower compartment containment sump, and forms the source of borated water to the emergency core cooling system (ECCS) and the containment spray system heat removal functions during the recirculation mode.

During a small-break DBA, the LIDs are slowly pushed away from their seals (the ajar position) once the breakaway pressure is reached. The higher temperature steam/non-condensable gases from the lower containment compartment will enter the ice condenser, and the heavier, more dense, cold air inside will escape through the slightly open doors, dissipating the resisting cold head pressure. The doors will open further or return toward the closed position under the influence of lower containment compartment small break pressure and the door spring closure mechanism. The operability requirements for the McGuire 1 and 2 ice condenser doors are contained in TS 3.6.13, "Ice Condenser Doors."

3.1 Adoption of NUREG-1431

3.1.1 Revise TS 3.6.13, Condition A

The licensee proposed to adopt the wording in TS 3.6.16 of the STS to revise McGuire 1 and 2 TS 3.6.13, Condition A. Currently, TS 3.6.13, Condition A reads "One or more ice condenser doors inoperable due to being physically restrained from opening." The revised TS 3.6.13, Condition A, would read "One or more ice condenser lower inlet doors inoperable due to being physically restrained from opening." Currently, Condition A applies to all the ice condenser doors. Adopting NUREG-1431, Rev. 3 wording would apply Condition A and the applicable 1-hour action statement to the LIDs only, thus excluding the intermediate deck doors and the top deck doors from this condition and the 1-hour action statement. The change results in moving the intermediate deck doors and top deck doors to TS 3.16.13, Condition B, which reads "one or more ice condenser doors inoperable for reasons other than Condition A or not closed," with a 14-day action statement. The licensee stated that the STS wording was not originally incorporated in the ice condenser doors TS during conversion to the Improved Technical Specifications (ITS) in 1998, which has resulted in entries into Condition A that are otherwise unnecessary.

The LIDs admit steam and non-condensable gases during applicable DBA scenarios, thus mitigating the pressure and temperature rise inside containment. The 1-hour action statement

reflects the need to have the ice condenser in a state of readiness consistent with the analyzed initial conditions for the containment during the modes of applicability (i.e., Mode 4 and above). The LIDs will continue to be governed by the 1-hour action statement defined in Condition A of the TS, whenever they are inoperable due to being physically restrained from opening. The proposed change is consistent with the STS in NUREG-1431, Rev. 3.

In regards to the intermediate deck doors and the top deck doors, the proposed change would relax the action statement from 1-hour (Condition A) to 14-days (Condition B), if these doors were found to be inoperable due to being physically restrained from opening. The licensee stated that the 14-day action statement defined in Condition B for the ice condenser doors is designed for situations and components that do not significantly challenge the functional capability of the ice condenser during a postulated DBA (e.g., operable but degraded). The intermediate deck and top deck doors are primarily thermal/humidity barriers. The licensee further stated that these doors are located outside the ice bed, and the time-dependent behavior of these doors is neither quantified nor included in the DBA. The NRC staff's review indicates that the proposed change is consistent with STS in NUREG-1431, Rev. 3. The NRC staff determined that the proposed change is less restrictive than the current TS requirements because restrictions on the intermediate deck and top deck doors would be relaxed. The NRC staff also determined that the licensee provided adequate justification for the proposed change and that the TS still afford adequate assurance of safety when judged against current regulatory standards. Therefore, the NRC staff determined that the proposed changes are acceptable.

3.1.2 Add Note to TS 3.6.13 Actions

The licensee also proposed to add a note to TS 3.6.13 Actions, which would state "Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or top deck door for short durations to perform required surveillances, minor maintenance such as ice removal or routine tasks such as system walkdowns." The licensee stated that such activities are allowed, without having to make TS entries, by the wording in the TS Bases of NUREG-1431, Rev. 3. The NRC staff's review indicated that the proposed note is same as the wording in the TS Bases of NUREG-1431, Rev. 3, and similar changes were granted to other ice condenser plants. The applicants in those precedents, however, included the wording in their respective Bases sections as was done in the STSs, but did not add a note to the TS Actions. In the case of McGuire 1 and 2, Duke is proposing to add a note to the TS Actions and also include the same wording to the TS Bases section, with the exception that a time frame of "(< 4 hours)" denoted immediately after the words "short durations" in the Bases section.

The NRC staff, in an RAI dated August 25, 2009, requested that the licensee provide a brief discussion of the activities that are expected to be covered by the proposed note and if the note could allow multiple doors to be open at the same time, and the reasons for not including the duration of "< 4 hours" in the note under the TS Actions. The NRC staff's concern in this regard is the potential for ice bed sublimation, melting, and ice condenser flow paths. In a letter dated August 25, 2009, the licensee stated that the activities covered by the proposed note would include tasks that are necessary to ensure ice condenser operability (e.g., door visual inspection, light housekeeping), require only a minimum amount of time to perform (typically 2 hours or less), and involve a small number of personnel. The licensee further stated that these tasks would not be expected to require the opening of multiple doors simultaneously. However, an extended maintenance activity (e.g., ice basket weighing) could require multiple doors to be opened

simultaneously. In such instances, the licensee noted that Condition B of TS 3.6.13 would be entered, which requires monitoring of the ice bed temperature at least every 4 hours to ensure that maximum ice bed temperatures do not approach the melting point. In addition, the 14-day action time of condition B ensures that there would not be a significant loss of ice from sublimation. The licensee further stated that the wording included in the STS 3.6.16 Bases, which identifies the criteria for entering an action statement, would be better positioned in the actual TS for Operator expediency. Recognizing that the STS 3.6.16 Bases wording does not identify a time frame for "short duration," the licensee further determined that the Condition B 4-hour completion time for ice bed temperature verification would be invoked since it represented a limit already prescribed by the TS and easily bounds the expected timeframe for performing routine surveillances and inspections. The licensee considers the 4-hour time frame defining a "short duration" a TS clarification, and as such has determined that it is better left in the TS Bases section.

The proposed change is consistent with the NUREG-1431, Rev. 3. The minor deviation from the STS provides clarity to the TS. The NRC staff determined that the proposed change is editorial, and therefore, is acceptable.

3.2 Lower Inlet Doors Torque Surveillance Tests

Currently, the LID torque surveillances are governed by SR 3.6.13.5 and SR 3.6.13.6. The licensee is proposing to revise SR 3.6.13.5 and eliminate SR 3.6.13.6.

3.2.1 Lower Inlet Door Torque SR 3.6.13.5

The licensee is proposing to revise the LID opening torque in SR 3.6.13.5 to include a verification of free movement of the door during the test. The 10 CFR Part 50, Appendix A (GDC 40), "Testing of containment heat removal system," states in part that "The containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components," and "(2) the operability and performance of the active components of the system, and ..." The licensee stated that pursuant to items (1) and (2) of this requirement, the LID initial opening torque surveillance in SR 3.6.13.5 can be enhanced by including an assessment of LID free movement to the existing assessment of the initial opening (breakaway) torque. Per the licensee, the freedom-of-movement assessment is currently performed during the application of SR 3.6.13.6 torque test series, and it involves a complex series of static force measurements and torque conversions with little to no inlet door movement required. The licensee is proposing to eliminate SR 3.6.13.6 altogether, and therefore, is including the freedom-of-movement assessment in the proposed revision to SR 3.6.13.5.

The LID initial opening torque test limiting value of 675 in-lb is based on the design cold head pressure differential on the closed inlet doors of approximately 1 psf, a value established in the Westinghouse LID performance evaluation and it relates directly to the containment response analysis. This test assures proper introduction of a break release to the ice bed and maintains consistency with the bounding safety analysis. This test will continue to be performed as the proposed change will have no effect on this test.

The licensee stated that the verification of free door movement will monitor the performance of the LID components (i.e., hinges and spring closure mechanisms), verify they are properly maintained, and facilitate early detection of changes to inlet door movement through the swing arc,

thus predicting potential challenges to the initial opening torque surveillance limit that may occur due to component aging and degradation. The licensee stated that the freedom-of-movement assessment is currently done as part of SR 3.6.13.6, and as discussed in the following paragraph, it involves little-to-no inlet door movement. The licensee is also proposing to eliminate SR 3.6.13.6. Inclusion of the freedom-of-movement assessment with specific language to this effect in the TS provides clarity and enhances the quality of the TS. The method of this assessment will facilitate early detection of potential challenges to the initial opening torque or the ability of the LIDs to continue to open further as the pressure differential across the doors increases. In addition, the initial opening torque test of the LIDs will continue to be performed. The NRC staff finds the proposed change acceptable.

3.3 Lower Inlet Door Torque SR 3.6.13.6

During an inspection in the spring of 2006, the NRC Resident Inspectors at McGuire 1 and 2 noted a concern with SR 3.6.13.6, in that the computation of the frictional torque component has produced negative values, a result that appeared to contradict the intuitively expected result. The Resident Inspectors also noted that that the test acceptance criteria for the frictional torque component has no documented lower bound, inferring that negative values in excess of the official (positive) maximum limit could be accepted as verification of an operable inlet door (Ref. 1). The Resident Inspectors at McGuire 1 and 2 requested that Duke provide the formal design basis for the LID 40° torque test series. The terminology "LID 40° torque test series" comes from the acceptance criteria described in the TS Bases for SR 3.6.13.6, which requires a series of force measurements and/or torque conversions performed on the LIDs when the doors are at a 40° open position. The licensee stated that the existing test series involves little-to-no movement of the LIDs. The functional capability of the LIDs through its range of motion is considered met if the SR 3.6.13.6 test acceptance limits satisfied at the 40° open position. The 40° position (approximately) represents the limitation on the opening angle of the LIDs imposed by the shock absorbers.

Duke interpreted the test acceptance limit to be an absolute value, allowing a positive or negative bound since the LIDs were intended to modulate in both the open and close directions. The licensee stated that this interpretation was documented by the Ice Condenser Utility Group (ICUG) at the ICUG technical conference in 2002; however, the interpreted position was not docketed. The licensee obtained a clarified design basis position from Westinghouse in December 2006. The information provided by Westinghouse confirmed the original test acceptance criteria (including a positive or negative bound). In the process of documenting the basis, Westinghouse acknowledged that the criteria were not directly tied to the bounding transient mass distribution (TMD) safety analysis, but were formulated from field tests on the first LIDs installed in Unit 1 of the Donald C. Cook nuclear plant (Cook 1) in 1975. The limits were interpreted to be representative of inlet doors that behaved in the flow-proportioning range with a specific characteristic curve, and were also intended to gauge LID hinge/spring mechanism material condition.

In the application dated October 2, 2008, the licensee stated that the LID 40° torque test series in SR 3.6.13.6 is cumbersome to perform, its results are subject to misinterpretation, and the situation represents an unnecessary burden on the licensee. Based on the evolution of the licensing basis for this torque test requirement, the licensee believes the torque test is no longer necessary and can be deleted from the TS. In support of the proposed change, the licensee

provided a brief history and discussion of the original design basis of the ice condenser plants which resulted in the subject SR and its evolution since that time which would allow its elimination from the TS.

3.3.1 Historical information

Between 1967 and 1974, several meetings took place between the Advisory Committee on Reactor Safeguards (ACRS), the NRC staff, and Westinghouse to discuss the ice condenser design basis and evaluate the Westinghouse's progress on certain aspects of the ice condenser containment design. After the first cycle of operation (ending in 1976) of Cook 1, the meetings reconvened to review the actual performance of the ice condensers. The meetings examined many topics; amongst them are two primary issues that relate to the application dated October 2, 2008. They are the effect of LID failure to open and the effect of steam bypassing the ice bed.

3.3.1.1 Effect of LID Failures

The committee's discussions centered on the effect that a LID failure-to-open would have on the containment shell peak pressure during the large-break DBA. In the context of these discussions, LID failures are paired inlet doors that fail to break away from their seals during a large-break transient, thus preventing the venting of the release through that door opening.

Westinghouse conducted sensitivity analysis in response to these issues. However, a LID failure to break away during a small release was not evaluated by Westinghouse. The main concern with a small-break event was even distribution of the release around the ice bed in order to accommodate a subsequent large-break release, termed as a "double break" scenario, which is one of the original design bases of the ice condenser plants. Therefore, the sensitivity runs focused more on the effects of maldistribution of the release and how to prevent it. The basis was that there was more than sufficient capacity in the containment spray system to handle breaks too small to engage the ice condenser via the LIDs, and significant effort has been put into ensuring that the LIDs would open at the prescribed pressure differential.

3.3.1.2 Steam Bypass of the Ice Bed

The ACRS discussions involving steam bypass were more extensive and included both small-break and large-break scenarios. Two basic issues were examined: (1) maldistribution of the release, via break flow asymmetry in the lower containment compartment or asymmetric inlet door behavior, and (2) maldistribution of the ice bed inventory (ice in the ice baskets)

The concern with maldistribution of the release was that it could create an asymmetric void or a "channel" in the ice bed, providing a bypass path for the remaining release. The context of the discussions was a small break, since a large-break release would be evenly distributed to the ice bed due to the inlet door portal geometry (i.e., the LIDs would be pushed out of the way in a large-break event). An associated concern with the maldistribution of the release is steam bypass to upper containment via the structural openings in the divider deck.

The concern with maldistribution of the ice bed inventory was that a section of ice baskets loaded with less total ice than the others would melt first during a break event, even if the release was evenly distributed. The concern again was that a channel in the ice bed could be created, requiring containment spray to mitigate the bypassing steam.

Westinghouse performed sensitivity analyses to evaluate the effects of maldistribution and deck bypass. Based on the analyses, Westinghouse has set an analytical maldistribution limit of 150% maximum peak to average mass input for the accident and an allowable deck bypass criteria of greater than the design value of 5 sq. ft. The analyses also resulted in the TS SRs assuring evenly distributed small-break release and acceptable ice mass distribution. For McGuire 1 and 2, the requirement for an evenly distributed small-break release is addressed in SR 3.6.13.6 and the requirements for acceptable ice mass distribution are addressed in SR 3.6.12.4 and SR 3.6.12.5.

3.3.2 Propagation of DBA Break Size

The generic ice condenser design basis by Westinghouse in the 1967-1973 time frame assumed that a release in the lower containment compartment initiated by a small-break DBA could propagate to bigger release and a subsequent large-break DBA. Per the ANSI Standard N18.2, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants," in effect at that time, the propagation could occur either by the small break growing larger (i.e., a change in the break geometry), or by dynamic interaction of a small break with a larger high energy line in close proximity to it. Therefore, the generic ice condenser design was required to mitigate both the small break and a subsequent large break immediately following it. This was identified by the Westinghouse as the "double break" scenario. The flow proportioning function of the LIDs periodically tested by the requirements in SR 3.6.13.6, provided assurance that during a small-break event, an asymmetric void would not be created in the ice bed and the fraction of the break flow through the divider deck area into the upper containment compartment would be limited. The design requirement for the case of a double accident is to limit the uncondensed steam bypass flow to the upper containment compartment during the small break, so that only a small increase in the final peak pressure results from the second part (double-ended break) of the postulated accident.

In the application dated October 2, 2008, the licensee provided insights relating to the original ice condenser design features at Cook 1, the first ice condenser containment licensed by the NRC in 1975, by quoting sections of the Cook 1 and 2 UFSAR. Based on these statements, Cook 1 was not designed to ANSI N18.2-1973, Section 2.1.3.3, which requires a design that prevents propagation of a small-break LOCA to a large-break LOCA. However, McGuire 1 and 2 are designed to ANSI N18.2, 1973. Therefore, the consideration of the "double accident" need not have been included as a consideration in establishing the design bases for McGuire 1 and 2. Duke has determined that the "double break" scenario is beyond the design basis of McGuire 1 and 2 and removed it from the UFSAR in February 2005 via a 10 CFR 50.59 evaluation. The licensee provided the following information from the UFSARs to substantiate that McGuire 1 and 2 are designed to ANSI N18.2, 1973.

Small- and large-break LOCAs are considered to be Condition III (infrequent) and IV (limiting) initiating events in accordance with ANSI N18.2-1973. According to ANSI N18.2, Section 2.1.3.3, "A condition III incident shall not, by itself, generate a condition IV fault or result in a consequential loss of function of the Reactor Coolant System or Containment barriers." The licensee stated that

the reactor coolant system is properly designed to prevent the dynamic effects of a small pipe break from damaging other numerous small piping branches to cause a large-break LOCA. Based on the dynamic effects criteria described in the McGuire 1 and 2 UFSAR, Section 3.6.2.1, the mechanism of propagation is limited such that only weaker nearby piping is subject to propagation of the break due to dynamic effects. In addition, the greatest dynamic effects would result at the initiation of the postulated break and would decrease over time, so it is reasonable to conclude by judgment that such propagation would occur immediately at the initial onset of the postulated break. Such a conclusion is consistent with and supported by the analysis criteria outlined in the McGuire 1 and 2 UFSAR, Section 3.6.2.2, that the propagation of circumferential and longitudinal breaks will reach full size within one (1) millisecond. The licensee provided a range of small- and large-break sizes and types in the reactor coolant system piping and main steam lines that were considered in the safety analysis of Chapters 3, 6, and 15 of the UFSARs, in accordance with 10 CFR 50.46.

3.3.3 Large-Break DBA Analysis

The original Westinghouse ice condenser TMD computer model for McGuire 1 and 2 did not include the effect of lateral ice bed cross-flow between TMD sections. The ice condenser sections are modeled as independent nodes, which resulted in the need to have the LIDs open proportionally to prevent any of these sections from getting depleted early in a postulated small-break transient. The licensee stated that Westinghouse did in fact perform sensitivity analyses that showed significant pressure reductions on the containment shell during these transients due to cross-flow, but elected to leave the bounding TMD analysis without cross-flow for conservatism. The licensee further stated that this conservative approach used in the original ice condenser design relates to the restrictive requirement that it be capable of handling a small-break transient immediately followed by a large-break.

In response to NRC questions regarding a submittal made by the ICUG (TSTF-429) at a later date, Duke performed GOTHIC sensitivity analyses to confirm the significant effect of steam cross-flow within the ice condenser bays. The GOTHIC containment model and analysis methodology are described in Duke Topical Report DPC-NE-3004, "Mass and Energy Release and Containment Response Methodology," Revision 1, approved by the NRC staff (Ref. 3). The responses and the description of GOTHIC sensitivity runs are contained in industry Topical Report ICUG-001, "Application of the Active Ice Management Concept to the Ice Condenser Ice Mass Technical Specification," Revision 2, also approved by the NRC staff (Ref. 2). The approved GOTHIC methodology, termed as "GOTHIC 4.0/DUKE code," was used to evaluate the effect of ice bed cross-flow and a postulated ice bed bypass on long-term phase of the large-break LOCA containment response by a series of sensitivity analyses. The analysis showed that even if a localized region of extremely light ice baskets is assumed to be initially present in the ice condenser, the steam entering the ice condenser at that section will not melt this ice and then completely bypass the remaining ice in the bed. The analyses showed that the entire ice bed will still be melted during the event since there is no isolated pathway for the steam to bypass the remaining ice. The licensee stated that in a small-break event, bypass is even less likely since the motive force for the steam in the lower compartment will be created by the low pressure areas of the condensing steam in the ice bed as opposed to a forceful blowdown of the reactor coolant system. In effect, the steam will have an affinity for ice, a scenario also consistent with the Westinghouse sensitivity analysis. The three-dimensional analytical capabilities of the GOTHIC methodology confirmed that the original flow-proportioning design requirement for the LIDs is not

necessary as long as the doors open at the initial breakaway pressure differential to admit steam flow. The peak containment pressure is not challenged for the small-break DBA scenario, and the large-break DBA remains bounding. In a letter dated October 23, 2009, the licensee clarified that no new analyses were performed in support of the application dated October 2, 2008. However, sensitivity analyses performed in support of a previously approved amendment were invoked to reaffirm the insensitivity of containment response to an extreme maldistribution of ice as discussed above. The licensee further stated that all analyses are fully formalized and documented.

In regard to steam bypass, via the structural openings in the divider deck, the licensee stated that the original Westinghouse TMD computer code and the associated sensitivity runs addressed the ability of the ice condenser containment to handle bypass flow. The designed bypass area between the upper and lower containment compartments is less than 5 sq. ft. As described in the McGuire 1 and 2 UFSAR Section 6.2.1.1.3, the Westinghouse's sensitivity analysis results indicate that a bypass area of 50 sq. ft. is possible before the containment shell pressure would be challenged for a large-break LOCA.

3.3.4 Summary of the NRC Staff's Evaluation of the "Double Break" Scenario

Based on the supporting information from the UFSAR presented by the licensee, the NRC staff finds that the "double break" scenario is not applicable to McGuire 1 and 2. Therefore, the flow-proportioning function of the LIDs as originally envisioned for this scenario is not applicable to McGuire 1 and 2. As long as the doors open at the initial breakaway pressure differential to admit steam, the flow-proportioning design requirement for the LIDs is not necessary.

The licensee has evaluated a large-break DBA assuming a localized region of extremely light ice baskets initially in the ice condenser, by using the previously approved GOTHIC 4.0/DUKE Code methodology for McGuire 1 and 2. The analysis showed that steam entering the ice condenser at that section will not melt the ice causing the steam to bypass the remaining ice in the bed. It is reasonable to assume that bypass is even less likely during a small-break event. The requirements for acceptable ice mass distribution as stated in SR 3.6.12.4 and SR 3.6.12.5 are not affected by the proposed change.

The requirement that the LIDs open at the initial breakaway pressure of 1 psf will continue to be tested per SR 3.6.13.5. Once the doors break loose from the seals, the requirement that the LIDs modulate during a small-break accident is not necessary as long as the doors continue to open as higher differential pressure occurs across the doors. The flow-proportioning requirements of the LIDs are ensured by the torque tests in current SR 3.6.13.6. This verification involves a series of force measurements and/or torque conversions performed on the LIDs with the doors at a 40° open position, with very little actual movement of the doors. The licensee is proposing to eliminate SR 3.6.13.6, and include a door freedom-of-movement verification as part of SR 3.6.13.5. The assessment of free movement of the LIDs through the available swing arc, as proposed by the licensee, will monitor the LID components such as hinges and spring closure mechanisms and verify that they are properly maintained, thus ensuring their functionality (i.e. open or close as the differential pressure increases or decreases). As discussed in the McGuire 1 and 2 UFSAR Section 6.2.1.1.3.1 and Table 6-20, the Westinghouse sensitivity studies

performed to review deck bypass leakage have shown that even if all the LIDs are assumed to open or close with a higher resistance, substantial margin in the allowable deck bypass area remains above the design value of 5 sq. ft.

The changes proposed by the licensee do not make any physical changes to the LIDs, nor do they affect the required functional capability of the doors. The containment response to DBAs as analyzed in the current licensing basis will remain unchanged and will continue to meet the requirements in GDCs 16, 38, 40, and 50. The NRC staff finds there is reasonable assurance that the LIDs would come off their seals when the lower containment compartment is pressurized to 1 psf and they will continue to open further as the pressure differential across the LIDs increase. The NRC staff, therefore, finds acceptable the proposed change to SR 3.6.13.5 to include the freedom-of-movement verification of the LIDs and the proposed elimination of the torque tests in SR 3.6.13.6 that were meant to verify the proportional opening of the LIDs.

3.4 Technical Specification Changes to TS 3.6.13, "Ice Condenser Doors"

3.4.1 Condition A

The licensee proposed to revise Condition A from "One or more ice condenser doors inoperable due to being physically retrained from opening" to "One or more ice condenser lower inlet doors inoperable due to being physically restrained from opening." The associated Required Action A.1 is proposed to be revised from "Restore door to OPERABLE status" to "Restore lower inlet door to OPERABLE status."

The proposed change is consistent with the STS in NUREG-1431, Rev. 3. The licensee desires to use the term "lower inlet doors" instead of "inlet doors" in order to maintain consistency with the terminology in the UFSAR. It is clear from NUREG-1431, Rev. 3 that the terms "inlet doors" and "lower inlet doors" are synonymous terms representing the same doors, in that the functions performed by the "inlet doors" in NUREG-1431, Rev. 3 and the functions performed by the "lower inlet doors" at McGuire 1 and 2 are the same. Therefore, even though the proposed language for Condition A is less restrictive on operations than the current TS, because the restrictions on the intermediate deck and top deck doors would be relaxed, the change is acceptable because the time-dependent behavior of the intermediate and top deck doors is neither quantified nor included in the design basis analyses. Therefore, the NRC staff determined that the licensee provided adequate justification for the proposed change and that the TS still afford adequate assurance of safety when judged against current regulatory standards.

3.4.2 Add Note 2 to Actions

The licensee proposed to add a new note to ACTIONS. The existing note will be numbered 1 and the new note will be numbered 2. The new note would read "Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or top deck door for short durations to perform required surveillances, minor maintenance such as ice removal or routine tasks such as system walkdowns."

The proposed change is consistent with the STS in NUREG-1431, Rev.3. The NRC staff finds that similar changes were granted to other ice condenser plants (e.g., Sequoyah, Watts Bar), except the licensees in those cases included the wording in their Bases section. In addition to the

Bases section, Duke desires to add the note to the TS ACTIONS for operator expediency. Duke also defined short duration as "≤ 4 hours" in the Bases section. In a letter dated August 25, 2009, which responded to a Request for Information (RAI), Duke clarified that during an extended maintenance activity such as ice basket weighing which requires multiple door openings, Condition B of the TS would be entered in lieu of invoking the note. The NRC staff determined that the proposed change is editorial, and therefore, is acceptable.

3.4.3 SR 3.16.13.1

The licensee proposed to revise SR 3.6.13.1 from "Verify all inlet doors indicate closed by the Inlet Door Position Monitoring System" to "Verify all lower inlet doors indicate closed by the Inlet Door Position Monitoring System."

As stated above, the licensee desires this change to maintain consistency with the term "lower inlet doors" used in the UFSARs. The proposed change is administrative and the NRC staff finds it acceptable.

3.4.4 SR 3.6.13.4

The licensee proposed to revise SR 3.6.13.4 from "Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris" to "Verify, by visual inspection, each lower inlet door is not impaired by ice, frost, or debris."

The proposed change also maintains consistency between the terminology in the TS and the UFSAR. The proposed change is administrative and the NRC staff finds it acceptable.

3.4.5 SR 3.6.13.5

The licensee proposed to revise SR 3.6.13.5 from "Verify torque required to cause each inlet door to begin to open is ≤ 675 in-lb" to "Verify torque required to cause each lower inlet door to begin to open is ≤675 in-lb and verify free movement of the door."

The licensee stated that the maintenance program procedurally monitors the LID condition at each refueling outage. However, the inclusion of the verification of free movement of the door during the performance of SR 3.6.13.5 elevates the assessment of the door to a higher level status and provides assurance that the LID components will be monitored and properly maintained. The NRC staff finds the proposed change acceptable.

3.4.6 SR 3.6.13.6

The licensee proposed to eliminate SR 3.6.13.6 by striking off "Perform a torque test on each inlet door" and mark it "(deleted)."

The requirement that the LIDs have a flow-proportioning requirement, as envisioned in the original licensing basis for ice condenser plants, does not apply to McGuire 1 and 2 based on the evolution of the basis since that time. The LID freedom-of-movement assessment that is presently done as part of this SR is suitably modified and included in the revised SR 3.6.13.5. The NRC staff finds the proposed change acceptable.

3.5 Additional Considerations

In the application dated October 2, 2008, the licensee included a discussion of the impact of the deletion of the LID torque tests in SR 3.6.13.6 on other containment transients in the UFSAR, previously approved license amendment requests, and potential future state conditions.

3.5.1 Containment Transients

UFSAR Section 6.2.1.1.3.3 describes peak containment pressure transient due to a steam line break. The flow proportioning requirement of the LIDs has no affect on the temperature response as the pressure differential across the LIDs following a large steam line break will cause all the doors to open completely (i.e., 40° open position). Post blowdown for large steam line breaks, and for smaller steam line breaks, LID behavior will be similar to that of a small break DBA. Other transients described in Section 6.2 of the UFSAR, peak reverse differential pressure and minimum containment back pressure, also utilize the mass and energy release from a large-break LOCA, and therefore, there is no flow-proportioning requirement for these transients.

3.5.2 Manual Start of Containment Air Return Fan

License amendments to allow an operator action to manually start one containment air return fan in response to NRC Bulletin 2003-01 were previously approved by the NRC staff for McGuire 1 and 2 (Ref. 4). The operator action prevents or delays reaching the containment hi-hi pressure setpoint for containment spray initiation, thus minimizing the amount of spray water available to transport debris to the containment sump, and subsequent sump screen debris build-up, as well as delay ECCS and containment spray system swap-over from the refueling water storage tank to the containment sump. In support of the amendment, the licensee performed small-break LOCA studies with a modified version of the GOTHIC large-break model to evaluate containment response to small breaks. The licensee stated that the elimination of LID torque testing in SR 3.6.13.6 has no affect on the initial conditions or assumptions made in the earlier submittal.

3.5.3 ECCS Sump Amendment Requests

License amendments to allow changes that will ensure plant operations are consistent with the current licensing basis following the installation of the new modified ECCS containment sump strainer assemblies were previously approved by the NRC for McGuire 1 and 2 (Ref. 5). The amendments authorized changes to the UFSARs concerning modifications to the ECCS sump. The proposed deletion of torque tests in SR 3.6.13.6 does not change the ice condenser accident response during large-or small-break events and, therefore, has no impact on the previously approved amendments.

3.5.4 ECCS Water Management

The Duke ECCS water management project was initiated in response to GSI-191 and NRC Bulletin 2003-01 (Ref. 6). This project involves the potential implementation of a delay in the actuation of the containment spray pumps and to maximize the amount of water available from the refueling water storage tank for ECCS use. The GOTHIC sensitivity analyses referenced in support of the ice condenser door amendment request dated October 2, 2008, include the use of automatic initiation of containment spray early in the large-break LOCA event. The licensee

stated that the effect of delaying the spray was evaluated using the GOTHIC methodology. The licensee plans on submitting an amendment request in the future to implement the ECCS Water management project at McGuire 1 and 2.

3.5.5 Summary of the NRC Staff's Evaluation

In a letter dated October 23, 2009, the licensee stated that no analyses done in support of the above items used LID flow proportioning behavior as an input. Therefore, the NRC staff finds that the proposed changes to ice condenser door TS 3.6.13 will have no impact on existing or recently revised licensing basis elements.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of facility components 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 (75 FR 10508). 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.

7.0 REFERENCES

1. McGuire Nuclear Station – NRC Integrated Inspection Report 05000413/2006005, 05000414/2006005, and 0720000038/2006005 and Exercise of Enforcement Discretion, dated January 30, 2007.

2. J. A. Nakoski, U.S. NRC, letter to R. S. Lytton, Duke Power Company, September 11, 2003 (ADAMS Accession No. ML032541235).

3. F. Rinaldi and C. P. Patel, U.S. NRC, letter to H. B. Barron and G. R. Peterson, Duke Energy Corporation, February 29, 2000 (ADAMS Accession No. ML003690464).

4. J. F. Stang, U.S. NRC, letter to G. R. Peterson, Duke Power Company, September 25, 2006 (ADAMS Accession No. ML062510170).
5. J. F. Stang, U.S. NRC, letter to G. R. Peterson, Duke Power Company, May 4, 2007 (ADAMS Accession No. ML071100160).

6. D. Jamil, Duke Power Company, letter to Document Control Desk, U.S. NRC, September 13, 2006 (ADAMS Accession No. ML062640514).

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June 28, 2010

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 TECHNICAL SPECIFICATION CHANGES ASSOCIATED WITH VERIFICATION OF ICE CONDENSOR DOOR OPERABILITY (TAC NOS. MD9796 and MD9797)

Dear Mr. Hamilton:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 256 to Renewed Facility Operating License NPF-9 and Amendment No. 236 to Renewed Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated October 2, 2008, as supplemented by letters dated August 25, 2009, and October 23, 2009.

The amendments revise the TSs associated with the verification of the ice condenser door operability and TS surveillance requirements 3.6.13.5 and 3.6.13.6.

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.

If you have any questions, please call me at 301-415-1119.

Sincerely,

/RA/

Jon Thompson, 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. 256 to NPF-9
2. Amendment No. 236 to NPF-17
3. Safety Evaluation

cc w/encls: Distribution via Listserv

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NKaripineni, NRR	RElliott, NRR	RDennig, NRR

ADAMS Accession No. ML093380012 *No substantial change to SE input ML092790003

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NAME	JThompson	MO'Brien	RElliott	RDennig*	AJones w/ comment	GKulesa (VSreenivas for)	JThompson
DATE	5/5/10	5/05/10 *w /minor changes*	5/10/10	11/17/09	06/11/10	06/24/10	06/24/10

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