



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ON REVISED EMERGENCY ACTION LEVELS FOR

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

DOCKET NOS. 50-269, 50-270, AND 50-287

1.0 INTRODUCTION

By letter dated May 5, 1994, as supplemented by letters dated July 18, July 26, and November 30, 1994, February 22 and March 9, 1995, Duke Power Company (the licensee) submitted proposed changes to the Oconee Nuclear Power Plant emergency action levels (EALs). Specifically, the licensee provided Section D of the Emergency Plan, Implementing Procedure RP/O/B/1000/01, EMERGENCY CLASSIFICATION, and a technical basis document that describe how the proposed EALs incorporated the guidance in NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," Revision 2, January 1992. The NRC endorsed NUMARC/NESP-007 as an acceptable method by which licensees may develop site-specific emergency classification schemes.

2.0 BACKGROUND

The EAL changes proposed for the Oconee Nuclear Power Plant were reviewed against the requirements in 10 CFR 50.47(b)(4) and Appendix E to 10 CFR Part 50.

Section 50.47(b)(4) specifies that onsite emergency plans must meet the following standard: "A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameter, is in use by the nuclear facility licensee . . ."

Appendix E, Subsection IV.B, specifies in part that ". . . These emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities . . ."

Appendix E, Subsection IV.C, specifies in part that "emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as pressure in containment and response of the Emergency Core Cooling System) for notification of offsite agencies shall be described . . . The emergency classes defined shall include (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency."

In Revision 3 to Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," the NRC endorsed NUMARC/NESP-007, Revision 2, (NESP-007), "Methodology for Development of Emergency Action Levels," as an acceptable method for licensees to meet the requirements of 10 CFR 50.47(b)(4) and Appendix E to 10 CFR Part 50. The staff relied upon the guidance in NUMARC/NESP-007 as the basis for its review of the Oconee EAL changes.

3.0 EVALUATION

The licensee organized the EAL tables into seven primary and two support enclosures to Section D of the site emergency plan and the emergency classification implementing procedure. The seven primary enclosures are: (1) Fission Product Barrier Matrix, (2) Systems Malfunctions, (3) Abnormal Radiation Levels/Radiological Effluent, (4) Loss of Shutdown Functions, (5) Loss of Power, (6) Fires/Explosions and Security Actions, and (7) Natural Disasters, Hazards, and Other Conditions Affecting Plant Safety. The first support enclosure provides a table of area radiation monitor readings for each classification that directly support the EALs in primary enclosure (3) "Abnormal Radiation Levels/Radiological Effluent." The second support enclosure provides a list of definitions and acronyms.

Each EAL is identified by a unique number sequence designation. The initiating conditions associated with each EAL that relate the EAL to its respective emergency classification are defined in the licensee's EAL Technical Basis Document (TBD). Each of the EALs proposed by the licensee that address fission product barrier degradation explicitly reference the barriers which are affected by the described condition. A majority of the proposed EALs conform closely to the guidance; however, several of the licensee's proposed changes depart from the example EALs in NUMARC/NESP-007. Review of the licensee's justification for these variations, as discussed below, found the variations to be acceptable.

1. NUMARC example EALs AA2-3 and AA2-4 state:

3. Water level less than (site specific) feet for the Reactor Refueling Cavity that will result in Irradiated Fuel Uncovering.

4. Water level less than (site specific) feet for the Spent Fuel Pool and Fuel Transfer Canal that will result in Irradiated Fuel Uncovering

The equivalent Oconee EAL states:

Major Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel outside the Reactor Vessel

The licensee states it does not have instrumentation to measure water level in the spent fuel pool, fuel transfer canal, or refueling cavity. However, the licensee has included the above EAL to address examples AA2-3 and AA2-4. This deviation from NUMARC/NESP-007 is acceptable.

2. NUMARC example EALs AU1-3 and AU1-4 state:

3. *Valid reading on perimeter radiation monitoring system greater than 0.10 mR/hr above normal background for 60 minutes [for sites having telemetered perimeter monitors].*

4. *Valid indication on automatic real-time dose assessment capability greater than (site-specific value) for 60 minutes or longer [for sites having such capability].*

The licensee states that it does not currently possess a telemetered radiation monitoring system or real-time dose assessment capability and, therefore, does not include site-specific EALs for these examples. In that this EAL was included in the NUMARC/NESP-007 for those plants which have such systems or capability and since Oconee does not have such systems or capability, the omission of this EAL is acceptable. This comment also applies to the licensee's deviation from NUMARC example EALs AA1-3, AA1-4, AS1-2, and AG1-2.

3. NUMARC example EAL #2, Reactor Coolant System (RCS) Barrier, states:

POTENTIAL LOSS

2. RCS Leak Rate

Unisolable leak exceeding the capacity of one charging pump in the normal charging mode

The equivalent Oconee EAL states:

Potential Loss (4)

RCS Leakrate > Makeup capacity of one HPI pump in normal makeup mode (approx. 160 gpm) with letdown isolated.

The Oconee scheme introduced the modifier phrase, with *letdown isolated*. The licensee states that with *letdown isolated*, the operator can determine very quickly if the capacity of one HPI pump is or is not adequate. If *letdown* is not isolated, the operator performs a mathematical calculation to determine RCS makeup flow. The licensee's method for implementation of this EAL is acceptable. This comment also applies to the licensee's deviation from NUMARC/NESP-007 criteria for EAL #3, RCS Barrier.

4. NUMARC example EAL #4, Fuel Clad Barrier, states:

POTENTIAL LOSS

4. Reactor Vessel Water Level

Level LESS than (site-specific) value

The equivalent Ocone EAL states:

Valid RVLS reading 0"

Although the licensee does possess a Reactor Vessel Level System (RVLS), that system does not provide a level indication for the top of the fuel. Therefore, the licensee uses the above EAL whereby a valid reading of 0" on the RVLS is an indicator that the fuel could be uncovered and would signify a potential loss of the fuel clad barrier. This deviation from NUMARC/NESP-007 is acceptable. This comment also applies to the licensee's deviation from NUMARC EAL #6, Containment Barrier, below.

5. NUMARC criteria for EAL #6, Containment Barrier, state:

POTENTIAL LOSS

6. Core Exit Thermocouple Readings

Core exit thermocouple in excess of 1200° and the restoration procedures not effective within 15 minutes; or, core exit thermocouple in excess of 700° with the reactor vessel level below top of active fuel and restoration procedures not effective within 15 minutes

The equivalent Ocone EAL states:

Potential Loss (1)

CETCs \geq 1200 °F > 15 min

OR

CETCs \geq 700 °F >15 minutes with valid RVLS reading of 0"

The licensee did not include the words "not effective" in this EAL because the emergency actions in the Inadequate Core Cooling (ICCM) (core exit thermocouple reading 1200 degrees) portion of the Emergency Operating Procedures (EOP), states the action required to be taken by the operator in 15 minutes. The omission of the words "not effective" from this EAL is acceptable.

6. The NUMARC criteria for SU4 state:
1. *(Site Specific) radiation monitor readings indicating fuel clad degradation greater than Technical Specification allowable limits.*
 2. *(Site Specific) coolant sample activity value indicating fuel clad degradation greater than Technical Specification allowable limits.*

The equivalent Oconee EAL states:

DEI I-131 - > 5 uci/ml

The licensee states Oconee does not have a failed fuel monitoring system but requires daily RCS samples. In that Oconee does require daily RCS samples and has included a coolant sample activity value which would indicate fuel clad degradation, the omission of EAL 1 above is acceptable.

By letters dated July 18 and July 26, 1994, the State of South Carolina, Oconee County, and Pickens County indicated their acceptance of the Oconee Nuclear site emergency classification system.

4.0 CONCLUSION

The proposed EAL changes for Oconee are consistent with the guidance in NUMARC/NESP-007, with variations as identified and accepted in this review, and, therefore meet the requirements of 10 CFR 50.47(b)(4) and Appendix E to 10 CFR Part 50.

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