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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APPENDIX B, TABLE B.2.5

DISPOSITION OF NEI COMMENTS ON CHAPTER VI OF GALL REPORT

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Table B.2.5: Disposition of NEI Comments on Chapter VI of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G VI – 1	Table 6	Delete "BWR/" from the Type column for the "Non-EQ electrical connectors exposed to borated water leakage."	The program for Non-EQ electrical connectors exposed to borated water leakage is based on NRC GL 88-05, *Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants*, and is only applicable to PWR plants.	Borated water is not used in BWR plants, and the program based on NRC GL 88-05 is specifically for PWR plants. Therefore, the proposed change is acceptable and has been incorporated. The GALL report, Volume 1, Table 6 was revised to address this comment.
G VI– 2	VI A-3 Paragraph 1	Delete the phrase, "*are not normally used at nuclear power plants,*" from paragraph 1, sentence 3.	Section VI A-3, Paragraph 1, sentence 3 states: *"High-voltage (>15kV) power cables and connections are not normally used at nuclear power plants, have unique, specialized constructions and must be evaluated on an application-specific basis."* The switchyards at nuclear plants normally do contain high-voltage power cables (transmission lines) and connections. The rest of the statement is accurate.	High-voltage power cables and connections are used in plant switchyards. Therefore, the proposed change is acceptable and has been incorporated. The GALL report, Chapter VI, was revised to address this comment.
G VI– 3	VI A-3 Paragraph 2	Revise the first sentence of paragraph 2 to read: "Electrical cables and their required terminations (i.e., connections) are typically reviewed as a single commodity."	Section VI A-3, Paragraph 2, sentence 1 states: *"Electrical cables and their required terminations (i.e., connections) are reviewed as a single commodity."* This will be true for most plants but is an acceptable option to review cables and connections separately. Suggest adding the word "typically" to clarify this.	Reviewing cables and their required terminations separately, and not as a commodity, is an option allowed under 10 CFR 54. Therefore, the proposed change is acceptable and has been incorporated. The GALL report, Chapter VI, was revised to address this comment.

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APPENDIX B, TABLE B.2.6

DISPOSITION OF NEI COMMENTS ON CHAPTER VII OF GALL REPORT

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Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII-1	General comment on System Interface	Include a reference to Section VII I (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 (VII I). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	The external surfaces of piping are included in the scope of carbon steel structures and components in Section I of Chapter VII. The links between CS components and the individual sections were made by revising the GALL report to include the following sentence in "Systems, Structures and Components" in Sections A1 to H2 of Chapter VII: "Aging management programs for degradation of external surface of carbon steel components are included in Section VII.I." The GALL report was revised to address this comment.
G-VIIA-1	A1.1.1 (p. A1-4)	Remove reference to "Coating Degradation."	"Coating Degradation" is not a mechanism, the other items listed are. The condition of the coating does not directly affect the intended function, only indirectly through the other listed mechanisms.	The carbon steel (CS) new fuel rack assembly is susceptible to general, pitting, and crevice corrosion. Because the condition of the coating does not directly affect the intended function, coating degradation was deleted as an aging mechanism of concern for auxiliary systems. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA1-1	VII.A1.1.1, page VIIA1-5	Aging Management Program should list Structures Monitoring program.	Additional information is superfluous.	The carbon steel (CS) new fuel rack assembly is susceptible to general, pitting, and crevice corrosion. The appropriate Aging Management Program (AMP) is "Structural Monitoring" (XI.S6, NUREG-1801, Vol. 2). The GALL report was revised to address this comment.
G-VIIA2-1	VII A2-4 (item A2.1.1)	Provide a separate line for each of the neutron absorbing materials (Boraflex, Boral, Boron Steel).	The AMP described in VII A2-5 is based on NRC guidance and industry experience of Boraflex aging mechanisms and aging effects. There is no specific NRC guidance or known industry issues with Boral and Boron Steel. Aging management effects for Boral and Boron should remain plant specific.	The Boraflex neutron absorbing sheets in spent fuel storage racks can degrade with a subsequent reduction of neutron-absorbing capacity. The appropriate AMP is "Boraflex Monitoring" (XI.M22, NUREG-1801, Vol. 2). Since little NRC guidance or industry experience is available for the degradation of Boral and Boron Steel neutron absorbing sheets in spent fuel storage racks, a plant-specific AMP needs to be evaluated. The GALL report was revised to create separate line items to distinguish between the AMPs for Boraflex and Boral/Boron Steel.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA2-2	VII A2-4 (item A2.1.1)	Add Storage Racks under "Region of interest" column, Stainless Steel under "Material" column. If AMP is required, reference a generic AMP or state plant specific.	Stainless Steel storage racks are listed in page VII A2-3 as included in Section A2.	Stainless steel spent fuel storage racks are exposed to chemically treated oxygenated water (in BWRs) or borated water (in PWRs). The AMP for this new line item is water chemistry (XI.M2 in NUREG-1801, Vol. 2) to manage crack initiation and growth due to stress corrosion cracking. The GALL report was revised to address this comment.
G-VIIA2-3	VIIA2, page VIIA2-5	Aging Management Program column should only identify the Boraflex Monitoring Program and the program should be evaluated in Chapter XI of GALL.	Additional information in AMP column is superfluous and should be included in the evaluation if it is to stay.	The Boraflex neutron absorbing sheets in spent fuel storage racks can degrade with a subsequent reduction of neutron-absorbing capacity. The appropriate AMP is "Boraflex Monitoring" (XI.M22, NUREG-1801, Vol. 2). Redundant information was deleted. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA2-4	VII A2-5	Eliminate the requirement for both visual inspection of the coupons and the BADGER device inspection.	Either of the two methods in addition to RACKLIFE provides reasonable assurance that aging of boraflex is adequately managed.	The visual inspection of the Boraflex coupons is not needed if the measurement of boron areal density and predictive modeling is in place. Boron areal density (BADGER) in conjunction with a predictive model (RACKLIFE) and periodic verification is an acceptable and conservative method of determining the amount of Boraflex remaining in the spent fuel pool racks. The GALL report was revised to address this comment.
G-VIIA2-5	VII A2-5	Delete the sentence "corrective action may consist of providing additional neutron absorbing capacity."	This is one option only. There are other corrective measures that could be taken such that the 5% subcriticality margin is maintained.	The AMP "Boraflex Monitoring" (XI.M22, NUREG-1801, Vol. 2) states that corrective actions are initiated if the test results find that the 5% subcriticality margin cannot be maintained because of the current or projected future degradation. Corrective actions consist of providing additional neutron absorbing capacity by Boral or boron steel inserts or other options that are available to maintain a 5% subcriticality margin. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA2-6	VII A2-5	Recommend changing "BADGER" to Areal Density measurements.	The term is more generic and permits the use of new equipment and technologies.	The AMP "Boraflex Monitoring" (XI.M22, NUREG-1801, Vol. 2) includes: (1) performing neutron attenuation testing, (2) sampling and analysis for silica levels in the spent fuel pool water and trending the results using the EPRI RACKLIFE code or its equivalent and, (3) measuring boron areal density by a device such as BADGER. The GALL report was revised to address this comment.
G-VIIA2-7	VII A2-7	Provide operating experience that justifies the effectiveness of the program.	Section A.1.2.3.10, page A.1-6 of draft SRP states "This information should provide objective evidence to support that the effects of aging will be adequately managed so that the structure and component intended function(s) will be maintained during the period of extended operation."	The description of operating experience has been expanded in the AMP "Boraflex Monitoring" (XI.M22, NUREG-1801, Vol. 2) to provide objective evidence that the program is effective by stating that the AMP will ensure that the boral sheets will maintain their integrity and will be effective in performing their intended function. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA3-1	A3.1.1, A3.5.1	Delete reference to ASME Section XI as a technique for detecting boric acid corrosion.	Refer to comments in Chapter XI.M5 for justification	NRC GL 88-05 provides a stand-alone program for inspection of carbon steel structures and components for evidence of boric acid leakage and corrosion. Inservice inspection that detects leakage identified during the performance of pressure tests and hydrostatic tests are required by the ASME Code and are performed independent of the AMP "Boric Acid Corrosion" (XI.M10, NUREG-1801, Vol. 2) and were removed. The GALL report was revised to address this comment.
G-VIIA3-2	A3.2.1, A3.3.1, A3.5.1, A3.5.2	The material column refers to "carbon steel (CS) with lining." It is not clear what type of lining material is intended by this description. If the lining material is stainless steel, then pitting and crevice corrosion should be deleted from this table.	The introduction of system operation (Page VII A3-3) states that stainless steel components are not subject to significant aging degradation in borated water and are not considered further. In addition, further evaluation is not warranted.	Pitting and crevice corrosion are aging mechanisms of concern only following degradation of the lining protecting the CS. Additional line items were added to represent the degradation of elastomer linings for filter housings and for ion exchangers. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA3-3	A3.3.1	The material column refers to "carbon steel (CS) with stainless steel (SS) cladding." Stainless steel is not subjected to significant aging degradation in a borated water environment and should be deleted from this table.	The introduction of system operation (Page VII A3-3) states that stainless steel components are not subject to significant aging degradation in borated water and are not considered further. Also, further evaluation is not warranted.	Stainless steel is subject to SCC in the presence of impurities. There have been instances of failures in spent fuel pool cleanup system. Instances of cracking in PWR piping have included piping from borated water storage tank to RHR suction, spent fuel cooling piping, etc. (NUREG–0691, 1980). Additionally, IGSCC was observed in PWR safety injection accumulator nozzles (NRC IN 91-05). SS can be subject to SSC in a borated water environment. The GALL Report was not revised to address this comment.
G-VIIA3-4	A3.4.1, A3.4.2	Delete reference to ASME OM Standards and Guides, Part 2 from this table. Add "If the adequacy of the chemistry control programs cannot be confirmed over the total operating history of the plant or if any unexplained downward trend in heat exchanger performance is identified that cannot be remedied by maintenance of an open-cycle system, it may be necessary to selectively perform functional testing of the affected heat exchangers."	Refer to comments in Chapter XI.M4 for justification.	See NRC disposition of NEI comment G-VIII E-5 in this Appendix B, Table B.2.7. The AMP "Closed-Cycle Cooling Water" (XI.M21, NUREG-1801, Vol. 2), element 5 "Monitoring and Trending" provides for the performance and functional test intervals to be adjusted by the applicant. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA3-5	A3.5.1-A.3.5.3	Add external surfaces to the Region of Interest column.	Consistent with other item numbers that are exposed to air and leaking chemically treated borated water.	The external surfaces of the shell and nozzles in the demineralizer ion exchanger are exposed to air and leaking chemically treated borated water. The component is identified as external surface only. The GALL report was revised to address this comment.
G-VIIA3-6	A3.1.1-A3.2.1, A3.2.2, A3.3.1-A3.3.2, A3.4.1-A3.4.3, A3.5.1-A3.5.3, A3.6.1	Delete line items.	All carbon steel external surfaces, including closure bolting exposed to atmospheric air and chemically treated borated water are evaluated under Chapter VII I – Carbon Steel Components.	The components in the spent fuel pool cooling and cleanup (PWR) contain chemically treated borated water, which may leak out of them. The components in the carbon steel components section have chemically treated borated water leaking onto them. The GALL report was revised to address this comment to clarify that the carbon steel components considered do not contain borated water, by adding a phrase both in the system structure and component description as well as in the table itself of the carbon steel components section.
G-VIIA3-7	System Interface	Include a reference to Section VII I (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 (VII I). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIA3-8	A3.4.1, A3.4.2	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.	Carbon steel components exposed to chemically treated closed-cycle cooling water are not susceptible to microbiologically influenced corrosion because treated CCCW is not amenable to biological growth. The GALL report was revised to address this comment by deleting this aging mechanism for CS components in the PWR spent fuel pool cooling and cleanup system.
G-VIIA4-1	A4.1.1, A4.2.1, A4.3.1, A4.4.2-A4.4.4, A4.5.1, A4.5.2, A4.6.1	See comments on AMP for "Water Chemistry" in Chapter XI.M.11.	See comments on AMP for "Water Chemistry" in Chapter XI.M.11.	The section on one-time inspection in Element 4, Detection of Aging Effects, in the AMP "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2), was clarified. One time inspection is needed to verify the effectiveness of water chemistry control and confirm the absence of an aging effect. If an aging effect is detected, the results are evaluated to determine the appropriate corrective actions. The reference to the "appendix to this report" was made clearer and the GALL Report was revised to address this comment.
G-VIIA4-2	A4.4.1-A4.4.3	See comments on AMP for "Closed cycle cooling water system" in Chapter XI.M.4.	See comments on AMP for "Closed cycle cooling water system" in Chapter XI.M.4.	See NRC disposition of NEI comment G-VIII E-5 in this Appendix B, Table B.2.7.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIB-1	B.1.1	Remove reference to "Coating Degradation."	"Coating Degradation" is not a mechanism, but General Corrosion is. The condition of the coating does not directly affect the intended function, only indirectly through the other listed mechanism.	The structural girders for cranes including bridge and trolley are subject to general corrosion. Because the condition of the coating does not directly affect the intended function, coating degradation was deleted as an aging mechanism of concern for auxiliary systems. Coatings are covered under the maintenance rule. The GALL report was revised to address this comment.
G-VIIB1-2	VIIB1, page VIIB-3	The text under system interfaces should be changed to the following: Physical interfaces exist with the supporting structure. The direct interface is at the connection to the structure.	Editorial clarification.	The text following the system interfaces caption on the introductory page was revised to include the following sentence: "Physical interfaces exist with the supporting structure. The direct interface is at the connection to the structure." The GALL report was revised to address this comment.
G-VIIB1-3	VIIB1.1, page VIIB-4	Structure and component should be listed as Cranes.	Bridge and trolley are subcomponents of the larger component, which is a crane.	The structural girders for cranes including bridge and trolley are subject to general corrosion. The structure and component are now listed as Crane, denoting that bridge and trolley are the subcomponents. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIB1-4	VIIB1.1, page VIIB-4	Delete ASME Section XI under reference for general corrosion.	The structural girders are not inspected in accordance with ASME.	The AMP "Inspection of Overhead, Heavy Load and Light Load Handling Systems" (XI.M23, NUREG-1801, Vol. 2) was revised so that references to ASME Section XI and ANSI N14.6 were deleted because ASME Section XI does not apply to crane structures and ANSI N14.6 applies to lifting devices rather than the cranes themselves. The GALL report was revised to address this comment.
G-VIIB1-5	VIIB1.1, page VIIB-5	(1) Aging Management Program should reflect CMAA Specifications #67 or #70. (2) Additional information such as cycles and CUF needs to be moved under evaluation and technical basis. (3) Further evaluation should say, "Yes, TLAA if applicable."	ASME NOG-1 is not a utility applied reference. Editorial clarification.	(1) The AMP "Inspection of Overhead, Heavy Load and Light Load Handling Systems" (XI.M23, NUREG-1801, Vol. 2) was revised to add the following CMAA documents (specification applicable at the time the crane was manufactured should be used). The Electric Overhead Crane Institute, Inc., EOCI Specification No. 61, Specifications for Electric Overhead Traveling Cranes (note that this is CMAA#61; CMAA#67 was a typo). Crane Manufactures Association of America, Inc., CMAA Specification No. 70, Specifications for Electric Overhead Traveling Cranes. Crane Manufactures Association of America, Inc., CMAA Specification

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIB1-5 (cont.)				No. 74, Specifications for Top Running and Under Running Single (contd) Girder Electric Overhead Traveling Cranes. (2) The AMP "Inspection of Overhead, Heavy Load and Light Load Handling Systems" (XI.M23, NUREG-1801, Vol. 2) was revised to include only aging management of aging effects due to general corrosion and wear. (3) Fatigue is a TLAA to be evaluated for the period of extended operation in accordance with 10 CFR 54.21 requirements. The license renewal applicant only has to demonstrate compliance with the original licensing basis design criteria for 60-years. If the criteria did not include a fatigue evaluation, the applicant does not have to perform one. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIB1-6	VIIB1.1, page VIIB-5	Aging Management Program, delete information on ASME code Section XI for VT-3.	The structural girders are not inspected in accordance with ASME Section XI.	The AMP "Inspection of Overhead, Heavy Load and Light Load Handling Systems" (XI.M23, NUREG-1801, Vol. 2) was revised. References to ASME Section XI, and ANSI N14.6 were deleted because ASME Section XI does not apply to crane structures and ANSI N14.6 applies to lifting devices rather than the cranes themselves. The GALL report was revised to address this comment.
G-VIIB1-7	VIIB1.1, page VIIB-5	Delete information on coating degradation under AMP column.	ASME Section XI and Coating inspections are not credited for managing the aging of cranes. Only the crane inspection or Maintenance Rule inspections are credited with managing aging of cranes.	The structural girders for cranes including bridge and trolley are subject to general corrosion. Because the condition of the coating does not directly affect the intended function, coating degradation was deleted as an aging mechanism of concern for auxiliary systems. Coatings are covered under the Maintenance Rule. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIB1-8	VIIB1.1, page VIIB-5	Revise Attributes 1 – 6 as follows: **(1) Scope of Program:** The program is focused on managing the effects of general corrosion on the girders. **(2) Preventive Actions:** No preventive actions are identified. The Crane inspection is a monitoring program.) **(3) Parameters Monitored/Inspected:** OK as is. **(4) Detection of Aging Effects:** Rails and girders are visually inspected on a routine basis for degradation. Functional tests are also performed to assure their integrity. **(5) Monitoring and Trending:** Monitoring and trending are not required as part of the crane inspection program. **(6) Acceptance Criteria:** The acceptance criteria are no unacceptable visual indication of loss of material due to corrosion or wear.	The attributes are changed to more correctly reflect the program. This statement matches how other preventive actions are addressed when it is a monitoring program. Changes are recommended because girders are not inspected in accordance with ASME. This matches how cranes are addressed in NUREGs 1705 and 1723. The statement in the GALL does not contain any acceptance criteria. These are the criteria that were accepted in NUREG 1723 for managing this aging effect.	The AMP "Inspection of Overhead, Heavy Load and Light Load Handling Systems" (XI.M23, NUREG-1801, Vol. 2) was significantly revised. In Element (1), the words "cyclic loading" and "structural reliability" were deleted because it is not in scope. Element (2) "preventive actions" was revised because it is an inspection program. Element (4) "Detection of Aging Effects" was revised because ASME Section XI does not apply to cranes. Element (5) "Monitoring and Trending" was not revised to address this comment because it is not in scope. Element (6) "Acceptance Criteria" was revised with the addition of the phrase at the end "according to applicable industry standards and good industry practice." The GALL report was revised to address this comment as stated above.
G-VIIB1-9	VIIB1.1, page VIIB-4, and VIIB.2.1, page VIIB-6	Environment should be changed to 100% relative humidity and 49°C.	Many locations within the plant are exposed to relative humidity as high as 100%.	Many locations within the plant are exposed to relative humidity as high as 100%. The GALL report was revised to address this comment, by changing the listed environment to 100% relative humidity and 49°C (120°F).

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIB1-10	VIIB.2.1, page VIIB-6 and VIIB-7	Delete "and coating degradation" under references, AMP and evaluation and technical basis.	Coating degradation does not in and of itself result in loss of material of the rail system. Corrosion results in loss of material.	The condition of the coating does not directly affect the intended function. Coatings are covered under the Maintenance Rule. The GALL report was revised to address this comment by deleting coating degradation as an aging mechanism for auxiliary systems.
G-VIIC1-1	System Description	Revise sentence addressing Regulatory Guide 1.26 as follows: Based on the Nuclear Regulatory commission Regulatory guide 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing components of Nuclear Power Plants", all components in the open cycle cooling water system are classified as Group "C" quality Standards, with the exception of those forming part of the containment penetration boundary which are Group "B."	Since scope of Section VII C2 now also includes containment isolation portion of system, Quality Group classification requires clarification.	The Quality Group classification was clarified by using the following sentence: "Based on Regulatory Guide 1.26, Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants," all components in the open-cycle cooling water system are classified as Group "C" Quality Standards, with the exception of those forming part of the containment penetration boundary which are Group "B." The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC1-2	System Interfaces Section	Change wording to indicate ...systems that "may" interface with the open cooling water system...	Many plants have a closed cooling water system that interfaces with the system listed.	The system interfaces paragraph in the introductory section for open-cycle cooling water system (service water system) was rewritten to indicate the systems that "may" interface with the open-cycle cooling water system (service water system). Many plants have an OCCW system that interfaces with the systems listed. The GALL report was revised to address this comment.
G-VIIC1-3	C1.1.1	Add stainless steel, as applicable material for open cycle cooling water systems (aboveground). The aging effects remain consistent with those items listed.	Stainless steel is used in many open-cycle cooling water systems in an effort to minimize the adverse effect of MIC.	Stainless steel is used in many OCCW systems to minimize the adverse effect of MIC. The GALL report was revised to address this comment by adding SS to the list of applicable materials for OCCW system (aboveground).
G-VIIC1-4	C1.1.1	Add galvanic corrosion to aging mechanism column.	The GALL Report identifies galvanic corrosion as being applicable only to piping exposed to a soil environment. This mechanism is also applicable to dissimilar metals in a raw water environment.	Galvanic corrosion is applicable to dissimilar metals in a raw water environment as well as to piping exposed to a soil environment. The GALL report was revised to address this comment by adding this aging mechanism for OCCW system (aboveground).

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC1-5	C1.1.1, C1.2.1, C1.3.1 through C1.3.5	Add the following to the aging mechanism column "General (For CS **without internal lining or coating**)..."	General corrosion of lined carbon steel is listed as an aging mechanism. Lined carbon steel pipe may be susceptible to localized corrosion in areas of lining degradation but will not be susceptible to gross wastage. This position was accepted in the CCNPP SER. In addition, this proposed change would ensure consistency with GALL Section VII C3, Item C3.1.1.	General corrosion is applicable for CS without an internal lining or coating or for CS with a degraded internal lining or coating. Lined carbon steel pipe may be susceptible to localized corrosion in areas of lining degradation. The GALL report was revised to address this comment.
G-VIIC1-6	C1.1.2	Add cast iron to material column and de-alloying as specific aging mechanism for only cast iron.	Cast iron piping is a probable material type for underground piping.	Cast iron was added as a material of concern for underground piping and fittings (external surface, with or without organic coating or wrapping) and aluminum-bronze was added for piping and fittings in OCCW systems (service water system) and selective leaching was identified as the specific aging mechanism. This term is used throughout GALL because it is the standard terminology for the process (and includes dealloying as a subset of selective leaching). The AMP "Selective Leaching of Materials" (XI.M33, NUREG-1801, Vol. 2) was created and inserted. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC1-7	C1.1.2	Delete reference to the AMA titled "Outer Surface of Buried Piping and Components."	Refer to Chapter XI.M8 comments.	The AMP "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2) manages the aging of buried carbon steel piping. Although the Buried Piping and Tanks Surveillance AMP (based on NACE standards) is not an existing nuclear industry standard practice, it is one acceptable method. An alternative to the AMP "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2) is found in the AMP "Buried Piping and Tanks Inspection (XI.M34, NUREG-1801, Vol. 2) which inspects based on the frequency for the need to dig up piping considering plant operating experience that would allow for crediting the inspection when a pipe is dug up for any reason. The frequency and plant operating experience could be subject to a plant specific review. The GALL report was revised to address this comment.
G-VIIC1-8	C1.1.1, C1.2.1, C1.4.1, C1.5.1, C1.6.1	Eliminate Buildup of deposit/Flow Blockage as an aging effect and Biofouling as an Aging mechanism for all components except heat exchanger tubes.	Buildup of deposit due to biofouling is an aging effect which impacts heat transfer intended function, and is thus documented only for heat exchanger tubes. Buildup of deposit does not affect pressure boundary, except for MIC, which is addressed under loss of material.	Biofouling affects both system flow performance and pressure boundary integrity. Flow performance is considered an active function covered under the current licensing basis and should not be included within the scope of license renewal. However, biofouling causes loss of material, which affects the pressure boundary and this passive function

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC1-8 (cont.)				requires aging management. This position does not contradict License Renewal Issue No. 98-105, which states that the heat transfer function for heat exchangers is within the scope of license renewal. Therefore, biofouling of heat exchanger tubes requires aging management. The GALL report was revised as follows to address this comment: 1. Delete all heat exchanger components except the tubes from the material column for buildup of deposits due to biofouling. 2. For all piping and components other than heat exchangers, deleted all line items for buildup of deposits due to biofouling. 3. For all piping and components including heat exchangers, loss of material due to biofouling was included as an aging mechanism for pressure boundary components. 4. The aging management program XI.M20 "Open-Cycle Cooling Water System" was revised to remove reference to flow blockage.
G-VIIC1-9	C.1.3.1 through C.1.3.5	Add: Aluminum Brass material for heat exchanger tubes. All other columns remain the same.	Some plants utilize aluminum brass heat exchanger tubes.	Since aluminum brass is used in heat exchanger tubes in some plants, the material was added. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC1-10	C1.4.1	Remove references to General Corrosion.	General Corrosion is listed as an Aging Mechanism for Stainless Steel Flow Orifices. Stainless Steel is not susceptible to General Corrosion, so this Aging Mechanism should not be considered.	Flow orifice bodies serviced by OCCW system are SS. Stainless steel is not susceptible to general corrosion. The GALL report was revised to address this comment by clarifying that the aging mechanisms of concern are pitting, crevice, and microbiologically influenced corrosion and biofouling.
G-VIIC1-11	C1.5.1	Add cast steel to the Material column.	To be consistent with the same item under different aging effect.	The pump casing in an OCCW system can be fabricated from cast steel or carbon steel. The GALL report was revised to address this comment by making GALL consistent with the same item specified under different aging effect.
G-VIIC1-12	C1.5.1	Remove "low flow cavitation" as an aging mechanism.	Cavitation Erosion is localized material erosion caused by formation and collapse of vapor bubbles in close proximity to material surface. Fluid (liquid) flow and pressure variations, which temporarily drop the liquid pressure below the corresponding vapor pressure, are required for this mechanism. Cavitation Erosion does not occur in liquid systems that have low flow and steady pressure, such as open cycle cooling water systems, because there are not significant flow and pressure variations.	The pump casing in an OCCW system can be fabricated from cast steel or carbon steel and can experience loss of material due to general, selective leaching, pitting, crevice, and microbiologically influenced corrosion and biofouling. Because there is no significant flow and pressure variations in OCCW systems, low flow cavitation is not a viable aging mechanism. The GALL report was revised to address this comment by deleting this aging mechanism for the OCCW in Auxiliary Systems.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC1-13	C1.6.1	Apply general corrosion only to the carbon steel material as an applicable aging mechanism.	Stainless steel is not susceptible to general corrosion.	Basket strainer bodies serviced by open-cycle cooling water are fabricated from either CS or SS. Because the SS component is not susceptible to general corrosion. The GALL report was revised to address this comment by clarifying that only CS components are subject to this aging mechanism and that both SS and CS components are susceptible to pitting, crevice and microbiologically influenced corrosion and biofouling.
G-VIIC1-14	System Interface	Include a reference to Section VII I (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 (VII I). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC2-1	System Description	Revise sentence addressing Regulatory Guide 1.26 as follows: "Based on the Nuclear Regulatory commission Regulatory guide 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing components of Nuclear Power Plants," all components in the closed cycle cooling water system are classified as Group "C" quality Standards, with the exception of those forming part of the containment penetration boundary which are Group "B."	Since scope of Section VII C2 now also includes containment isolation portion of system, Quality Group classification requires clarification.	The Quality Group classification was clarified by using the following sentence: "Based on Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants," all components in the closed-cycle cooling water system are classified as Group "C" Quality Standards, with the exception of those forming part of the containment penetration boundary which are Group "B". The GALL report was revised to address this comment.
G-VIIC2-2	C2.1.1	Delete reference to ASME OM Part 2. Add: "If the adequacy of the chemistry control programs cannot be confirmed over the total operating history of the plant or if any unexplained downward trend in heat exchanger performance is identified that cannot be remedied by maintenance of an open-cycle system, it may be necessary to selectively perform functional testing of the affected heat exchangers.	Refer to comments in Chapter XI.M4 for justification.	See NRC disposition of NEI comment G-VIIA3-4 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC2-3	C.2.2.1	(1) Need to add Stainless material for valves. (2) Revise Aging Mechanism Column by adding "(carbon steel only)" after General corrosion.	Some plants also utilize stainless steel valves in their closed cooling water systems. The Closed Cooling Chemistry Program addresses the aging effects of stainless steel.	(1) It is correct that some plants also use SS valves in CCCW systems. (2) The SS valve body and bonnet are not susceptible to general corrosion. The GALL report was revised to address this comment by adding SS as a material of consideration for valves and clarifying that only CS components are subject to this aging mechanism.
G-VIIC2-4	C.2.3.1	Need to add Cast Iron material for Pump Casing. Also add "Dealloying (Cast iron only)" to Aging Mechanism Column. No other changes are required to remaining columns.	Some plants also utilize cast iron material for pumps in their closed cooling water systems. The Closed Cooling Chemistry Program addresses the aging effects of cast iron.	Some plants use cast iron pumps in CCCW systems. Selective leaching is an aging mechanism of concern for cast iron and is addressed by the AMP "Selective Leaching of Materials" (XI.M34, NUREG-1801, Vol. 2). The GALL report was revised to address this comment by adding cast iron as a material of consideration for pump casings.
G-VIIC2-5	C.2.5.1	Need to add Stainless material for flow orifice. No other changes are required to columns.	Some plants also utilize stainless steel orifices in their closed cooling water systems. The Closed Cooling Chemistry Program addresses the aging effects of stainless steel.	SS has no aging effect in the closed cooling water system environment. The GALL report was not revised to address this comment.
G-VIIC2-6	C2.4.1, C2.5.1	Add general corrosion to aging mechanism column.	General corrosion should be added in a manner similar to other equipment in this section.	General corrosion is applicable for CS in treated water. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC2-7	C2.6.1	This row is incomplete. The Reference and AMP column are blank. In addition, the index page (VII C2-1) for section C2 does not show this item number.	Provide information in the appropriate columns and the index page **OR** remove and include lube oil cooler in the appropriate auxiliary system as stated in the second paragraph under "System, Structures, and Components" on page VII C2-3.	There was only one failure event of the lube oil cooler attributable to IGSCC in the entire U.S. nuclear power plant history. The event occurred at Fort Calhoun in 1973. The GALL report was revised to address this comment by deleting this line item.
G- VIC2-8	System Interface	Include a reference to Section VII I (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 (VII I). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.
G-VIIC3-1	C3.1.1, C3.2.1	Change aging mechanism from "selective leaching" to "dealloying" in the aging mechanism and AMP columns.	To ensure consistency between GALL sections VII C1 and VII C3.	Brass, bronze, and cast iron are subject to a selective leaching aging mechanism. This term is used throughout GALL because it is the standard terminology for the process (and includes dealloying as a subset of selective leaching). All references to dealloying in the GALL report have been changed to selective leaching. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIC3-2	C3.1.1, C3.2.1, C3.3.1	Add a comma after "Raw" in the environment column and "Untreated Salt Water."	To ensure consistency between GALL sections VII C1 and VII C3.	A comma was added after "Raw" in the environment column and "Untreated Salt Water" in order to have consistency between sections. The GALL report was revised to address this comment.
G-VIIC3-3	C3.2.1	Add carbon steel to the material column and general corrosion (for CS only without internal lining or coating) to the aging mechanism column.	To ensure consistency between GALL sections VII C1 and VII C3 and the AMP column.	Global changes were made throughout Ch. VII to ensure consistent descriptions for coatings, linings (elastomer) and claddings (SS). The GALL report was revised to address this comment.
G-VIIC3-4	C3.3.1	Revise the AMP column and the Evaluation and Technical Basis column to delete any reference to selective leaching for brass.	Brass material is not included in the material column of this Item number.	The selective leaching of the material "brass" was deleted from consideration in this environment. The GALL report was revised to address this comment.
G-VIIC3-5	System Interface	Include a reference to Section VII I (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 (VII I). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIID-1	System Description	Revise sentence addressing Regulatory Guide 1.26 as follows: "Based on the Nuclear Regulatory commission Regulatory guide 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive-Waste Containing components of Nuclear Power Plants," all components of the compressed air system are classified as Group "D" quality Standards, with the exception of those forming part of the containment penetration boundary which are Group "B."	Since scope of Section VII D now also includes containment isolation portion of system, Quality Group classification requires clarification.	The Quality Group classification was clarified by using the following sentence: "Based on Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive-Waste Containing Components of Nuclear Power Plants," all components of the compressed air system are classified as Group "D" Quality Standards, with the exception of those forming part of the containment penetration boundary which are Group "B." The GALL report was revised to address this comment.
G-VIID-2	D.1.1, D.2.1 through D.2.3, D.3.1, D.4.1 through D.4.3	Replace "Internal: Dry, Oil-Free Air" with "Saturated Air".	Dry, Oil-Free Air is not an aggressive environment conducive to aging effects for carbon and low alloy steels; however, moist or saturated air is. Saturated or moist air conditions should exist only upstream of air dryers in typical compressed air system. Plants have addressed air quality issues downstream of dryers per their response to GL 88-14. These responses included many one-time verifications of proper system design, and also assuring adequate maintenance/operating practices: 1) Verification that actual instrument air quality is consistent with manufacturers recommendations for safety related components, 2)	The environment to which components of the compressed air system are exposed progresses from saturated air at the piping and fittings to merely moist air at the dryer. The AMP "Compressed Air Monitoring" (XI.M24, NUREG-1801, Vol. 2) reflects the cleanup of air as it proceeds through filters and dryers. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIID-2 (cont.)			Verification that maintenance practices, emergency procedures, and training are adequate, and 3) Verification that the design of the entire system including air or other pneumatic accumulators is in accordance with its intended function. Note: This included testing of air operated valves. Compressed air systems having design features such as air dryers and filters typically have dew point alarms and/or dew point is tested periodically by the operators as part of their routine monitoring of the equipment. This should not be considered as an aging management program. Aging management activities or programs should only be provided for "saturated air" portion of the system upstream of air dryers. These components are subject to internal general and pitting corrosion. However, because of differences in system design and management philosophy, these aging management activities should be evaluated on a plant specific basis.	

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE1-1	E1.6.1, E1.6.2	Delete E1.6.1 from Item column and delete Casing from Region of Interest column for BAC Aging Mechanism.	The Low Pressure Pump Casing (item E1.6.1) is stainless steel and not subject to BAC.	The low-pressure pump casing, fabricated from stainless steel, is not susceptible to boric acid corrosion. The casing was deleted as a region of interest. The GALL report was revised to address this comment.
G-VIIE1-2	E1.7.1 through E1.7.4 (p. E1-8)	Change Material from LAS, CS to stainless steel.	The Regenerative Heat Exchanger has a borate water for both shell and tube side and is made of stainless steel not carbon steel.	The regenerative heat exchanger is fabricated only of stainless steel. The closure bolting is fabricated from the LAS and CS materials. The GALL report was revised to address this comment.
G-VIIE1-3	E1.10.1 through E1.10.4 (really E1.10.2 through E1.10.4)	Delete this item.	The Volume Control Tank is made of stainless steel not carbon steel. The listed Aging Mechanism is not valid for stainless steel and borated water.	The volume control tank, constructed only of SS, is not susceptible to pitting and crevice corrosion in borated water. The volume control tank closure bolting, fabricated of LAS or CS, was retained as a topic of concern in Section E1 because of possible boric acid corrosion. The GALL report was revised to address this comment by deleting the line items E1.10.2 through E1.10.4 (shell and access cover, nozzle, and penetration).
G-VIIE1-4	E1.10.1 through E1.10.4	If comment G-VII E1-3 above is not incorporated, Change "Pitting and Crevice Corrosion" to "BAC".	This entry seems inconsistent with all other entries on leaking Borated Water.	See NRC disposition of NEI Comment G-VIIE1-3 in Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE1-5	E1.7.1 through E1.7.4	Delete the Aging Mechanism 'Unanticipated cyclic loading'.	Unanticipated cyclic loading is not a valid Aging Mechanism.	The term "unanticipated" was eliminated because if a mechanism is not anticipated, then it cannot be managed in anticipation. The GALL report was revised to address this comment.
G-VIIE1-6	E1.8.1 through E1.8.3	Delete the Aging Mechanism 'Unanticipated cyclic loading.'	Unanticipated cyclic loading is not a valid Aging Mechanism.	The term "unanticipated" was eliminated because if a mechanism is not anticipated, then it cannot be managed in anticipation. The GALL report was revised to address this comment.
G-VIIE1-7	E1.5.1, E1.5.2, E1.6.1, E1.6.2	Delete the Aging Mechanism Fatigue.	Fatigue is listed as an Aging Mechanism for the Low Pressure and High Pressure Pump. These components are not subjected to high temperatures or thermal cycles that could cause Fatigue; this Aging Mechanism should not be listed for these items.	Temperatures and thermal cycles are relatively benign, fatigue has been deleted as an aging mechanism for the low-pressure and high-pressure pumps in the chemical and volume control system for PWRs. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE1-8	E1.2.1	Delete the Aging Mechanism stress corrosion cracking.	Low Pressure Piping Stress Corrosion Cracking identifies the Environment as External with Heat Tracing and internal with treated water. The Region of Interest is identified as Low Pressure Piping up to 100°C. The use of adhesives with halogens would appear to be a 'Degradation induced by human activities' (Generic Licensing Renewal Issue # 98-0013) and not a real Aging concern.	Pipe, fittings, and flanges for 150psig rating piping have been deleted as components of concern. The SCC aging mechanism for low-pressure piping was deleted because the use of adhesives with halogens can cause 'Degradation induced by human activities' (Generic Licensing Renewal Issue # 98-0013) which is not a real aging concern. The GALL report was revised to address this comment.
G-VIIE1-9	E1.4.1	Delete the Aging Mechanism stress corrosion cracking.	Low Pressure Valves Stress Corrosion Cracking identifies the Environment as External with Heat Tracing and internal with treated water. The Region of Interest is identified as Low Pressure Piping up to 100°C. The use of adhesives with halogens would appear to be a 'Degradation induced by human activities' (Generic Licensing Renewal Issue # 98-0013) and not a real Aging concern.	The SCC aging mechanism for low-pressure valves was deleted because the use of adhesives with halogens can cause "Degradation induced by human activities" (Generic Licensing Renewal Issue # 98-0013), which is not a real aging concern. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE1-10	E1.1.2	Remove all references to ISI for managing Boric Acid Corrosion.	See justification for comment on item XI.M5.	NRC GL 88-05 provides a stand-alone program for inspection of carbon steel structures and components for evidence of boric acid leakage and corrosion. Inservice inspection that detects leakage identified during the performance of pressure tests and hydrostatic tests are required by the ASME Code and are performed independent of the AMP "Boric Acid Corrosion" (XI.M10, NUREG-1801, Vol. 2) and were removed. The GALL report was revised to address this comment.
G-VIIE1-11	E1.7.1 through E1.7.4, E1.8.1 through E1.8.3	Delete entry for Crack Initiation and Growth.	This AE, shown as resulting from "SCC, Unanticipated Cyclic Loading" has been added since the original draft. No reference is provided to justify the inclusion of these mechanisms. In addition, "Unanticipated Cyclic Loading" is not clearly defined. This AE/AM combination was not identified in the first two LRAs.	Crack initiation and growth are legitimate aging effects caused by SCC and cyclic loading acting on SS regenerative heat exchangers in a PWR chemical and volume control system. The term "unanticipated" was eliminated because if a mechanism is not anticipated, then it cannot be managed in anticipation. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE1-12	E1.10.2 through E1.10.4	Make this entry consistent with the remainder of section VII.E1. Both the inclusions of the AE/AM combination and the credited program seem inconsistent with other entries.	AE/AM: Loss of Material/Pitting and Crevice Corrosion is not included as an external effect for other CS/LAS components. Programs: For Loss of Material/Pitting and Crevice Corrosion, this entry refers to a previous entry for the same AE/AM for item VII E1.8.4. The previous item credits the Closed Cycle Cooling Water Chemistry program, which applies to neither external nor borated water environments.	The volume control tank, constructed only of SS, is not susceptible to pitting and crevice corrosion in borated water, the line items E1.10.2 through E1.10.4 (shell and access cover, nozzle, and penetration) were deleted. The volume control tank closure bolting, fabricated of LAS or CS, was retained as a topic of concern in Section E1 because of possible boric acid corrosion. The GALL report was revised to address this comment.
G-VIIE2-1	E2.1.1	Under element 3 of Evaluation and Technical Basis, delete the second sentence and replace with, "Inspection requirements of IWC 2500-1 specify periodic volumetric or surface examination of welds in class 2 components."	As stated in our previous comments sent to the NRC, the category references like category C-A or C-F-1 are only applicable to the 1989 Edition of ASME Section XI. These categories may be deleted or changed to something else in later editions. The AMP should be based on ASME Section XI requirements for class 2 components, period.	Stainless steel is subject to SCC in the presence of impurities. There have been instances of failures in spent fuel pool cleanup system. Cracking instances in piping in PWRs were studied in NUREG-0691 (1980). Affected systems included piping from borated water storage tank to RHR suction, spent fuel cooling piping, etc. An appropriate AMP is "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2). The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE2-2	Entire section	Typos in the Material and environment columns require correction.	These typos make an evaluation of the material presented in the other columns difficult.	Structures and components of the standby liquid control system in BWRs are subjected to an environment consisting of a sodium pentaborate solution at 21-32°C (70-90°F) and ~ 24,500 ppm B). The GALL report was revised to address this comment.
GVIIE2-3	E2.1.1	Environment temperature ranges do not agree. SCC ranges should be from 93ºC to 194ºC.	SCC is not an appropriate aging effect for the internal surfaces of these components when their normal operating temperature is less than 200°F (93ºC).	Even at lower temperatures of 21-32°C (70-90°F), stainless steel is subject to SCC in the presence of impurities. There have been instances of failures in spent fuel pool cleanup system. Cracking instances in piping in PWRs were studied in NUREG–0691 (1980). Affected systems included piping from borated water storage tank to RHR suction, spent fuel cooling piping, etc. An appropriate AMP is "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2). The range over which a particular aging mechanism is active can not be accurately stated since it cannot be accurately predicted even if other variables are disregarded but if there are multiple active aging mechanisms at anyone time then that further complicates the predictability of the temperature range over which any one of those aging mechanisms is active. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE2-4	E2.1.1	Specifically with respect to the piping that is downstream of the explosive valves and upstream of the containment isolation valves, errors in the table for materials (should be SS) and Environment (should be Treated Water or Demineralized water). Temperature range should be from 93ºC to 194ºC.	Higher temperatures are unlikely in this item. Also demineralized water is most often used to flush any part of this line, and the cleanliness requirements and chemical controls are at least as good as the treated water systems.	This section of piping and fittings is only exposed to ambient air, SCC does not occur and the line item was deleted. The GALL report was revised to address this comment.
GVIIE2-5	E2.1.1	AMP should be Chemistry Controls with resultant E&TB section.	This section of piping will receive the same treatment as any piping that could discharge water into the reactor vessel. Therefore, an acceptable AMP would be the AMP outlined in XI.M11.	Stainless steel piping and fittings in contact with sodium pentaborate solution (~ 24,500 ppm B) at 21-32°C (70-90°F) may be susceptible to stress corrosion cracking. An appropriate AMP is "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2). The GALL report was not revised to address this comment.
GVIIE2-6	E2.2.1, E2.3.1, E2.4.1	The temperature range appears unusually high, especially for the storage tank. The temperature range should not exceed boiling (~100ºC). The low temperature for the range should be in keeping with the other comments of this section: 93ºC (200°F).	While high temperature spots around the heaters are possible, it is very unlikely that 302ºF would ever be reached. SCC is not a detrimental aging effect in components containing sodium pentaborate unless the mixing is inadequate and the temperature normally exceeds 200°F.	In the standby liquid control system in BWRs, the stainless steel solution storage tanks, the valve body and bonnets, and the injection pump casing are exposed to sodium pentaborate solution (~24,500 ppm B) at 21-32°C (70-90°C) and may be susceptible to stress corrosion cracking. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE2-7	Item Missing, applies to E.2.1.1	Cracking due to thermal fatigue is not discussed in this section for piping and should be to be consistent with other sections.	Cracking due to thermal cycling induced fatigue will have been addressed through a TLAA for BWR plants. This section does not contain this aging effect and should to be consistent with other sections.	In the standby liquid control system in BWRs, the stainless steel pipings and fittings are exposed to either sodium pentaborate solution or demineralized reactor coolant (between the explosive actuated discharge valves and containment isolation valve). This is a rarely used system. Since this system is only used in emergencies, it does not experience cycling. The GALL report was not revised to address this comment.
GVIIE2-8	E2.1.1, E2.2.1, E2.2.2, E2.3.1, E2.4.1	Delete all entries for SCC.	Based on the operating experience presented in the Evaluation and Technical Basis entries, Items (4) and (10), it appears that these entries should be removed as the case is made that this Aging Mechanism will not occur.	Stress corrosion cracking (SCC) of stainless steel (SS) components exposed to borated water is possible at temperatures below 200°F if contaminants are present in the water. This is supported by operating experience at PWR plants (NRC IN 79-19, IE Bulletin 79-17). As suggested by NEI at a public meeting on 01/25/01, the staff reviewed the information in NUREG/CR-6001 and concurred that operating experience indicates that degradation does not occur if water chemistry is maintained. The aging management program was revised to rely solely on the water chemistry program. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE3-1	All Items	This section should be deleted. (Comments below are provided in case this comment is not incorporated into GALL.)	The components in this section are not in scope of license renewal.	Even though the reactor water cleanup system can be isolated from the reactor water coolant system it is a pressure boundary concern during operation (NRC GL 88-01). Scoping for license renewal is plan specific. The GALL report is not a scoping document. The GALL report was not revised to address this comment.
GVIIE3-2	E3.1.1	Consistency issue: this item correctly identifies the temperature range for SCC in SS components. Other commodities in other sections do not.	SCC is not an applicable aging effect in non-saline solutions when the normal operating temperature is less than 200°F.	The temperature range for SCC in SS components was corrected to be consistent for comparable operating regimes throughout all of Chapter VII. The temperature will be in effect up to 550°F until the regenerative heat exchanger and then start decreasing. SCC was retained in GALL. The GALL report was revised to address this comment.
GVIIE3-3	E3.1.1	The lower limit of, ">93ºC," should read, "Up to 288ºC (550°F)" for the line item dealing with Cumulative Fatigue Damage.	The basis for excluding piping that has thermal cycles from room temperature up to 93ºC is unclear. Depending upon the pipe geometry, low to moderate temperature cycling may be dominating in the pipe stress analysis.	Stainless steel piping and fitting, beyond the second isolation valve, in the BWR reactor water cleanup (RWCU) system, is exposed to oxygenated water at 93-288°C (200-550°F). The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE3-4	E3.2.1	A lower limit should be placed on the temperature range for SCC in the pump casing. This limit should be 200°F.	NUREG-0313 provides a basis for 200°F as a lower limit. Given the high controls placed on the chemistry of the RWCU fluids, SCC is not an applicable aging effect for the pump casings that operate normally below 200°F.	The cast austenitic stainless steel RWCU pump casing is exposed to oxygenated water at 93-288°C (200-550°F). The GALL report was revised to address this comment.
GVIIE3-5	E3.2.2	SLAS should be spelled when first used.	Writing style comment.	Acronyms such as high strength low alloy steel (HSLAS) are defined when they are first used in each chapter of GALL. The GALL report was revised to address this comment.
GVIIE3-6	E3.2.1	A site-specific program should handle fatigue for the pump casing.	No CLB may exist for a TLAA on the pump casings. The design analysis is vendor specific and may not be a TLAA.	The comment that no current licensing basis (CLB) may exist for a TLAA on the pump casings may be valid for some of the older plants to the extent that a fatigue analysis may not have been required for these older plants. The license renewal applicant only has to demonstrate compliance with the original licensing basis design criteria for 60-years. If the criteria did not include a fatigue evaluation, then the applicant doesn't have to perform one. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE3-7	E3.2.2	Delete entry for Stress Relaxation.	Stress Relaxation is the unloading of pre-loaded components caused by long term exposure to elevated temperatures and/or neutron irradiation. The stress in a member decreases when a constant amount of deformation is applied due to creep. Loss of prestress occurs at a decreasing rate; the majority of the loss is within the first year. The amount of prestress loss significantly decreases with time to approach an asymptotic value. Therefore, the level of prestress with extended operation should be comparable to current conditions. Proper component specification, design, and maintenance practices prevent this mechanism from occurring. Creep is not a concern for alloy and ferritic steels below 700ºF, for austenitic steels below 800ºF, and for nickel based alloys below 1800ºF. Creep is not generally a consideration in light water reactors due to operation at a maximum of 650ºF or below, which is somewhat below the creep range for most ASME Code materials.	The high-strength low-alloy steel RWCU pump closure bolting will not be affected by stress relaxation at the operational temperature range. This entry was deleted. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE3-8	E3.3.1 through E3.3.4	The line item addressing Crack Initiation and Growth for the Regenerative Heat Exchanger should be split into two items because the temperature limitations on the SCC mechanism are different from the cyclic loading mechanism.	SCC is not an applicable aging effect in non-saline solutions when the normal operating temperature is less than 200°F.	The stainless steel components of the regenerative heat exchanger are exposed to oxygenated water at a 288°C (550°F) maximum temperature and 10 MPa maximum pressure. Even by NEI's criteria (comment E2-3 in this same table), SCC should be considered a legitimate aging mechanism. The GALL report was not revised to address this comment.
GVIIE3-9	E3.3.1 through E3.3.4	Remove references to "Cyclic Loading".	"Cyclic Loading" is not a mechanism. SCC can be postulated to result in crack growth without consideration of "Cyclic Loading". Inclusion of "Cyclic Loading" adds no value to this entry.	Stress corrosion cracking of the stainless steel components of the regenerative heat exchanger in the BWR reactor water cleanup system results in crack initiation and growth. The term "cyclic loading" was deleted from consideration as an aging mechanism. The GALL report was revised to address this comment.
GVIIE3-10	E3.4.1 through E3.4.4	The line item addressing Crack Initiation and Growth for the Non-Regenerative Heat Exchanger should be split into two items because the temperature limitations on the SCC mechanism are different from the cyclic loading mechanism.	SCC is not an applicable aging effect in non-saline solutions when the normal operating temperature is less than 200°F.	The stainless steel components of the nonregenerative heat exchanger are exposed to oxygenated water at a 288°C (550°F) maximum temperature and 10 MPa maximum pressure. Even by NEI's criteria (comment E2-3 in this same table), SCC should be considered a legitimate aging mechanism. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
GVIIE3-11	E3.4.1 through E3.4.4	Remove references to "Cyclic Loading".	"Cyclic Loading" is not a mechanism. SCC can be postulated to result in crack growth without consideration of "Cyclic Loading". Inclusion of "Cyclic Loading" adds no value to this entry.	Stress corrosion cracking of the stainless steel components of the nonregenerative heat exchanger in the BWR reactor water cleanup system results in crack initiation and growth. The term "cyclic loading" was deleted from consideration as an aging mechanism. The GALL report was revised to address this comment.
GVIIE3-12	E3.4.4	A maximum temperature limit for the line item for MIC should be expressed. 200°F is an acceptable limitation.	For portions of the RWCU that regularly see temperatures in excess of 200°F, MIC is not an applicable aging mechanism.	Microbiologically influenced corrosion affecting non-regenerative heat exchanger (serviced by closed-cycle cooling water) shell and access cover is an aging mechanism of concern for portions of the RWCU with temperatures under 200°F. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE4-1	E4.1.1	Under element 2 of Evaluation and Technical Basis, delete the last sentence regarding hydrogen water chemistry.	Both hydrogen water chemistry and noble metal addition are economic and business decisions made by each utility for their plants and should not be credited as a preventive action within GALL. This is a generic comment in various sections of the GALL for BWR's.	The AMP "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2) with augmentation from the AMP "One-Time Inspection" (XI.32, NUREG-1801, Vol. 2) manages the aging of piping and fittings in the shutdown cooling system for older BWRs. As denoted in Element 2 "Preventive Actions" of the AMP "Water Chemistry" (XI.M2, NUREG-1802, Vol. 2), the use of hydrogen water chemistry and noble metal additions are not required for BWRs, but their use may allow reducing the extent of inservice inspection of stainless steel piping and BWR vessel internals. Hydrogen additions are effective in reducing electrochemical potentials in the recirculation piping system, but are less effective in the core region. Noble metal additions through a catalytic action increase the effectiveness of hydrogen additions in the core region. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE4-2	E4.1.1	The Evaluation and Technical Basis elements 3, 5 and 10 have detailed information that is not necessary. Chapter V D2, item D2.1.1-D2.1-7 for similar materials and aging effect provides clear and succinct information for these elements and should be duplicated in this chapter and section. Specifics are as follows: Element 3, Parameters Monitored/Inspected: delete all and replace with element 3 information of Evaluation and Technical Basis of Chapter V.D2, item D2.1.1-D2.1.7. Element 5, Monitoring and Trending: delete the example after Section XI that states "e.g., 25% are examined every 10 y. at least 12% in 6 y." Element 10, Operating Experience: delete all sentences after second sentence and replace with, "The AMP outlined in GL 88-01 has been effective in managing the effect of stress corrosion cracking in SS piping."	These changes will make the GALL consistent for description of AMPs for similar materials and aging effects in different chapters of the GALL report.	Stainless steel piping and fittings in shutdown cooling systems in older BWRs exposed to oxygenated water are susceptible to stress corrosion cracking. Appropriate aging management programs include "BWR Stress Corrosion Cracking" (XI.M7, NUREG-1801, Vol. 2) and "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2). The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIE4-3	E4.3.1	In the AMP column, (1) delete the "and" between BWRVIP 29 and TR-103515. Instead replace with "BWRVIP 29 (TR-103515). (2) Evaluation and Technical Basis: Element 2 delete "and TR-103515" and the last sentence about hydrogen water chemistry. (3) Element 3 delete the second sentence about details of ISI categories.	TR-103515 is BWRVIP 29. See rationale above and in comment 1. Makes it consistent with other GALL sections. See comment 2.	Stainless steel valve body and bonnets in shutdown cooling systems in older BWRs exposed to oxygenated water are susceptible to stress corrosion cracking. Appropriate aging management programs include "BWR Stress Corrosion Cracking" (XI.M7, NUREG-1801, Vol. 2) and "Water Chemistry" (XI.M2, NUREG-1801, Vol. 2). (1 and 2) The documents BWRVIP-29 and TR-103515 are the same document. When the document is used as a reference, it is referred to as BWRVIP-29. (3) As denoted in Element 4 "Detection of Aging Effects" of the AMP "Water Chemistry" (XI.M2, NUREG-1801, Vol.2), when used by itself, inspection of select components may be undertaken to verify the effectiveness of the chemistry control program and to ensure that significant degradation is not occurring and the component intended function will be maintained during the extended period of operation. The GALL report was revised to address this comment as stated above.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF1-1	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of piping.	The external surfaces of piping etc. should be included in Section VIII I, however this link is not clearly established.	See NRC disposition of NEI comment G-VII-1 in Appendix B, Table B.2.6.
G-VIIF1-2	System Interface	Include a reference to Section VII C2 (Closed Cycle Cooling Water System) as the cooling coils typically receive their cooling from this source.	The cooling coils typically receive their cooling from another system and this source is typically a Closed Cycle Cooling Water System.	Clarification has been provided in the System Interfaces section of the introductory page for the Control Room Area Ventilation System (Table F1) by adding the following sentence. "The cooling coils receive their cooling water from other systems such as the hot water system or the chilled water cooling system." The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF1-3	F1.4.2	Delete all references to Charcoal Adsorber Filter.	The Charcoal Adsorber Filter is not a 'passive long lived component.' Charcoal Adsorber is typically tested in accordance with Technical Specifications and Reg. Guide 1.52. Change out of Charcoal is expected during a 40-year plant life.	The charcoal absorber filter will be replaced during a 40-year plant life. The charcoal absorber filter is not a passive, long-lived component and will not be subject to an aging management review. The SRP was used to provide guidance and govern the consideration of this component. As stated in SRP Table 2.1-3, "Specific Staff Guidance for Screening," consumables that fall within category (d) for system filters, fire extinguishers, fire hoses, and air packs are typically replaced based on performance or condition monitoring that identifies whether these components are at the end of their qualified lives and may be excluded, on a plant-specific basis, from aging management review under 10 CFR 54.21(a)(1)(ii). The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF1-4	F1.1.1, F1.1.2, F1.2.1, F1.4.1	Remove reference to MIC.	Microbiologically Influenced Corrosion is listed as an Aging Mechanism for the ducting, filters, and cooling coils. The fluid inside the duct is air with the potential for some moisture. Moisture does not subject the components to the aggressive environment normally associated with this type of corrosion. Therefore, this aging mechanism should not be considered. See NUREG-1705.	Microbiologically influenced corrosion (MIC) is not a viable aging mechanism for the duct, filters, and cooling coils that are not characterized by the usual aggressive environment normally associated with MIC. The GALL report was revised to address this comment by retaining MIC as an aging mechanism of concern for duct/drip-pan and piping for moisture drainage in the duct.
G-VIIF1-5	F1.2.1	Remove reference to General Corrosion.	This Aging Mechanism is listed for the Containment Air Handler Heating/Cooling Coils. The coils are annealed 90/10 copper nickel and is not susceptible to this type of corrosion. Therefore, this Aging Mechanism should not be considered.	The 90/10 copper/nickel containment air handler heating/cooling coils in the control room area ventilation system are exposed to warm, moist air and are susceptible to pitting and crevice corrosion. This alloy is not susceptible to general corrosion. The GALL report was revised to address this comment by deleting general corrosion as an aging mechanism.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF1-6	F1.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.	Carbon steel components exposed to chemically treated closed-cycle cooling water (CCCW) are not susceptible to microbiologically influenced corrosion because treated CCCW is not amenable to biological growth. This aging mechanism was deleted for piping and fittings in the control room area ventilation system. The GALL report was revised to address this comment.
G-VIIF1-7	F1.1.3, F1.1.4	Remove "and Radiation" from Aging Mechanism entry.	Location of equipment would preclude radiation from contributing to aging during normal operations.	The Neoprene duct seals and collars in the control room area ventilation system are exposed to warm, moist air and are susceptible to heat-induced elastomer degradation. There is no radiation effect during normal operation. The GALL report was revised to address this comment by deleting the contribution of radiation to the aging mechanism.
G-VIIF2-1	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of piping.	The external surfaces of piping etc. should be included in Section VIII I, however this link is not clearly established.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF2-2	System Interface	Include a reference to Section VII C2 (Closed Cycle Cooling Water System) as the cooling coils typically receive their cooling from this source.	The cooling coils typically receive their cooling from another system and this source is typically a Closed Cycle Cooling Water System.	Clarification has been provided in the System Interfaces section of the introductory page for the Auxiliary and Radwaste Area Ventilation System (Table F2) by adding the following sentence "The cooling coils receive their cooling water from other systems such as the hot water system or the chilled water cooling system." The GALL report was revised to address this comment.
G-VIIF2-3	F2.4.2	Delete all references to Charcoal Adsorber Filter.	The Charcoal Adsorber Filter is not a 'passive long lived component.' Charcoal Adsorber is typically tested in accordance with Reg. Guide 1.52. Change out of Charcoal is expected during a 40-year plant life.	See NRC disposition of NEI comment G-VIIF1-3 in this Appendix B, Table B.2.6.
G-VIIF2-4	F2.1.1, F2.1.2, F2.2.1, F2.4.1	Remove reference to MIC.	Microbiologically Influenced Corrosion is listed as an Aging Mechanism for the ducting, filters, and cooling coils. The fluid inside the duct is air with the potential for some moisture. Moisture does not subject the components to the aggressive environment normally associated with this type of corrosion. Therefore, this aging mechanism should not be considered. See NUREG-1705.	See NRC disposition of NEI comment G-VIIF1-4 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF2-5	F2.2.1	Remove reference to General Corrosion.	This Aging Mechanism is listed for the Containment Air Handler Heating/Cooling Coils. The coils are annealed 90/10 copper nickel and is not susceptible to this type of corrosion. Therefore, this Aging Mechanism should not be considered.	See NRC disposition of NEI comment G-VIIF1-5 in this Appendix B, Table B.2.6.
G-VIIF2-6	F2.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.	See NRC disposition of NEI comment G-VIIF1-6 in this Appendix B, Table B.2.6.
G-VII F2-7	F2.1.3, F2.1.4	Remove "and Radiation" from Aging Mechanism entry.	Location of equipment would preclude radiation from contributing to aging during normal operations.	See NRC disposition of NEI comment G-VIIF1-7 in this Appendix B, Table B.2.6.
G-VII F3-1	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of piping.	The external surfaces of piping etc. should be included in Section VIII I, however this link is not clearly established.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.
G-VIIF3-2	System Interface	Include a reference to Section VII C2 (Closed Cycle Cooling Water System) as the cooling coils typically receive their cooling from this source.	The cooling coils typically receive their cooling from another system and this source is typically a Closed Cycle Cooling Water System.	Clarification has been provided in the System Interfaces section of the introductory page for the Primary Containment Heating and Ventilation System (Table F3) by adding the following sentence "The cooling coils receive their cooling water from other systems such as the hot water system or the chilled water cooling system." The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF3-3	F3.4.2	Delete all references to Charcoal Adsorber Filter.	The Charcoal Adsorber Filter is not a 'passive long lived component.' Charcoal Adsorber is typically tested in accordance with Technical Specifications and Reg. Guide 1.52. Change out of Charcoal is expected during a 40-year plant life.	See NRC disposition of NEI comment G-VIIF1-3 in this Appendix B, Table B.2.6.
G-VIIF3-4	F3.1.1, F3.1.2, F3.2.1, F3.4.1	Remove reference to MIC.	Microbiologically Influenced Corrosion is listed as an Aging Mechanism for the ducting, filters, and cooling coils. The fluid inside the duct is air with the potential for some moisture. Moisture does not subject the components to the aggressive environment normally associated with this type of corrosion. Therefore, this aging mechanism should not be considered. See NUREG-1705	See NRC disposition of NEI comment G-VIIF1-4 in this Appendix B, Table B.2.6.
G-VIIF3-5	F3.2.1	Remove reference to General Corrosion.	This Aging Mechanism is listed for the Containment Air Handler Heating/Cooling Coils. The coils are annealed 90/10 copper nickel and is not susceptible to this type of corrosion. Therefore, this Aging Mechanism should not be considered.	See NRC disposition of NEI comment G-VIIF1-5 in this Appendix B, Table B.2.6.
G-VIIF3-6	F3.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.	See NRC disposition of NEI comment G-VIIF1-6 in this Appendix B, Table B.2.6.
G-VIIF4-1	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of piping.	The external surfaces of piping etc. should be included in Section VIII I, however this link is not clearly established.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF4-2	System Interface	Include a reference to Section VII C2 (Closed Cycle Cooling Water System) as the cooling coils typically receive their cooling from this source.	The cooling coils typically receive their cooling from another system and this source is typically a Closed Cycle Cooling Water System.	Clarification has been provided in the System Interfaces section of the introductory page for the Diesel Generator Building Ventilation System (Table F4) by adding the following sentence, "The cooling coils receive their cooling water from other systems such as the hot water system or the chilled water cooling system." The GALL report was revised to address this comment.
G-VIIF4-3	F4.1.1, F4.1.2, F4.2.1	Remove reference to MIC.	Microbiologically Influenced Corrosion is listed as an Aging Mechanism for the ducting, filters, and cooling coils. The fluid inside the duct is air with the potential for some moisture. Moisture does not subject the components to the aggressive environment normally associated with this type of corrosion. Therefore, this aging mechanism should not be considered. See NUREG-1705.	See NRC disposition of NEI comment G-VIIF1-1 in this Appendix B, Table B.2.6.
G-VIIF4-4	F4.2.1	Remove reference to General Corrosion.	This Aging Mechanism is listed for the Containment Air Handler Heating/Cooling Coils. The coils are annealed 90/10 copper nickel and are not susceptible to this type of corrosion. Therefore, this Aging Mechanism should not be considered.	See NRC disposition of NEI comment G-VIIF1-5 in this Appendix B, Table B.2.6.
G-VIIF4-5	F4.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.	See NRC disposition of NEI comment G-VIIF1-6 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIF4-6	F4.1.3, F4.1.4	Remove "and Radiation" from Aging Mechanism entry.	Location of equipment would preclude radiation from contributing to aging during normal operations.	See NRC disposition of NEI comment G-VIIF1-7 in this Appendix B, Table B.2.6.
G-VIIG-1	VIIG	The fire protection program needs to be combined and placed in Chapter XI. Separate sections could be provided for fire barrier penetration seals; fire barrier walls, ceiling, and floors; and fire rated doors.	Place program in Chapter XI to be consistent with other programs.	The AMP "Fire Protection" (XI.M26, NUREG-1801, Vol. 2) includes fire barrier inspection program and diesel-driven fire pump inspection program. The fire barrier inspection program requires periodic visual inspection of fire barrier penetration seals, fire barrier walls, ceilings, and floors, and periodic visual inspection and function test of fire rated doors to ensure that operability is maintained. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIG-2	VIIG	Rather than focus on structures, which may change from site to site, this section should be rewritten to focus on components. Combine items G.1, G.2, G.3, G.4, and G.5 into three items: Fire Barriers, Fire Barrier Penetrations Seals, and Fire Rated Doors.	Editorial comment	The AMP "Fire Protection" (XI.M26, NUREG-1801, Vol. 2) includes fire barrier inspection program and diesel-driven fire pump inspection program. The fire barrier inspection program requires periodic visual inspection of fire barrier penetration seals, fire barrier walls, ceilings, and floors, and periodic visual inspection and function test of fire rated doors to ensure that operability is maintained. Aging mechanisms may be different in different structures. The GALL report is classified according to safety-related structures. Class I structures typically include all the structures and components identified in VIIG. The applicant always has the option of conducting an alternative plant-specific program. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIG-3	VIIG, Page VIIG-3	The structures in the first paragraph are not necessarily included within fire protection at all sites. The list of structures should be deleted.	Editorial comment	Representative structures (intake structures, turbine building, etc.) are provided in the Systems, Structures, and Components section of the introductory page for the Fire Protection section and are meant to be applicable to many plants although there may be other examples. The GALL report is not a scoping document. Class I structures typically include all the structures and components identified in VIIG. The applicant always has the option of conducting an alternative plant-specific program. The GALL report was not revised to address this comment.
G-VIIG-4	VIIG, G1.1 Page VIIG-5	Add the following as introduction for evaluation and technical basis: SECY-96-146 documents aging evaluations of fire barrier penetration seals, with details provided in an attached report. The report states that "many fire barrier materials are resistant to thermally accelerated aging and that the material properties of silicone-based material, which dominate the industry, are particularly age independent." The document also reports they "did not find any penetration seal problems that were directly related to aging." Therefore,	SECY-96-146 has drawn conclusions on aging of penetration seals. To ensure that these conclusions are captured and that no programs are required for aging management for penetration seals, the information should be included in this section.	Section 5.7 of SECY 96-146 concludes that existing licensee and vendor seal installation programs are adequate to prevent potential penetration seal installation problems. However, the staff never concluded that the existing penetration seal programs were adequate to address monitoring/preventive activities for aging penetration seals. For example, plant programs tend to focus on degradation caused by voids, holes, splits, and gaps in penetration seal materials. These are penetration seal operability issues. The intent of license renewal

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIG-4 (cont.)		no aging effects should be identified for penetration seals. However, if plant specific aging effects are identified which require aging management, the fire barrier inspection as presented below provides an acceptable method for managing aging. An applicant needs to ensure that its implementation of the fire barrier inspection is consistent with this evaluation.		is to manage the effects of aging prior to the loss of the intended function. Actions contained in preventive/monitoring programs would focus on shrinkage or other aging effects, which could lead to cracking or separation, which could eventually affect operability. Using the loss of the intended function as an indication to manage aging of penetration seals does not meet the intent of 10 CFR 54.21. In addition, the staff did not conclude in SECY-96-146 that abnormal shrinkage and aging could never occur in the future as plants operate beyond 40 years. Furthermore, NEI did not consider the influence of abnormal pipe movement caused by the cyclical heatup/cooldown period that occurs with refueling outages. These movements can cause penetration seals to move over time, which may lead to shrinkage, which causes cracking and separation. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIG-5	VIIG1.1, page VIIG-5	Change the following attributes under the program: **(2) Preventive Actions:** No preventive actions are specified. The program is a monitoring program. **(4) Detection of Aging Effects:** Visual inspection should detect cracking, separation from walls and component, rupture and puncture of seal. Visual inspection of a sample is performed at least once every 18 months. The frequency and extent of inspection ensures timely detection of the aging effects before loss of component intended function.	The attributes are changed to more correctly reflect the program. This statement matches how other preventive actions are addressed when it is a monitoring program. Clarified that a sample is inspected every 18 months.	The AMP "Fire Protection" (XI.M26, NUREG-1801, Vol. 2) includes a fire barrier inspection program and diesel-driven fire pump inspection program because the attributes were not clearly outlined. Elements (2) and (4) have been revised to match how other preventive actions are addressed and to clarify the detection of aging effects. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIG-6	VIIG1.2, page VIIG-5 and VIIG1.3, page VIIG-7	Change the following attribute: **(2) Preventive Actions:** No preventive actions are specified. It is a monitoring program.	This statement matches how other preventive actions are addressed when it is a monitoring program.	The fire barrier walls, ceilings, and floors and also the fire-rated doors in the intake structure are subject to aging resulting in loss of material. The AMP "Fire Protection" (XI.M26, NUREG-1801, Vol. 2) and the AMP "Structural Monitoring" (XI.S6, NUREG-1801, Vol. 2) manages the aging of the fire barrier walls, ceilings, and floors. The AMP "Fire Protection"(XI.M26, NUREG-1801, Vol. 2) manages the aging of the fire rated doors. In the Fire Protection AMP, element (2) was revised to include the following: "For operating plants, fire hazard analysis assess the fire potential and fire hazard in safety-related plant areas and specifies measures for fire prevention, fire detection, fire suppression, and fire containment and alternative shutdown capability for each fire area containing structures, systems, and components important to safety." The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIIG-7	VIIG1.2, Page VIIG-5	Under parameters monitored, do not discuss the mechanisms.	The rule focuses on aging effects, not mechanisms.	Aging of the fire barrier walls, ceilings, and floors in the intake structure is managed by the AMP "Fire Protection" (XI.M26, NUREG-1801, Vol. 2) and the Structural Monitoring AMP (XI.S6). In Element (3) "Parameters Monitored/Inspected" of the AMP "Fire Protection" (XI.M26, NUREG-1801, Vol.2), visual inspection of the fire barrier walls, ceilings, and floors is said to examine the signs of degradation such as cracking, spalling, and loss of material caused by freeze-thaw, chemical attack, and reaction with aggregates. Visual inspection of penetration seals examines the signs of degradation such as cracking, seal separation from walls and component, separation of layers of material, rupture and puncture of seals which are directly caused by increased hardness and shrinkage of seal material due to weathering. The focus in this section is on aging effects (as produced by cited mechanisms). The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII G-8	G.1.3, G.2.3, G.3.3, G.4.3, G.5.2	Delete entry for "Wear."	Element (10) of Evaluation and Technical Basis concludes, "Operating experience with this AMP has shown that degradation is insignificant." If degradation is insignificant, it cannot affect the intended function.	Absence of degradation during the first 40 years does not preclude problems during the period of extended operation. Furthermore, in Element 10 "Operating Experience," it is noted that fire doors have experienced wear of the hinges and handles. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII G-9	G.6.1, G.6.2	Delete entries for "Biofouling" for all components except sprinklers.	Component intended function is pressure boundary only. Biofouling does not prevent this intended function. This Aging Mechanism has the potential to cause blockage of deluge system spray nozzles. Other than that, it should not be considered applicable for fire protection system piping and components.	Biofouling affects both system flow performance and pressure boundary integrity. Flow performance is considered an active function covered under the current licensing basis and should not be included within the scope of license renewal. However, biofouling causes loss of material, which affects the pressure boundary and this passive function requires aging management. The GALL report was revised as follows to address this comment: 1. For all piping and components, all line items for buildup of deposits due to biofouling were deleted. 2. Loss of material due to biofouling was included as an aging effect for piping and pressure boundary components. 3. The aging management programs XI.M20 "Open-Cycle Cooling Water System," XI.M26 "Fire Protection," and XI.M27 "Fire Water System" were revised to remove reference to flow blockage and to clarify the aging effect to be managed is loss of material.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII G-10	G.7.1, G.7.2	Delete entries for Lubricating Oil environment.	(1) General Corrosion, Galvanic Corrosion, Crevice Corrosion, and Pitting are listed as Aging Mechanisms for the RCP Oil Collection Tank, Piping, Tubing, and Valves. These corrosion mechanisms are not plausible for these components since the internal environment is lube oil and air. (2) Lube oil acts to inhibit corrosion of carbon steel, and there is inadequate moisture in the system to promote corrosion. Therefore, General Corrosion, Crevice Corrosion, and Pitting should not be listed for the lube oil collection system components. This position was accepted in the CCNPP SER. (3) The element (10) Operating Experience entries under Evaluation and Technical Basis concur that no corrosion-related degradation has been observed for these components.	The collection tank and piping, tubing, and valve bodies in the reactor coolant pump oil collection system are subjected to a lubricating oil environment. (1 and 2) Corrosion is a plausible mechanism with lubricating oil and contaminant for the components (tank, piping, tubing, valve body) in the reactor coolant pump oil collection system. This has been addressed in the Oconee LRA (Vol. II, page 3.5-11 to 3.5-14: Table 3.5-9, Vol. II, page 3.5-135) and the ONS License Renewal SER (page 3-149 to 150). For clarification, "lubricating oil" in the environment column was replaced with "lubricating oil (with contaminants and/or moisture)." (3) A plant-specific AMP is suggested to determine the thickness of the components or tank. An acceptable verification program is provided in the AMP "One-Time Inspection" (XI.M32, NUREG-1801, Vol. 2). The GALL report was revised to address this comment as stated abaove.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII G-11	G.8.1	Remove reference to the Diesel Driven Fire Pump (Pump Casing).	The fire water pump has been mistakenly included with fuel oil components.	Both the fire water pump casing and the fuel oil line are in the scope of the program. The fire oil supply line should be kept with fire pump casing. BG&E LR states that the diesel fire pump is periodically tested to verify operability/availability through flow and discharge pressure tests. The pump is under observation during performance of the above tests and degradation of the fuel oil supply lines would be immediately evident. The GALL report was not revised to address this comment.
G-VII G-12	G.8.1	Delete entry for Fuel Oil environment.	(1) Loss of Material is listed as an applicable Aging Effect due to the Aging Mechanisms Crevice Corrosion, Pitting, Galvanic Corrosion, and General Corrosion for the Diesel Fire Pump Fuel Oil Supply Line. These corrosion mechanisms should only be considered plausible in fuel oil systems where there is a potential for water to pool or separate (tanks, receivers, stagnant piping, etc. (BAW-2270). The fuel oil supply line is not such a location, therefore, these mechanisms should not be considered. (2) This position was accepted in the Oconee SER. (3) The element (10) Operating Experience entries under Evaluation	(1) The carbon steel diesel-driven fire pump casing and fuel oil supply line in the diesel fire system are exposed to a fuel oil environment and are susceptible to general, galvanic, pitting, and crevice corrosion. The AMP "Fire Protection" and "Fuel Oil Chemistry" (XI.M26 and XI.M30, NUREG-1801, Vol. 2) manage aging. As stated in Element 3 of the AMP "Fire Protection" (XI.M26, NUREG-1801), the diesel-driven fire pump is under observation during the performance tests such as flow and discharge test, sequential starting capability test, and controller function test for detecting any degradation of the fuel supply line. Even if the position was accepted in the Oconee SER that

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII G-12 (cont.)			and Technical Basis concur that no corrosion-related degradation has been observed for these components.	corrosion would only be plausible in the fuel oil systems where there is a potential for water to pool or separate (tanks, receivers, stagnant piping), this does not imply that this position applies to all plants (varying in configuration and design). It does not necessarily preclude other plants from having to evaluate this. (2) GALL is a living and evolving document. A position accepted in the Oconee SER does not necessarily preclude other plants from having to evaluate this. (3) Absence of degradation during operation to date does not preclude problems during the period of extended operation. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H1-1	H1.1.1, H1.4.2	(1) Delete the references in the References column Replace "For description of the AMP, see Chapter XI.S8 'Coating Program" with "Plant-specific aging management program" in the Aging Management Program column Replace "For evaluation and technical basis of the 10 elements of the AMP, see Chapter XI.S8 'Coatings Program' with "Plant-specific aging management program is to be evaluated."	The aging effect to be managed is loss of material of the carbon steel tank. The program described is management of the degradation of the coating. Degradation of the coating will not result in a loss of the component intended function of the tank. Different plants use a variety of activities or programs to monitor for loss of material of the carbon steel tank, not degradation of the coating. Due to this variety, the industry proposes that the aging management program be a plant-specific aging management program.	The condition of the coating does not directly affect the intended function. Coatings are covered under the Maintenance Rule. As shown in the columns for the recommended AMP and "Further Evaluation," a plant-specific AMP is to be evaluated and further evaluation is stipulated for aboveground piping and fittings. The GALL report was revised to address this comment by deleting coating degradation as an aging mechanism of concern for auxiliary systems.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H1-2	H1.1.2	Delete the entries in the Reference, Aging Management Program, and Evaluation and Technical Basis columns and replace with the following: Leave the Reference column blank Insert "Plant-specific aging management program is to be evaluated" in the Aging Management Program column. Insert Plant-specific aging management program is to be evaluated" in the Evaluation and Technical Basis column.	The program described is not an industry standard practice at nuclear plants. Various activities are employed by different utilities that are not encompassed within the description of this program. The industry proposes that plant-specific aging management programs be evaluated for managing this aging effect.	The AMP "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2) manages the aging of buried carbon steel piping. Although the Buried Piping and Tanks Surveillance AMP (based on NACE standards) is not an existing nuclear industry standard practice, it is one acceptable method. An alternative to the AMP "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2), is the AMP "Buried Piping and Tanks Inspection" (XI.M34, NUREG-1801, Vol. 2) which inspects based on the frequency for the need to dig up piping considering plant operating experience that would allow for crediting the inspection when a pipe is dug up for any reason. The frequency and plant operating experience could be subject to a plant specific review. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H1-3	H1.4.1	Should "ASTM D 270" be "ASTM D 4057."	This ASTM Standard was not in the 1996 through 2000 editions of the ASTM Standards. ASTM D 4057 has the same title. It may have replaced ASTM D 270.	The AMP "Fuel Oil Chemistry" (XI.M30, NUREG-1801, Vol. 2) manages the aging of carbon steel internal surfaces of the tank in the diesel fuel oil system. The reference ASTM D 270 was replaced by ASTM D 4057-95(2000), *Standard Practice for Manual Sampling of Petroleum and Petroleum Products.* The GALL report was revised to address this comment.
G-VII H1-4	H1.4.1	(1) Replace: "Exposure to fuel oil contaminants such as water and microbiological organisms is minimized by periodic cleaning/draining tanks and by verifying the quality of new oil before its introduction into the storage tanks." With: "Exposure to fuel oil contaminants such as water and microbiological organisms is minimized by verifying the quality of stored fuel oil and new fuel oil before its introduction." (2) Delete the following sentences from the Aging Management Program column: "However, corrosion may occur at locations where contaminants may accumulate, such as tank bottom, and verification of the effectiveness of the program should ensure that	Fuel oil chemistry alone is sufficient to manage aging the fuel oil storage tanks. Proper monitoring and maintenance of the fuel oil quality will preclude the accumulation of contaminants that could lead to corrosion.	The AMP "Fuel Oil Chemistry" (XI.M30, NUREG-1801, Vol. 2) manages the aging of carbon steel internal surfaces of the tank in the diesel fuel oil system. (1) The AMP program description states "Exposure to fuel oil contaminants, such as water and microbiological organisms, is minimized by periodic draining or cleaning of tanks...." Periodic cleaning and draining of tanks allows removal of sediments and periodic draining of water collected at the bottom of a tank which minimizes the amount of water and the length of contact time. (2) The AMP program description states that corrosion may occur at locations in which contaminants may accumulate, such as tank bottoms. Accordingly, there is a need for verification of the effectiveness of

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H1-4 (cont.)		significant degradation is not occurring and the component intended function will be maintained during he extended period of operation. An acceptable verification program consists of a one-time thickness measurement of the tank bottom surface."		the program to ensure that significant degradation is not occurring and the component intended function would be maintained during the extended period of operation. Tank bottom thickness measurement is an acceptable method to verify the effectiveness of the AMP. The GALL report was not revised to address this comment.
G-VII H1-5	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of carbon steel components in this section.	It is not clear that the external surfaces of carbon steel components are addressed in Section VII I of the GALL.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H1-6	H1.4.1	Delete entry for Biofouling.	Buildup of Deposit/Biofouling is listed as an Aging Effect/Mechanism for DFO Tank Internal Surfaces. The only passive intended function for the DFO Tank in the Diesel Fuel Oil System is the pressure boundary function. Buildup of Deposit/Biofouling does not affect the Tank's ability to accomplish this intended function, so this Effect/Mechanism should not be considered.	Biofouling affects both system flow performance and pressure boundary integrity. Flow performance is considered an active function covered under the current licensing basis and should not be included within the scope of license renewal. However, biofouling causes loss of material, which affects the pressure boundary and this passive function requires aging management. The GALL report was revised as follows to address this comment: 1. For all piping and components, all line items for buildup of deposits due to biofouling were deleted. 2. For all piping and components, loss of material due to biofouling was included as an aging mechanism for pressure boundary components. 3. The management program XI.M20 "Open-Cycle Cooling Water System" was revised to remove reference to flow blockage.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-1	H2.1.1, H2.1.2	Delete ASME OM S/G Part 2 from the References column.	ASME OM S/G Part 2 provides performance and functional testing requirements that verifies the active functions of a system. The parameters monitored by this OM do not detect loss of material of the system components prior to a loss of the component function. Chemistry alone is sufficient in managing loss of material. This is demonstrated by the two industry events listed in the operating experience of the program description. One of those events was the loss of an active component function, not a passive function.	The AMP "Closed-Cycle Cooling Water" (XI.M21, NUREG-1801, Vol. 2) AMP relies on preventive measures to minimize corrosion by maintaining inhibitors and by performing surveillance testing and inspection based on the guidelines of EPRI-TR-107396 for closed-cycle cooling water (CCCW) systems. These measures will ensure that the CCCW systems and components serviced by the CCCW system are performing their function acceptably. The requirement for performance of functional tests per ASME OM S/G Part 2 was deleted in the AMP "Closed-Cycle Cooling Water" (XI.M21, NUREG-1801, Vol. 2). The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-2	H2.1.1, H2.1.2	Delete the following in the Aging Management Program column: ", and performance and functional testing in accordance with ASME OM Standards and Guides, Part 2 to ensure that the CCCW system or components serviced by the CCCW system are performing their functions acceptably."	ASME OM S/G Part 2 provides performance and functional testing requirements that verifies the active functions of a system. The parameters monitored by this OM do not detect loss of material of the system components prior to a loss of the component function. Chemistry alone is sufficient in managing loss of material. This is demonstrated by the two industry events listed in the operating experience of the program description. One of those events was the loss of an active component function, not a passive function.	The AMP "Closed-Cycle Cooling Water" (XI.M21, NUREG-1801, Vol. 2) relies on preventive measures to minimize corrosion by maintaining inhibitors and by performing surveillance testing and inspection based on the guidelines of EPRI-TR-107396 for closed-cycle cooling water (CCCW) systems. These measures will ensure that the CCCW systems and components serviced by the CCCW system are performing their function acceptably. The requirement for performance of functional tests per ASME OM S/G Part 2 was deleted in the AMP "Closed-Cycle Cooling Water" (XI.M21, NUREG-1801, Vol.2). The GALL report was revised to address this comment.
G-VII H2-3	H2.1.1, H2.1.2	Need to add general corrosion, pitting corrosion, and crevice corrosion to the Aging Mechanism column for piping and fittings service by open cycle cooling water system.	These mechanisms will occur on carbon steel exposed to a raw water environment.	Carbon steel piping and fittings for the diesel generator cooling water subsystem in the emergency diesel generator system are susceptible to general, pitting, and crevice corrosion. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-4	H2.1.1, H2.1.2	Delete "Jacket" from the Region of Interest column.	The jacket is a part of the diesel engine that is excluded from a license renewal aging management review.	The jacket (associated with the diesel engine cooling water subsystem) is part of the diesel engine that is excluded from a license renewal aging management review. The jacket (H2.1.2) was deleted from consideration. The GALL report was revised to address this comment.
G-VII H2-5	H2.1.1, H2.1.2	(1) Make the following change in the Aging Management Program column for carbon steel susceptible to erosion/corrosion: "However, the system is chemically treated with hydrazine to lower the dissolved oxygen level in order to minimize the corrosion effects. Lowering the oxygen content increases the susceptibility of the carbon steel piping to erosion/corrosion. This susceptibility depends on the flow rate, which is plant specific. Therefore a plant specific AMP is necessary." Should read as: "However, the system may be chemically treated with hydrazine to lower the dissolved oxygen level in order to minimize the corrosion effects. Lowering the oxygen content increases the susceptibility of the carbon steel piping to erosion/corrosion. This susceptibility depends on the parameters outlined in NSAC 202L-R2. If the system is	Just using hydrazine and lowering the oxygen content does not necessarily make erosion/corrosion a concern in this system. Other factors must be considered as outlined in NSAC 202L-R2.	The AMP "Open-Cycle Cooling Water System" (XI.M21, NUREG-1801, Vol. 2) manages the aging of the carbon steel piping and fittings for the diesel generator cooling water subsystem (serviced by open cycle cooling water system). The aging mechanism of erosion/corrosion has been deleted from consideration in the discussion of the emergency diesel generator system in GALL. The diesel engine cooling water subsystem jacket (H2.1.2) was deleted from consideration in Section H2 because it is part of the diesel engine that is excluded from a license renewal aging management review. The further evaluation column was changed to "No." The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-5 (cont.)		susceptible to erosion/corrosion, the components should be added to the scope of Flow Accelerated Corrosion program." (2) Change: "Plant-specific aging management program is to be evaluated." to read "The scope of the Flow Accelerated Corrosion Program may need to be expanded to include these components if they are found to be susceptible to erosion/corrosion." (3) Change "Yes, plant specific" to "No" under the Further Evaluation column.		
G-VII H2-6	H2.1.1, H2.1.1	Vibration induced cracking is not a license renewal aging effect and should be deleted.	Vibration induced cracking is expected to occur during the current term and be corrected. This type of aging is random and is corrected as discovered with inspections of similar locations and configurations to ensure the event is location specific or a one-time event.	Vibration-induced cracking results in failure and subsequent replacement of affected devices. The rapid failure and swift correction implies this is not an aging issue. The aging mechanism of vibration-induced cracking was deleted from consideration in the discussion of the emergency diesel generator system in GALL. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-7	H2.5.1	Should "ASTM D 270" be "ASTM D 4057."	This ASTM Standard was not in the 1996 through 2000 editions of the ASTM Standards. ASTM D 4057 has the same title. It may have replaced D 270.	The AMP "Fuel Oil Chemistry" (XI.M30, NUREG-1801, Vol. 2) manages the aging of carbon steel tanks in the diesel generator fuel oil subsystem. The reference ASTM D 270 was replaced by ASTM D 4057-95(2000), Standard Practice for Manual Sampling of Petroleum and Petroleum Products. The GALL report was revised to address this comment.
G-VII H2-8	H2.5.1	(1) Replace: "Exposure to fuel oil contaminants such as water and microbiological organisms is minimized by periodic cleaning/draining tanks and by verifying the quality of new oil before its introduction into the storage tanks." With: "Exposure to fuel oil contaminants such as water and microbiological organisms is minimized by verifying the quality of stored fuel oil and new fuel oil before its introduction." (2) Delete the following sentences from the Aging Management Program column: "However, corrosion may occur at locations where contaminants may accumulate, such as tank bottom, and verification of the effectiveness of the program should ensure that significant degradation is not	Fuel oil chemistry alone is sufficient to manage aging the fuel oil storage tanks. Proper monitoring and maintenance of the fuel oil quality will preclude the accumulation of contaminants that could lead to corrosion.	The AMP "Fuel Oil Chemistry" (XI.M30, NUREG-1801, Vol. 2) manages the aging of diesel fuel oil storage tanks. (1) The AMP "Program Description" states, "Exposure to fuel oil contaminants, such as water and microbiological organisms, is minimized by periodic draining or cleaning of tanks...." Periodic cleaning and draining of tanks allows removal of sediments and periodic draining of water collected at the bottom of a tank minimizes the amount of water and the length of contact time. (2) The AMP program description states that corrosion may occur at locations in which contaminants may accumulate, such as tank bottoms. Accordingly, there is a need for verification of the effectiveness of the program to ensure that

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-8 (cont.)		occurring and the component intended function will be maintained during he extended period of operation. An acceptable verification program consists of a one-time thickness measurement of the tank bottom surface."		significant degradation is not occurring and the component intended function would be maintained during the extended period of operation. Tank bottom thickness measurement is an acceptable method to verify the effectiveness of the AMP. The GALL report was not revised to address this comment.
G-VII H2-9	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of carbon steel components in this section.	It is not clear that the external surfaces of carbon steel components are addressed in Section VII I of the GALL.	See NRC disposition of NEI comment G-VII-1 in this Appendix B, Table B.2.6.
G-VII H2-10	H2.1.1, H2.1.2	Remove references to MIC.	Demineralized water in a closed cycle is not subject to MIC.	Carbon steel piping and fittings for the diesel engine cooling water subsystem (serviced by open-cycle cooling water system) exposed to chemically treated demineralized <90°C (194°F) water is susceptible to general, pitting and crevice corrosion. Microbiologically influenced corrosion (MIC) was deleted, as an aging mechanism because demineralized water in a closed-cycle is not amenable to MIC. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-11	H2.1.1, H2.1.2	Delete entry for Biofouling.	The only passive intended function for the components in question is the pressure boundary function. Buildup of Deposit/Biofouling does not affect the components' ability to accomplish this intended function, so this Effect/Mechanism should not be considered.	Biofouling affects both system flow performance and pressure boundary integrity. Flow performance is considered an active function covered under the current licensing basis and should not be included within the scope of license renewal. However, biofouling causes loss of material, which affects the pressure boundary and this passive function requires aging management. The GALL report was revised as follows to address this comment: 1. For all piping and components other than heat exchangers, all line items for buildup of deposits due to biofouling were deleted. 2. For all piping and components, loss of material due to biofouling was included as an aging mechanism for pressure boundary components. 3. The aging management program XI.M20 "Open-Cycle Cooling Water System" was revised to remove reference to flow blockage.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-12	H2.1.1, H2.1.2	Delete entry for Erosion/Corrosion.	There is no operating experience to justify inclusion of this mechanism. Also, Hydrazine is not typically used in Diesel cooling water systems.	The AMP "Open-Cycle Cooling Water System" (XI.M21, NUREG-1801, Vol. 2) manages the aging of the carbon steel piping and fittings for the diesel generator cooling water subsystem (serviced by open cycle cooling water system). The aging mechanism of erosion/corrosion has been deleted from consideration in the discussion of the emergency diesel generator system in GALL. The diesel engine cooling water subsystem jacket (H2.1.2) was deleted from consideration in Section H2 because it is part of the diesel engine that is excluded from a license renewal aging management review. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-13	H2.1.1, H2.1.2	Delete entry for Vibration Induced Cracking.	There is no operating experience to justify inclusion of this mechanism. Why is this diesel subsystem susceptible to vibration but no others are? Excessive vibration is a design or maintenance issue, not an aging mechanism.	Vibration-induced cracking results in failure and subsequent replacement of affected devices. The rapid failure and swift correction implies this is not an aging issue. The aging mechanism of vibration-induced cracking was deleted from consideration in the discussion of the emergency diesel generator system in GALL. The diesel engine cooling water subsystem jacket (H2.1.2) was deleted from consideration in Section H2 because it is part of the diesel engine that is excluded from a license renewal aging management review. The GALL report was revised to address this comment.
G-VII H2-14	H2.5.1	"Dip" Tank should be "Drip" Tank.	There is no such thing as a "Dip" Tank.	The carbon steel day and drip tanks comprise part of the diesel generator fuel oil subsystem. The item was changed to drip tank to correct this typo. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII H2-15	H2.5.2	Delete entry for Fuel Oil environment.	Loss of Material is listed as an applicable Aging Effect due to the Aging Mechanisms Crevice Corrosion, Pitting, Galvanic Corrosion, and General Corrosion for the Diesel Fuel Oil Strainer. These corrosion mechanisms should only be considered plausible in fuel oil systems where there is a potential for water to pool or separate (tanks, receivers, stagnant piping, etc. (BAW-2270). The fuel oil strainer is not such a location, therefore, these mechanisms should not be considered. This position was accepted in the Oconee SER.	The fuel oil strainer is not in an environment where there is a potential for water to pool or separate. Corrosion as a mechanism should not be considered. The item was deleted. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII I-1	I.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 VII. 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.	Bolting is an integral part of piping, 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. GALL VII-I on 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. The GALL report was not revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII I-2	I.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.	NRC GL 88-05 provides a stand-alone program for inspection of carbon steel structures and components for evidence of boric acid leakage and corrosion. Inservice inspection that detects leakage identified during the performance of pressure tests and hydrostatic tests are required by the ASME Code and are performed independent of the AMP "Boric Acid Corrosion" (XI.M10, NUREG-1801, Vol. 2) and were removed. The GALL report was revised to address this comment.
G-VII I-3	I.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 Auxiliary Systems are exposed to temperatures lower than 212°F, and are therefore susceptible to general corrosion. Because atmospheric corrosion is not applicable to this environment, the term has been deleted and replaced with general corrosion, which is applicable to this environment. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII I-4	I.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 are subjected to air, moisture, and humidity resulting in loss of material caused by general corrosion. (The term "atmospheric corrosion" was replaced with "general corrosion.") A plant-specific aging management program needs to be evaluated for these conditions. Reference to the AMP "Protective Coating Monitoring and Maintenance Program" (XI.S8, NUREG-1801, Vol. 2) was deleted. Because the condition of the coating does not directly affect the intended function, coating degradation was deleted as an aging mechanism of concern for auxiliary systems. As shown in the columns for the recommended AMP and "Further Evaluation," a plant-specific AMP is to be evaluated and further evaluation is stipulated. The GALL report was revised to address this comment.

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII I-5	I.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." (3) Replace information in References column, Aging Management Program column and Evaluation and Technical Basis column with that provided in I.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).	(1)Closure bolting in high-pressure or high-temperature BWR or PWR systems can be said to be exposed to "Air, Moisture, Humidity and Leaking Fluid" for both systems. The general term "leaking fluid" was used to also encompass the borated water found in PWRs. (2) Because atmospheric corrosion is not applicable to this environment, the term has been deleted and replaced with general corrosion, which is applicable to this environment. (3) Closure bolting in the above-mentioned environment in high-pressure or high-temperature BWR or PWR systems is susceptible to general corrosion resulting in loss of material. The AMP "Bolting Integrity" (XI.M18, NUREG-1801, Vol. 2) which covers all bolting within the scope of license renewal manages the aging process. The GALL report was revised to address this comment only for part (2).

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII I-6	I.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 I.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. These effects 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.	Loss of preload would result in leakage and would be managed as part of the bolted component. The GALL report was revised to address this comment by deleting loss of preload as an aging effect. (Errors in the Reference and AMP columns were corrected in NUREG-1801, Vol. 2.)

Table B.2.6: Disposition of NEI Comments on Chapter VII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VII I-7	I.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 I.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.	Closure bolting in high-pressure or high-temperature BWR or PWR systems exposed to air, moisture, humidity and leaking fluid can be susceptible to the aging mechanisms of cyclic loading and stress corrosion cracking. Field experience shows that SCC (NRC GL 91-17) caused 20% of the bolt failures. The bolts made of SA 193 Grade B7 can have YS as high as 175 ksi and failures have been reported with YS as low as 150 ksi. In Section II of the ASME Code, the specification for SA193 Grade B7 for bolting only give a minimum YS of 105, but no maximum is given. Crack initiation and growth can result in leakage. 20% of the bolting failure is due to SCC. The GALL report was not revised to address this comment.

APPENDIX B, TABLE B.2.7

DISPOSITION OF NEI COMMENTS ON CHAPTER VIII OF GALL REPORT

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Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII-1	General comment on System Interface	Include a reference to Section VIII H (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 (VIII H). The link between Carbon Steel Components and the individual sections is not clearly established in the System Interface sections of the individual sections.	The external surfaces of piping are included in the scope of carbon steel structures and components in Section H of Chapter VIII. The links between CS components and the individual sections were made by revising the GALL report to include the following sentence in "System, Structures and Components" in Sections A to G of Chapter VIII: "Aging management programs for degradation of external surface of carbon steel components are included in Section H of Chapter VIII." (Similar changes were also made in Chapters V and VII). The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII A-1	A.1.1, A.1.2, A.2.1	Need to add the aging effect loss of material due to general, crevice, and pitting corrosion for carbon steel piping, fittings, and valves that is managed by Water Chemistry, with the reference being EPRI TR-102134, Revision 3 or later.	Carbon steel components are susceptible to this aging effect in this environment. Water Chemistry will manage the aging effect.	Carbon steel piping, fittings, and valves are susceptible to aging mechanisms of general, pitting, and crevice corrosion in a steam environment. These aging mechanisms were added in the GALL report for CS components in the Steam Turbine System by including two additional line items on general, pitting and crevice corrosion for piping and fittings and for valve bodies. The AMPs for these new line items are water chemistry augmented by one-time inspection (XI.M2 and XI.M32 in NUREG-1801, Vol. 2). A similar change was made for steam extraction system piping, fittings, and valves; condensate systems coolers/condensers (treated water side); and steam generator blowdown systems (PWR) blowdown heat exchanger (treated water side). One-time inspection is needed to verify the effectiveness of water chemistry control and confirm the absence of an aging effect. If an aging effect is detected, the results are evaluated to determine the appropriate corrective actions. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII A-2	System Interface	Include a reference to Section VIII H (Carbon Steel Components) for the external surfaces of carbon steel components in this section.	It is not clear that the external surfaces of carbon steel components are addressed in Section VIII H of the GALL.	See NRC disposition of NEI comment G-VIII-1 in this Appendix B, Table B.2.7.
G-VIII B1-1	B1.1.1, B1.1.2, B1.2.1	Add general corrosion to the Aging Mechanism column.	General corrosion could occur in this environment.	General corrosion is not an aging mechanism of concern in a steam environment with temperatures up to 300°C because this steam is relatively dry and does not provide enough moisture for general corrosion. The GALL report was not revised to address this comment.
G-VIII B1-2	System Interface	Include a reference to Section VIII H (Carbon Steel Components) for the external surfaces of carbon steel components in this section.	It is not clear that the external surfaces of carbon steel components are addressed in Section VIII H of the GALL.	See NRC disposition of NEI comment G-VIII-1 in this Appendix B, Table B.2.7.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII B2-1	B2.2.1	The FAC program described in Section XI is not usually applied to valve bodies. A note stating that the applicant's FAC program must choose bounding locations for the measurement of wall thinning in valves may need to be placed here.	FAC programs generally monitor thinning in pipe locations, since valve bodies are usually much thicker than pipe walls.	Wall thinning in valve bodies is of concern because turbulent flow in the valve bodies can cause flow-accelerated corrosion (FAC). The EPRI program CHECWORKS evaluates valve body FAC susceptibility. The FAC program in XI-M6 (XI-M17 in NUREG-1801, Vol. 2) explains that the applicant's FAC program needs to choose bounding locations for the measurement of components other than piping. AMP XI-M17 of the GALL report was revised to add valve bodies as a component that requires bounding. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII B2-2	All Items	Thermal Cycling Induced Fatigue is not listed as an Aging Effect. This is unusual in that most other sections list this aging effect, with the resultant AMP of a TLAA.	Consistency is the issue here. Either thermal cycling induced fatigue should be added here or stricken from the other sections. A TLAA is appropriate since this piping is usually design as Non-Class 1 with an assumed number of temperature cycles for 40-year life.	Thermal-cycle induced fatigue is an aging mechanism that may be experienced by non-class 1 components such as main system piping and fittings, but not valves. This aging mechanism was added for non-Class I components that were analyzed for allowable cycles (< 7000 cycles) for the 40-years life. This is a TLAA to be evaluated for the period of extended operation. As a result of this comment, 3 new rows were added in chapter VIII of the GALL report for cumulative fatigue damage: 1) piping and fittings in main steam system (BWR), 2) piping and fittings in main feedwater system (BWR), and 3) piping and fittings in auxiliary feedwater system (PWR). The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII D1-1	D1.1.1	General, Crevice, and Pitting Corrosion, delete one-time inspections from the Aging Management Program column. Revise the Further Evaluation Column to state 'No'.	Operating experience alone has shown the chemistry control program has been effective in controlling corrosion of the Feedwater Systems in plants. Feedwater chemistry parameters are well monitored and well controlled in plants. Routine maintenance on equipment has not shown any concerns over loss of material in feedwater systems.	General, pitting, and crevice corrosion are aging mechanisms that may be experienced by CS piping and fittings in Feedwater Systems in PWR plants. For example, steam generator feedwater nozzle and girth weld heat-affected zone exposed to secondary water have experienced pitting (IN 90-04, NUREG/CR-4868). The appropriate AMP is water chemistry augmented by one-time inspection (XI.M2 and XI.M32 in NUREG-1801, Vol. 2). One-time inspection is needed to verify the effectiveness of water chemistry control and confirm the absence of an aging effect. 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-VIII D1-2	D1.2.1	The FAC program described in Section XI is not usually applied to valve bodies. A note stating that the applicant's FAC program must choose bounding locations for the measurement of wall thinning in valves may need to be placed here.	FAC programs generally monitor thinning in pipe locations, since valve bodies are usually much thicker than pipe walls.	See NRC disposition of NEI comment G-VIII B2-1 in this Appendix B, Table B.2.7.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII D1-3	D1.2.1	General, Crevice, and Pitting Corrosion, delete one-time inspections from the Aging Management Program column. Revise the Further Evaluation Column to state 'No'.	Operating experience alone has shown the chemistry control program has been effective in controlling corrosion of the Feedwater Systems in plants. Feedwater chemistry parameters are well monitored and well controlled in plants. Routine maintenance on equipment has not shown any concerns over loss of material in feedwater systems.	See NRC disposition of NEI comment G-VIII D1-1 in this Appendix B, Table B.2.7.
G-VIII D1-4	D1.3.1, D1.3.2	The Flow Accelerated Corrosion should not be the AMP for Wall Thinning. If wall thinning is a concern, thickness measurements of the pump casing should be taken.	FAC programs generally monitor thinning in pipe locations, since valve bodies are usually much thicker than pipe walls.	Wall thinning of pump internals in the steam turbine-driven and motor-driven feedwater pumps need not be monitored by thickness measurements because pump internals have certain tolerances so any thinning of the casing wall will not significantly affect the pump performance. The maintenance program detects the deterioration in performance. Pump casings were deleted from the region of interest for the PWR feedwater system (D1.3.1), condensate system (E.3.1), and the PWR steam generator blowdown system (F.3.1). The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII D1-5	D1.1.1, D1.2.1, D1.3.1, D1.3.2	Entries combine General, Crevice, and Pitting Corrosion, but discussion under Aging Management Program considers only Crevice and Pitting Corrosion. Does one time inspection apply to General Corrosion as well? Should the entries be separated?	Consistency	General, pitting, and crevice corrosion aging mechanisms are experienced by carbon steel pipings and fittings in the main feedwater line, valves, and pump casing and suction and discharge lines associated with the feedwater pump. One-time inspection (XI.M32 in NUREG-1801, Vol. 2) includes detection of loss of material caused by general corrosion. The water chemistry program (XI.M2) of the GALL report was revised to add general corrosion as an aging mechanism for carbon steel components. The GALL report was revised to address this comment.
G-VIII D2-1	D2.1.1, D2.2.1, D2.3.1, D2.3.2	Does Flow Accelerated Corrosion also include the Erosion and/or Erosion-Corrosion aging mechanisms? The FAC program should not be credited for the other mechanisms.	FAC is an applicable aging mechanism for the type of fluid in the components evaluated in this section. Other loss of material mechanisms may be applicable as well, and the FAC program described in the generic program does not include the other mechanisms.	Flow accelerated corrosion (FAC), an applicable aging mechanism for the type of fluid in BWR feedwater system components, is considered in the GALL report to include erosion/corrosion but not the erosion aging mechanisms. FAC and erosion/corrosion are synonymous. Erosion is a mechanical process that requires a plant specific evaluation in the GALL report. The GALL report was not revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII E-1	E.1.1, E.2.1, E.3.1	Under "Aging Effect" should also include loss of material. The "Aging Mechanisms" should be general, crevice and pitting corrosion. Under "References" include EPRI TR-102134 and under "AMP" include description of water chemistry program and the following words "Alternatively, program effectiveness may be demonstrated based on industry or plant specific information." "Evaluation and Technical Basis" should refer to Chapter XI.M11 "Water Chemistry."	Carbon steel exposed to raw water is susceptible to loss of material due to general, crevice and pitting corrosion. Industry or plant specific information may be utilized to demonstrate that preventive measures e.g. chemistry control with addition of corrosion inhibitors, are effective in preventing the aging effect from occurring.	See NRC disposition of NEI comment G-VIII A-1 in this Appendix B, Table B.2.7.
G-VIII E-2	E.4.1– E.4.4 (serviced by open-cycle cooling water)	Under "Aging Mechanism" should also include crevice and pitting corrosion.	Carbon and stainless steel exposed to raw water are susceptible to loss of material due to crevice and pitting corrosion. The corrosion mechanisms may be minimized by chemistry controls.	The carbon and stainless steel tubes, tubesheets, channel heads, and shells of the condensate coolers and condensers exposed to raw water will be susceptible to general, pitting, and crevice corrosion. These aging mechanisms that cause loss of material were added for the condensate coolers/condensers, the steam generator blowdown heat exchangers, and the auxiliary feedwater bearing oil coolers, in Chapter VIII of the GALL report. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII E-3	E.4.1– E.4.4 (serviced by open-cycle cooling water)	Under "AMP" For Treated Water Side the program relies on preventive measures to minimize corrosion by monitoring and controlling chemistry based on the guidelines of EPRI-TR-102134 for secondary water chemistry in PWR's. Under "Evaluation and Technical Basis," add, "For evaluation and technical basis of the 10 elements of the AMP, see Chapter XI.M11, Water Chemistry."	To provide AMP for secondary side of heat exchanger.	The carbon and stainless steel tubes, tubesheets, channel heads, and shells of the condensate coolers and condensers exposed to treated water will be susceptible to general (carbon steel only), pitting, and crevice corrosion. Because the AMP relies on preventive measures based on the guidelines of EPRI-TR-102134 for secondary water chemistry in PWRs and EPRI-TR-103515 for reactor water chemistry in BWRs, the GALL report was revised to add XI.M3 (XI.M20 in NUREG-1801, Vol. 2), Open Cycle Cooling Water System, for the raw water side, and XI.M11 (M2 in NUREG-1801, Vol. 2), Water Chemistry, for the treated water side of the heat exchanger. A similar change in the GALL report was also made for the steam generator blowdown system heat exchangers. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII E-5	E.4.1–E.4.4 (serviced by closed-cycle cooling water)	Under "AMP" Delete requirement for performance of functional tests per ASME OM S/G Part 2 and add "If the adequacy of the chemistry control programs cannot be confirmed over the operating history of the plant or if any unexplained downward trend in heat exchanger performance is identified that cannot be remedied by maintenance of an open-cycle system, it may be necessary to selectively perform functional testing of the affected heat exchangers."	NRC Generic Letter 89-13.	The aging management program relies on preventive measures to minimize corrosion by maintaining inhibitors and by performing non-chemistry monitoring consisting of inspection and nondestructive evaluations based on the guidelines of EPRI-TR-107396 for closed-cycle cooling water (CCCW) systems. The inspections for monitoring, other than chemistry, includes data collection and analyses to predict the potential problems such as loss of structural integrity and reduced heat transfer caused by corrosion and/or deposition. These measures ensure that the CCCW systems and components serviced by the CCCW system are performing their function acceptably. The requirement for performance of functional tests per ASME OM S/G Part 2 was deleted in the AMP "Closed-Cycle Cooling Water" (XI.M21 in NUREG-1801, Vol. 2). The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII E-6	E.4.1–E.4.4 (serviced by closed-cycle cooling water)	Under "AMP" For Treated Water Side the program relies on preventive measures to minimize corrosion by monitoring and controlling chemistry based on the guidelines of EPRI-TR-102134 for secondary water chemistry in PWR's. Under "Evaluation and Technical Basis," add, "For evaluation and technical basis of the 10 elements of the AMP, see Chapter XI.M11, Water Chemistry."	To provide AMP for secondary side of heat exchanger.	See NRC disposition of NEI comment G-VIII E-3 in this Appendix B, Table B.2.7.
G-VIII E-7	E.5.1	A separate line item should be created for SS Condensate Storage Tanks. The aging effects would be pitting and crevice corrosion. The AMA would be a plant specific activity based on plant design and management philosophy. Hence further evaluation is warranted.	Existing line item is for stainless steel and carbon steel (-coated) tanks. However, the aging mechanisms exclude general corrosion, which would be applicable to carbon steel only.	Stainless steel condensate storage tanks exposed to a treated water environment are susceptible to pitting and crevice corrosion; under such conditions, uncoated CS condensate storage tanks are also subject to general corrosion. Because tanks composed of different materials are subject to different aging mechanisms, a new line item has been created for SS condensate storage tanks with "Water Chemistry" augmented by "One-time Inspection" (XI.M2 and XI.M32 in NUREG-1801, Vol. 2) as the appropriate AMPs. A similar change was made for the auxiliary feedwater system (PWR) condensate storage (emergency) tank in the GALL report. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII E-8	E.5.1	Under "AMP" add the following: "Alternatively, program effectiveness may be demonstrated based on industry or plant specific information."	Industry or plant specific information may be utilized to demonstrate that preventive measures e.g. chemistry control with addition of corrosion inhibitors, are effective in preventing the aging effect from occurring.	The suggested AMP for condensate storage tanks exposed to a treated water environment consists of water chemistry augmented by one-time inspection (XI.M2 and XI.M32 in NUREG-1801, Vol. 2). One-time inspection is needed to verify the effectiveness of water chemistry control and confirm the absence of an aging effect. If an aging effect is detected, the results are evaluated to determine the appropriate corrective actions. The applicant has the option of conducting an alternative plant-specific program. The GALL report was not revised to address this comment.
G-VIII E-9	E.5.1 (tank aboveground, external surface)	Under "AMP" and "Evaluation and Technical Basis," substitute with "Plant Specific program."	External corrosion of above ground carbon steel tanks should be addressed on a plant specific basis. Refer to Chapter XI.M7 comments.	"Above Ground Carbon Steel Tanks" (XI.M29 in NUREG-1801, Vol. 2) provides one acceptable AMP for the external corrosion of above ground carbon steel tanks. The applicant has the option of conducting an alternative plant-specific program. The GALL report was not revised to address this comment.
G-VIII E-10	E.5.1 (Tank buried, external surface)	Under "AMP" and "Evaluation and Technical Basis," substitute with "Plant Specific program."	Nuclear industry experience dictates external corrosion of buried components should be addressed on a plant specific basis. Refer to Chapter XI.M8 comments.	See NRC disposition of NEI comment G-XI.M8-1 in this Appendix B, Table B.2.9-2.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII E-11	E.6.1	Under "Aging Mechanism" add general corrosion.	Carbon steel exposed to treated water is susceptible to general corrosion.	The carbon steel components such as piping and fittings, demineralizer, and strainer associated with the condensate cleanup system may be exposed to treated water. Because of their susceptibility to general corrosion, this aging mechanism was included. The GALL report was revised as a result of this comment.
G-VIII E-12	E.4.1-E.4.4	Combine entries for General Corrosion.	General Corrosion is listed as an aging mechanism in two entries for these items. This is an unnecessary duplication and is confusing because different programs are credited.	General corrosion is an aging mechanism of concern for the condensate coolers/condensers serviced by both open-cycle and closed-cycle cooling water. These line entries were not combined because the AMPs are distinctly different for CCCW and OCCW (XI.M20 and XI.M21 in NUREG-1801, Vol. 2). The GALL report was revised by adding a new line item that references "Water Chemistry" augmented by "One-time Inspection" (XI.M2 and XI.M32 in NUREG-1801, Vol. 2) for the treated water side of the heat exchanger. The GALL report was revised to address this comment.
G-VIII E-13	E.5.1	Clarify meaning of "Corrosion."	Mechanism is referred to ambiguously. In remainder of Report, corrosion mechanisms are delineated as General, Crevice, Pitting, etc.	The term corrosion was revised to specifically state "general, pitting, and crevice corrosion." The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII F-1	F.1.1, F.1.2, F.2.1, F.3.1	Aging Management Program (AMP) column: Add the following at the end of the paragraph: "Alternatively, demonstration of an effective Chemistry Control Program by documented plant and or industry operating/maintenance experience also constitute acceptable verification."	Crevice and pitting corrosion occur most frequently in areas of low flow such as joints and connections or points of contact between metals and non-metals. These conditions would typically be found in component internals and flanged connections (such as those associated with valves and pumps), and thus, would be identified during routine or corrective maintenance where disassembly was performed. It should be noted that ASME XI requires a visual examination to determine the condition of Class 1 valve and pump internals at least once each Inspection Interval. When significant corrosion or failed parts are identified on safety related components, the utility corrective action programs require the identification of root cause and in many cases standard metallurgical analyses are employed to define the underlying aging mechanisms. Lack of evidence of crevice or pitting corrosion-related problems in these plant documents provides verification of an effective chemistry control program.	General, pitting, and crevice corrosion occur in carbon steel components such as PWR steam generator blowdown system pipings and fittings and blowdown pump casing exposed to secondary side treated water. Although ASME Section XI requires a visual examination to determine the condition of Class 1 valve and pump internals at least once each inspection interval, this is not relevant to GALL Chpt. VIII discussing Non-Class 1 components. Lack of documented evidence of crevice and pitting corrosion does not imply an absence of the effect of these mechanisms. The applicant has the option of conducting an alternative plant-specific program. The GALL report was not revised as a result of this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII F-2	F.4.1 through F.4.4	Eliminate Buildup of deposit due Biofouling as an Aging mechanism for all heat exchanger components except heat exchanger tubes.	Buildup of deposit due to biofouling is an aging effect which impacts heat transfer intended function, and is thus documented only for heat exchanger tubes. Buildup of deposit does not affect pressure boundary, except for MIC, which is addressed under loss of material.	Biofouling affects both system flow performance and pressure boundary integrity. Flow performance is considered an active function covered under the current licensing basis and should not be included within the scope of license renewal. However, biofouling causes loss of material, which affects the pressure boundary and this passive function requires aging management. This position does not contradict License Renewal Issue No. 98-105 states that the heat transfer function for heat exchangers is within the scope of license renewal. Therefore, biofouling of heat exchanger tubes require aging management. The GALL report was revised as follows to address this comment: 1. Delete all heat exchanger components except the tubes from the material column for buildup of deposits due to biofouling. 2. For all piping and components other than heat exchangers, deleted all line items for buildup of deposits due to biofouling. 3. For all piping and components including heat exchangers, loss of material due to biofouling was included as an aging mechanism for pressure boundary components.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII F-2 (cont.)				4. The aging management program XI.M20 "Open-Cycle Cooling Water System" was revised to remove reference to flow blockage.
G-VIII F-3	F.4.1-F.4.4	Remove reference to Stainless Steel in entry for General Corrosion.	Stainless Steel is not susceptible to General Corrosion.	Blowdown heat exchangers serviced by closed-cycle cooling water consist of SS tubes, CS tubesheet, CS channel head and access cover. The SS tubes are not susceptible to general corrosion. The GALL report was revised to address this comment by clarifying that only CS components are subject to this aging mechanism and that both SS and CS components are subject to pitting and crevice corrosion aging mechanisms..

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII G-1	G.1.1	The Flow Accelerated Corrosion is not valid Aging Mechanism for Auxiliary Feedwater. Delete this entry.	Flow Accelerated Corrosion (FAC) is listed as an Aging Mechanism for the AFW Piping. FAC of this piping is not plausible because the temperature of the water is near ambient temperature and the system is typically in standby. The AFW pumps take suction from a Condensate Storage Tank that is not heated. Industry experience indicates that FAC is not plausible for cold water systems with good chemistry control and infrequent operation. Therefore, FAC is not plausible for this piping and this entry should be removed. This position was accepted in the CCNPP SER.	The flow accelerated corrosion (FAC) of auxiliary feedwater (AFW) lines of recirculating steam generators with preheaters is of concern. In plants with these steam generators (Westinghouse Models D4, D5, and E steam generators), a portion of the main feedwater is diverted to the auxiliary feedwater line via a preheater bypass line during normal operation. As a result, a portion of the auxiliary feedwater line between steam generator and the bypass line connection experiences FAC. At one plant, this portion of the auxiliary feedwater line has experienced significant wall thinning because of FAC. Reference: NRC IN 92-07, "Rapid Flow-Induced Erosion/Corrosion of Feedwater Piping." FAC is a concern for AFW piping and fittings in plants with preheated steam generators. The GALL report was not revised as a result of this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII G-2	G.1.1, G.1.2	Revise Environment from '<90ºC ...Steam Generator' to be just 'Treated Water'.	The temperatures as stated are confusing.	The temperatures were intended to convey a sense of the treated water's general low temperature and the preheated sections high temperatures, since both temperatures apply for this environment. The environment is now denoted simply as treated water. The GALL report was revised to address this comment.
G-VIII G-4	G.1.1, G.1.2	Delete entry for Biofouling.	The only passive intended function for the components in question is the pressure boundary function. Buildup of Deposit/Biofouling does not affect the components' ability to accomplish this intended function, so this Effect/Mechanism should not be considered.	See NRC disposition of NEI comment for G-VIII-F-2 in this Appendix B, Table B.2.7.
G-VIII G-5	G.4.1	Clarify meaning of "Corrosion."	Mechanism is referred to ambiguously. In remainder of Report, corrosion mechanisms are delineated as General, Crevice, Pitting, etc.	See NRC disposition of NEI comment for G-VIII-E-13 in this Appendix B, Table B.2.7.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII G-6	G.5.1-G.5.3	Remove reference to Stainless Steel in entry for General Corrosion.	Stainless Steel is not susceptible to General Corrosion.	AFW bearing oil coolers for steam-turbine pumps are serviced by closed-cycle and open-cycle cooling water and are subjected to treated water, open water, and lubricating oil environments. The SS shells, tubes, or tubesheets are not susceptible to general corrosion. The GALL report was revised to address this comment by clarifying that only CS components are subject to this aging mechanism and that both SS and CS components are subject to pitting and crevice corrosion aging mechanisms.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII G-7	G.1.1, G.1.2	(1) Entry for piping combines General, Crevice, and Pitting Corrosion, but discussion under Aging Management Program considers only Crevice and Pitting Corrosion. (2) Does one time inspection apply to General Corrosion as well? (3) Should the entries be separated? (4) Also, later entries for pumps and valves do not include General Corrosion. (5) Why is General Corrosion not an AERM (aging effect requiring management) for these entries given same materials and environment?	Consistency	(1 and 2) The AMP of water chemistry augmented by one-time inspection (XI.M2 and XI.M32 in NUREG-1801, Vol. 2), was revised to address general, pitting, and crevice corrosion. A one-time inspection applies to general corrosion as well. (3) Since the aging effect of general, pitting, and crevice corrosion is identically "loss of material, these three aging mechanisms are best handled in the same line item with the same AMP (water chemistry augmented by one-time inspection). (4 and 5) AFW pump casings and valve bodies are composed of carbon steel and are subject to general, pitting, and crevice corrosion. The entries for pumps and valves were revised to include general corrosion as an applicable aging effect. The GALL report was revised to address this comment for parts 1, 2, 4, and 5.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII H-1	H.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 VIII. 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 VIII, Section H 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. The 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 VIII. The GALL report was not revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII H-2	H.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 (BAC) Program is based on NRC Generic Letter 88-05, which is a stand alone program to monitor the reactor coolant boundary for borated water leakage. ASME Section XI, which is independent of the boric acid corrosion program, is a code requirement to identify leakage during the performance of pressure tests and hydrostatic tests. Staff considers the ASME Section XI inspections to be non-related to the boric acid corrosion program and has removed reference to ASME Section XI from the BAC program. The GALL report was revised to address this comment.
G-VIII H-3	H.1.1	Atmospheric corrosion is only applicable to carbon steel components associated with portions of systems operating below 212ºF.	Since moisture is necessary for general, pitting and any other forms of atmospheric corrosion, the external surfaces of carbon steel components, which operate above 212ºF, are not susceptible to loss of material due to corrosion.	Several carbon steel components in the Steam and Power Conversion System are exposed to temperatures lower than 212°F, and are therefore susceptible to general corrosion. Corrosion mechanisms are delineated throughout the GALL report as general (incorporating atmospheric), pitting, crevice, etc. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII H-4	H.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. As programs credited vary between plant sites, a plant specific review should be performed.	The external surfaces of BWR and PWR carbon steel components are subjected to air, moisture, and humidity resulting in loss of material caused by general corrosion. (The term "atmospheric corrosion" was replaced with "general corrosion" to be consistent with similar changes in Chapters V and VII). A plant-specific aging management program needs to be evaluated for these conditions. Reference to AMP XI.S8 "Protective Coating Monitoring and Maintenance Program" was removed. The GALL report was revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII H-5	H.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 H.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).	(1) Closure bolting in high-pressure or high-temperature BWR or PWR systems is exposed to "Air, Moisture, Humidity and Leaking Fluid." Chemically treated borated water is applicable only to PWRs. (2) Boric acid corrosion of PWR closure bolting is addressed in the first line item for Section H on Carbon Steel Components. This bolting also experiences atmospheric corrosion (the term "atmospheric corrosion" was replaced with "general corrosion" to be consistent with similar changes in Chapters V and VII). Item H.2.1 represents both PWR and BWR closure bolting. The GALL report was not revised to address this comment.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII H-6	H.2.1	Delete Aging Effect/Mechanism "Loss of Pre-load due to Stress Relaxation."	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 ISI Inspection to address loss of pre-load due to stress relaxation.	See NRC disposition of NEI comment for G-VII-I-6 in this Appendix B, Table B.2.6.

Table B.2.7: Disposition of NEI Comments on Chapter VIII of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-VIII H-7	H.2.1	Delete Aging Effect/Mechanism "Crack Initiation/Growth" due to Cyclic loading, Stress Corrosion Cracking.	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 this Appendix B, Table B.2.6.

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APPENDIX B, TABLE B.2.8

DISPOSITION OF NEI COMMENTS ON CHAPTER X OF GALL REPORT

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Table B.2.8: Disposition of NEI Comments on Chapter X of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis For Comment	NRC Disposition
G X-1	B.3.6 GALL X	Revise the title of the Chapter to be "Chapter X Programs that Support TLAAs."	The programs identified in this section are not necessarily in support of Option (iii). Cycle counting and EQ are programs that can also be used to confirm design basis assumptions in support of Options (i and ii).	See NRC disposition of NEI comment S 4.3-9 in this Appendix B, Table B.2.13. Options (i) and (ii) calculations are performed prior to the period of extended operation to verify that the fatigue analysis remains valid. The intent of cycle counting in option (iii) is to monitor the usage during the extended period of operation to assure that the CUF does not exceed its allowable limit. The GALL report was not revised to address this comment.
G X.M1-1	B.3.6 GALL X.M1	GALL X.M1 Metal Fatigue of Reactor Coolant Pressure boundary intermingles thermal cycle counting with the addressing of reactor water effects. Delete the information in X.M1 associated with reactor water effects. Specifically: Program Description: Delete the second paragraph and the reference in the third paragraph to environmental effects. Evaluation and Technical basis: Adjust the numbered topics as follows: (2) Preventive Actions: Delete the phrase "and considering the effect of the reactor water environment, as described under program description above."	The thermal cycle count method of managing the existing fatigue design basis has been found acceptable for renewal and can be used by the majority of the industry. When reworded, the attributes in X.M1 can clearly be referenced by renewal applicants beginning near-tem. Addressing reactor water effects is less clear and has been done differently by the initial applicants. Additionally, it is the subject of ongoing industry and NRC efforts (Reference Christopher I. Grimes July 18, 2000 letter, *Summary of Meeting with the Nuclear Energy Institute (NEI) to Discuss Fatigue of Metal Components for 60-year Plant*	The reference to Appendix L in the AMP is as a consequence of outstanding technical issues regarding Appendix L that require resolution. This is one area where further staff review will be required if an applicant proposes the use of Appendix L. The acceptable way to evaluate environmental effects of fatigue is by calculation of CUF. The GALL report was not revised to address this comment.

Table B.2.8: Disposition of NEI Comments on Chapter X of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis For Comment	NRC Disposition
G X.M1-1 (cont.)		(3) In the third sentence, delete "local," revise "of the plant transient" to "of plant transients" and delete "for each transient." (4) Detection of Aging Effects: Reword to "not applicable for a preventive management program." (5) Monitoring and Trending: Reword to "The program should be provided for periodic assessment of actual accumulated cycles versus the design calculation values." (6) Acceptance Criteria: Delete the phrase "considering environmental fatigue effects." (7) Corrective Actions: Replace the second sentence with the following, "Acceptable corrective actions may include a more rigorous analysis of the component to demonstrate that the design code limit will not be exceeded, inspection coupled with appropriate flaw tolerance assessment, repair, or replacement of the component. ASME Section XI Appendix L provides methods and criteria for performing these activities." Delete the last sentence. Operating Experience: In the last sentence, replace the phrase "in selecting the monitored locations" with "by the program." 3. References: Delete the three references. Add a reference to NUREG-1723, Safety Evaluation Report Related to the License	*Life*, Adams Accession No. ML003733789). Given the current state of awareness on the ways to address reactor water effects, the near-term applicants can not use X.M1 the way it is currently structured. Since the GALL report was designed to create materials that can be referenced by renewal applicants, removing the information associated with reactor water effects from the GALL and maintaining them only in the SRP-LR until a future time better satisfies this objective. Item (3): For fatigue monitoring programs, the actual transient history may be evaluated, not each specific transient. Item (7): Appendix L permits a licensee to demonstrate that a component is acceptable with regard to cumulative fatigue effects by performing a flaw tolerance evaluation of the component as an alternative to meeting the fatigue requirements of ASME Section III. The NRC has reviewed Appendix L and determined that its use is generally acceptable. Licensees should be aware that the ASME Code is considering revisions to Appendix L concerned with flaw aspect ratio and the influence of reactor water environmental effects on both fatigue usage and crack	

Table B.2.8: Disposition of NEI Comments on Chapter X of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis For Comment	NRC Disposition
G X.M1-1 (Cont.)		Renewal of Oconee Nuclear Station Units 1, 2 and 3 where the thermal cycle count method of fatigue management was accepted by the NRC.	growth evaluations.	
G X.S1-1	B.3.6 GALL X.S1	Move this program description to Chapter XI.	The activities described in X.S1 constitute an aging management program and do not address a TLAA.	See NRC disposition of NEI comment S 4.5-1 in this Appendix B, Table B.2.13. This merely provides one way that an applicant can choose to perform its TLAA in accordance with 10 CFR 54.21(c)(1)(iii). The attributes addressed in X.S1 are related to the time-dependent characteristics of the pre-stressing forces in pre-stressed concrete containments as applicable to the extended period of operation. The GALL report was not revised to address this comment.

Table B.2.8: Disposition of NEI Comments on Chapter X of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis For Comment	NRC Disposition
G X.S1-2	B.3.6 GALL X.S1	Clarify regulatory meaning of the "trend line."	Under Program Description, last sentence in second paragraph begins "The goal would be to keep the trend line above the PLL," because "if the trend line crosses the PLL, the existing prestress in the containment could go below the MRV soon after the inspection." If the extension of the trend line crosses the PLL at some point in the future, then the second part of the sentence about not meeting the criteria "soon after the inspection" would not necessarily be true. Therefore, "trend line" needs to be clarified in this case as to whether it means the trend line only including the last data point, or the extension of the existing data trend line.	Depending upon the angle between the trend line and the PLL line, the trend line could go below MRV in 2 to 10 years. That is when the use of auxiliary verb "could" has some merits. The trend line in context of SRP, GALL and 10 CFR 50.55a(b)(2)(ix)(B) or 10 CFR 50.55a(b)(2)(viii)(B), means the regression line (i.e., extrapolated line) reflecting the actual measured lift-off data. The NEI commenter is partially correct in pointing out that in all cases the statement, "if the trend line crosses the PLL, the existing pre-stress in the containment could go below the MRV soon after the inspection, which will not meet the requirement of 10 CFR 50.55a(b)(2)(ix)(B) or 10 CFR 50.55a(b)(2)(viii)(B)." The GALL report was not revised to address this comment

APPENDIX B, TABLE B.2.9

DISPOSITION OF NEI COMMENTS ON CHAPTER XI OF GALL REPORT

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Table B.2.9-1: Disposition of NEI Electrical Comments on Chapter XI of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G2 XI.E1	XI.E1 Paragraph 1 XI.E2 Paragraph 1	In the first and second sentences of paragraph 1, replace "nominal plant" with "plant design."	"Nominal plant environment" is a vague term that does not describe any values normally maintained at a station. "Design environments" are defined at plants and are the values to which actual environments can be compared.	The term "nominal plant environment" is a vague term that does not describe any specific values normally maintained at a station. GALL Chapter XI, Sections E1 and E2 were revised to address this comment by replacing the term "nominal plant environment" with the term "plant design environment" to more clearly define the environments being referenced.

Table B.2.9-1: Disposition of NEI Electrical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G2 XI.E2	XI.E2 Paragraph 1 XI.E3 Paragraph 1	Add the following sentence: in G2-XI.E2 - after sentence 3 in paragraph 1 in G2-XI.E3 – before the last sentence in paragraph 1 "An adverse localized environment is a condition in a limited plant area that is significantly more severe than the specified service condition for the cable."	The term "*adverse localized environment*" is used in the first paragraph but is not defined.	The term "adverse localized environment" is a unique term that is not defined in the program description. GALL Chapter XI, Sections E1, E2, and E3 were revised to address this comment by incorporating the following definition, extracted from EPRI TR-109619, into the program descriptions: "An adverse localized environment is a condition in a limited plant area that is significantly more severe than the specified service condition for the cable. An adverse variation in environment is significant if it could appreciably increase the rate of aging of a component or have an immediate adverse effect on operability." Also, EPRI TR-109619 was included in the list of references for each program.

Table B.2.9-1: Disposition of NEI Electrical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G2 XI.E3	XI.E3 Paragraph 1	Replace sentence 2 of paragraph 1 with the following sentence: "When an energized medium-voltage cable is exposed to wet conditions for which it is not designed, water treeing or a decrease in dielectric strength of the conductor insulation could occur.	Section XI.E3, Paragraph 1, sentence 2 implies that any medium-voltage cable that is not designed for submergence is subject to water treeing or a decrease in dielectric strength of the conductor insulation. There are levels of moisture exposure lower than total submergence for which a cable could be designed to withstand without being subject to water treeing or a decrease in dielectric strength. Also, the DOE/Sandia Cable AMG states that the growth and propagation of water trees is *"somewhat unpredictable"* so it is not a sure thing that water treeing will occur even with the "right" conditions. Sentence 2 should instead reflect that when a medium-voltage cable is exposed to wet conditions for which it is not designed it could be subject to water treeing or a decrease in dielectric strength of the conductor insulation.	Note that this comment refers to sentence 3 of paragraph 1 in the August 2000 version, and not sentence 2. There are levels of moisture exposure lower than total submergence for which a cable could be designed to withstand without being subject to water treeing or a decrease in dielectric strength. Therefore, the proposed change is acceptable and has been incorporated. GALL Chapter XI, Section E3 was revised to address this comment.

Table B.2.9-1: Disposition of NEI Electrical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G2 XI.E4	XI.E4	Delete program XI.E3 and reference the Boric Acid Corrosion Program (XI.M5).	Section XI.E3, paragraph 1, sentence 2 states: *"The program described herein is an augmentation of the* Boric Acid Corrosion Program ..." This program as described is part of a plant's Boric Acid Corrosion Program in that visual inspections of electrical equipment are performed along with the visual inspections of mechanical equipment and structures. Using "augmentation" implies that electrical equipment is not included in a plant's current Boric Acid Corrosion Program. Since this program is just a part of the Boric Acid Corrosion Program (XI.M5) it is not logical to have pieces of the same program appear in two places in the GALL report. Suggest deleting program XI.E4 in electrical and just referencing program XI.M5 for this aging effect.	Note that this comment refers to program XI.E4 in the August 2000 version, and not program XI.E3. The Boric Acid Corrosion Program (XI.M5 in August 2000 version of GALL) has been revised to specifically include electrical components in its scope and is now AMP XI.M10 in NUREG-1801, Vol. 2. The program previously described in AMP XI.E4 in the August 2000 version of GALL was incorporated into XI.M10, because it is not necessary to have two separate programs concerned with the same aging effects of electrical components. GALL Chapter XI, Section E4 was deleted to address this comment. The Boric Acid Corrosion program (XI.M10 in NUREG-1801, Vol. 2) is now referenced. Also, conforming changes were made to GALL Volume 1, and the SRP-LR Section 3.6.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM1	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel	SRP-LR Section 3, Table 3.1-1 shows that aging management activities to address the loss of fracture toughness due to thermal aging embrittlement of Class 1 and Class CS cast austenitic stainless steel (CASS) components in BWR and PWR plants are adequate. The SRP-LR refers to Chapter XI, Section XI.M1, for discussion of the adequacy of the aging management activities. However, when the loss of fracture toughness is due to a combination of thermal aging embrittlement and neutron irradiation embrittlement (reactor vessel internals) are the aging management activities called into question. This discussion is contained in Section XI.M2. The Gall report also contains important findings in this regard. For example, the GALL report states that "The reactor vessel internals receive a visual inspection in accordance with Category B-N-3 of Subsection IWB, ASME Section XI. This inspection is not sufficient to detect the effects of loss of fracture toughness due to thermal aging and neutron irradiation embrittlement of cast austenitic stainless steel (CASS) reactor vessel internals." The GALL report also states that	The license renewal technical issue related to CASS component thermal aging embrittlement is closed with respect to the screening criteria used to determine the potential significance of thermal aging embrittlement for CASS reactor coolant system and reactor vessel internals components. The only remaining issues are related to the adequacy of activities to manage the potential loss of fracture toughness caused by thermal aging embrittlement. Almost all of the ASME Code Section XI inservice inspection activities have been found to be acceptable, with the exception of three items. First, the visual (VT-3) examinations for reactor internals have been found to be inadequate, and supplemental (e.g., VT-1 or enhanced VT-1) examinations are required. This item will be subsumed under the license renewal technical issue concerning VT-1 versus VT-3 examinations. Second, the Examination Category B-J inspections for piping welds have been found to be inadequate, with supplemental volumetric inspections of limiting base metal locations required. This item might be acceptable to the industry, since it is demonstrably likely that the limiting	The Aging Management Programs (AMPs) related to the Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (AMP XI.1 in the August 2000 draft of GALL and relocated as AMP XI.12 in NUREG-1801, Vol. 2) and the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (AMP XI.2 in the August 2000 draft of GALL and relocated as AMP XI.13 in NUREG-1801, Vol. 2) do not address SAW/SMAW flaw acceptance criteria for CASS components. Industry needs to justify that the correlation of SAW/SMAW crack growth resistance curves with those for thermally aged CASS is valid up to 40% delta ferrite. As delineated in each section, an AMP consists of the following: determination of the susceptibility of CASS components to thermal aging embrittlement based on casting method, molybdenum content, and percent ferrite. In AMP XI.12 (managing thermal aging embrittlement of CASS) For "potentially susceptible" components, aging management is accomplished through either enhanced volumetric examination or plant- or component-specific flaw tolerance evaluation. Additional inspection or evaluations to demonstrate that the material has

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM1 (cont.)		"The reactor coolant system components are inspected in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Subsection IWB. This inspection is not sufficient to detect the effects of loss of fracture toughness due to thermal aging embrittlement of cast austenitic stainless steel (CASS) components." The SRP-LR and the GALL report accept the industry screening criteria (i.e., casting method, Mo content, delta ferrite content) for susceptibility of CASS components to thermal aging embrittlement, with one minor exception. The exception concerns the comparison of SAW/SMAW crack growth resistance curves with thermally aged CASS crack growth resistance curves. The industry finds the comparison valid out to 40 % delta ferrite, while the NRC staff will not accept the comparison for delta ferrite greater than 25 %. The NRC staff want flaw evaluation for piping with >25% ferrite to be performed on a case-by-case basis using fracture toughness data provided by the applicant. However, for potentially susceptible components, the industry and the	base metal locations can be shown to be within the 0.5-inch zone on either side the welds being examined under the current Examination category B-J procedures. Third, the acceptability of the existing SAW/SMAW flaw acceptance criteria for CASS components has been found to be limited to 25 % delta ferrite. The industry finds that the available data, while sparse, shows good comparison out to delta ferrite of 40 %. The Gall report recognizes that "Cracking is expected to initiate at the surface and should be detectable by ISI." The GALL report also recognizes that volumetric examination covers welds and extends 1/2 in. on either side of the weld and through the wall thickness. The GALL report recognizes the added importance of Examination Category B-P, which involves visual (VT-2) examination of all pressure retaining boundaries during the system leakage test (IWB-5221) and system hydrostatic test (IWB-5222). The system leakage test is conducted prior to plant startup following each refueling outage, and hydrostatic test is conducted at or near the end of each inspection interval.	adequate fracture toughness are not required for components that are not susceptible to thermal aging embrittlement. In AMP XI.13 (managing thermal aging and neutron irradiation embrittlement of CASS) for each "potentially susceptible" component, aging management is accomplished through either (a) a supplemental examination of the affected component based on the neutron fluence to which the component has been exposed as part of the applicant's 10-year inservice inspection (ISI) program during the license renewal term, or (b) a component-specific evaluation to determine its susceptibility to loss of fracture toughness. The GALL report was not modified to address this comment.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM1 (cont.)		NRC staff disagree on some of the aging management activities. The SRP-LR and the GALL report stipulate either a supplemental examination of the some of the susceptible components or a component-specific evaluation to determine the consequences of a loss of fracture toughness. The supplemental examinations for reactor coolant system components are for base metal locations in CASS piping not covered by ASME Code Section XI Examination Category B-J. Flaw tolerance calculations can be used in lieu of these supplemental visual, surface, or volumetric examinations. The supplemental examinations for reactor vessel internals are to replace the Examination Category B-N-3 visual (VT-3) examinations. For pump casings and valve bodies, based on the assessment documented in the letter dated May 19, 2000, from Christopher Grimes, NRC, to Douglas Walters, Nuclear Energy Institute (NEI), screening for susceptibility to thermal aging is not required. The existing ASME Section XI inspection requirements, including the alternative requirements of ASME Code Case N-481 for pump casings,	Therefore, while the option of flaw tolerance will be helpful in avoiding unnecessary supplemental examinations, the industry continues to assert that existing ASME Code Section XI inservice inspection activities are adequate to manage the loss of fracture toughness in CASS components caused by thermal aging embrittlement. This adequacy determination applies not only to the Examination Category B-N-3 inspections for internals components, but also to the base metal for reactor coolant system piping components subject to Examination category B-J requirements.	

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM1 (cont.)		are considered adequate for all pump casings and valve bodies. Also, the existing ASME Section XI inspection requirements are considered adequate for managing the effects of loss of fracture toughness due to thermal embrittlement of CASS valve bodies.		
G-XI.M4-1	Closed Cycle Cooling Water System	Delete all information associated with the ASME OM S/G, Part 2 as it does not demonstrate chemistry effectiveness in managing aging. Chemistry is sufficient to manage the aging in this system. The Operating Experience attribute for Closed Cycle Cooling Water System should be revised to note that the applicant must provide objective evidence that the program presented in GALL is effective in managing the aging. This evidence could be provided in several different ways, such as a review of operating experience. The Closed Cycle Cooling Water System should state the following: **PROGRAM DESCRIPTION** The program relies on preventive measures to minimize corrosion by maintaining corrosion inhibitors based on the guidelines of EPRI TR–107396 for closed–cycle cooling water (CCCW) systems,	ASME OM S/G, Part 2, provides performance and functional testing guidelines to verify the active functions of the closed cooling water system to demonstrate chemistry effectiveness. Monitoring parameters such as flows, temperatures, and pressures does not manage the loss of material of system components nor will it provide indication that loss of the component function is imminent. As a result, this standard is not effective in maintaining the passive function of the system components nor does it demonstrate chemistry effectiveness. Chemistry alone is sufficient to manage the aging effects in a closed cycle cooling system unless a review of operating experience pertaining to the applicant's program notes otherwise. A review of operating experience should demonstrate program effectiveness	The aging management program relies on preventive measures to minimize corrosion by maintaining inhibitors and by performing non-chemistry monitoring consisting of inspection and nondestructive evaluations based on the guidelines of EPRI-TR-107396 for closed-cycle cooling water (CCCW) systems. The inspections for monitoring, other than chemistry, includes data collection and analyses to predict the potential problems such as loss of structural integrity and reduced heat transfer caused by corrosion and/or deposition. These measures will ensure that the CCCW systems and components serviced by the CCCW system are performing their function acceptably. The GALL report was modified to delete reference to ASME OM S/G Part 2 and the requirement for performance of functional tests per ASME OM S/G Part 2 in the AMP

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M4-1 (cont.)		**EVALUATION AND TECHNICAL BASIS** ***(1) Scope of Program:*** A CCCW system is defined as part of the service water system that is not subject to significant sources of contamination, one in which water chemistry is controlled, and one in which heat is not directly rejected to a heat sink. The program described in this section applies only to such a system. If any one or more of these conditions are not satisfied, the system is to be considered open–cycle cooling water system and is addressed in XI.M3 of this chapter. The staff notes that if the adequacy of cooling water chemistry control can not be confirmed, the system should be treated as an open-cycle system and Action III of GL 89-13 for open-cycle systems should implemented. Action III would require an inspection and maintenance program for piping and components in the CCCW system to ensure that corrosion, erosion, and protective coating failure cannot degrade the performance of safety-related systems serviced by CCCW. ***(2) Preventive Actions:*** The program relies on maintaining system corrosion inhibitor concentrations within specified limits of EPRI TR–107396 to minimize corrosion.	or the need for further actions to prove effectiveness. A couple of industry events do not provide significant proof that chemistry is ineffective at the applicant's plant and requires further actions unless those events occurred at the applicant's plant.	"Closed-Cycle Cooling Water" (XI.M21 in NUREG-1801, Vol. 2).

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M4-1 (cont.)		***(3) Parameters Monitored/Inspected:*** The program includes monitoring and control of cooling water chemistry corrosion inhibitor concentrations the specified limits of EPRI TR–107396 to minimize corrosive effects of the aggressive environment. ***(4) Detection of Aging Effects:*** Water chemistry manages corrosion by controlling the environment and requires no detection of aging effects. ***Monitoring and Trending:*** The frequency of sampling water chemistry varies from continuous, daily, weekly, or as needed, based on plant operating conditions. ***Acceptance Criteria:*** Corrosion inhibitors concentrations are maintained within the limits specified in the EPRI water chemistry guidelines for CCCW. ***(7) Corrective Actions:*** Corrosion inhibitor concentrations outside the allowable limits are returned to acceptable range within the time period specified in the EPRI water chemistry guidelines for CCCW. ***(8 & 9) Confirmation Process and Administrative Controls:*** Site QA procedures, review and approval processes, and administrative controls are implemented in accordance with requirements of		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M4-1 (cont.)		Appendix B to 10 CFR Part 50 and will continue to be adequate for the period of license renewal. As discussed in the appendix to this report, the staff finds 10 CFR Part 50, Appendix B, acceptable in addressing confirmation process and administrative controls. ***(10) Operating Experience:*** Degradation of closed-cycle cooling water systems due to corrosion product buildup [Licensee Event Report (LER) 93-029-00] or through-wall cracks in supply lines (LER 91-019-00) have been observed in operating plants. The operating experience indicates that the controlling system chemistry with corrosion inhibitors is effective in managing the effects of aging. **REFERENCES** EPRI TR-107396, *Closed Cooling Water Chemistry Guidelines*, Electric Power Research Institute, Palo Alto, CA, November 1997. NRC Generic Letter 89-13, *Service Water System Problems Affecting Safety-Related Equipment*, July 18, 1989. NRC Generic Letter 89-13, Supplement 1, *Service Water System Problems Affecting Safety-Related Equipment*, April 4, 1990. LER #93-029-00, *Inoperable Check Valve in the Component Cooling*		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M4-1 (cont.)		*System as a Result of a Build-Up of Corrosion Products between Valve Components*, December 13, 1993. LER #91-019-00, *Loss of Containment Integrity due to Crack in Component Cooling Water Piping*, October 26, 1991.		
G-XI.M4-2	Closed Cycle Cooling Water System	The LER numbers listed in the reference list are not valid numbers.	The numbers are not standard LER numbers. Searches were not able to find these LERs.	The referenced LER numbers were verified to be valid. The details of these LERs are: LICENSEE EVENT REPORT (LER) LER #: 93-029-00, DOCKET NUMBER: 05000327, Inoperable Check Valves in the Component Cooling System as a Result of a Build-Up of Corrosion Products between Valve Components, EVENT DATE: 11/16/93, REPORT DATE: 12/13/93, SCSS Accession # 9312270020, (http://scss.ornl.gov/scss/) LICENSEE EVENT REPORT (LER) LER #:91-019-00, DOCKET NUMBER: 05000280, Loss of Containment Integrity due to Crack in Component Cooling Water Piping, EVENT DATE: 8/28/91, REPORT DATE: 9/26/91, SCSS Accession # 9110010058, (http://scss.ornl.gov/scss/) The GALL report was not revised as a result of this comment.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
XI-M5-1	XI.M5	Revise first sentence of element (1) Scope of Program to read "The program covers any carbon steel **and low alloy steel** structures and components"	Both types of steel are affected. This addition makes the sentence more technically correct.	The AMP for Boric Acid Corrosion (XI.M5 in August 2000 version and relocated to XI.M10 in NUREG-1801, Vol. 2) covers any carbon steel and low-alloy steel structures or components on which borated reactor water leaks. The GALL report was modified to address the comment by including low-alloy steel structures and components in the program scope.
XI-M5-2	XI.M5	Remove all references to ISI in Program Description and elements (4) and (7).	NRC has approved responses to GL 88-05 that both include ASME XI visual examinations and those that don't. (In most cases, ISI will be one aspect of the 88-05 program.) If 88-05 program was deemed adequate without inclusion of ISI inspections, it should be adequate for aging management because adequate substitutes for the ISI aspect would have been included. GL 88-05 neither refers to nor requires ISI. Option should be with individual applicant as to whether to include ISI as one aspect of their 88-05 response. This position was accepted in NUREG-1705. Also, program information for elements (1), (5), and (10) does not seem to consider ISI as a separate aspect.	The boric acid corrosion AMP is sufficient by itself to detect leaks so as to prevent or mitigate boric acid corrosion on the external surfaces of CS components. The ASME Section XI inspections are being performed, independent of the boric acid corrosion AMP, typically before startup following a normal refueling outage. The GALL report, Chapter XI was revised to address the comment by revising the boric acid corrosion AMP (XI.M10 in NUREG-1801, Vol.2) to delete requirements to perform inservice inspections in accordance with ASME Chapter XI.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
XI-M6-1	XI.M6	Revise second sentence of element (1) Scope of Program to read "Pump casings and valve bodies retaining pressure in these high energy systems are bounded by the piping inspections performed for the program."	This revision more accurately reflects the scope of the program as defined by NSAC-202L-R2 since the pumps and valves are not actually part of the original UT scope.	The scope of the Flow Accelerated Aging Management Program XI-M6 (XI-M17 in NUREG-1801, Vol. 2) was revised to state that "Valve bodies retaining pressure in these high-energy systems are also covered by the program." The FAC of pump casing was deleted from the GALL report because wall thinning will affect pump performance that will be detected by the plant maintenance program. The GALL report was modified to address this comment.
G-XI.M7-1		Delete generic program for "Outer Surfaces of Above Ground Carbon Steel Tanks" in its entirety.	External corrosion of above ground carbon steel tanks should be addressed on a plant specific basis based upon the different monitoring programs credited by the industry and the differences in tank design utilized. The loss of material due to corrosion of external surfaces of carbon steel components (including tanks) is addressed by a variety of different industry programs. Some tanks may be included in the Maintenance Rule Structures Monitoring Program, while other tank inspections may be governed by the Fire Protection Program or other existing programs. Additionally, the potential aging effects on the external surface of the bottom of tanks are greatly dependent on the design of the tank.	The program title was changed to "Above Ground Carbon Steel Tanks" (XI.M29 in NUREG-1801, Vol. 2) and it provides one acceptable AMP for the external corrosion of above ground carbon steel tanks. The GALL report was not modified to address this comment because the applicant has the option of conducting an alternative plant-specific program.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M7-1 (cont.)			Some tanks are designed with a solid concrete foundation, which supports the floor of the tank. These tanks utilize a layer of asphalt or other material between the tank bottom and the concrete to eliminate high point bearing and to preclude moisture intrusion. Other designs utilize a concrete ring wall to support the walls of the tank and the tank bottom sits on compacted oil impregnated sand. Some tanks utilize a layer of grout between the tank bottom and the ring header to preclude moisture intrusion. As such, the environments and resulting potential aging effects associated with tanks are dependent upon site specific design considerations. Therefore, potential aging effects on external surfaces of above ground carbon steel tanks should be addressed on a plant specific basis.	
G-XI.M8-1		Delete generic program for "Outer Surface of Buried Piping and Components" in its entirety.	Nuclear industry experience dictates external corrosion of buried piping should be addressed on a plant specific basis. Aging effects associated with buried piping are highly dependent upon site specific considerations such as aggressiveness of soil/fill environment, materials used, and condition of protective coatings. Because Bell hole examinations have the potential of damaging	The AMP "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2) manages the aging of buried carbon steel piping. Although the Buried Piping and Tanks Surveillance AMP (based on NACE standards) is not an existing nuclear industry standard practice, it is one acceptable method. An alternative to the AMP "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2) is found in the AMP

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M8-1 (cont.)			coatings when unearthing pipe, they are not typically conducted at nuclear plants. Additionally, the most common failures are due to localized pinhole degradations in the coatings. However, when specific components are unearthed for repairs (e.g., a fire protection post indicator isolation valve), the condition of the external coatings on adjacent unearthed piping is typically inspected as a good practice. Plants which have experienced external aging effects with buried piping have taken actions to address their specific issues, including replacement of piping when deemed necessary. Therefore, potential aging effects on external surfaces of buried piping and components should be addressed on a plant specific basis.	"Buried Piping and Tanks Inspection (XI.M34, NUREG-1801, Vol. 2) which inspects based on the frequency for the need to dig up piping considering plant operating experience that would allow for crediting the inspection when a pipe is dug up for any reason. The frequency and plant operating experience could be subject to a plant specific review. The GALL report was modified to address this comment by adding a new alternative AMP, "Buried Piping and Tanks Surveillance" (XI.M28, NUREG-1801, Vol. 2).
G-XI.M9-1	Fuel Oil Chemistry	The ASTM Standard D270 does not exist in the ASTM Standards from 1996 through 2000. We believe that this standard should be replaced with ASTM D4057.	Unable to find the ASTM Standard D270. The title in the reference list matches the title D4057.	The "Fuel Oil Chemistry" AMP XI.M9 (XI.M30 in NUREG-1801, Vol. 2) was revised and the reference ASTM D 270 was replaced by ASTM D 4057-95(2000), *Standard Practice for Manual Sampling of Petroleum and Petroleum Products.* The GALL report was modified to address this comment.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M9-2	Fuel Oil Chemistry	If ASTM Standard D270 should be D4057, then the second sentence in the Parameters Monitored/ Inspected is incorrect. D4057 provides guidance for obtaining a sample; it does not define fuel oil specifications. Fuel oil specifications are outlined in D975.	A review of ASTM Standard D4057 did not reveal any fuel oil specifications. Standard D4057 only provides guidance for obtaining samples.	The "Fuel Oil Chemistry" AMP XI.M9 (XI.M30 in NUREG-1801, Vol. 2) was revised and references ASTM Standard D 4057 for guidance on oil sampling and ASTM Standard D 975 for guidance on fuel oil specifications. The GALL report was modified to address this comment.
G-XI.M9-3	Fuel Oil Chemistry	ASTM D975 does not specify microbiological limits for fuel oil as stated in the Acceptance Criteria attribute of the program.	A review of ASTM 975 did not reveal any limits for microbiological limits in fuel oil. In addition, the industry is not aware of a standard that specifies microbiological limits for fuel oil.	The "Fuel Oil Chemistry" AMP XI.M9 (XI.M30 in NUREG-1801, Vol. 2) was revised and the reference to ASTM D 975 concerning microbiological limits was deleted and the appropriate references for sediment D 2709 and particulates D 2276.were added. The ASTM Standards D 1796 and D 2709 are used for determination of water and sediment contamination in diesel fuel. For determination of particulates, *modified* ASTM D 2276, Method A, is used. The GALL report was modified to address this comment.
G-XI.M9-4	Fuel Oil Chemistry	Statements for verification of program effectiveness should be deleted from the Program Description and Detection of Aging Effects attributes. Statements concerning demonstration of program effectiveness should be in the Operating Experience attribute as defined by Appendix A of the	Chemistry alone is sufficient to manage the aging effects in the fuel oil system unless a review of operating experience pertaining to your program notes otherwise. A review of operating experience should demonstrate program effectiveness or the need for further actions, such as inspections, to	The "Fuel Oil Chemistry" AMPXI.M9 (XI.M30 in NUREG-1801, Vol. 2) was revised and the references suggested by NEI are now incorporated. One-time inspection is needed to verify the effectiveness of the fuel oil chemistry aging management program and confirm the absence of aging effects.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M9-4 (cont.)		SRP-LR. In addition, the statements should be clarified to note that other means of demonstrating effectiveness other than inspection, such as operating experience review, are available. In addition, the Fuel Oil Chemistry is sufficient to manage aging in the fuel oil tanks and should be written as follows: **PROGRAM DESCRIPTION** The program includes a combination of surveillance and maintenance procedures. Fuel oil quality is maintained by monitoring and controlling fuel oil contamination in accordance with the guidelines of ASTM Standards D975, D4057, D1796, and D2709. Exposure to fuel oil contaminants, such as water and microbiological organisms, is minimized by verifying the quality of existing fuel oil and new oil before its introduction into the storage tanks. **EVALUATION AND TECHNICAL BASIS** ***(1) Scope of Program:*** The program is focused on managing the conditions that cause general, pitting, and microbiologically-induced corrosion of the diesel fuel tank internal surfaces; it reduces the potential of exposure of the tank internal surface to fuel oil contaminated with water and	prove effectiveness. A few industry events do not provide significant proof that chemistry is ineffective at applicant's plant and requires further actions unless those events occurred at applicant's plant.	Because the applicant has the option of conducting an alternative plant-specific program. The GALL report was not modified to address the first part of this comment.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M9-4 (cont.)		microbiological organisms. ***(2) Preventive Actions:*** The quality of fuel oil is maintained by additions of biocides to minimize biological activity, stabilizers to prevent biological breakdown of the diesel fuel, and corrosion inhibitors to mitigate corrosion. Coatings, if used, prevent or mitigate corrosion by protecting the internal surfaces of the tank from contacting with water and microbiological organisms. ***(3) Parameters Monitored/Inspected:*** The AMP monitors fuel oil quality and the levels of water and microbiological organisms in the fuel oil, which cause loss of material of the tank internal surface. ASTM standard D975 defines fuel oil specifications and standard D4057 defines sampling requirements. The ASTM standards D1796, and D2709, provide guidance to quantify insoluble particulate contamination in diesel fuel. These are the principle parameters relevant to tank structural integrity. ***(4) Detection of Aging Effects:*** Degradation of the diesel fuel oil tank cannot occur without exposure of the tank internal surfaces to contaminants in the fuel oil, such as water and microbiological organisms. Compliance with diesel fuel oil		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M9-4 (cont.)		standards in item 3 above and periodic multilevel sampling provides assurance that fuel oil contaminants are below acceptable levels. ***(5) Monitoring and Trending:*** Water and biological activity or particulate contamination concentrations are monitored and trended at least quarterly. Based on industry operating experience, quarterly sampling and analysis of fuel oil provide for timely detection of conditions conducive to corrosion of the internal surface of the diesel fuel oil tank before the potential loss of its intended function. ***(6) Acceptance Criteria:*** ASTM standard D 975 specifies acceptance criteria for the limits of water content and sediment in the diesel fuel oil. ***(7) Corrective Actions:*** Specific corrective actions are implemented in accordance with the plant quality assurance (QA) program. For example, corrective actions are taken to prevent recurrence when the specified limits for fuel oil standards are exceeded or when water is drained during periodic surveillance. Also, when the presence of biological activity is confirmed, a biocide is added to fuel oil. As discussed in the appendix to this report, the staff finds 10 CFR Part 50, Appendix B, acceptable in		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M9-4 (cont.)		addressing corrective actions. ***(8 & 9) Confirmation Process, and Administrative Controls:*** Site QA procedures, review and approval processes, and administrative controls are implemented in accordance with requirements of Appendix B to 10 CFR Part 50 and will continue to be adequate for the period of license renewal. As discussed in the appendix to this report, the staff finds 10 CFR Part 50, Appendix B, acceptable in addressing confirmation process and administrative controls. ***(10) Operating Experience:*** The operating experience at some plants has included identification of water in the fuel, particulate contamination, and biological fouling. However, no instances of fuel oil system components failures attributed to contamination have been identified. This operating experience indicates that maintaining monitoring and controlling fuel oil quality is effective in managing the effects of aging. **REFERENCES** ASTM D 975-98b, *Standard Specification for Diesel Fuel Oils*, The American Society of Testing Material, West Conshohocken, PA. ASTM D 4057-95, *Standard Method of Sampling Petroleum and*		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M9-4 (cont.)		*Petroleum Products*, The American Society of Testing Material, West Conshohocken, PA. ASTM D 1796-97, *Standard Test Method for Water and Sediment in Fuel Oils by the Centrifuge Method*, The American Society of Testing Material, West Conshohocken, PA. ASTM D 2709-96, *Standard Test Method for Water and Sediment in Middle Distillate Fuels by Centrifuge*, The American Society of Testing Material, West Conshohocken, PA.		
G-XI.M10-1		Delete the 4th sentence of element 4 in the Evaluation and Technical Basis that states "This program of functional testing, ...in accordance with 10 CFR Part 50, Appendix R."	System testing, maintenance and inspection in accordance with NFPA should be adequate. Not all sections of Appendix R are applicable to all plants, depending on the date the plant was licensed, commitments to Appendix A of BTP APCSB 9.5-1, or NRC acceptance of plant fire protection features as documented by the staff in comprehensive fire protection SER's issued before Appendix A to BTP APCSB 9.5-1 was published. Moreover, Appendix R primarily addresses design and personnel requirements necessary to assure safe shutdown capabilities. With respect to system testing, maintenance and inspections, Appendix R includes only general requirements.	The referenced sentence in the Evaluation and Technical Basis of the "Fire Water System" AMP XI.M10 (XI.M27 in NUREG-1801, Vol. 2) "This program is implemented in accordance with 10 CFR part 50, Appendix R." has been deleted. The AMP states that "To ensure no significant corrosion, MIC, or biofouling has occurred in water-based fire protection systems, periodic flushing, system performance testing, and inspections are conducted." The GALL report was modified to address this comment.
G-XI.M10-2		In the program description, replace the last 3 sentences to state the following: "In addition to NFPA	Meeting applicable NFPA commitments and the additional internal inspections of system	There is evidence that for aging programs, NFPA is not enough to detect MIC, corrosion, or fouling

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M10-2 (cont.)		commitments, internal inspections are performed on system components when disassembled to identify evidence of loss of materials due to corrosion and biofouling. Also, system is normally maintained at required operating pressure and is monitored such that loss of system pressure is immediately detected and corrective actions initiated."	components when disassembled along with maintaining the system at normal operating pressure provide the assurance that the system intended functions are maintained. This is demonstrated by the element 10, Operating Experience write-up, where the GALL report states, "Water based fire protection systems designed, inspected, tested and maintained in accordance with the NFPA standards have demonstrated reliable performance for at least 80 years."	prior to a loss of the intended function. The programs in NFPA are requirements that do not focus on the detection of aging effects prior to loss of the intended function, as the license renewal rule states. GALL was revised to include internal inspections for portions of piping to ensure that corrosion, MIC, fouling have not caused significant wall thinning and to ensure sprinkler head operability throughout the period of extended operation. The revised program description would read: In addition to NFPA codes and standards, which do not currently contain programs routinely subjected to flow, need to be subjected to full flow tests at the maximum design flow and pressure before the period of extended operation (and at 5-year intervals thereafter). In addition, a sample of sprinkler heads should be inspected by using the guidance of NFPA 25, Section 2.3.3.1. This NFPA section states "where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory for field service testing." It also contains guidance to perform this sampling test every 10 years after the initial field service testing. Finally, portions of fire

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M10-2 (cont.)				protection suppression piping located aboveground and exposed to water also need to be disassembled and visually inspected internally once every refueling outage. The purpose of the full flow testing and internal visual inspections is to ensure that corrosion, MIC, or biofouling aging effects are managed such that the system function is maintained. Element 10 was modified to remove the reference to at least 80 years since no commercial nuclear plants have operated for 80 years. This element now states that "Water-based fire protection systems designed, inspected, tested, and maintained in accordance with NFPA standards have demonstrated reliable performance." The program description of "Fire Water System" XI.M10 (XI.M27 in NUREG-1801, Vol. 2) was not modified to address this comment.
G-XIM11-1	E&TB Item 7	Delete the reference to the "appendix to this report."	It is unclear what this statement means. A more clear reference can be used if desired.	Element 7 "Corrective Actions" of "Reactor Water Chemistry" XI.M11 (XI.M2 in NUREG-1801, Vol. 2) was revised to clarify the reference to the "appendix to this report." The GALL report was modified to address this comment.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M11-2	Water Chemistry	Statements for verification of program effectiveness should be deleted from the Program Description and Detection of Aging Effects attributes. Statements concerning demonstration of program effectiveness should be in the Operating Experience attribute as defined by Appendix A of the SRP-LR. In addition, the statements should be clarified to note that other means of demonstrating effectiveness other than inspection, such as operating experience review, are available. Chemistry alone is sufficient to manage aging and the program should be revised as follows: **PROGRAM DESCRIPTION** The water chemistry program for BWRs relies on monitoring and control of reactor water chemistry based on the EPRI guidelines in TR-103515. The EPRI document TR-103515 has three sets of guidelines, one for primary water, one for condensate and feedwater, and one for control rod drive mechanism cooling water. The water chemistry program for PWRs relies on monitoring and control of reactor water chemistry based on the EPRI guidelines in TR-105714 for primary water chemistry and TR-102134 for	Chemistry alone is sufficient to manage the aging effects unless a review of operating experience pertaining to your program notes otherwise. A review of operating experience should demonstrate program effectiveness or the need for further actions, such as inspections, to prove effectiveness. A few industry events do not provide significant proof that chemistry is ineffective at applicant's plant and requires further actions unless those events occurred at applicant's plant.	The proposed rewrite for XI.M11 "Reactor Water Chemistry" (XI.M2 in NUREG-1801, Vol. 2) provided by NEI is not significantly different from the version submitted for review on August 2000, except for one-time inspection in Element 4 Detection of Aging Effects. One-time inspection is needed to verify the effectiveness of water chemistry control and confirm the absence of an aging effect. If an aging effect is detected, the results are evaluated to determine the appropriate corrective actions. At the 11/15/00 meeting, NEI said that it would provide appropriate language regarding an alternative to a one-time inspection. Although the staff did not receive any NEI input. The GALL report was modified to address the comment by adding a statement indicating that there are alternatives based on past maintenance records.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M11-2 (cont.)		secondary water chemistry. The water chemistry programs are generally effective in removing impurities in primary and secondary water systems. **EVALUATION AND TECHNICAL BASIS** ***(1) Scope of Program:*** The program includes periodic monitoring and control of known detrimental contaminants such as chlorides, fluorides (PWRs only), dissolved oxygen, and sulfate concentrations below the levels known to result in loss of material. Water chemistry control is in accordance with the EPRI guidelines of TR-103515 Rev. 3, for water chemistry in BWRs, TR-105714 Rev. 3, for primary water chemistry in PWRs, and TR-102134 Rev. 3 for secondary water chemistry in PWRs, or later revisions or updates of these reports as approved by the staff. ***(2) Preventive Actions:*** The program includes specifications for chemical species, sampling and analysis frequencies, and corrective actions for control of reactor water chemistry. System water chemistry is controlled to minimize contaminant concentration and mitigate loss of material due to crevice and pitting corrosion.		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M11-2 (cont.)		***(3) Parameters Monitored/Inspected:*** Concentration of corrosive impurities listed in the EPRI guidelines discussed above, and which include chlorides, fluorides (PWRs only), sulfates, dissolved oxygen and hydrogen peroxide, are monitored to mitigate corrosion. Water quality (pH and conductivity) is also maintained in accordance with the guidance. ***(4) Detection of Aging Effects:*** Water chemistry manages corrosion by controlling the environment and requires no detection of aging effects. ***(5) Monitoring and Trending:*** The frequency of sampling water chemistry varies from continuous, daily, weekly, or as needed, based on plant operating conditions. Whenever corrective actions are taken to address an abnormal chemistry condition, increased sampling is utilized to verify the effectiveness of these actions. ***(6) Acceptance Criteria:*** Maximum levels for various contaminants are maintained below the system specific limits based on the limits specified in the EPRI water chemistry guidelines (see item 10, below). Any evidence of the presence of an aging effect or unacceptable water chemistry results is evaluated and its root		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M11-2 (cont.)		cause identified and the condition corrected. ***(7) Corrective Actions:*** When measured water chemistry parameters are outside the specified range, corrective actions are taken to bring the parameter back within the acceptable range in the time period specified in the EPRI water chemistry guidelines. As discussed in the appendix to this report, the staff finds 10 CFR Part 50, Appendix B, acceptable in addressing corrective actions. ***(8) Confirmation Process:*** Following corrective actions, additional samples are taken and analyzed to verify that the corrective actions were effective in returning the concentrations of contaminants such as chlorides, fluorides, sulfates, dissolved oxygen/hydrogen peroxide to within the acceptable ranges. ***(9) Administrative Controls:*** Site QA procedures, review and approval processes, and administrative controls are implemented in accordance with requirements of Appendix B to 10 CFR Part 50 and will continue to be adequate for the period of license renewal. ***Operating Experience:*** The EPRI guidelines documents have been developed based on plant		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.M11-2 (cont.)		experience and have been shown to be effective over time with their widespread use. **REFERENCES** EPRI TR-105714, *PWR primary Water Chemistry Guidelines-Revision 3*, Electric Power Research Institute, Palo Alto, CA, Nov. 1995. EPRI TR-102134, *PWR Secondary Water Chemistry Guideline-Revision 3*, Electric Power Research Institute, Palo Alto, CA, May 1993. EPRI TR-103515, *BWR Water Chemistry Guidelines-Revision 3, Normal and Hydrogen Water Chemistry*, Electric Power Research Institute, Palo Alto, CA, February 1994.		

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM12-1	1-10	The aging management activities appear to ignore the activities that licensees take to ensure that aging of in-scope, but non-safety related, bolting does not inhibit the intended function of the system or component.	Following the EPRI guidelines was not required in the Generic Letter (91-17); however, if licensees have examined their bolting practices and have determined that their programs are adequate, then they should only have to say so in their application. Inspection of bolting in non-safety applications will not prove effective in preventing loss of preload or SCC in some cases. These two effects are most properly managed through original design and torquing.	The Bolting Integrity AMP XI.M12 (XI.18 in NUREG-1801, Vol. 2) acknowledges the activities that licensees take to manage aging of in-scope, but non-safety related, bolting. The last sentences of Element (1) in the Bolting Integrity AMP state that the industry's technical basis for the program for safety related bolting and guidelines for material selection and testing, bolting preload control, inservice inspection (ISI), plant operation and maintenance, and evaluation of the structural integrity of bolted joints, are outlined in references. These include EPRI NP-5769, with the exception noted in NUREG 1339, for safety-related bolting, and EPRI TR-104213 replaces the earlier report EPRI NP-5067 for other bolting. The GALL report was not modified to address this comment.
G-XIM12.2	SRP-LR Tables 3.2-1 3.3-1 3.4-1 and 3.5-1 GALL Sections V.D1.1.7 V.D1.2.2 V.D1.3.1 V.D1.4.2 V.D1.5.5	This is a listing of many of the locations where bolting or the Bolting Integrity Program is specifically mentioned. Any discussion on bolting or the alone should be deleted and replaced with a general discussion on closure set integrity in the SRP-LR. No specific, individual listing of bolting is needed. Also the Bolting Integrity Program is not a real plant program. The	These comments should serve to complement other comments associated with mechanical and structural bolting. Other comments have been made to delete bolting as a specific component for review. Bolting is one part of a multi-part closure set that also includes mating surfaces and could contain gaskets. The function of concern is loss of closure integrity and not bolt integrity.	This aging process is managed by "Bolting Integrity"" AMP XI.M12 (XI.M18 in NUREG-1801, Vol. 2) which covers all bolting within the scope of license renewal. Bolting is considered to be a system component 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. Because ASME Section XI

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM12.2 (cont.)	V.E.2 VII.A3.1.1 VII.A3.2.2 VII.A3.3.2 VII.A3.4.3 VII.A3.5.3 VII.A3.6.1 VII.D.1.2 VII.D.2.2 VII.D.3.2 VII.D.4.2 VII.D.5.2 VII.E1.1.2 VII.E1.2.2 VII.E1.3.2 VII.E1.4.2 VII.E1.5.2 VII.E1.6.2 VII.E1.7.5 VII.E1.8.5 VII.E1.9.1 VII.E1.10.1 VII.E3.2.2 VII.I.2 VIII.B1.1.2 VIII.H.2	appropriate attributes for managing closure integrity will be contained within other plant programs, a number of which are already covered in GALL. Specific details in Comment 3 identify the shortcomings of XI.M12, Bolting Integrity as written.		treats individual bolting as a component and requires inspection of individual bolting. This AMP is retained in the SRP-LR and the GALL report, which were not modified to address this comment.

Table B.2.9-2: Disposition of NEI Mechanical Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XIM12-4	GALL XI.M12	Delete the XI.M12 Bolting Integrity and all associated references from GALL and SRP-LR.	Along with the major perspective issue described in Comment 2 on whether bolting is a component or part of a component, here are some specific problems with the Bolting Integrity write-up and supporting evidence why the program write-up should be deleted: Scope says the program covers all bolting within the scope of license renewal, yet structural bolting is not covered within other program attributes. Also, the program as called out only addresses nuclear class I (RCPB) bolting, mainly 2" and larger. Chapter IV addresses RPV and RPV internals and associated AMP's. Parameters Monitored/Inspected says the program monitors effects of aging on the intended function of closure bolting. Bolting does not have a license renewal intended function. Bolting is part of a closure set that has a closure integrity or structural support function. This is a fundamental issue. of Aging Effects says ASME Section XI is a fine program to manage bolting falling within its purview. We agree for those items falling within the scope of ASME, so the Bolting Integrity write-up is extraneous.	The "Bolting Integrity"" AMP XI.M12 (XI.M18 in NUREG-1801, Vol. 2) covers all bolting within the scope of license renewal. The reference (EPRI TR-104213) replaces the earlier report EPRI NP-5067, *Good Bolting Practices, A Reference Manual for Nuclear Power Plant Maintenance Personnei.* ASME Section XI does not cover structural bolting. As far as the attribute Detection of Aging Effects is concerned, Bolting Integrity program is not extraneous. The GALL report was revised to address the comment by adding a sentence to the AMP EPRI TR-104213, *Bolted Joint Maintenance & Application Guide.*

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G.XI.S1-1	Eval & Tech Basis (1)	**Scope of Program** Change item number 3 to "...provided **IWE-1232** and IWE-5220 are met..."	Editorial	The proposed change provides a more concise reference to the appropriate paragraph of IWE. GALL XI.S1 was revised to address this comment.
G.XI.S1-2	XI.S1	**Scope of Program** Industry concerns regarding inaccessible areas have not been addressed. Consider adding the following paragraph "Plant-specific evaluation of such inaccessible areas should begin with an assessment of environmental conditions, such as severe weathering, aggressive groundwater, and impinging flow of groundwater, that could lead to accelerated aging effects in inaccessible areas with little or no effect in accessible areas. Guidelines for quantitative assessment of severe environmental conditions are provided in Section III.A.1.1 of the GALL."	Plant-specific actions to address inspection of inaccessible areas are beyond Code requirements.	Detailed guidance relating to inaccessible areas has been incorporated in GALL Chapter II for containment structures. Also, the discussion of NUREG-1611 as it pertains to inaccessible areas has been deleted from GALL XI.S1 and XI.S2. With these revisions, the NUREG-1611 concern about aging management for inaccessible areas of containment structures is now directly addressed in Chapter II; GALL XI.S1 and XI.S2 address the implementation of IWE and IWL, in accordance with 10 CFR 50.55a, respectively. GALL Chapter and AMPs II, XI.S1, and XI.S2 were revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G.XI.S1-3	Eval & Tech Basis (3)	**(3) Parameters Monitored or Inspected** Clarify that the "Volumetric" examination method is ultrasonic thickness measurements. Revise the Category E-C table entry to "Visual VT-1, Ultrasonic Thickness Measurements."	Misleading characterization of Examination Category E-C.	The term "Volumetric" is used in Table IWE-2500-1. Therefore, to avoid confusion, this is retained in the table description of Examination Category E-C. However, wording has been changed to "Volumetric (Ultrasonic Thickness Measurements)" in the text of XI.S1 because it more accurately describes the type of volumetric examination specified in E-C. GALL XI.S1 was revised to address this comment.
G-XI.S1-4	Eval & Tech Basis (4)	**(4) Detection of Aging Effects** Revise sentence as follows: "An expedited examination of containment is required by 10 CFR 50.55a in which an inservice (baseline) examination specified for the first period of the first inspection interval must be performed by September 9, 2001."	The added words (underlined) come directly from 10 CFR 50.55a and are included for clarification purposes.	The proposed change accurately reflects the requirements in 10 CFR 50.55a. GALL XI.S1 was revised to address this comment.
G.XI.S1-5	Eval & Tech Basis (4)	**(4) Detection of Aging Effects** Clarify that the "Volumetric" examination method is ultrasonic thickness measurements. Revise the next-to-last sentence to "Selected areas, such as containment surfaces requiring augmented examination (E-C) require ultrasonic thickness measurements."	Misleading characterization of Examination Category E-C.	See NRC Disposition of NEI Comment G.XI.S1-3 in Appendix B, Table B.2.9-3.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S1-6	Eval & Tech Basis (8)	**(8) Confirmation Process** While the write-up for IWE is fairly comprehensive, the key provision for aging management in IWE is missing in the text. Please add to the text "IWE-1240 requires augmented examinations of containment surface areas subject to degradation. A VT-1 examination is required for these areas in lieu of the VT-3 examination specified for examination category E-A in Table IWE-2500-1."	IWE-1240 is the key to aging management in Section XI-IWE.	The proposed change is more appropriate in Attribute (4) — Detection of Aging Effects. Attribute (4) already has a general statement for augmented examination of selected areas. However, to more accurately reflect IWE requirements, the evaluation of Attribute (4) has been revised as follows: "IWE-1240 requires augmented examinations (Examination Category E-C) of containment surface areas subject to degradation. A VT-1 examination is required when the area is accessible from both sides and volumetric (ultrasonic thickness measurement) examination is required for areas accessible from only one side." GALL XI.S1 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G.XI.S2-1	Eval & Tech Basis, (1)	**Scope of Program** Industry concerns have not been addressed. Consider adding the following paragraph "Plant-specific evaluation of such inaccessible areas should begin with an assessment of environmental conditions, such as severe weathering, aggressive groundwater, and impinging flow of groundwater, that could lead to accelerated aging effects in inaccessible areas with little or no effect in accessible areas. Guidelines for quantitative assessment of severe environmental conditions are provided in Section III.A.1.1 of the GALL."	Plant-specific actions to address inspection of inaccessible areas are beyond Code requirements.	See NRC Disposition of NEI Comment G.XI.S1-2 in this Appendix B, Table B.2.9-3.
G-XI.S2-2	Eval & Tech Basis, (2)	**(2) Preventive Action** Delete the reference to a "credited coating program" (second sentence).	Concrete coatings are very plant specific based on external environment. Some plants in harsh climate have metal covers over the containment in lieu of coatings. Coatings are generally not used on interior containment concrete surfaces within the scope of IWL.	Reliance on concrete coatings to manage aging is plant-specific. If relied upon during the current operating term, a program that monitors and maintains the concrete coatings should continue to be relied upon for license renewal. Attribute (2) has been revised to state: "If a coating program is currently credited for managing the effects of aging of concrete surfaces, then it should be continued during the period of extended operation." GALL XI.S2 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S2-3	Eval & Tech Basis, (3)	**(3) Parameters Monitored or Inspected** Change "ultimate strength" to "ultimate tensile strength" in sentence on tendon wires are also tested for...	To match the ASME Code (IWL-2523.2). (Editorial)	The proposed change accurately reflects the wording in IWL-2523.2. GALL XI.S2 was revised to address this comment.
G-XI.S2-4	Eval & Tech Basis (4) 5th line	**(4) Detection of Aging Effects** Clarify the inspection intervals for sites with two plants as specified in IWL-2421. The following paragraph needs to be added: "For sites with multiple plants, the examination requirements for the concrete containments may be modified if the containments utilize the same prestressing system and are essentially identical in design, if post-tensioning operations for each subsequent containment constructed at the site were completed not more than 2 years apart, and if the containments are similarly exposed to or protected from the outside environment. When the above conditions are met, the inspection dates and examination requirements may be as follows. For the containment with the first Structural Integrity Test, all examinations required by IWL-2500 shall be performed at 1, 3, and 10 years and every 10 years thereafter. Only the examinations required by IWL-2524 and IWL-2525 need be performed at 5 and 15 years and	To address the inspection interval for sites with multiple units.	The evaluation of IWL only includes the 1992 edition plus 1992 addenda and the 1995 edition plus 1996 addenda, in accordance with the latest revision to 10 CFR 50.55a. These editions do not address "sites with multiple plants." These editions do address "sites with two plants." Consequently, the following sentence was added to Attribute (4): "For sites with two plants, the schedule for inservice inspection is provided in IWL-2421." GALL XI.S2 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S2-4 (cont.)		every 10 years thereafter. *(2)* For each subsequent containment constructed at the site, all examinations required by IWL-2500 shall be performed at 1, 5, and 15 years and every 10 years thereafter. Only the examinations required by IWL-2524 and IWL-2525 need be performed at 3 and 10 years and every 10 years thereafter."		
G-XI.S2-5	Eval & Tech Basis, (3)	**(5) Monitoring and Trending** Delete second sentence that states trending is required.	Not a requirement of IWL.	Although trending is not a requirement of IWL, trending is required by 10 CFR 50.55a(b)(2)(ix) [or (viii) in the latest amendment of the regulation]. It states that "When evaluation of consecutive surveillances of prestressing forces for the same tendon or tendons in a group indicates a trend of prestress loss such that the tendon force(s) would be less than the minimum design prestress requirements before the next inspection interval, an evaluation shall be performed and reported ...." GALL XI.S2 was not revised to address this comment.
G-XI.S2-6	Page XI-S6	Under Attribute (3), delete "wear" from the sentence on tendon anchorage and wires are visually examined....	Code does not state wear.	The proposed change accurately reflects the wording in IWL. GALL XI.S2 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S3-1	Page XI-S11	Under monitoring and trending, at the end of the last sentence add that trending is possible, but not required.		To address this, the last sentence in (5) Monitoring and Trending has been deleted in its entirety. GALL XI.S3 was revised to address this comment.
G-XI.S4-1	Appendix J, Eval & Tech Basis	The "Evaluation and Technical Basis" for the Appendix J Program needs to acknowledge the requirements for the Containment Inspection as discussed in 10 CFR 50 Appendix J, V.A., particularly the sentence: "...to uncover any evidence of structural deterioration which may affect either the structural integrity or leak-tightness."	Prior to the mandatory inspections under ASME XI-IWE and IWL, Appendix J inspections were performed (and continue to be performed) and provide the operating experience for containment aging.	The GALL report includes discussion regarding prior Appendix J containment inspections in the discussion of "Operating Experience" for the IWE (XI.S1) and IWL (XI.S2) AMPs. Since the mandatory inspection requirements of IWE and IWL have essentially superceded the Appendix J inspections, the Evaluation and Technical Basis for the Appendix J AMP (XI.S4) only addresses the leak rate testing requirements of 10 CFR 50 Appendix J. GALL XI.S4 was not revised to address this comment.
G-XI.S5-1	XI.S5, Introduction, and Evaluation & Technical Basis, items 1 and 6	Delete references to A-46 program. Change the discussion in items 1 and 6 of the Evaluation and Technical Basis to refer to masonry walls within the scope of license renewal.	Reference to A-46 program is inappropriate because the evaluation of masonry walls is not a defined element of the USI A-46 program. The appropriate reference is to "those masonry walls within the scope of license renewal."	Masonry walls identified and evaluated during the USI A-46 program that have an intended function consistent with the criteria of 10 CFR Part 54 must be included in the scope of license renewal. The purpose of the reference to the USI A-46 program was to alert applicants and reviewers. In addition, masonry walls that serve a fire barrier function necessary to meet 10 CFR 50.48 are also within the scope of license renewal.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S5-1 (cont.)				At the meeting with NEI on 1/30/01, NEI pointed out that this is a scoping issue and it is not appropriate to address LR scope in GALL. This issue is more appropriately addressed in SRP-LR 2.4. Consequently, in Section 2.4.3.2, "Structural Components Subject to an Aging Management Review" of SRP-LR-LR, Chapter 2, the following sentence was added: "Another example, if a non-safety-related structure or component is included in the plant's CLB as a part of the safe shutdown path resulting from the resolution of USI-A-46, the reviewer should verify that this structure or component has been included within the scope of license renewal." XI.S5 Attribute (1) and Attribute (6) were revised to delete reference to A-46. XI.S5 Attribute (10) has been revised to incorporate USI A-46 and MR inspection in the discussion of operating experience. GALL XI.S5 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S5-2	XI.S5, Evaluation & Technical Basis	Under item 4, **Detection of Aging Effects:** Delete the following two sentences "Unreinforced masonry walls that have not been contained by bracing require the most frequent inspection because the development of cracks may invalidate the evaluation basis. These walls are to be inspected at every refueling outage."	There is no regulatory requirement to perform this inspection at every refueling outage. The wording cited constitutes a backfit of requirements. Requirements for inspection of unreinforced masonry walls are plant-specific, and will generally be contained in either a Masonry Walls Program or the Structures Monitoring Program (SMP) for the Maintenance Rule. Inspection intervals associated with the SMP, for instance, vary significantly.	The sentence, "These walls are to be inspected at every refueling outage," was deleted in Chapter XI.S5, Attribute (4) – Detection of Aging Effects, because the development of an inspection schedule that ensures there is no loss of intended function between inspections is already specified there. The inspection schedule is the responsibility of the applicant. GALL XI.S5 was revised to address this comment.
G-XI.S5-3	XI.S5, Introduction	There is no need to include "NUREG-1557 identifies IE Bulletin 80-11 and IN 87-67 as an acceptable basis..."	Stand alone comments about IE Bulletin 80-11 and IN 87-67 are adequate by themselves.	Reference to NUREG-1557 is extraneous here and has been deleted. GALL XI.S5 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S5-4	XI.S5, Introduction	The following wording should be used: Since the issuance of the IEB 80-11 and IN 87-67, the NRC promulgated 10 CFR 50.65, the Maintenance Rule. Masonry walls may be inspected as part of the Structures Monitoring Program (XI-S6) conducted for the Maintenance Rule. In these cases, the Maintenance Rule evaluation (XI-S6) for license renewal applies and no further explanation is required. For plants with a separate masonry wall program, the following evaluation and technical basis is provided:	Provides for use of existing Structures Monitoring Program and a method for using other plant specific programs.	NEI's proposed wording was incorporated in the Program Description for the Masonry Wall Program (XI.S5), except for the sentence, "*In these cases, the Maintenance Rule evaluation (XI-S6) for license renewal applies and no further explanation is required.*" To clarify the applicability of the structures monitoring program (XI.S6) to aging management for masonry walls, the Program Description for XI.S5 was revised to stipulate that XI.S6 should incorporate the attributes described in XI.S5 when being credited to manage aging of masonry walls. In general, a Structures Monitoring Program to meet the Maintenance Rule does not include consideration of seismic II/I as an intended function. This is an intended function for license renewal. Many masonry walls within the scope of license renewal are not automatically in the scope of a Structures Monitoring Program. The applicant must ensure that all masonry walls in the LR scope are included before taking credit for a Structures Monitoring Program. GALL XI.S5 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S5-5	XI.S5, Evaluation & Technical Basis	Masonry Wall Inspection: **Scope of Program:** The scope of the program includes those masonry walls within the scope of license renewal. **Preventive Actions:** No specific preventive actions are required. **Parameters Monitored/Inspected:** Visual inspection by a qualified individual is sufficient to identify cracking of masonry walls. **Detection:** A visual inspection performed using the guidance of IEB 80-11 and IN 87-67 provides reasonable assurance that the aging effect of cracking will be identified prior to loss of the component intended function. **Monitoring and Trending:** There are no monitoring and trending processes associated with this program **Acceptance Criteria:** Acceptance criteria are no visual indication of cracking of masonry walls, which would invalidate the evaluation basis in response to IEB 80-11. (10)**Operating Experience:** Incorporation of lessons learned from the implementation of IE Bulletin 80-11, USI A-46, and the	There is no need to include USI A-46 program here. It is addressed in Operating Experience. The program is a visual inspection and no preventive actions are identified. The staff has found this acceptable. Cracking is the primary parameter. Frequency does not need to be specified here. Frequency is per the current licensing basis. The NRC staff has found this acceptable. Do not expand criteria previously established.	This NEI proposal had been previously submitted in March 2000. For the August 2000 draft of GALL, this proposal was not considered because it lacked the level of detail needed to clearly define the attributes of an acceptable AMP for masonry walls. GALL XI.S5 was not revised to address this comment. Also see NRC Disposition of NEI Comment G-XI.S5-1 in Appendix B, Table B.2.9-3.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S5-5 (cont.)		MR Inspection should assure the structural integrity of all masonry walls important to safety are adequately managed. This should ensure the structural integrity of the masonry walls within the scope of license renewal is adequately managed for the period of extended operation. Delete Note.	Note has been incorporated in text above in Introduction.	
G-XI.S6-1	XI-S6 Evaluation & Technical Basis (3)	Delete the following statements: "For concrete structural elements, parameters to be monitored or inspected include cracking, spalling, scaling, erosion, corrosion of reinforcing steel, settlements, and deformations. A more complete description of parameters for inclusion in this AMP is presented in ACI 349.3R-96. For steel liners and for joints, coatings, and waterproofing membranes (if any of these three items are relied upon to manage the effects of aging), ACI 349.3R-96 also specifies a description of the parameters to be monitored or inspected. For structural steel elements (including connections), parameters to be monitored or inspected include corrosion, cracking, erosion, discoloration, wear, pitting, gouges, dents, and other signs of surface irregularities. ANSI/ASCE 11-90 provides details for some of these	NEI 96-03 is a more appropriate reference than ACI 349.3, as it was the guidance document actually used by applicants to develop the Structures Monitoring Program for the Maintenance Rule. For example, under acceptance criteria ACI 349.3 specifies acceptance criteria more stringent than the ASME Code. Any reference to ACI 349.3 should state that ACI 349.3 provides guidance on acceptance criteria that may be used. ANSI/ASCE 11-90 is not widely used by the industry to define inspection attributes for structural steel elements. EPRI NP-5380 is an inappropriate reference as it is primarily applicable to construction, not ongoing maintenance of welds. It is not typically the source of industry inspection activities regarding welds.	The quoted text has been deleted. However, the proposed insertion is not appropriate because NEI 96-03 has not been endorsed by the staff for license renewal (see NRC letters to NEI dated October 1, 1996, and September 24, 1997). To clarify the intent, the description in Attribute 3 was revised to indicate that ACI 349.3R-96 and ANSI/ASCE 11-90 are examples of industry codes and standards which can be used to develop or define parameters to be monitored/inspected. The reference to EPRI NP-5380 has been deleted because it does not address inservice inspection. Comparable revisions have been made to Attributes 4 and 6, to address NEI comments G-XI.S6-2 and G-XI.S6-3, in Appendix B, Table B.2.9-3. GALL XI.S6 was revised to address

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S6-1 (cont.)		parameters to be monitored or inspected. For welds, additional details on parameters to be monitored or inspected are provided in EPRI NP-5380." Insert "Specification of parameters to be monitored or inspected should be linked to aging effects. Guidance for parameters monitored/inspected is provided in NEI 96-03." Leave last sentence as is.	EPRI NP-5380 does not address operating inspections of welds. EPRI NP-5380 provides guidelines for construction. The document states that cracks are not permitted. Information on welds should not be identified here.	this comment.
G-XI.S6-2	XI-S6 Evaluation & Technical Basis (4)	Delete the following statements: "As specified in ACI 349.3R-96, "the visual inspection should include all exposed surfaces of the structure, joints and joint material, interfacing structures and materials (e.g., abutting soil), embedments, and attached components such as base plates and anchor bolts." ANSI/ASCE 11-90 specifies that inspection of the physical condition may sometimes require the use of simple physical assistance such as cleaning, scraping, and sounding. Details on detection methods for concrete; steel liners; and joints, coatings, and waterproofing material (if relied upon to manage the effects of aging) are specified in ACI 349.3R-96. Details on detection methods for structural steel (includ-ing connections) are specified in ASNI/ASCE 11-90. Additional details on detection methods for welds are	NEI 96-03 is a more appropriate reference than ACI 349.3, as it was the guidance document actually used by applicants to develop the Structures Monitoring Program for the Maintenance Rule. For example, under acceptance criteria ACI 349.3 specifies acceptance criteria more stringent than the ASME Code. Any reference to ACI 349.3 should state that ACI 349.3 provides guidance on acceptance criteria that may be used. ANSI/ASCE 11-90 is not widely used by the industry to define inspection attributes for structural steel elements. EPRI NP-5380 is an inappropriate reference as it is primarily applicable to construction, not ongoing maintenance of welds. It is not typically the source of industry	See NRC Disposition of NEI Comment G-XI.S6-1 in Appendix B, Table B.2.9-3.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S6-2 (cont.)		specified in EPRI NP-5380. The frequency for the inspection of structures shall be dependent upon the structure, environment, and past performance; however, the frequency shall be no more than ten years. This frequency is in agreement with inspection intervals specified in ACI 349.3R-96 for concrete structures and recommendations given in NUREG-1522." Replace with: "Guidance for detection is provided in NEI 96-03."	inspection activities regarding welds. EPRI NP-5380 does not address operating inspections of welds. EPRI NP-5380 provides guidelines for construction. The document states that cracks are not permitted. Information on welds should not be identified here.	
G-XI.S6-3	XI-S6 Evaluation & Technical Basis (6)	Delete the following statements: "For concrete structures (including steel liners and joints, coatings, and waterproofing material, if relied upon to manage the effects of aging), Chapter 5 of ACI 349.3R-96 specifies acceptance criteria. Acceptance criteria are specified for 1) acceptance without further evaluation, 2) acceptance after review, and 3) conditions requiring further evaluation. For example, acceptance without further evaluation for concrete is passive cracks in concrete less than 0.4 mm (0.015 in.) in maximum width. Acceptance criteria for visual examination of welds are specified in EPRI NP-5380." Replace with: "Guidance for acceptance criteria is provided in	NEI 96-03 is a more appropriate reference than ACI 349.3, as it was the guidance document actually used by applicants to develop the Structures Monitoring Program for the Maintenance Rule. For example, under acceptance criteria ACI 349.3 specifies acceptance criteria more stringent than the ASME Code. Any reference to ACI 349.3 should state that ACI 349.3 provides guidance on acceptance criteria that may be used. EPRI NP-5380 is an inappropriate reference as it is primarily applicable to construction, not ongoing maintenance of welds. It is not typically the source of industry inspection activities regarding welds. EPRI NP-5380 does not address operating inspections of welds. EPRI	See NRC Disposition of NEI Comment G-XI.S6-1 in Appendix B, Table B.2.9-3. .

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S6-3 (cont.)		NEI 96-03."	NP-5380 provides guidelines for construction. The document states that cracks are not permitted. Information on welds should not be identified here.	
G-XI.S6-4	XI-S6 Evaluation & Technical Basis (7)	Change to "The Structures Monitoring Program should be conducted under 10 CFR 50 Appendix B (Quality Assurance) for Corrective Action, or an existing quality assurance program developed for the Maintenance Rule Program."	Reg. Guide 1.160 Revision 2 recognizes that the Maintenance Rule program includes non-safety related structures and does not require that the licensee develop paper work for BOP to meet the requirements of 10 CFR 50 Appendix B requirements.	Non-safety related structures or components that serve an intended function, in accordance with the criteria provided in 10 CFR Part 54, are within the scope of LR. If aging management of these structures and components is accomplished under an applicant's Structures Monitoring Program, 10 CFR 50 Appendix B applies. In addition, plant-specific QA programs developed for the Maintenance Rule Program cannot be evaluated generically as part of GALL. To reference GALL, Attributes (7), (8), and (9) should be addressed by a commitment to 10 CFR Part 50, Appendix B. Alternatively, a license renewal applicant has the option to describe a plant-specific approach for addressing these attributes, as described in the Appendix to the GALL report. GALL XI.S6 was not revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S6-5	XI-S6 Evaluation & Technical Basis (8)	Change to "The Structures Monitoring Program should be conducted under 10 CFR 50 Appendix B (Quality Assurance), for Confirmation, or an existing quality assurance program developed for the Maintenance Rule Program."	Reg. Guide 1.160 Revision 2 recognizes that the Maintenance Rule program includes non-safety related structures and does not require that the licensee develop paper work for BOP to meet the requirements of 10 CFR 50 Appendix B requirements.	See NRC Disposition of NEI Comment G-XI.S6-4 in this Appendix B, Table B.2.9-3.
G-XI.S6-6	XI-S6 Evaluation & Technical Basis (9)	Change to "The Structures Monitoring Program should be conducted under 10 CFR 50 Appendix B (Quality Assurance), for Administrative Controls, or an existing quality assurance program developed for the Maintenance Rule Program."	Reg. Guide 1.160 Revision 2 recognizes that the Maintenance Rule program includes non-safety related structures and does not require that the licensee develop paper work for BOP to meet the requirements of 10 CFR 50 Appendix B requirements.	See NRC Disposition of NEI Comment G-XI.S6-4 in this Appendix B, Table B.2.9-3.
G-XI.S7-1	Page XI.S7	Add the following Note to the end of the "Introduction" Section: "For plants not committed to RG 1.127, inspection of Water-Control Structures should be inspected under the Maintenance Rule Structural Monitoring Program."	The NRC should recognize that some of the older plants are not committed to RG 1.127 under their CLB. Therefore, applicable water-control structures would be inspected under the Maintenance Rule Structural Monitoring Program.	Aging management of water-control structures under the structures monitoring program (XI.S6) must include the attributes described in XI.S7 to adopt the evaluation conclusion for XI.S7.The following sentence has been added to the Program Description of XI.S7: "For plants not committed to RG 1.127, water-control structures may be included in the Structures Monitoring Program (XI.S6). However, details pertaining to water control structures are to incorporate the attributes described herein." GALL XI.S7 was revised to address this comment.

Table B.2.9-3: Disposition of NEI Structural Comments on Chapter XI of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-XI.S7-2	Page XI.S7	Change the second sentence under Item (6) "Acceptance Criteria" to read as follows: "Although not required, acceptance criteria based on the 'Evaluation Criteria' provided in Chapter 5 of ACI 349.3R are acceptable as an option. ACI 349.3R is not mandatory since this document is not part of the Current Licensing Basis of most operating plants."	Item (6) "Acceptance Criteria" identifies ACI 349.3R as an acceptable standard for acceptance criteria to determine the adequacy of observed aging effects for water-control concrete structures. Although Industry does not object to using this standard as a reference, the NRC should recognize that it is not identified within the CLB for operating plants, and therefore should not be considered as a mandatory standard for RG 1.127 inspections under License Renewal.	GALL XI.S7, attribute (6) – Acceptance Criteria has been revised to indicate that, although not required, Chapter 5 of ACI 349.3R provides acceptance criteria that are acceptable. GALL XI.S7 was revised to address this comment.
G-XI.S8-1	Page XI.S23	Delete the Protective Coating Monitoring and Maintenance Program.	This Aging Management Program is not credited for loss of material due to corrosion of steel.	This AMP can be credited for managing loss of material due to corrosion of carbon steel surfaces inside containment. See NRC Disposition of NEI Comment G-IIA1-10 in Appendix B, Table B.2.1. GALL XI.S8 was not revised to address this comment.

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