

MRP Materials Reliability Program _____ MRP 2010-047

(via email)

July 29, 2010

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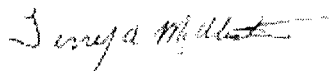
Subject: Document Submittal – EPRI MRP Comments on NUREG-1801 (GALL Report) Revision 2

To Whom It May Concern:

Enclosed are two copies of the subject document. These are being provided to the NRC as part of the EPRI-MRP support of the update to the Generic Aging Lessons Learned (GALL) Report (NUREG 1801). These comments were up-loaded to the NRC website on July 1, 2010 as required by the request-for-comments – they are being provided here in the more familiar spreadsheet format used by the MRP in an earlier draft submittal of comments

If you have any questions on this subject, please contact Anne Demma (ademma@epri.com, 650-855-2026) or Chuck Welty (cwelty@epri.com, 650-855-2371).

Sincerely,



Terry McAllister
SCANA
Chairman, Materials Reliability Program

cc: Jim Lash, First Energy
Tanya Mensah, NRC (with 8 copies of Subject documents)
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NUREG-1801, Revision 2 (GALL Report) Comments by EPRI MRP

Comment Number	Item Number	RECOMMENDED CHANGES (Deletions –Strikethrough, Additions –Underline)	JUSTIFICATION
1	Table IV B2, Item IV.B2.RP-272,	Column 6: Loss of fracture toughness; due to neutron irradiation embrittlement; change in dimension due to void swelling; loss of preload due to stress relaxation Also, see Item IV.B2.RP-354, Item IV.B2.RP-274, and other items with the same series of Degradation Effects/Mechanisms.	Typographical.
2	Table IV B2, Item IV.B2.RP-301, Column 2.	<u>IV.B2-40(R-112)</u>	Typographical.
3	Table IV B2, Items IV.B2.RP-301, IV.B2.RP-299, IV.B2.RP-284, IV.B2.RP-355, IV.B2.RP-356, IV.B2.RP-285, IV.B2.RP-289, IV.B2.RP-288, and IV.B2.RP-346,.	Column 7: Chapter XI.M2, “Water Chemistry,” and Chapter XI.M16A, “PWR Vessel Internals” Existing Program components (identified in the "Structure and Components" column) no Expansion components	There are never any Expansion Components associated with Existing Program Components.
4	Table IV B2, Item IV.B2.RP-300	Column 6: Loss of preload due to stress relaxation; loss of material due to wear	The mechanism is simply loss of preload, not necessarily caused by stress relaxation. There is no loss of material due to wear.
5	Table IV B2, Items IV.B2.RP-301 and IV.B2.RP-299.	We recommend that the entire row for Item IV.B2.RP-301 be eliminated, with only the row for Item IV.B2.RP-299 retained.	Although Table 3-3 (Page 3-24) of MRP-227 shows an “X” for both SCC and wear, Table 4-9 (Page 4-69) of MRP-227 shows only “Loss of material (Wear)” as the Effect (Mechanism) for which the Existing Section XI visual examination program is credited.
6	Table IV B2, Items IV.B2.RP-272, IV.B2.RP-274, and IV.B2.RP-287.	We recommend that the entire rows for Items IV.B2.RP-272, IV.B2.RP-274, and IV.B2.RP-287 be eliminated, with only Items IV.B2.RP271, IV.B2.RP-273, and IV.B2.RP-286 retained.	Although Table 3-3 (Page 3-23) of MRP-227 also shows “P” for IE, VS, and ISR/IC, Table 4-3 (Page 4-25) of MRP-227 shows only Cracking (IASCC and Fatigue), and the examination requirements only apply to those two Effects (Mechanisms).

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Comment Number	Item Number	RECOMMENDED CHANGES (Deletions –Strikethrough, Additions –Underline)	JUSTIFICATION
7	Table IV B2, Items IV.B2.RP-275 and IV.B2.RP-354,	Column 3: Baffle-to-former assembly: baffle <u>errel</u> -edge bolts (all plants with baffle-edge bolts)	Typographical change for both items.
8	Table IV B2, Item IV.B2.RP-354.	We recommend that the entire row for this item be eliminated with only Item IV.B2.RP-275 retained.	Although Table 3-3 (Page 3-23) of MRP-227 also shows “P” for IE, VS, and ISR/IC, Table 4-3 (Page 4-25) of MRP-227 shows only Cracking (IASCC and Fatigue), and the examination requirements only apply to those two Effects (Mechanisms).
9	Table IV B2, Items IV.B2.RP-298, IV.B2.RP-297, IV.B2.RP-291, IV.B2.RP-293, IV.B2.RP-290, and IV.B2.RP-292.	<p>First, for Column 3 and Column 4 of Items IV.B2.RP-298 and IV.B2.RP-297:</p> <p>Control rod guide tube (CRGT) assemblies: CRGT lower flange welds (accessible)</p> <p>Cast austenitic<u>S</u>stainless steel</p> <p>Second, we recommend that Item IV.B2.RP-297 be eliminated, retaining only Item IV.B2.RP-298.</p> <p>Third, we recommend that Item IV.B2.RP-290 be eliminated, retaining only Item IV.B2.RP-291.</p> <p>Fourth, we recommend that Item IV.B2.RP-292 be eliminated, retaining only Item IV.B2.RP-293.</p>	<p>The concern here is all of the CRGT lower flange welds. Table 3-3 (Page 3-23) of MRP-227 erroneously lists the items as “Lower Flanges” made of CF8, rather than 304 SS Lower Flange Welds.</p> <p>Table 3-3 (Page 3-23) of MRP-227 also shows “P” for TE and IE; Table 4-3 (Page 4-24) of MRP-227 shows only Cracking (SCC and Fatigue). The examination requirements only apply to those two Effects (Mechanisms).</p> <p>Table 3-3 (Page 3-24) of MRP-227 shows “E” for both IASCC and IE; Table 4-6 (Page 4-34) of MRP-227 shows only IASCC. The examination requirements only apply to this Effect (Mechanism).</p> <p>Table 3-3 (Page 3-23) of MRP-227 shows “E” for both Fatigue and IE; Table 4-6 (Page 4-34) of MRP-227 shows only Cracking (Fatigue). The examination requirements only apply to this Effect (Mechanism).</p>

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Comment Number	Item Number	RECOMMENDED CHANGES (Deletions –Strikethrough, Additions –Underline)	JUSTIFICATION
10	Table IV B2, Item IV.B2.RP-355, Column 7.	Existing Program components (identified in the "Structure and Components" column) no Expansion components	Typographical.
11	Table IV B2, Items IV.B2.RP-276, IV.B2.RP-278, IV.B2.RP-280, IV.B2.RP-281, IV.B2.RP-282, IV.B2.RP-294, and IV.B2.RP-295.	<p>First, in Column 6 for Item IV.B2.RP-276:</p> <p style="text-align: center;">Cracking due to stress corrosion cracking and irradiation-assisted stress corrosion cracking</p> <p>Second, we recommend that the rows for Items IV.B2.RP-280 and IV.B2.RP-281 be eliminated, with Item IV.B2.RP-282 taking their place. However, in Column 6 for Item IV.B2.RP-282:</p> <p style="text-align: center;">Cracking due to stress corrosion cracking <u>and fatigue</u></p> <p>Third, we recommend that a new item be added – perhaps IV.B2.RP-280 – that identifies the Core Barrel Assembly core barrel flange as an Expansion Component</p> <p>Fourth, we recommend that the row for Item IV.B2.RP-295 be eliminated, retaining only the row for Item IV.B2.RP-294.</p>	<p>Table 4-3 (Page 4-24) of MRP-227 shows only SCC, even though Table 3-3 (Page 3-24) of MRP-227 shows a “P” for SCC and an “E” for IASCC. However, the EVT-1 inspection does not distinguish between cracking mechanisms.</p> <p>There is a discrepancy between Table 3-3 (Page 3-24) of MRP-227 and Table 4-6 (Page 4-33) of MRP-227 with respect to the Expansion Components for the upper core barrel flange weld (IV.B2.RP-276). The item listed as “Core Barrel Axial Welds” in Table 3-3 should be listed as “Lower Core Barrel Flange Weld.”</p> <p>Table 4-6 on Page 4-33 of MRP-227) shows cracking due to SCC and fatigue as an Expansion Component linked to Item IV.B2.RP-276, similar to Item IV.B2.RP-278 and the corrected Item IV.B2.RP-282.</p> <p>Table 3-3 (Page 3-24) of MRP-227 shows “E” for both IASCC and IE; Table 4-6 (Page 4-33) of MRP-227 shows only Cracking (IASCC). The examination requirements only apply to this Effect (Mechanism).</p>
12	Table IV B2, Items IV.B2.RP-292, IV.B2.RP-293, and IV.B2.RP-285.	For these three items and elsewhere in the document on occasion, in Column 3, “Lower internals assembly” is spelled incorrectly as “Lower internal assembly.”	Typographical.
13	Table IV B2, Item IV.B2.RP-288.	<p>In Column 6 for Item IV.B2.RP-288</p> <p style="text-align: center;">Loss of fracture toughness; due to neutron Irradiation embrittlement; loss of material due to wear</p>	The Existing Program elements will be unable to detect the degradation caused by IE, even though IE is cited as “X” in Table 3-3 (Page 3-24) of MRP-227.

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Comment Number	Item Number	RECOMMENDED CHANGES (Deletions –Strikethrough, Additions –Underline)	JUSTIFICATION
14	Section IV.B.2, first sentence.	This section addresses the Westinghouse pressurized water reactor (PWR) vessel internals and consists of the upper internals assembly, the rod control cluster assemblies (RCCA) , guide tube assemblies, the core barrel, the baffle/former assembly, the lower internal assembly, and the instrumentation support structures.	The RCCAs were not in the scope of the Westinghouse reactor internals study. Any reference to rod control cluster assemblies should be removed.
	Section IV.B.2	"Aging related degradation in the reactor internals is managed through an integrated program. Specific inspection requirements are listed in this section. Degradation due to changes in material properties (e.g., loss of fracture toughness) were considered in the determination of inspection recommendations and are managed by the requirement to use appropriately degraded properties in the evaluation of identified defects. These requirements are detailed in the aging management programs."	Add this new paragraph following the first paragraph of Section IV.B.2. Note that this recommendation is accompanied by the suggested removal of multiple entries from Table IV B2 that do not directly correspond to the suggested recommendations in the MRP-227 tables.
	Section IV.B.3, first sentence.	This section addresses the Combustion Engineering pressurized water reactor (PWR) vessel internals and consists of the upper internals assembly, the control element assembly (CEA), shrouds assemblies , the core support barrel, the core shroud assembly, and the lower internal assembly.	Section IV.B.3, first sentence. Only the CEA shrouds were in the scope of the CE reactor internals study. The section "control element assembly (CEA) shroud assemblies" should read "control element assembly (CEA) shrouds." It is not clear what the reference to "shroud assembly" means.
	Section IV.B.3	"Aging related degradation in the reactor internals is managed through an integrated program. Specific inspection requirements are listed in this section. Degradation due to changes in material properties (e.g., loss of fracture toughness) were considered in the determination of inspection recommendations and are managed by the requirement to use appropriately degraded properties in the evaluation of identified defects. These requirements are detailed in the aging management programs."	Also, following the first paragraph of Section IV.B.3, we recommend that this new paragraph be added: Note that this recommendation is accompanied by the suggested removal of multiple entries from the following table that do not directly correspond to the suggested recommendations in the MRP-227 tables.

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Comment Number	Item Number	RECOMMENDED CHANGES (Deletions –Strikethrough, Additions –Underline)	JUSTIFICATION
15	Table IV B3, Items IV.B3.RP-314, IV.B3.RP-315	First , we recommend that the entire row for Item IV.B3.RP-315 be eliminated, with only the row for Item IV.B3.RP-314 retained.	Table 3-2 (Page 3-22) of MRP-227 shows “P” for IE, VS, and ISR/IC, in addition to the “P” for IASCC; Table 4-2 (Page 4-20) of MRP-227 identifies only IASCC and fatigue. The examination requirements apply to cracking.
	Table IV B3, Items IV.B3.RP-316, IV.B3.RP-317	Second , we recommend that Item IV.B3.RP-317 be eliminated, with only Item IV.B3.RP-316 retained. The information in Column 3 of Item IV.B2.RP-317 should be moved to Column 3 of Item IV.B2.RP-316 (so that the > 3 dpa exposures apply to IASCC), and “and fatigue” needs to be added to Column 6 of Item IV.B3.RP-316.	Table 3-2 (Page 3-22) of MRP-227 shows “E” for IE and ISR/IC, in addition to “E” for IASCC; Table 4-2 (Page 4-30) of MRP-227 identifies only the two cracking mechanisms (IASCC and Fatigue). The examination requirements apply only to those two Effects (Mechanisms).
	Table IV B3, Items IV.B3.RP-330, IV.B3.RP-331	Third , we recommend that Item IV.B3.RP-331 be eliminated, retaining only Item IV.B3.RP-330.	Table 3-2 (Page 3-23) of MRP-227 shows “E” for IE, in addition to the “E” for IASCC and Fatigue; Table 4-5 (Page 4-31) of MRP-227 identifies only IASCC and fatigue. The examination requirements apply only to cracking.
	Table IV B3, Item IV.B3.RP-358.	Fourth , we recommend that Item IV.B3.RP-358 be eliminated.	Table 3-2 (Page 3-22) of MRP-227 shows “E” for IASCC, as well as “P” for IE and VS, the latter two designations control, and Item IV.B3.RP-318 provides the aging management requirements.
	Table IV B3, Items IV.B3.RP-320, IV.B3.RP-321	Fifth , these items are Existing Program components, not Expansion components, and have no Primary component references.	
16	Table IV B3, Item IV.B3.RP-319.	Column 7 Chapter XI.M16A, "PWR Vessel Internals" <u>Existing Program</u> Primary components (identified in the "Structure and Components" column)/ existing program no Expansion components	Column 7 should be changed as shown in order to match MRP-227. eliminate that are no Expansion or Primary component references to an Existing Program component

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17	Table IV B3, Item IV.B3.RP-318.	Column 6 Loss of fracture toughness due to neutron irradiation embrittlement; C ehange in dimension due to void swelling	The aging management program elements are intended only to detect the effects of void swelling.
18	Table IV B3, Item IV.B3.RP-359.	Column 6 Loss of fracture toughness due to neutron irradiation embrittlement; C ehange in dimension due to void swelling	The aging management program elements are intended only to detect the effects of void swelling.
19	Table IV B3, Items IV.B3.RP-342 and IV.B3.RP-366.	Column 3 and Column 4 <u>Lower support structure</u> Core shroud assemblies : deep beams (applicable assemblies with full height shroud plates) Stainless steel	Typographical.
20	Table IV B3, Items IV.B3.RP-342 and IV.B3.RP-366.	Column 6 Cracking due to stress corrosion cracking, irradiation-assisted stress corrosion cracking, and fatigue Eliminate Item IV.B3.RP-366 entirely.	Table 3-2 (Page 3-21) of MRP-227 shows “X” for SCC and IASCC, and “P” for Fatigue and IE. Table 4-2 (Page 4-23) of MRP-227 lists only cracking from fatigue. However, the EVT-1 inspection does not distinguish between cracking mechanisms.
21	Table IV B3, Item IV.B3.RP-322.	Column 3 Core shroud assembly/ <u>core shroud plate-former plate weld</u> (for welded core shrouds in two vertical sections): (a)-axial and horizontal weld seams at the core shroud reentrant corners as visible from the core side of the shroud, within six inches of the central flange and (b)-the horizontal stiffeners in the core shroud plate-former plate weld	Typographical.

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22	Table IV B3, Items IV.B3.RP-324, IV.B3.RP-360, and Item IV.B3.RP-361.	We recommend the elimination of Items IV.B3.RP-360 and IV.B3.RP-361, retaining only Item IV.B3.RP-324.	Table 3-2 (Page 3-22) of MRP-227 shows “P” for both IASCC and IE. Table 4-2 (Page 4-20) of MRP-227 lists only cracking from IASCC, and the aging management program elements are applicable only to that effect.
23	<p>Table IV B3, Item IV.B3.RP-328</p> <p>Table IV B3, Item IV.B3.RP-335</p> <p>Table IV B3, Items IV.B3.RP-329 and IV.B3.RP-362</p> <p>Table IV B3, Items IV.B3.RP-363 and IV.B3.RP-364.</p>	<p>Columns 6 and 7:</p> <p>Cracking due to stress corrosion cracking and fatigue</p> <p><u>Primary</u>Expansion components (identified in the "Structure and Components" column) (for Primary components see AMR Line Item No Expansion components)</p> <p>Column 3:</p> <p>Lower support structure: core support column welds (<u>all plants except those assembled with full-height shroud plates</u>)</p> <p>We recommend that Item IV.B3.RP-362 be eliminated.</p> <p>We recommend that Items IV.B3.RP-363 and IV.B3.RP-364 be eliminated.</p>	<p>Although Table 3-2 (Page 3-21) of MRP-227 shows “P” for Fatigue and “E” for SCC, the lower core barrel flange weld is a Primary Component. Table 4-2 (Page 4-22) only designates cracking due to fatigue.</p> <p>Missing information.</p> <p>Those welds are already included in Item IV.B3.RP-329, and only SCC is included in Table 4-5 (Page 4-30) of MRP-227.</p> <p>The welds are not subject to TE, although the core support columns are listed in Table 3-2 (Page 3-21) of MRP-227 as cast austenitic stainless steel, and the examination methods specified in Table 4-5 (Page 4-31) of MRP-227 are not applicable to IE.</p>
24	Table IV B3, Items IV.B3.RP-357, IV.B3.RP-336, and IV.B3.RP-334.	<p>Chapter XI.M16A, “PWR Vessel Internals”</p> <p>Existing Program components (identified in the "Structure and Components" column)</p> <p>no Expansion components</p>	Typographical. Correct the spelling of “Program” and eliminate the reference to “no Expansion components.” There are never any Expansion Components associated with Existing Program components.

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25	Table IV B3, Item IV.B3.RP-336.	Column 6 Loss of material due to wear; loss of fracture toughness due to neutron irradiation embrittlement; change in dimension due to void swelling	Table 3-2 (Page 3-21) of MRP-227 shows “X” for IE and ISR/IC, in addition to the “X” for IASCC and Fatigue. Table 4-8 (Page 4-68) of MRP-227 identifies only the three cracking mechanisms (SCC, IASCC and Fatigue), and the examination requirements apply only to cracking.
26	Table IV B3, Item IV.B3.RP-337.	We recommend that this entry be deleted	This item appears to be a repeat of IV.B3.RP-342 and IV.B3.RP-366.

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Comment Number	Item Number	RECOMMENDED CHANGES (Deletions –Strikethrough, Additions –Underline)	JUSTIFICATION
27	Table IV B4.	<p>First, NUREG-1801, Revision 1 (2005) lists the following requirement under aging management program in Table IV B4:</p> <p>"Upon completion of these programs, but not less than 24 months before entering the period of extended operation, submit an inspection plan for reactor internals to the NRC for review and approval."</p> <p>However, the NUREG-1801, Revision 2, draft has removed this submittal of an inspection plan requirement. Please clarify whether this requirement will be withdrawn for all PWR plants that have previously made this commitment in their license renewal applications and/or FSAR. In other words, if these PWR plants fulfill the implementation requirements listed in the current MRP-227 Revision 0, Section 7, no inspection plan or aging management program will be required to be submitted to NRC.</p> <p>Second, the NUREG-1801, Revision 2 draft has removed "XI.M13 THERMAL AGING AND NEUTRON IRRADIATION EMBRITTLEMENT OF CAST AUSTENITIC STAINLESS STEEL (CASS)" that was in NUREG-1801, Revision 1 (2005). The current draft has added the following statement under Section XI.M12 "THERMAL AGING EMBRITTLEMENT OF CAST AUSTENITIC STAINLESS STEEL (CASS)":</p> <p>"Aging management of CASS reactor internal components of pressurized water reactors (PWRs) are discussed in AMP XI.M16 and for boiling water reactor (BWR) CASS reactor internal components in AMP XI.M9."</p> <p>By removing Section XI.M13 from the Rev. 2 draft, NRC has also removed the following alternative disposition method afforded in GALL Rev. 1 (2005) Section XI.M13, under "4. Detection of Aging Effects:" for reactor vessel internal CASS components that have a neutron fluence of greater than 1017 n/cm2 (E>1 MeV) or are determined to be susceptible to thermal embrittlement:</p>	

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27 (Cont.)	Table IV B4. (Cont.)	<p>“Alternatively, the applicant may perform a component-specific evaluation, including a mechanical loading assessment to determine the maximum tensile loading on the component during ASME Code Level A, B, C, and D conditions. If the loading is compressive or low enough (<5 ksi) to preclude fracture, then supplemental inspection of the component is not required. Failure to meet this criterion requires continued use of the supplemental inspection program.”</p> <p>The above alternative disposition method is not listed in GALL Rev. 2 draft Section XI.M16. Can PWR plants continue to use the above alternative disposition method in GALL Rev. 1 Section M.13 for the CASS components in the reactor internals?</p>	
28	Table IV B4, Item IV.B4.RP-245.	<p>Column 7</p> <p>Expansion components (identified in the "Structure and Components" column) (for Primary components see AMR Line Items <u>IV.B4.RP-247 and IV.B4.RP-248</u>)</p>	Typographical.
29	Table IV B4, Item IV.B4.RP-241.	<p>Column 3 and Column 6</p> <p>Core barrel assembly: baffle/former assembly; (a) accessible baffle-to-former bolts and screws; (b) accessible locking devices (including welds) of baffle-to-former bolts and internal baffle-to-baffle bolts; (c) internal baffle-to-baffle bolts</p> <p>Cracking due to stress corrosion cracking, irradiation-assisted stress corrosion cracking</p>	Typographical.

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30	Table IV B4, Item IV.B4.RP-240.	Column 3 Core barrel assembly: baffle/former assembly; (a) accessible baffle-to-former bolts and screws; (b) accessible locking devices (including welds) of baffle-to-former bolts and internal baffle-to-baffle bolts; (c) internal baffle-to-baffle bolts	Typographical.
31	Table IV B4, Item IV.B4.RP-244.	Column 6 Cracking due to stress corrosion cracking , irradiation-assisted stress corrosion cracking	Typographical.
32	Table IV B4, Item IV.B4.RP-248.	Column 7 Chapter XI.M2, "Water Chemistry," for PWR primary water, and Chapter XI.M16A, "PWR Vessel Internals" Primary components (identified in the "Structure and Components" column) (for Expansion components see AMR Line Items IV.B4.RP-245, IV.B4.RP-246, <u>IV.B4.RP-247</u> , IV.B4.RP-254, and IV.B4.RP-256)	Typographical.
33	Table IV B4, Item IV.B4.RP-252.	Column 4 Stainless steel; nickel alloy	Typographical.
34	Table IV B4, Item IV.B4.RP-251.	Column 4 Stainless steel; nickel alloy	Typographical.
35	Table IV B4, Item IV.B4.RP-256.	Column 7 Chapter XI.M2, "Water Chemistry," for PWR primary water, and Chapter XI.M16A, "PWR Vessel Internals," Expansion components (identified in the "Structure and Components" column) (for Primary components see ARM_Line Items <u>IV.B4.RP-247</u> and <u>IV.B4.RP-248</u>)	Typographical.

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36	Table IV B4, Item IV.B4.RP-258.	Column 7 Chapter XI.M16A, “PWR Vessel Internals” Primary components (identified in the "Structure and Components" column) (for Expansion components see Line Items IV.B4.RP-242 and IV.B4.RP-260)	Typographical.
37	Table IV B4, Item IV.B4.RP-254.	Column 7 Chapter XI.M2, “Water Chemistry,” for PWR primary water, and Chapter XI.M16A, “PWR Vessel Internals,” Expansion components (identified in the "Structure and Components" column) (for Primary components see ARM Line Items <u>IV.B4.RP-247</u> and <u>IV.B4.RP-248</u>)	Typographical.
38	Table IV B4, Item IV.B4.RP-246.	Column 7 Chapter XI.M2, “Water Chemistry,” for PWR primary water, and Chapter XI.M16A, “PWR Vessel Internals” Expansion components (identified in the "Structure and Components" column) (for Primary components see AMR Line Items <u>IV.B4.RP-247</u> and <u>IV.B4.RP-248</u>)	Typographical.
39	Table IV B4, Item IV.B4.RP-260.	Column 7 Chapter XI.M16A, “PWR Vessel Internals" Expansion components (identified in the "Structure and Components" column) (for Primary components see AMR Line Items IV.B4.RP-258 and IV.B4.RP-259)	Typographical.
40	Table IV B4, Item IV.B4.RP-262.	Column 4 Stainless steel; <u>Nickel alloy</u>	Typographical.

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41	Table IV B4, Item IV.B4.RP-240.	Column 3 Core barrel assembly: baffle/former assembly; (a) accessible baffle-to-former bolts and screws; (b) accessible locking devices (including welds) of baffle-to-former bolts and internal baffle-to-baffle bolts; (e) internal baffle-to-baffle bolts	Typographical.
42	Table IV B4, Item IV.B4.RP-241.	Column 3 and Column 6 Core barrel assembly: baffle/former assembly; (a) accessible baffle-to-former bolts and screws; (b) accessible locking devices (including welds) of baffle-to-former bolts and internal baffle-to-baffle bolts; (e) internal baffle-to-baffle bolts Cracking due to stress corrosion cracking , irradiation-assisted stress corrosion cracking	Typographical.
43	Table IV B4, Item IV.B4.RP-245.	Column 7 Chapter XI.M2, "Water Chemistry," for PWR primary water, and Chapter XI.M16A, "PWR Vessel Internals" Expansion components (identified in the "Structure and Components" column) (for Primary components see AMR Line Items <u>IV.B4.RP-247 and IV.B4.RP-248</u>)	Typographical.
44	Table IV B4, Item IV.B4.RP-53.	Column 6 and Column 7 Cracking due to stress corrosion cracking, <u>loss of ductility due to a reduction in fracture toughness</u> , and irradiation-assisted stress corrosion cracking	Loss of ductility to a reduction in fracture toughness should be added to Column 6, and it should be recognized that this mechanism (effect) is a TLAA from BAW-2248A, Section 2.4, along with fatigue.