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NUCLEAR ENERGY INSTITUTE

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October 13, 2000

Ms. Annette Vietti-Cook
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: NRC Request for Public Comments on the Draft Guidance Documents for License Renewal (65 FR 53047, August 31, 2000)

Dear Ms. Vietti-Cook:

In the August 31, 2000, Federal Register, the NRC noticed the availability of and opportunity to comment on the following documents:

- Draft Regulatory Guide DG-1104, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses,"
- Draft Standard Review Plan for License Renewal, and
- Draft Generic Aging Lessons Learned (GALL) report

The Nuclear Energy Institute[1] reviewed the documents and our comments are enclosed. Enclosure 1 contains comments on several topics that relate to all the draft guidance documents. Enclosure 2 contains responses to the specific questions posed in the Federal Register notice. Enclosure 3 includes comments on the draft Standard Review Plan and the GALL report. Enclosure 4 includes comments on the draft Regulatory Guide. Enclosure 5 identifies changes necessary to NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54- The License Renewal Rule," Revision 2.

ADM03

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

ERIDS03

Template ADM013

Add Steve Koenick SSK2
Raj Anand RKA

The Commission is to be commended for devoting the resources to capturing the lessons learned from the review of the first few license renewal applications. Industry interest in license renewal continues to grow and expectations for a stable, predictable and efficient regulatory process are high. To this end, these lessons learned documents play an important role.

We remain concerned, however, that the use of these documents, by the NRC staff and the license renewal applicants, is unclear. There is no question GALL and the other guidance documents help focus on issues that are germane to the individual plant seeking license renewal. However, absent a clear understanding by the NRC and its stakeholders there is also the potential that these documents may become defacto standards and the benefit of lessons learned is lost.

We believe the purpose and intended use of GALL should be explicitly stated in the standard review plan. It is our view that the GALL report should serve as a catalogue of acceptable aging management programs that a licensee may reference in a license renewal application. The GALL report should not be used a template to review license renewal applications.

Finally, we appreciate the opportunity to comment on these most critical documents. It is our desire to work with the NRC staff and other stakeholders on resolving our comments and perhaps working through practical examples to demonstrate use of the GALL report and the standard review plan.

Please contact me at 202-739-8080, am@nei.org or Doug Walters at 202-793-8083, djw@nei.org if you have any questions or desire further clarification of these comments.

Sincerely,

Alex Marion

Alex Marion

NUCLEAR ENERGY INSTUTE
GENERIC COMMENTS ON THE
DRAFT REGULATORY GUIDANCE DOCUMENT
FOR LICENSE RENEWAL

Use of GALL and the Standard Review Plan

The Nuclear Energy Institute reviewed the Generic Aging Lessons Learned (GALL) report and the standard review plan (SRP) earlier this year and provided comments to the NRC staff. We also met with the NRC staff to discuss our comments in more detail.

Through these interactions we expressed concerns about how a license renewal applicant would use the GALL and the SRP; nor were we certain how the NRC would use the documents in the review of a renewal application. We discussed our concerns with the NRC and note that there is language in the August version of the GALL and SRP, which discusses the purpose, and use of these documents. While we appreciate the NRC staff's revising the documents to address our concerns; we continue to believe further clarification is warranted.

The GALL includes a section entitled "APPLICATION OF GALL REPORT." (Ref. GALL, Page 3). This section correlates the GALL to a topical report and indicates that a renewal applicant may reference GALL if the applicants programs correspond to those reviewed in the GALL report.

Later in the section there is a discussion about the applicant having the responsibility to verify that the plant program contains all the elements of the referenced GALL program. It then states that "The applicant must include a certification in the license renewal application that the verifications have been completed and are documented on-site in an auditable form." It is not clear what type of certification is acceptable nor is it clear what the NRC staff will look for if they examine the on-site verification documents.

Some insight into the certification question is found in the Standard Review Plan. Section 3.1, for example, addresses "Aging Management of Reactor Coolant System." Subsection 3.1.1.1 discusses what the reviewer looks for (area of review) in the renewal application, Subsection 3.1.2.1 discusses acceptance criteria, and Subsection 3.1.3.1 discusses the review procedure. All three subsections deal with the topic of programs evaluated in GALL that are relied on for license renewal. However, as the table below points out, the guidance in each subsection is quite different. Is the certification made by providing, as noted in Subsection 3.1.3.1, a brief description of the system, components, materials, and environment and a

statement that the applicable aging effects and industry and plant-specific operating experience have been reviewed? Or, does providing information necessary to adopt the finding of program acceptability mean certification?

Subsection 3.1.1.1	Subsection 3.1.2.1	Subsection 3.1.3.1
"...staff should ensure that the applicant verifies that the approvals set forth in the GALL report for generic programs apply to the applicants programs."	"...applicant should indicate that the material presented in the GALL report is applicable to the specific plant involved and provide the information necessary to adopt the finding of program acceptability..."	"...verifies that the applicant has provided a brief description of the system, components, materials, and environment. The reviewer also verifies that the applicant has stated that the applicable aging effects and industry and plant-specific operating experience have been reviewed..."

We believe the language in Subsection 3.1.3.1 is the appropriate language if an applicant is relying in a program evaluated in the GALL report. We recommend the other sections and subsections in the SRP be revised to be consistent with subsection 3.1.3.1.

Program Evaluations in GALL

As noted in the table above, Subsection 3.1.2.1, states that the renewal applicant needs to provide information necessary to adopt the finding of program acceptability. Notwithstanding our recommendation to eliminate those words, we do believe the GALL report program evaluations should include a statement relative to the finding for license renewal. When a program evaluation in GALL concludes that no further evaluation is necessary, there should be a statement that the program is adequate and demonstrably effective in managing aging in the period of extended operation.

If the renewal applicant is truly taking credit for the program evaluations in the GALL report then there should be a concluding statement that the program satisfies the finding required by Part 54.

GALL Format

The August 31, 2000 Federal Register notes that the format of the guidance documents may change as a result of the comment process. During the September 25 Workshop, the NRC staff informed the workshop participants that the format of GALL is likely to change from an 11 column table to a seven-column table.

The license renewal application standard format presented in NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule" utilizes a six-column table. Modifying the GALL report to a seven-column table will align it with the table that licensees are expected to use. Therefore we support the NRC staff's recommendation to reformat GALL.

GALL Chapter XI – Aging Management Programs

The use of Chapter XI as a repository for one-time evaluations of aging management programs is beneficial. In our detailed comments (Enclosure 3) on Chapter 4, we identify ASME Section XI, Subsection IWB-2500 as a program that should be considered an adequate aging management program. We have not provided a program evaluation for IWB-2500, although we believe a generic evaluation of IWB-2500 in GALL Chapter XI would be appropriate.

Evaluating IWB-2500 will require that it be partitioned and that each piece be evaluated separately. Such an evaluation is likely to encompass other program evaluations in Chapter XI, and thus they could be eliminated. For example, the program evaluations for Thermal Aging Embrittlement of Cast Austenitic Stainless Steel and Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (program evaluations XI.M1 and XI.M2 respectively).

We would appreciate the opportunity to discuss with NRC staff the possibility of a program evaluation for IWB-2500 with the NRC staff. We are willing to provide draft evaluations for the NRC staff review but believe it's important to reach agreement with the NRC staff on how that evaluation will be partitioned.

NUCLEAR ENERGY INSTUTE
COMMENTS ON THE
QUESTIONS POSED IN THE FEDERAL REGISTER NOTICE

Question 1. The draft GALL report evaluates many existing programs for their adequacy to manage aging for license renewal. In many cases, the draft GALL report concludes that the existing programs are adequate without change. Did the NRC staff provide sufficient credit for existing programs in the draft GALL report?

Response: Based on the lessons learned from the review of the first few renewal applications, the GALL provides sufficient credit for existing programs. As renewal applications continue to be submitted and reviewed, the NRC should consider future revisions to GALL to capture any additional lessons learned.

The number of programs evaluated is sufficient. The GALL report is somewhat limited in that the existing programs must be generic. Obviously, renewal applicants will credit existing programs that are plant specific but at this time it seems that the focusing GALL on the generic programs is appropriate.

Question 2. As a complement to Question 1, did the NRC staff provide too much credit without a sufficient technical basis in the draft GALL report?

Response: The GALL report does not provide too much credit for existing programs. The programs credited in GALL are a reflection of the programs credited in the first few renewal applications. The technical detail is sufficient. The GALL evaluates the existing programs against ten attributes that are typically found in adequate aging management programs. While we do not agree that all ten elements need to exist for a program to be found adequate, the fact that GALL uses all them is a testament to the robustness of the technical evaluation.

Question 3. Many existing programs are based on national codes and standards that are updated as industry and technology evolve. The Commission has a process to periodically incorporate updated versions of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code into the regulations in 10 CFR 50.55a. The draft GALL report evaluation of existing programs for their adequacy as aging management programs for license renewal is based on the specifics of the 1989 edition of Section XI of the ASME code for inservice inspection and the 1992 edition of Subsections IWE and IWL of Section XI of the ASME code for containment inspections. These specific editions were the editions incorporated into the regulations by the Commission at the time when the bulk of the draft GALL report was being prepared. Since then, the Commission has incorporated the 1995

edition of the ASME code into the regulations (64 FR 51370, September 22, 1999). Before final issuance of the GALL report, the staff plans to review changes to the ASME code between the 1989 and 1995 editions to determine if the conclusions in the draft GALL report remain valid. Should the changes affect any conclusions in the draft GALL report, the affected conclusions will be re-evaluated and modified, as appropriate. By an April 13, 2000, staff requirements memorandum (SRM), the Commission directed the staff to maintain the current requirements that licensees update their inservice inspection and inservice testing programs every 10 years to the latest edition of the ASME Code that is incorporated by reference in NRC regulations. Therefore, the requirements of 10 CFR 50.55a will result in future changes to those aging management programs that rely on the ASME Code. To ensure that the GALL report conclusions will remain valid when future editions of the ASME code are incorporated into the NRC regulations by the 10 CFR 50.55a rulemaking, the staff will perform an evaluation of these later editions for their adequacy for license renewal using the 10-element program evaluation described in the GALL report as part of the 10 CFR 50.55a rulemaking. There are other national codes and standards that are referenced in the draft GALL report, such as those published by the American Concrete Institute (ACI), that are not subject to the Commission's approval process in 10 CFR 50.55a. How should the GALL report reference editions of such national codes and standards? Should specific code editions be cited, and then, an applicant using a different edition would have to verify that the applicant's edition is equivalent to the specific edition cited in the GALL report before the applicant can reference the GALL report evaluation?

Response: If a specific revision of a code – say those published by the American Concrete Institute (ACI), is referenced and evaluated in GALL a renewal applicant can indicate that they use the same program at their facility and rely on the GALL evaluation. If the ACI standard used by an applicant is different from that in the GALL then the applicant must demonstrate that its program is adequate in the areas which differ between the standard revision contained in GALL and the revision of the standard which the applicant uses.

Question 4. The draft GALL report identifies specific aging effects, based on operating experience or technical expertise, that should be managed for particular structures and components. The NRC staff expects an applicant to discuss, in its application, any aging effects identified in the draft GALL report for a particular structure or component that the applicant has determined to be not applicable to its plant. However, NEI suggests that an applicant need not address aging effects that were determined not to be applicable. NEI suggests instead that the NRC staff should review the applicant's process for identifying aging effects that should be managed for license renewal. However, the NRC staff believes that such a process is too general and operating experience has shown that aging effects are often system, structure, or component-specific. Although the NRC staff does not expect all aging effects identified in the draft GALL report would be applicable to a particular plant,

the draft GALL report does not identify unlikely aging effects and evaluate the associated aging management programs. Thus, the NRC staff believes that any such exception taken by an applicant for its plant should be justified as part of the application. Should an applicant be required to justify, in its application, the omission of any aging effects identified in the GALL report, that the applicant has determined not to be applicable?

Response: This question addresses the staff's desire for an applicant to discuss, in its application, any aging effects identified in the draft GALL report for a particular structure or component that the applicant has determined to be not applicable to its plant. It appears that the GALL identified aging effects are to be used by the staff as a checklist of those that require management. This implies that it would be acceptable for an applicant to use the GALL to determine which aging effects require management. Is this the staff's intent? Is it acceptable for an applicant to refer to the GALL for a particular system or structure with the same materials and environments as those identified in the GALL, and use it as a basis for conclusions regarding the aging effects requiring management? If the GALL is intended to provide guidance regarding the need to manage certain aging effects as well as guidance on the adequacy of existing plant programs, then this appears to be an acceptable approach.

If it is acceptable for an applicant to use the GALL to determine which aging effects require management, then the applicant should discuss, in its application, any aging effects identified in the GALL for a particular structure or component that the applicant has determined to be not applicable to its plant. In this case, the staff should make available to the industry the analyses for the aging effects conclusions in the GALL so that it may formulate appropriate arguments to dispute the findings.

If it is not acceptable for an applicant to use the GALL to determine which aging effects require management, then the applicant must make use of engineering analyses to determine which aging effects require management. This process would not involve use of the GALL, and it would be inappropriate to require an applicant to address the aging effects conclusions of the GALL if it may not use it as a basis for its own conclusions.

NUCLEAR ENERGY INSTUTE
COMMENTS ON THE
GENERIC AGING LESSONS LEARNED REPORT AND
THE STANDARD REVIEW PLAN

GALL COMMENTS

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IIA1-1	A1.1 Page II A1-5 Leaching of Calcium Hydroxide Page II A1-7 Aggressive Chemical Attack Page II A1-7 Corrosion of Embedded Steel A1.2 Page II A1-11 Corrosion	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(viii)(E) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIA1-2	A1.1 Page II A1-5 Leaching of Calcium Hydroxide Page II A1-7 Aggressive Chemical Attack	Apply the findings given in Section III.A.1 for the Class I concrete structures to the "Evaluation and Technical Basis" and "Further Evaluation" columns for concrete components identified.	The technical basis for the Class I concrete structures and the concrete containment (which also is a Class 1 structure) should be consistent.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
	Page II A1-7 Corrosion of Embedded Steel		
G-IIA1-3	A1.1 Page II A1-6 Corrosion of Embedded Steel	Add the reference EPRI TR-103842. Change the Environment column to "Exposure to Aggressive Environment" to be consistent with Item IIIA1.1 on page III A1-6.	A review of the applicable references (EPRI TR-103842, Section 4.1.5, NUREG/CP-0100, Page 85, NUREG-1611, Table 1, Items 04 and 013) concluded that the discussions on "Corrosion of Embedded Steel" refers to the environment within the concrete directly surrounding the rebar. In order to manage embedment corrosion, the surrounding environment must be managed. As long as the surrounding environment does not present an "Aggressive Chemical Attack" to the cover concrete, the concrete environment surrounding the embedment is maintained. The acceptance criteria for the Aggressive Chemical Attack by soil or groundwater (or atmospheric conditions) are: pH>5.5, Chlorides <500 ppm, Sulfates < 1,500 ppm (Reference TR-103842, Section 4.1.3.3). NUREG/CP-0100 also recommends Groundwater Tests for pH, chlorides and sulfates.
G-IIA1-4	A1.1 Page IIA1-6 Reaction with Aggregates	Aging effect should be cracking	The aging effect is cracking. Expansion would lead to cracking.
G-IIA1-5	A1.1	Region of interest is Dome, wall and basemat.	Provided as clarification.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
	Page IIA1-8 Settlement		
G-IIA1-6	A1.1 Page II A1-8 Elevated Temperatur e	'10 CFR 50.55a ASME Sect. XI, Subsection IWL' should be deleted from Reference column	The implementation of 10 CFR 50.55a ASME Sect. XI, Subsection IWL would not be able to identify the loss of strength and modulus due to elevated temperature. This has been rightfully stated in the next page.
G-IIA1-7	A1.1 Page II A1-8 Elevated Temperatur e	The following sentence should be added at the end of the existing paragraph: "Higher temperatures than given above may be allowed in the concrete if tests and/or calculations are provided to evaluate the reduction in strength and this reduction is applied to the design allowables."	ASME Section III, Division 2 should be properly quoted. As because aging management of this issue is impractical, option of accepting the elevated temperature with calculation should be available to utilities.
G-IIA1-8	A1.1 Page IIA1-9 Elevated temp	Evaluation and technical basis: Change second sentence to read: Thus, for any portions of concrete containment that exceed specified temperature limits, as referenced in this section, further evaluations are warranted.	The addition of "as referenced in this section" clarifies that it is only the items mentioned in the region of interest column that are evaluated.
G-IIA1-9	A1.2 Page II A1-10 Corrosion	Delete "Structural Steel" from the Region of Interest column.	Containment structural steel is not managed by IWE, rather it is managed by the Structures Monitoring Program per item A4.2 on page III A4-6.
G-IIA1-10	A1.2 Page II A1-10 Corrosion	The discussion of Appendix J and Coatings Programs should be deleted.	Subsection IWE is acceptable as a stand alone program. In the package which was generated in support of the final rulemaking to incorporate by reference into 10 CFR 50.55a ASME Section XI Subsection IWE, it was stated that the inspection criteria of IWE is incorporated to assure that the critical areas of containment are periodically inspected to detect and take corrective actions for defects that could

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
			compromise a containment's structural integrity.
G-IIA1-11	A1.2 Page II A1-12 Corrosion of Tendons	Delete reference NUREG-1522.	NUREG-1522 is not a mandated program and should be deleted from the Reference column.
G-IIA1-12	A1.2 Page II A1-12 Relaxation	Add reference ACI 318-95	Other methods such as ACI-318-95 may be more accurate, appropriate or current.
G-IIA1-13	A1.3 Page IIA1-13 Corrosion of tendons	Delete the paragraph under evaluation and technical basis that discusses the tendon gallery.	The environment of the tendon gallery is similar to the external dome environment. Both environments subject the tendon anchorage to moisture, humidity, etc. Therefore, the tendon gallery environment is not unique and should not be singled out. In addition, the tendon anchorages are protected from the moist, humid environment by the tendon caps and grease which is within the cap. The tendon anchorages are evaluated by Subsection IWL regardless of where they are located. Tendon anchorage within the tendon gallery would be evaluated by Subsection IWL.
G-IIA2-1	A2.1 Page IIA2-5 Corrosion	Delete Appendix J and Coatings Program from AMP and evaluation and Technical Basis.	Subsection IWE is acceptable as a stand alone program. In the package which was generated in support of the final rulemaking to incorporate by reference into 10 CFR 50.55a ASME Section XI Subsection IWE, it was stated that the inspection criteria of IWE is incorporated to assure

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
			that the critical areas of containment are periodically inspected to detect and take corrective actions for defects that could compromise a containment's structural integrity.
G-IIA2-3	A2.1 Page IIA2-5 Corrosion A2.2 Page IIA2-7 Leaching of Calcium Hydroxide Page IIA2-7 Aggressive Chemical Attack Page IIA2-9 Corrosion of Embedded Steel	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIA2-4	A2.2 Pages II A2-6 & II A2-7	In lieu of ASME XI, IWL, licensees should be able to credit the Maintenance Rule 10CFR50.65, Regulatory Guide 1.160 Rev.2, and NUMARC 93-01. • Add these references to the reference column.	In lieu of ASME XI, IWL, licensees should be able to credit the Maintenance Rule 10CFR50.65, Regulatory Guide 1.160 Rev.2, and NUMARC 93-01.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
	Freeze/Thaw, Leaching of Calcium Hydroxide, Aggressive Chemical Attack Pages II A2-8 & II A2-9 Reaction of Aggregate and Corrosion of Embedded Steel Pages IIA2-10 & IIA2-11 Elevated Temperatur e	• Add "or Structures Monitoring Program" in the AMP column and add statement "See Chapter XI.S6" in the Evaluation & Technical Basis column.	BASIS: These programs are particularly effective for structures and supports, which are not currently under the scope of ASME XI-IWL. The structural monitoring programs developed under MR have been mandated since 1996 and therefore provide operating experience and effectiveness demonstration. NEI submitted a paper to the NRC dated 3/26/99, regarding structural monitoring programs, with a request to declare the structural monitoring program an effective aging management program for structures on a generic basis.
G-IIA2-5	A2.2 Page IIA2-11 Elevated temp	Evaluation and technical basis: Change second sentence to read: Thus, for any portions of concrete containment that exceed specified temperature limits, as referenced in this section, further evaluations are warranted.	The addition of "as referenced in this section" clarifies that it is only the items mentioned in the region of interest column that are evaluated.
G-IIA3-1	A3.1 Page II A3-4 Corrosion	Delete the dissimilar metal welds from the Material column.	10 CFR 50.55a(b)(x)(C) states that the examination of these items is optional.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IIA3-2	A3.1 Page IIA3-5 Penetration sleeves	Delete coatings program.	ASME Subsection IWE and Appendix J tests are adequate without the coatings program.
G-IIA3-3	A.3.1 Page II A3-6 Fatigue	Delete the dissimilar metal welds from the Material column.	10 CFR 50.55a(b)(x)(C) states that the examination of this item is optional.
G-IIA3-4	A.3.1 Page II A3-6 & II A3-7 SCC, Cyclic Loading	Delete the dissimilar metal welds from the Material column and Evaluation and Technical Basis column.	10 CFR 50.55a(b)(x)(C) states that the examination of this item is optional.
G-IIA3-5	A.3.1 Page II A3-7 SCC, Cyclic Loading	Delete the comment "(one option may be to perform VT-1 visual inspections)" from attribute (4)	VT-1 is not an effective examination for fine cracks such as fatigue. Additionally, most of the metal surfaces are coated. A more effective method is the leak test of Appendix J for non-fatigue CLB plants.
G-IIA3-6	A3.2 Page IIA3-9 Airlock	Delete coatings program.	ASME Subsection IWE and Appendix J tests are adequate without the coatings program.
G-IIA3-7	A3.2 Page II A3-10 Mechanical Wear of Locks	Reword the Aging Mechanism column to read as follows: "Mechanical Wear of Locks, Hinges and Closure Mechanisms required to maintain the airlock/hatch in the closed position".	Should only evaluate the components required to maintain the hatch in the closed position to support the intended function (essentially leak tight barrier).
G-IIB1-1	B1.1.1 Page II B1-5 Corrosion	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
			areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB1-2	B1.1.1 Page II B1-5 Corrosion	The discussion of Appendix J and Coatings Programs should be deleted.	IWE is acceptable as a stand-alone program.
G-IIB1-3	B.1.1 Page II B1-7 Steel Elements Cyclic Loading	Delete the comment "(one option may be to perform VT-1 visual inspections)" from attribute (4)	VT-1 is not an effective examination for fine cracks such as fatigue. Additionally, most of the metal surfaces are coated. A more effective method is the leak test of Appendix J for non-fatigue CLB plants.
G-IIB2-1	B2.1.1 Page II B2-5 Corrosion	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB2-2	B2.1.1 Page II B2-7 Steel Elements Cyclic Loads	Delete the comment "(one option may be to perform VT-1 visual inspections)" from attribute (4)	VT-1 is not an effective examination for tight cracks such as fatigue. Additionally, most of the metal surfaces are coated. A more effective method is the leak test of Appendix J for non-fatigue CLB plants.
G-IIB2-3	B2.2.1 Page II B2-9 Concrete	Delete the "Yes" and the description from the Further Evaluation column and replace with "No"	The leaching of Calcium Hydroxide requires the free flow of water across the concrete section (i.e. via through-wall cracks). If both

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
	Elements Leaching		sides of the concrete are not accessible, no flow can occur. If one side is accessible (exposed) then indication of degradation is evident and the concern does not apply.
G-IIB2-4	B2.2.1 Page II B2-9 Leaching of Calcium Hydroxide Page II B2-9 Aggressive Chemical Attack Page II B2-11 Corrosion of Embedded Steel	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB2-5	B2.2.1 Page II B2-9 Concrete Elements	In the "Evaluation and Technical Basis" and "Further Evaluation" columns for the Mark 2 and 3 concrete components for Leaching of Calcium Hydroxide, Aggressive Chemical Attack, Reaction with Aggregates and Corrosion of Embedded Steel aging mechanisms, apply the findings given in Section III.A.1 for the Class I concrete structures.	The technical basis for the Class I concrete structures and the concrete containment (which also is a Class 1 structure) should be consistent. This comment also applies to the PWR concrete containment, Section IIA for the same aging mechanisms.
G-IIB2-6	B2.2.2 Page II B2-15 Corrosion	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
		and Technical Basis and Further Evaluation.	10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB3-1	B3.1.1 Page II B3-5 Corrosion	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB3-2	B3.1.2 Page II B3-7 Leaching of Calcium Hydroxide Page II B3-9 Aggressive Chemical Attack Page II B3-9 Corrosion of Embedded Steel	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."

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G-IIB3-3	B3.2.1 Pages II B3-13 & II B3-15 Concrete Elements	In the "Evaluation and Technical Basis" and "Further Evaluation" columns for the Mark 2 and 3 concrete components for Leaching of Calcium Hydroxide, Aggressive Chemical Attack, Reaction with Aggregates and Corrosion of Embedded Steel aging mechanisms, apply the findings given in Section III.A.1 for the Class I concrete structures.	The technical basis for the Class I concrete structures and the concrete containment (which also is a Class 1 structure) should be consistent.
G-IIB3-4	B3.2.1 Page II B3-13 Leaching of Calcium Hydroxide Page II B3-13 Aggressive Chemical Attack Page II B3-15 Corrosion of Embedded Steel	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB3-5	B3.2.2 Page II B3-19 Corrosion	There are additional requirements for inspection of inaccessible areas when there are no indications of degradation for (adjacent, nearby) accessible areas. This requirement should be removed from Evaluation and Technical Basis and Further Evaluation.	Imposing such requirements is tantamount to additional rulemaking over and above 10 CFR 50.55a without adhering to the rulemaking process. Section (b)(2)(ix)(A) of 10 CFR 50.55a says "the licensee shall evaluate the acceptability of inaccessible

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			areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."
G-IIB4-1	B.4.1 Page II B4-4 Corrosion	Delete the dissimilar metal welds from the Material column.	10 CFR 50.55a(b)(x)(C) states that the examination of this item is optional.
G-IIB4-2	B.4.1 Page II B4-6 Fatigue	Delete the dissimilar metal welds from the Material column.	10 CFR 50.55a(b)(x)(C) states that the examination of this item is optional.
G-IIB4-3	B4.1 Page II B4-6 Cyclic Loading	Cracking due to cyclic loading is a TLAA and should be addressed similar to Item B4.1 Fatigue.	Cyclic loading only applies to some penetrations and torus-attached piping, which are required to have a fatigue analysis under the Containment Loads Program.
G-IIB4-4	B.4.1 Page II B4-7 SSC, Cyclic Loading	Delete reference to augmented VT-1 examinations of bellows and dissimilar metal welds.	Fatigue and SCC cracks cannot be detected by VT-1 or by any surface examination. The Type B local leak test per Appendix J is the most effective method, particularly for two-ply bellows, which are normally pressurized between the plies.

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G-IIIA1-1	III A1.1, aggressive chemical, page III A1-7	Evaluation and technical basis should include the information from the preceding item on the aggressive environment limits. Further evaluation should be changed to yes, if exceed aggressive chemical limits.	Limits have been previously documented and should be included here to be consistent.
G-IIIA1-2	IIIA1.1, Concrete degradation	There appears to be a mix-up in several table entries between Below Grade/Exterior and Above Grade/Interior. The criteria for aggressive chemical attack are for aggressive groundwater (below grade), not for above grade/interior surfaces.	
G-IIIA1-3	III A1.1, erosion of porous concrete, page IIIA1-8	Delete sections on porous concrete throughout the document. Including III A2.1, page IIIA2-8; IIIA3.1, page IIIA3-8; IIIA5.1, page IIIA5-8; IIIA6.1, page IIIA6-8; IIIA7.1, page IIIA7-8; IIIA8.1, page IIIa8-8	This is not a generic aging effect. Erosion of porous concrete is a current licensing issue being handled on a site-specific basis and as such should not be included in this document.
G-III.A1-4	III A1.1, Erosion of Porous Conc, page III A1-8	If the previous comment is not incorporated, then change Material from "Reinforced Concrete" to "Porous Concrete"	Provides a more accurate description
G-IIIA1-5	III A1.2, corrosion, page IIIA1-9	Delete the statement on protective coatings under evaluation and technical basis. Including IIIA4.2, page IIIA4-7 IIIA5.2, page IIIA5-9 IIIA6.2, page IIIA6-9 IIIA7.2, page IIIa7-9	The Structures Monitoring Program is adequate as a stand-alone program without the coatings program.
G-IIIA1-6	III A1.2, corrosion, page IIIA1-9	Delete requirement on inaccessible areas. Including IIIA3.2, page IIIA3-9 IIA5.2, page IIIA5-9 IIIA7.2, page IIIA7-9 IIIA8.2, page IIIA8-9	Requirements on inaccessible areas are not required by the Code on containment. Therefore, group 1 structures should not be more restrictive than Code requirements for containment.
G-IIIA1-7	III.A1.3,	Revise the AMP column to "Structures Monitoring	Either program may be used.

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	page III A1-9 Masonry Walls	Program or Masonry Wall Program" and add referral to Chapter XI-S6 to Evaluation column.	
G-IIIA2-1	III.A2.3, page III A2-9 Masonry Walls	Revise the AMP column to "Structures Monitoring Program or Masonry Wall Program" and add referral to Chapter XI-S6 to Evaluation column.	Either program may be used.
G-IIIA3-1	III.A3.3, page III A3-9 Masonry Walls	Revise the AMP column to "Structures Monitoring Program or Masonry Wall Program" and add referral to Chapter XI-S6 to Evaluation column.	Either program may be used.
G-IIIA5-1	A5.2, liners, page IIIA5-9	On Page IIIA5-9, delete the discussion in the Evaluation and Technical Basis column and insert the Water Chemistry Program as the applicable AMP and add referral to ChapterXI-M11.	The water chemistry program precludes aging effects by maintaining the spent fuel pool parameters such that degradation would not occur.
G-IIIA5-2	III.A5.3, page III A5-9	Revise the AMP column to "Structures Monitoring Program or Masonry Wall Program" and add referral to Chapter XI-S6 to Evaluation column.	Either program may be used.
G-IIIA6-1	III.A6.3, page III A6-9	Revise the AMP column to "Structures Monitoring Program or Masonry Wall Program" and add referral to Chapter XI-S6 to Evaluation column.	Either program may be used.
G-IIIA8-1	III.A8.1, page III A8-7 Corrosion of Embedded Steel and Aggressive Chemical Attack	Evaluation and technical basis should provide the limits below which no aging management is required similar to those on page III A1-7.	

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G-IIIA8-2	IIIA8.2, stainless steel tank liners	Delete the item entirely.	Aging of the internal surfaces of steel tanks is addressed with the applicable mechanical system and does not belong in the structural section.
G-IIIB1-1	IIIB1.1 Page IIIB1-4 to IIIB1-17	For section B1, change header at top of page from B1.3 to B1. Also, delete "MC" from the heading text.	Editorial Class MC is for containment vessels, not piping and component supports.
G-IIIB1-2	IIIB1.1.1, page IIIB1-4; IIIB1.1.3, page IIIB1-8 IIIB1.1.4, page IIIB1-8; IIIB1.2.1, page IIIB1-10; IIIB1.3.1, page IIIB1-14; IIIB1.3.3, page IIIB1-16; IIIB2.3, page IIIB2-6; IIIB3.2, page IIIB3-4; IIIB4.3, page IIIB4-	Vibration and cyclic induced cracking is not a license renewal aging effect and should be deleted.	Cracking due to vibratory loads and cyclic loading is not an aging effect requiring management for the period of extended operation. For components that may be subjected to vibratory or cyclic loading, proper design eliminates or compensates for vibration and cyclic loading. In addition, vibration characteristically leads to cracking in a short period of time, on the order of hours to days of operation. For example, a component with 1 Hertz vibratory load will be subject to 10^7 cycles in four months of service, so that failure, should it occur, is probable early in life for vibratory stresses above the endurance limit. Because this time period is short when compared to the overall plant operational life, any cracking will be identified and corrected to prevent recurrence long before the period of extended operation. This type of degradation is limited to a small set of components and is corrected as discovered with inspections of similar locations and

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	6; IIIB5.2, page IIIB5-4		configurations to ensure the event is location specific or a one-time event.
G-IIIB1-3	IIIB1.1.2, Bolting, SCC, page III B1-6	Program should be Subsection IWF, not Bolting Integrity Program.	The components listed in "Class I Piping and Component Supports" are within the scope of IWF, which has been found to be acceptable for managing this aging effect in NUREG-1723.
G-IIIB1-4	B1.1.2 SCC Page III B1-6	Under the material column for stress corrosion cracking, change "tensile strength > 150ksi" to "yield strength > 150ksi"	Per NUREG-1339 and EPRI NP-5769, the 150ksi is related to yield strength when discussing whether SCC is an applicable aging effect.
G-IIIB1-5	IIIB1.1.1, fatigue, page IIIB1-7	For fatigue throughout this section, evaluation and technical basis should be changed to "Fatigue may be a time-limited...." Further evaluation should say "Yes, TLAA if applicable." Including Sections B1.2.1, page IIIB1-13 and B1.3.1, page IIIB1-15	Editorial comment.
G-IIIB1-6	III.B1.1.1, Cracking, page III B1-5 III.B1.2.1, Cracking, Page III B1-11 III.B1.3.1, Cracking, Page III B1-	In this section and throughout the document, the adequacy of visual VT-3 examination is called into question for the detection of cracking. In particular, Section III.B1.1.1 determine that VT-3 is inadequate for detection of cracking in Class 1 piping and component supports, and Section III.B1.2.1 finds this to be true for Class 2 and 3 piping and component supports as well. VT-1 is recommended.	The conclusions reached in this section go beyond what is current in the code. Licensee should not have to go beyond Code requirements without justification. VT-3 should be found to be adequate for detection of "crack like indications" in at least three circumstances: 1. When the structure or component can tolerate "mature cracks." This should be the case for Class 1, 2, and 3 component supports, where mature cracks are needed to jeopardize the load-carrying function of the component support.

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	15		2. When pressure-containing component is subject to both visual examinations and pressure testing capable of detecting localized, small capacity leakage. This should be the case for bellows sleeves and penetration subjected to Appendix J Type B and C tests. 3. Situations where proximity to the component or structure surface is not an issue, so that visual acuity, lighting and character recognition is essentially identical for VT-1 and VT-3.
G-IIIB2-1	IIIB2.1, cyclic loading, page IIIB2-6	Cyclic loading should be deleted for cable trays, etc.	Cyclic loading is not applicable to supports for cable trays, conduit, instruments, etc
G-IIIB2-2	IIIB2.2, page IIIB2-6	Thermal cycling/ vibration should be deleted for cable trays, etc.	Cyclic loading is not applicable to supports for cable trays, conduit, instruments, etc

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G-IV-1	General comments	Further evaluation should not be required where existing programs manage applicable aging effects. The meaning of the "Further Evaluation Recommended" column is not clear. The table should be arranged by common RCS components as follows: reactor vessel (BWR & PWR), vessel internals (BWR & PWR), RCS piping and valves (BWR&PWR), RCS Pumps (BWR&PWR), and steam generators (PWR) In addition, it is not clear that aging effects for which ISI is done today will be required for the period of extended operation. For example, cracking at vessel welds (e.g., pressurizer, RV, and primary side of OTSGs), nozzle welds, and piping welds is not addressed anywhere, thus implying that Examination Categories B-A, B-B, B-D, and B-J may be discontinued for license renewal. This conclusion is not consistent with the NRC's findings in BAW-2243A, BAW-2244A, BAW-2251A, and the Oconee License Renewal Application.	What is meant by "Further Evaluation Recommended?" Every entry has a yes in this column implying that every item requires an evaluation. If the GALL report is to be a useful document, credit for existing programs that are found to be sufficient should be given without the requirement for further evaluation.

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G-IV-2	B2.1.1, B2.1.4, B2.1.7+ for W internals B3.1.1, B3.1.3+ for CE internals B4.1.1, B4.1.5+ for B&W internals No BWR items at this time	The GALL report states that "The reactor vessel internals receive a visual inspection (VT-3) according to Category B-N-3 of Subsection IWB, ASME Section XI. This inspection is not sufficient to detect the effects of changes in dimension due to void swelling" While the VT-3 examination is capable of detecting significant changes in dimension. At issue is the ability to visually detect loss in ductility. Therefore, the GALL and the SRP should be revised to read "This inspection is capable of detecting significant changes in dimension, but is not sufficient to detect loss of ductility directly." Too many components are called out in the GALL report. Only the most affected locations should be listed in the GALL report, such as baffle/former assemblies (Items B2.4.1 and B2.4.2) in Westinghouse plants	The GALL and the SRP should recognize the capability of visual examination to detect significant changes in dimension caused by void swelling, with significant defined to be a dimensional change of 5 % or more. The likely outcome of the industry programs will be to recommend examination of the most affected internals locations, such as baffle/former assemblies (Items B2.4.1 and B2.4.2) in Westinghouse plants. The GALL document would be greatly simplified, and the most affected locations would continue to be adequately covered by these changes.

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G-IV-3	C1.1.13 (BWR) C2.1.5 (PWR)	The GALL report should be changed so that, for PWR Class 1 small-bore piping, SCC and Unanticipated Thermal and Mechanical Loading are separated. The column labeled Aging Mechanism for one of these will be stress corrosion cracking (SCC) and the other will be Unanticipated Thermal and Mechanical Loading.	Separating these two aging mechanisms permits the industry to comment on two separate GALL entries. The industry considers that Unanticipated Thermal and Mechanical Loading is not a valid aging effect, but rather a design consideration. The industry does not agree that SCC of Class 1 small-bore piping is an issue that should be addressed for license renewal. The combination of material selection, reactor coolant chemistry control, ASME Code Section XI surface and visual examinations, and plant leak detection monitoring systems, are sufficient to address SCC for Class 1 small-bore piping. The report recommends that "A plant-specific destructive examination or a nondestructive examination (NDE) that permits inspection of the inside surfaces of the piping" be performed "to ensure that cracking has not occurred and the component intended function will be maintained during the extended period." This should not be necessary when reactor coolant chemistry programs and plant detection systems are in place.

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G-IV-4	A2.3.1 A2.3.3	The GALL report extends the concern for irradiation embrittlement to reactor vessel inlet and outlet nozzles, and to safety injection nozzles, for PWR plants. GALL should add the following sentences in the column labeled "Evaluation and Technical Basis:" 1. The applicant may choose to demonstrate that the materials in the inlet, outlet, and safety injection nozzles are not controlling for the TLAA evaluations. 2. The applicant may choose to demonstrate that the materials in the inlet, outlet, and safety injection nozzles are not controlling, so that such materials need not be added to the material surveillance program for the license renewal term. The GALL report also states that "Appendix H to 10 CFR Part 50 requires the reactor vessel materials surveillance program to meet the American Society for Testing and Materials (ASTM) E 185 Standard. However, the surveillance program in ASTM E 185 is based on plant operation during the current license term, and additional surveillance capsules may be needed for the period of extended operation."	License renewal applicants have been able to demonstrate that, while nozzle course materials may exceed the neutron fluence threshold of 10^{17} n/cm^2 (E>1 MeV), these materials are not controlling (i.e., traditional beltline base metal and weld materials control PTS limits, pressure-temperature limits, LUST limits, and material surveillance capsule requirements). Other license renewal applicants should have the same opportunity to provide the same type of demonstration.
G-IV-5	A2.2.1 A2.7.1 A2.7.2	Chapter IV of the GALL report should be revised to eliminate the augmented program requirements for bottom head instrumentation	The justification for the adequacy of existing activity for Ni-Fe-Cr CRDM nozzles is based on the following information from the GALL report:

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	C2.5.6 C2.5.10	tubes (Item A2.7.1), the vessel head vent pipe (Item A2.7.2), pressurizer instrument penetrations (Item C2.5.4), and pressurizer heater sheaths and sleeves (Item C2.5.6).	1. The program includes inservice inspection (ISI) in accordance with ASME Subsection IWB, Table IWB 2500-1 or, for susceptible components and locations, implementation of an integrated, long-term inspection program based on the guidelines of NRC Generic Letter (GL) 97-01 to detect cracks or coolant leakage. 2. Preventive measures are in accordance with EPRI guidelines in TR-105714 to mitigate primary water stress corrosion cracking (PWSCC). Control of halogens, sulfates, and oxygen in the primary water to less than 0.05, 0.05, and 0.005 ppm, respectively, during operation, and monitoring and control of water chemistry during shut down, mitigate potential of PWSCC. 3. The applicant performs a susceptibility assessment in accordance with the most current industry susceptibility model and inspection results, to define the most susceptible components and locations to be included in a periodic inspection program. The susceptibility assessment is performed in accordance with the guidelines of GL 97-01, in order to determine the need for an augmented inspection program of nozzle welds, including a combination of surface and volumetric examination. However, several of these same justifications are apparently insufficient for bottom head instrumentation tubes (Item A2.7.1), the vessel

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			head vent pipe (Item A2.7.2), pressurizer instrument penetrations (Item C2.5.4), and pressurizer heater sheaths and sleeves (Item C2.5.6). This should not be the case. Insufficient credit is given for the reactor coolant water chemistry program and its combination with ASME Code Section XI Examination Category B-P visual (VT-2) inspections. It would appear that some form of susceptibility evaluation is required, along with the water chemistry program and an inservice inspection program, in order for adequacy to be demonstrated. Considering that the CRDM nozzles are lead indicators of potential PWSCC, and considering the lower level of risk associated with leakage from Ni-Fe-Cr components other than the CRDM nozzles, the combination of water chemistry control and Examination Category B-P inspections should be found to be adequate.

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G-IV-6	B2.1.3, B2.1.7, B2.4.2, B2.5.5, B2.5.7 W Plants B3.2.2, B3.4.2, B3.4.3 CE Plants B4.3.4 B&W Plants	SRP Section 3.1.2.2.9 states that loss of preload due to stress relaxation could occur in PWR reactor vessel internal bolts and screws of B&W design. The SRP references the GALL report for recommendations for inservice inspection activities to manage loss of preload. However, the GALL report is not consistent on the evaluation of aging management activities. Items B2.1.3, B2.1.7, B2.5.5, and B2.5.7 for W plants and Item B3.2.2 for CE plants are consistently evaluated. For the W plant items, the GALL report states that: "Visual inspection (VT–3) is performed according to Category B–N–3 of Subsection IWB, ASME Section XI to monitor the relevant conditions of degradation, and loose part monitoring and/or neutron noise monitoring (excore detectors) to detect core barrel motion." However, the GALL report should be changed so that the aging management activities for Items B3.4.2 and B3.4.3 for CE plants, and Item B4.3.4 for B&W plants require no further evaluation.	No justification is provided in the GALL report for determining that existing aging management activities for Items B3.4.2 and B3.4.3 for CE plants, and Item B4.3.4 for B&W plants require augmentation. The GALL report says that "However, VT–3 inspection may not be adequate to detect the loss of mechanical closure integrity in components. An augmented inspection program to determine critical locations and appropriate monitoring and inspection techniques may be necessary." This statement could also be made about Items B2.1.3, for example, but the finding by the NRC staff was that the existing activities were adequate. The GALL report also says, "Because VT–3 inspection can only detect degradation that occurs after the loss of preload, in some cases, enhanced inspection may be required." While this may be so, the NRC staff has made findings elsewhere that are not consistent with requiring enhanced inspection. Generally, the finding of adequacy in spite of detection of loss of preload is based on redundancy. Therefore, the enhanced inspection requirements for baffle/former bolts are understandable. Other enhanced inspection requirements are not justified.

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G-IV-7	A2.2.2, B2.1.2, B2.5.3, B2.5.4 W Plants B3.2.1, B3.5.4 CE Plants B4.3.2, B4.4.3, B4.4.4 B&W Plants B1.4.8, B1.5.1, C1.1.6 to C1.1.11, C1.2.1, C1.3.1, C1.3.2 BWR Plants C2.1.1 to C2.1.3, C2.2.7, C2.3.1, C2.4.1, C2.5.3, C2.5.4 PWR Plants	Chapter IV and Chapter XI of the GALL report should be changed to find ASME Code Section XI periodic inservice inspection requirements (Examination Category B-N-3) for CASS internals components adequate for managing the effects of thermal aging embrittlement. Chapter IV and XI should be revised to recognize that the limiting base metal for CASS piping thermal aging embrittlement effects may be the 0.5-inch of base metal on either side of welds inspected in accordance with the ASME Code Section XI Examination Category B-J. The 25 % limit on delta ferrite for which the comparison of SAW crack growth resistance is comparable to thermally aged CASS should be reassessed. The SRP 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	The 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 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. 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 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 CAS 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 %.

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		crack growth resistance curves.	
G-IV-8	Fatigue TLAA	SRP Section 4.3.2.1 describes the TLAA options for Class 1 components. For example, 10 CFR 54.21(c)(1)(I) stipulates that the existing CUF calculations remain valid because the number of assumed transients would not be exceeded during the period of extended operation. 10 CFR 54.21(c)(1)(ii) stipulates that the CUF calculations be re-evaluated based on an increased number of assumed transients to bound the period of extended operation. The resulting CUF must remain less than unity as required by the Code during the period of extended operation. The discussion for 10 CFR 54.21(c)(1)(iii) refers to the GALL report, Chapter X, and implies that the NRC staff accepts only fatigue monitoring programs as the basis for managing fatigue effects. The SRP states that "staff has evaluated a program that monitors and tracks the number of critical thermal and pressure transients for the selected reactor coolant system components. The staff has determined that it is an acceptable aging management program to address metal fatigue of the reactor coolant system components according to 10 CFR 54.21(c)(1)(iii)." Finally, the TLAA discussion describes	There is no ASME Code requirement that a CUF less than 1.0 must be maintained throughout the operating life of a Class 1 component. The CUF< 1.0 requirement is a design requirement, intended to demonstrate confidence that a Class 1 component can be safely put into service. The requirements for continued service are contained in the ASME Code Section XI. These requirements include demonstration of continued serviceability through periodic inservice inspection and testing. Detection of indications or conditions exceeding acceptance requirements could lead to supplementary examinations, engineering evaluations, or repair/replacement. This Section XI activity should also be acceptable to the NRC staff. Other activities, such as the use of non-mandatory flaw tolerance methods combined with periodic inservice examination, should be acceptable to the NRC staff as the basis for managing the effects of fatigue. References to augmented TLAA evaluations that include reactor water environmental effects should be eliminated from the SRP and the GALL report. The GALL report should recognize only that the two completed license renewal applications were required to address GSI 190, which was an open

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		Generic Safety Issue 190, including a statement that "Based on the results of probabilistic analyses, along with the sensitivity studies performed, the interactions with the industry (NEI and EPRI), and different approaches available to the licensees to manage the effects of aging, it was concluded that no generic regulatory action is required, and that GSI-190 is resolved." The SRP goes on to state that "However, the calculations supporting resolution of this issue, which included consideration of environmental effects, and the nature of age-related degradation indicate the potential for an increase in the frequency of pipe leaks as plants continue to operate. Thus, the staff concluded that licensees must address the effects of coolant environment on component fatigue life as aging management programs are formulated in support of license renewal."	issue at the time, and that GSI 190 is now closed. It is the intent of the industry to provide a generic demonstration of the effects of reactor water environments on fatigue life. This generic demonstration has already been submitted, in large measure, to the NRC staff for review. The industry intends to complete this generic demonstration and submit the final set of reports to the NRC staff for review and acceptance, thus avoiding the need for individual license renewal applicant submittals in this regard.
G-IV-9	GALL	Every place the "aging effect" is identified as "cumulative fatigue damage" should be revised to "cracking".	Fatigue damage will eventually manifest itself as a crack. That is the effect to be managed.
G-IVA1-1	IV-A1.1.1, A1.1.2, A1.2.7, A1.4.1, A1.4.5, A1.5.1 through A1.5.6,	In every location where the GALL refers to BWRVIP-29 (TR-103515), replace the reference with "EPRI TR-103515, Rev. 2 (BWRVIP-79) or later approved version of TR103515.	The EPRI document referred to has been updated as of March 2000. The latest issue is TR-103515, Rev.2. NRC staff in EMCB has the document. This document is updated periodically to identify the latest enhancements to the water chemistry programs. As such, the GALL ought to recognize such.

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G-IVA1-2	IV-A1.1.4	Under the AMP column and in the Evaluation and Technical Basis column, delete the reference to GE RICSIL 055.	While the RICSIL is a tool that can be used by an owner to manage cracking, it is not necessary. The Code examinations are adequate to manage aging effect of cracking.
G-IVA1-3	IV-A1.2.4 & A1.2.6	In the first occurrence of this item the following changes should be made in the Evaluation and Technical Basis column. 1. In the sentence that begins with " In accordance with approved BWRVIP-74", after the "a)" the words "and axial reactor vessel welds" need to be deleted. 2. In the same sentence, delete item "d)" in its entirety.	1. Examination of RPV axial welds is already required by ASME Section XI. Therefore, there is no reason to evaluate the need for examining this group of welds. 2. The CLB, in conjunction with the requirements of 10CFR50 Appendix G and H is more than adequate to manage the effects of neutron embrittlement. There is neither basis for requiring an owner to assess failure probability of these welds nor any other component to manage loss of fracture toughness.
G-IVA1-4	IV-A1.3.2	Revise the last 3 lines of the AMP column to read: "NUREG-0619 and NRC Generic Letter 81-11 ***or*** alternative recommendation of GE NE-523-A71-0594.	The GE document is an approved alternative to NUREG-0619 and GL 81-11 not an additional requirement.

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G-IVA1-5	IV-A1.3.2 & A1.3.3	Change the "Further Evaluation" column to read "No, fatigue is managed through an inspection program". Also, change the aging effect to "cracking".	As noted for the same item where the effect to be managed is cracking due to cyclic loading (read fatigue), there is an acceptable inspection program to assure the aging effect is managed. This approved required program assumes the component is cracked and requires a conservative inspection program to assure a postulated flaw would not exceed code allowable limits. The approved alternative program assumes the component is cracked, calculates a remaining life and then specifies an inspection frequency. All of this is done to manage the effect of cracking caused by fatigue. Every time the component is examined and confirmed to be crack free, the time to failure assumed in the evaluation is reset, thus this is not a TLAA. Since this program assumes cracking has occurred (i.e. fatigue has initiated a crack) and conservatively specifies an inspection frequency based on this assumption, it is obvious that the effects of fatigue are being managed by inspection and nothing else is required.
G-IVA1-6	IV-A1.4.1 & A1.4.5	Delete the reference to the BWRVIP-03 internals examination guidelines.	BWRVIP-03 is applicable to components inside the RPV, not to safe-ends outside the vessel.
G-IVA1-7	IV-A1.4.3	Change the "Further Evaluation" column to read "No". Also, change the aging effect to "cracking"	This is not a generic issue. There are only 2 BWRs that have not cut and capped the CRDRL nozzle. Further, for those 2 plants, the aging effect of cracking due to fatigue is managed by NUREG-0619 inspections. Thus fatigue is managed via inspection.

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G-IVA1-8	IV-A1.5.1 through A1.5.6	Revise the last sentence in the "Preventive Action" statement to read: Also, hydrogen water chemistry may be used as a means to enhance IGSCC mitigation.	Use of HWC is an option an owner may want to use. However, control of water chemistry by implementing TR-103515 is sufficient and HWC is not required. The staff has approved the BWRVIP Program documents for license renewal use based on normal water chemistry that remains within the parameters of EPRI TR-103515.
G-IVA2-1	A2.1.1	Add cracking at welded joints (growth of fabrication flaws) due to service loadings. See EPRI NP-1406-SR for justification.	Dome welds examined in accordance with Section XI, Examination Category B-A. If this not an aging effect then why are welds examined each inspection interval. If not in the GALL then assume examinations may be discontinued in the period of extended operation. See BAW-2251A and associated NRC SER. GALL is not consistent with approved B&WOG topical reports.
G-IVA2-2	A2.1.1, A2.1.3	Remove all references to ISI for managing Boric Acid Corrosion.	See justification for comment on item XI.M5
G-IVA2-3	A2.1.3	Remove references to RG 1.65 in program element (2)	Design requirements are not part of aging management program preventive actions.
G-IVA2-4	A2.1.3	For "wear" in closure head studs, include replacement along with repair in (7) Corrective Action	Repair or replacement should be jointly used for corrective action descriptions, as in the item for SCC directly above
G-IVA2-5	A2.1.4	Delete vessel flange leak detection line	Line is considered as piping at B&W operating plants and was not shipped with the vessel.
G-IVA2-6	A2.1.4	Delete the leak detection line.	The line is piping and is not part of a vessel. In addition, for some plants, the line is not subject to aging management review
G-IVA2-7	A2.2	Add flange bolting	Missing items. See BAW-2251A description of flange bolting and nut ring.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVA2-8	A2.2.1	CRDM nozzles are SB-167 at B&W-designed plants	The CRDM nozzle material is SB-167 as described in BAW-2251A.
G-IVA2-9	A2.2.1	Remove reference in program element (10) to SS.	This requirement has been removed from the latest revision of SRP Chapter 4.2 and does not apply.
G-IVA2-10	A2.2.1	Change name of Structure and Component to CRD Head Penetration	The CRD part of concern is the piece which penetrates the upper head
G–IVA2-11	A2.2.1	Modify the wording under "Aging Management Program" to The program includes inservice inspection in accordance with ASME Subsection IWB, Table IWB 2500-1 or for susceptible components and locations an industry wide, integrated, long-term inspection program based on the industry responses to NRC Generic Letter (GL) 97-01 contained in NEI letter Dec, 11, 1998, Dave Modeen to Gus Lainas, "Response to NRC RAIs on GL 97-01" and individual plant responses. Primary water chemistry is monitored and maintained in accordance with EPRI guidelines in TR-105414 (Rev. 3 or later revisions or update) to minimize the potential of crack initiation or growth	"Integrated" has always been intended to mean "industry wide," yet here it could be construed to be confined to the individual unit and mean something else, like "covering ALL head penetrations," or something else. It is difficult to say that NRC GL97-01 contains "guidelines" of any sort. The appropriate inspection for a given unit may be NEVER, depending on conditions

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVA2-12	A2.2.1	Modify the (1) Scope of Program to: The program includes inservice inspection (ISI) in accordance with ASME Subsection IWB, Table IWB 2500-1, or for susceptible components and locations an industry wide, integrated, long-term inspection program based on the industry responses to NRC Generic (GL) 97-01 contained in NEI letter Dec, 11, 1998, Dave Modeen to Gus Lainas, "Response to NRC RAIs on GL 97-01" and individual plant responses. Preventive measures are in accordance with EPRI guidelines in TR-105714 to mitigate primary water stress corrosion cracking (PWSCC). An integrated cracking susceptibility assessment in accordance with industry susceptibility models and inspection results was performed in response to GL 97-01, to define the most susceptible plants and rank them in accordance with their susceptibility. This information is used by each plant to determine the proper timing of vessel head penetration examinations, either during the current license period or the period of license renewal, if necessary. Significant changes in the industry models as future plants inspect may require reassessment	The assessment referred to was performed in response to GL 97-01 and subsequent RAIs, and would not be expected to significantly change (other than accumulation of time-at-temperature) unless inspection results from lead plants indicate significant deficiencies in the models used by the industry to perform the assessments and plant rankings. The models were used to define the most susceptible "plants," not necessarily the most susceptible "components." The requirements for any "periodic inspections has yet to be established

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVA2-13	A2.2.1	Modify (3) Parameters Monitored / Inspected to: The AMP monitors the effects of PWSCC on the intended function of the CRD head penetrations by detection and sizing of cracks and coolant leakage by ISI. Susceptibility assessment was performed in response to GL 97-01 utilizing the most current industry susceptibility models that were based on material and operating parameters and inspection results to date, to rank plants in accordance with their susceptibility. This information is used to develop a plant-specific long-term inspection program, including schedule, scope and determination whether an augmented inspection program of nozzle penetrations, including a combination of surface and volumetric examination, is necessary. Significant changes in industry models may require re-assessment.	The assessment is not performed in response to license renewal. Do not refer to the "mechanism"
G-IVA2-14	A2.2.1	Clarification to (4) (4) Detection of Aging Effects: Aging degradation of the CRD head penetration cannot occur without crack initiation and growth. Based on GL 97-01, the applicant should review the scope and schedule of inspection, including leakage detection system, to assure detection of cracks before the loss of intended function of the components.	Should not refer to "mechanism"

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G-IVA2-15	A2.2.1	Typo in (5) Monitoring and Trending: change "provides" to "provide"	Typo.
G-IVA2-16	A2.2.1	Modify wording in (6) Acceptance Criteria: Any SCC degradation is evaluated in accordance with IWB-3000 by comparing ISI results with the acceptance standards of IWB-3400 and IWB-3500. <u>However, if there have been significant changes since the applicants response to GL 97-01 and the RAIs to it, then the applicant should either provide updated information on crack initiation and crack growth models and the data used to validate these models (or references to appropriate industry model revisions) to verify adequacy of the inspection program and acceptance criteria</u>	The information requested was provided in the responses to GL-97091 and the RAI responses, primarily through references. Applicants should not have to provide it again unless something changes significantly.
G-IVA2-17	A2.3.1 to A2.3.3	Assessment of fracture toughness changes due to neutron irradiation in accordance with 10CFR50, Appendix G for the reactor vessel inlet and outlet nozzles can not be accomplished. Note that Generic Letter 92-01, Revision 1, Supplement 1 did not address the nozzle materials. It appears that GALL intends to backfit these vessel beltline requirements to the nozzles.	Assessment of fracture toughness changes due to neutron irradiation in accordance with 10CFR50, Appendix H for the reactor vessel inlet and outlet nozzles can not be accomplished because the surveillance program adopted for the beltline materials is already in place and can not be changed to include specimens from the nozzles. It does not need to be accomplished for the nozzles because empirical and analytical tools are available to perform the Appendix G analysis.

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G-IVA2-18	A2.3.1 and A2.3.3	Delete fluence threshold of 1.0E17 n/cm2.	Nozzles are not limiting materials in accordance with BAW-2251A. Reduction of fracture toughness is not an applicable aging effect. 10 CFR 50.60 and 50.61 calculations apply to beltline items. Nozzles not in beltline for period of extended operation.
G-IVA2-19	A2.3.1 and A2.3.3	See Comment 31 regarding cracking. Examination Category B-D manages cracking at welded joints at cracking at nozzle IR.	NRC SER of BAW-2251A.
G-IVA2-20	A2.3.1, A2.3.3, A2.5.1, A2.5.2	Remove last sentence of Evaluation and Technical Basis, "Applicants are to determine...etc."	This requirement has been removed from the latest revision of SRP Chapter 4.2 and does not apply.
G-IVA2-21	A2.4.1, A2.4.3	Remove "Cyclic Loading" from Aging Mechanism entry	SCC is adequate to describe Mechanism. Cyclic Loading is duplicative of Fatigue entry. Growth of SCC cracks can result from loading other than cyclic.
G-IVA2-22	A2.4.1 A2.4.3	For Nozzle Safe Ends, Crack Initiation and Growth is attributed to SCC and Cyclic Loading. Cyclic loading is generally associated with fatigue and is classified as a TLAA. Explain the relation between the identified program elements and cyclic loading	New application for existing program requires justification.
G-IVA2-23	A2.5	Add bottom head	Missing items.
G-IVA2-24	A2.5.1, A2.5.2	Vessel Shell—missing cracking at welded joints and intergranular separations of SA 508 Class 2 forgings clad using a high heat input welding process. Exam. Cat. B-A requires volumetric inspections of vessel welds.	NRC SER of BAW-2251A

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVA2-25	A2.5.3	The topic is Loss of Material due to Wear on the Vessel Flange. The Evaluation and Technical Basis discussion is for Core Support Pads. Revise to made the discussion applicable to the Vessel Flange	Discussion should be applicable to the component being discussed.
G-IVA2-26	A2.6	Add parenthetical (interior attachments)	Core guide lugs for B&W plants
G-IVA2-27	A2.6	Aging mechanism should be PWSCC. Appropriate AMP is ASME Section XI, Examination Category B-N-2.	NRC SER of BAW-2251A
G-IVA2-28	A2.6	For Core Support Lugs, crack initiation and growth, a plant-specific program is to be evaluated. Change the "further evaluation" text from "Yes, No AMP" to "Yes, Plant-Specific AMP"	Consistency with previous format
G-IVA2-29	A2.6	The topic is Loss of Material due to Wear on the Core Support Lugs. The (2) Preventive Actions refers to "attrition" due to wear. Make the words consistent as "loss of material"	Descriptive wording should be consistent throughout.
G-IVA2-30	A2.7	Change parenthetical to (bottom head and/or closure head)	Missing instrumentation penetrations in closure heat at 2 B&W operating plants
G-IVA2-31	A2.7.1 A2.7.2	Change the "further evaluation" text from "Yes, No AMP" to "Yes, Plant-specific AMP"	Consistency with previous format
G-IVA2-32	A2.5.3	Remove "Design requirements" from element (2) of the Wear/Loss of material Evaluation and Technical Basis.	Design requirements are not an aging management activity.
G-IVA2-33	A2.6	Remove entry for Wear/Loss of Material	There is insufficient relative motion between the pad and adjacent parts to generate degradation. The entry provides no reference or operating experience to justify this mechanism.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB1-1	IV-B.1.1.1, B1.1.2, B1.1.3, B1.1.4, B1.1.5, B1.1.6, B1.1.7, B1.2, B1.3.1 through B1.3.4, B1.4.1 through B1.4.8, B1.5.2, B1.6.1 through B1.6.3,	Delete the second and third sentence of the "Preventive Action " statement. If the NRC staff insists on retaining a statement related to hydrogen water chemistry it should be revised to read: It is also possible to use hydrogen additions to enhance the inhibition of IGSCC. Hydrogen addition is very effective in reducing the electrochemical potential in recirculation system piping and to a lesser degree, in the core region. Noble metal additions through a catalytic action increase the effectiveness of hydrogen additions in the core region.	Use of HWC is an option an owner may want to use. However, control of water chemistry by implementing TR-103515 is sufficient and HWC is not required. The staff has approved the BWRVIP Program documents for license renewal use based on normal water chemistry that remains within the parameters of EPRI TR-103515.
G-IVB1-2	IV-B.1.1.1, B1.1.2, B1.1.3, B1.1.4, B1.1.5, B1.1.6, B1.1.7, B1.2, B1.3.1 through B1.3.4, B1.4.1 through B1.4.8, B1.5.2, B1.6.1 through B1.6.3,	In every location where the GALL refers to BWRVIP-29 (TR-103515), replace the reference with "EPRI TR-103515, Rev. 2 (BWRVIP-79) or later approved version of TR103515.	The EPRI document referred to has been updated as of March 2000. The latest issue is TR-103515, Rev.2. NRC staff in EMCB has the document. This document is updated periodically to identify the latest enhancements to the water chemistry programs. As such, the GALL ought to recognize such.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB1-3	IV-B1.1.2 IV-B1.3.1 through B1.3.4, B1.4.1 through B1.4.8, B1.5.1,	For the aging effect of cumulative fatigue damage, change the "Further Evaluation" column to read "No".	Cumulative fatigue damage, if it occurs to the point of being a concern, will manifest itself in the form of cracking. The BWRVIP criteria have evaluated components for all modes of degradation and prescribed inspections necessary to manage cracking, regardless of cause. This may not be a TLAA for all plants since some may not have fatigue calculations for these locations. However, even if it is a TLAA, the effect of fatigue (cracking) is managed by the BWRVIP inspection program where needed.
G-IVB1-4	IVB-B1.1.2 & B1.1.3	1. Delete the reference to VT-3 and ASME Section XI. 2. Reword first sentence of "AMP" column to read: Visual and ultrasonic examinations are performed in accordance with the guidelines of BWRVIP-03 for reactor pressure vessel internals.	This component is not a "welded core support structure" and is thus not subject to the requirements of ASME Section XI. The BWRVIP requirements are sufficient to manage aging effects.
G-IVB1-5	IV-B1.1.5	Add an asterisk to the statement in the "Further Evaluation" column. Add a footnote at the bottom of the table that reads: "The staff is currently reviewing this program. If the program is approved, no further evaluation will be required."	This is similar to B1.1.1. The BWRVIP program, once approved by the staff will be adequate to manage aging effects.
G-IVB1-6	IV-B1.1.6	Delete this item.	The NRC approved BWRVIP documents show that the standby liquid control (SLC) line inside the reactor vessel is not necessary and as such no inspections are necessary to manage aging. BWRVIP-27 does have inspection provisions for the SLC lines **outside** the reactor vessel. Those inspection should be in another section of the GALL and not in the internals portion.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB1-7	IV-B1.2	1. Delete the reference to VT-3 and ASME Section XI. 2. Reword first sentence of "AMP" column to read: Visual and ultrasonic examinations are performed in accordance with the guidelines of BWRVIP-03 for reactor pressure vessel internals.	This component is not a "welded core support structure" and is thus not subject to the requirements of ASME Section XI. The BWRVIP requirements are sufficient to manage aging effects.
G-IVB1-8	IV-B1.5.1	Delete this item from the GALL.	The approved BWRVIP documents show that management of aging effects is not required for the orificed fuel support casting. (BWRVIP-06, etc.)
G-IVB1-9	IV-B1.6.1 through B1.6.3	Delete this item from the GALL.	The instrument penetrations are addressed in BWRVIP-49 and should be discussed in the RPV section. The housing inside the vessel is not safety related and does not require an aging management program.
G-IVB1-10	IV-B1.7	Delete this item from the GALL.	This item is not safety related and not subject to an aging management program.
G-IVB2-1	All	Delete void swelling from all items except B2.4.1. For the Evaluation and Technical Basis entry for void swelling, delete "The applicant should address loss of ductility associated with swelling." (STH/FPL)	Wording under the Aging Management Program column appears to be acceptable. The Westinghouse position on this issue is that void swelling is only applicable to the baffle/former plates. Additionally, the change in material properties, if any, will not affect the ability of the baffle/former plates to perform their intended functions (core support and flow distribution).

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB2-2	All	SCC and IASCC have been combined in the latest revision. The only internals parts subject to IASCC per Westinghouse topical are Item Numbers B2.3.1, B2.3.4, B2.4.1, B2.4.2, B2.5.1, B2.5.2, B2.5.4, and B2.5.5. SCC and IASCC should be segregated again and IASCC indicated for the above item numbers only. (STH/FPL)	The Westinghouse position is that only internals parts subject to fluences greater than 1 x 10^{21} have the potential for IASCC.
G-IVB2-3	All	The only internals parts subject to irradiation embrittlement are Item Numbers B2.3.1, B2.3.4, B2.4.1, B2.4.2, B2.5.1, B2.5.2, B2.5.4, and B2.5.5. It should be indicated as a mechanism for these item numbers only. (STH/FPL)	The Westinghouse position is that only internals parts subject to fluences greater than 1 x 10^{21} have the potential for irradiation embrittlement.
G-IVB2-4	All	Reference to ASME Section XI should be deleted from the References, Existing AMP, and Evaluation and Technical Basis columns for all SCC entries. (STH/FPL)	The effects of SCC on PWR austenitic stainless steel are precluded by material selection (e.g., Reg. Guide 1.43) and control of chemistry (oxygen and other debilitating constituents) in the reactor coolant.
G-IVB2-5	B2.1.1 B2.1.4 B2.1.7	For SCC/IASCC in the RV upper internals, item (10) Operating Experience refers to cracking in SS baffle former bolts and states that the mechanism of this particular cracking has not yet been resolved. Delete this reference to bolts in (10).	The location and geometry of the bolts is not consistent with the upper internals components being described. The fact that the cracking mechanism has not been identified makes this an inappropriate piece of information.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB2-6	B2.1.1 B2.1.4 B2.1.7	For the aging effect of "changes in dimension due to void swelling" the AMP column identifies the fact that the RV Internals receive a visual inspection per ASME Section XI, implying that this inspection is intended to manage void swelling. This is not correct since void swelling is not recognized as a mechanism, which requires management. An "acceptable" alternate AMP is described in this column. Move the description of an acceptable program to the Technical Basis column. The requirement to address loss of ductility associated with void swelling is included in the Technical Basis. It should be deleted.	Current programs are not intended to detect the effects of void swelling. Since the Technical Basis column identifies what is required of an applicant, it should also describe what is acceptable. If loss of ductility is a valid effect of swelling, then it should be included explicitly in the aging effects column.
G-IVB2-7	B2.1.1 B2.1.4 B2.1.7 B2.1.2 B2.1.3, B2.1.5, B2.1.6 B2.2.1, B2.2.2 B2.2.3, B2.3.1 B2.3.4, B2.4.1 B2.4.2, B2.5.2 B2.5.6 to end	Program cited is Section XI and (4) Detection of Aging Effects describes inspections that are not part of Section XI – the description of detection in addition to B-N-3 should be modified to reflect ongoing industry initiatives and not recommend specific inspections. A statement such as "participation in industry programs to investigate aging effects and determine appropriate inspections, with reports to the NRC on a periodic basis." This applies to void swelling, IASCC, SCC, reduction in fracture toughness due to irradiation embrittlement and thermal embrittlement, and loss of closure integrity due to stress relaxation	NUREG 1733, Safety Evaluation Report Related to the License Renewal of Oconee Nuclear Station, Units 1,2 and 3. There are significant industry efforts under way to determine appropriate inspections for RV internals as referenced on ONS SER

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB2-8	B2.1.2	For "Loss of Fracture Toughness due to Thermal Aging and Neutron Irradiation Embrittlement" the environment includes a Neutron Fluence of greater than 10E17 n/cm2 (E > 1 MeV). Identify the basis for this threshold value for irradiation embrittlement in CASS	The 10E17 fluence value for irradiation embrittlement is valid for low alloy steels such as the reactor pressure vessel. There is no basis for also assigning it to stainless steel material. –W- expects the threshold to be at least 10E21 n/cm2 (E > 1 MeV)
G-IVB2-9	B2.1.2	Delete reference to CASS and associated thermal embrittlement for this item.	Per previous comment, Westinghouse plants do not have CASS in the upper support columns. Some plants do have mixing vane devices made of CASS, however these do not perform any intended function.
G-IVB2-10	B2.1.7	Loose parts monitoring and neutron noise monitoring (excore detectors were added to the Aging Management Program column. These entries should be deleted.	Visual inspections of the reactor vessel internals performed in accordance ASME Section XI provide an adequate aging management program for portions of the internals outside the fuel assembly region. SRP Appendix A.1.2.3.10 states that operating experience 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. In fact the operating experience provided indicates that there is no need for loose parts monitoring or neutron noise monitoring to manage aging effects associated with the reactor vessel internals.
G-IVB2-11	B2.1.7	Delete this item completely	For the –W- design, the hold-down spring does not perform any intended function, and does not require an aging management review

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB2-12	B2.2.1, B2.3.2	Delete wear as an aging effect for these items.	Measurements have shown this effect to be not significant, or insignificant relative motion to result in wear
G-IVB2-13	B2.3.1 thru B2.3.4	GALL now has a fluence threshold specified in the Environment column and examination category B-N-2/B-N-3 was added. However, the effect should only be listed for item B2.3.1, the core barrel.	The core barrel is the only item that is exposed to neutron fluences in excess of the embrittlement threshold.
G-IVB2-14	B2.4.1	Category B-N-2 needs to be added with each entry of B-N-3.	Use of the B-N-2 / B-N-3 pairing is not consistently applied to components in this section
G-IVB2-15	B2.5.1 B2.5.6 B2.5.7	Of this grouping, IASCC should only apply to item number B2.5.1 (Lower Core Plate).	The lower core plate is the only item that is exposed to neutron fluences in excess of the embrittlement threshold.
G-IVB2-16	B2.5.2 B2.5.5 B2.5.7	Of this grouping, IASCC should only apply to item number B2.5.2 (Fuel Pins).	The fuel alignment pin is the only item that is exposed to neutron fluences in excess of the embrittlement threshold.
G-IVB2-17	B2.5.2 B2.5.5	Of this grouping, reduction if fracture toughness due to irradiation embrittlement should only apply to item number B2.5.2 (Fuel Pins).	The fuel pin is the only item that is exposed to neutron fluences in excess of the embrittlement threshold.
G-IVB2-18	B2.5.3 B2.5.4	IASCC should not apply to these items.	Neither of these is expected to be exposed to neutron fluences in excess of the embrittlement threshold.
G-IVB2-19	B2.5.3 B2.5.4	Reduction if fracture toughness due to irradiation embrittlement should not apply to these items.	Neither of these is expected to be exposed to neutron fluences in excess of the embrittlement threshold.
G-IVB2-20	B2.6.2	For wear, the Reference column should include I&E Bulletin 88-09, existing program material should be replaced with "utility response to Bulletin 88-09", and Technical Basis column should reflect Bulletin 88-09 requirements.	B 88-09 is the basis for the current programs.

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G-IVB2-21	B2.2.1 B2.4.2	References to the Code were deleted for items B2.2.1 (wear) and B2.4.2 (stress relaxation), and references to the Tech Specs were deleted for item B2.4.2 (SCC/IASCC).	Need to confirm if this is an issue.
G-IVB2-22	B2.2.1	Delete rod drop time testing to detect wear of the guide tube cards	Rod drop time testing will not detect wear of the RCA Guide tube during operation. This test is done prior to startup and if the rods do not meet the rod drop time specified; action must be taken prior to startup.
G-IVB2-23	Page IVB2-25	The rows on page IVB2-25 are not aligned with their corresponding items on Page IVB2-24. It appears that the last row should be at the top of the page. Correct the alignment	Editorial.
G-IVB2-24	B2.6.2	Loss of Material due to Wear on the Flux Thimbles is described as "same as" wear on the upper core plate alignment pins. Delete this and replace with reference to I&E Bulletin 88-09. Program should be "utility response to Bulletin 88-09." Technical basis should reflect 88-09 requirements.	The type of wearing action is substantially different between the flux thimble and the core plate alignment pins. Utility action was required in response to 88-09.
G-IVB3-1	B3.1.1 B3.1.3	Delete IASCC as a contributing mechanism	IASCC is not a likely aging mechanism because of the very low oxygen environment and the relatively low neutron fluence. SCC is the only likely mechanism. The likelihood of cracking such as was observed in stainless steel baffle bolts has no relevance to Combustion Engineering upper internals assemblies.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-2	B3.1.1 B3.1.3	Delete Void Swelling as a contributing mechanism	Void swelling is not a likely aging mechanism for the upper internals assembly because of the very low neutron fluence. The likelihood of embrittlement due to swelling is even more remote because irradiation hardening is associated with over 10% swelling in Fast Breeder Reactor cladding. No swelling is expected, therefore, embrittlement due to 10% swelling is not possible. Industry programs to address the occurrence and significance of void swelling will be used as part of the Core Shroud Assembly aging management activity to establish the need for an inspection program.
G-IVB3-3	B3.2.1 B3.2.2	Delete IASCC as a contributing mechanism	IASCC is not a likely aging mechanism because of the very low oxygen environment and the relatively low neutron fluence. SCC is the only likely mechanism. The likelihood of cracking such as was observed in stainless steel baffle bolts has no relevance to Combustion Engineering CEA shroud assemblies and bolts.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-4	B3.2.1 B3.2.2	Delete Void Swelling as a contributing mechanism	Void swelling is not a likely aging mechanism for the CEA shroud assemblies and bolts because of the very low neutron fluence. The likelihood of embrittlement due to swelling is even more remote because irradiation hardening is associated with over 10% swelling in Fast Breeder Reactor cladding. No swelling is expected, therefore, embrittlement due to 10% swelling is not possible. Industry programs to address the occurrence and significance of void swelling will be used as part of the Core Shroud Assembly aging management activity to establish the need for an inspection program
G-IVB3-5	B3.3.1 B3.3.2	Delete IASCC as a contributing mechanism	IASCC is not a likely aging mechanism because of the very low oxygen environment and the relatively low neutron fluence. SCC is the only likely mechanism. The likelihood of cracking such as was observed in stainless steel baffle bolts has no relevance to Combustion Engineering Core Support Barrels.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-6	B3.3.1 B3.3.2	Delete Void Swelling as a contributing mechanism	Void swelling is not a likely aging mechanism for the Core Support Barrel (CSB) because of the very low neutron fluence and the low irradiation temperature. (The CSB is in direct contact with reactor coolant inlet water that is nominally 550F.) The likelihood of embrittlement due to swelling is even less remote because irradiation hardening is associated with over 10% swelling in Fast Breeder Reactor cladding. No swelling is expected, therefore, embrittlement due to 10% swelling is not possible. Industry programs to address the occurrence and significance of void swelling will be used as part of the Core Shroud Assembly aging management activity to establish the need for an inspection program.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-7	B3.3.1 B3.3.2	Modify the threshold value for loss of fracture toughness, or delete as a contributing mechanism	Loss of fracture toughness due to neutron irradiation embrittlement in Combustion Engineering Core Support Barrels is not a credible aging degradation mechanism because the austenitic stainless steel used to construct the CSB will retain significant amounts of ductility through its service life. The fluence threshold of $1x10^{17}$ n/cm^2 is at least four orders of magnitude too low for loss of significant fracture toughness in austenitic stainless steel. There currently are industry programs underway to address the occurrence and significance of changes in strength and ductility due to neutron irradiation that can be used to determine the need to monitor loss of fracture toughness due to neutron irradiation embrittlement in CSBs.
G-IVB3-8	B3.4.1 B3.4.3	Delete Void Swelling as a contributing mechanism	Void swelling in the Core Shroud Assembly will be addressed through an industry program on the occurrence and significance of void swelling. The likelihood of embrittlement due to swelling is remote because irradiation hardening is associated with over 10% swelling in Fast Breeder Reactor cladding. Swelling as great as 10% is not expected, therefore, embrittlement due to 10% swelling is not likely.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-9	B3.4.1 B3.4.3	Modify the threshold value for loss of fracture toughness, or delete as a contributing mechanism	Loss of fracture toughness due to neutron irradiation embrittlement in Combustion Engineering Core Shroud Assemblies is not a credible aging degradation mechanism because the austenitic stainless steel used to construct the CSB will retain significant amounts of ductility through its service life. The fluence threshold of $1x10^{17}$ n/cm^2 is at least four orders of magnitude too low for loss of significant fracture toughness in austenitic stainless steel. There currently are industry programs underway to address the occurrence and significance of changes in strength and ductility due to neutron irradiation that can be used to determine the need to monitor loss of fracture toughness due to neutron irradiation embrittlement in Core Shroud Assemblies.
G-IVB3-10	B3.4.2	Delete IASCC as a contributing mechanism	IASCC is not a likely aging mechanism because of the very low oxygen environment and the relatively low neutron fluence. SCC is the only likely mechanism. The likelihood of cracking such as was observed in stainless steel baffle bolts has no relevance to Combustion Engineering lower internals assemblies.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-11	B3.5.1 thru B3.5.6	Delete IASCC as a contributing mechanism	IASCC is not a likely aging mechanism because of the very low oxygen environment and the relatively low neutron fluence. SCC is the only likely mechanism. The likelihood of cracking such as was observed in stainless steel baffle bolts has no relevance to Combustion Engineering Core Shroud Assembly Bolts.
G-IVB3-12	B3.5.1 thru B3.5.6	Delete Void Swelling as a contributing mechanism	Void swelling is not a likely aging mechanism for the lower internals assembly because of the very low neutron fluence. The likelihood of embrittlement due to swelling is even less remote because irradiation hardening is associated with over 10% swelling in Fast Breeder Reactor cladding. No swelling is expected, therefore, embrittlement due to 10% swelling is not possible. Industry programs to address the occurrence and significance of void swelling will be used as part of the Core Shroud Assembly aging management activity to establish the need for an inspection program.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB3-13	B3.5.1 thru B3.5.6	Modify the threshold value for loss of fracture toughness, or delete as a contributing mechanism	Loss of fracture toughness due to neutron irradiation embrittlement in Combustion Engineering lower internals assemblies is not a credible aging degradation mechanism because the austenitic stainless steel used to construct the components will retain significant amounts of ductility through its service life. The fluence threshold of $1x10^{17}$ n/cm^2 is at least four orders of magnitude too low for loss of significant fracture toughness in austenitic stainless steel. There currently are industry programs underway to address the occurrence and significance of changes in strength and ductility due to neutron irradiation that can be used to determine the need to monitor loss of fracture toughness due to neutron irradiation embrittlement in lower internals assemblies.
G-IVB3-14	IV.B3.1.1-IV.B3.1.3, IV.B3.2.1, IV.B3.2.2, IV.B3.3.1, IV.B3.3.2, IV.B3.4.1, IV.B3.4.2, IV.B3.4.3, IV.B3.5.1, IV.B3.5.1, IV.B3.5.3, IV.B3.5.4, IV.B3.5.5, IV.B3.5.6	Remove entry for IASCC.	IASCC is listed as an Aging Mechanism for the Upper Internals Assembly, CEA Shroud Assembly, Core Shroud Bolts, Core Support Barrel, Core Shroud/Tie Rod, and Lower Internals Assembly. The low levels of dissolved oxygen in a PWR environment and the low applied strain of the RV Internals components cause IASCC to be an unlikely Aging Mechanism for this device type. This position was accepted in NUREG-1705. This entry does not present conclusive evidence that this mechanism is plausible. This mechanism has been observed in BWRs where oxygen levels are considerably higher than in PWRs. A similar Aging Mechanism has also been observed in PWR CEDM tips where very high strain is applied at

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			very low strain rate in a high fluence field. However, there is not conclusive evidence of IASCC for device types with the temperature, oxygen and radiation levels present for the RV Internals either in operating plants or in laboratory tests. Since there is not clear agreement on this Aging Mechanism, and since new information is emerging, such as from the EPRI Materials Reliability Project, applicants could agree to participate in industry efforts to address the significance of IASCC, such as with a program similar to that accepted in NUREG-1705 for Void swelling, in lieu of the listed Existing AMP. Prior to year 40, if it is determined that IASCC is a significant issue in the renewal term, they would agree to develop a sufficient inspection program (including the basis, methods, locations to be examined, timing frequency and acceptance criteria) for management of the issue based upon the results of the industry information. This agreement would not constitute consideration of this Aging Mechanism as requiring management and the agreement would not constitute a "credited program" at this time.

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G-IVB3-15	IV.B3.1.1- IV.B3.1.3, IV.B3.2.1, IV.B3.2.2, IV.B3.3.1, IV.B3.3.2, IV.B3.4.1, IV.B3.4.2, IV.B3.4.3, IV.B3.5.1, IV.B3.5.2, IV.B3.5.3, IV.B3.5.4, IV.B3.5.5, IV.B3.5.6	Remove references to ISI in entry for SCC.	SCC is listed as an Aging Mechanism for the Upper Internals Assembly, CEA Shroud Assembly, Core Shroud Bolts, Core Support Barrel, Core Shroud/Tie Rods, and Lower Internals Assembly. SCC/IGSCC is not plausible for this device type due to non-susceptible material (Alloy Steel, Stainless Steel and/or Nickel Base Stainless Steel), lack of high tensile stresses and control of water chemistry. SCC is not a concern for SS components in treated borated water where chemistry controls maintain halides < 150 ppb or sulfates < 100 ppb (BAW-2270). Chemistry controls in accordance with industry guidelines assure this requirement is met. Therefore, for SCC, chemistry programs in accordance with industry guidelines alone should be credited. A similar position was accepted in NUREG-1705. This entry does not present conclusive evidence that this mechanism is plausible. The References, Existing AMP, Evaluation and Technical Basis, and Further Evaluation entries should be rewritten to correspond to the provided example.
G-IVB3-16	IV.B3.2.2, IV.B3.4.2, IV.B3.4.3	Remove references to loose parts monitoring in entry for Stress Relaxation.	Loose parts monitoring will not discover degradation resulting from stress relaxation until after the intended function has failed. ISI is adequate for aging management; loose parts monitoring adds no value for aging management.

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G-IVB3-17	IV.B3.3.1, IV.B3.3.2, IV.B3.4.1, IV.B3.4.2, IV.B3.4.3, IV.B3.5.1, IV.B3.5.2, IV.B3.5.3, IV.B3.5.4, IV.B3.5.5, IV.B3.5.6	For Neutron Irradiation Embrittlement, include enhanced VT-1, with no further evaluation, as an option for aging management.	This program combination was accepted in NUREG-1705.
G-IVB4-1	B4.	Incore guide tube assembly items are missing. See BAW-2248A.	Missing internals items
G-IVB4-2	All Items	Fatigue TLAA is applicable to replacement bolts (core barrel and thermal shield) only. TLAA not applicable to the majority of internals items. See BAW-2248A	B&W internals designed prior to Section III rules for design of RV internals.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
G-IVB4-3	B4.1.1-B4.1.3 Plenum cover and plenum cylinder and CSS B4.4.1-B4.4.5 and flow distributor and Lower internals	SCC and IASCC are unlikely mechanisms for these items due to water chemistry and fluence. The B&WOG and NRC did not agree on thresholds; however, the NRC did agree that augmented inspections at limiting locations would be appropriate and bound other locations that may be susceptible to these mechanisms. AMP—the program description does not include provisions to identify limiting items and perform augmented inspections. The limiting items may not be associated with the plenum assembly and are most likely part of the core barrel assembly (e.g., baffle bolts).	See BAW-2248A—Applicant Action Items.
G-IVB4-4	B4.1.1-B4.1.5, page IV B4-10 and all items	Void Swelling—See comment number 14 above. Void swelling of the plenum cover and plenum cylinder unlikely owing to low fluence.	BAW-2248A
G-IVB4-5	B4.2.1-B4.2.5, page IV B4-12	Loss of Fracture Toughness—AMP should include provisions to ID limiting items and perform augmented inspections at those locations.	BAW-2248A
G-IVB4-6	B4.3.2, page IV B4-16 and all subsequent items where loss of fracture toughness is listed	Delete fluence threshold of 1.0E17	No justification is provided for the fluence threshold and calculation of fluence at the spacer castings is very difficult (i.e., large uncertainties).

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G-IVC1-1	IV-C1.1.5 through C1.11, C1.1.13	Delete the last sentence under the "Preventive Action" statement. If the staff insists on retaining a statement, revise the last sentence to read: "Also, hydrogen addition may be used to enhance the inhibition of IGSCC."	Use of HWC is an option an owner may want to use. However, control of water chemistry by implementing TR-103515 is sufficient.
G-IVC1-2	IV-C1.1.5 through C1.11	Revise the "Parameters Monitored/Inspected" to read: "Inspection and flaw evaluation are to be performed in accordance with ***GL 88-01 or*** the referenced BWRVIP guideline as approved by the NRC staff."	The GL 88-01 reference is appropriate.
G-IVC1-3	IV-C1.1.5 through C1.11, C1.1.13, C1.2.1, C1.3.1, C1.3.2, C1.4.1 through C1.4.4	In every location where the GALL refers to BWRVIP-29 (TR-103515), replace the reference with "EPRI TR-103515, Rev. 2 (BWRVIP-79) or later approved version of TR103515.	The EPRI document referred to has been updated as of March 2000. The latest issue is TR-103515, Rev.2. NRC staff in EMCB has the document. This document is updated periodically to identify the latest enhancements to the water chemistry programs. As such, the GALL ought to recognize such.
G-IVC2-1	Page IVC2-11 thru IVC2-19	Multiple entries with "same as..." are not in italics. Convert all "same as..." to italics.	Need to be consistent with general format
G-IVC2-2	C2.1.1-C2.1.4, page IV C2-4	Add crack growth due to service (cyclic) loadings as a mechanism. SCC of carbon steel pipe is unlikely. The AMP discusses Exam. Category B-J but is silent with regard to risk-informed ISI	EPRI- NP-1406-SR discusses the mechanism
G-IVC2-3	C2.1.5	Unanticipated thermal and mechanical loading is not a valid aging mechanism - Delete	If a mechanism is not anticipated, then it cannot be managed in anticipation. This is not an aging mechanism, it is a design issue

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G-IVC2-4	C2.1.5	Program parameters monitored should be modified to allow the use of industry experience as inspections of small bore piping are done instead of requiring a plant-specific inspection	As experience is gained with these inspections, if the same material / environment combination exists, a plant-specific inspection may not be necessary.
G-IVC2-5	C2.1.5	Small-bore piping is either stainless steel, Alloy 600, or stainless steel clad carbon steel. In addition, loose or displaced thermal sleeves in HPI (2 ½-inch NPS) connections are not addressed. AMP requires augmented inspection of thermal sleeves per GL 85-20.	There is no small bore CS
G-IVC2-6	C2.3.1	RCP Casing – Thermal Embrittlement. The AMP and Technical Basis text refer to thermal aging for valve body. Change to RCP casing.	Correct topic is RCP casing.
G-IVC2-7	C2.4.3	Valve closure bolting is either HSLAS or SS. Aging effect is loss of closure integrity by cracking and loss of preload.	BAW-2243A
G-IVC2-8	C2.5.8	Manway and Flange—aging effect of loss of material on external surface of the manway was omitted.	BAW-2244A
G-IVC2-9	C2.5.12	Cracking at weld that connects the pressurizer support plate to the shell was omitted.	BAW-2244A
G-IVD1-1	D.1.1.3, D1.1.4	Evaluation of Technical Basis – Discussion of NRC IN 90-04 should be deleted regarding general corrosion and pitting of the SG shell. The conclusion that additional inspection may be required that are associated with the IN discussion should also be deleted	IN 90-04 Cracking of Upper shell to Transition Girth Welds does not discuss cracking of SG shell remote from welds. The problems discussed in this IN were in –W- model 44 and 51 SGs and were discovered during ISI weld inspections

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G-IVD1-2	D1.1.9	Evaluation of technical basis – delete discussion about potential cracking in cladding remote from welds	There is no justification provided to show that existing ASME inspections are not sufficient. The operation experience cited deal primarily with alloy 600 issues (IN 90-10 and 90-30). In 84-18 provides general information on SCC with a focus on systems, which generally are in standby or where contaminants have been introduced into the system.
G-IVD1-3	D1.2.1	Fatigue of SG tubes is treated "same as" fatigue of top head, steam nozzle and safe end. Add the following. "For plants where analyses were completed in response to Bulletin 88-02, "Rapidly Propagating Cracks in SG Tubes," the results of those analyses have to reconfirmed for the period of life extension.	The type of fatigue analysis is different for certain tube locations.
G-IVD1-4	D1.2.1	SG Tubes – Fretting and Wear – under Technical Basis (2) The program provides no guidance or recommendations.... Change to "NEI 97-06 includes foreign material exclusion as a means to inhibit fretting and wear degradation	Incorporate available guidance from existing program
G-IVD1-5	D1.2.1	Technical Basis (5), change the referenced inspection interval for PWSCC to be consistent with the recommendation under Secondary Side visual inspection in NEI 97-06.	Incorporate available guidance from existing program
		Technical Basis (6) incorrectly discusses PWSCC. Replace with "Loose parts or foreign objects that are found should be removed from the steam generators unless it can be shown by evaluation that these objects do not cause unacceptable tube damage. The evaluation will define an acceptable operating interval."	Incorporate available guidance from existing program

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G-IVD1-6	D1.2.1	For Aging Mechanism = General Pitting and Corrosion, under Technical Basis (6), add the performance criteria identified in NEI 97-06.	Incorporate available guidance from existing program
G-IVD1-7	D1.2.1	For "denting due to corrosion of tube support plates" change aging mechanism to specify carbon steel tube support plates	Denting has not been experienced with stainless steel support plates.
G-IVD1-8	D1.2.1	Tube support lattice bars / FAC... Consider adding Carbon Steel Tube Support Plates as separate item. Effect = ligament cracking, mechanism = corrosion. AMP = Program in accordance with NEI 97-06	Corrosion of carbon steel support plates has a detrimental effect on SG tubes where they pass through the support plate. Denting of tubes is a secondary effect.
G-IVD2-1	D2.1.3	Primary OTSG inlet and outlet nozzles do not have SS safe ends. Loss of material due to boric acid corrosion on external nozzles was omitted.	NUREG-1723
G-IVD2-2	D21.8, page D2-12	Secondary side nozzles are susceptible to SCC and not PWSCC.	

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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.
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.
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.
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 400°F. This system is maintained in standby at ambient temperature; the temperature preconditions for SCC (>150°F) do not exist.

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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.
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.
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.
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.
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.
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.
G-VC-4	C.2.1, C.2.2	The environments in this item are quite varied. Consideration should be given to	SS and low-alloy materials are generally not subject to detrimental aging effects unless they are

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		addressing each environment separately, as the aging effects can be different.	exposed to high temperatures (>200°F) under normal (long-term) operating conditions or salt-laden fluids.
G-VC-5	C.1.1	Typos in the Evaluation and Technical Basis Section.	Editorial comment.
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.
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.
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 644°F. This portion of system is maintained in standby at ambient temperature; the temperature preconditions for SCC (>150°F) do not exist.

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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.
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.)
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.
G-VD2-2	D2.1.1-D2.1.7	Change lower limit for temperature to 93°C (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.
G-VD2-3	D2.1.1-D2.1.7	This item should be modified 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.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
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.
G-VD2-5	D2.3.1	Change lower limit for temperature to 93°C (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.
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.
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.

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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.
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.
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.
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.
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

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
			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.
G-VE-6	E.2.1	Delete "Air, Moisture, Humidity and Leaking Fluid" under Environment Column for Closure Bolting. Replace with "Air, Leaking Chemically treated Borated Water". 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).
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

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			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.
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.

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G VI – 1	Table 6	Delete "BWR/" from the Type column for the "Non-EQ electrical connectors exposed to borated water leakage."	COMMENT 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.
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."* COMMENT The switchyards at nuclear plants normally do contain high-voltage power cables (transmission lines) and connections. The rest of the statement is accurate.
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."* COMMENT 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.

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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.
G-VIIA-1	A1.1.1	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.
G-VIIA1-1	VII.A1.1.1, page VIIA1-5	Aging Management Program should list Structures Monitoring program.	Additional information is superfluous.
G-VIIA2-1	VII A2-4	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.
G-VIIA2-2	VII A2-4	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.
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.
G-VIIA2-4	VII A2-5	Eliminate the requirement for both visual inspection of the coupons and the BADGER	Either of the two methods in addition to RACKLIFE provides reasonable assurance that

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		device inspection.	aging of boraflex is adequately managed.
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.
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.
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."
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
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.
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
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	Refer to comments in Chapter XI.M4 for justification

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
		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.	
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.
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.
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.
G-VIIA3-8	A3.4.1, A3.4.2	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.
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.
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.
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

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			does not directly affect the intended function, only indirectly through the other listed mechanism.
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
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.
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.
G-VIIB1-5	VIIB1.1, page VIIB-5	Aging Management Program should reflect CMAA Specifications #67 or #70. Additional information such as cycles and CUF needs to be moved under evaluation and technical basis. Further evaluation should say, "Yes, TLAA if applicable."	ASME NOG-1 is not a utility applied reference. Editorial clarification.
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.
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.
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	The attributes are changed to more correctly reflect the program. This statement matches how other preventive actions are addressed when it is a monitoring

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		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.	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.
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%.
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.
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	Since scope of Section VII C2 now also includes containment isolation portion of system, Quality Group classification requires clarification.

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		part of the containment penetration boundary which are Group "B.	
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.
G-VIIC1-3	C1.1.1	Add stainless steel, as applicable material for open cycle cooling water systems (above ground). 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.
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.
G-VIIC1-5	C1.1.1, C1.2.1, C1.3.1 thru 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.
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.
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.
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

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
			addressed under loss of material.
G-VIIC1-9	C.1.3.1 thru 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.
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.
G-VIIC1-11	C1.5.1	Add cast steel to the Material column.	To be consistent with the same item 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.
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.
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.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
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.
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.
G-VIIC2-3	C.2.2.1	Need to add Stainless material for valves. 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.
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.
G-VIIC2-5	C.2.5.1	Need to add Stainless material for flow orifice.	Some plants also utilize stainless steel orifices in

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
		No other changes are required to columns.	their closed cooling water systems. The Closed Cooling Chemistry Program addresses the aging effects of stainless steel.
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.
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.
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.
G-VIIC3-1	C3.1.1, C3.2.1	Change aging mechanism from "selective leaching" to "de-alloying" in the aging mechanism and AMP columns.	To ensure consistency between Gall sections VII C1 and VII C3.
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.
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.
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.
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	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

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
		Interface paragraph.	individual sections is not clearly established in the System Interface sections of the individual sections.
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.
G-VIID-2	D.1.1, D.2.1 thru D.2.3, D.3.1, D.4.1 thru 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) Verification that maintenance practices, emergency procedures, and training are adequate, and 3) Verification that the design of the entire system

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			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.
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.
G-VIIE1-2	E1.7.1 thru E1.7.4	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.
G-VIIE1-3	E1.10.1 thru 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.
G-VIIE1-3	E1.10.1 thru 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.
G-VIIE1-5	E1.7.1 thru E1.7.4	Delete the Aging Mechanism 'Unanticipated cyclic loading'.	Unanticipated cyclic loading is not a valid Aging Mechanism.

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G-VIIE1-6	E1.8.1 thru E1.8.3	Delete the Aging Mechanism 'Unanticipated cyclic loading'.	Unanticipated cyclic loading is not a valid Aging Mechanism.
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.
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.
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.
G-VIIE1-10	E1.1.2	Remove all references to ISI for managing Boric Acid Corrosion.	See justification for comment on item XI.M5
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

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			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.
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.
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.
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.
GVIIE2-3	E2.1.1	Environment temperature ranges do not agree. SCC ranges should be from 93°C to 194°C.	SCC is not an appropriate aging effect for the internal surfaces of these components when their normal operating temperature is less than 200°F (93°C).
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	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.

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		Demineralized water). Temperature range should be from 93°C to 194°C.	
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.
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 (~100°C). The low temperature for the range should be in keeping with the other comments of this section: 93°C (200°F).	While high temperature spots around the heaters are possible, it is very unlikely that 302°F 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.
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.
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.
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.
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.
GVIIE3-3	E3.1.1	The lower limit of, ">93°C," should read, "Up to 288°C (550°F)" for the line item dealing with	The basis for excluding piping that has thermal cycles from room temperature up to 93°C is

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		Cumulative Fatigue Damage.	unclear. Depending upon the pipe geometry, low to moderate temperature cycling may be dominating in the pipe stress analysis.
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.
GVIIE3-5	E3.2.2	SLAS should be spelled when first used.	Writing style 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.
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 700°F, for austenitic steels below 800°F, and for nickel based alloys below 1800°F. Creep is not generally a consideration in light water reactors due to

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			operation at a maximum of 650°F or below, which is somewhat below the creep range for most ASME Code materials. `
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.
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.
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.
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.
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.
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

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			GALL for BWR's.
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 AMP's for similar materials and aging effects in different chapters of the GALL report.
G-VIIE4-3	E4.3.1	In the AMP column, delete the "and" between BWRVIP 29 and TR-103515. Instead replace with "BWRVIP 29 (TR-103515). Evaluation and Technical Basis: Element 2 delete "and TR-103515" and the last sentence about hydrogen water chemistry. 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.
G-VIIF1-1	System	Include a reference to Section VII I (Carbon	The external surfaces of piping etc. should be

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	Interface	Steel Components) for the external surfaces of piping.	included in Section VIII I, however this link is not clearly established.
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.
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.
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
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.
G-VIIF1-6	F1.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.
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.
G-VIIF2-1	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of	The external surfaces of piping etc. should be included in Section VIII I, however this link is not

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
		piping.	clearly established.
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.
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.
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
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.
G-VIIF2-6	F2.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.
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.
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.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
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.
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.
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
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.
G-VIIF3-6	F3.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.
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.
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	The cooling coils typically receive their cooling from another system and this source is typically a Closed Cycle Cooling Water System.

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		source.	
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
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.
G-VIIF4-5	F4.3.1	Remove reference to MIC.	Treated Closed Cycle Cooling Water is not susceptible to MIC.
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.
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.
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

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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
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, 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.	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.

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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.
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.
G-VIIG-7	VIIG1.2, Page VIIG-5	Under parameters monitored, do not discuss the mechanisms.	The rule focuses on aging effects, not mechanisms.
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.
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.

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G-VII G-10	G.7.1, G.7.2	Delete entries for Lubricating Oil environment.	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. 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. The element (10) Operating Experience entries under Evaluation and Technical Basis concur that no corrosion-related degradation has been observed for these components.
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.
G-VII G-12	G.8.1	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 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. This position was accepted in the Oconee SER. The element (10) Operating Experience entries under Evaluation and Technical

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			Basis concur that no corrosion-related degradation has been observed for these components.
G-VII H1-1	H1.1.1, H1.4.2	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.
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.
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.
G-VII H1-4	H1.4.1	Replace: "Exposure to fuel oil contaminants such as water and microbiological organisms is minimized by periodic cleaning/draining tanks	Fuel oil chemistry alone is sufficient to manage aging the fuel oil storage tanks. Proper monitoring and maintenance of the fuel oil quality will

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		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." 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 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."	preclude the accumulation of contaminants that could lead to corrosion.
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.
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.
G-VII H2-1	H2.1.1, H2.1.2	Delete ASME OM S/G Part 2 from the	ASME OM S/G Part 2 provides performance and

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		References column.	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.
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.
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.
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.
G-VII H2-5	H2.1.1, H2.1.2	Make the following change in the Aging Management Program column for carbon steel	Just using hydrazine and lowering the oxygen content does not necessarily make

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		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 susceptible to erosion/corrosion, the components should be added to the scope of Flow Accelerated Corrosion program." 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." Change "Yes, plant specific" to "No" under the Further Evaluation column.	erosion/corrosion a concern in this system. Other factors must be considered as outlined in NSAC 202L-R2.
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

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			discovered with inspections of similar locations and configurations to ensure the event is location specific or a one-time event.
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.
G-VII H2-8	H2.5.1	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." 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 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."	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.
G-VII H2-9	System Interface	Include a reference to Section VII I (Carbon Steel Components) for the external surfaces of	It is not clear that the external surfaces of carbon steel components are addressed in Section VII I of

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		carbon steel components in this section.	the GALL.
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.
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.
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.
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.
G-VII H2-14	H2.5.1	"Dip" Tank should be "Drip" Tank.	There is no such thing as a "Dip" Tank.
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.

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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.
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.
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.
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.

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G-VII I-5	I.2.1	Delete "Air, Moisture, Humidity and Leaking Fluid" under Environment Column for Closure Bolting. Replace with "Air, Leaking Chemically treated Borated Water". 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 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).
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.
G-VII I-7	I.2.1	Delete Aging Effect/Mechanism "Crack	Although there have been a few instances of

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		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.)	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.

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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.
G-VIII A-1	A.1.1, A.1.2, A.2.1	Need to add the aging effect loss of material due 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.
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.
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.
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.
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.

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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.
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.
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.
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.
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	FAC programs generally monitor thinning in pipe locations, since valve bodies are usually much

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		a concern, thickness measurements of the pump casing should be taken.	thicker than pipe walls.
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
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.
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.
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.

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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.
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.
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.
G-VIII E-7	E.5.1	A separate line item should be created for SS Condensate Storage Tanks. The aging effects	Existing line item is for stainless steel and carbon steel (-coated) tanks. However, the aging

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		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.	mechanisms exclude general corrosion, which would be applicable to carbon steel only.
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.
G-VIII E-9	E.5.1 (tank above ground, 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.
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.
G-VIII E-11	E.6.1	Under "Aging Mechanism" add general corrosion.	Carbon steel exposed to treated water is susceptible to general corrosion.
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.
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.
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	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

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		plant and or industry operating/maintenance experience also constitute acceptable verification."	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.
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.
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.
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

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			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
G-VIII G-2	G.1.1, G.1.2	Revise Environment from '<90°C ...Steam Generator' to be just 'Treated Water'.	The temperatures as stated are confusing.
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.
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.
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.
G-VIII G-7	G.1.1, G.1.2	Entry for piping combines 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? Also, later entries for pumps and valves do not include General Corrosion. Why is General Corrosion not an AERM for these entries given same materials and environment?	Consistency

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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.
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.
G-VIII H-3	H.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.
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

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			plant specific review should be performed.
G-VIII H-5	H.2.1	Delete "Air, Moisture, Humidity and Leaking Fluid" under Environment Column for Closure Bolting. Replace with "Air, Leaking Chemically treated Borated Water". 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).
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.

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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.

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G-XIM1	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel	SRP 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 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 reactor coolant system components are inspected in	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 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

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		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 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 NRC staff disagree on some of the aging management activities. The SRP and the GALL report stipulate either a supplemental examination of the some of the susceptible components or a	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. 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

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		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, 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.	internals components, but also to the base metal for reactor coolant system piping components subject to Examination category B-J requirements.

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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, **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	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 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.

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		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. ***(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	

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		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 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	

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		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 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.

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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.
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.

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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.

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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. 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

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			specific basis.

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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 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.

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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.
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.
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.
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 SRP. 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	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 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.

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		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 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.	

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		(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 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.	

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		(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 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.	

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		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 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.	

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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.
G-XI.M10-2		In the program description, replace the last 3 sentences to state the following: "In addition to NFPA 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."	Meeting applicable NFPA commitments and the additional internal inspections of system 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."

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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.
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. 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	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.

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		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 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	

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		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. ***(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	

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		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 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	

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		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 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	

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		Research Institute, Palo Alto, CA, February 1994.	

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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.
G-XIM12.2	SRP 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 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	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. No specific, individual listing of bolting is needed. Also the Bolting Integrity Program is not a real plant program. The 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.	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.

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	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		
G-XIM12-4	GALL XI.M12	Delete the XI.M12 Bolting Integrity and all associated references from GALL and SRP.	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.

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			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. Detection 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.

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G.XI.S1-1	Eval & Tech Basis (1)	**(1) Scope of Program** Change item number 3 to "...provided **IWE-1232** and IWE-5220 are met..."	Editorial
G.XI.S1-2	XI.S1	**(1) 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.
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.
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	The added words (underlined) come directly from 10 CFR 50.55a and are included for clarification purposes.

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		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."	
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.
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.
		(1)	
G.XI.S2-1	Eval & Tech Basis, (1)	**(2) Scope of Program** Industry concerns have not been addressed. Consider adding the following paragraph "Plant-specific evaluation of	Plant-specific actions to address inspection of inaccessible areas are beyond Code requirements.

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		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."	
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.
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)
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	To address the inspection interval for sites with multiple units.

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		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. *(1)* 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 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	

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		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.
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.
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.	
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 10CFR50 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.
G-XI.S5-1	XI.S5, Introduction, and Evaluation & Technical	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".

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	Basis, items 1 and 6		
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.
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.
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 10CFR50.65, 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.	Provides for use of existing Structures Monitoring Program and a method for using other plant specific programs.

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		For plants with a separate masonry wall program, the following evaluation and technical basis is provided:	
G-XI.S5-5	XI.S5, Evaluation & Technical Basis	Masonry Wall Inspection: (1) **Scope of Program**: The scope of the program includes those masonry walls within the scope of license renewal. (2) **Preventive Actions**: No specific preventive actions are required. (3) **Parameters Monitored/Inspected**: Visual inspection by a qualified individual is sufficient to identify cracking of masonry walls. (4) **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. (5) **Monitoring and Trending**: There are no monitoring and trending processes associated with this program	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.

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		(6) **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 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.	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

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		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 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.	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. 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.S6-2	XI-S6 Evaluation & Technical Basis (4)	Delete the following statements: "As specified in ACI 349.3R-96, "the visual inspection should include <u>all</u> exposed surfaces of the structure, joints and joint material, interfacing structures and	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

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		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 (including connections) are specified in ASNI/ASCE 11-90. Additional details on detection methods for welds are 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."	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. 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.

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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."	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 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 10CFR50 Appendix B (Quality Assurance) for Corrective Action, or an existing quality assurance program developed for	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 10CFR 50 Appendix B

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		the Maintenance Rule Program."	requirements.
G-XI.S6-5	XI-S6 Evaluation & Technical Basis (8)	Change to "The Structures Monitoring Program should be conducted under 10CFR50 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 10CFR 50 Appendix B requirements.
G-XI.S6-6	XI-S6 Evaluation & Technical Basis (9)	Change to "The Structures Monitoring Program should be conducted under 10CFR50 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 10CFR 50 Appendix B requirements.
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.
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 <u>not mandatory since this document is not part of the</u>	Item (6) "Acceptance Criteria" identifies ACI 349.3R as an <u>acceptable</u> 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

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		Current Licensing Basis of most operating plants."	therefore should not be considered as a mandatory standard for RG 1.127 inspections under License Renewal
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.

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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".	COMMENT "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.
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."	COMMENT The term "*adverse localized environment*" is used in the first paragraph but is not defined.

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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.	COMMENT 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.

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G2 X.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 ..." COMMENT 1 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. COMMENT 2 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.

STANDARD REVIEW PLAN COMMENTS

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE INCLUDING ANY PROPOSED REWRITE	JUSTIFICATION FOR PROPOSED CHANGE
S-1-1	General	NEI 95-10 should be added as a reference in each section.	This provides the reviewer with insight to the industry recommended process.
S-1-2	1.1.3.2	This section should include the 20-year criteria of 1.1.2.2.	Consistency.
S-1-3	Table 1.1-1	In Item I.4 the 20-year criteria should be moved to Item II Timeliness Provision.	Consistency.
S-1-4	Table 1.1-1	Delete III.1.A.a. and b.	III.1.A. is adequate and consistent with rule requirements. The sufficiency review should verify compliance with the regulation only.
S-1-5	Table 1.1-1	Revise Table 1.1-1, Section III.1.C.b. to read: "Identification of aging effects requiring management based on materials, environment, operating experience, etc."	Section III.1.C.b. states *"Identification of applicable aging effects based on materials, environment, operating experience, etc."* An "applicable aging effect" is not defined. Suggest substituting the term "aging effects requiring management" as used in NEI 95-10.
S-2-1	General	NEI 95-10 should be added as a reference in each section.	This provides the reviewer with insight to the industry recommended process.

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S-2-2	2.1.3 Item 3	In the second sentence replace "accident" with "events." Remove the sentence beginning with "however, events such as fire," and the next sentence and replace with "Design basis events are defined as conditions of normal operations, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure the functions in 54.4(a)(1). See the Branch Technical position beginning on page A.1-1 of the SRP, specifically the design basis event discussion on page A.1-2 in the second paragraph of item 6."	Events not specifically identified in 50.49(b)(1)(ii) are listed – fire, floods, storms, earthquakes, tornadoes and hurricanes. The paragraph should correlate exactly with the definition in 50.49(b)(1)(ii). Additionally SSCs required for compliance with the commission's regulations for fire protection are in scope under 54.4(a)(3).
S-2-3	2.1.3	Delete item 4.	The LR Rule is deterministic not probabilistic. In 60FR22468: "... [The Commission concludes that it is inappropriate to establish a licensee renewal scoping criterion... that relies on plant-specific probabilistic analyses. Therefore, within the construct of the final rule, PRA techniques are of very limited use for license renewal scoping." Further, the guidance in item 4 focuses on drawing " attention to specific vulnerabilities (e.g. results of an IPE or IPEEE)." These evaluations are not parts of the CLB. . Staff review of these documents may not provide the information it is seeking. The IPE and IPEEE reports reflect the estimated core damage frequency for the plant configuration at the time the evaluation is performed. These reports also may contain recommendations to modify the plant, revise procedures, or develop training to further reduce the estimated core damage frequency. Some plant modifications may reduce

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			the frequency of initiating events and others may improve the reliability of credited mitigation systems. The IPE and IPEEE reports do not change the CLB by themselves. The plants must perform complete 50.59 reviews and may or may not implement the recommended modifications. Those modifications that are implemented will be reflected in plant drawings, FSAR changes, or technical specification changes, as appropriate. The staff is already reviewing these latter documents, which provide more current information than that which may be contained in the IPE and IPEEE reports.
S-2-4	2.1.3	Delete item 5.	The LR Rule is deterministic not probabilistic. In 60FR22468: "... [The Commission concludes that it is inappropriate to establish a licensee renewal scoping criterion... that relies on plant-specific probabilistic analyses. Therefore, within the construct of the final rule, PRA techniques are of very limited use for license renewal scoping." Staff review of the probabilistic documents may not provide the information it is seeking. The IPE and IPEEE reports reflect the estimated core damage frequency for the plant configuration at the time the evaluation is performed. These reports also may contain recommendations to modify the plant, revise procedures, or develop training to further reduce the estimated core damage frequency. Some plant modifications may reduce the frequency of initiating events and others may improve the reliability of credited mitigation systems. The IPE and IPEEE reports do not change the CLB by themselves. The plants must perform complete 50.59 reviews and may or may not implement the

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			recommended modifications. Those modifications that are implemented will be reflected in plant drawings, FSAR changes, or technical specification changes, as appropriate. The staff is already reviewing these latter documents which provide more current information than that which may be contained in the IPE and IPEEE reports.
S-2-5	2.1.3.1	Add the following as the last sentence in the first paragraph of 2.1.3.1: "Usually plants will already have a list of those systems, structures, and components identified for compliance with other regulations in the plants CLB that contain identical scoping criteria, such as NRC Regulatory Guide 1.29 or 10CFR100, Appendix A."	This change gives credit to work already completed by the applicant and reviewed and approved by the NRC under 10 CFR Part 50. Such credit would make the staff review more efficient. The NRC staff indicated agreement with a change containing this concept at a public meeting about the SRP on July 18, 2000.
S-2-6	2.1.3.1.2	Revise the last paragraph of Section 2.1.3.1.2 to read: "It is important to note that the scoping criterion under 10 CFR 54.4(a)(2) specifically applies to those functions 'identified in paragraph (a)(1)(i), (ii), and (iii)' of 10 CFR 54.4 and does not apply to those functions identified in 10 CFR 54.4(a)(3)."	The last paragraph states, *"On the basis of the staff's experience to date, it is important to clarify that the scoping criterion under 10 CFR 54.4(a)(2) specifically applies to those functions 'identified in paragraph (a)(1)(i), (ii), and (iii)' of 10 CFR 54.4. An applicant need not extend this requirement to the scoping criteria under 10 CFR 54.4(a)(3), as is discussed below."* The way this is written (O*n the basis of the staff's experience...*) it implies that staff judgement was necessary to determine that §54.4(a)(2) does not apply to §54.4(a)(3) and that based on staff judgement this could change (*...to date...)* in the future. As the regulation is clear, there is no judgement necessary.

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S-2-7	2.1.3.1.3	In the third paragraph remove "and operate within." Also in the fifth paragraph remove "or operation within."	The regulation does not state "demonstrate compliance with and **operation within** the Commission's regulations."
S-2-8	2.1.3.1.3	In the third full paragraph excluding the quote, remove "based on the applicant's design specifications for the diesel,"	The example in this paragraph regarding the diesel goes beyond the rule and conflicts with other sections of the SRP when it refers to the design specifications for the diesel. The 3rd paragraph further down has more appropriate wording,"that is, whose functions were credited in the analysis or evaluation."
S-2-9	2.1.3.1.3	Restate the third sentence of fifth paragraph to read: "For example, if a nonsafety-related diesel generator is only relied upon to remain functional to demonstrate compliance with the Commission SBO regulations, an applicant need not consider the following SSCs:"	This comment clarifies provides a firmer statement.
S-2–10	2.1.3.2.1	Revise the last paragraph of Section 2.1.3.2.1 to read: "10 CFR 54.21(a)(1)(i) explicitly excludes instrumentation, such as pressure transmitters, pressure indicators, and water level indicators, from an aging management review. The applicant does not have to identify pressure retaining boundaries of this instrumentation because 10 CFR §54.21(a)(1)(i) excludes this instrumentation without exception, unlike pumps and valves. Further, instrumentation is sensitive equipment and degradation of the pressure retaining boundary of the instrumentation would be readily determinable by the extensive surveillance and testing. If an applicant determines that certain structures	The last paragraph of Section 2.1.3.2.1 states: *"10 CFR 54.21(a)(1)(i) explicitly excludes instrumentation, such as pressure transmitters, pressure indicators, and water level indicators, from an aging management review. If an applicant determines that certain structures and components listed in Table 2.1-5 as meeting 10 CFR 54.21(a)(1)(i) do not meet that requirement for its plant, the reviewer reviews the applicant's basis for that determination."* The same paragraph in the SRP Working Draft, September 1997, stated: *"10 CFR 54.21(a)(1)(i) explicitly excludes instrumentation, such as pressure transmitters, pressure indicators, and water level indicators, from an aging management review. The applicant does not have to identify pressure*

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		and components listed in Table 2.1-5 as meeting 10 CFR 54.21(a)(1)(i) does not meet that requirement for its plant, the reviewer reviews the applicant's basis for that determination.	*retaining boundaries of this instrumentation because 10 CFR §54.21(a)(1)(i) excludes this instrumentation without exception, unlike pumps and valves. Further, instrumentation is sensitive equipment and degradation of the pressure retaining boundary of the instrumentation would be readily determinable by the extensive surveillance and testing."* REFERENCE: Letter from Dennis M. Crutchfield of NRC to Charles H. Cruse of Baltimore Gas and Electric, dated April 4, 1996. This documented NRC position taken regarding instrumentation would be helpful for future NRC reviewers and should be retained in the SRP.
S-2-11	Table 2.1-1	**Delete "Probabilistic Risk Assessment summary report."**	The LR Rule is deterministic not probabilistic. In 60FR22468: "... [The Commission concludes that it is inappropriate to establish a licensee renewal scoping criterion... that relies on plant-specific probabilistic analyses. Therefore, within the construct of the final rule, PRA techniques are of very limited use for license renewal scoping." The PRA is not part of the CLB. . Staff review of this document may not provide the information it is seeking. The PRA report reflects the estimated core damage frequency for the plant configuration at the time the evaluation is performed. This report also may contain recommendations to modify the plant, revise procedures, or develop training to further reduce the estimated core damage frequency. Some plant modifications may reduce the frequency of initiating events and others may improve the reliability of credited mitigation systems. The PRA

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			report does not change the CLB by themselves. The plants must perform complete 50.59 reviews and may or may not implement the recommended modifications. Those modifications that are implemented will be reflected in plant drawings, FSAR changes, or technical specification changes, as appropriate. The staff is already reviewing these latter documents, which provide more current information than that which may be contained in the PRA report.
S-2-12	Table 2.1-1	**Delete "Emergency operating procedures."**	EOPs are not sources of information regarding evaluations or analyses for design basis events or regulated events.
S-2–13	Table 2.1-2	Revise the third sentence under Commodity Groups to read: "The basis for grouping structures and components can be determined by such characteristics as similar function, similar design, similar materials of construction, similar aging management practices, or similar environments."	Sentence 3 does not consider a grouping based on similar function. Function is a valid basis for grouping as this is the basis for all electrical commodity groups in SRP Table 2.1-5.
S-2-14	Table 2.1-2	Remove the reference to NUREG 1723 in the Complex assemblies row. The staff could add an example of complex assemblies from NUREG 1705, Section 2.2.3.22.2.2.	
S-2-15	Table 2.1-4	Reword the fifth function as "Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current or signals."	This provides a more accurate description of the function of cable.
S-2–16	Table 2.1-5	Delete motor items 65 and 66.	These motors are examples of the motor commodity group and are already included in the **Motors, Generators** commodity group.
S-2-17	Table 2.1-5	Remove entry 107 for terminal blocks.	Terminal blocks are included in entry 79. The

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		Entry 77 should say "Annunciators" and Entry 98 should say "Regulators" The notes regarding references for entries 83, 86, 92, 105 should refer to NRC letters, which provided the passive/active determination for these components. For entry 83 it should be letters from C.I. Grimes to D.J. Walters dated September 19, 1997and November 19, 1999. For entry 86 it should be the letter from C.I. Grimes to D.J. Walters dated April 27, 1999. For entry 92 it should be the letter from C.I. Grimes to D.J. Walters dated September 19, 1997. For entry 105 it should be the letter from C.I. Grimes to D.J. Walters dated September 19, 1997.	second comment corrects the table. The third clarifies references.
S-2-18	Table 2.1-5	Revise this Item 89 to read: "Surge Arresters (e.g., switchyard surge arresters, lightning arresters, surge suppressers, surge capacitors, protective capacitors, reactors)"	Surge arresters that are separate components have applications other than just high-voltage. Suggest dropping "High-voltage" from the name of the commodity group. In continuing license renewal electrical work reactors, another type of surge arrester, was identified that would be helpful to have in the list of examples.
S-2-19	Table 2.1-5	Change Item 96 to read: "Radiation Monitors (e.g., area radiation monitors, process radiation monitors)" and change the passive determination to "No". Change Item 85 to read: "Elements, RTDs, Sensors, Thermocouples,	The original SRP table had the three items; Radiation Sensors, Radiation Monitors and Radiation Transmitters listed as separate items. Radiation Sensors was the only item associated with a pressure boundary in the table. Combining these three separate items is not consistent with the rest of the table under Electrical and I&C in combining into commodity groups.

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		Transducers (e.g., conductivity elements, flow elements, temperature sensors, radiation sensors, watt transducers, thermocouples, RTDs, vibration probes, amp transducers, frequency transducers, power factor transducers, speed transducers, var. transducers, vibration transducers, voltage transducers)" Change Item 106 to read: "Transmitters (e.g., differential pressure transmitters, pressure transmitters, flow transmitters, level transmitters, radiation transmitters, static pressure transmitters)"	
S-2–20	2.2.3	Revise second sentence of Section 2.2.3, Paragraph 1 to read: "Should the reviewer request additional information from the applicant regarding why a certain system or structure was not identified by the applicant as within the scope of license renewal for the applicant's plant, the reviewer should provide a plant specific CLB reference and the specific scoping criterion under which the reviewer believes the system or structure scopes in."	The second sentence of Section 2.2.3, Paragraph 1 states: *"Should the reviewer request additional information from the applicant regarding why a certain system or structure was not identified by the applicant as within the scope of license renewal for the applicant's plant, the reviewer should provide a brief description of why the reviewer believes that this particular system or structure could be potentially within the scope of license renewal."* COMMENT The above guidance of providing a brief statement is vague and may not prevent an applicant from having to "prove the negative". The "brief statement" guidance should be expanded to instruct the reviewer to provide a plant specific CLB reference for the system and the specific scoping

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			criterion under which the reviewer believes the system scopes in. It is the responsibility of the reviewer to explain why they believe a specific system or structure that the applicant scoped out is in the scope of license renewal.
S-2-21	2.2.3.1	The last three full paragraphs: these were added since last draft and refer to components, rather than systems and structures. They seem out of place. They should go in the screening section. If the intention was to add these paragraphs here, they should refer to systems and structures.	Consistency with the purpose of the section.
S-2-22	2.3.3.1	Remove this section. This change makes this section consistent with 2.4.	The Rule does not require an applicant to identify structures and components in the scope of license renewal in an application. An application must contain an identification of structures and components that require aging management review. Please see pages 60 and 61 of NEI 95-10, revision 2, for industry guidance regarding contents of the Scoping and Screening sections of a License Renewal Application. The SRP should focus on the actual expected contents of an application.
S-2-23	2.3.3.2	In the first paragraph remove the second sentence.	A license renewal application will not contain a list of components in the scope of license renewal. Please see pages 60 and 61 of NEI 95-10, revision 2, for industry guidance regarding contents of the Scoping and Screening sections of a License Renewal Application. The SRP should focus on the actual expected contents of an application.
S-2-24	2.3.3.2	Paragraph 2 states "Although Table 2.1-5 is extensive, it is not all inclusive. Thus, the reviewer should use other available information sources, such as prior application	Inclusion of a component by a license renewal applicant is not indicative of the need for a following applicant to include a similar component as the current licensing bases and scoping and screening

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		reviews, to determine whether a component is subject to an aging management review." Sections 2.4 and 2.5 do not contain these words. This statement should be removed from Section 2.3. A combination of Table 2.1-5 and other NRC guidance should be sufficient.	methodologies of the two applicants may be different.
S-2-25	2.5.1	Remove the third paragraph as system level scoping is addressed in section 2.2.	The third paragraph reiterates information already provided in section 2.2. This section is addressing components requiring aging management review; therefore, this paragraph is not needed for the reviewer.
S-2-26	2.5.1	In the fourth paragraphs indicate that the "plant spaces" approach may be used. It is not required.	The License Renewal Rule does not require use of SAND96-0344. An applicant may use another method that complies with rule requirements.
S-2-27	2.5.1	Revise the last sentence of the fifth paragraph to read: "For the above example, if the applicant identified elevated temperatures in a particular area within the turbine building, the applicant may elect to further refine the scope in this particular area by identifying electrical equipment that is not subject to an aging management review and excluding this equipment from the aging management review. In this case, the excluded electrical equipment would be reported in the application as not subject to an aging management review." (Colaianni, Duke)	The last sentence in Section 2.5.1, paragraph 5, does not follow the way scoping in a specific area would be reported in the application when using the plant spaces approach. The space approach starts with the assumption that all passive long-lived electrical and I&C components subject to an aging management review. During the aging management review when a plant area that could be adverse to equipment is identified, the specific equipment in the area is identified in order to eliminate all equipment that does not meet the scoping criteria. In most cases this eliminates all electrical equipment in the area from the scope of review. Since a scoping evaluation was performed to exclude equipment from the aging management review, the excluded equipment would be reported in the application in a manner such as, "All non-EQ cables and connections are subject to an aging

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			management review excluding cables and connections used for the nonsafety-related thermocouples in the in-core instrumentation system."
S-2-29	2.5.1.1 and 2.5.1.2	Delete Sections 2.5.1.1 and 2.5.1.2. Also delete the sentence before 2.5.1.1.	Sections 2.5.1.1 and 2.5.1.2 are not duplicated in the Mechanical Systems and Structures sections (2.3 and 2.4 respectively) and it seems to be a duplication of the material covered in Section 2.5.3, Review Procedures.
S-2-30	2.5.3	Revise the third paragraph to read: "Equipment in the EQ (10 CFR 50.49) program has a qualified life and is replaced at the end of its qualified life. With a qualified life, EQ equipment does not meet the 'long-lived' screening criteria and is not subject to an aging management review. However, the qualified life analyses that provide the basis for a 40-year or greater qualified life are TLAAs for license renewal. The staff reviews the applicant's EQ TLAA evaluation separately following the guidance in Section 4.4 of this standard review plan."	*"The scope of 10 CFR 50.49 electric equipment to be included within 10 CFR 54.4(a)(3) is that 'long-lived' (qualified life of 40-years or greater) equipment already identified by licensees under 10 CFR 50.49(b), which specifies certain electric equipment important to safety."* The scope of §50.49 (EQ) equipment to be included within §54.4(a)(3) is all EQ equipment, not just EQ equipment with a 40-year or greater qualified life. The sentence implies that the 'long-lived' screening criteria applies only to SSCs that are subject to replacement based on a qualified life or specified time period equal to or greater than 40 years. There is no basis for this limitation of the §54.21(a)(1)(ii) criteria in either 10 CFR 54 or in the accompanying Statement of Considerations. *"An applicant may identify EQ equipment separately for TLAA evaluation and not include such equipment as subject to an aging management review under 10 CFR 54.21(a)(1)."*

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			Equipment in the EQ program has a qualified life and is replaced at the end of its qualified life. With a qualified life EQ equipment does not meet the long-lived screening criteria and is not subject to an AMR. The sentence is misleading in that no EQ equipment is required to be included in the list of components subject to an AMR. Much of the information in this paragraph is TLAA evaluation specific and may confuse future reviewers as to the difference between 'long-lived' screening and TLAA evolution regarding EQ equipment.
S-2-31	2.5.3.1	Remove this section. This change makes this section consistent with 2.4 and 2.3 as revised.	The Rule does not require an applicant to identify structures and components in the scope of license renewal in an application. An application must contain an identification of structures and components that require aging management review.
S-2-32	2.5.3.2	Delete the last sentence of paragraph 3, Section 2.5.3.2.	The last sentence of paragraph 3 states, *"An applicant should justify omitting a component that is within scope of license renewal at their facility and is listed as 'passive' in Table 2.1-5."* This information is not required by 10 CFR 54 to be provided in the application, but would be available for on-site inspection at the applicant's facility. An applicant is required to list in the application components subject to an aging management review and describe and justify the methodology, but not to justify why any specific component is not subject to an aging management review.

		EDITORIAL AND TYPOGRAPHIC COMENTS FOLLOW.	
	2.1.2	Second bullet: should say "systems, structures, and components"	Editorial
	2.1.3.2.2	The quote from the SOC should in the middle read "... with a specified time period is deemed ..."	Editorial
	2.1.6	Reference 11 is a duplicate of reference 8.	Editorial
	Table 2.1-3	Change column heading "Subject" to "Issue."	Editorial
	2.2.3.1	The fourth full paragraph says "internal functions", should instead say "intended functions."	Editorial
	2.2.3.1	In the sixth paragraph beginning "An applicant may..." Insert "that" between "indicating" and "the"	Editorial
	2.3.1	In the fifth paragraph beginning "Mechanical components..." delete "(or must)."	Editorial
	2.3.3.2	In the first paragraph the third line from end should read, "...AMR, components that perform..."	Editorial
	2.4.1	The items in the third bullet are components rather than structures and should be included in the sentence following the bullets.	Editorial
	2.4.3.1	The fourth paragraph from end and last paragraph say essentially the same thing.	Editorial
	2.5.1	In the second paragraph insert "to" after "staff" in the fifth line from end.	Editorial

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S3.1-1	SRP 3.1	SRP Section 3.1.1 Areas of Review, describes "connected systems." Statements describing the "connected systems" should be deleted.	SRP 3.1 covers the aging management review of the reactor coolant systems. Connected systems are not part of the review of the reactor coolant system.
S3.1-2	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Inservice Inspection	GALL Section I applies. The presentation of the Inservice Inspection program in the GALL is different than any other program evaluated in the GALL that is relied upon for license renewal. What specifically is an applicant supposed to do that allows this program to be credited without further review?
S3.1-3	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Water Chemistry	GALL Section XI.M.11 applies Refer to comments on Aging Management programs.

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S3.1-4	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Minimization and Control of SCC Delete this program from all locations in all documents	For PWRs, this topic is discussed in GALL IV.A2.1.3. Regulatory Guide 1.65 is referenced within this GALL entry. Regulatory Guide 1.65 entitled, "Materials and Inspections for Reactor Vessel Closure Studs," which was published in 1973 was reviewed by the B&W Owners Group during the licensing of BAW-2251, "Demonstration of the Management of Aging Effects for the Reactor Vessel." In a letter to the NRC staff dated April 1, 1997 (Project No.683), the B&WOG addressed Regulatory Guide 1.65 in response to RAI # 14. In brief, the B&WOG concluded that all recommendations (i.e., examination methods and acceptance standards) of the RV studs in Regulatory Guide 1.65 have been superceded by the current examination requirements specified in the 1989 Edition of ASME Section XI. The examination requirements specified in ASME Section XI, Examination Category B-G-1 are sufficient to manage that potential for IGSCC of the RV studs during the period of extended operation.
S3.1-5	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Fatigue Monitoring Program	GALL Section X.M1 applies Refer to comments on Aging Management programs.

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S3.1-6	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Bolting Integrity	GALL Section XI.M.12 applies Refer to comments on Aging Management programs.
S3.1-7	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Reactor Vessel Surveillance	GALL Section XI.M.13 applies Refer to comments on Aging Management programs.
S3.1-8	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Boric Acid Corrosion	GALL Section XI.M.5 applies Refer to comments on Aging Management programs.
S3.1-9	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Thermal Aging and neutron irradiation embrittlement (CASS)	GALL Section XI.M.2 applies Refer to comments on Aging Management programs.
S3.1-10	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Flow Accelerated Corrosion	GALL Section XI.M.6 applies Refer to comments on Aging Management programs.
S3.1-11	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Quality Assurance	GALL Appendix A and SRP Appendix A.2 apply Refer to comments on Aging Management programs.

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S3.1-12	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Vessel Closure Head Penetrations Delete the requirement for further review of this program in SRP 3.1.2.2.7	GALL Section IV A2.2.1 applies The applicable GALL section states "No Further Evaluation Recommended" as does Table 3.1-1 of the SRP. Actions will be taken by the applicant to address this topic within the bounds of the program.
S3.1-13	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Steam Generator Tube Integrity	GALL Sections IV D1.2.1, D1.2.3, D2.2.1, and D2.2.2 apply Refer to comments on Aging Management programs.
S3.1-14	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Loose Part monitoring Delete this program from all locations in all documents	ASME Section XI, Examination Category B-N-3 has been found to be acceptable to manage loss of prestress by the staff in previous reviews. (i.e., BAW-2248, NUREG-1723). Operating experience provided in GALL IV B2.1.7 does not support the assertion that loose parts monitoring is an effective program to detect loss of preload from stress relaxation.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.1-15	SRP 3.1	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Neutron Noise monitoring Delete this program from all locations in all documents	ASME Section XI, Examination Category B-N-3 has been found to be acceptable to manage loss of prestress by the staff in previous reviews. (i.e., BAW-2248, NUREG-1723). Operating experience provided in GALL IV B2.1.7 does not support the assertion that neutron noise monitoring is an effective program to detect loss of preload from stress relaxation.
S3.1-16	SRP 3.1	SRP 3.1.2.2.2 addresses loss of material due to pitting and crevice corrosion in the steam generator shell assembly and refers to IN 90-04. GALL Sections (IV D1.1.3, 1.1.4, 2.1.4) apply This requirement should be deleted.	IN 90-04, Cracking of the Upper Shell-to-Transition Cone Girth Welds in Steam Generators was issued to alert licensees to problems related to cracking of the upper shell-to-transition cone girth welds in certain steam generators. The aging mechanism is related to the weld itself. The cracking was found during a scheduled ISI. While a common factor was general corrosion pitting on the inside surface of the SGs, the cracks were initiated at the welds not in the base metal. IN 90-04 does not appear to support the GALL/SRP conclusion that further evaluation is necessary. General corrosion pitting of base metal remote form the weld is not likely to result in a loss of component intended function.

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S3.1-17	SRP 3.1	SRP 3.1.2.2.3, 2nd paragraph should be revised to read as follows: "Appendix H of 10 CFR 50, Section III.B.3 requires staff review of the plant surveillance program for the period of licensed operation."	While it is true that the GALL recommends staff approval, the more correct reason is that such review and approval is required by the regulations.
S3.1-18	SRP 3.1	SRP 3.1.2.2.3, 3rd paragraph states that the GALL report recommends an enhanced inservice inspection to detect tight cracks and supplemental examinations for crevice regions of reactor pressure vessel beltline shell and nozzles. Contrary to what the SRP states, there are no such recommendations in the GALL report. This statement should be deleted.	The pertinent GALL Report locations for the reactor vessel beltline shell and nozzles are IV.A2.5 and IV A2.3. Both sections address loss of fracture toughness. Neither section identified the recommendation for further evaluation nor the basis for such an issue.
S3.1-19	SRP 3.1	SRP 3.1.2.2.4 states that unanticipated thermal and mechanical loading can cause crack initiation and growth. This requirement should be deleted.	SRP A.1.2.1 discusses the process to determine applicable aging effects. Item number 6 specifically states that "abnormal events need not be postulated specifically for license renewal." Unanticipated thermal and mechanical loading is an abnormal event that is outside the design of the plant.
S3.1-20	SRP 3.1	SRP Sections 3.1.2.2.4 and 3.1.2.2.7 SRP States that GALL recommends enhanced inspection and one-time inspections for small bore piping. The statement needs to be revised to state: GALL recommends one-time inspections for small bore piping.	GALL IV C2.1.5 applies This GALL section does not recommend enhanced inspections. It only recommends the one-time inspection.

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S3.1-21	SRP 3.1	Section 3.1.2.2.7 indicates that further evaluation is recommended of CRD nozzles (page 3.1-5). This statement should be deleted.	GALL IV A2.2.1 also indicates that there are actions for the applicant to take but that no further evaluation is recommended by the staff. Also Table 3.1-1, PWR, CRD nozzle item (page 3.1-20) indicates that no further evaluation is recommended.
S3.1-22	SRP 3.1	Section 3.1.2.2.7 indicates that further evaluation is required to address the potential for cracking of cladding remote from the welds (GALL D1.1.9) This statement needs to be deleted.	The GALL basis for this requirement relies inappropriately on inadvertent introduction of contaminants into the RCS. This activity is an abnormal event and need not be specifically postulated for license renewal unless the event has occurred at the plant. (SRP A.1.2.1) Welds and the heat-affects zones adjacent to them are inspected because they are known to be the leading indicator of potential cracks. The consideration of potential cracks beyond the welds and HAZ is not required in order to provide reasonable assurance that the intended functions will be maintained during the period of extended operation.
S3.1-23	SRP 3.1	Sections 3.1.3.2.2, 3.1.3.2.3, 3.1.3.2.4 and 3.1.3.2.7 need to be revised to be consistent with the equivalent revisions to the 3.1.2 sections listed above.	Conforming changes, technical justification provided above.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.1-24	SRP 3.1	Table 3.1-1 should be revised to include the specific GALL sections that apply to the specific component group. Merge Table 1 of GALL Volume 1 with Table 3.3-1.	See Generic comments covering all aging management program summary tables.
S3.1-25	SRP 3.1	Table 3.1-1, BWR/PWR, Reactor vessel beltline shell and welds item (page 3.1-16): Revise "Aging Management Program" entry to be "Plant Specific" Revise "Further Evaluation Recommended" entry to be "Yes, staff review of plant reactor vessel surveillance program required (see subsection 3.1.2.2.3)"	Proposed change makes entry consistent with proposed change to subsection 3.1.2.2.3.
S3.1-26	SRP 3.1	Table 3.1-1, PWR, Primary Nozzles and Safe Ends (page 3.1-18), delete further revaluation item consistent with comments provided above.	Technical justification provided above
S3.1-27	SRP 3.1	Table 3.1-1, BWR/PWR, Reactor Vessel closure studs and stud assembly item (page 3.1-18): Under the "Aging Management Programs" delete "Minimization and control of SCC" consistent with comments provided above.	Technical justification provided above
S3.1-28	SRP 3.1	Table 3.1-1, PWR, Upper and lower internals assembly (Westinghouse) item (page 3.1-21). Credit for neutron noise monitoring program should be deleted.	Technical justification provided above

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.1-29	SRP 3.1	Table 3.1-1, PWR, Upper and lower internals assembly (Westinghouse) item (page 3.1-21). Credit for loose part monitoring program should be deleted.	Technical justification provided above
S3.1-30	SRP 3.1	Table 3.1-2, delete the "Minimization and control of SCC" program summary (page 3.1-22).	Conforming change to proposed change noted above.
S3.1-31	SRP 3.1	Table 3.1-2, delete the "Loose part monitoring" program summary (page 3.1-26)	Conforming change to proposed change noted above.
S3.1-32	SRP 3.1	Table 3.1-2, delete the "Neutron noise monitoring" program summary (page 3.1-26)	Conforming change to proposed change noted above.
S3.1-33	SRP 3.1	Table 3.1-2, delete summary of Steam Generator Tube Integrity program as this program is already required by technical specifications.	Technical specifications are part of the facility operating license and are approved and issued by the NRC staff. A description of the Steam Generator Tube Integrity program is contained in Chapter 5 of the facility technical specifications. Due to the hierarchy of regulatory documents, requirements contained in the technical specifications supercede any statements contained in the FSAR.
S3.2-1	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Bolting Integrity	GALL Section XI.M.12 applies Refer to comments on Aging Management programs.

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S3.2-2	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Boric Acid Corrosion	GALL Section XI.M.5 applies Refer to comments on Aging Management programs.
S3.2-3	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Closed Cycle cooling water system	GALL Section XI.M.4applies Refer to comments on Aging Management programs.
S3.2-4	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Flow accelerated corrosion (FAC) program	GALL Section XI.M.6 applies Refer to comments on Aging Management programs.
S3.2-5	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Inservice Inspection	GALL Section I applies. The presentation of the Inservice Inspection program in the GALL is different than any other program evaluated in the GALL that is relied upon for license renewal. What specifically is an applicant supposed to do that allows this program to be credited without further review?
S3.2-7	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Open-cycle cooling water system	GALL Section XI.M.3 applies Refer to comments on Aging Management programs.
S3.2-8	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Protective Coating monitoring and maintenance program	GALL Section XI.S.8 applies Refer to comments on Aging Management programs.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.2-9	SRP 3.2	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Thermal aging embrittlement of CASS AMP.	GALL Section XI.M.1 applies Refer to comments on Aging Management programs.
S3.2-10		AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Water Chemistry	GALL Section XI.M.11 applies Refer to comments on Aging Management programs.
S3.2-11	SRP 3.2	Section 3.2.2.2.2 Crack Initiation and Growth Due to SCC Delete this Inservice Inspection	Inservice inspections due not include tanks within the scope of inspection so it is inappropriate to credit in this instance See additional comments concerning the water chemistry program
S3.2-12	SRP 3.2	Section 3.2.2.2.4 Local Loss of Material Due to Pitting and Crevice Corrosion Delete this item	No objective evidence has been provided in the GALL report Sections VA 2.1, 5.1, VC 2.1, 2.2 to support the requirement to perform additional inspections. See additional comments concerning the water chemistry program
S3.2-13	SRP 3.2	Section 3.2.2.2.5 Local Loss of Material Due to MIC Delete this item	No objective evidence has been provided in the GALL report Section VC.2.1 to support the requirement to perform additional inspections.
S3.2-14	SRP 3.2	Section 3.2.2.2.6 Changes in Properties Due Elastomer Degradation	BWR item

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S3.2-15	SRP 3.2	Section 3.2.2.2.7 Loss of Iodine Retention Capacity Due to Moisture Absorption Delete this item	Charcoal absorber filter media should be considered to be a consumable. See SRP Table 2.1-3
S3.2-16	SRP 3.2	Section 3.2.2.2.8 Buildup of Deposit from Biofouling Delete this item	No objective evidence has been provided in the GALL report Sections VC.2.1, VC.2.2 to support the requirement to perform additional inspections.
S3.2-17	SRP 3.2	Section 3.2.2.2.9 Local Loss of Material Due to Erosion Delete this item	No objective evidence has been provided in the GALL report Section VD.1.2.3 to support the requirement to perform additional inspections.
S3.2-18	SRP 3.2	Table 3.2-1, page 3.2-13, BWR/PWR, Closure bolting in high-pressure or high-temperature systems This component description is not consistent with the scope of the actual program. It should be "Class 2 bolting greater than 2 inches in diameter."	See generic comments concerning the Bolting Integrity Program
S3.2-19	SRP 3.2	Section 3.2-3, Tables 3.2-1 and 3.2-2, and the applicable GALL sections need to be revised as necessary to reflect changes made above.	Conforming changes
S3.3-2	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Bolting Integrity	GALL Section XI.M.12 applies Refer to comments on Aging Management programs.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.3-3	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Boraflex Monitoring	GALL Section VII A2.1.1 applies Refer to comments on Aging Management programs.
S3.3-4	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Boric Acid Corrosion	GALL Section XI.M.5 applies Refer to comments on Aging Management programs.
S3.3-5	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Closed Cycle cooling water system	GALL Section XI.M.4 applies Refer to comments on Aging Management programs.
S3.3-6	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Compressed air inspection and maintenance	GALL Section VII D.1.1 applies Refer to comments on Aging Management programs.
S3.3-7	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Fire Protection	GALL Section VII.G applies Refer to comments on Aging Management programs.
S3.3-8	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Fire Water System	GALL Section XI.M.10 applies Refer to comments on Aging Management programs.
S3.3-9	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Fuel oil Chemistry	GALL Section XI.M.9 applies Refer to comments on Aging Management programs.

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S3.3-10	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Inservice Inspection	GALL Section I applies. The presentation of the Inservice Inspection program in the GALL is different than any other program evaluated in the GALL that is relied upon for license renewal. What specifically is an applicant supposed to do that allows this program to be credited without further review?
S3.3-11	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Open-cycle cooling water system	GALL Section XI.M.3 applies Refer to comments on Aging Management programs.
S3.3-12	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Outer surface of above ground carbon steel tanks	GALL Section XI.M.7 applies Refer to comments on Aging Management programs.
S3.3-13	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Outer surface of buried piping and components	GALL Section XI.M.8 applies Refer to comments on Aging Management programs.
S3.3-14	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Overhead and gantry cranes inspection and maintenance	GALL Section VII B.1.1 applies Refer to comments on Aging Management programs.
S3.3-15	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Protective coating monitoring and maintenance	GALL Section XI.S.8 applies Refer to comments on Aging Management programs.

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.3-16	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Structural Monitoring	GALL Section XI.S.6 applies Refer to comments on Aging Management programs.
S3.3-17	SRP 3.3	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Water Chemistry	GALL Section XI.M.11 applies Refer to comments on Aging Management programs.
S3.3-18	SRP 3.3	Section 3.3.2.2.1 Loss of Material from General, MIC, Galvanic, Pitting, and Crevice Corrosion	See generic comments concerning water chemistry program No objective evidence has been provided in GALL VII A3.2.1 that supports this additional inspection.
S3.3-19	SRP 3.3	Section 3.3.2.2.2 Hardening, and Cracking from Material Degradation	No objective evidence has been provided in GALL VII A3.3.3, F1.1.3, and F2.1.3 that supports this additional inspection.
S3.3-20	SRP 3.3	Section 3.3.2.2.4 Crack Initiation and Growth from SCC 2nd paragraph is inconsistent with Table 3.3-1 and GALL report which also refer to "unanticipated cyclic loading" for this item. Inconsistency needs to be corrected. 3rd paragraph concerns SCC that could occur in external surfaces adhered with electrical tape. This item should be deleted.	Unanticipated cyclic loading should not be considered an aging effect that needs to be managed for the period of extended operation. This is an abnormal event per SRP A.1. No objective evidence in GALL VII E1.4.1 provided to support that this is an aging effect. Also, per SRP A1, abuse due to human activity is an abnormal event and aging effects from such abuse need not be postulated for license renewal.

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S3.3-21	SRP 3.3	Section 3.3.2.2.5 Loss of Material from MIC, Galvanic, Pitting, and Crevice Corrosion, Wear and Erosion/Corrosion	Moist air required Movement required in order to have mechanical wear.
S3.3-22	SRP 3.3	Section 3.3.2.2.6 Loss of Iodine Retention Capacity from Moisture Absorption Delete this item	Charcoal absorber filter media should be considered to be a consumable. See SRP Table 2.1-3
S3.3-23	SRP 3.3	Section 3.3.2.2.7 Loss of Material from General, Galvanic, Pitting, and Crevice Corrosion	RCP Oil Collection Tank inspection at ONS

COMMENT NUMBER	ITEM NUMBER	PROPOSED CHANGE	JUSTIFICATION FOR PROPOSED CHANGE
S3.3-24	SRP 3.3	Section 3.3.2.2.8 Induced cracking from vibration and wall thinning from Erosion/Corrosion Vibration induced cracking should be deleted. Erosion /corrosion should be deleted.	Unanticipated cyclic loading should not be considered an aging effect that needs to be managed for the period of extended operation. This is an abnormal event per SRP A.1. Vibration induced cracking is a design problem not an aging management issue. GALL Section VII H2.1.1 and H2.1.2 apply. No objective evidence is provided that supports the determination that either of these aging effects is of concern for the period of extended operation. Erosion / corrosion is plant specific and can be managed by the Flow Accelerated Corrosion program. However, the operating experience described in GALL XI.M6 does include any incidents with Diesel engine cooling water systems.
S3.3-25	SRP 3.3	Section 3.3.2.2.9 Loss of Material from corrosion or Buildup of Deposits from Biofouling Delete this item	No objective evidence in GALL H1.4.1 provided to support that this is an aging effect.

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S3.3-26	SRP 3.3	Table 3.3-1, page 3.3-13, Diesel engine cooling water system item Delete entire line item	Unanticipated cyclic loading should not be considered an aging effect that needs to be managed for the period of extended operation. This is an abnormal event per SRP A.1. Vibration induced cracking is a design problem not an aging management issue. Consistent with comments made on SRP 3.3.2.2.8
S3.3-27	SRP 3.3	Table 3.3-1, page 3.3-14, BWR, Closure Bolting item. The Bolting integrity program as written cannot manage the effects of aging identified in this item. Another program or activity must be provided.	The bolting integrity program only includes ASME Class 1 bolting and ASME Class 2 bolting greater than 2 inches in diameter.
S3.3-28	SRP 3.3	Table 3.3-2, page 3.3-18, Fuel Oil Chemistry Delete the statement concerning ASTM Standards	Required ASTM Standards are also in ITS Section 5.5, Programs
S3.4-1	SRP 3.4	Section 3.4.1 Areas of Review For PWRs, the boundary between the secondary side systems and the steam generator needs to be clearly defined.	
S3.4-2	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Bolting Integrity	GALL Section XI.M.12 applies Refer to comments on Aging Management programs.
S3.4-3	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Boric Acid Corrosion	GALL Section XI.M.5 applies Refer to comments on Aging Management

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			programs.
S3.4-4	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Closed Cycle cooling water system	GALL Section XI.M.4 applies Refer to comments on Aging Management programs.
S3.4-5	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Flow accelerated corrosion (FAC) program	GALL Section XI.M.6 applies Refer to comments on Aging Management programs.
S3.4-6	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Open-cycle cooling water system	GALL Section XI.M.3 applies Refer to comments on Aging Management programs.
S3.4-7	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Outer surface of above ground carbon steel tanks	GALL Section XI.M.7 applies Refer to comments on Aging Management programs.
S3.4-8	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Outer surface of buried piping and components	GALL Section XI.M.8 applies Refer to comments on Aging Management programs.
S3.4-9	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Protective coating monitoring and maintenance	GALL Section XI.S.8 applies Refer to comments on Aging Management programs.
S3.4-10	SRP 3.4	AMPs Evaluated in the GALL Report that are Relied on for License Renewal – Water Chemistry	GALL Section XI.M.11 applies Refer to comments on Aging Management programs.
S3.4-11	SRP 3.4	Table 3.4-1, page 3.4-9, BWR/PWR,	GALL Section XI.M.12 applies

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		Closure bolting in high-pressure or high-temperature systems This component description is not consistent with the scope of the actual program. It should be "Class 2 bolting greater than 2 inches in diameter."	Refer to comments on Aging Management programs.
	SRP 3.4	Table 3.4-2, page 3.4-12, the summary for Inservice Inspection should be deleted.	Inservice Inspection is not relied upon to manage the effects of aging summarized in table 3.4-1.
S-3.5-1	S3.5 Generic Comment	Since this section deals with AMR, a discussion needs to be included on determining aging effects. If a discussion is not provided, include a pointer to A1.2.1.	Editorial clarification
S-3.5-2	S3.5 Generic Comment	This section contains a lot of information from the GALL. Many changes have been recommended to the information in the GALL. The GALL should be corrected first, and then the changes to this section should be made accordingly. For example, 3.5.2.2.1.2, discusses porous concrete subfoundations. The industry has recommended that this information be deleted from GALL since it is not generic to all sites and was not applicable to the two sites, which have received, extended licenses. Therefore, the GALL should change and this section should change.	The information in the GALL and this section need to be consistent Editorial.
S-3.5-3	3.5.1	Suggest adding the following sentence next to last paragraph: "Where GALL report has referenced a code (e.g. ACI 201.2R-77)	Older plants, which were not constructed per referenced code, should be able to reference a code if the intent of the code has been satisfied.

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		as a technical basis for concluding that aging management is not required if it was constructed in accordance with that particular code, the staff will accept the deviation as long as the intent of that code has been satisfied and that referenced code is not the code of record for that particular plant."	
S-3.5-4	3.5.1 Page 3.5-1	Add a sentence to the paragraph to address older vintage plants. Proposed wording: For older vintage plant, the information related to the structures and component supports is plant specific, and is contained in various Sections and Appendices of the UFSAR.	Second sentence of the first paragraph states: "for a recent vintage plant, the information related to the structures and component supports is contained in Chapter 3.." The rest of the paragraph does not address older vintage plants.
S-3.5-5	S3.5.1.3 Generic Comment	The second sentence states that "If an applicant does not rely on a particular program for license renewal, or if....., the staff should review each such aging management program to which the GALL report does not apply." The statement should begin with: If an applicant does not rely on a program in GALL, ...	Provide clarification to address program not in GALL.
S-3.5-6	S3.5.1.4 Generic Comment	The second sentence states that : "If an applicant has identified particular components subject to aging management review for its plant, ..." The statement should begin with: If an applicant has identified particular components subject to aging management	Provide clarification for components not addressed in GALL.

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		review for its plant which are not addressed in GALL, ..	
S-3.5-7	S3.5.1.4 Generic Comment	Add statement: Not all aging effects in GALL require aging management at all plants.	Provide clarification. What happens if an applicant does not identify an aging effect that is in GALL?
S-3.5-8	S3.5.2.1 Generic Comment	Provide more guidance so that an applicant or reviewer will know what is required.	The second sentence in this section states that the applicant should "... provide the information necessary to adopt the finding..." There is not enough guidance provided in this section for an applicant or a reviewer to know what is required.
S-3.5-9	S3.5.2.1 Generic Comment	Provide more guidance so that an applicant or reviewer will know what is required.	The third sentence in this section states that the applicant should "...also verify that the approvals set forth in the GALL report for generic programs apply to the applicant's programs." There is not enough guidance provided in this section for either an applicant or reviewer to know what is required.
S-3.5-10	S3.5.2.2 Generic Comment	Information included in this section should be compared to the final GALL report to ensure that any changes are incorporated.	The industry has recommended several changes to the GALL. These changes should be incorporated in both the GALL and SRP.
S-3.5-11	3.5.2.1 Pg. 3.5-3 Generic Comment	This paragraph requires the applicant to provide information such that the Staff can establish acceptability of the program as described and evaluated in GALL. According to GALL Volume 1 and paragraph 3.5.1.1, if the applicant's program corresponds to GALL evaluated GALL Generic Program no further staff review is required. Clarify the	If the applicant's program corresponds to the GALL evaluated Program, then any information required in the LRA is a duplication. It should suffice to reference GALL as stated in Volume 1. The Staff can audit the credited program to confirm it corresponds to GALL.

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		requirement of paragraph 3.5.2.1.	
S-3.5-12	3.5.2.2.2.1 Pg. 3.5-4	The title "Aging of Supports not covered.." should be "Aging of Structures not covered.."	Paragraph content discuss structures. Supports are discussed in 3.5.2.2.3
S-3.5-13	3.5.2.2.2.2 Pg. 3.5-5	Aging management of Inaccessible Areas. This paragraph requires further evaluation of Class 1 structures, concrete and structural steel, in inaccessible areas. GALL only requires further evaluation of structural steel and not concrete. Revise the paragraph to be consistent with GALL.	Aging management of concrete structures is not required if the evaluation and technical basis described in GALL are met.
S-3.5-14	3.5.2.2.3.2 Pg. 3.5-5	The paragraph states fatigue is a TLAA for Groups B1.1, B1.2, & B1.3 components supports. Delete B1.2 & B1.3.	ANSI B31.1-B31.7 requires no fatigue analysis for supports. ASME III fatigue requirements apply to supports ASME Class 1 piping.
S-3.5-15	S3.5.3.1 Generic Comment	Provide more guidance.	The third sentence of the first paragraph of this section states "If the applicant has provided the information necessary to adopt the finding of program acceptability..." There is not enough guidance provided in this document for either an applicant or review to know what is required.
S-3.5-16	S3.5.3.1 Generic Comment	The fifth sentence states that the "The reviewer also verifies that the applicant has stated that the applicable aging effects and industry and plant-specific operating experience had been reviewed by the applicant and are evaluated in the GALL report." Since the GALL did not necessarily evaluate plant-specific operating	Provides clarification on how to handle plant-specific operating experience and industry experience.

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		experience, the sentence should be changed to the following: The reviewer also verifies that the applicant has stated that the applicant had reviewed the applicable aging effects and are evaluated in the GALL report. The reviewer verifies that the applicant stated that industry and plant-specific operating experience had been reviewed and no additional aging effects were identified beyond those evaluated in the GALL report.	
S-3.5-17	3.5.3.1 Pg. 3.5-6 Generic Comment	This paragraph requires the applicant to provide information such that the Staff can establish acceptability of the program as described and evaluated in GALL. According to GALL Volume 1 and paragraph 3.5.1.1, if the applicant's program corresponds to GALL evaluated GALL Generic Program no further staff review is required. Clarify the requirement of paragraph 3.5.3.1.	If the applicant's program corresponds to the GALL evaluated Program, then any information required in the LRA is a duplication. It should suffice to reference GALL as stated in Volume 1. The Staff can audit the credited program to confirm it corresponds to GALL.
S-3.5-18	S3.5.3.1 Generic Comment	Add statement: Not all aging effects in GALL require aging management at all plants.	The next to last sentence in the first paragraph states that "the reviewer verifies that the applicant has identified those aging effects for the structures and component supports that are contained in the GALL report as applicable to its plant." Not all aging effects are applicable to all plants. For example, settlement is not applicable for

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			sites located on bedrock.
S-3.5-19	S3.5.3.2.1.1	Delete the information on inaccessible areas.	The requirement for inaccessible areas goes beyond what is required by ASME and 50.55a.
S-3.5-20	S3.5.3.2.1.7	Information in this section disagrees with information in the GALL. The SRP states that, "However, the report notes that VT-1 inspection may not be sufficient to detect cracks." The GALL states, "For cracking due to cyclic loading of penetration sleeves and penetration bellows, VT-3 visual inspection may not detect fine cracks (one option may be to perform VT-1 visual inspections." In both documents, the conclusions should be changed to determine that VT-3 is adequate. In this section and throughout both documents, the adequacy of visual VT-3 examination is called into question for the detection of cracking. In particular, GALL Section III.B1.1.1 determines that VT-3 is inadequate for detection of cracking in Class 1 piping and component supports and GALL Section III.B1.2.1 finds this to be true for Class 2 and 3 piping and component supports, as well.	The conclusions reached in this section go beyond what is current in the code. Licensee should not have to go beyond Code requirements without justification. VT-3 should be found to be adequate for detection of "crack-life indications" in at least three circumstances: (1) When the structure or component can tolerate "mature cracks." This should be the case for Class 1, 2, and 3 component supports, where mature cracks are needed to jeopardize the load-carrying function of the component or support. (2) When pressure-containing component is subject to both visual examination and pressure testing capable of detecting localized, small-capacity leakage. This should be the case for bellows, sleeves, and penetrations subjected to Appendix J Type B and C tests. (3) Situations where proximity to the component or structure surface is not an issues, so that visual acuity, lighting, and character recognition is essentially identical for VT-1 and VT-3.
S-3.5-21	3.5.3.2.2.1 Pg. 3.5-9	The title "Aging of Supports not covered.." should be "Aging of Structures not	Paragraph content discuss structures. Supports are discussed in 3.5.3.2.3

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		covered.."	
S-3.5-22	3.5.3.2.2.2 Pg. 3.5-10	Aging management of Inaccessible Areas. This paragraph requires further evaluation of Class 1 structures, concrete and structural steel, in inaccessible areas. GALL only requires further evaluation of structural steel and not concrete. Revise the paragraph to be consistent with GALL.	Aging management of concrete structures is not required if the evaluation and technical basis described in GALL are met.
S-3.5-23	3.5.3.2.3.2 Pg. 3.5-11	The paragraph states fatigue is a TLAA for Groups B1.1, B1.2, & B1.3 components supports. Delete B1.2 & B1.3.	ANSI B31.1-B31.7 requires no fatigue analysis for supports. ASME III fatigue requirements apply to supports ASME Class 1 piping.
S-3.5-24	3.5.3.2.3.1	The industry disagrees with the conclusions reached in GALL on reduction in concrete capacity due to vibration loads. This information should be deleted.	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.
S-3.5-25	Table 3.5-1 Generic Process Issue	Delete Table 3.5-1.	This table adds no value. In addition, there are now 4 places where information would have to be changed if it was determined that the conclusions in GALL were not correct. For example, the industry disagrees with the conclusion for aggressive chemical attack on PWR containments. This information is incorrect in (1) the GALL, (2) SRP Section 3.5.2.2.1.1, (3) SRP Section 3.5.3.2.1.1, and (4) Table 3.5-1.
S-3.5-26	Table 3.5-1	Dissimilar metal welds should be deleted from the component column.	Dissimilar metal welds are optional per 50.55a.

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S-3.5-27	Table 3.5-2 page 3.5-20	In Table 3.5-2 (referenced in Section 3.5.3.5), on page 3.5-20, replace the "Monitoring of Leak in Fuel Storage Facility" with "Liner Integrity" and revise the Program Description to describe the Water Chemistry Program.	Make SRP consistent with proposed GALL revision of comment in GALL section IIIA, page IIIA5-9.

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S 4.1-1	SRP 4.1-4.7	Delete qualifying term "plant-specific". This comment should be noted throughout Chapter 4 of the SRP.	In the first paragraph of section 4.1, the second sentence, and the second paragraph, first sentence, use of the term "plant-specific" incorrectly limits the scope of TLAAs, and adds nothing to the discussion. For example, a CE-generic surge line fatigue calc. (most certainly not plant-specific) was determined to be a TLAA for CCNPP. It may be correct to say, "the list of TLAAs is plant specific".
S 4.1-2	SRP 4.1.1	Delete the last sentence in the first paragraph.	The last sentence in paragraph 1 states, *"The listing of TLAAs should provide sufficient detail to identify the type of calculations and a summary result of calculations."* Providing a summary result of a calculation that is a TLAA goes beyond the listing requirements of 10 CFR 54.21(c)(1). Details of an analysis would only be necessary for the demonstration portion if demonstration methods (i) or (ii) were chosen for a TLAA. No such details as the type of calculation or a summary of results are required if demonstration method (iii) is chosen. The information reviewed in SRP 4.1.1 should at most be no more than a table of contents of the TLAA Chapter. Each TLAA will be addressed in its own Chapter 4 section. The last sentence of paragraph 1 is just not needed.

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S 4.1-3	SRP 4.1.1	In the first paragraph of the section add a sentence to the end as follows, "A listing of specific calculation numbers is not required."	A specific listing of the individual calculations will not be provided. Rather, a listing of the categories of calculations identifying a topical area will be identified. Sufficient information as requested for each category of calculations will be provided. For example, containment liner fatigue is a 'category' of calculations. Several calc numbers may have been used for this category.
S 4.1-4	SRP 4.1.1	SRP Section 4.1.1, 3rd paragraph should be revised to read: "an applicant must provide a list of plant-specific exemptions granted under 10 CFR 50.12 that are based on TLAA."	Part 54 limits exemptions to only those granted under 50.12.
S 4.1-5	SRP 4.1.3	In the paragraph that starts "The reviewer should use the plant Updated Final Safety Analysis Report ---" add two sentences as follows, "Sections 4.2 through 4.6 identify typical types of TLAAs for most plants. Information on the licensee's methodology for identifying TLAAs may also be useful in identifying calculations that did not meet the six criteria below."	The reviewer should start with the plant CLB as stated. The use of Tables 4.1-2 and 4.1-3 may start the reviewer on the wrong track as stated in the next comment. Inserting this wording allows the reviewer to quickly retrace the efforts of the licensee in identifying TLAAs so the reviewer may discover potential omissions.
S 4.1-6	SRP 4.1.3	In the paragraph that starts "The number and type of TLAAs vary ---," delete the remainder of the paragraph that starts with the sentence, "Table 4.1-2 provides a list ---." Also, delete Tables 4.1-2 and 4.1-3.	The use of Tables 4.1-2 and 4.1-3 start the reviewer from the wrong place. The search for possible TLAAs should start from the licensees CLB and the reviewer's knowledge of the six criteria. Of particular concern in retaining these SRP tables, would be the need for each licensee to address each of the items in the tables to preclude questions on the topics listed. The licensee's efforts start from the CLB, not from the tables. The reviewer should have a reasonable basis for believing that a TLAA exists. This will come from a review of the CLB, not from a review of these tables.

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S 4.1-7	SRP 4.1.3	SRP Section 4.1.3, page 4.1-3, statements in the first two examples on the page should be revised to read as follows: "A review of the code and standard reveals that an analysis or calculation is required. Some of these calculations or analyses will be TLAAs." Similarly, revise the statement in the 2nd example to read: "In response to a generic letter, licensee submitted a letter to the NRC committing to perform an analysis or calculation..."	TLAA is a term that is unique to Part 54. Codes and standards do not in and of themselves require a TLAA. Codes and standards often require an analysis or calculation which if the criteria of §54.3 are met then a TLAA exists. Commitments in response to generic letters would not necessarily be a TLAA unless all criteria contained in §54.3 were met.
S 4.2-1	SRP 4.2, 4.3, 4.4, 4.5, 4.6, 4.7	In each of these SRP Sections, there is a statement in the Review Procedures section, FSAR Supplement discussion that begins with: "The staff expects to impose a license condition in the renewed license, if granted, ..."	It is not clear why this statement is included in the review procedure section. It is true information but does not seem to have anything to do with the FSAR summary review. Perhaps it should be relocated or deleted. This statement begins a new thought and if it needs to stay in this section of the SRP, then it should be a new paragraph. Please note that this comment also applies to Chapter 3 of the SRP.
S 4.2-2	SRP 4.2.2.1.5 and 4.2.3.1.5	Delete these sections from the SRP.	The BWRVIP analysis referred to was to demonstrate the difference between the axial and circumferential welds in a BWR vessel for the purpose of eliminating circumferential weld examinations. The fluence experienced by BWRs is significantly less than PWRs and does not pose a threat to the integrity of the reactor vessel. The axial welds are examined periodically in accordance with ASME Section XI. Finally, the reactor material surveillance program and the assessment of the data monitor the level of embrittlement by

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			evaluating the impact on upper shelf energy. See IV.A1.2.4 of GALL.
S 4.3-1	SRP 4.3.1.2	Insert the language previously provided with regard to the environmental effects of fatigue. Also include conforming changes throughout section 4.3 including deleting sections 4.3.2.2, 4.3.3.2 and the second paragraph of Table 4.3-2. Note that the previous comments suggested that this issue be addressed in Section 3 under the RCS. NOTE: Conforming changes will need to be made to the GALL report sections that reference this section and GALL Chapter X. For example, refer to GALL IV C2.1.1, C2.1.2 Fatigue. The language related to environmental effects should be deleted. A new line item related to environmental effects should be added and a site-specific program should be identified with further evaluation set to yes.	None of the industry comments pertaining to GSI-190 were included in the August 2000 version of the SRP. The alternative method to address EAF was not included. Chapter X of the GALL now contains a Fatigue Management Program description (comments are provided below in comments labeled G X.M1-1). Environmental effects are not a TLAA and should not be addressed in the TLAA section. The industry has not closed on a long-term strategy for dealing with environmental effects so the language proposed in the original comments provides the flexibility for applicants to propose methods for addressing the issue.
S 4.3-2	SRP 4.3.1.2	SRP Section 4.3.1.2 Generic Safety Issue, in the opening paragraph describes the concern that the effects of reactor coolant environment on the fatigue life of components were not adequately addressed by the code of record. This statement is in contrast to the 12/26/99 Thadani letter (Reference 11, SRP Section 4.3) that allows the use of the same code of record for advanced reactor designs, but questions its validity for currently licensed plants. Because Reference 11 provides a confident foundation for the fatigue design basis of the next generation of nuclear plants, it is unclear how	The concern over the fatigue design of the existing plants casts a shadow on the viability of the fatigue design in the next generation of plants. Metal fatigue is a physical issue for both existing and future designs. The apparent conflict in NRC positions should be resolved to assure continuity in plant design.

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		this same basis is a cause for concern for the existing plants. Resolution o f this disagreement needs to be clearly articulated.	
S 4.3-3	SRP 4.3.1.2	SRP Section 4.3.1.2 Generic Safety Issue, in the last full paragraph, uses the phrase "the nature of age-related degradation" to indicate the potential for an increase in the frequency of pipe leaks. Please define "nature of age-related degradation."	The phrase "nature of age-related degradation" has no meaning in the context written. Since it is being used as a justification for further action, the phrase needs to be more fully defined to assist the reviewer.
S 4.3-4	SRP 4.3.1	SRP Section 4.3.1, "Areas of Review" does not seem to include fatigue analyses associated with the RCP Flywheel.	Confirm that the RCP flywheel fatigue analyses should not be included under Section 4.3 and that it will be considered plant specific and included under Section 4.7.
S 4.3-5	SRP 4.3.1.1.3	SRP Section 4.3.1.1.3 lists metal bellows designed to ASME NC-3649.4 (e)(3). SRP Section 4.6.1 also lists penetration bellows as within the "Area of Review" for Section 4.6. Bellows should be addressed in only one section.	Clarify which section of the SRP addresses metal bellows.
S 4.3-6	SRP 4.3.2.1.1.2 (typical for other sections)	The last sentence should be revised to read "The resulting CUF remains less than unity for the period of extended operation."	There is a Code requirement to design for a CUF below one, but a CUF below one during operation is not a Code requirement. This comments applies throughout Section 4.2 where the Code is tied with the period of extended operation.
S 4.3-7	SRP 4.3.2.1.2.1 4.3.2.1.2.2	These two paragraphs should be revised to read as follows: 4.3.2.1.2.1 The existing fatigue strength reduction factors remain valid because the number of cycles would not be exceeded during the period of extended operation. 4.3.2.1.2.2 The fatigue strength reduction factors have been re-evaluated based on an increased	The allowable full cycle thermal stresses calculated during design are adjusted based on fatigue strength reduction factors. If the actual number of full range thermal cycles (e.g. 7000 cycles) remains valid for the 60-year term, then (i) is satisfied. If the fatigue strength reduction factor is increased but the design basis allowable is still met, then (ii) is satisfied.

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		number of assumed thermal cycles and Table 4.3-1 to bound the period of extended operation. The adjusted fatigue strength reduction factors are such that the component design basis remains valid during the period of extended operation.	
S 4.3-8	SRP 4.3.2.1.2.3 Also, conforming changes with 4.3.3.1.2.3	Replace the existing text with the text presented in Section 4.3.2.1.1.3	Piping that was designed to B31.1 can be managed by cycle counting the same as piping designed to ASME Section III. If this change is not accepted as proposed, then delete the second sentence of the first paragraph because there is no requirement to replace piping when the design cycles are reached. ASME XI can be applied the same as if CUF exceeds one. Also, there should be no requirement that if the pipe is replaced it be designed to last until the end of the extended period of operation. It may be economically better to replace the pipe several times during plant lifetime rather than design such that the pipe will last for the entire plant lifetime.
S 4.3-9	SRP 4.3.3.1.1.3 (typical for other sections)	Insert a second sentence as follows, "Cycle counting can be used by the applicant in one of two ways. First, it may be implemented as a confirmation of design assumptions in support of options (i and ii). Secondly, it may be used as an aging management program in support of an option (iii) solution."	This may not be a disposition of fatigue TLAAs (option iii). The only time one would apply (iii) is if a CUF of 1.0 had been exceeded during the period of extended operation, or in the case of monitoring existing flaws. In that case the program could be one which manages cracking or might involve cycle counting. Cycle counting can also be used to confirm that you are remaining within your design cycle assumptions and supports the (i) and (ii) alternatives.
S 4.3-10	SRP Table 4.3-2	The first sentence should begin with "The aging management program..." The phrase "In order to not exceed the design limit on fatigue usage and the number of design cycles" should	The fatigue-monitoring program does not have to prevent exceeding the number of design cycles. The purpose of the AMP is to monitor thermal fatigue to identify before the plant exceeds the limit on cycles

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		be deleted.	of CUF, so that appropriate action can be taken. This can include revising the CUF calculations, inspection of the piping per ASME Section XI, or replacement of the pipe.
S 4.4-1	SRP 4.4	EQ Component Reanalysis Attributes section of GALL X.E.1 is identical to the information provided in SRP Section 4.4.3.1.2 and Table 4.4-1. Suggest deleting the information from SRP 4.4.3.1.2 and simply referencing the GALL report	From an administrative perspective, it makes sense to only have this information in one location. Future changes would then need to be made to only one location. It also fits the objective of the overall GALL report. The story in the GALL report makes sense as told and it should remain as is and revise the SRP.
S 4.4-2	SRP 4.4.1	At the end of the paragraph on "Areas of Review" add a new sentence as follows, "For the purposes of license renewal only those components with a service life of 40 years or greater would be TLAAs."	Please provide a statement that clarifies that only equipment qualified for 40 years or greater meets the 6 TLAA criteria. This statement was included in Chapter X of the GALL
S 4.4-3	SRP 4.4.1.2	Delete the first sentence of Section 4.4.1.2	The first sentence is a true statement, but there are a variety of other reasons that GSI-168 was generated. Highlighting this one reason and not the others implies that it is of most importance. In actuality the difference in EQ requirements between newer and older plants was eliminated as an in issue in a letter from the NRC dated 2-5-98.
S 4.5-1	SRP Chapter 4.5	Replace Chapter 4.5 with the previously submitted NEI version of Chapter 4.5. NOTE: Conforming changes will also need to be made to the GALL report. For example, in GALL section II A1.3 Loss of Prestress, the evaluation and technical basis description should be revised as follows: Delete the second sentence of the first paragraph. Revise the sentence in the second	The latest version of this SRP chapter remains based on a fundamental misconception of what constitutes a TLAA. Based strictly on the definition of a TLAA presented in the Rule, the TLAA for Containment Tendon Prestress consists ONLY of the PLL curves that currently are calculated out to 40 years. The trend lines of the actual measurements, and any comparison of these trend lines to the PLL curves, DO NOT constitute a TLAA, because they are in no way based on the

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		paragraph to read "...see Chapter XI.S2 *and XI.Sx.*" where "*x*" refers to the new number for the tendon surveillance program.	forty-year operating life of the plant. The trend line is based on data taken at individual points in time that have no relation to a forty year life, and the trend line is compared to whatever point on the PLL curve it intersects, not to the point on the PLL curve representing 40 years. In actuality, since the TLAA for Containment Tendon Prestress consists only of the PLL curves, the only options for dispositioning this TLAA should be (i), the PLL curves are already calculated to 60 years, or (ii), we will project the PLL curves to 60 years. The activities described in the SRP under option (iii), with the exception of projecting the PLL curves, have nothing to do with any TLAA. Rather, they constitute the Aging Management Program that the applicant will have to credit after performing the AMR of the Containment Tendons. The industry does not dispute that these activities will be required, only that they have nothing to do with dispositioning the TLAA for Containment Tendon Prestress. The Aging Management Program aspects of Containment Tendon Prestress, including comparison of the slope of the trend line to the PLL curves, will be considered in the aging management review for the Containment structure, not in this TLAA. With the current version of this SRP chapter, the NRC has presented two options for disposition, (i) and (ii) that will almost certainly be rejected by applicants. This is because they require making

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			conjectures about future equipment performance. Also, option (iii) consists of first, extending the PLL curves to 60 years (which as described above should be listed as option (ii) in its entirety and must be done anyway) and then proceeding with the Tendon Prestress activities that every licensee is required to perform already. For option (ii), the staff is requiring an extrapolation of data for a time-period that is in excess of the current regulatory requirement in 50.55a. In 50.55a(b)(viii)(B), the trend of data needs to be made out only through the next inspection interval (5 years). With data scatter, there is a large degree of uncertainty in extrapolating out upwards of 40 years. Developing a retensioning plan based on a lengthy extrapolation of data adds no value towards assuring the intended function of the tendons is maintained above and beyond existing regulatory requirements. In the absence of any additional TLAA considerations, licensees would continue to treat the prestress trend results in accordance with the existing regulatory requirements. The industry and NRC are not in disagreement as to the complete set of activities that must be performed for aging management and for TLAA disposition for Containment Tendons. The previous industry rewrite of this SRP chapter intended to allocate those activities that, by the Rule, actually pertain to the TLAA aspects of this issue, and relegate the remainder to the appropriate aging

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			management review process.

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S-A.1-1	A.1.1	Under background, the statement is made that "In many instances, more than one type of aging management programs are implemented to ensure that aging effects are managed." The sentence should be changed to: "More than one type of aging management program may be implemented to ensure that aging effects are managed."	This is not true and has not been the case with the first two approved licenses.

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SA.1 –2	SRP App A.1	Currently, A.1.2.1, Applicable Aging Effects, paragraph 1 states: The determination of applicable aging effects is based on the degradations that have actually occurred and those that potentially could cause structure and component degradation. The materials, environment, stresses, service conditions, operating experience, and other relevant information should be considered in identifying applicable aging effects. The effects of aging on the structure and component intended function(s) should also be considered. This paragraph should be revised to read as follows: The determination of aging effects that require management during the period of extended operation is based degradations that have actually occurred and those that would result in loss of component function during the period of extended operation if left unmanaged. The materials, environment, stresses, service conditions, operating experience, and other relevant information should be considered in identifying applicable aging effects. The effects of aging on the structure and	The threshold for when an aging effect needs to be managed for the period of extended operation needs to be clearly defined and have a technical basis that supports the conclusion. The statement that an aging effect that needs to be managed is one that "potential could" is too vague and ambiguous and subject to too much judgement.

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		component intended function(s) should also be considered.	
SA.1-3	SRP App A.1	Section A1.2.3.2 Preventive Actions, paragraph 2 currently states: "However, in many instances, more than one type of aging management programs should be implemented to ensure that effects are managed."	In many instances, reasonable assurance has been provided by programs that prevent or mitigate the effects of aging during the current term of the operating license. Only if there is a recognized deficiency in the existing program should there be a need to augment the program with an inspection program
SA.1-4	SRP App A.1	Section A.1.2.3.4 Detection of Aging Effects This section should focus on what is needed to do the aging management program or activity. This section should be revised to discuss the method by which the aging effect will be detected; how often the activity will be performed, and how large the sample size should be. In addition, for new activities, the timing of when the new activity will be implemented. Appropriate industry codes and standards may be included to support the program. The "Detection of Aging Effects" attribute should be revised to read as follows:	This section does not currently provide enough guidance to the applicant or the reviewer relative to the information that should be discussed within this attribute. The guidance needs to address the expectations for the 'Detection of Aging Effects' attribute for all four types of aging management programs and activities: prevention, mitigation, condition monitoring, and performance monitoring.

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		This program element describes "when", "where" and "how" program data is collected; i.e., all aspects of activities to collect data as part of the program. This includes aspects such as method or technique (e.g., visual, volumetric, surface inspection), frequency, sample size, and timing of new/one-time inspections. Provide information that links the parameters to be monitored or inspected to the aging effects being managed. The method or technique and frequency may be linked to plant specific or industry wide operating experience. Provide justification, including codes and standards referenced, that the technique and frequency are adequate to detect the aging effects prior to a loss of SC intended function. The NRC staff position is that a program based solely on detecting SC failures is not considered an effective aging management program. When sampling is used to inspect a group of SCs, provide the basis for the inspection population and sample size. The inspection population should be based on aspects of the SCs such as a similarity of materials of construction, fabrication,	

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		procurement, design, installation, operating environments or aging effects. The sample size should be based on aspects of the SCs such as the specific aging effect, location, existing technical information, system and structure design, materials of construction, service environment or previous failure history. The samples should be biased towards locations most susceptible to the specific aging effect of concern in the period of extended operation. Provisions should also be included on expanding the sample size when degradation is detected in the initial sample.	
SA.1-5	SRP App A.1	Section A.1.2.3.5 Monitoring and Trending This section should focus on what evaluations are performed after the results from performing the aging management program or activity are obtained. This section could be re-titled to be 'Evaluation and Trending." The use of the term 'monitoring' is ambiguous and confusing, because it relates to actually doing the aging management activity. This section should focus on the review or evaluation of the data obtained from the aging management program or activity	This section does not currently provide enough guidance to the applicant or the reviewer relative to the information that should be discussed within this attribute. The guidance needs to address the expectations for the 'Monitoring and Trending' attribute for all four types of aging management programs and activities: prevention, mitigation, condition monitoring, and performance monitoring.

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		described in the previous section. Quantitative results can be trended if appropriate. Past inspection results can be reviewed in preparation for a forthcoming inspection. The evaluation confirms that the structure or component will continue to meet its acceptance criteria through the next planned inspection. The "Evaluation and Trending" attribute should be revised to read as follows: This program element describes "how" the data collected is evaluated and may also include trending if a forward look is required. This includes an evaluation of the results against the acceptance criteria and a prediction regarding the rate of degradation in order to confirm that timing of the next scheduled inspection will occur prior to a loss of SC intended function. Although aging indicators may be quantitative or qualitative, aging indicators should be quantified, to the extent possible, to allow trending. Explain how the parameter or indicator will be trended. If not straightforward, describe the methodology for analyzing the inspection or test results against the	

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		acceptance criteria. This attribute is used for condition or performance monitoring programs that trend the results of the monitoring activities. Trending is a comparison of the current monitoring results with previous monitoring results in order to make predictions for the future.	
SA.1-6	SRP A.1	Section A.1.2.3.6 The statement in the first paragraph that reads: "The program should include a methodology for analyzing the results against applicable acceptance criteria." May be deleted if the changes noted in the previous section are made. Acceptance criteria can also be qualitative such as that used during a visual inspection.	The specific feature of analyzing results is more appropriately included within the "Evaluation and Trending" attribute. Acceptance criteria can be both quantitative and qualitative and expectations for both need to be addressed.
SA.1-7	SRP A.1	Revise A.1.2.3.10, paragraph 1 to add the following statement: By providing the objective evidence, the demonstration required by §54.21(a)(3) is satisfied.	In the checklist provided in SRP Chapter 1, the staff is required to determine if the demonstration requirements of §54.21(a)(3) have been met. This additional statement is recommended in order to clearly establish what is meant by demonstration.
S-A.1-8	A.1.2.1	Applicable and potential aging effects needs to be defined if it is determined that these are the correct terms to use. NEI 95-10 uses the term "aging effects requiring	

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		management." Suggest using this term to be consistent with industry guidance.	
S-A.1-9	A.1.2.1	Item No. 3 should be deleted.	The rule only requires an applicant to demonstrate that the aging effects are managed. The applicant does not have to identify aging effects that it does not have to manage or justify why it does not have to manage those effects.
S-A.1-10	A.1.2.3.2	The second sentence under Item 2 states that "However, in many instances, more than one type of aging management programs are implemented to ensure that aging effects are managed." This should be changed to: However, more than one type of aging management program may be implemented to ensure that aging effects are managed.	This is not true and has not been the case with the first two approved licenses.
S-A.1-11	A.1.2.3.6	Delete the second sentence under Item 3 that discusses CLB design loads.	Acceptance criteria, which do permit degradation, are based on maintaining the intended function under all CLB design loads. Therefore, this comment is irrelevant.
SA.2-1	SRP App A.2	SRP Appendix A.2, Section A.2.2, Item 2 contains that following statement that should be deleted: "The applicant should document such a commitment in the final safety analysis report (FSAR) supplement in accordance with 10 CFR 54.21(d)."	In general, the SRP contains guidance for the staff reviewers. Including a specific applicant requirement such as this should not be in the SRP. The specific content of the FSAR supplement is already provided by examples contained in all appropriate sections of the SRP.

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			This issue of documenting this commitment should be contained in each example FSAR summary description. If necessary, it can be placed in brackets to indicate that whether or not to include the statement is a plant specific decision.
SA.3-1	SRP App A.3	SRP Appendix A.3, Section A.3.2.1, Item 2, states that "the version of NUREG-0933 that is current on the date 6 months before the date of the license renewal application..." Revise this review process to include as a viable alternative an applicant's review of the annual staff report to the Commission of the activities related to Generic Safety Issues.	There is routinely several weeks delay from the time the revision is finished until the time it is published and available to the public. An approach needs to be developed to address any new issues that reveal themselves over the course of the review of license renewal applications. In SECY-98-030, the Commission directed the staff to provide an annual summary of activities related to open reactor and non-reactor GSIs. These annual summaries of activities have been recently provided in SECY-98-166, July 6, 1998; SECY-99-185, dated July 16, 1999; and most recently in SECY-00-0149, dated June 30, 2000. It appears that these annual reports from the staff and to the Commission may be a reliable alternative to the actual release of supplements to NUREG-0933 and more useful to applicants in determining the current status of open GSIs.
SA.3-2	SRP App A.3	SRP Appendix A.3, Section A.3.2.1, Item 3, states that "the amendment to the license renewal application identifying current licensing basis (CLB) changes, as required	§54.21(b) requires an applicant to submit an amendment to the application that addresses and changes to the CLB that materially affect the contents of the application.

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		by 10 CFR 54.21(b), should address any additional USI, HIGH-, or MEDIUM-priority issues designated after the application has been submitted..."	Changes to NUREG-0933 are not considered to be changes to the plant CLB. Therefore, it is inappropriate to include them within the §54.21(b) amendment to the application. An approach needs to be developed to address any new issues that reveal themselves over the course of the review of license renewal applications.
SA.3-4	SRP App A.3	SRP Appendix A.3, Section A.3.2.1, Item 4, states that "During the preparation and review of a license renewal application, an applicant or the NRC may become aware of an aging management or TLAA issue that may be generically applicable to other nuclear units. If issues may have generic applicability (but are not yet part of the formal generic safety issues resolution process as identified in NUREG-0933), an applicant should still address the issue to demonstrate that the effects of aging are or will be adequately managed or that TLAAs have been evaluated for the period of extended operation."	In general, the SRP contains guidance for the staff reviewers. Including a specific applicant requirement such as this should not be in the SRP. An approach needs to be developed to address any new issues that reveal themselves over the course of the review of license renewal applications. The threshold of when an issue becomes of concern during the license renewal application review needs to be clearly defined.
SA.3-5	SRP App A.3	SRP Appendix A.3.3 References indicates that the current version of NUREG-0933 is Supplement 23, April 1999. The SRP should be revised to reflect the actual current version - Supplement 24, June 2000.	As of September 19, 2000, the NRC web site also lists Supplement 23 as the current version of NUREG-0933. The SRP may not be updated as often as NUREG-0933 is revised. Specification of a specific supplement of NUREG-0933 in the SRP

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		Table A.3-1 should be updated to include issues are not in NUREG-0933 but have been identified to be addressed during the initial applicant reviews.	may be counterproductive. In addition, the NRC web site needs to also be kept current with respect to NURG-0933, and its most recent supplement issued. As an aid to both applicants and staff reviewers, Table A.3-1 should be updated annually to reflect the emerging issues that need to be reviewed during license renewal.

NUCLEAR ENERGY INSTUTE
COMMNETS ON THE
DRAFT REGULATORY GUIDE

Does the Reg. Guide need to address the issue of Electronic Submittals?

CHANGES NEEDED TO NEI 95-10

We will need to make changes to NEI 95-10. Some of the changes will reflect changes to GALL and the SRP. Specific areas we envision are:

- Incorporating guidance on the use of GALL.
- Updating Appendix B consistent with the comments provided on GALL (see detailed comments in Enclosure 3)
- Refinements to the standard applicant format guidance in Chapter 6.

Other comments that we need to make to NEI 95-10 are provided in the attached table.

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1.	NEI 1.5	NEI 95-10, Section 1.5 discusses resolution of current safety issues. SRP Appendix A.2 provides a similar discussion. The current descriptions are not consistent and the threshold for addressing new issues may be too low.	An approach needs to be developed to address any new issues that reveal themselves over the course of the review of license renewal applications.
2.	NEI 5.1.3	NEI 95-10, Section 5.1.3 should be revised to delete the following statement: " For example, poisons in the high density spent fuel racks have coupons that are periodically removed and tested to verify that the rack continues to be capable of performing its intended function."	Aging of neutron absorber in the spent fuel rack is no longer considered to be a generic TLAA. Note that Section X of the SRP-LR contains several TLAA program descriptions
3.	NEI 6.2	NEI 95-10, Section 6.2, Table 6.2-1 should be revised to delete Section 3.1 of the Application Table of Contents and renumber the remaining Chapter 3 sections to align with equivalent sections of the SRP-LR.	Alignment of the documents. NRC SRP-LR no longer has a section 3.1 describing common aging management programs
4.	NEI 6.2	NEI 95-10, Section 6.2, Table 6.2-1 should be revised to delete Section 4.7 of the Application Table of Contents and renumber the remaining Chapter 4 section to align with equivalent sections of the SRP-LR.	Alignment of the documents – As noted above, aging of neutron absorber in the spent fuel rack is no longer considered to be a generic TLAA.

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5.	NEI 6.2	NEI 95-10, Section 6.2, Table 6.2-2 should be revised to delete Section 4.7 of the Application Table of Contents and renumber the remaining Chapter 4 section to align with equivalent sections of the SRP-LR.	Alignment of the documents – As noted above, aging of neutron absorber in the spent fuel rack is no longer considered to be a generic TLAA.
6.	NEI 6.2	NEI 95-10, Section 6.2, Table 6.2-2 should be revised to delete Section 3.7 of the Application Table of Contents and renumber the remaining Chapter 3 section to align with equivalent sections of the SRP-LR.	Alignment of the documents. NRC SRP-LR no longer has a section 3.1 describing common aging management programs
7.	NEI 6.2	NEI 95-10, Section 6.2, Table 6.2-2 should be revised to offer guidance to applicants for using the GALL report as part of the aging management review.	TBD