[7590-01-P]

NUCLEAR REGULATORY COMMISSION

Withdrawal of Regulatory Guide 1.154

[NRC-2011-0010]

AGENCY: Nuclear Regulatory Commission.

ACTION: Withdrawal of Regulatory Guide 1.154, "Format and Content of Plant-Specific Pressurized Thermal Shock Safety Analysis Reports for Pressurized Water Reactors."

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SUPPLEMENTAL INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is withdrawing Regulatory Guide (RG) 1.154, "Format and Content of Plant-Specific Pressurized Thermal Shock Safety Analysis Reports for Pressurized Water Reactors." RG 1.154 was issued by NRC in January 1987 to describe the format and content acceptable to the NRC staff for plant-specific pressurized thermal shock (PTS) safety analyses, and to describe acceptance criteria that NRC staff will use in evaluating licensee analyses and proposed corrective measures.

In recent years, the NRC's Office of Nuclear Regulatory Research (RES) developed a technical basis that supported updating the PTS regulations in Title 10, Section 50.61, of the *Code of Federal Regulations* (10 CFR 50.61). This technical basis, as described in NUREG-1806 and in NUREG-1874, concluded that the risk of through-wall pressure vessel cracking due to a PTS event is much lower than previously estimated. This finding indicated that the

reference temperature (RT) screening criteria in 10 CFR 50.61 are overly conservative and may impose an unnecessary burden on some licensees. Therefore, the NRC developed a new rule, 10 CFR 50.61a, "Alternate Fracture Requirements for Protection against Pressurized Thermal Shock Events" (SECY-09-0059: "Final Rule Related to Alternate Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," RIN 3150-AI01, April 9, 2009). The alternative rule allows, but does not require, that licensees may comply with more permissive RT limits that were derived in a risk-informed manner provided that certain requirements regarding vessel inspection and surveillance programs, as outlined in 10 CFR 50.61a, are met.

In the course of developing 10 CFR 50.61a, it became clear to staff that the guidance provided by RG 1.154 is significantly outdated and, in some cases, technically deficient. As such, a plant-specific PTS analysis performed based on guidance in RG 1.154 will not be acceptable to the staff. While the methods and procedures were appropriate based on the situation in the industry when RG 1.154 was developed (1987), the methods and procedures have since either passed into common practice among plant operators, or were accounted for in the development of 10 CFR 50.61a. A fundamental premise underlying RG 1.154 is that the RT screening criteria in 10 CFR 50.61 are based on a large number of conservative assumptions. As such, RG 1.154 postulates that it is possible to perform a plant-specific analysis to show that some conservatism could reasonably be removed while still demonstrating that a plant can be operated at an acceptably low level of risk. The technical basis for 10 CFR 50.61a, however, considered the most accurate models and input values presently available given the current state of the science. This had the effect of eliminating much of the conservatism that was embedded in the more restrictive 10 CFR 50.61 RT screening criteria. This calls into question whether a strong case could be made to remove further conservatism in a plant-specific PTS analysis performed in accordance with RG 1.154. Moreover, RG 1.154 frequently discusses the

“licensee’s proposed program of corrective measures,” reflecting the view that there are actions that an individual licensee can take, beyond present practices, that will mitigate the PTS risk. The continued validity of this premise is also questionable. An assessment of potential corrective measures described in RG 1.154 indicates that they are either impractical or that they have already been implemented because of changes to standard industry practices since the issuance of the RG in 1987. RG 1.154 lists five general classes of potential corrective actions. The current assessment suggests that few of the corrective actions listed in RG 1.154 would effectively mitigate PTS risk relative to the baseline risk established by the technical basis documents that support the alternative rule 10 CFR 50.61a. Licensees have a choice to apply more conservative screening criteria in 10 CFR 50.61 or more permissive and risk-informed criteria in the alternative rule 10 CFR 50.61a. If a licensee chooses to apply the screening criteria in 10 CFR 50.61 to their plant, and the plant is projected to reach the screening limits in 10 CFR 50.61, the licensee can either choose to follow procedures prescribed in 10 CFR 50.61 (b)(3) on implementing flux reduction measures or 10 CFR 50.61 (b)(4) on performing plant-specific safety analysis. However, if a licensee chooses to follow 10 CFR 50.61 (b)(4) on performing safety analysis, Regulatory Guide 1.154 cannot be used, as it is hereby being withdrawn.

II. Further Information

The withdrawal of RG 1.154 does not alter any prior or existing licensing commitments based on its use. Regulatory guides may be withdrawn when their guidance no longer provides useful information, or is superseded by technological, congressional actions, or other events.

Guides are revised for a variety of reasons, and the withdrawal of a regulatory guide should be thought of as the final revision of the guide. Although a regulatory guide is withdrawn, current licensees may continue to use it, and withdrawal does not affect any existing licenses or

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Dated at Rockville, Maryland, this 6th day of January, 2011.

For the Nuclear Regulatory Commission.

/RA/

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