April 8, 1999

LICENSEE: Duke Energy Corporation (Duke)

FACILITY: Oconee Nuclear Station, Units 1, 2, and 3

SUBJECT: SUMMARY OF MARCH 15, 1999, PHONE CALL BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) STAFF AND DUKE REPRESENTATIVES TO DISCUSS THE OCONEE LICENSE RENEWAL APPLICATION

On March 15, 1999, representatives of Duke had a phone call with the NRC staff in Rockville, Maryland, to discuss the Oconee license renewal application. The purpose of the phone call was to discuss a question the staff had regarding environmental qualification (EQ). The Duke participants were Robert Gill, and Paul Colaianni. The staff participants were Dale Thatcher, Paul Shemanski and Joe Sebrosky.

The staff question regarding EQ related to the difference between the Baltimore Gas and Electric (BGE) license renewal application and the Duke application. Unlike BGE, Duke did not appear to address the EQ provision (50.49) of 10 CFR 54.4(a)(3) which requires that an applicant look at passive, long-lived electrical devices that may have intended functions in the scope of license renewal. In the Duke application the EQ program looks at aging due primarily to temperature and radiation and does not look at passive functions such as maintaining pressure boundary, maintaining pressure seal at reactor vessel, or providing electrical continuity as were defined by BGE. The components identified by BGE that are within the scope of license renewal are:

cables	core exit thermocouple system
junction box	seal
cont. penetration assy.	solenoid valve
terminal block	reactor vessel level monitoring in-core assy.

The age-related degradation mechanism for the BGE application were crevice corrosion, general corrosion, Kapton unique aging, and pitting. The staff was concerned about how the above components were treated by Duke in its license renewal application. Duke's response to the staff's question can be found in the Enclosure. The staff stated that if any additional information is required, it will identify the information in a future call, or in the safety evaluation report for the Oconee license renewal application.

A draft of this meeting summary was provided to Duke to allow them the opportunity to comment on the summary prior to issuance.

original signed by:
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Docket Nos. 50-269, 50-270, and 50-287
Enclosure: As stated
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Duke's Response to Environmental Qualification Question
3/15/99 Phone Call

EXPLANATION OF A DIFFERENCE IN THE CALVERT CLIFFS AND OCONEE LICENSE RENEWAL APPLICATIONS

During the March 11, 1999 meeting with the NRC staff to discuss RAI responses, differences were noted in the way the Calvert Cliffs LRA (Attachment 1, Appendix A, Section 6.3) and the Oconee LRA addressed EQ equipment in the IPA. In a follow-up telephone conference on March 15, 1999 this issue was discussed further. The information provided in this document is meant to resolve the issues raised by the NRC staff regarding this apparent inconsistency in the application of the license renewal rule between Calvert Cliffs and Oconee. The Calvert Cliff LRA should be consulted for details of the Calvert Cliffs LRA beyond the information provided here.

The Calvert Cliffs IPA and Oconee IPA are structured differently. Calvert Cliffs divided the plant into systems and each system aging management review included a review of mechanical, structural, and electrical components that are a part of the system. Oconee divided the plant into mechanical components, structural components, and electrical components and each discipline performed a separate aging management review of applicable components. This basic difference in methodology led to several differences at the component level.

For example, solenoid valves were reviewed in the Calvert Cliffs IPA as a single component whereas Oconee reviewed valves as a mechanical component and the solenoid operators as an electrical component. Another example is containment electrical penetration assemblies (EPAs) where, instead of treating them as a single component as did Calvert Cliffs, Oconee reviewed the metallic portions of EPAs that are part of the essentially leaktight containment barrier as structural components and the electrical current and insulation portions of EPAs as electrical components. A third example is that Calvert Cliffs included the associated fluid system pressure boundary along with a sensor in a common review, whereas Oconee separated the sensor as an electrical component and the associated fluid pressure boundary is included in the mechanical component review. As a last example, electrical cabinets are addressed in the structural components review and the electrical components in the cabinets are addressed in the electrical components review.

Looking at the differences between Calvert Cliffs and Oconee, Calvert Cliffs included all components in the review of a system, with several separate system documents, and then performed all discipline specific reviews in each separate document. Oconee split some components into parts based on their discipline specific functions and then reviewed the mechanical, structural, and electrical components (or parts of components) in separate documents. The evaluation boundaries of split components were coordinated between the three disciplines to ensure an appropriate review of all component parts.

The Calvert Cliffs LRA addresses environmentally qualified components in the aging management review. ***For illustrative purposes only*** (since Oconee followed a different methodology) the components and intended functions identified in the Calvert Cliffs LRA are used to show how these same aging effects, if applicable, would be dispositioned in the Oconee LRA.

Enclosure

ILLUSTRATION

Calvert Cliffs LRA Table 6.3-2 identifies eight electrical component commodity groups that Calvert Cliffs determined to be passive and have plausible age related degradation mechanisms (ARDMs) and Calvert Cliffs LRA Table 6.3-3 identifies the intended functions of these components. The intended functions of these eight component commodity groups are identified as (a) active, (b) passive-EQ, and (c) passive-non-EQ. Active intended functions were included for information in the Calvert Cliffs LRA and are not reviewed; Oconee would treat these in a similar manner. The passive-EQ intended functions listed in Calvert Cliffs LRA Table 6.3-3 are identified as being managed by the EQ program; Oconee would also credit the EQ program for managing these intended functions. There are three different passive-non-EQ intended functions identified:

Provide a containment pressure boundary function to prevent the release of fission products in the event of a DBE occurring at the end of the plant's licensed life. (PEN) The containment pressure boundary intended function of Oconee electrical penetration assemblies is addressed as a structural component intended function and applicable aging effects are addressed in the structures and structural components aging management review. This structural review would cover any applicable aging effects from general corrosion. See Sections 2.3.3.6 and 3.3.3 of Exhibit A of the Application for the structural review. The last paragraph of Section 2.6.6.2 of Exhibit A of the Application, which is the electrical components review section, specifically refers to the Reactor Building (Containment) sections of Exhibit A of the Application for the review of the metallic portions of electrical penetration assemblies.

Provide pressure seal at the reactor vessel. (RI, TP) The reactor vessel pressure seal intended function is addressed as a Reactor Coolant System pressure boundary intended function and applicable aging effects associated with instrument pressure boundaries are addressed in either the Reactor Coolant System components aging management review or the mechanical system components aging management review. These aging management reviews would cover any applicable aging effects from crevice corrosion or pitting. See Sections 2.4 and 3.4 of Exhibit A of the Application for the Reactor Coolant System components review and Sections 2.5.12 and 3.5.12 of Exhibit A of the Application for the mechanical system components review.

Maintain system pressure boundary to support safety-related functions. (SV) System pressure boundary intended functions are addressed as mechanical component pressure boundary intended functions and applicable aging effects are addressed in the mechanical system components aging management review. This mechanical review would cover any applicable aging effects from crevice corrosion or pitting. The mechanical system pressure boundary intended function is common to many mechanical systems and components, all of which are addressed in Sections 2.5 and 3.5 of Exhibit A of the Application.

Terminal Blocks

Duke was also asked to address terminal blocks specifically. The Calvert Cliffs LRA states that the general corrosion ARDM for terminal blocks is not plausible. The review of Oconee terminal blocks for all applicable plant areas is provided in Sections 2.6.3 and 3.6.3 of Exhibit A of the

Application. This review would be applicable to EQ terminal blocks regarding aspects of aging, if any, not covered by the EQ program.

How the above passive-non-EQ intended functions and applicable aging effects would be addressed for components subject to an aging management review at Oconee is identified above. The apparent inconsistency in application of the rule requirements pointed out a difference in methodology between Calvert Cliffs and Oconee that would not result in applicable intended functions not being evaluated.

COMPARISONS OF THE CALVERT CLIFFS LRA AND THE OCONEE LRA

Since the Calvert Cliffs LRA has not been approved, the Oconee LRA should not be compared to the Calvert Cliffs LRA. The Oconee LRA should be compared to the requirements of the rule separate from the Calvert Cliffs LRA. Comparisons of the two LRAs, without full consideration of the widely varying methodologies used by each plant, can lead to confusion and misleading conclusions.

DUKE'S POSITION ON THE INCLUSION IN THE AMR OF COMPONENTS THAT ARE REPLACED BASED ON A QUALIFIED LIFE

The Calvert Cliffs LRA conservatively includes in their aging management review components that are replaced based on a qualified life. The criteria in §54.21(a)(1)(ii) states that structures and components subject to an aging management review shall encompass those structures and components, "That are not subject to replacement based on a qualified life...."

The Calvert Cliffs LRA addresses EQ equipment in the aging management review. Since these components are replaced based on an appropriately determined qualified life, EQ components do not meet the screening criteria of §54.21(a)(1)(ii) and this is conservatism in the Calvert Cliffs aging management review. The inclusion of components, which are not subject to an aging management review, in the review is acceptable per the requirements of the license renewal rule and the guidance provided in the associated statement of considerations (SOC).

An interpretation of the rule has been proffered that components which are replaced based on a qualified life that is 40 years or greater can not be excluded based on the criteria of §54.21(a)(1)(ii). This interpretation can be found in Section 4.1.2 of NEI 95-10 Rev. 0, but no basis for this interpretation is offered. Excluding components that are replaced based on a qualified life from the aging management review is specifically discussed in the SOC. Upon searching the guidance provided in the SOC regarding the exclusion of components that are replaced based on a qualified life, the basis for this interpretation is absent. The SOC sections that provide guidance (see 60FR22478) are repeated below.

SOC to 10 CFR 54, Section III.f.(i)(b) "Long-lived" structures and components.

The Commission recognizes that, as a general matter, the effects of aging on a structure or component are cumulative throughout its service life. One way to effectively mitigate these effects is to replace that structure or component, either (i) on a specified interval based upon the qualified life of the structure or component or (ii) periodically in accordance with a specified time period to prevent performance degradations leading to loss of intended function during the period of operation.

Where a structure or component is replaced based upon a qualified life (appropriately determined), it follows that the replaced structure or component will not experience detrimental effects of aging sufficient to preclude its intended function. This is because the purpose of qualification of the life of a structure or component is to determine the time period for which the intended function of that structure or component can be reasonably assured.

Where a structure or component is replaced periodically in accordance with a specified time period, the regulatory process will ensure that degraded performance of the structure or component experienced during the replacement interval will be adequately addressed and the established replacing interval will be appropriate. Thus, there is a high likelihood that the detrimental effects of aging will not accumulate during the subsequent period such that there is a loss of intended function.

In sum, a structure or component that is not replaced either (i) on a specified interval based upon the qualified life of the structure or component or (ii) periodically in accordance with a specified time period, is deemed by §54.21(a)(1)(ii) of this rule to be "long-lived," and therefore subject to the §54.21(a)(3) aging management review.

Unlike the rule regarding time-limited aging analyses TLAAs, which specifically states that they "Involve time-limited assumptions *defined by the current operating term, for example, 40 years,*" the criteria in §54.21(a)(1)(ii) and the SOC guidance make no such reference related to components that are replaced based on a qualified life.

Oconee screened out of the IPA components that are replaced based on an appropriately determined qualified life using the criteria of §54.21(a)(1)(ii). This position is in agreement with the SOC guidance on the application of the "long-lived" criteria.