

January 20, 2007

MEMORANDUM TO: Melvin C. Shannon, Senior Resident Inspector
Oconee Nuclear Station
Division of Reactor Projects
Region II

FROM: J. E. Dyer, Director/RA/
Office of Nuclear Reactor Regulation

SUBJECT: DIFFERING PROFESSIONAL OPINION DECISION REGARDING
USE OF LEAK-BEFORE-BREAK TECHNOLOGY AT OCONEE,
UNITS 1, 2, AND 3 (DPO-2006-003)

The purpose of this memorandum is to provide the management decision for the Differing Professional Opinion (DPO) regarding the use of leak-before-break (LBB) technology in the design of a facility modification involving the emergency core cooling system (ECCS) at Oconee, Units 1, 2 and 3 that you submitted on May 3, 2006. In accordance with Management Directive 10.159, "The Differing Professional Opinions Program," I appointed an Ad Hoc Review Panel on June 2, 2006 to conduct an independent review of your concerns. The panel met with you on July 20, 2006 to obtain clarification on certain details of your concerns and you confirmed the panel's summary of the issues. The following is a summary of your concern:

On March 20, 2003, Duke Power Company (DPC) ("the licensee") submitted an application to the U.S. Nuclear Regulatory Commission (NRC) to modify the Oconee Units 1, 2 and 3 facility by adding a normally open cross-connect line between the redundant discharge lines of the low pressure injection (LPI) system inside the containment building. The staff approved the design change and associated changes to technical specifications for the Oconee Units 1, 2 and 3 in its letters to the licensee dated September 29, 2003, February 5, 2004 and September 2, 2004, respectively. The licensee has now installed the cross-connect line in all three Oconee units.

Your fundamental concern was that the cross-connect modification should not have been approved by the NRC nor implemented by the licensee because the LPI system, as modified, does not meet requirements in 10 CFR Part 50. These requirements include those set forth in 10 CFR 50.46 in providing long term cooling and in Appendix A, General Design Criteria (GDC) 34 and 35, in providing suitable redundancy and isolation capability in the design of the ECCS and decay heat removal (DHR) system. Your contention stemmed from the interpretation of Commission policy that LBB cannot be used if the dynamic effects of the pipe rupture adversely affect the ECCS. In support

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of this position, your DPO cited passages from certain Statements of Consideration for the final rule that modified Criterion 4 of the GDC (GDC-4) to permit exclusion of dynamic effects of high energy pipe ruptures from the design basis of systems, structures and components (SSC) based on LBB technology (52 FR 41294, October 27, 1987).

Further, you indicated that the NRC staff and the licensees should receive additional guidance for the application of LBB technology. This opinion stemmed from your perception that the Commission had stated its intention that LBB technology not be used for excluding dynamic effects from the design basis for ECCS or the containment, yet the staff approved such use for the LPI cross-connect modification at Oconee.

During the review, the panel identified two additional issues associated with the DPO. The first issue is the contention that the licensee has been applying LBB technology at the Oconee facility without NRC approval. The second issue involves the question as to why the central issue raised in this DPO could not have been resolved through the normal interactions between the two division management teams in the Regional Office and NRR, or via an established NRR process for resolving questions on the application of regulations, such as the Task Interface Agreement (TIA) process. The panel's findings and conclusions regarding your original contention and these two additional issues were discussed in the final report that was issued on December 5, 2006, which you were provided a copy.

In reaching my decision, I reviewed the panel's reports, discussed the panel's conclusions with the panel chair, and reviewed your comments on the final report. Based on these reviews, I agree with the conclusions made by the panel. The panel provided one recommendation. My decision regarding its recommendation, and the rationale for the decision, is provided below.

RECOMMENDATION: The staff should develop a knowledge management document describing the NRC's policy and practice on the application of LBB.

Decision: Agree with the recommendation. The staff will review its existing documents and enhance the understanding on the application of LBB by developing a knowledge management document as appropriate.

Rationale: This DPO issue demonstrated that the application of LBB technology involves many regulatory developments over time and may not be apparent and easily understood. A knowledge management document that would clearly restate and present all the background and developments to the application LBB technology would enhance the effectiveness and efficiency on the part of the staff and the inspectors as they perform technical reviews and inspections related to the LBB issues.

M. Shannon

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I would like to express my appreciation to you for having first brought your concerns up through your first and second line supervisors. I commend your willingness to subsequently use the DPO Program in raising your concerns. Your willingness to bring your concerns first to your management's attention, and then to mine through the DPO process, contributed to the development of the recommendation for an enhancement to the NRR mission. In accordance with Management Directive 10.159, "The Differing Professional Opinions Program," a summary of the issue and its disposition will be included in the Weekly Information Report to advise interested employees of the outcome.

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