

Interim Staff Guidance Review of Evaluation to Address Adverse Flow Effects in Equipment Other than Reactor Internals

Issuance Status

Proposed

Purpose

The purpose of this interim staff guidance (ISG) is to provide for the review of adverse flow effects on components and piping other than reactor internals in the appropriate Standard Review Plan (SRP) Section.

Background

In March 2007, the Nuclear Regulatory Commission (NRC) revised SRP Section 3.9.2, "Dynamic Testing and Analysis of Systems, Structures, and Components," Section 3.9.5, "Reactor Pressure Vessel Internals," and Regulatory Guide (RG) 1.20, "Comprehensive Vibration Assessment Program for Reactor Internals During Preoperational and Initial Startup Testing" to address adverse flow induced vibration effects experienced in industry. Since the worst case problems in industry at the time occurred in boiling-water reactor (BWR) internals (the steam dryer), SRP Sections 3.9.2 and 3.9.5 and RG 1.20 were modified to include the details for all the events.

Issue Discussion

Staff members conducting reviews in accordance with SRP Section 3.9.5 review reactor internals design, but not steam generator, valve, piping, or other component design. The staff realizes that including actions to address adverse flow effects in these other components in the license application section dealing with reactor internals is not effective.

Proposed Interim Staff Guidance

To correct this issue, the staff reviewers looking at component and piping design will review applicant actions to address adverse flow effects on other components and piping in their native sections of the safety evaluation report (SER). Several examples of such effects have occurred in industry and call for consideration of this concern in components other than the reactor internals. Consideration of effects on safety relief valves and steam lines in BWR plants similar to the issues identified following implementation of extended power uprates will be documented in SER Section 3.9.3. Actions to address concerns involving vibration effects similar to those encountered on a shutdown cooling line and shutdown cooling line isolation valve at an operating pressurized-water reactor plant would be considered under SER Sections 3.9.3 and 3.12. The potential for adverse flow induced vibration of steam generator internal components would be addressed in SER Sections 3.9.2 and 3.9.3. Finally, SER Section 3.9.5 will continue to address vibration concerns with reactor internals.

Final Resolution Method

Future updates of SRP Sections 3.9.2, 3.9.3, 3.9.5, 5.4, and 3.12 will incorporate the final changes adopted, and will be documented in the final version of this ISG and other guidance documents. The NRC staff is specifically soliciting stakeholder comment on how to revise the text of the SRP sections and other guidance documents. The updates will either clarify or correct affected sections of the staff guidance to address components within the scope of the review of the native section(s).

After resolution of public/stakeholder comments, the staff will issue this ISG in final form and incorporate its contents into the applicable SRP sections and RG 1.20.

Applicability

This ISG is applicable to all design certification and COL applications submitted under 10 CFR Part 52. It shall remain in effect until it has been superseded, withdrawn, or incorporated into revisions of the applicable SRP sections and RG 1.20.

Backfit Determination

This ISG reformats reviews called for in the SRP to more closely align those reviews with the outline in the SRP. The same level of review will still occur, but will be conducted under other SRP sections. No backfit analysis is required.