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June 22, 1999

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

Subject: License Renewal
Response to License Renewal SER Open Item 2.1.3.1-1
Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

By letter dated July 6, 1998, Duke Energy Corporation submitted an Application for Renewed Operating Licenses for Oconee Nuclear Station, Units 1, 2, and 3 (Application). Exhibit A of the Application contains the technical information required by 10 CFR Part 54. The NRC staff is reviewing the information provided by Duke Energy in the Application and by several letters identified areas where additional information is needed to complete its review.

By letter dated February 17, 1999, Duke Energy provided responses to several requests for additional information (RAIs) including RAI 2.2-6. On March 11, 1999, a meeting was held with staff in which Duke Energy provided additional information on several additional topics identified by the staff concerning the scoping methodology utilized in the integrated plant assessment of Oconee Nuclear Station. By letter dated March 18, 1999, Duke Energy provided further explanation of the scoping events set used for the license renewal mechanical system scoping.

The staff identified the scoping issue in a letter dated April 8, 1999. In our letter dated May 10, 1999, we deferred a response to this potential Safety Evaluation Report open item pending a meeting with the staff on the subject. A meeting with the staff was held on May 11, 1999 and this topic was identified as an action item in the meeting summary dated May 19, 1999 for this meeting. Subsequently, the staff issued the Safety Evaluation Report on June 16, 1999 that contains the following open item:

Open Item 2.1.3.1-1 – The applicant agreed to supplement its response to the staff's request for additional information (RAI) 2.2-6, to include a description of the process used to identify events for ONS license renewal scoping consistent with the presentation that was given to the staff. The applicant agreed to provide an explanation as to how the 26 events identified during the meeting are sufficient to satisfy 10 CFR 54.4(a)(1) and 54.4(a)(2). This is part 1 of the Open Item.

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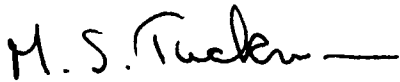
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The information provided in Attachment 1 is provided in response to Open Item 2.1.3.1-1.
There are no commitments contained in this response.

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

Very truly yours,

A handwritten signature in cursive script that reads "M. S. Tuckman" followed by a horizontal line.

M. S. Tuckman

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 Company to sign and file with the U. S. Nuclear Regulatory Commission this supplemental response to an NRC request for additional information concerning the Application to Renew the Facility Operating Licenses of Oconee Nuclear Station submitted by letter dated July 6, 1998; and that all 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 22nd day of June 1999.

Mary P. Nelms

Notary Public

My Commission Expires:

JAN 22, 2001

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Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Response to NRC Safety Evaluation Report
Open Item 2.1.3.1-1**

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Introduction

The NRC originally questioned aspects of the license renewal scoping methodology in RAI 2.2-6. By letter dated February 17, 1999, Duke Energy provided responses to several requests for additional information (RAIs) including RAI 2.2-6. On March 11, 1999, a meeting was held with staff in which Duke Energy provided additional information on several additional topics identified by the staff concerning the scoping methodology utilized in the integrated plant assessment of Oconee Nuclear Station. By letter dated March 18, 1999, Duke Energy provided further explanation of the scoping events set used for the license renewal mechanical system scoping.

The staff identified the scoping issue as a Potential Open Item in a letter dated April 8, 1999. In our letter dated May 10, 1999, we deferred a response to this potential Safety Evaluation Report open item pending a meeting with the staff on the subject. A meeting with the staff was held on May 11, 1999 and this topic was identified as an action item in the meeting summary dated May 19, 1999 for this meeting. Subsequently, the staff issued the Safety Evaluation Report on June 16, 1999 that contains the following open item:

Open Item 2.1.3.1-1 – The applicant agreed to supplement its response to the staff's request for additional information (RAI) 2.2-6, to include a description of the process used to identify events for ONS license renewal scoping consistent with the presentation that was given to the staff. The applicant agreed to provide an explanation as to how the 26 events identified during the meeting are sufficient to satisfy 10 CFR 54.4(a)(1) and 54.4(a)(2). This is part 1 of the Open Item.

The response provided herein is intended to respond to Open Item 2.1.3.1-1. The response contains a description of the events used as the starting point for mechanical license renewal scoping, an excerpt of the four-step mechanical license renewal scoping methodology from Exhibit A of the Application, and a summary.

Response

Section 2.2 of Exhibit A of the Application reports the methodology used by Duke to identify the mechanical systems and components that meet the criteria of §§54.4(a)(1) and (a)(2). The criteria begins, "Plant systems, structures, and components that are within the scope of this part are- (1) Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49(b)(1))..." The statement implies that the set of systems, structures, and components that are safety related are equal to the set of systems, structures, and components that are required to mitigate design basis events. As with other plants licensed prior to the staff's issuance of the Standard Review Plan and

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Regulatory Guide 1.29, the safety-related systems, structures, and components at Oconee do not completely bound the set of systems, structures, and components relied upon to remain functional during and following design-basis events. Thus, the scoping methodology had to begin with the set of design basis events for Oconee, but as discussed below, it was not limited to this set of design basis events.

Duke Energy applied the criteria of §§54.4(a)(1) and (a)(2) for Oconee license renewal consistent with Oconee's current licensing basis. When applying NRC regulations to Oconee, it is important to recognize that Oconee's design preceded the promulgation of the design basis events definition in NRC regulations. The opening sentence of the Oconee UFSAR Chapter 15, the accident analysis chapter, reads:

“This section details the expected response of the plant to the spectrum of transients and accidents which constitute the design basis events.”

Oconee's design relies on features that are effective and have been approved by the NRC, but that may not completely bound the NRC's current regulatory terminology. Historically, NRC regulations have been individually resolved against the Oconee design and licensing basis. In 1991, as part of the overall creation of the design basis document (DBD) set, Oconee recognized the need to standardize the approach to resolving future regulations that would use the term “design basis event.” The creation of the Design Basis Event DBD was intended to provide a standardized description of the design basis events. Subsequent use of this DBD revealed the need to broaden the descriptions in order to be clear on how the document requirements were to be applied. This eventually led to the Oconee Safety Related Designation Clarification (OSRDC) Project.

The purpose of the OSRDC Project was to implement a voluntary augmented quality program for “important” non-safety related components. The decision was made to define those important components as those non-safety components required to mitigate or support the mitigation of design basis events. The initial phase of the project was conducted over the 1995 to 1998 timeframe to fully document Oconee's licensing basis associated with the Oconee design basis events. The project performed exhaustive research that included the examination of documents such as NRC letters, NRC SERs, Duke's response to staff letters, as well as the scoping methodology of previous regulated programs that have been reviewed and approved by the NRC. The conclusion of the research verified the statement in Chapter 15 of the UFSAR that those events constitute the set of Oconee's design basis events. The project then proceeded to document the mitigation strategy for each event in Oconee Event Mitigation Calculations. Several of these Oconee Event Mitigation Calculations were reviewed by the staff during the scoping and screening inspection at Oconee in April 1999 and during the staff visit in Charlotte in October 1998.

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As the starting point for mechanical license renewal scoping, the mitigation strategies documented in Oconee Event Mitigation Calculations of the Oconee UFSAR Chapter 15 accident analyses listed below were reviewed. This list contains both design basis accidents and anticipated operational occurrences. No external events are analyzed in Chapter 15 of the Oconee UFSAR.

Design Basis Event*

1. Uncompensated Operating Reactivity Change
2. Startup Accident
3. Rod Withdrawal Accident
4. Moderator Dilution Accident
5. Cold Water Accident
6. Loss of Coolant Flow
7. Locked Rotor/ Sheared Shaft
8. Control Rod Misalignment
9. Loss of Electric Power
10. Loss of Offsite Power (LOOP)
11. Turbine Trip
12. Steam Generator Tube Rupture
13. Waste Gas Tank Rupture
14. Fuel Handling Accident
15. Rod Ejection Accident
16. Main Steam Line Break
17. Large Break Loss of Coolant Accident coincident with LOOP
18. Small Break Loss of Coolant Accident
19. Maximum Hypothetical Accident
20. Post Accident Hydrogen Control

* The titles of the events are consistent with the titles in the UFSAR Chapter 15 reanalysis topical entitled "DPC-NE-3005-P, UFSAR Chapter 15 Transient Analysis Methodology" that has been submitted to the staff. The titles are not necessarily consistent with the event titles in the UFSAR today. The staff has completed its review of this topical report and has documented the results of the review in safety evaluation reports transmitted to Duke by letters dated October 1, 1998 and May 25, 1999.

The OSRDC project also identified and documented an additional set of "scoping events" beyond the set of design basis events to be included in the augmented quality program. The project then proceeded to document the mitigation strategy or regulatory requirements for these events in Oconee Event Mitigation Calculations. An Oconee Event Mitigation Calculation exists for each additional scoping event except for Seismic, because systems and components required to meet seismic design criteria are designated as such on design drawings. Duke took the position that when scoping a regulatory issue that is based on design basis event mitigation, the regulatory requirements of these

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additional scoping events should be considered for possible scope inclusion. These additional events were chosen based on their risk significance and regulatory importance.

In a similar manner that the staff considered non-design basis events within a plant's current licensing basis important enough to be included as an additional scoping consideration in §54.4(a)(3), Duke considers these additional non-design basis events within Oconee's current licensing basis important enough to be included in the scoping of regulatory programs. License renewal included not only the design basis events for Oconee as required by the regulation, but also the additional scoping events to identify the mechanical components that meet the criteria of §§54.4(a)(1) and (a)(2). This methodology resulted in a larger mechanical license renewal scope than if only Oconee's design basis events had been considered. The additional events and criteria used as a starting point to identify mechanical components within the scope of license renewal include:

Additional Scoping Events

21. Loss of Main Feedwater
22. SSF Event Turbine Building Flood
23. Natural Phenomena: Tornado, Wind, and Hurricane (including Tornado missiles)
24. Natural Phenomena: External Floods and Groundwater
25. Natural Phenomena: Snow and Ice
26. Natural Phenomena: Seismic

The mitigation and requirements associated with both sets of events listed above were used to identify the mechanical components within the scope of license renewal. For the purposes of license renewal, the entire set of events constitutes the events used for license renewal mechanical scoping.

Below is an excerpt from Exhibit A of the Application that describes the four step process used in the mechanical license renewal scoping methodology. Please note that although the excerpt refers to "design basis events", all 26 events above, including the additional scoping events, were used as the starting point of the mechanical scoping methodology.

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Excerpt from Exhibit A of the License Renewal Application

**2.2 IDENTIFICATION OF SYSTEMS, STRUCTURES, AND COMPONENTS
WITHIN THE SCOPE OF LICENSE RENEWAL**

The methodology used to identify structures and mechanical systems at Oconee that are within the scope of license renewal is described and justified in this section, consistent with the guidance provided by NEI 95-10, Revision 0 [Reference 2.2-1, Section 3.1]. In August 1996, the NRC issued Draft Regulatory Guide DG-1047, *Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses*, for public comment. Therein, the NRC proposed to endorse NEI 95-10, Revision 0, as an acceptable method for complying with the requirements of 10 CFR Part 54 [Reference 2.2-2]. The methodology utilized to identify the electrical components within the scope of license renewal and subject to aging management review is described in Section 2.6 of OLRP-1001.

Section 2.2.1 discusses the review performed to identify structures and mechanical systems that satisfy the criteria contained in §§54.4(a)(1) and (a)(2). Section 2.2.2 describes the review performed to satisfy the criteria contained in §54.4(a)(3). [Footnote 1]

2.2.1 REVIEW TO CRITERIA IN §§54.4(a)(1) AND (a)(2)

The following sections describe the methodology and results associated with the identification of structures and mechanical systems within the scope of license renewal. This methodology covers the design basis event mitigation scoping requirements of both §§54.4(a)(1) and (a)(2).

2.2.1.1 Mechanical Systems

The mechanical systems at Oconee, Keowee Hydroelectric Station (Keowee), and the Standby Shutdown Facility (Standby Shutdown Facility), as identified on Oconee and Keowee engineering drawings and documents, were the subject of this review. For the purpose of mechanical system scoping, Duke carried out the following activities:

- (a) Identify all systems and their functions that are listed in design basis event mitigation calculations at Oconee.

As defined by §§54.4(a)(1) and (a)(2), all safety-related systems, structures, and components required to mitigate design basis events and nonsafety-related systems, structures, and components whose failure would prevent the successful mitigation of design basis events are within the scope of license renewal. Because Oconee was licensed before terms such as "safety-related" were more

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precisely defined by the NRC, a list of the Oconee safety-related systems, structures, and components, in and of itself, will not meet the intent of §54.4(a)(1). Because the criteria in §54.4(a)(1) are the scoping criteria for many modern-day, regulatory-required programs, Oconee conducted a design study that validated all functions required for the successful mitigation of Oconee design basis events and identified the systems and components relied upon to complete those functions. The individual design basis event mitigation calculations produced as a result of the study contain a list of the system functions required to successfully mitigate each event. Duke determined that the systems that perform these functions are within the scope of license renewal.

(b) Identify all passive pressure boundaries required for the systems identified in step (a).

As part of the design basis event mitigation calculations, the validated functions were mapped onto Oconee system flow diagrams. These functional boundaries then required the additional identification of piping and components to complete the physical piping boundary. In some instances, the pressure boundary for one system may cross the system boundary into another system. Since the additional system does not perform a specific function, but serves only as a pressure boundary for the system that does serve a function, the additional system is not specifically stated as a system within scope. For the purposes of license renewal, the additional components are considered an extension of the functional system that is within scope.

(c) Identify portions of selected mechanical systems whose failure to maintain their pressure boundary or to remain structurally intact would result in impacting the function of any essential system and component. Oconee essential systems and components include the Reactor Coolant System, reactor vessel internals, Reactor Building, Engineering Safeguards System, and electric emergency power sources [Reference 2.2-4, Section 3.1.1].

In this activity, two types of physical interactions must be considered for the purposes of scoping systems, structures and components into license renewal. The first type of interaction to consider is the structural integrity of mechanical components that must remain in place such that they do not fall onto equipment that is performing a safety-related function and prevent it from performing that function. In this case, structural integrity for these mechanical components is the responsibility of the component support which is required to remain intact in order to fulfill the function.

The other type of physical interaction is the leakage of fluid from the mechanical system components onto nearby equipment that is performing a safety-related

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function which could prevent it from performing that function. In this case, the pressure boundary and the structural integrity of the mechanical component is of concern. Oconee is licensed to consider the effects of physical interactions on essential systems and components consistent with the original licensing basis. This list of essential systems is in UFSAR, Section 3.1.1. These essential systems and components are not necessarily the systems, structures and components that meet the first scoping criteria of license renewal, 10 CFR 54.4(a)(1)(i), (ii), and (iii). However, they are the systems, structures and components that Oconee is required to protect from postulated failures (due to physical interactions) of nonsafety-related systems, structures and components.

Oconee System Piping Class D [Footnote 2] piping is the nonsafety-related piping whose pressure boundary loss may adversely affect essential systems or components. Systems containing Oconee System Piping Class D piping are within the scope of license renewal.

(d) Some mechanical systems at Oconee contain mechanical safety-related piping and components and seismic-related piping and components that do not meet the criteria of §54.4(a)(1) or (a)(2).

To ensure completeness in mechanical scoping, systems or portions of systems containing this piping were evaluated for inclusion in the scope of license renewal, whether or not they meet the criteria of §54.4(a)(1) or (a)(2). Individual components or sets of components are included within the scope of license renewal based on this evaluation and are included within the marked license renewal evaluation boundaries in OLRP-1002 [Reference 2.2-3].