

## **EF-4 Effectiveness Strategic Plan Goal**

**Implementation Activity: Develop the technical basis to revise the PTS rule. (RES/DFERR)**

**Primary FY 04-09 Strategic Plan Goal:** Ensure that NRC actions are effective, efficient, realistic, and timely.

**Strategy 1:** Use state-of-the-art methods and risk insights to improve the effectiveness and realism of NRC actions.

**Secondary FY 04-09 Strategic Plan Goal:** Ensure protection of public health and safety and the environment.

**Strategy 3:** Use sound science and state-of-the-art methods to establish risk-informed and, where appropriate, performance-based regulations.

In 1986, the NRC established the pressurized thermal shock (PTS) rule (10 CFR 50.61) in response to an issue concerning the integrity of embrittled reactor pressure vessels in pressurized-water reactors. The NRC staff is now reevaluating the technical basis of this rule in light of the results of subsequent extensive research on key technical issues underlying the rule. Analyses performed as part of this research suggest that the agency may be able to reduce unnecessary conservatism in the rule while still maintaining safety.

The staff's approach to reevaluating the screening criteria that 10 CFR 50.61 prescribes for reactor pressure vessel material characteristics is described in SECY-00-0140, "Reevaluation of the Pressurized Thermal Shock Rule (10 CFR 50.61) Screening Criterion," dated June 23, 2000, and subsequent periodic status reports (SECY-01-0045, SECY-01-0185, and SECY-02-0092, dated March 16, 2001, October 5, 2001, and May 30, 2002, respectively). In March of 2005 the Advisory Committee for Reactor Safeguards provided a favorable review of the Office of Nuclear Regulatory Research (RES) reports detailing the technical basis for PTS rule revision. In June of 2005 these draft reports were issued to the Office of Nuclear Reactor Regulation (NRR) for review. These reports integrated sequence frequency, thermal-hydraulic, and fracture mechanics analyses (using the probabilistic fracture mechanics code FAVOR) to calculate the frequency of vessel failure due to PTS. This report presented the bases for possible changes to the PTS rule. NRR completed a review of the RES reports and calculations were performed by RES to address NRR comments. The final technical basis reports were prepared in December 2006. On September 11, 2007 the Commission directed the staff to proceed with public comment on the draft rule.

**Primary Priority:** High

**Secondary Priority:** Medium

**Project Considerations:** None.