

Voluntary Risk-Informed Alternative Pressurized Thermal Shock Limits

Lead Office/Division: NRR/DPR

Supporting Offices/Divisions: NRO/DE, NRR/DCI, NRR/DRA, RES/DFERR

Description

The proposed rule would amend the Commission's regulations (§ 50.61) that protect against brittle fracture of reactor vessels during severe cooldown events. The existing regulations establish screening limits that were developed based on what NRC believed to be a conservative probabilistic fracture mechanics analysis. Several licensees will exceed the screening limits in the current rule during their license renewal periods. The staff proposes to provide alternate fracture toughness requirements which reflect the updated technical basis in the proposed rule.

The NRC has been engaged in a research program to reevaluate and update the technical basis of the risk of throughwall cracking due to PTS, and recommends that the regulations be amended to reflect the updated technical basis. Revising the PTS requirements would permit some reactor vessels that are approaching the current maximum permissible level of embrittlement to postpone permanent shutdown. Current regulations allow licensee to avoid shutdown if they perform a safety analysis to show that operation with a PTS higher than the screening criteria is safe, or that they anneal the reactor vessel.

The staff issued SECY 07-0104 "Proposed Rulemaking — Alternate Fracture Toughness Requirements for Protection against Pressurized Thermal Shock Events (RIN 3150-AI01)" on June 25, 2007. This SECY requested Commission approval to publish for public comment a proposed rule that would provide new fracture toughness requirements for pressurized water reactors (PWRs). On September 11, 2007, the Commission approved publication of a proposed rule, 10 CFR 50.61a, "Alternative Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," for a 75-day public comment period. The public comment period expired December 17, 2007. About 40 public comments were received and the staff is currently addressing these comments. The Staff intends to propose a schedule for completing the rule by May 2008.

The SECY may be found at:

<http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2007/secy2007-0104/2007-0104scy.pdf>

The related staff requirements memorandum (SRM) may be found at:

<http://www.nrc.gov/reading-rm/doc-collections/commission/srm/2007/2007-0104srm.pdf>

Additional information on this proposed rule may be found on the NRC external website at:

<http://www.nrc.gov/about-nrc/regulatory/rulemaking/proposed-rules.html>