

July 19, 2002

Dr. George E. Apostolakis, Chairman
Advisory Committee on Reactor Safeguards
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: CORE POWER UPRATE FOR THE BRUNSWICK STEAM ELECTRIC PLANT,
UNITS 1 AND 2

Dear Dr. Apostolakis:

On April 23, 2002, the Office of Nuclear Reactor Regulation (NRR) staff discussed its review of the Brunswick Steam Electric Plant (BSEP) extended power uprate (EPU) application with the Advisory Committee on Reactor Safeguards (ACRS) Subcommittee on Thermal-Hydraulic Phenomena. During the 492nd meeting of the ACRS on May 2, 2002, the NRR staff discussed its review of the EPU application with the ACRS Full Committee. By letter dated May 10, 2002, the ACRS forwarded its comments on the staff's review of the BSEP EPU application to Chairman Meserve. In that letter, the ACRS recommended approval of the EPU application and provided comments on the staff's review of this EPU. The staff has approved the BSEP EPU application by Amendment Nos. 222 and 247 (ADAMS Accession No. ML021430551) on May 31, 2002.

The ACRS noted that the staff determined that the application met all of the requirements of the regulations, used approved codes, and followed the required procedures. Nonetheless, the ACRS suggested that the staff's determinations could have benefitted by including the results of independent computations and detailed checks of calculations to support the staff's review and audits of the procedures and conclusions described by the applicant. As the staff explained at the meetings, it will continue to perform audits (i.e., onsite checking of licensee calculations as part of the technical review process) of supporting calculations for EPUs. In the BSEP audit, the staff focused its efforts on the emergency core cooling system, loss-of-coolant accidents, anticipated transients without scram, and transient analyses which were known to be important areas of consideration based on past EPU reviews. The staff identified several areas during the audit where the licensee did not properly evaluate the impact of the EPU. The licensee subsequently made appropriate revisions to its calculations to address the deficiencies identified by the staff.

In the past, the staff evaluated the need for independent computations on an ad hoc basis and performed them when needed. In general, the staff performed such computations when new analysis methods were proposed, or when previously approved methods were applied in a new or different manner. The staff will continue to consider the need for independent calculations. The staff has undertaken an initiative to develop a review standard for EPUs. As part of this effort, the staff will establish specific and predictable criteria for determining when and what type of independent calculations should be performed. In support of these independent analyses, NRR will work with the Office of Nuclear Regulatory Research to maintain the capability to perform independent calculations of safety-significant issues related to power uprates.

The ACRS further encouraged the staff to continue to pay close attention to the details of core reload analyses at BSEP and other boiling-water reactor plants implementing EPU. The ACRS explained that this is particularly important with regard to the ways that core thermal success criteria will continue to be met as more sophisticated fuel design and reload management techniques are implemented. In support of the effort to develop the review standard for EPUs, the staff will maintain or, where necessary, develop the ability to independently perform core neutronic and thermal margin calculations. When such calculations are determined to be necessary to be performed, the staff will model the core design proposed by the licensee. This will ensure that an independent assessment has been performed regarding safety limits and margins.

The remainder of the ACRS comments in the May 10, 2002, letter related to the staff's review of risk information. The staff notes that the BSEP and other EPU applications to date have not been submitted as risk-informed license amendment applications. However, risk information was used by the licensee to gain additional insights into the integrated effects of the EPU on the plant and was submitted to the staff in accordance with the NRC-approved General Electric Licensing Topical Report NEDC-32424P-A, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate" (referred to as ELTR-1). The staff reviewed the risk information provided by the licensee, as well as other information that was available (e.g., safety evaluation reports on individual plant examinations and individual plant examinations of external events), to ensure that no risk-significant vulnerabilities would be created by the EPU. The staff's review was also used to determine if the licensee's request raised issues that could constitute "special circumstances" per NRC Regulatory Issue Summary (RIS) 2001-02, "Guidance on Risk-Informed Decisionmaking in License Amendment Reviews," and, in so doing, potentially rebut the presumption of adequate protection provided by the application meeting the current regulatory requirements. The staff utilized elements of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," as appropriate, to guide its review of this non-risk-informed application.

In conducting this review, the staff requested the licensee to provide additional information to (1) clarify the submitted information, (2) ensure the evaluation appropriately considered the potential risk impacts and implications of the EPU, and (3) ensure the evaluation properly reflected the plant conditions. Requests for additional information and audits have been utilized by the staff in recent EPU reviews. Though the staff did identify some issues with the licensee's evaluation, the staff did not identify any issues that would potentially rebut the presumption of adequate protection. As a result, the process laid out in RIS 2001-02 to pursue specific risk concerns in further detail did not need to be implemented. If the staff identifies such issues in a future application, the staff will follow the RIS 2001-02 process, which includes seeking management approval for the expansion of the staff's review scope, requesting additional detailed risk information, and notifying the Commission.

As discussed above, the staff has initiated efforts to develop a review standard for EPUs. As part of these efforts, the staff plans to reexamine the scope and depth of the staff's reviews of EPU applications.

G. Apostolakis

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We hope that this information on the scope and depth of the staff's review of EPU submittals demonstrates that the staff takes its review responsibilities very seriously and conducted an appropriate level of risk review for the BSEP EPU.

Sincerely,

/RA by William F. Kane Acting For/

William D. Travers
Executive Director
for Operations

cc: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
SECY

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