Duke Power
A Duke Energy Company

Duke Power Company
A Duke Energy Company
EC07H
526 South Church Street
P.O. Box 1006
Charlotte, NC 28201-1006

(704) 382-2200 OFFICE
(704) 382-4360 FAX

M. S. Tuckman
Executive Vice President
Nuclear Generation

March 1, 2002

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Response to Requests for Additional Information in Support of the Staff Review of the Application to Renew the Facility Operating Licenses of McGuire Nuclear Station, Units 1 & 2 and Catawba Nuclear Station, Units 1 & 2

Docket Nos. 50-369, 50-370, 50-413 and 50-414

Dear Sir:
By letter dated June 13, 2001, Duke Energy Corporation (Duke) submitted an Application to Renew the Facility Operating Licenses of McGuire Nuclear Station and Catawba Nuclear Station (Application). The staff is reviewing the information provided in the Application and has identified areas where additional information is needed to complete its review.

In a letter dated January 17, 2002, the staff requested additional information concerning the license renewal scoping and screening methodology. Attachment 1 provides the Duke response to this letter. Some of these responses contain commitments. The commitments are restated in Attachment 3 to facilitate tracking and management.

In a letter dated January 23, 2002, the staff requested additional information concerning the plant level scoping results. Attachment 2 provides the Duke response to this letter. None of these responses contain any commitments.

If there are any questions, please contact Bob Gill at (704) 382-3339.

Very truly yours,

M. S. Tuckman

M. S. Tuckman

Attachments:

A001

Affidavit

M. S. Tuckman, being duly sworn, states that he is Executive Vice President, Nuclear Generation Department, Duke Energy Corporation; that he is authorized on the part of said Corporation to sign and file with the U. S. Nuclear Regulatory Commission the attached responses to staff requests for additional information relative to its review of the Application to Renew the Facility Operating Licenses of McGuire Nuclear Station and Catawba Nuclear Station, Docket Nos. 50-369, 50-370, 50-413 and 50-414 dated June 13, 2001, and that all the statements and matters set forth herein are true and correct to the best of his knowledge and belief. To the extent that these statements are not based on his personal knowledge, they are based on information provided by Duke employees and/or consultants. Such information has been reviewed in accordance with Duke Energy Corporation practice and is believed to be reliable.

M. S. Tuckman

M. S. Tuckman, Executive Vice President
Duke Energy Corporation

Subscribed and sworn to before me this 1ST day of MARCH 2002.

Mary P. Nelms
Notary Public

My Commission Expires:

JAN 22, 2006

xc: (w/ Attachment)

L. A. Reyes
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303

D. B. Matthews
Director, Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Senior NRC Resident Inspector
McGuire Nuclear Station

Senior NRC Resident Inspector
Catawba Nuclear Station

C. P. Patel
Senior Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

C. I. Grimes
Program Director, License Renewal and Environmental Impacts
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

R. L. Franovich
Senior Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

R. E. Martin
Senior Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

xc: (w/ Attachment)

Henry J. Porter
Assistant Director, Division of Waste Management
Bureau of Land & Waste Management
S.C. Department of Health and Environmental Control
2600 Bull St.
Columbia, SC 29201

R. M. Fry
Director, Division of Radiation Protection
North Carolina Department of Environment, Health, and Natural Resources
3825 Barrett Drive
Raleigh, NC 27609

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

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

Piedmont Municipal Power Agency
121 Village Drive
Greer, SC 29651

Saluda River Electric Cooperative, Inc.
P. O. Box 929
Laurens, SC 29360

Attachment 1
Application to Renew the Operating Licenses of
McGuire Nuclear Station and Catawba Nuclear Station
Responses to NRC Requests for Additional Information
NRC Letter dated January 17, 2002

2.1 Scoping and Screening Methodology

RAI 2.1-1
In LRA Section 2.1.1.1, "Safety Related Structures, Systems, and Components," Duke appropriately states that plant systems, structures, and components within the scope of license renewal are those that satisfy the scoping criteria in §54.4(a)(1). Scoping criterion (a)(1)(iii) refers to the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines in §50.34(a)(1), §50.67(b)(2), or §100.11 of this chapter, as applicable."

During the audit, however, the staff noted that the Duke Specifications governing scoping methodology for McGuire and Catawba currently cite superseded regulatory text in establishing the scoping criteria to be used in identifying Catawba and McGuire structures, systems, and components in accordance with §54.4(a)(1) requirements. Specifically, these specifications cite the following criterion in reference to §54.4(a)(1)(iii): "The capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures comparable to the 10 CFR Part 100 guidelines."

Therefore, the staff requests the applicant to provide a written evaluation that addresses the impact, if any, of not having explicitly considered in its scoping methodology for Catawba and McGuire those structures, systems, or components that are relied upon to ensure "the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines in §50.34(a)(1), §50.67(b)(2), or §100.11 of this chapter, as applicable," consistent with the facilities' CLB.

Response to RAI 2.1-1
Duke has reviewed the scoping criteria in §50.34(a)(1), §50.67(b)(2), or §100.11 as currently reflected in §54.4(a)(1)(iii) and determined that there is no impact on scoping.

For §50.34(a)(1), only §50.34(a)(1)(i) is applicable and it refers to Part 100 for specific site evaluation factors. Section 100.11 is applicable to McGuire and Catawba and was used in the license renewal scoping process. However, §50.34(a)(1)(ii) is not applicable to McGuire and Catawba because it is only applicable to applications filed on or after January 10, 1997. Likewise, §50.67(b)(2) is not applicable to McGuire and Catawba because license amendments have not been made at either station to allow use of the revised accident source term.

Duke will revise its scoping methodology specifications to incorporate the current criteria of §54.4(a)(1)(iii) by June 30, 2002.

2.1-2.a and 2.1-2.b - Scoping of Structures and Components that Meet 10 CFR 54.4(a)(2) Criteria

An applicant has two options when performing its scoping evaluation for non-safety-related piping systems that have a spatial relationship with safety-related systems, structures or components (SSCs) such that their failure could adversely impact the performance of an intended safety function: a mitigative option or a preventive option.

Mitigative option: With the mitigative option, the applicant must demonstrate that plant mitigative features (e.g., pipe whip restraints, jet impingement shields, spray and drip shields, seismic supports, flood barriers, etc.) are provided to protect safety-related SSCs from a failure of non-safety-related piping segments. When evaluating the failure modes of non-safety-related piping segments and the associated consequences, age-related degradation must be considered. The staff notes that pipe failure evaluations typically do not consider age-related degradation when determining pipe failure locations. Rather, pipe failure locations are normally postulated based on high stress. Industry operating experience has shown that age-related pipe failures can, and do, occur at locations other than the high-stress locations postulated in most pipe failure analyses. Therefore, to utilize the mitigative option, an applicant should demonstrate that the mitigating devices are adequate to protect safety-related SSCs from failures of non-safety-related piping segments at any location where age-related degradation is plausible. If this level of protection can be demonstrated, then only the mitigative features need to be included within the scope of license renewal, and the piping segments need not be included within the scope.

Preventive option: if an applicant cannot demonstrate that the mitigative features are adequate to protect safety-related SSCs from the consequences of non-safety-related pipe failures, then the applicant should utilize the preventive option, which requires that the entire non-safety-related piping system be brought into the scope of license renewal and an AMR be performed on the system piping. An applicant may determine that, to ensure adequate protection of the safety-related SSC, a combination of mitigative features and non-safety-related piping segments must be brought within scope.

RAI 2.1-2.a

The staff requests that the applicant identify whether the mitigative option, the preventive option, or a combination, is used to identify non-safety-related piping systems that, if they failed, could adversely impact the performance of an intended safety function. For each non-safety-related piping system that would normally be included within the scope of license renewal, but is excluded because mitigative features have been credited for protecting safety-related SSCs from the failure of the non-safety-related piping system,

please identify (1) the mitigative feature(s) that is credited for protection; (2) the hazard (e.g., failure mechanisms and postulated failure locations) for which the mitigative feature(s) is providing protection; and (3) a summary discussion (including references, such as reports, analyses, calculations, etc.) of the basis for the conclusion that the mitigative feature(s) is adequate to protect safety-related SSCs.

RAI 2.1-2.b

The staff requests that the applicant identify whether the mitigative option, the preventive option, or a combination, is used to identify non-safety-related non-safety-related systems, structures or components (other than piping) that, if they failed, could adversely impact the performance of an intended safety function. For these other non-safety-related systems, structures or components, an applicant can exercise the mitigative option, the preventive option, or a combination, to address the scoping issue. For each non-safety-related systems, structures or components identified as meeting the 54.4(a)(2) scoping criterion, list which option or combination of options is being credited. For those non-safety-related systems, structures or components that exercise the mitigative option, please identify (1) the mitigative feature(s) that is credited for protection; (2) the hazard (e.g., failure mechanisms and postulated failure locations) for which the mitigative feature(s) is providing protection; and (3) a summary discussion (including references, such as reports, analyzes, calculations, etc.) of the basis for the conclusion that the mitigative feature(s) is adequate to protect safety-related SSCs.

Response to RAIs 2.1-2.a and 2.1.2.b

The response to these two RAIs is in preparation and will be provided on or before April 15, 2002.

RAI 2.3-1
LRA Appendix B, "Aging Management Programs and Activities," Section B.2, "Program and Activity Attributes," and Subsection B.2.2, "Attribute Definitions," states that the applicant relies on the corrective action process as implemented through Nuclear System Directives NSD 208, "Problem Investigation Process," and NSD 223, "Trending of PIP Data," to satisfy the corrective actions, confirmation process, and administrative controls attributes of the aging management programs that will be implemented at Catawba and McGuire for the period of extended operation.

Consistent with guidance in SRP-LR, Appendix A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)," license renewal applicants can rely on the existing requirements in 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to satisfy these program elements/attributes. However, the Catawba/McGuire LRA does not establish or identify the role of the aforementioned Nuclear System Directives with respect to the applicant's 10 CFR Part 50, Appendix B, quality assurance program in effect at these facilities.

Therefore, the staff requests the applicant to confirm that NSDs 208 and 223 govern the applicant's corrective action program, which is subject to the requirements of 10 CFR Part 50, Appendix B, quality assurance program. The staff requests the applicant to confirm that this same corrective action program is credited for structures, systems, and components whose aging will be managed by an aging management program at Catawba and McGuire during the period of extended operation. In conformance with 10 CFR 54.21(d) requirements, the staff also requests the applicant to identify and describe this role as a commitment in the UFSAR supplements for Catawba and McGuire.

Response to RAI 2.1-3
The Problem Investigation Process (PIP) (NSD-208) provides a structured approach for a formal corrective action program which facilitates the prioritization, evaluation, and correction of conditions adverse to quality, as defined by 10 CFR Part 50, Appendix B. Trending of PIP Data (NSD-223) provides a process for an effective, structured method for analyzing the PIP data.

As stated in each aging management program and activity description provided in Appendix B of the Application, this same corrective action program is credited for systems, structures, and components whose aging will be managed by these aging management programs and activities at Catawba and McGuire during the period of extended operation.

The following statements will be added to Section 18.1 of each station's UFSAR Supplement:

The Problem Investigation Process (PIP) (NSD-208) provides a structured approach for a formal corrective action program which facilitates the prioritization, evaluation, and correction of conditions adverse to quality, as defined by 10 CFR Part 50, Appendix B. This same corrective action program is credited for systems, structures, and components whose aging will be managed by the aging management programs and activities described herein.

RAI 2.1-4
The audit team determined that the procedures reviewed in combination with the review of a sample of scoping and screening products provided adequate evidence that the scoping and screening process was conducted in accordance with the requirements of 10 CFR 54.4, "Scope," and 10 CFR 54.21, "Contents of Application — Technical Information." However, the team also concluded that the applicant needs to describe the process it intends to implement to capture the scoping and screening process upon which the applicant will rely during the period of extended operation at Catawba and McGuire to satisfy the requirements of 10 CFR 54.35, "Requirements During the Term of Renewed License." As such, the staff requests the applicant to describe the process it intends to implement to capture the scoping and screening process upon which the applicant will rely during the period of extended operation at Catawba and McGuire to satisfy the requirements of 10 CFR 54.35, "Requirements During the Term of Renewed License."

Response to RAI 2.1-4
Section 54.35 states that "during the term of a renewed license, licensees shall be subject to and shall continue to comply with all Commission regulations contained in 10 CFR parts 2,19, 20, 21, 26, 30, 40, 50, 51, 54, 55, 70, 72, 73, and 100, and the appendices to these parts that are applicable to holders of operating licenses." For all parts of Title 10, except Part 54, programs that were in existence prior to the renewal of the operating licenses will continue through the term of the renewed license. With respect to Part 54, §54.37(b) specifically applies after the renewed license is issued. Duke has prepared and issued an engineering directive that is generic to all of our nuclear stations to provide guidance for meeting the requirements of §54.37(b).

The process described in this generic engineering directive applies to particular facility changes that may affect the license renewal scope and invoke the requirements of §54.37(b). These plant changes include (1) physical plant changes that may add a component to the plant, (2) physical plant changes that may change the material of a component in the plant, (3) functional plant changes that may add existing components to the scope of license renewal, and (4) current licensing basis changes that may add components to the scope of license renewal.

The process described in this generic engineering directive utilizes existing plant processes such as the plant modification process and the procedure change process to meet the requirements of §54.37(b). Applicable portions of the existing plant modification process checklist will be used to review each physical plant modification to determine if the plant modification would change the scope of license renewal upon implementation. In addition, a plant procedure change could result in an operating system alignment change or

a method of operation change such that the components within the scope of license renewal are affected. Finally, current licensing basis changes are reviewed by the plant staff to determine if the change affects the scope of license renewal.

The results of these reviews will be documented. If the physical plant change or procedural change results in a change to the station Updated Final Safety Analysis Report (UFSAR), then the UFSAR will be updated as required by §50.71(e).

Attachment 2
Application to Renew the Operating Licenses of
McGuire Nuclear Station and Catawba Nuclear Station
Responses to NRC Requests for Additional Information
NRC Letter dated January 23, 2002

2.2 Plant Level Scoping Results

RAI 2.2.1-1

Section 8.1.2 of the McGuire Updated Final Safety Analysis Report (UFSAR) states that "Each unit has two redundant and independent 4160 Volt Essential Auxiliary Power Systems. All of the loads listed in Table 8-1 are supplied power during a blackout or accident condition, are fed from the 4160 Volt Essential Auxiliary Power System, either at 4160 Volts or through transformers at a lower voltage." Table 8-1 of the McGuire UFSAR lists both the control rod drive ventilation fans and the incore instrumentation room air handling units as receiving essential auxiliary power during a blackout. As such, it appears that the control rod drive ventilation (VR) and the incore instrumentation area ventilation (VT) systems are relied upon to be operational during a loss of offsite power event and should be within the scope of license renewal. Table 2.2-3 of the McGuire license renewal application (LRA) lists these systems as "Not within the Scope of License Renewal." Please provide the basis for excluding these systems from the scope of license renewal.

Response to RAI 2.2.1-1

During normal operation, both the VR and VT systems provide cooling to specific areas within the Containment. The VR system provides cooling to the control rod drive mechanisms that are located on the Reactor Vessel head. The VT system provides cooling to the in-core instrumentation area. Both VR and VT are non-safety related ventilation systems and are not credited for any design basis events. None of the scoping criteria contained in §54.4 are met.

Table 8-1 in the McGuire UFSAR uses the term "blackout." The term "blackout" as used in the UFSAR refers to the postulated accident described in UFSAR Section 15.2.6, "Loss of Non-Emergency AC power to the Station Auxiliaries." The VR and VT systems are listed in McGuire UFSAR Table 8-1 as loads on the emergency diesel generators. These two loads are added for convenience, rather than by necessity. During events that result in starting the emergency diesel generators, such as "blackout," the VR and VT systems are powered to provide additional Containment cooling to avoid an increase in Containment pressure and preclude unnecessary actuation of the safety-related Containment Spray System due to small increases in pressure. The two systems provide no required event mitigation function.

RAI 2.2.1-2

Table 2.2-3 lists Diesel Building (#7434) as not being within the scope of license renewal. Table 2.2-1 lists the Diesel Generator Buildings as being within the scope of license renewal. It is not clear what the difference between these buildings is. Table 3-1 of the McGuire UFSAR lists the "diesel building" as being a seismically designed category I structure. Similarly Table 3-7 of the UFSAR lists the "diesel building" ventilation system as being safety class 2E. It is not clear whether the UFSAR is referencing the diesel generator buildings in these tables or diesel building (#7434). Please explain the basis for excluding the diesel building (#7434) from the scope of license renewal.

Response to RAI 2.2.1-2

Diesel Building (#7434) houses the back up power for the non-vital telecommunications building. This diesel is outside the protected area and is located Northeast of the Office Shop Building. Diesel Building (#7434) does not perform a §54.4 function and is not within the scope of license renewal. The "diesel building" identified as a seismic Category I structure in the McGuire UFSAR is the Diesel Generator Building. The Diesel Generator Buildings house the emergency diesel generators. The Diesel Generator Buildings are part of the Auxiliary Building complex and are within the scope of license renewal.

RAI 2.2.1-3
Section 12.1.2.1 of the McGuire UFSAR states that the Radwaste Facility is shielded by two-foot thick concrete walls. Similarly, the same section indicates that Retired Steam Generator Storage Facility is shielded by 2-½ foot thick concrete walls. These shield walls are necessary because these facilities could contain significant levels of radioactivity. Are these walls necessary to ensure the capability to mitigate the consequences of accidents that could result in potential offsite exposure comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11? If so, please provide the basis for their exclusion from the scope of license renewal.

Response to RAI 2.2.1-3
The walls identified for the Radwaste and Retired Steam Generator Storage facility are designed for shielding and are not required to mitigate the consequences of accidents that could result in potential offsite exposure comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11.

The Radwaste and Steam Generator Storage Facility did not meet any scoping criteria for 10 CFR 54.4. Therefore, these structures are not within the scope of license renewal.

RAI 2.2.1-4
10CFR54.4(a)(3) states that all systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63) are within the scope of license renewal. Table 2.2-3 of the LRA lists the mechanical systems that the applicant has determined are not within the scope of license renewal. This table lists the condensate and condensate storage systems as not within the scope of license renewal. In its February 19, 1992, safety evaluation report on McGuire's response to the Station Blackout Rule, the staff's acceptance of McGuire's response was partially based on the licensee's statement that adequate water sources were available to provide a four hour coping period. The specific water sources credited include the auxiliary feedwater condensate storage tank, the upper surge tanks, and the condenser hotwell. As such, it appears that the condensate and condensate storage systems should be within the scope of license renewal because they are relied upon during a station blackout event. Please provide the basis for excluding them from the scope of license renewal.

Response to RAI 2.2.1-4
The regulatory guidance documents associated with implementation of the Station Blackout Rule required, among other reviews, a review of the coping capability of the plant, including the requisite condensate inventory required for the applicable coping duration. For McGuire, over 75,000 gallons of water are required for decay heat removal during the 4-hour coping period. The turbine-driven auxiliary feedwater pumps can be aligned to any one of several sources of condensate grade water as well as to a non-condensate grade source of water.

The condensate grade water sources are the normal sources of water for the Auxiliary Feedwater System. As noted in the staff's Technical Evaluation Report (TER), "[t]here are, however, no technical specifications limits on levels of these water sources, and therefore there are no guarantees that these sources of condensate will be available during an SBO event." The TER goes on to say, "If, for any reason, sufficient sources of condensate-grade water are unavailable, the licensee can align the turbine-driven AFW pump to take suction from the CCWS, which can provide non-condensate-grade water for 72 hours." It is this latter source of water that is relied upon in the SBO coping plant evaluation.

As stated in Section 2.1.2.1.1 of the Application, McGuire takes credit for the standby shutdown system-related equipment to achieve and maintain a hot standby condition for one of both units following a postulated fire, sabotage, or SBO. The condensate sources are not part of the standby shutdown system; only the condenser circulating water inventory is considered part of the standby shutdown system and relied upon in these events. The components that contain the condenser circulating water inventory are within the scope of license renewal.

RAI 2.2.1-5

Table 2.2-4 of the Catawba license renewal application (LRA) states that the Retired Steam Generator Storage Facility is not within the scope of license renewal. However, Section 12.3.2.2 of the Catawba UFSAR states that the Retired Steam Generator Storage Facility is shielded by 2½ thick concrete walls. These shield walls are apparently necessary because this facility could contain significant levels of radioactivity. Are these walls necessary to ensure the capability to mitigate the consequences of a design basis event that could result in potential offsite exposure comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11? If so, please provide the basis for the exclusion of the Retired Steam Generator Storage Facility from the scope of license renewal.

Response to RAI 2.2.1-5

The walls identified for the Retired Steam Generator Storage facility are designed for shielding and are not required to mitigate the consequences of accidents that could result in potential offsite exposure comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11.

The Retired Steam Generator Storage Facility did not meet any scoping criteria for 10 CFR §54.4. Therefore, the Retired Steam Generator Storage Facility is not within the scope of license renewal.

Attachment 3
Application to Renew the Operating Licenses of
McGuire Nuclear Station and Catawba Nuclear Station
Responses to NRC Requests for Additional Information
NRC Letters dated January 17 and 23, 2002

LIST OF COMMITMENTS

List of Commitments

1. Duke will revise its scoping methodology specifications to incorporate the current criteria of §54.4(a)(1)(iii) by June 30, 2002. (Response to RAI 2.1-1)

2. The response to these two RAIs is in preparation and will be provided on or before April 15, 2002. (Response to RAIs 2.1.2.a and 2.1.2.b)

3. The following statements will be added to Section 18.1 of each station's UFSAR Supplement:

   The Problem Investigation Process (PIP) (NSD-208) provides a structured approach for a formal corrective action program which facilitates the prioritization, evaluation, and correction of conditions adverse to quality, as defined by 10 CFR Part 50, Appendix B. This same corrective action program is credited for systems, structures, and components whose aging will be managed by the aging management programs and activities described herein.

   (Response to RAI 2.1-3)