

July 27, 2006

MEMORANDUM TO: Sher Bahadur, Chairman
Committee To Review Generic Requirements

FROM: Gary M. Holahan, Associate Director **/RA/**
for Risk Assessment and New Projects
Office of Nuclear Reactor Regulation

SUBJECT: TRANSMITTAL OF PROPOSED REVISION TO STANDARD
REVIEW PLAN NUREG-0800, SECTION 6.1.1, "ENGINEERED
SAFETY FEATURES MATERIALS"

The purpose of this memorandum is to transmit the proposed revision to NUREG-0800, *Standard Review Plan* (SRP), Section 6.1.1, "Engineered Safety Features Materials," to the Committee To Review Generic Requirements (CRGR).

In accordance with the staff requirements memorandum (SRM) dated May 10, 2005, on the April 6, 2005, Commission meeting, the Office of Nuclear Reactor Regulation (NRR) has revised SRP Section 6.1.1 (Enclosure 1). To aid in identifying the areas of revision, a redline/strikeout version of the document with description of the changes is included (Enclosure 2). Additionally, the revised Branch Technical Position (BTP) 6-1, "pH for Emergency Coolant Water for PWRs," is included as Enclosure 3. The redline/strikeout of this BTP is attached to the version of SRP Section 6.1.1 (Enclosure 2), from which this document was extracted.

The proposed revision to this SRP section updates Revision 2, dated April 1981, and includes most of the changes introduced in the draft Revision 3 of April 1996. In general, changes consist mostly of assigning the review responsibilities by function, with the responsible organizations maintained separately from the SRP itself to minimize impacts of office reorganizations; editorial and formatting changes as part of the SRP update effort; and updating some references. All changes are consistent with the published staff positions or the current requirements and acceptance criteria of Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, which has been incorporated by reference in 10 CFR 50.55a. The acceptance criteria in revised Subsection II.1.a.(3) and (4) are new to this SRP section; however, these acceptance criteria reflect staff positions that were previously issued in Regulatory Guide (RG) 1.37, for subparagraph II.1.a.(3) on controls for abrasive work on austenitic stainless steel surfaces, and NUREG-0313 and Generic

CONTACT: A. Keim, DCI/CPNB
301-415-1617

Letter (GL) 88-01, for controls on austenitic stainless steel piping in boiling water reactors that is susceptible to intergranular stress corrosion cracking (IGSCC). The revision also adds standard paragraphs or subsections to extend application of the updated SRP section to the advanced reactor design certification reviews as well as to extend implementation of this section to submittals by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52.

In general, these revisions include the following:

1. Other editorial and formatting changes to conform with guidance provided in LIC-200, Revision 1, "Standard Review Plan (SRP) Process."
2. Formatting changes to conform, to the extent practicable, with the format of the corresponding sections of DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)."
3. Re-organized SRP subsections to provide, to the extent practicable, a logical and consistent flow of information between the five major subsections.
4. Added Inspection, Testing, Analyses, and Acceptance Criteria (ITAAC) paragraphs to Subsection I to identify that ITAAC requirements for design certification and combined license (COL) reviews are applicable to this SRP section.
5. Added "Review Interfaces" in Subsection I to capture related reviews that are performed under other SRP sections.
6. Added "Technical Rationale" in Subsection II to provide the bases for citing specific General Design Criteria and 10 CFR paragraphs.
7. Added reference to 10 CFR 52.47(a)(1)(vi) and 10 CFR 52.97(b)(1) for acceptance criteria applicable to ITAAC requirements for design certification reviews and COL reviews, respectively.
8. Added Subsection III.5, "10 CFR Part 52 Review," to clarify the relationship of review procedures and acceptance criteria applicable to design certification and COL applications.
9. Added "Evaluation Findings" in Subsection IV addressing the performance of design certification reviews and COL reviews pursuant to 10 CFR Part 52.
10. Added "Implementation" text to Subsection V capturing applicability to 10 CFR Part 52 and time frame in which SRP update becomes effective.

Specific changes to SRP 6.1.1 worth noting are:

1. Extracted Branch Technical Position MTEB 6-1, "pH for Emergency Coolant Water for PWRs," from the SRP section and renumbered it as BTP 6-1 by deleting the branch from the title. Reformatted BTP for consistency with SRPs.

2. Deleted secondary review responsibility from SRP, but maintained this responsibility with BTP 6-1.
3. Deleted subparagraph II.A.1.a.1, which provided unsubstantiated offset yield strength value for cold worked austenitic stainless steel.
4. Replaced subparagraph II.A.1.a.3, which provided reference for the use of austenitic stainless steel in boiling water reactors (BWRs), with new subparagraph II.1.a.(4), which provides updated references for the applicable acceptance criteria.
5. In paragraph II.A.1.b, "Ferritic Steel Welding," a subparagraph on acceptable alternate procedures for ferritic steel welding was added for the 1996 draft revision of this SRP section to explicitly identify an acceptable alternative control to RG 1.50 as stated in the 1996 draft revision of SRP Section 5.2.3. This subparagraph is deleted for the current revision of this SRP section and in SRP Section 5.2.3 because the references for this alternative are from the 1970s and do not reflect current knowledge and technology.
6. In subparagraph II.A.2.a, updated limits on the conductivity, chloride concentration, and pH for consistency with current industry guidance.
7. In subparagraph III.1.a, "Materials Specifications," provided reference to RG 1.84 regarding acceptable material Code Cases, and GL 88-01 and NUREG-0313 regarding ESF piping in BWRs.
8. In subparagraph III.1.b, "Nickel-Chromium-Iron Alloys," added review procedures for nickel-chromium-iron alloys proposed for use in ESF systems, based on more recent operating experience.
9. In subparagraph III.1.c, "Austenitic Stainless Steels," added review procedures applicable to BWR austenitic stainless steel ESF piping exposed to reactor coolant during power operation and a method identified as a previously accepted alternative to the weld qualification/non-sensitization verification guidance of RG 1.44 in SRP Section 5.2.3.
10. Added subparagraph III.1.d, "Corrosion Allowances," to address review procedures applicable to corrosion allowances in ESF materials.
11. Added subparagraph III.1.e, "Abrasive Work Controls," to address review procedures applicable to abrasive work controls for stainless steel surfaces.
12. In subparagraph III.2.a, enhanced paragraph addressing hydrogen release to address the process that would lead to a hydrogen release.
13. In Subsection IV, "Evaluation Findings," added findings for BWR austenitic stainless steel piping related to conformance with GL 88-01 positions and NUREG-0313, Revision 2 recommendations.
14. In Subsection V, "Implementation," added text to address the approach to implementation of evolutionary plant issues in the SRP. Added explicit description of the

applicability of NUREG-0313, Revision 2 to the review of new BWR applications (rather than identifying its applicability to evolutionary BWRs in the body of the SRP section).

Based on the nature of the changes, specifically the updates do not represent new staff positions, we are providing the SRP section for information, only. Most SRP sections will be issued as final versions without publishing them as draft and requesting comment. The staff is revising the SRP in this manner to provide a more up-to-date SRP in light of the requirement in 10 CFR 50.34(h) for an applicant to evaluate its facility against the SRP revision in effect 6 months before the docket date of the application. The staff will nonetheless request comment on these final SRP sections, and will address comments received in a subsequent SRP revision. Prior to revision to individual sections, comment resolution may establish a basis for how alternatives to the NUREG-0800 acceptance criteria provide an acceptable method of complying with the NRC's regulations.

Separately, we have recommended that the Advisory Committee on Reactor Safeguards elect not to review the proposed revisions to the SRP.

For questions concerning SRP Section 6.1.1, please contact Andrea Keim at 301-415-1617.

Enclosures:

1. SRP Section 6.1.1, Working File Revision 3
2. SRP Section 6.1.1, Redline/Strikeout Revision 3
3. BTP 6-1, Revision 3

14. In Subsection V, "Implementation," added text to address the approach to implementation of evolutionary plant issues in the SRP. Added explicit description of the applicability of NUREG-0313, Revision 2 to the review of new BWR applications (rather than identifying its applicability to evolutionary BWRs in the body of the SRP section).

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