

PROJ 0669



MRP Materials Reliability Program _____ MRP 2011-011
(via email)

May 16, 2011

Document Control Desk
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Subject: Supplement to Comments and Recommended Changes Regarding NRC Draft Safety Evaluation of MRP-227 Rev. 0

Reference:

- 1) NRC Letter John Jolicoeur (NRC) to Neil Wilmshurst (EPRI), "DRAFT SAFETY EVALUATION FOR THE ELECTRIC POWER RESEARCH INSTITUTE'S TOPICAL REPORT (TR) MATERIALS RELIABILITY PROGRAM (MRP) REPORT 1016596 (MRP-227), REVISION 0, "PRESSURIZED WATER REACTOR (PWR) INTERNALS INSPECTION AND EVALUATION GUIDELINES" (TAC NO. ME0680), dated March 28, 2011.
- 2) EPRI MRP Letter MRP 2011-006 to NRC Document Control Desk, "Comments and Recommended Changes Regarding NRC Draft Safety Evaluation of MR-227 Rev. 0", dated May 10, 2011

Attachment:

- 1) Proposed changes to MRP-227 Rev. 0 resulting from MRP review of the draft SE that will be included, verbatim, in MRP-227 Rev. A.

To Whom It May Concern:

Reference 1 requested that MRP provide NRC with comments and recommended changes to the draft Safety Evaluation of MRP-227, Rev. 0. The requested comments and recommended changes were provided in three attachments to Reference 2, indicating that a fourth attachment would be provided by May 16, 2011. The purpose of this letter is to forward two copies of that attachment.

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If you have any questions on this material, please contact Tim Wells (Southern Nuclear, MRP Chairman) at 205-992-7460, or Rick Reid (EPRI Reactor Internals Project Manager) at 704-595-2770.

Sincerely,



Tim Wells
Southern Nuclear Operating Company
Chairman, Materials Reliability Program

Cc: James Lash, First Energy
David Czufin, Exelon
Andrew Hon, NRC
Sheldon Stuchell, NRC (with 8 copies of Attachment)
Victoria Anderson, NEI
Anne Demma, EPRI
David Steininger, EPRI

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Attachment
Proposed Changes to MRP-227-Rev. 0
NRC Draft Safety Evaluation of MRP-227
May 13, 2011

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The following changes to MRP-227-Rev. 0 are proposed to reflect the Topical Report Conditions included in the Draft Safety Evaluation forwarded in Reference 1, including the proposed modifications discussed in Attachments 1 to 3 of MRP letter MRP 2011-006.

The text provided below provides the substantive technical changes to MRP-227 required to implement the Technical Report Conditions, as modified. A thorough review of MRP-227 will be required to identify the non-intent and editorial changes required for consistency within the document. An example of a non-intent change would be revision of Section 3.3.2 to update the number of Expansion components as a result of the changes required in response to Topical Report Condition 1. Editorial changes would include changes to the Table of Contents, page references, etc.

- 1) Topical Report Condition 1 (4.1.1 of Reference 1, as modified in Attachment 1 to MRP 2011-006) will be incorporated by the following changes:
 - a. A new row will be added to Table 3-3 to include the upper core plate as a component of the Upper Internals Assembly (directly underneath the item "Upper Support Ring or Skirt") for Westinghouse plants. The initial category will be given as A, with all other columns labeled N, except for Wear and Fatigue, which will be labeled A. However, the Final Group will be X.
 - b. Two new rows will be added to Table 3-3 to include the lower support casting and the lower support forging as components of the Lower Internals Assembly (directly underneath the item "XL Lower Core Plate") for Westinghouse plants. The initial category for both will be given as A for both, with all other columns labeled N, except for Thermal Embrittlement for the lower support casting. However, in both cases, the Final Group will be X.
 - c. A new row will be added to Table 3-2 to include the lower core support beams as components of the Lower Support Structure (directly underneath

the item "Core Support Column Bolts") for Combustion Engineering plants. The initial category will be given as A, with all columns labeled N except for SCC and fatigue, which will be labeled A. However, the Final Group will be X.

- d. Two new rows will be added to Table 3-2 to include the core support barrel assembly (CSBA) upper cylinder (directly below the CSBA upper cylinder welds) and the CSBA upper core barrel flange (directly below the CSBA upper core barrel flange welds) as components of the CSBA. Both will be given A as the initial category, with all columns labeled N except for the Wear for the CSBA upper core barrel flange, which will be labeled A. However, in both cases, the Final Group will be X.
- e. Additional rows will also be added to Tables 4-8 and 4-9 to accommodate these six Existing program items, with the entries in the various columns corresponding to similar entries for other ASME Code Section XI Existing program entries.

2) Topical Report Condition 2 (4.1.2 of Reference 1, as modified in Attachment 1 to MRP 2011-006) will be incorporated by the following changes:

a. Add a new row to Table 4-2 CE plants Primary components:

Item	Applicability	Effect (Mechanism)	Expansion Link (Note 1)	Examination Method /Frequency (Note 1)	Examination Coverage
<p>Core Support Barrel Assembly Circumferential Welds within Active Core Height</p>	All plants	Cracking (IASCC) Aging Management (IE)	None	<p>Plant may provide analysis of IASCC impact on component performance to demonstrate acceptability for continued operation as an alternative to inspection.</p> <p>Inspection Requirement: EVT-1 of exterior surface of core barrel circumferential weld in regions potentially susceptible to IASCC.</p> <p>Examination completed no later than 2 refueling outages from the beginning of the license renewal period. Subsequent examinations on a ten-year interval.</p>	<p>Examination required for 75% of circumferential weld sections within +/- 15° of peak fluence locations in each quadrant of core barrel.</p> <p>Plant specific analysis may be used to demonstrate smaller examination zones based on minimum fluence requirement of 2×10^{21} n/cm² (E>1MeV). 75% of surface in reduced examination zone must be inspected.</p>

- b. Add a corresponding entry in Section 4.3.2 to under the existing listing “ – Upper (core support barrel) flange weld” (page 4-13) that reads “core barrel circumferential weld potentially susceptible to IASCC.”
- c. Add a similar column to Table 4-3 Westinghouse plants Primary components with the “Item” entry “***Core Barrel Assembly: Circumferential welds within Active Core Height***” and entries in all other columns identical to the above.
- d. Add a corresponding entry in Section 4.3.3 to under the existing listing “ – Upper core barrel flange weld” (page 4-15) that reads “core barrel circumferential weld potentially susceptible to IASCC.”

3) Topical Report Condition 3 (4.1.3 of Reference 1, as modified in Attachment 1 to MRP 2011-006) will be incorporated by the following changes:

a. Add a new row to Table 4-2 CE plants Primary components:

Item	Applicability	Effect (Mechanism)	Expansion Link (Note 1)	Examination Method /Frequency (Note 1)	Examination Coverage
Lower Support Structure Welded core support columns	All plants with lower support columns	Cracking (SCC, IASCC, Fatigue) including damaged or fractured material Aging Management (IE, TE)	None	EVT-1 examination of 25% of the welds connecting the core support column to the core support plate. Examination completed no later than 2 refueling outages from the beginning of the license renewal period. Subsequent examination of an additional 25% sample on a ten-year interval.	Require visual examination of weld surface in a sample of 25% of core support columns. Visual access to weld surfaces from top side of core support plate.

Topical Report Condition 3 changes (continued):

- b. Add a corresponding (new) entry to Section 4.3.2 in the • **Visual (EVT-1) Examination** section that reads:

“Primary (applicable to plants with welded lower support columns)

- Welded core support columns.

There are no expansion items for this component.

- 4) Topical Report Condition 4 (4.1.4 of Reference 1):

Per Attachment 1 to MRP 2011-006, as justified in Attachments 2 and 3 to MRP 2011-006, MRP has proposed this Condition be deleted. Therefore no changes to MRP-227-Rev. 0 are proposed.

- 5) Topical Report Condition 5 (4.1.5 of Reference 1, as modified in Attachment 1 to MRP 2011-006) will be incorporated by the following changes:

Reference to Footnote 2 will be added to appropriate entries in sixth column of Tables 4-4, 4-5, and 4-6, with the footnote itself included at the end of each of the tables to reflect Topical Report Condition 5. Examples of the appropriate footnoting and the wording of the footnotes are given below.

Example 1.

“100% of accessible pads, dowels, and cap screws, and associated welds.” will be changed to read “100% of accessible pads, dowels, and cap screws, and associated welds².”

Example 2.

“100% of accessible bolts.” will be changed to read “100% of accessible bolts².”

Example 3.

“100% of one side of the accessible surfaces of the selected weld and adjacent base metal.” will be changed to read “100% of one side of the accessible surfaces of the selected weld and adjacent base metal².”

Footnote 2 will read:

² Coverage requirements for all Expansion items shall be determined and reviewed as a part of the extent of condition evaluation for the associated Primary

item. In the absence of a valid technical justification, a minimum of 75% coverage of the entire examination area or volume, or a minimum sample size of 75% of the total population of like components of the examination (including both accessible and inaccessible portions) is required.

- 6) Topical Report Condition 6 (4.1.6 of Reference 1) will be incorporated by the following changes:
- a. In Table 4-1, B&W plants Primary components, change the Examination Method/frequency for the ***Core Barrel Assembly: Baffle-to-former bolts*** entry to read:
“Baseline volumetric examination (UT) no later than two refueling outages from the beginning of the license renewal period with subsequent examination after 10 ~~to 15~~ additional years.”
 - b. In Table 4-2, CE plants Primary components, change the Examination Method/frequency for the ***Core Shroud Assembly (Bolted): Core shroud bolts*** entry to read:
“Baseline volumetric (UT) examination between 25 and 35 EFPY, with subsequent examination after 10 ~~to 15~~ additional ~~EFPY~~ years to confirm stability of bolting pattern.”
 - c. In Table 4-3, Westinghouse plants Primary components, change the Examination Method/frequency for the ***Baffle-Former Assembly: Baffle-former bolts*** entry to read:
“Baseline volumetric (UT) examination between 25 and 35 EFPY, with subsequent examination after 10 ~~to 15~~ additional ~~EFPY~~ years to confirm stability of bolting pattern.”

- 7) Topical Report Condition 7 (4.1.7 of Reference 1, as modified in Attachment 1 to MRP 2011-006) will be incorporated by the following changes:

The fifth column in Tables 4-4, 4-5, and 4-6 will be revised to reflect Topical Report Condition 7. The revisions will vary slightly, depending upon the context. Two examples should suffice to illustrate the variation.

Example 1.

“Enhanced visual (EVT-1) examination, with initial and subsequent examination frequencies dependent on the results of the core shroud weld examinations” will be changed to read “Enhanced visual (EVT-1) examination, with the initial examination dependent on the results of the core shroud weld examination and subsequent examinations consistent with ASME Code Section XI requirements unless a longer interval can be technically justified.”

Example 2.

“Visual (VT-3) examination” will be changed to read “Visual (VT-3) examination, with the initial examination dependent on the results of the Alloy X-750 dowel-to-guide-block weld examinations and subsequent examinations consistent with ASME Code Section XI requirements unless a longer interval can be technically justified.”

We do not anticipate that these changes will require any changes to the text.

8) Topical Report Condition 8 (4.1.8 of Reference 1):

Per Attachment 1 to MRP 2011-006, as justified in Attachment 2 to MRP 2011-006, MRP has proposed this Condition be deleted on the basis that MRP informed the Staff in our responses to RAI set 4 that the existing Appendix A of MRP-Rev. 0 would be deleted in its entirety and replaced with an Operating Experience Summary. Therefore no additional changes to MRP-227-Rev. 0 are proposed.

Attachment
Proposed Changes to MRP-227-Rev. 0
NRC Draft Safety Evaluation of MRP-227
May 13, 2011

Reference:

- 1 NRC Letter from John Jolicoeur to Neil Wilmshurst, dated March 28, 2011, "DRAFT SAFETY EVALUATION FOR THE ELECTRIC POWER RESEARCH INSTITUTE'S TOPICAL REPORT (TR) MATERIALS RELIABILITY PROGRAM (MRP) REPORT 1016596 (MRP-227), REVISION 0, "PRESSURIZED WATER REACTOR (PWR) INTERNALS INSPECTION AND EVALUATION GUIDELINES" (TAC NO. ME0680)."

The following changes to MRP-227-Rev. 0 are proposed to reflect the Topical Report Conditions included in the Draft Safety Evaluation forwarded in Reference 1, including the proposed modifications discussed in Attachments 1 to 3 of MRP letter MRP 2011-006.

The text provided below provides the substantive technical changes to MRP-227 required to implement the Technical Report Conditions, as modified. A thorough review of MRP-227 will be required to identify the non-intent and editorial changes required for consistency within the document. An example of a non-intent change would be revision of Section 3.3.2 to update the number of Expansion components as a result of the changes required in response to Topical Report Condition 1. Editorial changes would include changes to the Table of Contents, page references, etc.

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2) Topical Report Condition 2 (4.1.2 of Reference 1, as modified in Attachment 1 to MRP 2011-006) will be incorporated by the following changes:

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Item	Applicability	Effect (Mechanism)	Expansion Link (Note 1)	Examination Method /Frequency (Note 1)	Examination Coverage
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