APPENDIX B, TABLE B.2.4

DISPOSITION OF NEI COMMENTS ON CHAPTER V OF GALL REPORT

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Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-V-1	System Interface	Include a reference to Section V E (Carbon Steel Components) for the external surfaces of piping in each specific section's System Interface paragraph.	The external surfaces of piping etc. is included in the scope of Carbon Steel Components (V E). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	The links between the carbon steel components evaluated in Sections A through D2 of Chapter V and Section E of Chapter V were necessary because the external surfaces of those components are only addressed in Section E. The GALL report was revised to address this comment by adding the following sentence under "System, Structures and Components" in Sections A through D2 of Chapter V, "Aging management programs for degradation of external surfaces of carbon steel components are included in Section E of Chapter V," and by modifying the reference link to other sections under "System, Structures, and Components" in Section E of Chapter V.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VA-1	A.1.1-1.3, A.1.5, A.3.1, A.4.1	Regulatory Guide 1.44 does not manage cracking of stainless steel. This guide provides information to limit the sensitization of stainless steel during welding. However, sensitization of stainless steel during welding cannot be eliminated and it must be assumed that cracking will occur if the other parameters necessary for cracking (i.e., halogens) are present. Therefore, other programs (ex- chemistry) are necessary to manage cracking. Relative to SSC, the references, AMP and Evaluation and Technical Basis should include design and material controls consistent with Reg. Guide 1.43.	Comment transmitted for previous draft was not incorporated.	Certain stainless steel components of the PWR Containment Spray System such as piping and fittings, pumps, and valves are susceptible to stress corrosion cracking. The referenced AMP is XI.M2, “Water Chemistry” (NUREG-1801, Vol. 2). The main objective of the “Water Chemistry” AMP is to mitigate damage caused by general, pitting, and crevice corrosion, and SCC. The GALL report was revised to address this comment by deleting RG 1.44 from AMP XI.M2 because it does not provide any guidelines for preventing SCC of SS that is already sensitized during welding. RG1.43 was not added as a reference to the “Water Chemistry” AMP because it does not have information related to design and material control of SS welds. RG 1.43 contains information related to underclad cracking in Grade 508 Cl-2 material.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VA-2	A.1.4, A.3.2, A.4.2, A.5.2, A.6.5	Delete Closure Bolting from this section of the GALL and revise E1.1 to clarify inclusion of bolting.	Bolting is not a component. It is a piece part of components such as pipe, valves, and pumps. The bolt does not perform a component intended function. See comment G-V E-1.	Bolting is an integral part of pipings, fittings and miscellaneous related items, pumps, valves, and heat exchangers in the PWR containment spray system. Bolting is considered to be a system component for each individual engineered safety features system because it can be uniquely identified and also because it is a small component whose review could be missed if categorized under a broader category. Section E of Chapter V of the GALL report for CS Components includes AMPs for degradation of all CS structures and components, including closure bolting. In addition, ASME Section XI treats individual bolting as a component and requires inspection of individual bolting. Boric acid corrosion of closure bolting is included in both Sections A and E of Chapter V of the GALL report. In Section A, the borated coolant is leaking from an integral bolted connection in the piping, whereas in Section E, it is leaking from adjacent piping onto the bolted connection. The GALL report was not revised to address this comment.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VA-3	A.1.1-A.1.3, A.1.5, A.3.1, A.4.1	Remove entry for SCC.	Plausibility of mechanism seems based on design temperature of 400ºF. This system is maintained in standby at ambient temperature; the temperature preconditions for SCC (>150ºF) do not exist.	Stress corrosion cracking (SCC) of stainless steel (SS) components exposed to borated water is possible at temperatures below 200ºF if contaminants are present in the water. This is supported by operating experience at PWR plants (IN 79-19, IE Bulletin 79-17). However, the staff believes that that degradation does not occur if water chemistry is maintained since normal practices within the water chemistry program either preclude the introduction of or filter out contaminants, such as sulfides and chlorides, that are required for transgranular stress corrosion cracking. Any significant departures from that program which would allow the introduction of contaminants would be reviewed for the root cause and corrective measures undertaken at that time in accordance with the QA requirements of Appendix B to 10 CFR Part 50. The GALL report was revised to address this comment by indicating water chemistry as the aging management program, and the operating temperature as less than 200ºF in the “Environment” column for line items A.1-a, A.1-c, A.3-a, and A.4-a.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VA-4	A.2.1-A.2.4, A.5.1	Remove references to Pitting and Crevice Corrosion.	General Corrosion, Pitting, and Crevice Corrosion are listed as Aging Mechanisms for Carbon Steel in the Header and Spray Nozzles System. Carbon Steel exposed to Air will at most be susceptible to General Corrosion; Crevice Corrosion and Pitting require an aqueous environment.	Carbon steel is subject to only general corrosion in an air environment. The GALL Report was revised to address this comment by removing pitting and crevice corrosion as aging mechanisms since they are only operative in an aqueous environment.
G-VB-1	B.2.1	Remove entry for Stainless Steel or materials should be separated into two groups with Stainless Steel having a specific reference to high temperature operating conditions and/or a salt air environment. The data in the other columns can remain the same, including the plant specific AMP.	The material for the Filter Housing and Supports is listed as Carbon and Stainless Steel. Stainless steel is not subject to pitting or crevice corrosion unless exposed to salt-laden air or normal temperatures in excess of 200°F. Stainless steel is not normally subject to general corrosion unless exposed to repeated wet-dry cycling of salt-laden air.	The BWR standby gas treatment systems filter housing and supports fabricated from CS, but not SS, are susceptible to loss of material due to general corrosion for the stated conditions. The GALL report was revised to address this comment by removing SS from the “Material” column.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VB-2	B.2.2	Delete entry for Charcoal Absorber.	The charcoal filter medium is active, short-lived, and as such is not subject to an aging management review. The filter medium performs its intended function by undergoing a change of state, and will be eventually replaced on a periodic basis or due to its condition.	The charcoal absorber filter in the BWR Standby Gas Treatment Systems will be replaced at least once during a 40-year plant life, and therefore will not be subject to an aging management review. The SRP will be used to provide guidance and govern the consideration of this component as stated in Table 2.1-3, "Specific Staff Guidance for Screening," for consumables that fall within category (d) such as system filters, fire extinguishers, fire hoses, and air packs. The GALL report was revised to address this comment by deleting the charcoal absorber filter as a line item and inserting a statement in Section B of Chapter V under "System, Structures, and Components" invoking the table in the SRP, referred to above, for the filter.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VC-1	C.1.1	Delete entry for Valve Disc Seal.	Valve internals are active and as such is not subject to an aging management review. See NUREG-1705 for NRC position on valve internals.	Valve internals, such as valve disc seals, are considered active and short-lived and are not subject to an aging management review. The SRP will be used to provide guidance and govern the consideration of this component. As stated in Table 2.1-3, "Specific Staff Guidance for Screening," consumables that fall within category (a) for gaskets, component seals, etc. The GALL report was revised to address this comment by deleting the valve disc seal as a line item.
G-VC-2	C.2.1, C.2.1	Delete entry for Biofouling.	Component intended function is pressure boundary only. Biofouling does not prevent this intended function.	BWR and PWR isolation barriers are exposed to raw water and there exists the possibility of biological activity resulting in the buildup of deposits. For this application, biofouling only impacts active intended functions. The GALL report was revised to address this comment by deleting this line item with buildup of deposit as the aging effect and biofouling as the aging mechanism.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VC-3	C.2.1, C.2.2	CS should not be included with low-alloy steel and SS. A separate line item should be made for CS.	CS has different applicable aging effects than low-alloy or SS.	CS and low-alloy steel, but not SS, are grouped together for BWR and PWR isolation barriers because they have similar susceptibility to general, pitting, and crevice corrosion and microbiologically influenced corrosion (MIC). The GALL report was revised to address this comment by including separate line items for (1) CS and low-alloy steel subject to general, pitting, and crevice corrosion, and also the combination of MIC and biofouling; and (2) SS subject to pitting and crevice corrosion, and also the combination of MIC and biofouling. For both line items, gaseous waste is no longer listed as part of the environment.
G-VC-4	C.2.1, C.2.2	The environments in this item are quite varied. Consideration should be given to addressing each environment separately, as the aging effects can be different.	SS and low-alloy materials are generally not subject to detrimental aging effects unless they are exposed to high temperatures (>200°F) under normal (long-term) operating conditions or salt-laden fluids.	See NRC disposition of NEI Comment G-VC-3 in Appendix B, Table B.2.4.
G-VC-5	C.1.1	Typos in the Evaluation and Technical Basis Section.	Editorial comment.	See NRC disposition of Comment G-VC-1 in Appendix B,Table B.2.4, which deleted the line item for the valve disc seal, which contained the typos referred to in this comment. The GALL report was not revised to address this comment.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD1-1	D1.1-1.6, D1.2.1, D1.4.1, D1.7.3, D1.8.1-8.3	Regulatory Guide 1.44 does not manage cracking of stainless steel. This guide provides information to limit the sensitization of stainless steel during welding. However, sensitization of stainless steel during welding cannot be eliminated and it must be assumed that cracking will occur if the other parameters necessary for cracking (i.e., halogens) are present. Therefore, other programs (ex- chemistry) are necessary to manage cracking. Relative to SSC, the references, AMP and Evaluation and Technical Basis should include design and material controls consistent with Reg. Guide 1.43.	Comment transmitted for previous draft was not incorporated.	Certain stainless steel components of the PWR Containment Spray System such as piping and fittings, pumps, and valves are susceptible to stress corrosion cracking. The referenced AMP is XI.M2, “Water Chemistry” (NUREG-1801, Vol. 2). The main objective of the “Water Chemistry” AMP is to mitigate damage caused by general, pitting, and crevice corrosion, and SCC. The GALL report was revised to address this comment by deleting RG 1.44 from AMP XI.M2 because it does not provide any guidelines for preventing SCC of SS that is already sensitized during welding. RG1.43 was not added as a reference to the “Water Chemistry” AMP because it does not have information related to design and material control of SS welds. RG 1.43 contains information related to underclad cracking in Grade 508 Cl-2 material.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD1-2	D1.1.7, D1.2.2, D1.3.1, D1.4.1-4.2, D1.5.3-5.5, D1.6.3-6.4, D1.8.4	Delete Closure Bolting from this section of the GALL and revise E1.1 to clarify inclusion of bolting.	Bolting is not a component. It is a piece part of components such as pipe, valves, and pumps. The bolt does not perform a component intended function. See comment G-V E-1.	Bolting is an integral part of pipings, fittings and miscellaneous related items, pumps, valves, and heat exchangers in the PWR containment spray system. Bolting is considered to be a system component for each individual engineered safety features system because it can be uniquely identified and also because it is a small component whose review could be missed if categorized under a broader category. Section E of Chapter V of the GALL report for CS Components includes AMPs for degradation of all CS structures and components, including closure bolting. In addition, ASME Section XI treats individual bolting as a component and requires inspection of individual bolting. Boric acid corrosion at closure bolting is included in both Section D1 and E of chapter V of the GALL report. In Section A, the borated coolant is leaking from an integral bolted connection in the piping whereas in Section E, it is leaking from adjacent piping on to the bolted connections. The GALL report was not revised to address this comment.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD1-3	D1.1.1- D1.1.6	Remove "Lines to Emergency Sump" from entry for SCC.	Plausibility of mechanism seems based on design temperature of up to 644ºF. This portion of system is maintained in standby at ambient temperature; the temperature preconditions for SCC (>150ºF) do not exist.	Stress corrosion cracking (SCC) of stainless steel (SS) components exposed to borated water is possible at temperatures below 200ºF if contaminants are present in the water. This is supported by operating experience at PWR plants for spent fuel pool cooling lines (IN 79-19, IE Bulletin 79-17), for safety injection lines (IN 97-19 and IN 84-18), for charging pump casings (IN 80-18), and instrumentation line nozzles for safety injection tanks (IN91-05). However, the staff believes that that degradation does not occur if water chemistry is maintained since normal practices within the water chemistry program either preclude the introduction or filter out contaminants such as sulfides and chlorides that are required for transgranular stress corrosion cracking. Any significant departures from that program which would allow the introduction of contaminants would be reviewed for the root cause and corrective measures undertaken at that time in accordance with the QA requirements of Appendix B to 10 CFR Part 50. The GALL report was revised to address this comment by indicating water chemistry as the aging

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD1-3 (cont.)				management program with no further evaluation required and the operating temperature as less than 200°F in the "Environment" column for line items D1.1-a, D1.2-a, D1.4-b, D1.7-b, and D1.8-a.
G-VD1-4	D1.2.1	Delete entry for SCC.	Plausibility of mechanism seems based on design temperature of up to 644°F. This portion of system is maintained in standby at ambient temperature; the temperature preconditions for SCC (>150°F) do not exist.	See NRC disposition of NEI comment G-VD1-3 in Appendix B, Table B.2.4.
G-VD1-5	D1.8.1-D1.8.3	Delete entry for SCC.	This portion of system is maintained in standby at ambient temperature; the temperature preconditions for SCC (>150°F) do not exist. (This mechanism was considered Plausible for CCNPP but the root cause appeared to be contaminants not removed during initial fabrication. This is a plant-specific event and will not apply to other prospective applicants.)	See NRC disposition of NEI comment G-VD1-3 in Appendix B, Table B.2.4.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD2-1	All items where the AMP is Plant Chemistry Controls	Change Further Evaluation Column to "NO" wherever the AMP is the Plant Chemistry Controls, and the applicant has demonstrated their effectiveness through operating experience.	Per prior discussions with NRC, Plants can show through their operating experience that the Chemistry Controls they are using are adequate for the purpose of preventing and mitigating aging effects.	A one-time inspection is needed to verify the effectiveness of water chemistry control (AMP XI.M2) and confirm either the absence of an aging effect or the slow progression of an innocuous aging effect for BWR plants only. If an aging effect is detected, the results are evaluated to determine the appropriate corrective actions. The GALL report was not revised to address this comment.
G-VD2-2	D2.1.1-D2.1.7	Change lower limit for temperature to 93ºC (200°F).	SCC is not an applicable aging effect for these components due to the high quality of the water and the low normal operating temperature. Most RHR lines and most of the line connected to the SC will normally operate below 200°F. SCC can occur in SS components that utilize salt water for the cooling, but no commercial US reactors do.	Pipings and fittings and associated components for BWR ECCS are exposed to a demineralized water environment ranging in temperature from 25-288°C (77-550°F). The temperature range listed in the 'Environment' column indicates variation in operating conditions; it is not a threshold temperature for any aging mechanism. The GALL report was not revised to address this comment.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD2-3	D2.1.1-D2.1.7	This item should be revised to be restricted to components that Section XI and Appendix B require to be included in the applicant's ISI program.	The systems listed will have components that are not in the ISI plan for the applicant. As such, the inspections listed will not occur. The separate line item for the non-ISI components should be prepared with comment G-V D2-1, above, in mind.	Pipings and fittings and valves for BWR ECCS fabricated of stainless steel can be susceptible to SCC and intergranular SCC. The inspections of pipings and fittings required for aging management program XI.M7 will be limited to those required in GL 88-01 and BWRVIP-75. The GALL report, Chapter XI, program M7 was revised to address this comment. by making it more specific on limiting scope of program to the intent of GL 88-01 and BWRVIP-75.
G-VD2-4	D2.1.8	This item should be separated by material into two items.	The aging effects for SS are different than for CS in this case. It is extremely unlikely that the SS components will be subject to the aging effects listed due to the low temperatures of the air and due to the lack of electrolytes in the atmosphere.	Pipings and fittings for the BWR ECCS automatic depressurization system are fabricated of CS or SS which, when subjected to a moist containment atmosphere, steam, or demineralized water, are susceptible to loss of material due to crevice and pitting corrosion. The GALL report was revised to address this comment by denoting under "Aging Effect/Mechanism" that carbon steel under such conditions is also susceptible to general corrosion in addition to pitting and crevice corrosion.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD2-5	D2.3.1	Change lower limit for temperature to 93ºC (200°F).	SCC is not an applicable aging effect for these components due to the high quality of the water and the low normal operating temperature. Most RHR lines and most of the line connected to the SC will normally operate below 200°F. SCC can occur in SS components that utilize salt water for the cooling, but no commercial US reactors do.	Valves for BWR ECCS are exposed to a demineralized water environment ranging in temperature from 25-288°C (77-550°F). The temperature range listed in the "Environment" column is intended to indicate variation in operating conditions; it is not a threshold temperature for any aging mechanism. The GALL report was not revised to address this comment.
G-VD2-6	D2.5.1-D2.5.4	This item should be separated by material into two items or delete entry for General Corrosion, Pitting, and Crevice Corrosion.	The aging effects for SS are different than for CS in this case. It is extremely unlikely that the SS components will be subject to the aging effects listed due to the low temperatures of the air and due to the lack of electrolytes in the atmosphere. Stainless Steel exposed to Air will not be affected by these Aging Mechanisms. Also, Carbon Steel exposed to Air will at most be susceptible to General Corrosion; Crevice Corrosion and Pitting require an aqueous environment.	Pipings and fittings, the flow orifice, headers, and spray nozzles for the BWR ECCS drywell and suppression chamber spray system fabricated of CS and exposed to an air environment are susceptible to only general corrosion because other aging mechanisms require an aqueous environment. The resultant aging effects are either loss of material or plugging of nozzles and spray sparger holes. The GALL report was revised to address this comment by deleting stainless steel from the "Material" column and pitting and crevice corrosion from the "Aging Effect/Mechanism" column.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VD2-7	D2.5.1-D2.5.4	Why is plugging of the nozzles and spray sparger holes not considered an applicable aging effect? (Flow Blockage)	Corrosion build-up inside CS spargers could lead to plugging of the sparger hole. Plugged holes could cause spray dispersal patterns that do not agree with the design basis analysis leading to inadequate SC cooling.	Pipings and fittings, the flow orifice, headers, and spray nozzles for the BWR ECCS drywell and suppression chamber spray system fabricated of CS and exposed to an air environment are susceptible to general corrosion. Because of corrosion products buildup, plugging of the CS flow orifice and spray nozzles was added as an applicable aging effect. The GALL report was revised to address this comment by adding this new line item.
G-VE-1	E.1.1	Revise Structure and Component "Carbon Steel Components (PWR's)" to read "Carbon Steel Components and Closure Bolting (PWR's)"	Bolting is not a component; as such it should not be called out separately in other sections in chapter V. Chapter XI.M5, "Boric Acid Corrosion" applies. There is no need to distinguish bolting from other pressure boundary external surfaces relative to boric acid corrosion.	GALL V, Section E on carbon steel components includes AMPs for degradation of all carbon steel structures and components, including closure bolting. ASME Section XI treats individual bolting as a component and requires inspection of individual bolting. This line item for BAC of external surfaces refers to those PWR carbon steel components that do not contain borated coolant. The components containing borated coolant are addressed in other sections of Chapter V. The GALL report was not revised to address this comment.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VE-2	E.1.1	Delete second section related to atmospheric corrosion. Revise SRP Tables 3.2-1 (page 3.2-13) and 3.2-2 (page 3.2-15) accordingly.	Very few components of the ECCS systems are constructed of carbon steel. Reference to Chapter XI.S8 has the effect of back-fitting RG 1.54, Rev. 1. As a minimum, replace with a requirement for "plant specific" in lieu of S8.	The external surfaces of BWR and PWR CS components subjected to air, moisture, and humidity at temperatures lower than 212°F are susceptible to general corrosion causing loss of material. The GALL report was revised to address this comment by replacing the term "atmospheric corrosion" with "general corrosion" and deleting the reference to Chapter XI.S8 "Protective Coating Monitoring and Maintenance Program."
G-VE-3	E.1.1	Delete reference to ASME section XI in program description for BAC.	Implementation of the Boric Acid Corrosion Program at the sites has nothing to do with ASME Section XI. This program is performed independent of Section XI for the identification of boric acid corrosion. Most utilities perform this inspection at the start of the outage to identify problems so that they may be repaired while off-line. Leakage identified during the performance of pressure tests and hydrostatic tests are handled per the ASME Code requirements.	The Boric Acid Corrosion Program is deemed to be a stand alone program and sufficient by itself to detect leaks so as to prevent Boric Acid Corrosion on the external surfaces of CS components exclusive of the ASME Section XI inspections. Since the ASME Section XI inservice inspections are already performed prior to startup, it was not necessary to include them as part of this aging management program. The GALL report was revised to address this comment by deleting requirements to perform inservice inspections in the Boric Acid Corrosion program XI.M10 in accordance with ASME Chapter XI.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VE-4	E.1.1	Atmospheric corrosion is only applicable to carbon steel components associated with portions of systems operating below 212°F.	Since moisture is necessary for general, pitting and any other forms of atmospheric corrosion, the external surfaces of carbon steel components, which operate above 212°F, are not susceptible to loss of material due to corrosion.	Several CS components in the Engineered Safety Features are exposed to temperatures lower than 212°F and are therefore susceptible to general corrosion. The GALL report was revised to address this comment by replacing the term “atmospheric corrosion” with “general corrosion.”
G-VE-5	E.1.1	Delete reference to XI.S8, “Coating Program” under Aging Management Program Column for atmospheric corrosion. Plant specific review should be performed.	The use of coatings is a preventive measure to minimize or preclude the loss of material due to corrosion. Loss or degradation of coatings does not result in loss of material, and thus is not considered an aging effect. Programs credited for monitoring loss of material typically constitute periodic visual inspections of component external surfaces for signs of corrosion or loss of material. Since programs credited vary between plant sites, a plant specific review should be performed.	The external surfaces of BWR and PWR CS components subjected to air, moisture, and humidity at temperatures lower than 212°F are susceptible to general corrosion causing loss of material. The GALL report was revised to address this comment by replacing the term “atmospheric corrosion” with “general corrosion” and deleting the reference to Chapter XI.S8 “Protective Coating Monitoring and Maintenance Program.”

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VE-6	E.2.1	(1) Delete "Air, Moisture, Humidity and Leaking Fluid" under Environment Column for Closure Bolting. Replace with "Air, Leaking Chemically treated Borated Water." (2) Delete "Atmospheric Corrosion" under Aging Mechanism column and replace with "Boric Acid Corrosion". Replace information in References column, Aging Management Program column and Evaluation and Technical Basis column with that provided in E.1.1 for Boric Acid Corrosion.	Most carbon or low alloy steel bolting is in a dry environment and coated with a lubricant, thus general corrosion of bolting has not been a major concern in the industry. Corrosion of fasteners has only been a concern where leakage of a joint occurs, specifically, when exposed to aggressive chemical attack such as that resulting from borated water leaks. Aging effect requiring management should be loss of mechanical closure integrity due to aggressive chemical attack (boric acid corrosion).	The purpose of line item E.2-a in Chapter V of GALL report is to address carbon steel and low alloy steel closure bolting exposed to ambient environment (i.e., humid air). Boric acid corrosion of closure bolting is not addressed here because it is addressed by line item E.1-a in Chapter V of the GALL report and also in the respective sections of that same chapter. In addition, the GALL report was revised to address this comment by replacing "atmospheric corrosion" with "general corrosion" for this line item and removing leaking fluid from the "Environment" column.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VE-7	E.2.1	Delete Aging Effect/Mechanism "Loss of Pre-load due to Stress Relaxation." (Note: Reference column and AMP Column incorrect list Item H.2.1 instead of E.2.1.)	Loss of pre-load of mechanical closures can occur due to settling of mating surfaces, relaxation after cyclic loading, gasket creep, and loss of gasket compression due to differential thermal expansion. The effects of these mechanisms are the same as that of a degraded gasket; that is, the potential for leakage of internal fluid at the mechanical joint. Since the ASME code does not consider gaskets, packing, seals, and O-rings to perform a pressure retaining function, these components are typically not considered to support an intended function and not within the scope of license renewal. Thus, with the exception of Class 1 components and those cases where a gasket or seal is utilized to provide a radiological barrier, the aging mechanisms associated with loss of pre-load, described above are not considered to require management. Class 1 components credit the ISI Inspection Program to address loss of pre-load due to stress relaxation.	See NRC disposition of NEI comment for G-VII-1-6 in this Appendix B, Table B.2.6.

Table B.2.4: Disposition of NEI Comments on Chapter V of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VE-8	E.2.1	Delete Aging Effect/Mechanism "Crack Initiation/Growth" due to Cyclic loading, Stress Corrosion Cracking. (Note: Reference column and AMP Column incorrect list Item H.2.1 instead of E.2.1.)	Although there have been a few instances of cracking of bolting in the industry due to SCC, these have been attributed to high yield stress materials and contaminants, such as the use of lubricants containing MoS_2. For quenched and tempered low alloy steels (e.g., SA193 Grade B7) used for closure bolting material, susceptibility to SCC is controlled by yield strength. Additionally, operating experience and existing data indicate that SCC failure should not be a significant issue for the bolting materials of SA193 Grade B7.	See disposition of NEI comment G-VII I-7 in Appendix B, Table B.2.6.

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