

April 28, 2005

Dr. Graham B. Wallis, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: PRESSURIZED THERMAL SHOCK (PTS) REVALUATION PROJECT:  
TECHNICAL BASIS FOR REVISION OF THE PTS SCREENING CRITERIA  
IN THE PTS RULE

Dear Dr. Wallis:

I am responding to your letter, dated March 11, 2005, in which the Advisory Committee on Reactor Safeguards (ACRS) provided feedback concerning efforts by the staff of the U.S. Nuclear Regulatory Commission (NRC) to develop a revised technical basis for the Pressurized Thermal Shock (PTS) Rule set forth in Title 10, Section 50.61, of the *Code of Federal Regulations* (10 CFR 50.61). As you know, the NRC and the nuclear power industry have achieved significant advancements over the past two decades in the understanding of materials behavior, ability to realistically model plant systems and operational characteristics, and ability to evaluate PTS transients to estimate the loading imparted to the reactor pressure vessel (RPV) wall. These advancements led to the realization that significant conservatisms exist in the analyses underlying the current technical basis for 10 CFR 50.61.

To address that realization, the Office of Nuclear Regulatory Research (RES) initiated a project in 1999 to develop a technical basis to support a risk-informed revision to 10 CFR 50.61, and that effort is nearing completion. Consequently, in December 2004 and March 2005, RES staff and contractors briefed the ACRS concerning the overall project and its conclusions, as well as the thermal hydraulic (TH) aspects of the PTS analysis. On that basis, the Committee reached the following conclusions and recommendations, as presented in your letter of March 11, 2005:

- (1) The PTS Reevaluation Project has developed a comprehensive technical basis for analyzing the susceptibility of reactor pressure vessels to PTS and to support rulemaking to revise the current PTS Rule (10 CFR 50.61).
- (2) The external peer review of the technical work was valuable, and the staff response to the criticisms and questions raised by the peer review panel has strengthened the technical basis.
- (3) The documentation for the project is not yet final, but significant progress has been made. One of the documents, NUREG-1809, "Thermal-Hydraulic Evaluation of Pressurized Thermal Shock," should be substantially revised.

G. Wallis

-2-

I would like to personally thank the ACRS for its reviews of this project and interactions with the staff over the course of the past 6 years. With regard to the Committee's third conclusion (above), I would like to note that the staff revised NUREG-1809 to address comments made by the ACRS. As requested in your letter, we have provided this document to ACRS for review.

Sincerely,

***/RA Martin J. Virgilio Acting For/***

Luis A. Reyes  
Executive Director  
for Operations

cc: Chairman Diaz  
Commissioner McGaffigan  
Commissioner Merrifield  
Commissioner Jaczko  
Commissioner Lyons  
SECY

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