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

May 19, 1999

LICENSEE: Duke Energy Corporation (Duke)

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

SUBJECT: SUMMARY OF MEETING BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) STAFF AND DUKE REPRESENTATIVES REGARDING SCOPING FOR THE OCONEE LICENSE RENEWAL APPLICATION

On May 11, 1999, representatives of Duke met with the Nuclear Regulatory Commission (NRC) staff in Rockville, Maryland, to discuss the Oconee license renewal application. A list of meeting attendees is provided as Enclosure 1. The meeting notice provided a list of issues to be discussed at the meeting. Enclosure 2 contains the list of issues found in the meeting notice. Duke's presentation materials discussed at the meeting are provided as Enclosure 3.

The purpose of the meeting was to discuss the scoping process that Duke used to comply with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2). Duke provided a brief history of the issue. The NRC originally questioned aspects of the effort in RAI 2.2-6 that Duke responded to in a February 17, 1999, letter. A technical meeting was held on March 11, 1999, to further discuss the scoping issue. The March 11, 1999, meeting resulted in a revision to Duke's response to RAI 2.2-6 that provided an explanation of the scoping events set used for the license renewal mechanical scoping. Following the revision, the scoping issue remained open, leading to the May 11, 1999, meeting.

Duke then provided steps in defining the issue. Slides 5, 6, 7, 8, 9, 10, and 11 of Enclosure 3 provide the terminology and Oconee design and licensing basis background regarding this issue. Duke stated that the term "design basis events" means something different to Oconee and the NRC staff. In 1991, as part of the overall creation of the design basis document (DBD) set, Duke recognized the need to standardize the approach to resolving future NRC regulations that would use the term "design basis event." This eventually led to the Oconee Safety Related Designation Clarification (OSRDC) project. The OSRDC project confirmed and documented that the Oconee updated final safety analysis report (UFSAR) Chapter 15 events constitute Oconee's own unique set of design basis events. In addition, the OSRDC project documented an additional set of events beyond the design basis events that should be considered for possible inclusion when defining the scope of a regulatory issue.

Slide 12 of Enclosure 3 provides a diagram of the Oconee "scoping events" set. Duke stated that the "scoping events" set included UFSAR chapter 15 events, natural phenomena criteria, post-Three Mile Island emergency feedwater design basis scenarios, and turbine building flood mitigated by the standby shutdown facility. There are 26 events that Duke considers "scoping events" that were used in the mechanical scoping area to comply with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2). Duke also stated that it reviewed an additional 32 events for possible inclusion into the set of scoping events. Duke determined that none of the additional 32 events needed to be considered for purposes of scoping in accordance with 10 CFR 54.4 (a)(1) and 10 CFR 54.4(a)(2).

For clarity, the staff suggested that these "scoping events" could be referred to as "design basis events for license renewal." In addition, the staff noted that, as part of an inspection effort, it would like to explore why the 32 additional events were not considered to be within scope of the license renewal rule. Duke expressed concern that the staff was asking them to name every event that was considered and not just the events that were actually used to comply with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2). The staff stated that it needed to be able to substantiate that the events that Duke used are sufficient for compliance with the license renewal rule. The following action items were identified as a result of this meeting:

1. Duke 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 Oconee license renewal scoping consistent with the presentation that was given to the staff. During the meeting, Duke referred to these events as "scoping events." For clarity, the staff suggested that these "scoping events" could be referred to as "design basis events for license renewal." Duke should 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).

2. Once the information identified in item 1 above is provided, the staff will determine whether additional inspection activities will be needed to verify that there is reasonable assurance that the Oconee systems, structures and components that are within scope of the license renewal rule have been captured by Duke's process.

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**

Joseph M. Sebrosky, Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosures: As stated (3)

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| NAME | EHylton | JSebrosky | TQuay | CIGrimes | DMatthews |
| DATE | 5/12/99* | 5/18/99 | 5/18/99 | 5/18/99 | 5/19/99 |

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The staff stated that it understands Duke's "scoping events" to be "design basis events for license renewal." In addition, the staff noted that, as part of an inspection effort, it would like to explore why the list of 32 additional events were not considered to be within scope of the license renewal rule. Duke expressed concern that the staff was asking them to name every event that was considered and not just the events that were actually used to comply with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2). The staff stated that it needed to be able to substantiate that the events that Duke used are sufficient for compliance with the license renewal rule. The following action items were identified as a result of this meeting:

1. Duke 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 appropriate for Oconee license renewal scoping consistent with the presentation that was given to the staff. During the meeting, Duke referred to these events as "scoping events." The staff understands these to be "design basis events for license renewal." Duke should provide an explanation as to how the 26 events identified during the meeting are necessary and sufficient to satisfy 10 CFR 54.4(a)(1) and 54.4(a)(2)

2. Once the information identified in item 1 above is provided, the staff will determine whether additional inspection activities will be needed to verify that there is reasonable assurance that the Oconee systems, structures and components that are within scope of the license renewal rule have been captured by Duke's scoping process.

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

Joseph M. Sebrosky, Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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Distribution: Hard copy

PUBLIC — Except for the attendees list in Enclosure 1, an advance copy of the handouts to this meeting summary was sent directly to the PDR on 5/12/99

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210010

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MAY 11, 1999, NRC MEETING WITH DUKE REGARDING OCONEE SCOPING

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| Greg Robison | Duke Energy |
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| Ed Burchfield | Duke Energy |
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| Chris Grimes | NRR/DRIP/RLSB |
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| Dan Dorman | NRR/DIPM/IQMB |
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| Ed Girard (via phone) | NRC/Region II/DRS |
| Billy Crowley (via phone) | NRC/Region II/DRS |
| Lawrence Chandler | NRC/OGC |
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| Janice Moore | NRC/OGC |
| Robert Weisman | NRC/OGC |
| Noel Dudley | ACRS |
| Mark Wetterhahn | Winston & Strawn |
| Lisa Vaughn | Duke Law Department |
| Will Kenworthy | GSI |
| Lynn Connor | DSA |
| Colleen Amoruso | NUS information Services |
| Doug Walters | Nuclear Energy Institute |

Enclosure 1

May 11, 1999 Meeting Topics

Description of the Problem

The Oconee Nuclear Station Application for Renewed Operating License, ORLP-1001, Section 2.2.1.1(a), states the following with respect to the identification of systems, structures, and components within the scope of license renewal:

> "Because Oconee was licensed before terms such as 'safety-related' were more 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."

In response to this statement, the staff generated RAI 2.2-6 requesting additional information on the Oconee design study identified in ORLP-1001. In addition, the staff met with representatives from Duke Energy Corporation (Duke), on March 11, 1999, to obtain additional insights into the methodology used by Duke to meet the requirements of 10 CFR 54.21(a)(2) for identifying the structures and components requiring an aging management review. Specifically, the staff requested that Duke describe its methodology for identifying the Oconee systems, structures, and components (SSCs) within the scope of Part 54, based on the following requirements:

> "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)) to ensure the following functions–
>
> (i) The integrity of the reactor coolant pressure boundary;
>
> (ii) The capability to shut down the reactor and maintain it in a safe shut-down condition; or
>
> (iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in §50.34(a)(1) or §100.11 of this chapter, as applicable.
>
> (2) All nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1)(i), (ii), or (iii) of this section.
>
> (3) All systems, structures, and components relied upon 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)."

Paragraph (b)(1) of § 50.49, "Environmental qualifications of electric equipment important to safety for nuclear power plants," states that "Design basis events are defined as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure functions (b)(1)(i)(A) through (C)[1] of this section."

Since the design study conducted by Duke only validated those functions required for the successful mitigation of Oconee design basis events identified in Chapter 15 of the Oconee Updated Final Safety Analysis Report (UFSAR), it is unclear whether all functions required for the successful mitigation of the design basis events set forth in Oconee's current licensing basis have been identified as required by the rule. Furthermore, since the Duke methodology may not have identified all the systems, structures, and components required under 10 CFR 54.4(a)(1), the potential exists for this deficiency to also affect the scoping requirement of 10 CFR 54.4(a)(2) for nonsafety-related SSCs.

Accordingly, Duke must either amend its application to specify a process for identifying all events in the Oconee current licensing basis meeting the definition of "design basis events" in 10 CFR 50.49(b)(1) or provide justification for its position that the set of design basis events for Oconee meeting that definition is identified in Chapter 15 of the Oconee Updated Final Safety Analysis Report. In order to assist the staff in evaluating Duke's response to this issue, Duke should specifically list the design basis events relied on for scoping under 10 CFR 54.4(a)(1).

Design Basis Events Outside of Chapter 15 of the UFSAR

The staff contends that DBEs are not limited to Chapter 15 of the UFSAR. The staff believes that events such as fire, floods, storms, or earthquakes represent DBEs. These events are not explicitly considered in the review of anticipated operational occurrences and postulated accidents in Chapter 15 of the UFSAR, but could result in potential offsite exposures comparable to the applicable guideline exposures set forth in 10 CFR 50.34(a)(1) or 10 CFR 100.11. The staff notes that Duke explicitly considers DBEs beyond Chapter 15 events in Nuclear Directive 209 "10 CFR 50.59 Evaluations." For example, Duke considers the following events as accident/events not included in Oconee's UFSAR Chapter 15: spent fuel pool accidents, loss of main feedwater, main feedwater line break, loss of control room event, loss of instrument air, missiles, pipe rupture, fire event, internal building floods, natural phenomena, loss of lake keowee, loss of intake structure, and loss of decay heat removal. Duke needs to reconcile the list of DBEs contained in Nuclear Directive 209 with the list of DBEs that were considered in the license renewal scoping review in accordance with 10 CFR 54.4 or provide justification for not doing so.

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[1] The functions identified in § 50.49(b)(1)(i)(A) through (C) are identical to those identified in § 54.4(a)(1) (i) through (iii).

May 11, 1999 Meeting Topics

Description of the Problem

The Oconee Nuclear Station Application for Renewed Operating License, ORLP-1001, Section 2.2.1.1(a), states the following with respect to the identification of systems, structures, and components within the scope of license renewal:

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Accordingly, Duke must either amend its application to specify a process for identifying all events in the Oconee current licensing basis meeting the definition of "design basis events" in 10 CFR 50.49(b)(1) or provide justification for its position that the set of design basis events for Oconee meeting that definition is identified in Chapter 15 of the Oconee Updated Final Safety Analysis Report. In order to assist the staff in evaluating Duke's response to this issue, Duke should specifically list the design basis events relied on for scoping under 10 CFR 54.4(a)(1).

Design Basis Events Outside of Chapter 15 of the UFSAR

The staff contends that DBEs are not limited to Chapter 15 of the UFSAR. The staff believes that events such as fire, floods, storms, or earthquakes represent DBEs. These events are not explicitly considered in the review of anticipated operational occurrences and postulated accidents in Chapter 15 of the UFSAR, but could result in potential offsite exposures comparable to the applicable guideline exposures set forth in 10 CFR 50.34(a)(1) or 10 CFR 100.11. The staff notes that Duke explicitly considers DBEs beyond Chapter 15 events in Nuclear Directive 209 "10 CFR 50.59 Evaluations." For example, Duke considers the following events as accident/events not included in Oconee's UFSAR Chapter 15: spent fuel pool accidents, loss of main feedwater, main feedwater line break, loss of control room event, loss of instrument air, missiles, pipe rupture, fire event, internal building floods, natural phenomena, loss of lake keowee, loss of intake structure, and loss of decay heat removal. Duke needs to reconcile the list of DBEs contained in Nuclear Directive 209 with the list of DBEs that were considered in the license renewal scoping review in accordance with 10 CFR 54.4 or provide justification for not doing so.

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[1] The functions identified in § 50.49(b)(1)(i)(A) through (C) are identical to those identified in § 54.4(a)(1) (i) through (iii).

Duke Power
A Duke Energy Company

# Oconee License Renewal

*Duke/NRC Management Meeting*
*Scoping Process Discussion*

*May 11, 1999*

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## Meeting Focus

- Issues related to the license renewal scoping of the mechanical systems and components have been raised by the staff during their review of the Oconee application
- The 4/15/99 NRC meeting notice for today's meeting provided a list of issues to be discussed today:
  1. Oconee §54.4 Scoping Process
  2. Inconsistency between the Oconee §54.4 process and the §50.59 process



Enclosure 3

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## Background

- The Oconee application reports how Duke used the Oconee design basis events set to define the scope of mechanical systems and components meeting 10 CFR 54.4 (a)(1) and (a)(2)
- The NRC questioned aspects of this effort and asked for further clarification in RAI 2.2-6. The Duke response is included in the RAI response set dated 2/17/99



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## Background

- A technical meeting was held on 3/11/99 between Duke and NRC staff to further discuss the scoping issues associated with the Oconee application
- The response to RAI 2.2-6 was subsequently revised 3/18/99 to provide a fuller explanation of the scoping events set used in license renewal mechanical scoping
- Following this revision the scoping issues remained open, leading to today's management meeting

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## Defining the issue

*Steps to define the issue -*

- Understand terminology differences that exist
- Review the background of the compilation of the Oconee design and licensing basis that led to establishing the License Renewal Scoping Events set
- Comparison of the Oconee results to the BG&E results
- Comparison of the Oconee §54.4 process and the §50.59 process



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## Terminology

- We recognize the term *design basis events* means something different to Oconee and the NRC
- The terminology differences may be causing us to focus away from the adequacy of the Oconee license renewal mechanical scoping answer

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## Terminology

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

*- Opening sentence of Oconee UFSAR Chapter 15*



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## Oconee Design & Licensing Basis Background

- 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 regulation
- Oconee's design relies on features that are effective and approved by the NRC, but that do not necessarily bound or overlap completely the NRC's current regulatory terminology
- Historically, NRC regulations have been individually resolved against the Oconee design and licensing basis.

## Oconee Design & Licensing Basis Background

- 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 Design Basis Event DBD set out 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 lead to the OSRDC Project.



## Oconee Design & Licensing Basis Background

- The initial phase of the Oconee Safety Related Designation Clarification (OSRDC) Project was conducted over the 1995 - 1998 timeframe to more fully document the Oconee licensing basis associated with Oconee design basis events.
- The OSRDC project confirmed and documented that the Oconee UFSAR Chapter 15 events constitute Oconee's own unique set of design basis events.
- In addition, the OSRDC Project documented an additional set of *scoping events* beyond the design basis events that should be considered for possible inclusion when defining the scope of a regulatory issue.
- License renewal is such an issue.

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## Oconee Design & Licensing Basis Background

- The definition of the Oconee *Scoping Events* set:
  - Oconee Design Basis Events (UFSAR Chapter 15 events)
  - Natural Phenomena Criteria
  - Post-TMI Emergency Feedwater Design Basis scenarios
  - Turbine Building Flood mitigated by the Standby Shutdown Facility
- The §54.4 (a)(1) & (a)(2) mechanical scoping for license renewal uses the Oconee *Scoping Events* set



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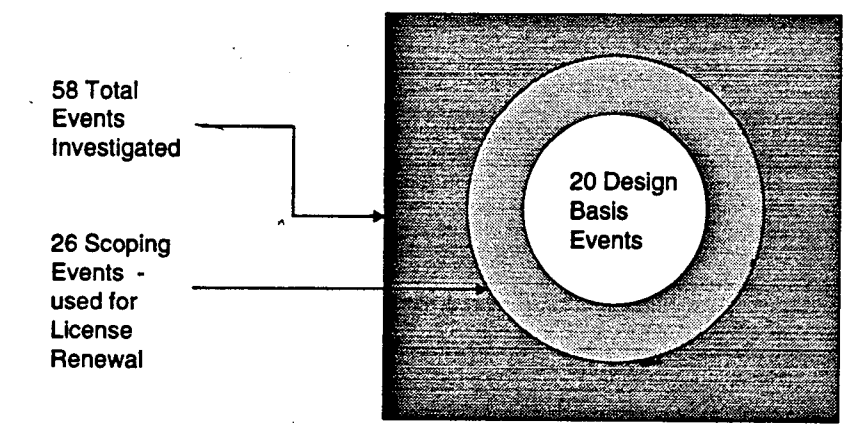
## Oconee Scoping Events Set



## Oconee License Renewal Mechanical Scoping Events Set

- Loss of Main Feedwater (Scoping)
- Loss of Offsite Power (LOOP) (DBE)
- Turbine Trip (DBE)
- Loss of Electric Power (DBE)
- Large Break Loss of Coolant Accident with LOOP (DBE)
- Steam Generator Tube Rupture (DBE)
- Main Steam Line Break (DBE)
- Fuel Handling Accident (DBE)
- Moderator Dilution Accident (DBE)
- Post Accident Hydrogen Control (DBE)
- Control Rod Misalignment (DBE)
- Cold Water Accident (DBE)
- Locked Rotor / Sheared Shaft (DBE)
- Loss of Coolant Flow (DBE)
- Startup Accident (DBE)
- Small Break Loss of Coolant Accident (DBE)
- Maximum Hypothetical Accident (DBE)
- Rod Ejection Accident (DBE)
- Uncompensated Operating Reactivity Change (DBE)
- Waste Gas Tank Rupture (DBE)
- Rod Withdrawal Accident (DBE)
- SSF Event Turbine Building Flood (Scoping)
- Natural Phenomena: Tornado, Wind & Hurricane (includes Tornado Missile) (Scoping)
- Natural Phenomena: Seismic (Scoping)
- Natural Phenomena: External Floods & Ground Water (Scoping)
- Natural Phenomena: Snow & Ice (Scoping)



## How's this answer relate to similar BG&E Information?

| | Oconee | Calvert Cliffs |
|---|---|---|
| # of events | 26 | 25 |
| Design Basis Events set | UFSAR Ch 15 (No external events in either set) | UFSAR Ch 14 |
| Documentation | Component Database & Event Calculations | Q-List & Accident Flow Sheets |
| # of systems & structures scoped | ~50% | ~50% |

## Inconsistency between Oconee §54.4 Process and §50.59 Process

- Nuclear System Directive (NSD) 209 documents the guidance on how Duke Energy evaluates changes to their nuclear facilities to meet the requirements of 10 CFR 50.59
- The aim of NSD-209 is to broaden the thinking of the evaluator, not to define the Oconee design basis events set
- In comparison, 10 CFR 54.4 (a)(1) & (a)(2) requires a focus on the plant design basis event set within the CLB



## Summary

- The License Renewal Scoping Events set covers the Oconee design basis event set plus additional events that have gained importance over the license history of Oconee.
- The scoping results for license renewal are consistent with previous scoping of regulated programs.
- Duke believes that considering the scoping events set has led the license renewal process to manage the aging of a conservative set of hardware we consider important to plant safety.