



Analysis of Public Comments on the Improved License Renewal Guidance Documents

U.S. Nuclear Regulatory Commission
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Analysis of Public Comments on the Improved License Renewal Guidance Documents

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ABSTRACT

This report contains the staff's analysis of the stakeholder's comments on the license renewal guidance documents, which are the draft Regulatory Guide DG-1104, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," the draft Standard Review Plan for License Renewal, the draft Generic Aging Lessons Learned (GALL) report, and the Nuclear Energy Institute (NEI) document 95-10, Rev. 3, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule." The license renewal guidance documents were issued for public comment on August 31, 2000 (65 FR 53047). The staff's analysis is presented in a tabular format and contained in five appendices: Appendix A addresses the participant comments from the license renewal public workshop on September 25, 2000; Appendix B addresses the specific written comments submitted by NEI; Appendix C addresses the written comments submitted by various stakeholders, such as the Union of Concerned Scientists, utilities, and private citizens; Appendix D addresses five technical reports provided by the Union of Concerned Scientists; and Appendix E addresses the Advisory Committee on Reactor Safety consultants' structural and electrical comments. The April 2001 version of the license renewal guidance documents incorporated the information in this report.

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ABBREVIATIONS

ACI	American Concrete Institute
ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Document Access and Management System
AE	architect engineer
AEA	Atomic Energy Act
AEOD	NRC Office for Analysis and Evaluation of Operational Data
AEP	American Electric Power
AFWS	auxiliary feedwater system
AMP	aging management program
ANL	Argonne National Laboratory
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AUX	auxiliary system
BNL	Brookhaven National Laboratory
BWR	boiling water reactor
BWRVIP	Boiling Water Reactor Vessel and Internals Project
CAN	Citizens Awareness Network
CASS	cast austenitic stainless steel
CCCW	closed-cycle cooling water
CFR	Code of Federal Regulations
CLB	current licensing basis
CM	condition monitoring
CNS	Constellation Nuclear Services
COMED	Commonwealth Edison Company
CP&L	Carolina Power and Light Company
CRD	control rod drive
CVCS	chemical and volume control system
DE	NRC/NRR Division of Engineering
DET	NRC/RES Division of Engineering Technology
DG	Draft Regulatory Guide
DOR	Division of Operating Reactors
DP	Duke Power Company
DRIP	NRC/NRR Division of Regulatory Improvement Programs
DSSA	NRC Division of Systems Safety and Analysis
ECCS	emergency core cooling system
EDG	emergency diesel generator
EMCB	NRC/NRR/DE Materials and Chemical Engineering Branch
EMEB	NRC/NRR/DE Mechanical and Civil Engineering Branch
EOP	emergency operating procedure
EPRI	Electric Power Research Institute
ESF	engineered safety feature
EQ	environmental qualification
FPC	fire pump control
FR	Federal Register

ABBREVIATIONS (continued)

FSAR	final safety analysis report
GALL	Generic Aging Lessons Learned
GDC	general design criteria
GE	General Electric
GEIS	generic environmental impact statement
GL	generic letter
GSI	generic safety issue
HLW	NRC/NMSS Division of High-Level Waste
I&C	instrumentation and control
I&M	Indiana Michigan Power
IEB	IE bulletin
IEEE	Institute of Electrical and Electronics Engineers
IN	information notice
INEEL	Idaho National Environmental and Engineering Laboratory
IPE	individual plant examination
KOPEC	Korea Power Engineering Company
LER	licensee event report
LOCA	loss of coolant accident
LR	license renewal
LRA	license renewal application
LR-PW	license renewal public workshop
LWR	light water reactor
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NESF	normal engineered safety feature
NIRS	Nuclear Information and Resource Service
NMC	Nuclear Management Company
NMSS	NRC Office of Nuclear Material Safety and Safeguards
NNECO	Northeast Nuclear Energy Company
NPAR	nuclear plant aging research
NRC	Nuclear Regulatory Commission
NRR	NRC Office of Nuclear Reactor Regulation
NUMARC	Nuclear Management and Resources Council
NUS	NUS Information Services
ODSCC	outside diameter stress corrosion cracking
PBPM	planning, budgeting, and performance management
PC	plugging criteria
PECO	Philadelphia Energy Company
PRA	probabilistic risk analysis
PTS	pressurized thermal shock
PWR	pressurized water reactor

ABBREVIATIONS (continued)

PWSCC	primary water stress corrosion cracking
QA	quality assurance
RII	NRC Region II (Atlanta, Georgia)
RAI	request for additional information
RCS	reactor coolant system
RES	NRC Office of Nuclear Regulatory Research
RG	Regulatory Guide
RG&E	Rochester Gas and Electric
RGEB	NRC/NRR/DRIP Generic Issues, Environmental, Financial, and Rulemaking Branch
RHR	residual heat removal
RLSB	NRC/NRR/DRIP License Renewal and Standardization Branch
RROP	Revised Reactor Oversight Program
RWST	refueling water storage tank
SAMG	severe accident management guidelines
SCC	stress corrosion cracking
SER	safety evaluation report
SG	steam generator
SOC	statements of consideration
SNC	Southern Nuclear Company
SPCS	steam and power conversion system
SRM	staff requirements memorandum
SRP-LR	standard review plan
SRP-LR-LR	standard review plan for license renewal
SS	stainless steel
SSC	systems, structures, and components
TLAA	time-limited aging analysis
UCS	Union of Concerned Scientists
UFSAR	updated final safety analysis report
USAEC	U.S. Atomic Energy Commission
UT	ultrasonic testing
VP	Virginia Power
W&S	Winston & Strawn
WEPCO	Wisconsin Electric Power Company
WESCO	Westinghouse Electric Company

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EXECUTIVE SUMMARY

OVERVIEW

On August 31, 2000, the Nuclear Regulatory Commission (NRC) announced the issuance and availability of a draft Regulatory Guide DG-1104, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses"; a draft Standard Review Plan for License Renewal (SRP-LR-LR), "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants"; a draft Generic Aging Lessons Learned (GALL) report for public comment (65 FR 53047); and DG-1104, which proposed to endorse NEI 95-10, Rev. 3, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule." These improved license renewal guidance documents describe methods acceptable to NRC staff for implementing the license renewal rule (10 CFR Part 54), as well as techniques used by NRC staff in evaluating applications for license renewals. The staff also held public meetings with stakeholders to discuss their comments.

The NRC has taken into consideration all comments received as a result of the solicitation described above and incorporated their NRC dispositions into the April 2001 version of the license renewal guidance documents.

This report provides the evaluation and disposition of all public comments received by the NRC on the license renewal guidance documents.

NATURE AND SCOPE OF COMMENTS

In total, 1,084 comments were received and docketed from stakeholders on or before October 16, 2000. The nuclear industry provided 860 comments, with the majority of those from the Nuclear Energy Institute. The public, including public interest groups, provided 177 comments, with 125 of those comments coming from individuals representing themselves and public interest groups. Those 125 general comments were concerned with the validity of the license renewal process. The remainder of the comments (or 47 of the comments) came from the ACRS consultants. This NUREG includes written comments from 128 commentators, which represent comments from 101 individuals, 15 public interest groups, and 12 industry groups that responded to the request for public comments (65 FR 53047).

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1. INTRODUCTION

1.1 BACKGROUND

On August 31, 2000, the Nuclear Regulatory Commission (NRC) announced the issuance and availability of a draft Regulatory Guide DG-1104, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses"; a draft Standard Review Plan for License Renewal (SRP-LR-LR), "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants"; a draft Generic Aging Lessons Learned (GALL) report for public comment (65 FR 53047); and DG-1104, which proposed to endorse NEI 95-10, Rev. 3, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule." These improved license renewal guidance documents describe methods acceptable to NRC staff for implementing the license renewal rule (10 CFR Part 54), as well as techniques used by NRC staff in evaluating applications for license renewals. The NRC also announced a public workshop that was held on September 25, 2000, to facilitate gathering public comment on the draft documents. The NRC was especially interested in stakeholder comments that would improve the safety, effectiveness, and efficiency of the license renewal process. The staff also held public meetings with stakeholders to discuss their comments.

1.2 ORGANIZATION OF REPORT

This report contains the NRC assessment of the stakeholder comments. The evaluation and dispositions are prepared in a tabular format and contained in the following five appendices: Appendix A addresses the participant comments from the license renewal public workshop on September 25, 2000; Appendix B addresses the specific written comments submitted by the Nuclear Energy Institute (NEI); Appendix C addresses the written comments submitted by various stakeholders, such as the Union of Concerned Scientists, utilities, and private citizens; Appendix D addresses five technical reports provided by the Union of Concerned Scientists; and Appendix E addresses the Advisory Committee on Reactor Safety (ACRS) consultant comments on the structural and electrical components.

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APPENDIX A

DISPOSITION OF PARTICIPANT COMMENTS FROM THE LICENSE RENEWAL PUBLIC WORKSHOP, SEPTEMBER 25, 2000

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A.1. INTRODUCTION

NRC's September 25, 2000, license renewal public workshop (LR-PW) was the second outreach workshop (the first was December 6, 1999) to obtain feedback from stakeholders on the NRC development of the "Generic Aging Lessons Learned" (GALL) report and the revised guidance for the conduct of review of license renewal applications.

The draft GALL report dated August 2000, along with the draft SRP-LR dated August 2000, DG-1104, and NEI 95-10 Revision 2, were available for public comment on the Regulatory Guidance website page (<http://www.nrc.gov/NRC/REACTOR/LR/guidance.html>). The August 2000 Draft GALL report superseded the earlier version of the report, dated December 6, 1999, and the original NUREG/CR-6490, "Nuclear Power Plant Generic Aging Lessons Learned (GALL)," Volumes 1 and 2, issued in December 1996.

The NRC staff made 16 presentations during the workshop that were designed to elicit stakeholder input. The workshop discussion was based on first reviewing the agenda for any add-on topics and then addressing the relevant documents with ten discussion topics addressed by different speakers. The Federal Register Notice Questions (65 FR 53047) were addressed at the end. Thirty-two individuals spoke and/or made comments, with 17 being from the NRC and 15 from other organizations. About 86 different comments were made by these 15 non-NRC stakeholders. Sixty-seven were made by individuals representing industry groups and 19 from individuals representing public interest groups or themselves. The focus of the majority of the discussion seemed to be the technical details or fine points. The nature of the comments was substantially different from that of the December 6, 1999, workshop, during which more general recurring themes, such as credit for existing programs for license renewal, regulatory and/or attribute creep, and adequacy of mechanisms for public review.

All comments made by stakeholders are sorted in alphabetical order by the commenter's last name and listed in Table A of Appendix A, along with the NRC analysis of the stakeholder comments. Stakeholder comments have been incorporated or addressed in the license renewal guidance documents.

A.2. PARTICIPANT AFFILIATION

Of the 115 documented attendees attending NRC's September 25, 1999, License Renewal Public Workshop (LR-PW, <http://www.nrc.gov/NRC/REACTOR/LR/IRG/workshop0925.html>), 56 were from the NRC. At least 26 participants represented power companies, 10 were from National Laboratories, 1 participant was from the Union of Concerned Scientists, 5 participants represented the Nuclear Energy Institute, and 18 represented other organizations.

The participant list is shown, sorted alphabetically first by organizational affiliation and then by name of attendee. Individuals who participated and whose comments are noted in the official hard copy of the transcript for the NRR-License Renewal Public Workshop (LR-PW) are noted by an asterisk (*) next to their name.

Affiliation	Attendee
AEP-Cook	*Kunsemiller, David
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ANL	Shah, Vik
ANL	Shelton, Brent
ANL	Tam, Shiu-Wing
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Bechtel Power Corp.	Smith, Wayne
BNL	Lofaro, Robert
BNL	Morante, Rich
CES	*Chang, Ken
Constellation Nuclear Services (CNS)	*Bowman, Marvin
CNS	*Rycyna, John
CNS	Sturdevant, Lee
CNS	*Taormina, Ernie
CP&L	Fletcher, Michael H.
Dominion	Corbin, Bill
Duke Energy	Robison, Greg
Enercom Services	Masiero, David
Entergy	Young, Garry G.
First Energy	Kurtz, Gene
Entergy Operations	Mosher, Natalie
First Energy Corp.	Borysiak, Michael
Florida Power and Light	*Menocal, Antonio G.
FPC	Becker, Gary
GE	Negres, Paige
Hopkins & Sutter	*Danstanger, Chris (noted in transcript but not on attendance roster)
Hopkins & Sutter	Stenger, Dan
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WEPCO	*Newton, Roger
Winston & Strawn	Sutton, Kathryn

A.3. EVALUATION AND DISPOSITION OF COMMENTS

Table A, at the end of Appendix A, contains comments provided by the participants at the workshops. The column heading "Commenter and Affiliation" is primarily intended to provide the source of the comment, meaning the individual and his/her affiliated organization that submitted the comment. For example, Beedle-1, NEI, indicates that the comment was made by Mr. Beedle of NEI and the "1" segregates this comment from all other comments made by that individual. The abbreviations used in this appendix are listed in the front matter of this NUREG. This table is sorted alphanumerically based on the name of the individual and the consecutive number assigned to his/her comment.

A.4. REFERENCES

American National Standards Institute (ANSI) Standard, B31.1 Power Piping Code.

ASME Boiler and Pressure Vessel Code, Section XI, Rules for In-Service Inspection of Nuclear Power Plant Components, American Society of Mechanical Engineers.

Code of Federal Regulations 10 CFR, Part 2 – Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders, Subpart B – Procedure for Imposing Requirements by Order, or for Modification, Suspension, or Revocation of a License, or for Imposing Civil Penalties §2.206 *Requests for action under this subpart.*

Code of Federal Regulations 10 CFR, Part 50, – Domestic Licensing of Production and Utilization Facilities, Appendix A *General Design Criteria for Nuclear Power Plants.*

Code of Federal Regulations 10 CFR, Part 50, – Domestic Licensing of Production and Utilization Facilities – §50.21, *Class 104 licenses; for medical therapy and research and development facilities.*

Code of Federal Regulations 10 CFR, Part 50, “Domestic Licensing of Production and Utilization Facilities” – §50.49, *Environmental qualification of electrical equipment important to safety for nuclear power plants.*

Code of Federal Regulations 10 CFR, Part 50, “Domestic Licensing of Production and Utilization Facilities” – §50.54, *Conditions of licenses.*

Code of Federal Regulations 10 CFR, Part 50, “Domestic Licensing of Production and Utilization Facilities” – §50.55a, *Codes and Standards.*

Code of Federal Regulations 10 CFR, Part 50, “Domestic Licensing of Production and Utilization Facilities” – §50.59, *Changes, tests and experiments.*

Code of Federal Regulations 10 CFR, Part 50, “Domestic Licensing of Production and Utilization Facilities” – §50.61, *Fracture toughness requirements for protection against pressurized thermal shock events.*

Code of Federal Regulations 10 CFR, Part 54 - Requirements for Renewal of Operating Licenses for Nuclear Power Plants, §54.21, *Contents of application – technical information.*

Code of Federal Regulations 10 CFR, Part 54 - Requirements for Renewal of Operating Licenses for Nuclear Power Plants, §54.31, *Issuance of a renewed license.*

NEI 95-10, Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule, *Revision 2, August 2000* (http://ruleforum.llnl.gov/cgi-bin/downloader/rg_lib/123-0118.pdf).

NRC Draft Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants (SRP-LR), August 2000 (<http://www.nrc.gov/NRC/REACTOR/LR/IRG/SRP/srp.html>).

NRC Generic Aging Lessons Learned (GALL), Dec. 6, 1999 Draft Report, NRC/NRR (<http://www.nrc.gov/NRC/REACTOR/LR/index.html>).

NRC Generic Letter 88-20, *Individual Plant Examination for Severe Accident Vulnerabilities*, November 23, 1988.

NRC Generic Letter 89-13, *Service Water System Problems Affecting Safety-Related Equipment*, July 18, 1989.

NRC Generic Safety Issue 190, *Fatigue Evaluation of Metal Components for 60-Year Plant Life*, September 1995.

NRC Official Transcript of Proceedings, Public Meeting License Renewal Workshop. (<http://www.nrc.gov/NRC/REACTOR/LR/IRG/workshop0925.html>).

NRC Organizational Abbreviations (<http://www.nrc.gov/NRC/PHONE/org.html>).

NRC Regulatory Guide (draft) DG-1104, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," August 2000.

NRC Regulatory Guide 1.54, Rev. 1, *Service Levels I, II, and III Protective Coatings Applied to Nuclear Power Plants*, U.S. Nuclear Regulatory Commission, Rockville, MD, July 2000.

NRC Regulatory Guide 1.84, Design and Fabrication Code Case Acceptability – ASME Section III, Division 1, May 1999.

NRC Website License Renewal Section (<http://www.nrc.gov/NRC/REACTOR/LR/index.html>).

NRC/NRR Office Letter No. 805 "License Renewal Application Review Process."

NUREG/CR-6490, Vols. 1 and 2, *Nuclear Power Plant Generic Aging Lessons Learned (GALL)*, December 1996.

NUREG-0544, NRC Collection of Abbreviations, Rev. 4 (<http://www.nrc.gov/NRC/NUREGS/SR0544/R4/index.htm>).

NUREG-1275, "Operating Experience Feedback Report," U.S. Nuclear Regulatory Commission, *Air System Problems* (Vol. 2) December 1987.

NUREG-1275, "Operating Experience Feedback Report," U.S. Nuclear Regulatory Commission, *SWS Failure and Degradation in LWRs* (Vol. 3) December 1987.

NUREG-1611, *Aging Management of Nuclear Power Plant Containments for License Renewal*, September 1997.

NUREG-1705, Safety Evaluation Report (SER) Related to the License Renewal Application of Calvert Cliffs Nuclear Power Plant Units 1 and 2, Prepared by David L. Solorio, March 1999 (<http://www.nrc.gov/NRC/REACTOR/LR/CALVERT/SER/>).

NUREG-1723, *Safety Evaluation Report related to the License Renewal of Oconee Nuclear Station, Units 1, 2 and 3*, March 2000 (<http://www.nrc.gov/NRC/NUREGS/SR1723/index.html>).

NUREG-1801, *Generic Aging Lessons Learned (GALL)*, U.S. Nuclear Regulatory Commission, July 2001.

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Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Audience participant-1, Anonymous	40	[Inaudible] I wondered what kind of results you mean. Sometimes the results, types of programs, listed in the GALL report have to be plant-specific.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report contains one acceptable way to manage aging effects for license renewal. An applicant may reference GALL in an application with no further review by NRC staff or may propose plant-specific alternatives for staff review in its license renewal application. If there is no existing program that manages the specific aging effect then the GALL report will identify the required program as "plant specific" with an evaluation by the staff.</p> <p>The GALL report was not revised to address this comment.</p>
Audience participant-2, Anonymous	56	(Inaudible) Could NRC inspection reports be used as a reference in a license renewal application?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Referencing inspection reports as evidence of NRC approval of a program may be difficult because inspection reports generally verify compliance with the licensing basis. However, if there is a relevant NRC exposition on the intended purpose and operating experience of that program, then the report may be adequate as a reference.</p> <p>The GALL report was not revised as a result of this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Beedle-1, NEI	12	It is not clear to NEI how the attributes (10 elements of a program) will be derived, what process controls will be utilized to prevent attribute creep or attribute shrink, and how stakeholder disagreements over the scope of these attributes will be resolved.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report generically evaluates the attributes of existing aging management programs (AMPs) and recommends when those programs should be augmented. NRC management oversight will be the major process control to prevent additional attribute creep or shrink by requiring justification from the NRC staff for any such internal change in the GALL report. Similarly, an applicant must provide justifications for either changes from programs in GALL or new programs proposed in its license renewal application.</p> <p>If disagreements over the attributes of a program cannot be resolved, the disagreement can be appealed in accordance with the process discussed between the NRC's License Renewal Steering Committee and NEI's License Renewal Working Group in meetings on 9/29/00 and 12/9/99. The appeal process is being incorporated into the next revision of NRR Office Letter No. 805, "License Renewal Application Review Process."</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Beedle-2, NEI	13	GALL evaluates the adequacy of existing programs and identifies where enhancements are needed. Since 85-90% of the programs credited in the Calvert Cliffs and Oconee applications were existing programs that did not require enhancement, NEI would expect this result to be reflected in the GALL. Thus the focus should be on program enhancements and new programs for the remaining 10-15%. This will ensure that the license renewal complements the extensive review conducted to assure compliance with the current licensing basis (CLB).	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is a generic compilation of structures, systems, and components and an evaluation of existing aging management programs. By merely referencing the GALL report, when it is bounding, the NRC review is focused on proposed programs of an applicant that are augmentations of programs in the GALL report or new programs. The GALL report and SRP already took into account individual insights gained during staff reviews of Calvert Cliffs and Oconee.</p> <p>The GALL report and SRP were not revised to address this comment.</p>
Bowman-1, CNS	54	Why did NRC not adopt what is already an existing aging management program for coatings inside containment as opposed to a brand new one?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>NRC adopted the current revision of Reg. Guide 1.54 because the references for the original version were outdated. NRC has no objection to the programs supported in the original version of that regulatory guide. An applicant can use the original version if copies of the supporting standards are available.</p> <p>The GALL report was revised to address this comment by allowing both the original and current revision of the regulatory guide to be utilized.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Bowman-2, CNS	61	Many programs in Section 11 can be considered common or generic programs. One of the difficulties is the lack of a unique identifier for each row. When I am writing up a program evaluation, and I am trying to say it applies to B1.1 and I have about 10 or 12 rows that have that, I then have to not only add that it is B1.1, I have to in some cases add that it is for carbon steel with steam and for a particular aging effect.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>A unique identifier was used in conjunction with each line item number in the GALL report in order to afford better traceability when referencing to a particular line item of the GALL report.</p> <p>The GALL report was globally revised to address this comment. The SRP also was further subdivided in any respective subsection of a chapter by assigning unique, numerical identifiers to paragraphs with different subsection matters.</p>
Bowman-3, CNS	153	The GALL report takes two approaches in regard to non-service-level one coatings. Cranes fall as one approach for coatings, whereas for service-level one, two, three, for other coatings, it takes a different approach. The approach for cranes appears more straightforward and more realistic in terms of the desired objective; i.e., protecting the substrate. Perhaps it would be better to give more credit for the existing Reg. Guide 1.54 1973 programs, and if there are deficiencies that need to be addressed to take credit for that, that would be an improvement to allow either way, either version of Reg. Guide 1.54 to be credited.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Bowman-1 in this Table A.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Bowman-4, CNS	155	When you get into a sub-tier of ANSI standards, ASTM standards and so forth, there are substantial differences between the two versions of the Reg. Guide. This puts the applicant in the mode of trying to reconcile and separate the aspects that are really important to service-level-one coatings and not important to other non-containment coatings. It becomes a major bookkeeping exercise with the result of ending up at the same end point – that is, that either program is probably acceptable.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Bowman-1 in this Table A.
Bowman-5, CNS	163	Sometimes credit may be mis-assigned (such as crediting the chemistry program for doing things that the chemistry program really doesn't do). In GALL, the chemistry program includes a one-time inspection element. The plant chemistry people own the chemistry program, but they don't own the inspection program; at plants, it's hard to get people to think across their borders. In the SRP-Appendix A, four different types of aging management activities are presented (prevention, mitigation, condition monitoring, and performance monitoring). There are cases where, when you look through GALL, you find yourself trying to shoehorn all 10 elements around a particular activity, where some of those elements really don't apply. So, for example, for a chemistry program,	The basis for this comment is contained in and around the denoted transcript page (T-pg).	Appendix A of the SRP considers each acceptable AMP to consist of ten elements. An applicant can take exception to one or more of the ten elements of a program in the GALL report and provide justifications in an application. In some cases in the GALL report, more than one program is required to manage a particular aging mechanism in a specific environment. In those cases, each program crosscuts the other, and the combination is treated as a singular program under Appendix A of the SRP. The NRC does not believe that there is any added value gained by classifying each program into the four categories identified in Appendix A of the SRP since the ten elements in a program typically describe the respective characteristics of each of those four categories.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Bowman-5, CNS (cont.)		I think if you characterize the program as the type of program that it is, that would be helpful, identify the chemistry program, this is a mitigation program, and these other – and also think about what of those 10 attributes really are essential for certain of these types of programs and aren't essential for certain of those types of programs. For example, the trending – for a preventive program, trending really isn't very meaningful, whereas for a condition-monitoring program, it is very meaningful.		<p>The GALL report used and evaluated existing AMPs and augmented them as necessary. Consistent with that concept, it was determined that chemistry control and one-time inspections are actually separate aging management programs.</p> <p>The GALL report Chapter XI was revised to address this issue, but not specifically for this comment.</p>
Chang-1, CES	43	In this process of preparing the GALL report and soliciting comments, were any efforts made by the NRC to have foreign utilities review and comment on it [inaudible]?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC did not solicit comments on GALL and SRP from foreign utilities because typically they have different licensing periods than the United States. Some countries re-license their plants every ten years, thus aging effects may not have materialized by now. There has been considerable foreign interest in the development of this guidance. NRC has shared it with many international colleagues but did not seek formal international public comment on these documents.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Chang-2, CES	94	<p>For those plants that apply for license renewal, most of them have already been operated 20, 25 years, so that's one of the main reasons they apply for it. In those 20, 25 years, they have monitoring programs, they have cycle counting, so they know exactly what happens in the past 25 years (and probably different from the design trending conditions). For license renewal, is the applicant supposed to evaluate the fatigue impact on their plants, based on a combined operating for the past, design for the future, or should the applicant evaluate operating in the past and extrapolate for the future?</p> <p>What exactly are the monitoring requirements for a plant to comply with the GALL report?</p>	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Fatigue is to be analyzed and evaluated as a time-limited aging analysis (TLAA) in accordance with 10 CFR 54.21(c)(1). For license renewal, there are three ways of maintaining the current licensing basis, for the fatigue usage factor per 10 CFR 54.21(c)(1) :</p> <ol style="list-style-type: none"> 1. The current TLAA is valid for period of extended operation based on original conservative estimate for number of cycles. Compare estimate with the number of cycles monitored in a component's operating history. 2. Project the usage using a new TLAA based on operating history. Knowledge of the operating history is essential. 3. Monitor the usage (i.e., number of actual and design basis cycles) during extended period and use that as the basis to determine that aging effects will be adequately managed. This is discussed in Chapter X of the GALL report. <p>The GALL report was not revised to address this comment.</p>
Chang-3, CES	95	Can the three ways listed in 10 CFR 54.21(c)(1) be used to handle the fatigue part of the license renewal? Do you need to revise the design transient documents or type in specifications on them, or do you just say this demonstrates operability for 60 years?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Chang-2 in this Table A.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Chang-4, CES	96	At many plants, there is no fatigue design basis in the licensing basis because they are 31.1 plants. Do you have extra requirements for those plants that are 31.1 plants? For critical locations, what are the requirements in regard to fatigue?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	Plants licensed prior to ASME Section III are not required to do a fatigue analysis but must still meet the ANSI B31.1 design criteria for bending stresses in regard to the 7000 thermal cycles during plant life. An applicant should address Generic Safety Issue (GSI) 190, regarding environmental effects on fatigue, at fatigue critical locations for 60 years. The GALL report was not revised to address this comment.
Chang-5, CES	97	Regarding the 7,000 cycles you mentioned, those are based on the test results and so on and so forth. Now, if I have a transient that only has 200 cycles, can I increase the number of allowable cycles, or can I increase the allowable stress, since there are fewer cycles?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	The allowable stress limit for bending stress in ANSI B31.1 is for less than 7,000 thermal cycles. Only a couple hundred actual thermal cycles occur during the current license term. A simple extrapolation would show that the 7000 cycles would not be exceeded for 60 years. The GALL report was not revised to address this comment.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Chang-6, CES	180	The code editions and addenda are beyond the GALL report. The code edition addendum is a generic issue, and should be considered by ASME to any application or by ACI by any application. GALL should describe a general methodology defining conditions or situations where codes of different edition and addenda can be used to replace the GALL-based code base or the plant design basis code base. If you meet those criteria, then we do not object to a different code edition or addenda. For instance, in the ASME code itself, early codes don't have that high-cycle fatigue. So, for all those infinite cycles, for those flow-induced vibrations, you cannot evaluate. Old plants are designed to one code. You have to use ASME code for doing any fatigue evaluation or assessment. The NRC Reg. Guide 1.84, issued periodically – always tells you what code edition and addenda and code case are approved by the NRC. Those are the basis of using different code base edition, addenda for any evaluation, and the GALL report, GALL evaluation should not be different from that.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The intent in the GALL report is to refer to a particular code, including chapter and section, and provide sufficient criteria to allow an excerpt or summary of a code requirement to stand independent of the revision of the code or standard it was taken from. An applicant can compare the latest revision of a code or standard with the excerpt or summary. This comparison provides the technical basis to determine if the position in the GALL report is still bounding in order to adopt the latest code revision.</p> <p>The Commission has a process to endorse the ASME Code. To ensure that the GALL report will remain valid when future editions of the ASME code are approved by the NRC, the staff will perform an evaluation of future code revisions as part of the 10 CFR 50.55a rulemaking. This evaluation will determine the adequacy of code revision with respect to the ten-element program evaluation described in the GALL report.</p> <p>The GALL report was not revised to address this comment.</p>
Danstanger-1, Hopkins & Sutter	127	How will the new risk-informed Part 50 be incorporated into license renewal?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment UCS-3 in Table C of this NUREG.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Kunsemiller-1, AEP	47	How does the GALL report differentiate in its applicability and treatment of plants constructed before and after the General Design Criteria of 10 CFR 50, Appendix A was invoked?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>GALL was drafted to evaluate aging management of SSCs in particular environments irrespective of the vintage of a plant. For instance, the applications of older plants may discuss why particular SSCs need no AMPs. This could be done, for example, by noting that, per CLB, particular SSCs have no intended functions that would be impaired if aging effects were not prevented or controlled.</p> <p>The GALL report was not revised to address this comment.</p>
Lochbaum-1, UCS	15	Does the draft GALL report provide sufficient credit for existing aging management programs? Is the adequacy of existing programs being ensured?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is a generic evaluation of existing AMPs and it sometimes recommends augmentation of those programs to adequately manage specific aging effects. An applicant can take credit in his application by referencing the existing programs in the GALL report with only limited review by staff. The applicant must demonstrate "reasonable assurance" that new, existing, or augmented programs other than those evaluated in the GALL report will be effective in managing effects of aging on structures and components in the period of extended operation.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-2, UCS	16	There are clearly times when one-time inspections are warranted. However, the adequacy of these one-time inspections will be in question for some time into the future until some of them are actually implemented.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	Both Calvert Cliffs and Oconee proposed one-time inspections. Although these plants had rigorous chemistry control programs, the one-time inspections were designed to examine areas most susceptible to crevice or pitting corrosion and to confirm the adequacy of the chemistry control program to manage aging. A one-time inspection, performed to verify if an aging effect is being adequately managed, is a reasonable action to take where there is some uncertainty about the occurrence and progression of the aging effect. The GALL report was not revised to address this comment.
Lochbaum-3, UCS	17	There seem to be mechanisms for shrinking the level of effort in the GALL report, but not mechanisms for increasing its scope.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Lochbaum-1 in this Table A for demonstrated adequacy of the staff review of applicant's program. See NRC disposition of comment Beedle-1 in this Table A on process controls to ensure integrity of the GALL report. The GALL report was not revised to address this comment.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-4, UCS	17	<p>Are the efforts of the group formerly known as AEOD (NRC Office for Analysis and Evaluation of Operational Data) factored back into the GALL report?</p> <p>Is there another group that continues the efforts of AEOD or some other means to factor in lessons learned from plant operation into the license renewal effort?</p>	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Significant safety and important generic issues of the AEOD reports on aging of long-lived passive components and structures have been included in the GALL report.</p> <p>1. The majority of AEOD reports address safety and generic problems or issues of system operations and active components. Few AEOD reports deal with the aging aspects of long-lived passive components and structures.</p> <p>2. The significant safety and important generic issues identified in AEOD reports have been addressed in NRC generic communications, such as GL, BL, and IN. The generic communications have been reviewed by ANL, INEEL, and BNL in the GALL report.</p> <p>3. Many former AEOD staff participated in the RES review of the GALL report. They are either authors of AEOD reports or are aware of AEOD reports that are relevant to their specific review areas. They have factored the applicable AEOD reports into their reviews. As an example, the AEOD Report, NUREG-1275, Vol. 3, SWS Failure and Degradation in LWRs, was addressed in GL 89-13. Bill Jones, one of the authors of the AEOD report, S-96-02, <i>Assessment of Spent Fuel Pool</i>, was assigned to review the GALL-2 Chapter VII spent fuel sections. Harold Ornstein, the author of NUREG-1275, Vol. 2, <i>Air System Problems</i>, reviewed the GALL report compressed air system section.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-4, UCS (cont.)				The Office of NRC Research continues to monitor operating experience at plants and will continue to provide information to license renewal activities. The GALL report was not revised to address this comment.
Lochbaum-5, UCS	17	The actual feedback on implementation of aging programs will not occur until plants begin operation in the extended period. Will preliminary feedback be factored in from renewal applications approved to date, Calvert Cliffs and Oconee, which are not real road tests of success of the license renewal process, to decrease the scope of the GALL report or to make it less conservative?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Lochbaum-1 in this Table A on intended purpose of the GALL report. The staff positions in SERs for plants reviewed have been or will be integrated into the GALL report, but the intent is not to make the GALL report less conservative. After the issuance of a license for extended operation, the plant will be subject to the same regulatory oversight as under CLB. The GALL report was not revised to address this comment.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-6, UCS	18	The license renewal applications submitted to date do not seem to provide adequate information for the ten elements in every case as required by the SRP, Appendix A for the aging management programs.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Current experience indicates that the 10 elements are found in most programs, but sometimes they crosscut. When an element does not apply to a specific program, Chapter XI of the GALL report identifies it. The ten elements should be present in an effective AMP. Some individual programs standing alone may not have all ten elements, but there is a synergy between different programs. The applicant should identify what combination of aging programs is most effective so as to provide reasonable assurance that aging effects are being adequately managed.</p> <p>In addition, the SRP is not a requirement but a guidance document which provides information to facilitate staff reviews.</p> <p>The GALL report was revised to address this issue, but not specifically for this comment, by modifying the program evaluations in Chapter XI of the GALL report as appropriate to ensure there is adequate information in each one.</p>
Lochbaum-7, UCS	19	The NRC staff stated previously in written correspondence that IPE submittals for GL 88-20 are obsolete or out of date. However, page 2.1-3 of the SRP still requires their review as part of NRC staff review of scoping and screening methodology of an application.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>IPE submittals for GL 88-20 are considered only one source of many that are reviewed to help the reviewer understand the functions of plant systems, structures, and components for scoping purposes.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-8, UCS	43	Will the guidance documents - the GALL report, SRP, and draft Reg. Guide - be the vehicles for communication to the public or will something else be provided that is more easily understood by the general public?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC envisions these guidance documents as being the primary means of communicating to the public the license renewal process. In their present form, these documents are designed more for practitioners. The NRC is considering whether to develop a summary form of this information for the general public as part of public outreach activities.</p> <p>The license renewal guidance documents were not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-9, UCS	71	The guidance documents submitted for formal review and made available to all stakeholders were modified during the review period without communicating to all stakeholders ("bait and switch") either in the Federal Register or other means the reasons for and types of changes being made.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC has reformatted the GALL report to make it easier to understand and use. The substance of the information provided to the public was not expected to change as a result of this reformatting. If the public provided comments on information that was changed, the NRC evaluated if the comments would negate or affect the changes. The tables in the GALL report were reformatted by combining information in columns "Structure and Component" and "Region of Interest" into a column titled "Structure and/or Component" and also in columns "Aging Effect" and "Aging Mechanism" into column "Aging Effect/Mechanism." In addition, the staff relocated the information in columns "References" and "Evaluation and Technical Basis" into Chapter XI under the various aging management programs with applicable references in table to the respective programs.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-10, UCS	73	<i>Only one hour of the September 25, 2000, agenda is focused on the Federal Register notice that the public has to comment on. The bulk of the meeting concerns topics that aren't officially out for public comment.</i>	The basis for this comment is contained in and around the denoted transcript page (T-pg).	Guidance documents for license renewal were officially made available to the public with no constraints on the nature of comments that could be made. The NRC specifically asked in the Federal Register Notice for input on four areas very important to the credibility and public confidence in these guidance documents. This NRC workshop and others like it were open to the public and the NRC has tried to be very open in all communications to the general public. The GALL report was not revised to address this comment.
Lochbaum-11, UCS	125	There is a move afoot to move towards a risk-informed regulation, and 50.49 is one of the target regulations. Assuming that move continues on and makes some progress and things actually happen, is the implication to have two GALL reports? A GALL report for the risk-uninformed plants, and something like a "GALL-lite" for the risk-informed plants? How do you foresee handling that situation?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment UCS-3 in Table C of this NUREG.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-12, UCS	140	NRC did not refer to or address in this workshop the petition for rulemaking submitted by UCS. What is the current status of that petition for rulemaking?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The request for action by UCS filed under 10 CFR 2.206 was in regard to operation of the Edwin Hatch nuclear plant outside its design and licensing basis for liquid or gaseous radioactive waste systems. A copy of the Final Director's Decision (DD-00-05, ADAMS ascension no. ML003758416) in regard to this matter was filed with the Commission on October 18, 2000 and was officially final 25 days from that date or about November 22, 2000.</p> <p>The GALL report was not revised to address this comment.</p>
Lochbaum-13, UCS	155	If an applicant submits an application, relies on GALL and meets all 10 attributes without exception or variation, the NRC approves the license and the SER cites reliance on meeting GALL. Does NRC view that, then, as a licensing commitment that requires prior approval, review and approval, if any changes are made by the licensee to how they do aging management in that area?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC views it as a commitment and as part of the licensing basis, since the rule requires a summary of these programs in the FSAR supplement. Any change in this licensing basis is by the 10 CFR 50.59 process.</p> <p>If a license condition is imposed, any changes to it require prior approval by the NRC.</p> <p>The GALL report was not revised to address this comment.</p>
Lochbaum-14, UCS	156	If the applicant later changes the procedure for addressing aging management, is it necessary to return to NRC for further evaluation?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Lochbaum-13 in this Table A.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Lochbaum-15, UCS	185	Since in the single-page format adopted, the reference column was deleted altogether, would not any discussion about references become a moot point?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>See NRC disposition of comment Lochbaum-9 in this Table A.</p> <p>The reference column in the August 2000 version contains redundant information that is already contained in the other columns in the GALL report. The information was not lost, just relocated to a more central location in the GALL report. Therefore, the reference column was deleted in the reformatting of the GALL report.</p> <p>A citation to a code or standard, as applicable is in the text of the Aging Management Programs contained in Chapter XI of the GALL report. The actual references to a code and standard for a specific AMP are included at the end of each AMP.</p> <p>The GALL report was not revised to address this comment.</p>
Menocal-1, Florida Power and Light	63	The latest version of the draft GALL included a new section for carbon steel external surfaces for steam and power conversion, aux systems normal engineered safety feature (NESF), yet it looked like in some cases external surfaces were also addressed within the body of the sections. Was the intent to have that new section address all the external surfaces for each section of the GALL?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The intent of the last Section in each of Chapters IV, V, VII, and VIII discussing carbon steel external surfaces was to cover all carbon steel surfaces in each of those respective chapters of GALL. It was done to comprehensively cover all carbon steel external surfaces without listing each component or requiring any further evaluation.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Menocal-2, Florida Power and Light	118	Is crevice corrosion one of the mechanisms that are of concern with respect to adequacy of existing chemistry programs and can it be detected and verified by one-time inspection in accordance with GALL? Is a corrective action program with root cause identification a suitable substitute for a one-time inspection?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Crevice corrosion is an aging mechanism of concern in certain areas of particular systems, and combinations of environments. One aging management program to control crevice corrosion aging effects as presented in GALL is a chemistry program in conjunction with a one-time inspection. The one-time inspection, conducted prior to expiration of the current license, is a validation of either the presence or absence of corrosion and is implemented by nondestructive evaluation techniques. Any corrosion detected is evaluated and corrective actions are implemented if necessary. Any program that similarly verifies that corrosion is either present or not can be credited as an acceptable alternative.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Menocal-3, Florida Power and Light	119	Will the absence of symptoms of aging mechanisms such as crevice corrosion, based on a one-time inspection, appropriately permit the conclusion that a problem does not exist? Certain other aging effects may be found other than the specific effects for which the inspections were initiated.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The one-time inspection is used to confirm either the lack of corrosion or the slow progression of corrosion, which has an innocuous effect, and to evaluate any corrosion detected, per established acceptance criteria. It is not a stand-alone aging management program. The primary aging management program, which the one-time inspection is used to validate as performing as intended, will still be in effect even if no corrosion is detected to ensure the continued management of that aging mechanism. An applicant would be well advised to look for as many aging effects/mechanisms as would be applicable in a specific one-time inspection.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Mulvehill-1, Southern Nuclear	126	Can an applicant just select the more economical option three, 10 CFR 54.21(c)(1)(iii), or will he have to update the EQ calculation?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>An applicant is allowed to select the option listed in 10 CFR 54.21 (c)(1)(iii), which means the applicant must show the ability to manage the aging effects of the electrical components during the renewal period under its current EQ program. This allows the applicant to delay the decision as to whether to update the EQ calculation or replace those components until just prior to the renewal period in order to extend their qualification under 10 CFR 50.49 into the renewal period.</p> <p>The GALL report was not revised to address this comment.</p>
Newton-1, WEPCO	100	For the reactor vessel, could a program like the Master Curve Approach be included in the GALL report, and how can programs like that be recognized in the GALL report as acceptable?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Any program like the Master Curve Approach can be incorporated into the GALL report if deemed of a generic nature and if approved by NRC staff. Specifically, for the Master Curve Approach, a rule change would probably be needed. To use the Master Curve Approach instead of the screening criteria in the pressurized thermal shock (PTS) rule in 10 CFR 50.61, an exemption could be granted in the interim, but over the long term, there would have to be a change in the 10 CFR 50.54 rule.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Newton-2, WEPCO	102	What if a utility came in, and in their application, referenced specifically planned future use of the Master Curve. How would that be reviewed and assessed as an acceptable aging management program?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The Master Curve Approach in regard to licensing renewal would be a TLAA and would have to meet the requirements of 10 CFR 50.21(c)(1). An applicant would have to show that under the present technology, the screening criteria or the basis for the PTS rule in 10 CFR 50.61 is met. The staff would have to know how the Master Curve Approach would be used and how it would be implemented in order to review it as a means to manage aging.</p> <p>The GALL report was not revised to address this comment.</p>
Newton-3, WEPCO	103	If existing rules were used and a reactor vessel only meets the screening criteria for some arbitrary number (say 55 years) and the applicant intends to apply the Master Curve Approach, before that time period expires; -- how would that program be reviewed and accepted?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC would need to condition the license to require a demonstration of adequate reactor vessel toughness past 55 years.</p> <p>The GALL report was not revised to address this comment.</p>
Newton-4, WEPCO	104	The NRC has accepted TLAA's where the analysis was not valid for the entire 60 years for license renewal applications already granted. So why would the NRC not accept a TLAA for the reactor vessel if the analysis similarly was either not valid for or had not been projected to the end of the period of extended operation?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>If an analysis is not updated to be valid for the entire 60 years, then the NRC will require reasonable assurance that aging effects are being adequately managed for the entire extended period or until the analysis is updated. The applicant has the burden under 10 CFR 54.21(c)(1)(iii) to demonstrate this is actually the case.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Newton-5, WEPCO	109	One vision of the future with respect to reactor vessel internals is that applicants can learn from each other's inspections, and show their applicability to similar plants. Is that vision shared by the NRC?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC looks for opportunities to focus the staff's review on unique aspects and relies on generic efforts to increase the efficiency of that review. The NRC is open to increasing the generic aspects of GALL based on the staff's review of the inspection and research activities performed by applicants. Licensees of plants with renewed licenses are participating in industry programs and workshops to share their license renewal experiences. The NRC expects that, as a result of these industry forums, future applicants and holders of renewed licenses will propose changes to their programs and possibly to programs in the GALL report. With many aging mechanisms and aging effects, it is unclear when they become critical in regard to impeding an intended function. NRC's experience with its research programs, inspections, and industry insights will provide some guidance.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Newton-6, WEPCO	142	Is it correct that the SRP causes an examination of what is not in the scope? Is it clear that the applicant knows what NRC staff is looking for during site visits when NRC staff want to confirm what's in and what's out of scope in the SRP?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The rule requires an applicant to develop a screening and scoping methodology that will ultimately classify those SSCs that are and are not in scope. The staff visits the site to understand the applicant's scoping and screening process and making sure that it is consistent with the requirements of the rule. The NRC first tries to understand the applicant's methodology and then reviews the SSCs the applicant classified as being in scope based on that methodology. The SRP provides guidance for the staff in reviewing the applicant's methodology and scoping results.</p> <p>The SRP was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Newton-7, WEPCO	182	Codes and standards very seldom make up the entire 10 set of attributes that we use in a program; they could be used for an inspection technique, scope definition, etc. So, when the NRC looks at what we've referenced from a code or standards standpoint, they really look at what attribute it's trying to satisfy in a program. Once you've accepted that code and standard in that program, we can then use that as a guide to say we are equivalent or better to that. I anticipate that you're going to look at the standard and say, for this attribute, it's all right in that one, then we can use that in the future, and once you've blessed it for that, we can use that as the process by which it gets approved.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Usually, the NRC relies on codes and standards for certain important attributes – scope, method, frequency – the key features of an aging management program. The objective is to find a way to maximize the efficiency of GALL by defining an attribute in such a way so as to give maximum credit. However, the SRP in Appendix A discusses ten elements (attributes) for aging management programs. Although typically only the most important attributes require a benchmark to be established from a reference or code, it is up to the staff to determine the weight assigned to each attribute of a program in regard to managing specific aging effects and mechanisms.</p> <p>The GALL report was not revised to address this comment.</p>
Newton-8, WEPCO	187	If the applicant does not justify, in its application, the omission of any aging effects identified in the GALL report, that the applicant has determined not to be applicable will the applicant get an RAI (Request for Additional Information) asking it anyway?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>If an applicant does not justify in applications instances where GALL is not bounding, the staff should focus its review on those aging programs. The objective is to allow maximum credit for programs that adequately manage aging effects. If that standard is not met, RAIs should be issued to help reviewers to fully understand the augmented or new programs proposed in the application.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Patel-1, PECO Energy	32	How will the GALL report be used in the future? Is NRC planning to revise the GALL as more plants apply for license renewal?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report looks back and reflects on experience; future GALL updates would address the most recent experience. The NRC looks for opportunities to focus the staff's review on unique aspects and relies on generic efforts to increase the efficiency of review. The staff plans to update these license renewal guidance documents to capture additional lessons learned from future reviews and industry activities. However, the schedule of this update is not determined.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Patel-2, PECO Energy	46	There seems to be some inconsistency in guidelines in different sections of the SRP corresponding to the GALL report – is the intent to include the 10 attribute table or is it just a three line or a four line statement?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is a topical report that an applicant can merely reference in an application to focus staff efforts on the evaluation of plant-specific AMPs or exceptions to the GALL report. By merely referencing the GALL report when it is bounding, the applicant decreases the volume of the application and the review time of the staff. These references and any exceptions to the GALL report may be in tables, footnotes to tables, or in a separate section in the front or the back of the application. The applicant typically would include only those components or AMPs that are either exceptions or plant-specific as the case may be in the application with the remainder of supporting information for material in application, bounded by GALL, in auditable form at plant site. The Final Safety Analysis Report (FSAR) supplement that is included in the application may take the form of tables, for both components and aging management programs, as outlined in Chapter 3 of the SRP. This would be for those components and AMPs identical to those in the GALL report. If additional components are added, then the applicant must, as previously stated, denote somewhere in the application the inclusion of those components.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Patel-3, PECO Energy	50	When the word "program" is used, many plants don't necessarily have what could be considered a full-fledged program in all cases. For example, the mechanism a plant uses to meet the intent of GL 89-13 (Service Water System Problems Affecting Safety-Related Equipment) may be a series of activities. One of the NEI's previous comments was to call these "aging management activities" rather than "aging management programs." Clarify what is considered an aging management program.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>There is no distinction between the terms "program" and "activity" in the GALL report. A program should consist of ten elements as stated in SRP, Appendix A, Section A.1.2.2. and in Chapter XI of the GALL report, and if it does not, then it must be justified by the applicant and evaluated by the staff. Many of the "existing programs" at plants serve multiple purposes whereas the definition of program used here is exclusively for managing aging effects.</p> <p>The GALL report was not revised to address this comment.</p>
Patel-4, PECO Energy	63	The 2-pg format in the August 2000 draft of GALL had the effect of sometimes carrying over an extensive write-up of the 10 elements for the AMPs. This would be displaced to a location in the table that would be two pages away (leaving the left side of the page blank when there was no change in line item). This made the tables sometimes difficult to read.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The tables in various chapters of GALL now refer to the aging management programs in Chapter XI of the GALL report. Thus, this problem of AMP descriptions extending to several pages was eliminated.</p> <p>The GALL report was revised to address this comment by placing all AMPs in Chapter XI of the GALL report and have the various line items in the GALL report (Chapters 2 through 8) under the "Aging Management Programs" column refer to those AMPs.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Patel-5, PECO Energy	75	When NRC said 'scoping questions' does this focus only on systems and components or does this also include aging effects? If I don't have an aging effect, then I don't need to manage it. Do I need to explain it in my application?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is completely independent of the scoping issue. The GALL report is a generic evaluation of aging management programs for components in specific environments. The inclusion or exclusion of an SSC into GALL does not dictate that an SSC will be included or excluded in the application. Thus, its associated aging effect or mechanism would be treated similarly.</p> <p>The GALL report was not revised to address this comment.</p>
Patel-6, PECO Energy	76	If the GALL report calls out an aging effect or an aging mechanism for a certain material and component, and an applicant determines that this is not relevant to the plant, is it necessary to explain why it is not applicable?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is a generic evaluation of aging management programs and is not a scoping document. An applicant is required to identify and list structures and components that are within the scope of the 10 CFR 50.54 rule in the application. For the GALL report, any exceptions to programs for particular SSCs must be identified and justified in an application.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Patel-7, PECO Energy	108	If the applicant has the BWR VIP program with an SER for license renewal, will this be recognized in GALL Chapter XI "Aging Management Programs?" If a relevant AMP is included in GALL Chapter XI, then aging effects considered by the BWRVIP, will be covered. At present, this information is absent.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>All aging management programs were placed in GALL Chapter XI in order to present this guidance only once. This provides a user-friendlier document and an easier format to understand. Chapter XI, Sections M1 (ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD), XI.M4 (BWR Vessel ID Attachment Welds), XI.M7 (BWR Stress Corrosion Cracking), XI.M8 (BWR Bottom Head Penetration), and especially XI.M9 (BWR Vessel Internals) rely heavily on BWRVIP guidance.</p> <p>A new AMP, XI.M9 (BWR Vessel Internals), was drafted and inserted in GALL, Chapter XI, concerning Aging Management Programs. This particularly references the Boiling Water Reactor Vessel Internals Programs (BWRVIP).</p> <p>The GALL report was revised to address this comment and other similar comments by placing all aging management programs in Chapter XI and basing several aging management programs in part on BWRVIPs.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Patel-8, PECO Energy	185	The GALL report provides too much detail on ASME Section XI in the evaluation basis, right down to the category level; with the new codes coming out, with the new editions coming out, those categories would change. The Gall report still lists references down to the category level for the '89 version of that code. Some plants have already switched to the '95 version and some categories have changed. So, even though we meet the intent of the GALL and meet all the attributes, we still cannot say we meet all of the requirements of the GALL, because the categories have changed.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Chang-6 in this Table A in regard to updating the GALL report for new ASME code revisions.
Polaski-1, PECO Energy	51	From a license renewal perspective, many plants that have plant-unique configurations may be placed at a disadvantage. It would be better if the GALL report does not become so overly-prescriptive that it does not allow for existing plant-specific exceptions for those programs that have been in place at plants for years.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>If a program was developed in conformance to a Regulatory Guide, staff position, standard, or code (with some exceptions noted) and was documented in that plant's CLB or previously evaluated by the NRC, then the applicant should make a statement to that effect in the application. If GALL were binding, other than the exception noted for license renewal, the staff would evaluate the impact of the exception on the program. The NRC staff may still need to review exceptions to programs or the CLB to determine the applicability to license renewal.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Polaski-2, PECO Energy	87	Containment and inspections – Is there any reason that an applicant couldn't just cite his inspections that he does in accordance with IWE, IWL, which are mandated by regulations and acceptable programs? But when the NRC promulgated that rule, they found that it was an acceptable aging management program for current-term and the renewal term. So the question is, why do we need to do more than what's currently mandated by regulation for renewal term?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Walters-8 in this Table A.
Polaski-3, PECO Energy	88	The NRC, for licensing renewal, requires inspections in inaccessible areas with no presence of corrosion in accessible areas. This seems counter to some current regulations.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC, in conjunction with industry, has proposed acceptance criteria for addressing inaccessible areas. Exceeding the criteria will probably denote the presence of corrosion in inaccessible areas. If the threshold of the acceptance criteria is exceeded, then inspection of those inaccessible areas will be performed.</p> <p>The GALL report was revised to address this comment by incorporating into AMPs XI.S1 (ASME Section XI, Subsection IWE) and XI.S2 (ASME Section XI, Subsection IWL) in Chapter XI of GALL acceptance criteria.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Polaski-4, PECO Energy	148	What is the significance about the maintenance rule for scoping mentioned earlier in the public workshop? It ought to be fairly easy and straightforward to take the maintenance rule answers which were developed under regulation and just apply them to license renewal.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The intents of the license renewal rule and the maintenance rule are similar in that they both verify that the effects of aging on functionality of SSCs will be adequately managed. The Commission has determined that the license renewal rule should credit the existing maintenance rule including the area of scoping for most SSCs when applicable. This is in accordance with the first principle of license renewal, i.e., the reliance on the current regulatory process to protect the public health and safety except for age-related degradation issues. Therefore, an applicant should exercise credit for both the scoping of SSCs and programs developed for the maintenance rule in addressing compliance with the license renewal rule to the extent possible within the guidelines of license renewal.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Polaski-5, PECO Energy	157	<p>A general concern is that the plants that are going through license renewal right now are some of the original plants that were licensed, and a lot of the programs that are credited in GALL are written from the viewpoint of latest, best industry standards that would be suitable to a fairly recent plant, like a Watts Bar or a plant like that, but have no applicability at all to the earlier plants; and so, some of the earlier plants are going to expend a great effort to try to use GALL to the extent that was hoped it would be. Part of the challenge will be to adapt GALL so that it reflects, justifiably, earlier applications for older plants which were accepted despite some disagreements with the presentation and aging management programs in the GALL report. The reason being is not to have subsequent plants of a similar vintage to submit applications and to have to revisit issues and concerns that were previously accepted by the NRC in some respect anyway.</p>	<p>The basis for this comment is contained in and around the denoted transcript page (T-pg).</p>	<p>See NRC disposition of comment Patel-1 in this Table A.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Polaski-6, PECO Energy	159	It is not clear that we will have the immediate increase in efficiency that some people hoped we would have, where it would have been. If I'm putting in an application two years from now for a plant that was built and the license will expire in 2012, I ought to be able to go right down the list and match up. I think you're going to find there's going to be some disparity. Maybe 10 years from now, when you're talking about a Watts Bar and some of the latest plants, it should be very clear-cut that that process will go real easy.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>If industry representatives or future applicants think the GALL report is too limited in scope in the number of SSCs presented, or in the number or content of the evaluations of AMPs (thus applying only to newer plants), the NRC should be informed of such. The NRC is sensitive to this issue, but the GALL report cannot envelope all plant-specific details because it would not be a generic evaluation of aging management programs that applicants could use to present and justify their own programs.</p> <p>The GALL report was not revised to address this comment.</p>
Robinson-1, Duke Energy	111	During the Oconee work, one-time inspections played a very important role for us, in that there were certain areas where we could not characterize the aging that was going on. We proposed one-time inspections as an opportunity to go in, look at the hardware, characterize what may be going on, and then determine if follow-up and more perpetual aging management programs were required. Could you address the characterization of aging, versus proving that an aging management program is effective?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>NRC presented the position in the GALL report that a one-time inspection was a verification of an existing AMP that probably was adequately managing the aging effect, and that new proposed programs or modifications of the existing program, based on input from the one-time inspections, were not out of the question, but were not likely.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Robinson-2, Duke Energy	112	The one-time inspections at Oconee were aimed at areas where no program existed or the aging mechanisms occurring could not be characterized. Using the water chemistry program as an example, after over 20-25 years of operating nuclear power plants with chemistry programs, if corrosion was going to occur in the systems in which chemistry is controlled then evidence of that would have been apparent by now. One-time inspections can be very valuable in helping you characterize things where knowledge of what prevailing synergistic effects are going to do to hardware is not available. But be careful when you're including well established, and well run programs, like a chemistry program, for which additional sampling is not required, based on operating experience, into the bin of programs to be verified by one-time inspections.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>One-time inspections are appropriate to "verify" that an aging effect is being adequately managed by existing programs, if it is postulated that a very slow-acting aging mechanism is in progress or no aging effect is to be observed. However, there are concerns about possibly long incubation periods or lack of evidence about an aging effect. Corrective action process based on either operating experience or inspections could be used to initiate a plant-specific program. The GALL report identifies the need for a one-time inspection on a case-by-case basis.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Robinson-3, Duke Energy	146	The whole scoping methodology exercise seems to be evolving to the point of looking at what's not in scope. There seems to still be a disconnect between the scoping phase and the aging management review phase of renewal. My first comment is that it seems there could be a more efficient way to get through that. The second comment is that we focus a lot of scoping on structures and systems. There's the other aspect of commodity reviews that we do, sort of super-set reviews that we do at the aging management review level.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The reviews of an applicants' scoping and screening methodologies will become more efficient as more applications are processed and the staff knows what questions to ask to not only expedite the review but also to obtain reasonable assurance that all aging effects are being adequately managed.</p> <p>The GALL report was not revised to address this comment.</p>
Robinson-4, Duke Energy	161	The write-up in the SRP and GALL on the words to be used in an applicant's FSAR supplement may cause future applicants some concern. For Oconee we have included our FSAR supplement in our FSAR, and are trying to make sure we have procedures in place to maintain those words into the future. Reasonably specific information in a FSAR will be required in order to give guidance to future generations. Some of the words in the GALL and SRP are not specific and strong enough about their intent or meaning to prevent an applicant from changing the words in his FSAR at a later date to something that is less specific than originally intended.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The write-up in the SRP on the content of the FSAR supplement represents minimum information. An applicant may propose to include more details if that helps in maintaining the licensing commitment for its plant. NRC would welcome any suggested improvements during or subsequent to the public comment period of the license renewal guidance documents so as to assist applicants in the future maintenance of their FSAR's content. The nature of such suggestions would have to be specific in order for the staff to assess their merit and make the necessary changes to the GALL report and the SRP on the content of the FSAR supplement.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Robinson-5, Duke Energy	173	If we meet some information in GALL, then we should take credit for it. A code or standard does not manage aging, but it's the actions under the program that manages aging. A code or guidance document gives us some help in setting up that program, but we still have to do the program in-house. If our code or standard is a later version than the one referenced in GALL then we have to make sure that we're doing the appropriate aging management task in-house. Referencing a code like 50.55(a) means nothing, it's the program actions themselves that we have to justify so that you can make a judgment on them not the codes and standards.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Chang-6 in this Table A.
Robinson-6, Duke Energy	175	There are really two issues. One is how you measure up to GALL and what happens if you want to use a code that's outside of the particular rev that's been described in GALL. That's sort of an administrative process you have to go through. The other question is, once you've signed up for a program that has certain elements to it that will help you manage aging, how do you, in a systematic way, begin to progress and mature beyond that?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Chang-6 in this Table A for what to do when references in the GALL report and in an applicant's application are different prior to granting a renewed license. The process to change a code or standard after granting an applicant a renewed license is the 10 CFR 50.59 process. The GALL report was not revised to address this comment.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Robinson-7, Duke Energy	176	Being clear with what's written in GALL, whether I agree with it or I want to take a deviation from it, you've got to be specific. You can't just say an in-service inspection, but if you call out a particular type of volumetric inspection or a particular technique that you believe works or that you've seen in industry practice that works and you want to report that in GALL and I want to deviate from it, you have to be specific enough so I can know how to deviate.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is a generic evaluation of aging management programs for specific materials in certain environments. The GALL report describes one acceptable way to manage aging effects. An applicant can deviate from any program but must then provide reasonable assurance on the adequacy of his program to manage aging. This also applies to the codes and standards on which an aging management program is based. The NRC received several comments during the formal public comment period on how to modify the GALL report to make it more specific and evaluated them individually. Any additional comments on this same matter should identify where the GALL report lacks specificity.</p> <p>The GALL report was revised to address this comment and other similar public comments by modifying the AMPs in the GALL report.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Robinson-8, Duke Energy	191	When aging effects are identified in GALL, they should not be just someone's perspective or experiences that can not be substantiated by operating experience or a legitimate reference document. An assertion based on some laboratory experience in graduate school but with no operating experience should not be allowed since there is really nothing for an objective reviewer to follow up on. A word search should be done to avoid using phrasing such as "based on staff experience, these effects occur."	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>One of the elements requested of all programs is operating experience per SRP, Appendix A. All programs in the GALL report, chapter XI, have supporting evidence why they are legitimate programs. The NRC has made all operating experience provided in the GALL report objective rather than the subjective viewpoint of the staff that developed a particular program. A word search produced no instances where aging programs were not adequately supported. In addition, the NRC reverified any operating experience that had been questioned based on formal comments submitted.</p> <p>The GALL report was not revised to address this comment.</p>
Rycyna-1, CNS	160	What are the expectations of those plants that have programs similar to those in the GALL report but for which it's more effort to justify similarity with the GALL than to do the 10-point review and just ignore the GALL?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>If the GALL report is bounding then an applicant can merely reference the GALL report. If not, an applicant should provide reasonable assurance on the suitability of a new or augmented program for a particular application.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Taormina-1, CNS	188	<p>Can an applicant identify in GALL the appropriately corresponding system, components, with the same materials and environments and make the conclusion that it has the same aging effects and put that in his application? Is it acceptable to use the GALL as a basis for the aging effects requiring management for a particular system?</p> <p>I don't feel I should have to address an aging effect that's in the GALL if my own analysis shows I don't require to manage that, unless you can let me use the GALL to draw those conclusions, in which case, if I need to dispute the finding in the GALL, I'd like to see those technical bases for those conclusions that are in the GALL.</p>	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report is not a scoping document, and an applicant can only reference it when the GALL report is bounding. The applicant bears the entire responsibility for determining and defending what applicable aging effects and mechanisms are relevant for his plant. The inclusion or exclusion of an SSC in the GALL report does not dictate that an SSC will be included or excluded in the application. Thus, its associated aging effect or mechanism would be treated similarly. For example, there may be aging effects observed through plant-specific operating experience that may not be included in the GALL report.</p> <p>The GALL report was not revised to address this comment.</p>
Taormina-2, CNS	190	It was our understanding that the GALL was really intended to describe how programs are adequate to manage aging effects for those particular systems and structures, not necessarily to describe which aging effects require management. We were just curious where the basis for those aging effects requiring management came from.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>GALL is a generic evaluation of aging management programs for specific materials in certain environments. The basis for the description of aging effects requiring management stems from the original GALL report (NUREG/CR-6490). This was a comprehensive catalog of aging effects based on an extensive review of operating experience and aging studies.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-1, NEI	31	Implicit in many of the topics addressed today is how the Regional inspection process or program will be applied. If not already targeted as being addressed today, can you place it on the agenda for today?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC anticipates that the inspection guidance documents contained in plant inspection procedures will evolve and be refined slightly as more applications are processed. Presently, inspection plans are developed from them for separate reviews of scoping and screening methodology and aging management programs, including TLAA's, during the license renewal process. Before the start of the extended period of operation, another inspection will be performed to verify the status of outstanding commitments or licensing actions identified by applicants during the license renewal process. The inspection plans could evolve to a much greater extent than the procedures since they focus on problem areas defined by prior experience or staff guidance. The inspections will focus on the supporting evidence for scoping methodology and aging management programs kept in an auditable form at the site. This will be pursued, along with other key areas under the guidance of NRC staff in headquarters. The NRC will entertain comments of a more specific nature on the inspection procedures for license renewal contained in both manual chapters 2515 and 2516.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-2, NEI	66	How is the distinction between structures/components (one column in the August 2000 draft version of GALL) and regions of interest (adjacent column in the August 2000 draft version of GALL) handled in the revised 1-page format where the region of interest column is eliminated?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The GALL report has been reformatted into a single-page format that retains the distinction between "structure & component" and "regions of interest" by having a single column where the heading is "structure and/or component." The immediate entry under that column for each line item is the structure and component of concern with subcategories on that same line item being the previous regions of interest.</p> <p>The GALL report was revised to address this comment as stated above.</p>
Walters-3, NEI	67	<i>Has the NRC ever considered adding a column for function? (If the purpose of the rule is to manage aging to ensure functionality, it is not clear how programs can be evaluated without considering function.)</i>	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The NRC has not included a column for "intended function" in the GALL report for several reasons. First, an SSC can have several intended functions with the aging effect and mechanism being the same for each. Listing all those intended functions would unnecessarily increase the volume of the GALL report. Second, intended functions are plant specific, which, if included, would further detract from the generic nature of the GALL report.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-4, NEI	68	Has the NRC considered an approach that would start with the program first, specifically those where no further evaluation was required? The components would be defined for each program and then the GALL-type of format would be utilized for those programs that require further evaluation. This approach might be a more expedient way for the applicant to go through the process.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Generally, an applicant first must determine what SSCs are included within the licensing renewal rule. Once he determines that, then the GALL report presents an understandable format for determining the evaluations performed for a SSC and the results. Again, the applicant can follow the GALL format or present his own. In addition, the SRP summary tables for a grouping of plant systems provide, in a condensed format, the association between SSCs, aging effect/mechanism, programs, and plant type. Chapter XI of the GALL report also provides a compilation of aging management programs.</p> <p>The GALL report was not revised to address this comment.</p>
Walters-5, NEI	70	At this date, has it been determined that the final version of GALL will be reformatted or are you considering this and looking for input?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>See NRC disposition of comment Lockbaum-9 in this Table A.</p> <p>The GALL report was previously revised to address this issue but not specifically for this comment.</p>
Walters-6, NEI	77	The SRP seems to describe a methodology of how to evaluate scoping and it really focuses on proving the negative. The licensee has to defend why something wasn't in the scope. Although separate from GALL, it seems to be a logical extension that the staff reviewer may ask why wasn't something in scope that was included in the GALL report?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Patel-5 in this Table A.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-7, NEI	81	By structural monitoring program, is it implied that an applicant can take credit for a similar program implemented under the maintenance rule?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>An applicant can take credit for a program meant for compliance with the maintenance rule if the applicant provides reasonable assurance in the LRA why it is also applicable to adequately manage aging effects for those SSCs without all ten elements present as required by SRP, Appendix A, for all programs. The staff would review this program to see if it meets the criteria for an aging management program.</p> <p>The GALL report was not revised to address this comment.</p>
Walters-8, NEI	90	The issue seems to be that the Agency looked at the 50.55(a) rulemaking to endorse IWE and IWL for containment inservice inspections, specifically with an eye to license renewal. I believe the statements of consideration indicate that they did that, and that they found it acceptable for the period of extended operation. On this issue, we've just been in quandary why, if that's what the intent of the rulemaking was, is there now an exception to that to do something different?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The Statements of Consideration (SOC) (60 FR 22461; May 8, 1995) in support of 50.55a rulemaking endorse IWE and IWL for containment inservice inspections. The Commission amended Part 54, but did not limit aging management activities for containment for license renewal to just IWE and IWL. Aging management activities including IWE and IWL should adequately manage aging effects. If not, they should be augmented to accomplish that goal. The GALL report is consistent with the 50.55a rule and recommends aging management programs for areas that are not covered by 10 CFR 50.55a.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-9, NEI	116	If a one-time inspection is performed for an area, as agreed in GALL, is it possible that this inspection could be done at a more opportune time (such as during an outage) either before or during the preparation of an application? Would this still qualify as satisfying that particular need?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>A one-time inspection is a verification of the absence or presence of specific types of corrosion. It may be performed at anytime in accordance with the GALL report, Chapter XI, AMPM32, as long as it is before the expiration of the original operating period. Preferably, the inspection should be as near the end of the original licensing period as possible.</p> <p>The GALL report was not revised to address this comment.</p>
Walters-10, NEI	132	Do we have, collectively, any operating experience that shows that inaccessible cables are being degraded? Do we have any experience that suggests that those cables, the buried cables, in particular, are degrading? I guess the question is how aggressive do we have to be in going to look for this aging? An issue with the original rule was we shouldn't have to speculate on what might occur. We ought to deal with what we know.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The concern is with non-EQ cables within the license renewal rule exposed to environmental effects (like temperature and water), that could compromise their safe operation after 40 years. Accessible cables can be monitored for hot spots, and there is recent operating experience with degradation with inaccessible cables.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-11, NEI	136	For EQ equipment, is there anything that precludes the staff from accepting an original analysis that shows that the equipment is good for 80 years or 100 years so that additional evaluation is not required every 20-year licensing renewal interval?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Environmental qualification per the license renewal rule is satisfied by a time-limited aging analysis (TLAA). There are three methods to verify that TLAA's are adequate under the license renewal rule in 10 CFR 54.21(c)(1). First, an applicant may show the original TLAA is valid for a time span exceeding the original 40 years and one or more renewal periods. Second, the original TLAA is modified to include at least one extended period of operation. Third, the applicant can show that the aging effects are adequately controlled during the extended period of operation. Proceeding from the first method to the last requires increasing levels of evaluation and assessment on the part of the staff and also the applicant. Equipment cannot be credited for more than one renewal period at a time, but an applicant can decrease his and the staff's review efforts by including as many renewal periods as feasible in the TLAA evaluation.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-12, NEI	143	As a follow-up to the question about looking at what is not in scope, does the NRC actually approve the methodology? Unless you're doing that review to somehow verify that I implemented an approved methodology satisfactorily, in which case I wonder why do you need to do that?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>The rule requires the applicant to submit a scoping and screening methodology for NRC approval. The staff will review the methodology and its results to determine if all within scope SSCs have been included. On-site inspection will be used to verify, on a sampling basis, the implementation of the applicant's scoping methodology by primarily reviewing supporting documentation, which forms the basis for his compliance with the rule in regard to scoping.</p> <p>The GALL report was not revised to address this comment.</p>
Walters-13, NEI	167	The staff's evaluation of an applicant's program based on the required ten elements appears rather robust. The content of the programs in the GALL report does not seem to agree with that of the actual programs in the field. How do we come to closure on this issue about increasing the agreement between these two program descriptions?	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>See the NRC disposition of comment Bowman-5 in Table A.</p> <p>In addition, the NRC considered public comments on the composition of the aging management programs and revised the GALL report as appropriate. However, each aging management program in the GALL report was evaluated using the ten elements in the SRP, Appendix A.</p> <p>The GALL report was not revised to address this comment.</p>
Walters-14, NEI	168	If the old program is okay and there is a new program that's okay, shouldn't we capture both in GALL, because there is a probability that a certain percentage of licensees will use the old program? Have you thought about that, to the extent that it provides	The basis for this comment is contained in and around the denoted transcript page (T-pg).	The staff focuses its review on the unique aspects in an application rather than generic efforts bounded by the GALL report. The NRC is open to increasing the generic aspects of the GALL report based on the staff's approval of an applicant's inspection and research

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-14, NEI (cont.)		sufficient credit? There's probably other situations like that, where there's a percentage of licensees who use a certain version or revision of a particular Reg. Guide or code. Older programs may be in place and may be just as acceptable as a newer program, and should we capture those in GALL?		<p>activities and where the revision of a code or standard has an innocuous effect on an existing program. For the latter case, the GALL report could be expanded to include both the new and old programs supported by different code or standard revisions, as long as each adequately manages the postulated aging effects. Conformance, as well as exceptions to a Regulatory Guide, staff position, standard, or code in accordance with a plant's CLB or evaluated in an NRC document, should be noted in an application, but only the exceptions should be reviewed by the staff. The GALL report looks back and reflects on experience; future GALL updates (when issued) would address the most recent experience. The NRC's experience with its research programs, inspections, and industry insights will provide some guidance as to when and to what extent the GALL report needs to be expanded.</p> <p>The GALL report was previously revised to address this comment based on staff reviews of other similar comment but not directly as a result of this comment. Dispositions of other comments on programs are provided elsewhere.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-15, NEI	173	I think for the codes and standards that are not endorsed by 50.55(a), certainly you could evaluate those in GALL, and I believe that the applicant, certainly if they implement the version that was evaluated in GALL, has a straightforward job. If they've got a different revision that they're using, then perhaps what they need to do is evaluate the differences and provide that in the application.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>See NRC disposition of comment Chang-6 in this Table A in regard to the incorporation of codes and standards in the GALL report or applications.</p> <p>The NRC has reviewed the 1995 ASME Code Edition through 1996 Addendum against the ten element evaluations for AMPS where the Code is utilized in Chapter XI of GALL. Where appropriate, the NRC has identified and included those items that are different in the 1995 Code Edition through the 1996 Addendum from the 1989 ASME Code Edition in Chapter XI.M1.</p> <p>Any future revisions of the ASME code will be evaluated in a similar manner as described above. If an applicant has a different version of a code and standard than the one referenced in the GALL report, the applicant should evaluate the differences and provide that information in the application.</p> <p>The GALL report was not revised to address this comment.</p>

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-16, NEI	178	There are two issues of concern. (1) If there are two acceptable existing programs, you ought to consider putting both of those in the 8/00 version of GALL. I'll tell you where I differ, and you're going to pass judgement on that and you're going to give me a renewed license. (2) What happens if the ACI standard is upgraded or there's a new ACI standard. I've got to go back and say have I changed anything between what the NRC approved for renewal and what this does, and I would probably argue that even on 50.55(a), the fact that you endorse it by regulation, I'm not sure I just go off and say I'm going to implement that version. Certainly if I took credit for it as an AMP, regardless of code edition, I don't believe I'm going to be able to use that unless I go through the process of evaluating that new edition against what you approved in my LR application. If we're aware of another program that's older, that's acceptable, we shouldn't impose or make GALL appear to impose something newer merely because that's what's in place at the time.	The basis for this comment is contained in and around the denoted transcript page (T-pg).	See NRC disposition of comment Bowman-1 in this Table A to address the first issue in the comment. See NRC disposition of comment Lochbaum-13 in this Table A to address the second issue in the comment.

Table A: Disposition of Participant Comments from the License Renewal Public Workshop, September 25, 2000 (continued)

Commenter and Affiliation	T-pg	Comment	Basis for Comment	NRC Disposition
Walters-17, NEI	192	<p>It's not clear why the process can't work by reviewing what the applicant describes as their methodology for scoping and then also for determining which aging effects require management. If the agency looks at that methodology and applies it however they think they would apply it and they think that a structure or component was omitted or an aging effect was omitted, then ask that question.</p> <p>For the applicant to be requested to provide information about everything that is not included, is very hard. The burden is on the applicant, but I always thought that the burden was to provide your process for how you come up with what's in the basket. If the agency thinks there is a problem with that, then the question ought to go back to the applicant with a basis for why the staff believes, based on their review of the methodology, a certain aging effect or a certain structure or component should have been included, I'm not sure that's the way that we're headed.</p>	The basis for this comment is contained in and around the denoted transcript page (T-pg).	<p>Industry is looking for ways to minimize the amount of information that they are required to put in the application. At the same time, the staff is looking for an optimum level of information that will make reliance on references and the evaluation basis clear. As a general rule, the NRC does not expect to challenge everything, but expects to limit challenges to specific areas based on knowledge, experience, and a rationale.</p> <p>At the same time, an applicant could reference GALL, and where there are differences, should provide basis regarding how the reference was incorporated. The NRC will continue to improve the efforts to explain the reasons behind questions in a clear manner. NRC guidance provides a guide on level of detail in applications in order for the NRC to review the applicable aging effects and assess the effectiveness of aging management programs.</p> <p>The GALL report was not revised to address this comment.</p>

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APPENDIX B

DISPOSITION OF NEI COMMENTS

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B.1. INTRODUCTION

In response to the NRC Request for Public Comments on the Draft Guidance Documents for License Renewal (65 FR 53047, August 31, 2000), the Nuclear Energy Institute reviewed the documents and provided written comments on October 13, 2000 (see Section B.4, References) on the draft guidance documents and for the specific questions posed in the Federal Register notice. In addition, NEI provided additional comments on October 26, 2000 (see Section B.4, References) and November 08, 2000 (see Section B.4, References) on the same documents. Comments were made on the draft Standard Review Plan, the GALL report, and the draft Regulatory Guide. Changes were identified that were necessary to NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 2. About 723 written comments were received from NEI.

B.2. EVALUATION AND DISPOSITION OF COMMENTS

The tables B.2.1 through B.2.16, at end of Appendix B, contain comments received from NEI in accordance with the references provided in Section B.4.

The column heading, "Comment Number," is primarily intended to provide the source of the comment, meaning the letter or meeting from which the comment was obtained (see Section B.4, References), and to indicate whether the comment was originally numbered when submitted. For example, NEI-1 indicates that the comment was made by NEI and the "1" distinguishes this comment from all other NEI comments; however, the "NEI" in front of the number indicates that this comment was not originally numbered when submitted by NEI. A comment number prefixed by either a "G" or "S" indicates that the comment is on the GALL report or Standard Review Plan for License Renewal (SRP-LR), respectively. For example:

- G-IVD1-6 indicates a comment on the GALL report, Chapter IV, Section D1.
- G-XI-M5-1 indicates a comment on the GALL report, Chapter XI, Aging Management Program M5.
- S3.4-2 indicates a comment on the SRP-LR, Section 3.4.
- SA.1-3 indicates a comment on the SRP-LR, Appendix A, Section A.1.
- NEI-1 indicates a comment for which NEI did not actually supply a comment number. NRC numbered the NEI comments consecutively. This applies to comments NEI-1 through NEI-19.
- A single number (1 through 7) indicates a NEI comment on NEI 95-10 for which NEI did supply a comment number, which is shown as the single digit.

The abbreviations used in this appendix are listed in the front matter of this NUREG. All comment numbers use original NEI comment numbers if provided. Traceability between the comments in this Appendix B and the references in Section B.4 is indicated in Section B.3 and is established for all comments. In Tables B.2.8, B.2.10, B.2.12-5, B.2.15, and B.2.16, under the column heading "Item Number," the numbers on the first line for a line item are those from Section B.3 to establish traceability since the origins at comments in these tables are less direct than those in other tables. For example B.3.2 would indicate that Section B.3, item 2, is the source of that comment, and B.3.2 would appear on the first line under the column heading "Item Number." The items on the second or subsequent lines for each line item under this column heading relate to the section of the document on which the listed comment was made. The references in Section B.4 provide the sources of all comments. For the tables B.2.1 through B.2.13, the comments are in alphanumerical order both for each appendix and for this overall appendix. However, Tables B.2.14 through B.2.16 are only in alphanumerical order within each appendix. This is based on the combination of letters and numbers of each comment number as you move from left to right.

B.3. ORIGIN OF NEI COMMENTS

1. All NEI Comments besides those described below

See Section B.4, Reference 1, Enclosure 3

2. Comments NEI-1 through NEI-5 in Table B.2.15

See Section B.4, Reference 1, Enclosure 2, pages 1 through 3

3. Comments NEI-6 through NEI-8 in Table B.2.15

See Section B.4, Reference 1, Enclosure 1, pages 1 through 3

4. Comments NEI-9 in Table B.2.15

See Section B.4, Reference 1, Enclosure 4, page 1

5. Comments NEI-10 through NEI-13 in Table B.2.15

See Section B.4, Reference 1, Enclosure 5, page 1

6. Comments G X-1, G XM1-1, G X.S1-1, and G X.S1-2 in Table B.2.8

See Section B.4, Reference 2

7. Comments S-1-1 through S-1-5; S-2-1 in Table B.2.10

See Section B.4, Reference 1, Enclosure 3, SRP-LR Comments on Chapters 1 and 2, page 1

8. Comments S-3.5-1 through S-3.5-27 in Table B.2.12-5

See Section B.4, Reference 1, Enclosure 3, SRP-LR Comments on Chapter 3, pages 20 through 27

9. Comments 1 through 7 in Table B.2.15

See Section B.4, Reference 1, for Enclosure 5, pages 1 and 2)

10. Comments NEI-14 through NEI-19 in Table B.2.16

See Section B.4, Reference 3

B.4. REFERENCES

Letter from Alex Marion, Director, Licensing and Programs, Nuclear Generation, Nuclear Energy Institute, to Annette Vietti-Cook, Secretary of the Commission, U.S. Nuclear Regulatory Commission, concerning NRC Request for Public Comments on the Draft Guidance Documents for License Renewal (65 FR 53047, August 31, 2000), October 13, 2000.

Letter from Alex Marion, Director, Licensing and Programs, Nuclear Generation, Nuclear Energy Institute, to Annette Vietti-Cook, Secretary of the Commission, U.S. Nuclear Regulatory Commission, concerning NRC Request for Public Comments on the Draft Guidance Documents for License Renewal (65 FR 53047, August 31, 2000), October 26, 2000.

Meeting between NRC staff and NEI representatives on industry's comments on Chapters 2, 4, and 11 of the GALL report based on the NRC Request for Public Comments on the Draft Guidance Documents for License Renewal (65 FR 53047, August 31, 2000), November 8, 2000.

APPENDIX B, TABLE B.2.1

**DISPOSITION OF NEI COMMENTS
ON CHAPTER II OF GALL REPORT**

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Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIA1-1	<p>A1.1 Page II A1-5 Leaching of Calcium Hydroxide</p> <p>Page II A1-7 Aggressive Chemical Attack</p> <p>Page II A1-7 Corrosion of Embedded Steel</p> <p>A1.2 Page II A1-11 Corrosion</p>	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."	<p>The GALL report is not equivalent to rulemaking. It defines a basis acceptable to the staff for aging management for license renewal. To clarify the GALL provisions for aging management of inaccessible areas, the staff has developed specific criteria that can be applied to address inaccessible areas as follows:</p> <p>For the "Aggressive Chemical Attack" and "Corrosion of Embedded Steel" aging mechanisms, aging management of below-grade exterior inaccessible areas is considered satisfied if the applicant establishes that the below-grade environment is not aggressive, in accordance with criteria presented in revised GALL Chapter II.</p> <p>For the "Leaching of Calcium Hydroxide" aging mechanism, aging management of below-grade exterior inaccessible areas is considered satisfied if the applicant establishes that this aging mechanism is not significant, in accordance with criteria presented in revised GALL Chapter II.</p> <p>For corrosion of inaccessible steel areas of containment, the staff's concern is that concrete containment steel liners or steel containment shells that are embedded in the concrete floor slab are potentially subject to</p>

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIA1-1 (cont.)				<p>degradation from inside containment (i.e., water on the containment floor seeping through cracks in the concrete floor or past degraded joint sealants). Specific criteria were added based on a proposal submitted by NEI on 12/4/00 in GALL Chapter II to address inaccessible steel areas of containments.</p> <p>If any of these criteria cannot be satisfied, a plant-specific aging management program is recommended to address that aging mechanism for inaccessible areas. GALL Chapter II tables were revised to incorporate this additional guidance in all applicable locations.</p> <p>GALL, Chapter II was revised to address this comment.</p>
G-IIA1-2	<p>A1.1 Page II A1-5 Leaching of Calcium Hydroxide</p> <p>Page II A1-7 Aggressive Chemical Attack</p> <p>Page II A1-7 Corrosion of Embedded Steel</p>	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.	<p>This was previously captured in GALL XI.S2 in a "Note" under Attribute (6) - Acceptance Criteria. However, to improve clarity, the specific information in GALL IIIA has been added to GALL IIA and IIB.</p> <p>GALL Chapter II was revised to address this comment.</p>

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIA1-3	A1.1 Page II A1-6 Corrosion of Embedded Steel	<p>Add the reference EPRI TR-103842.</p> <p>Change the Environment column to "Exposure to Aggressive Environment" to be consistent with Item IIIA1.1 on page III A1-6.</p>	<p>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.</p>	<p>The first proposed change is no longer relevant because the reference column was removed from the GALL tables.</p> <p>The second proposed change was incorporated in GALL Chapter II to provide consistency with GALL Chapter III.</p> <p>The technical information included in the justification column proposes the use of acceptance criteria for the surrounding environment, in lieu of acceptance criteria for the internal concrete environment. The staff concurs with this proposal. The following sentence has been added to the Evaluation and Technical Basis for aging effects associated with corrosion of embedded steel: "Alternatively, If the environment surrounding the concrete is not aggressive (pH > 5.5, chlorides < 500 ppm, sulfates < 1,500 ppm), corrosion of embedded steel is not significant."</p> <p>GALL Chapter II was revised to address this comment.</p>
G-IIA1-4	A1.1 Page IIA1-6 Reaction with Aggregates	Aging effect should be cracking	<p>The aging effect is cracking. Expansion would lead to cracking.</p>	<p>The aging effect is more correctly identified as cracking. "Expansion and Cracking" has been changed to "Cracking."</p> <p>GALL Chapter II was revised to address this comment.</p>

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIA1-5	A1.1 Page IIA1-8 Settlement	Region of interest is Dome, wall and basemat.	Provided as clarification.	To be consistent with other locations in the GALL report, the word "All" has been replaced by "Dome, Wall, Basemat, Ring Girder, Buttresses." GALL Chapter II was revised to address this comment.
G IIA1-6	A1.1 Page II A1-8 Elevated Temperature	'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.	The proposed change is no longer relevant because the Reference column was removed from the GALL report. GALL Chapter II was not revised to address this comment.
G-IIA1-7	A1.1 Page II A1-8 Elevated Temperature	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.	The proposed addition follows the requirements of ASME Section III, Division 2, Subsection CC-3440 and has been incorporated in GALL Chapter II. Evaluation of load-bearing localized areas has also been added. GALL Chapter II was revised to address this comment.
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.	The phrase "as referenced in this section" is not considered necessary. It is understood that the evaluation applies only to the items listed. The proposed sentence may be confusing instead of clarifying. GALL Chapter II was not revised to address this comment.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	Reference to structural steel is inappropriate. "Structural Steel" has been replaced with "Integral Attachments" in the GALL report. Integral attachments to the containment steel shell or liner are within the scope of IWE. GALL Chapter II was revised to address this comment.
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 compromise a containment's structural integrity.	The leak tightness is an intended function of containment [10 CFR 54.4(a)(1)(iii)] and is not included in the ISI requirements of IWE. Measurement of an unacceptable leak rate would require an assessment of the cause. The cause may be due to aging degradation from loss of material, cracking, and/or change in material properties. Consequently, this program supplements the ISI program for detecting aging effects. Although the 1992 and 1995 editions of IWE reference App. J leak rate testing for certain examinations, they are not as comprehensive as the requirements of 10 CFR Part 50, Appendix J. In addition, the 1998 and later editions of IWE no longer reference App. J leak rate testing. With respect to the Coatings Program, the GALL report (XI.S8) defines a technical basis acceptable to the staff for a coatings monitoring

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIA1-10 (cont.)				<p>and maintenance program. If a coatings program is credited for managing loss of material due to corrosion during the current licensing term, then the GALL report recommends that it should be continued during the period of extended operation. An example of this is a relief request from IWE inspections based on maintenance of protective coatings to control corrosion. The staff has clarified the Chapter II of the GALL report in all applicable locations with respect to the protective coatings program.</p> <p>GALL Chapter II was revised to address this comment.</p>
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.	<p>The proposed change is no longer relevant because the reference column was removed from the GALL report.</p> <p>GALL Chapter II was not revised to address this comment.</p>
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.	<p>The proposed change is no longer relevant because the reference column was removed from the GALL report.</p> <p>Also ACI 318-95 does not address TLAA for loss of tendon prestress.</p> <p>GALL Chapter II was not revised to address this comment.</p>

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The discussion of the tendon access gallery was for information only, to indicate that managing the condition and environment in the tendon access gallery is a prudent way to manage degradation of tendon anchorage components located there. GALL did not impose any requirement for aging management of the tendon access gallery because the tendon access gallery does not serve an intended function, in accordance with the criteria of 10 CFR Part 54. Since the paragraph in question is not an essential part of GALL, it has been deleted from GALL Chapter II in all applicable locations. GALL Chapter II was revised to address this comment.
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 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.	See NRC Disposition of NEI Comment G-IIA1-10 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIA2-4	<p>A2.2 Pages II A2-6 & II A2-7 Freeze/Thaw, Leaching of Calcium Hydroxide, Aggressive Chemical Attack</p> <p>Pages II A2-8 & II A2-9 Reaction of Aggregate and Corrosion of Embedded Steel</p> <p>Pages IIA2-10 & IIA2-11 Elevated Temperature</p>	<p>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.</p> <p>Add these references to the reference column.</p> <p>Add "or Structures Monitoring Program" in the AMP column and add statement "See Chapter XI.S6" in the Evaluation & Technical Basis column.</p>	<p>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.</p> <p>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.</p>	<p>The first proposed change is no longer relevant because the reference column was removed from the GALL report.</p> <p>The second proposed change, to credit the Structures Monitoring Program (XI.S6) in lieu of IWL (XI.S2) is inappropriate. The Structures Monitoring Program is applicable to concrete <u>not</u> within the IWL scope. An applicant cannot substitute the Structures Monitoring Program for aging management of concrete that is within the IWL scope.</p> <p>GALL Chapter II was not revised to address this comment.</p>
G-IIA2-5	A2.2 Page IIA2-11 Elevated temp	<p>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.</p>	<p>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.</p>	<p>See NRC Disposition of NEI Comment G-IIA1-8 in this Appendix B, Table B.2.1.</p>

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	10 CFR 50.55a does not state that examination of dissimilar metal welds is optional. 10 CFR 50.55a states that IWE Examination Category E-F, which is a surface examination of dissimilar metal welds (e.g., liquid penetrant inspection), is optional. IWE Examination Categories E-A and E-C are also applicable to dissimilar metal welds and are required by 10 CFR 50.55a. Based on discussion with NEI at the 1/30/01 meeting, GALL Chapter II was revised at all appropriate locations to indicate that IWE Examination Category E-F is optional. GALL Chapter II was revised to address this comment.
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.	See NRC Disposition of NEI Comment G-IIA1-10 in this Appendix B, Table B.2.1.
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.	Fatigue is a TLAA and is not addressed by 10 CFR 50.55a. GALL Chapter II was not revised to address this comment.
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.	See NRC Disposition of NEI Comment G-IIA3-1 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	Visual inspection VT-1 is not effective. The phrase "(one option may be to perform VT-1 visual inspections)" has been deleted throughout GALL Chapters II and III, as applicable. The applicant should describe a plant-specific approach to detection of fine cracks in its application. GALL Chapter II was revised to address this comment.
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.	See NRC Disposition of NEI Comment G-IIA1-10 in this Appendix B, Table B.2.1.
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).	A passive intended function meeting the criteria of 10 CFR Part 54 exists for locks, hinges, and closure mechanisms on containment airlocks and hatches during normal operation. It is to maintain leak-tight integrity of airlocks and hatches when they are in the closed position. Consequently, the wording in GALL IIA.3 and IIB.4 was revised to be consistent with NEI's original comment. The staff maintains that these items are within the LR scope. The staff has revised GALL to specify that aging management is accomplished by existing Appendix J leak rate testing and plant-specific Technical Specifications. No augmentation or further evaluation is needed. GALL Chapter II was revised to address this comment.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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 areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.
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.	See NRC Disposition of NEI Comment G-IIA1-10 in this Appendix B, Table B.2.1.
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.	See NRC Disposition of NEI Comment G-IIA3-5 in this Appendix B, Table B.2.1.
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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC Disposition of NEI Comment G-IIA3-5 in this Appendix B, Table B.2.1.
G-IIB2-3	B2.2.1 Page II B2-9 Concrete Elements Leaching	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 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.	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.
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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC Disposition of NEI Comment G-IIA1-2 in this Appendix B, Table B.2.1.
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 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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.
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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.
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.	See NRC Disposition of NEI Comment G-IIA1-2 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.
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 areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas."	See NRC Disposition of NEI Comment G-IIA1-1 in this Appendix B, Table B.2.1.
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.	See NRC Disposition of NEI Comment G-IIA3-1 in this Appendix B, Table B.2.1.
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.	See NRC Disposition of NEI Comment G-IIA3-3 in this Appendix B, Table B.2.1.

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>If a CLB fatigue analysis exists, then this is covered under the "Fatigue" aging mechanism. The "Cyclic Loading" aging mechanism is intended to address cases where cyclic loading is applicable, but a CLB fatigue analysis does not exist. GALL IIB4 and IIA3 were revised to clarify this distinction.</p> <p>GALL Chapter II was revised to address this comment.</p>

Table B.2.1: Disposition of NEI Comments on Chapter II of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>With respect to fatigue cracks, see NRC Disposition of NEI Comment G-IIA3-5 in this Appendix B, Table B.2.1.</p> <p>With respect to SCC cracks, the staff notes that problems regarding Type B local leak rate testing for 2-ply bellows have been described in NRC IN 92 20; this should be addressed in an applicant's Appendix J program.</p> <p>In the Evaluation and Technical Basis, Attribute (4), for SCC, "augmented VT-1 visual examination" has been deleted and the last sentence revised to read: "For the period of extended operation, Examination Categories E-B & E-F and additional appropriate examinations to detect SCC in bellows assemblies and dissimilar metal welds are warranted to address this issue."</p> <p>This revision has been implemented throughout GALL Chapter II, as applicable.</p> <p>GALL Chapter II was revised to address this comment.</p>

APPENDIX B, TABLE B.2.2

**DISPOSITION OF NEI COMMENTS
ON CHAPTER III OF GALL REPORT**

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Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-III A1-1	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.	<p>The only concern for aging degradation of below-grade concrete is restricted to the presence of a below-grade aggressive environment, which may lead to chemical attack of the concrete and corrosion of embedded steel. Specific criteria that define an aggressive below-grade environment have been added to GALL IIIA. In the presence of an aggressive below-grade environment, a plant-specific aging management program is needed and must be described in the license renewal application.</p> <p>GALL IIIA was revised to address this comment.</p>
G-III A1-2	III A1.1, 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.		See NRC disposition of NEI Comment G-III A1-1 in this Appendix B, Table B.2.2.
G-III A1-3	III A1.1, erosion of porous concrete, page III A1-8	Delete sections on porous concrete throughout the document. Including III A2.1, page III A2-8; III A3.1, page III A3-8; III A5.1, page III A5-8; III A6.1, page III A6-8; III A7.1, page III A7-8; III A8.1, page III A8-8.	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.	<p>Many entries in GALL address aging effects that do not generically apply to all NPPs. It is appropriate to include it, so that affected plants address it for the period of extended operation.</p> <p>GALL IIIA was not revised to address this comment.</p>

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The concern is for loss of strength, cracking and differential settlement of the foundation, which is reinforced concrete. However, for completeness, GALL IIIA has been revised to add "subfoundation" and "porous concrete" in the structural component and material columns, respectively. GALL IIIA was revised to address this comment.
G-III.A1-5	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.	Clarified the applicability of a protective coatings program as follows: "If protective coatings are relied upon to manage the effects of aging, the structures monitoring program must include requirements to address protective coatings monitoring and maintenance." GALL IIIA was revised to address this comment.
G-III.A1-6	III A1.2, corrosion, page IIIA1-9	Delete requirement on inaccessible areas. Including IIIA3.2, page IIIA3-9 IIIA5.2, 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.	There is no generic concern relating to aging of inaccessible structural steel in Class 1 structures. The proposed deletions have been implemented. GALL IIIA was revised to address this comment.

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-III A1-7	III.A1.3, page III A1-9 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.	Guidance on the applicability of XI.S6 "Structures Monitoring Program" for aging management of masonry walls was added to the 'Program Description' of XI.S5. The AMP for masonry walls can be either the XI.S6 "Structures Monitoring Program" or the XI.S5 "Masonry Wall Program." AMP XI.S5 was revised to address this comment.
G-III A2-1	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.	See NRC disposition of NEI Comment G-III A1-7 in this Appendix B, Table B.2.2.
G-III A3-1	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.	See NRC disposition of NEI Comment G-III A1-7 in this Appendix B, Table B.2.2.

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-III A5-1	A5.2, liners, page III A5-9	On Page III A5-9, delete the discussion in the Evaluation and Technical Basis column and insert the Water Chemistry Program as the applicable AMP and add referral to Chapter XI-M11.	The water chemistry program precludes aging effects by maintaining the spent fuel pool parameters such that degradation would not occur.	The Water Chemistry Program (now XI.M2) has been identified as the applicable AMP. However, in addition to the Water Chemistry Program, the monitoring of the spent fuel pool water level is also necessary, because reliance solely on control of water chemistry does not manage potential degradation from the concrete side of the spent fuel pool liner. Such degradation has occurred at one plant. GALL III A was revised to address this comment.
G-III A5-2	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.	See NRC disposition of NEI Comment G-III A1-7 in this Appendix B, Table B.2.2.
G-III A6-1	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.	See NRC disposition of NEI Comment G-III A1-7 in this Appendix B, Table B.2.2.
G-III A8-1	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.		See NRC disposition of NEI Comment G-III A1-1 in this Appendix B, Table B.2.2.

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-III A8-2	III A8.2, 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.	Stainless steel liners for tanks are appropriately addressed in GALL, as part of the structure. The aging effect addressed in GALL III A has not been duplicated in other sections of GALL. GALL III A was not revised to address this comment.
G-III B1-1	III B1.1 page III B1-4 to III B1-17	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.	To improve clarity, the title of III B1 was changed to "Supports for ASME Piping and Components" and the title of III B1.3 was changed to "Supports for ASME Class MC Components." The supports covered by III B1.3 are for certain BWR containment components, such as downcomers, vent lines, and torus. GALL III B was revised to address this comment.
G-III B1-2	III B1.1.1, page III B1-4; III B1.1.3, page III B1-8 III B1.1.4, page III B1-8; III B1.2.1, page III B1-10; III B1.3.1, page III B1-14; III B1.3.3, page III B1-16; III B2.3, page III B2-6; III B3.2,	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	Cracks in steel elements of component supports caused by vibratory stresses above the material endurance limit would develop in a matter of hours or days. This time frame is not consistent with the requirements of the License Renewal Rule, which address slow aging processes affected by extended operation. The potential for cracking induced by other cyclic loads, such as thermal cycling of the supported system, is implicitly considered in

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIIB1-2 (cont.)	page IIIB3-4; IIIB4.3, page IIIB4-6; IIIB5.2, page IIIB5-4		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 configurations to ensure the event is location specific or a one-time event.	<p>structural steel design through the specification of conservative design allowable stresses that account for a minimum of 10^5 load cycles.</p> <p>However, concrete located around expansion, undercut or embedded anchors for component supports is susceptible to cracking as a result of service-induced loads on the supports. This could result in reduced capacity of the support anchorage and consequential failure of the anchorage during a design-basis event (e.g., earthquake). Maintaining sound conditions in the concrete around support anchors is critical to the intended function of the support and requires aging management.</p> <p>GALL IIIB was revised to retain aging management of concrete surrounding expansion, undercut, and embedded anchors; the Structures Monitoring Program is identified as the applicable AMP.</p> <p>At the 1/30/01 meeting with NEI, the staff again reviewed operating experience and NRC-sponsored testing of concrete anchor capacities when cracking is present. It was concluded that concrete cracking is significant for expansion anchors and grouted anchors, but not for</p>

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIIB1-2 (cont.)				cast-in-place anchors and undercut anchors. GALL has been revised to reflect this conclusion. GALL IIIB was revised to address this comment..
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.	Cracking due to SCC is not adequately managed by IWF, which only requires a VT-3 visual inspection of most support details. Cracking of bolts due to SCC can only be detected by examinations developed specifically for this purpose. Bolting Integrity Program (XI.M18) was revised to include consideration of stress corrosion cracking (SCC) for high strength bolting associated with NSSS supports. For additional discussion concerning special inspection of bolting, see NRC Disposition of NEI Comment G-V-E-7 in this Appendix B, Table B.2.4. GALL IIIB was not revised, but AMP XI.M18 was revised to address this comment.

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	"Yield strength" is the correct terminology not "tensile strength." As noted in NUREG-1339, the 150 ksi criterion is applied to "actual" yield strength, not "minimum specified" yield strength. GALL IIIB was revised to address this comment.
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.	The three table entries cited are only applicable if a CLB fatigue analysis exists, which by definition is a TLAA. GALL IIIB was not revised to address this comment.

Table B.2.2: Disposition of NEI Comments on Chapter III of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IIIB1-6	<p>III.B1.1.1, Cracking, page III B1-5</p> <p>III.B1.2.1, Cracking, page III B1-11</p> <p>III.B1.3.1, Cracking, page III B1-15</p>	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.	<p>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:</p> <p>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.</p> <p>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.</p> <p>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.</p>	See NRC Disposition of NEI Comment G-IIIB1-2 in this Appendix B, Table B.2.2.
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.	See NRC Disposition of NEI Comment G-IIIB1-2 in this Appendix B, Table B.2.2.
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.	See NRC Disposition of NEI Comment G-IIIB1-2 in this Appendix B, Table B.2.2.

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APPENDIX B, TABLE B.2.3

**DISPOSITION OF NEI COMMENTS
ON CHAPTER IV OF GALL REPORT**

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Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-1a	General comments	(a) Further evaluation should not be required where existing programs manage applicable aging effects. The meaning of the "Further Evaluation Recommended" column is not clear.	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.	<p>The column "Further Evaluation" identifies one or more of the 10 elements of the existing AMP that need augmentation and require further evaluation. If existing programs manage applicable aging effects and no further evaluation is required then a "no" is placed in the column. This comment was simply requesting clarification.</p> <p>The GALL report was not revised to address this comment.</p>
G-IV-1b	General comments	(b) 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).		<p>The arrangement proposed by NEI is generally followed in the GALL report. Making a separate section for pumps does not provide added value since the region of interest for the pumps is only the pressure boundary. There is no substantial advantage to be gained by the suggested reformatting.</p> <p>The GALL report was not revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-1c	General comments	(c) 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.		<p>The GALL report describes the existing aging management programs (AMPs) that may be used to satisfy the requirements of 10 CFR 54. The requirements in 10 CFR 50.55a are for both the current and license renewal terms. The requirements of both 10 CFR 50.55a and 10 CFR 54 must be satisfied during the license renewal term.</p> <p>Cracking at vessel welds was not viewed to be a credible aging effect by NRC and thus is not included in the GALL report.</p> <p>The GALL report was not revised to address this comment.</p>
G-IV-2	<p>B2.1.1, B2.1.4, B2.1.7+ for W internals</p> <p>B3.1.1, B3.1.3+ for CE internals</p> <p>B4.1.1, B4.1.5+ for B&W internals</p> <p>No BWR items at this time</p>	<p>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."</p> <p>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-LR should be revised to read "This inspection is capable of detecting significant changes in</p>	<p>The GALL and the SRP-LR 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.</p> <p>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</p>	<p>The NEI comment is too general and will not be incorporated until reactor vessel internals research programs resolve the void swelling issue. For additional modifications to GALL based on similar comments, see NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-2 (cont.)		<p>dimension, but is not sufficient to detect loss of ductility directly."</p> <p>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.</p>	be adequately covered by these changes.	
G-IV-3	C1.1.13 (BWR), C2.1.5 (PWR)	<p>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.</p>	<p>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.</p> <p>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.</p> <p>The report recommends that "A plant-specific destructive examination or a nondestructive examination (NDE) that permits inspection of the inside surfaces of</p>	<p>It is not necessary to separate stress corrosion cracking (SCC) and unanticipated thermal and mechanical loading because the effect can be synergistic. Operating experience demonstrates that small-bore piping has an aging effect that requires managing in the extended term. GALL recommends that a plant-specific destructive examination or a nondestructive examination (NDE) that permit inspection of the inside surfaces of the piping needs to be conducted. For Class 1 piping with a diameter smaller than nominal pipe size (NPS) 4 inch, GALL recommends the one-time inspection be performed to confirm whether crack initiation and growth due to stress corrosion cracking (SCC) or cyclic loading is occurring or not. This one-time inspection can also verify the effectiveness of the chemistry program.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-3 (cont.)			<p>the piping" be performed "to ensure that cracking has not occurred and the component intended function will be maintained during the extended period."</p> <p>This should not be necessary when reactor coolant chemistry programs and plant detection systems are in place.</p>	The GALL report was not revised to address this comment.
G-IV-4	A2.3.1, A2.3.3	<p>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:"</p> <p>(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. 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.</p> <p>(2) The GALL report also states that "Appendix H to 10 CFR Part 50 requires the reactor vessel materials surveillance program to meet the</p>	<p>License renewal applicants have been able to demonstrate that, while nozzle course materials may exceed the neutron fluence threshold of 10^{17} n/cm² (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.</p>	<p>This comment is similar to several other comments where NEI is suggesting that the threshold should be raised to 10E21. In order to address these type comments the following was modified in GALL.</p> <p>The threshold or trigger value should not be changed to 10E21 as NEI commented because of the lack of data to support this value as a threshold. The GALL recommendation is that the most susceptible locations should be monitored and inspected and it is not necessary to identify all locations exceeding 10E17. For the vessel, the threshold must stay at 10E17 to be consistent with 10 CFR 50 Appendix H.</p> <p>See NRC disposition of NEI comment GIVB3-17 in this Appendix B, Table B.2.3. The GALL was revised by recommending use of an enhanced visual inspection to</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-4 (cont.)		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."		<p>detect tight cracks in non-bolted applications. Then, no further evaluation will be required for these components. This option is for SCC/IASCC and neutron embrittlement, and the response in "Further Evaluation" column was changed to "no."</p> <p>Specifically, a new program in GALL chapter XI was developed to articulate this approach. The program includes (a) augmentation of the inservice inspection (ISI) in accordance with the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWB, Table IWB 2500-1 (1995 edition through the 1996 addenda, or later edition as approved in 10 CFR 50.55a) for certain susceptible or limiting components or locations, and (b) monitoring and control of reactor coolant water chemistry in accordance with the EPRI guidelines in TR-105714 to ensure the long-term integrity and safe operation of pressurized water reactor (PWR) vessel internal components. Augmentation of the ASME Section XI ISI includes enhanced visual examinations of non-bolted components, and other demonstrated acceptable methods for bolted components. The</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-4 (cont.)				<p>inspection methods for bolted components must be submitted for the NRC staff review beginning of the license renewal period. The program is focused on managing the effects of crack initiation and growth due to stress corrosion cracking (SCC) or irradiation assisted stress corrosion cracking (IASCC), and loss of fracture toughness due to neutron irradiation embrittlement or void swelling. The program contains preventive measures to mitigate SCC or IASCC; ISI to monitor the effects of cracking on the intended function of the components; and repair and/or replacement as needed to maintain the ability to perform the intended function. Loss of fracture toughness is of consequence only if cracks exist. Cracking is expected to initiate at the surface and should be detectable by augmented inspection. The program provides guidelines to assure safety function integrity of the subject safety-related reactor pressure vessel internal components, both non-bolted and bolted components. The program consists of the following elements: (a) identify the most susceptible or limiting items, (b) develop appropriate inspection techniques to permit detection and characterizing</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-4 (cont.)				<p>of the feature (cracks) of interest and demonstrate the effectiveness of the proposed technique, and (c) implement the inspection during the license renewal term. For non-bolted components, this program recommends enhanced visual examinations. For bolted components, this program recommends other demonstrated acceptable inspection methods; these methods must be submitted for the NRC staff review beginning of the license renewal period. A comment was made at the January 25th meeting that we should only use the enhanced VT-1 as an example. GALL was verified to contain enhance VT-1 as an example.</p> <p>Specifically for this NEI comment, applicable for both PWR and BWR reactor vessel nozzles, was addressed.</p> <p>(a) The first sentence in (1) applies to TLAA situation on pg. IVA2-15, the first row (August 2000 version of GALL). In NUREG-1801, Vol. 2, the sentence "The applicant may choose to demonstrate that the materials in the inlet, outlet, and safety injection nozzles are not controlling for the TLAA evaluations" was incorporated into the AMPs for</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-4 (cont.)				<p>line items A1.3-e (earlier designation A1.3.4) and A2.3-a (earlier designation A2.3.1-A2.3.3).</p> <p>(b) The second sentence in (1) applies to the second row on p. IV A2-15 (August 2000 version of GALL). In NUREG-1801, Vol. 2, AMP XI.M31 "Reactor Vessel Surveillance" the sentence "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" was added as item #8 in the program description.</p> <p>The GALL report was revised to address this comment.</p>
G-IV-5	A2.2.1, A2.7.1, A2.7.2, C2.5.6, C2.5.10	Chapter IV of the GALL report should be revised to eliminate the augmented program requirements for bottom head instrumentation 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).	The justification for the adequacy of existing activity for Ni-Fe-Cr CRDM nozzles is based on the following information from the GALL report: 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.	<p>The AMP for Item A2.2.1 (Control Rod Drive Head Penetration) is sufficient for Items A2.7.2 and A2.7.3.</p> <p>For bottom head instrumentation tubes (Item A2.7.1), pressurizer instrument penetrations (Item C2.5.6) and pressurizer heater sheaths and sleeves (Item C2.5.10) credit is given for Inservice Inspection for Class 1 components and Water Chemistry and the applicant provides a plant-specific</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-5 (cont.)			<p>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.</p> <p>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.</p> <p>However, several of these same justifications are apparently insufficient for bottom head instrumentation tubes (Item A2.7.1), the vessel head vent pipe (Item A2.7.2), pressurizer instrument penetrations (Item C2.5.4), and</p>	<p>AMP or participates in industry programs to determine appropriate AMP for PWSCC of Inconel 182 welds.</p> <p>The GALL report was revised to address this comment by eliminating the need for an augmented program (plant specific program) for the vessel closure head penetrations such as vessel head vent pipe (Item A2.7.2) and other top head penetration (new Item A2.7.3 added) because they are covered by GL 97-01.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-5 (cont.)			<p>pressurizer heater sheaths and sleeves (Item C2.5.6). This should not be the case.</p> <p>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.</p>	
G-IV-6	<p>B2.1.3, B2.1.7, B2.4.2, B2.5.5, B2.5.7, W Plants</p> <p>B3.2.2, B3.4.2, B3.4.3, CE Plants</p>	SRP-LR 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-LR references the GALL report for recommendations for inservice inspection activities to manage loss of preload.	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	<p>The wording for AMP description for Item B2.1.3 and other similar items in Section B2 and B3 (related to stress relaxation and loss of preload) have been revised as follows:</p> <p>For items B2.1.7 and B2.5.7, an acceptable AMP requiring no further evaluation includes visual inspection</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-6 (cont.)	B4.3.4 B&W Plants Other items in B&W plants: B4.9.2, B4.5.2, B4.5.3, B4.5.5, B4.6.3, B4.6.7, B4.7.2	<p>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:</p> <p>"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."</p> <p>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.</p>	<p>closure integrity in components. An augmented inspection program to determine critical locations and appropriate monitoring and inspection techniques may be necessary."</p> <p>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.</p> <p>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.</p> <p>Therefore, the enhanced inspection requirements for baffle/former bolts are understandable. Other enhanced inspection requirements are not justified.</p>	<p>performed according to Category B-N-3 of Subsection IWB, ASME Section XI, and either neutron noise monitoring or loose part monitoring to detect relevant conditions of degradation. For remaining items other than baffle bolts (items B2.42 and B4.5.5), an acceptable AMP requiring no further evaluation includes visual inspection performed according to Category B-N-3 of Subsection IWB, ASME Section XI, and loose part monitoring to detect relevant conditions of degradation.</p> <p>The GALL report was corrected for Items B3.4.2 and B3.4.3 (CE plants). For these two items, further evaluation is not needed. This was a misprint.</p> <p>Regarding Item B4.3.4 and other items in B&W plants (there was no item B4.9.2, this was an NEI misprint), ISI in accordance with Section XI, Subsection IWB alone needs to be augmented. This disposition is based on the following information from the Oconee SER (pp. 3-120, 3-121, NUREG-1723): Duke is participating in industry programs to investigate the effect of stress relaxation along with other aging mechanisms. Based on the results of these programs, Duke will be developing an inspection</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-6 (cont.)				<p>program for the RVI. GALL report recommends ISI and loose part monitoring.</p> <p>The GALL report was revised to address this comment as stated above.</p>
G-IV-7	<p>A2.2.2, B2.1.2, B2.5.3, B2.5.4, W Plants</p> <p>B3.2.1, B3.5.4, CE Plants</p> <p>B4.3.2, B4.4.3, B4.4.4, B&W Plants</p> <p>B1.4.8, B1.5.1, C1.1.6 to C1.1.11, C1.2.1, C1.3.1, C1.3.2, BWR Plants</p> <p>C2.1.1 to C2.1.3, C2.2.7, C2.3.1, C2.4.1,</p>	<p>(a) 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.</p> <p>(b) 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.</p> <p>(c) The 25 % limit on delta ferrite for which the comparison of SAW crack growth resistance is comparable to thermally aged CASS should be reassessed.</p> <p>(d) The SRP-LR and the GALL report accept the industry screening criteria (i.e., casting method, Mo content, delta ferrite content) for susceptibility of CASS components</p>	<p>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.</p> <p>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</p>	<p>(a) Examination Category B-N-3 inspections (VT-3 inspections) can not detect cracks in cast stainless steel components and, therefore, needs to be augmented to manage the effects of thermal aging embrittlement.</p> <p>(b) CASS piping thermal aging embrittlement effects are managed by AMP XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel " (NUREG-1802, Vol. 2). As mentioned in Element 4 "Detection of Aging Effects" the inspection must include base metal to a distance of one-pipe-wall thickness or 0.5 in., whichever is greater, on both sides of the weld.</p> <p>c) The data of EdF (France) on JR curves for CF-8M compositions with >25% ferrite clearly show that the fracture toughness J-R curves of thermally embrittled steels are below the J-R curve for SAW. The evaluation procedures and acceptance criteria of IWB 3640 are applicable to pipe and pipe fittings</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-7 (cont.)	C2.5.3, C2.5.4, PWR Plants	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.	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 %.	<p>that are made of cast SS with ferrite level less than 20% or FN20. The GALL report extends that limit to 25% ferrite.</p> <p>The GALL report recommends that flaw evaluation for components with >25% ferrite is performed on a case-by-case basis by using fracture toughness data provided by the applicant. Extensive research data indicate that the lower-bound fracture toughness of thermally aged CASS material with up to 25% ferrite is similar to that for SAWs with up to 20% ferrite (Lee et al., Intl. J. Pres. Ves. & Piping, 72, 37-44, 1997). Fracture toughness data for CASS materials with 25-35% ferrite are available in the following papers:</p> <ol style="list-style-type: none"> 1. Jayet-Gendrot, Ould, and Balladon, Fontevraud III, 90-97, 1994. 2. Jayet-Gendrot, Ould, and Meylogan, Nucl. Eng. & Des., 184, 3-11, 1998. 3. Jayet-Gendrot, Ould, and Meylogan, PVP Vol-304, 163-169, 1996. <p>These results clearly show that the fracture toughness J-R curves for CASS materials with 25-35% ferrite are lower than that for SAW.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-7 (cont.)				NEI commented that 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 GALL report recommends the AMP described in the letter from Grimes to Walters, License Renewal Issue No. 98-0030, May 19, 2000. The AMP recommends inspection of the limiting base metal of CASS components. For thermal embrittlement of potentially susceptible piping, the AMP provides for volumetric examination of the base metal, with the scope of the inspection covering the portions determined to be limiting from the standpoint of applied stress, operating time, and environmental conditions. For thermal and neutron embrittlement of susceptible components, the AMP includes a supplemental inspection covering portions of the susceptible components determined to be limiting from the standpoint of thermal aging susceptibility (i.e., ferrite and molybdenum contents, casting process, and operating temperature), neutron fluence, and cracking susceptibility (i.e., applied

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-7 (cont.)				<p>stress, operating temperature, and environmental conditions). The applicant has the option to demonstrate that the 0.5-inch of base metal on either side of the welds is limiting.</p> <p>d) See NRC disposition of NEI comment G-IV-7, Part (c) in this Appendix B, Table B.2.3.</p> <p>The GALL report was not revised to address this comment for any of the proposed changes.</p>
G-IV-8	Fatigue TLAA	<p>(a) SRP-LR 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</p>	<p>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</p>	<p>(a) Fatigue can be included in an inspection program if an applicant can justify it can manage its aging effects. Under the iii option, inspection can be proposed and will be reviewed on a case-by-case basis because there is no staff approved procedure. Appendix L is not referenced in the AMP because of outstanding technical issues against it that require resolution. Further staff review will be required if an applicant proposes use of Appendix L.</p> <p>b) Resolution of GSI 190 requires that GALL must address environmental effects. The NEI rationale is that environmental effects are not a TLAA. The staff does not agree with the NEI recommendation. Environmental</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-8 (cont.)		<p>for managing fatigue effects.</p> <p>The SRP-LR 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)."</p> <p>(b) Finally, the TLAA discussion describes 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-LR 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,</p>	<p>activity should also be acceptable to the NRC staff.</p> <p>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.</p> <p>References to augmented TLAA evaluations that include reactor water environmental effects should be eliminated from the SRP-LR 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 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</p>	<p>concerns relate to conservatism of the fatigue calculation that is a TLAA. The issues should not be separated.</p> <p>The GALL report was not revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IV-8 (cont.)		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."	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.	Usage is monitored to prevent cracking directly. The AMP does not directly monitor cracking but tracks the cumulative usage factor to prevent cracking. Cumulative fatigue damage is the appropriate aging effect and terminology. The GALL report was not revised to address this comment.
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.	EPRI TR-103515, Rev. 1 (BWRVIP-29) or later approved version is acceptable. BWRVIP-29 will not be replaced by BWRVIP-79 because generic review of BWRVIP 79 has not been requested and, therefore, it has not been reviewed. The GALL report was not revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>The references to various RICSIL documents such as RICSIL 055, 455, 462, or 409 have been deleted. While the RICSIL is a tool that can be used by an owner to manage cracking, it is not required by GALL. The staff will revise the program description to delete reference to the RICSIL.</p> <p>The GALL report was revised to address this comment.</p>
G-IVA1-3	IV-A1.2.4 and A1.2.6	<p>In the first occurrence of this item the following changes should be made in the Evaluation and Technical Basis column.</p> <p>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.</p> <p>In the same sentence, delete item "d)" in its entirety.</p>	<p>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.</p> <p>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.</p>	<p>(1) The words "and axial reactor vessel welds" were deleted from "a)."</p> <p>(2) The item d) is deleted. The approach specified in a staff letter dated May 7, 2000 was also referenced.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The appropriate AMPX1.M5 "BWR Feedwater Nozzle" (NUREG-1801, Vol. 2) includes inservice inspection (ISI) in conformance with the requirements of the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWB, Table IWB 2500-1 (1995 edition through the 1996 addenda, or later edition as approved in 10 CFR 50.55a), as revised by the provisions of NUREG-0619, the Nuclear Regulatory Commission (NRC) Generic Letter (GL) 81-11, and the alternative recommendation of General Electric (GE) NE-523-A71-0594. The GE document is an approved alternative to NUREG-0619 and GL 88-11. The GALL report was revised to address this comment.
G-IVA1-5	IV-A1.3.2 and 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	There are approved analyses of feedwater and CRDRL nozzles. However, design fatigue analyses for these nozzles are on record and need to be extrapolated to 60 years. Therefore (for unique identifier A1.3-d, items IV-A1.3.2 and A1.3.3), the fatigue evaluation for a nozzle is a TLAA and there is a "Yes" in the "Further Evaluation" column. NEI commented that every place the "aging effect" is identified as "cumulative fatigue damage," it

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA1-5 (cont.)			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.	should be revised to "cracking." The staff believes that usage is monitored to prevent cracking directly. The AMP does not directly monitor cracking but tracks the cumulative usage factor to prevent cracking. Cumulative fatigue damage is the appropriate aging effect and terminology. GALL report was not revised to address this comment.
G-IVA1-6	IV-A1.4.1 and 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.	The aging effects of nozzle safe ends are managed by AMPs XI.M7 "BWR Stress Corrosion Cracking" and XI.M2 "Water Chemistry" (NUREG-1801, Vol. 2). The AMP XI.M7 references the BWRVIP-03 internals examination guidelines. The GALL report was revised to address this comment by deleting the reference from AMP X1.M7 because safe-ends are not covered in the BWRVIP-03.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA1-7	IV-A1.4.3	<p>a) Change the "Further Evaluation" column to read "No."</p> <p>b) Also, change the aging effect to "cracking."</p>	<p>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.</p>	<p>a) The safe-end fatigue evaluation is a TLAA.</p> <p>NUREG-0619 only refers to ASME Section XI, Examination Category B-D, which includes full penetration welded nozzles in vessels and not the nozzle safe ends.</p> <p>(b) NEI commented that every place in GALL the "aging effect" is identified as "cumulative fatigue damage", it should be revised to "cracking." The staff believes that usage is monitored to prevent cracking directly. The AMP does not directly monitor cracking but tracks the cumulative usage factor to prevent cracking. Cumulative fatigue damage is the appropriate aging effect and terminology.</p> <p>The GALL report was not revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The aging effects of BWR reactor vessel penetrations are managed by AMPs XI.M8 "BWR Bottom Head Penetrations" and XI.M2 "Water Chemistry" (NUREG-1801, Vol. 2). VIP-62 reference has been added to the GALL report for plants using hydrogen water chemistry. Both VIP-62 and VIP-75 were used as references. (VIP-75 refers to revised inspection program for piping.) The GALL report was revised to address this comment.
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.	See NRC disposition of NEI Comment G-IV-1c in this Appendix B, Table B.2.3. The GALL report was not revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>The Boric Acid Corrosion program in the GALL report, which relies on implementation of NRC Generic Letter 88-05, provides a stand-alone program for inspection of carbon steel structures and components for evidence of boric acid leakage and corrosion. ASME-Code inservice inspections (ISI) that detect leakage during the performance of pressure and hydrostatic tests were deleted from BAC program since it is independent of the ISI inspections.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>The words "design requirements" were deleted from Element (2), Preventive Actions, of the Evaluation and Technical Basis discussion. The design requirements of Reg Guide 1.65 were removed from GALL because they are not considered an aging management program. RG 1.65 preventive-maintenance features are a CLB requirement and will continue into the extended period. RG 1.65 preventive measures such as the use of acceptable surface treatments and stable lubricants are presented in GALL. These mitigation measures are an effective option for reducing SCC or IGSCC, for the AMP to be effective.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>Element (7) of the Evaluation and Technical Basis discussion was revised as suggested by the comment to include repair or replacement for corrective action.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>This component is included in the vessel report (BAW-2251A). The vessel flange leak detection line has the LR function of pressure boundary in some plants and has been included in earlier LR applications. Even though this component may not be in scope at some plants, the GALL report should be generic and accommodate those plants that have this component in scope.</p> <p>The GALL report was not revised to address this comment.</p>
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.	See NRC disposition of NEI comment G-IVA2-5 in this Appendix B, Table B.2.3.
G-IVA2-7	A2.2	Add flange bolting.	Missing items. See BAW-2251A description of flange bolting and nut ring.	<p>New item A2.2.3, "Flange Bolting," was added to the GALL report. (The item is described in BAW-2251A.) The aging effects for this item are loss of preload caused by stress relaxation, cracking caused by SCC (BAW-2251 does not state the mechanism for cracking), and loss of material because of wear.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	SB-167 was added along with SB-166 to the "Materials" column. (These are both alloy 600, but just different product form with different susceptibilities to cracking.) The GALL report was revised to address this comment.
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-LR Chapter 4.2 and does not apply.	Removed reference to SS in AMP element 10. The GALL report, Chapter XI was revised to address this comment.
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.	Replaced the word "mechanism" with "Head Penetration" in the "Structures and Component column." The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA2-11	A2.2.1	<p>Modify the wording under "Aging Management Program" to</p> <p>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.</p>	<p>"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.</p> <p>It is difficult to say that NRC GL97-01 contains "guidelines" of any sort.</p> <p>The appropriate inspection for a given unit may be NEVER, depending on conditions.</p>	<p>The description of the AMP was revised as recommended by the comment.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA2-12	A2.2.1	<p>Modify the (1) Scope of Program to:</p> <p>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.</p>	<p>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.</p>	<p>The Evaluation and Technical Basis discussion was revised as recommended by the comment. A change in wording was made as NEI recommended.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA2-13	A2.2.1	<p>Modify (3) Parameters Monitored / Inspected to:</p> <p>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.</p>	<p>The assessment is not performed in response to license renewal. Do not refer to the "mechanism."</p>	<p>The Evaluation and Technical Basis discussion in the GALL report was revised to address this comment.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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."	The word "mechanism" has been deleted from the evaluation and technical basis discussion. The GALL report was revised to address this comment.
G-IVA2-15	A2.2.1	Typo in (5) Monitoring and Trending: change "provides" to "provide."	Typo.	Typo was corrected in program element (5) Monitoring and Trending. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA2-16	A2.2.1	<p>Modify wording in (6) Acceptance Criteria:</p> <p>Any SCC degradation is evaluated in accordance with IWB-3000 by comparing ISI results with the acceptance standards of IWB-3400 and IWB-3500. 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.</p>	<p>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.</p>	<p>The Evaluation and Technical Basis discussion was revised as recommended, the following sentence has been added to element 6: To verify the adequacy of the long-term inspection program and acceptance criteria, if there have been significant changes since the applicants response to GL 97-01 and the RAIs to it, the applicant should either provide references to appropriate industry model revisions or provide updated information on crack initiation and crack growth data and models.</p> <p>The GALL report was revised to address this comment.</p>
G-IVA2-17	A2.3.1 to A2.3.3	<p>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.</p>	<p>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.</p>	<p>The Evaluation and Technical Basis discussion was revised to incorporate the NRC disposition of NEI Comment G-IV-4 in this Appendix B, Table B.2.3.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA2-18	A2.3.1, 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.	See NRC disposition of NEI Comment G-IV-4 in this Appendix B, Table B.2.3. The magnitude of the fluence threshold was not changed. The GALL report was revised to address this comment.
G-IVA2-19	A2.3.1, 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.	See NRC disposition of NEI Comment G-IV-1c in this Appendix B, Table B.2.3. Note the following error in the comment: Comment 31 should be NEI comment G-IVA2-1 in this Appendix B, Table B.2.3. The GALL report was not revised to address this comment.
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-LR Chapter 4.2 and does not apply.	The last sentence of Evaluation and Technical Basis was removed so that the GALL report is consistent with SRP-LR. The GALL report was revised to address this comment.
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.	Cyclic loading was removed from "Aging Mechanism" column of the bottom row on page IV A2-14. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	Cyclic loading was removed from "Aging Mechanism" column of the bottom row on page IV A2-14. The GALL report was revised to address this comment.
G-IVA2-23	A2.5	Add bottom head.	Missing items.	Bottom head was added as an additional component to A 2.5, Shell. Fatigue was identified as an aging mechanism and cumulative fatigue as an aging effect (TLAA). There is no other aging effect for this component. ASME Section XI inservice inspection of this component was continued during license renewal period as required by 10 CFR 50.55a. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>Earlier comment (Comment G-IV-1c) on cracking as not being aging mechanism also applies to cracking at weld joint.</p> <p>Intergranular separations of SA 508 Class 2 forging clad using a high heat input welding process was addressed in the GALL report. A line item was added in the GALL report for SA 508 Class 2 forging. Aging mechanism is cyclic loading and aging effect is crack growth. This is a TLAA. TLAA discussion in SRP-LR (p. 4.1-7) was revised. A line item for crack growth was added.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>The Evaluation and Technical Basis discussion was revised to refer to appropriate component as suggested. Movement of the description of programs to chapter XI minimizes these types of errors in the GALL report.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVA2-26	A2.6	Add parenthetical (interior attachments).	Core guide lugs for B&W plants.	<p>In the "Structure and Component" column, "core support pad" was retained and "core guide lugs" was added.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>PWSCC is an aging mechanism for PWR alloy 600 components exposed to reactor coolant. The corresponding aging management program is plant-specific (as recommended by NEI comment G-IVA2-28 in this Appendix B, Table B.2.3) because there is no generic alloy-600 program approved by NRC except for reactor vessel head penetrations.</p> <p>The NEI recommendation for the appropriate AMP to be ASME Section XI, Examination Category B-N-2 is inconsistent with NEI comment G-IVA2-28 which proposed a plant-specific AMP.</p> <p>The GALL report was revised to partially address this comment by identifying PWSCC as the aging mechanism as stated above.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC disposition of NEI Comment G-IVA2-27 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment by requiring the AMP to be plant specific.
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.	Word "Attrition" was changed to "loss of material." This change was made throughout GALL. The GALL report was revised to address this comment.
G-IVA2-30	A2.7	Change parenthetical to (bottom head and/or closure head).	Missing instrumentation penetrations in closure head at 2 B&W operating plants.	Instrument tube penetrations for closure head (top head) were added as separate components (Item A2.7.3). They are not combined with instrument tube penetrations for bottom head because the aging management programs are different. AMP based on GL 97-01 is specified for top head penetrations whereas plant-specific AMP is specified for bottom head penetrations. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>For A2.7.1, the response in "Further Evaluation" column was changed to "Yes, Plant-specific."</p> <p>For A2.7.2, the AMP was the same as the one for PWSCC of control rod drive head penetration (Item A2.2.1).</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>The words "design requirements" were removed from GALL.. Additional changes were made as mentioned in the NRC disposition of NEI Comment G-IVA2-25 in this Appendix B, Table B.2.3.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>There is insufficient relative motion between the core support pad and adjacent parts to generate degradation. Wear/loss of material for this component is unlikely.</p> <p>The GALL report was revised to address this comment by removing the aging effect "wear/loss of material" for the core support pad.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC disposition of NEI comment G-IV-A1-8 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment by acknowledging hydrogen water chemistry may be used as a means to enhance IGSCC mitigation.
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.	EPRI TR-103515, Rev. 1 (BWRVIP-29) or later approved version is acceptable. BWRVIP-29 will not be replaced by BWRVIP-79 because BWRVIP 79 has not been generically reviewed. The GALL report was not revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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."		For fatigue of vessel internal components, the GALL report was revised to state that for components for which a fatigue analysis has been performed for the 40-year period, fatigue is a time-limited aging analysis (TLAA) to be evaluated for the period of extended operation. This statement will also be added for PWR vessel internals. The GALL report was revised to address this comment.
G-IVB1-4	IVB-B1.1.2 and B1.1.3	Delete the reference to VT-3 and ASME Section XI. 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.	Inspections are performed according to BWRVIP-25, which is an expanded ISI. Reference to VT-3 and ASME Section XI was deleted. The GALL report was revised to address this comment.
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.	The BWR VIP is now approved and no further evaluation is recommended. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	Item B1.1.6 was deleted, because the SLC line inside the vessel has no license renewal intended function. However, the line outside of the vessel is within scope and is covered in item C1.1.11. The program XI.M9 "BWR Vessel Internals" was added which includes BWRVIP-27 to item C1.1.11. The GALL report was revised to address this comment.
G-IVB1-7	IV-B1.2	Delete the reference to VT-3 and ASME Section XI. 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.	Inspections are performed according to BWRVIP-26 guidelines. Reference to VT-3 and ASME Section XI was deleted. The GALL report was revised to address this comment.
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.).	This line item was deleted because SCC of OFS was considered insignificant in NUREG 1557. The GALL report was revised to address this comment.
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.	This item was mislabeled in the GALL report. These are instrumentation dry tubes; "housing" has been deleted from the heading. The existing AMP is BWR vessel internals program XI.M9 for lower plenum. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>The correct name for this component is steam dryer support bracket attachment (BWRVIP 15). The susceptible location is the attachment weld for these brackets to the vessel wall. These welds are safety related. This item is covered in the GALL report under Item A1.2.7, "Attachment Welds."</p> <p>The GALL report was not revised to address this comment.</p>
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).	<p>From Calvert Cliffs SER – the issue of concern is the impact of change of dimension due to void swelling on the ability of the RVI to perform their function. Industry programs may decide whether void swelling is a significant issue. The statement, "The applicant should address loss of ductility associated with swelling," has been deleted, and the following statement has been added in the AMP column for change in dimensions due to void swelling. "The applicant provides a plant-specific AMP or participates in industry programs to investigate aging effects and determine appropriate AMP. Otherwise, the applicant provides the basis for concluding that void swelling is not an issue for the component."</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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 1×10^{21} have the potential for IASCC.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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 1×10^{21} have the potential for irradiation embrittlement.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	Material selection and control of water chemistry do not preclude SCC. See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was not revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	GALL was reformatted to move all AMPs to a central location in Chapter XI of the GALL report, and new AMP XI.M16 appropriately reflects the concern of this comment in its element (10) Operating Experience. The GALL report was revised to address this comment.
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.	In line items on loss of fracture toughness, void swelling was added as a mechanism in addition to neutron irradiation embrittlement. No other change was made in the AMP column for void swelling. Similar changes were made throughout GALL, especially in Sections IV B2, B3, and B4. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The response to this comment is as follows: (a) Void swelling: see NRC dispositions to NEI comments G-IVB2-1 & G-IVB2-6 in this Appendix B, Table B.2.3. (b) IASCC/SCC and loss of fracture toughness: a program based on augmentation of ASME Section XI, Subsection IWB to include enhanced visual inspection for non-bolting components and other demonstrated acceptable inspection methods for bolting, were included. Response in “Further Evaluation” column was changed from a “Yes” to a “No.” Similar changes were made in Sections IV B2, B3, and B4. The GALL report was revised to address this comment.
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).	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>The comment suggests that some plants do have mixing vane devices made of cast austenitic stainless steel (CASS), and the staff believes a mixing vane has an LR intended function. Section 2.6.8 of proposed Rev. 1 of WCAP-14577 cites service history of vane separation from the RCCA spiders, with free RCCA travel inhibited in some instances. Although these vanes do not in of themselves perform any intended function within Part 50, their ability to prevent satisfactory accomplishment of a safety-function by another system, structure or component places them within the context of license renewal in accordance with 10 CFR 54.4(a)(2), and hence aging management must be provided for these components.</p> <p>The GALL report was not revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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-LR 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.	For items B2.1.7 and B2.5.7, the AMP column was revised to clarify that the AMP recommends loose part monitoring or neutron noise monitoring in addition to ASME Section XI inspections. WCAP 14577 provides justification for keeping both neutron noise monitoring and ISI. The WCAP states (4 th paragraph on p. 4-3), "The use of neutron noise monitoring (excore detectors) in combination with ISI is a valuable tool to track/observe core barrel vibrations. A continuation of the above monitoring and ISI would prevent relaxation of the holddown spring and clevis insert bolts from becoming a significant license renewal issue." The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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	<p>The hold-down spring does support the functions (1), (2), and (4) cited in Section 2.2 of proposed Rev. 1 of WCAP-14577, specifically to support and orient the reactor core; support, orient, guide and protect control rod assemblies; and, provide a passageway for support, guidance and protection for incore instrumentation. In addition, Section 2.6.5 of the topical report cites two instances in which detection of degradation of this component occurred early enough to prevent development of a safety issue, indicative that failure of this component could lead to a safety issue.</p> <p>The GALL report was not revised to address this comment.</p>
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.	<p>The wear of the RCCA guide tubes is not significant and this was confirmed in WCAP 14577. The line item for wear of the guide tubes in GALL will be removed based on this comment.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>GALL sections IV B2, B3, and B4 were revised according to the following reasoning. For PWRs, Category B-N-2 should only apply to interior attachments to the RPV, and Category B-N-3 should apply to "removable core support structures," generally all other internal components. For GALL Sections IV-B2, B3 and B4, Category B-N-3 should be the cited reference in all cases.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3.</p> <p>This line item provides the AMP for crack initiation and growth that may be caused by SCC and for some components IASCC.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. This line item provides the AMP for crack initiation and growth that may be caused by SCC and for some components IASCC. The GALL report was revised to address this comment.
G-IVB2-17	B2.5.2, B2.5.5	Of this grouping, reduction in 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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
G-IVB2-19	B2.5.3, B2.5.4	Reduction in 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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	NRC BL 88-09 requirements were included in the GALL report. The utility response to the Bulletin was cited in the AMP column, generally in accordance with the NEI comment. In addition, ASME Section XI inspection requirements were included in the AMP column. The GALL report was revised to address this comment.
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.	NEI confirmed at the December 21, 2000, meeting that this was not an issue. The GALL report was not revised to address this comment.
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.	The wear would be insignificant. This was confirmed in WCAP 14577. The GALL report was revised to address this comment.
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.	Alignment of rows and items was corrected. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	NRC GL 88-09 requirements were included in GALL report. See NRC disposition of NEI Comment G-IVB2-20 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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 1×10^{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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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 1×10^{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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVB3-11	B3.5.1 through 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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.
G-IVB3-12	B3.5.1 through 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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVB3-13	B3.5.1 through 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 1×10^{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.	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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 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 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	See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVB3-14 (cont.)			(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.	

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>The NEI comment is consistent with NUREG-1705; but this change is not consequential since "crack initiation and growth" due to IASCC remains as an aging effect that must be managed by applicants. There is also the need to have confirmation of the effectiveness of chemistry control with ISI.</p> <p>See NRC disposition of NEI comment G-IV-4 in this Appendix B, Section B.2.3.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>See NRC disposition to NEI comment G-IVB2-10 in this Appendix B. Section B.2.3. According to WCAP, it should be ISI and Neutron Noise or Loose Parts Monitoring.</p> <p>Loose parts monitoring could detect stress relaxation during power operation before the loss of the intended function. Since the bolts are redundant, loose parts monitoring might pick up degradation upon the first bolts degradation or failure. The inspection is required by ISI only once every 10 years during the shutdown period. This is similar to those identified in Westinghouse WCAP 14577 recommendations (from this point of view, Westinghouse is typical). GALL does not recommend any additional programs, other than existing requirements, for this aging effect.</p> <p>The GALL report was not revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	<p>Recommend the use of enhanced VT-1 to detect tight cracks in non-bolted applications. No further evaluation is required for these components. This option was given for SCC/IASCC and neutron embrittlement and further evaluation was changed to "no."</p> <p>For license renewal of Calvert Cliffs, enhanced VT-1 examination was accepted for management of IASCC and neutron embrittlement of the most susceptible RVI components. For non-bolted applications, this is an acceptable program. For bolted applications, this is not an acceptable AMP because the area(s) of interest are not accessible for visual examination. An UT examination is recommended for the bolting. A new program was developed in chapter XI to articulate this approach.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVB4-1	B4.	Incore guide tube assembly items are missing. See BAW-2248A.	Missing internals items.	<p>The pertinent component is the "incore guide tube spider castings," which are subject to loss of fracture toughness due to thermal aging embrittlement. The GALL report was revised to include these components as Item B4.6.11.</p> <p>The GALL report was revised to address this comment.</p>
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.	<p>To account for plants built prior to Section III rules, the fatigue statement was revised as follows:</p> <p>For components for which a fatigue analysis has been performed for the 40 y period, fatigue is a time-limited aging analysis (TLAA) to be performed for the period of license renewal, and for Class 1 components, environmental effects on fatigue are to be addressed.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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	<p>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.</p> <p>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).</p>	See BAW-2248A—Applicant Action Items.	<p>The following was added as a new item under "Aging Management Program" for these items: "An acceptable AMP consists of the following elements: identify the most susceptible or limiting items, develop appropriate inspection techniques to permit detection and characterizing of the features (cracks) of interest and demonstrate the effectiveness of the proposed techniques, and implement the inspections during the license renewal term." This statement was added for B4.1.1-B4.1.3, B4.4.1, B4.4.3, and B4.4.4 and items other than boltings in B4.6, B4.7, and B4.8.</p> <p>The GALL report was revised to address this comment.</p>
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	<p>See NRC disposition of NEI comment G-IV-4 in this Appendix B, Table B.2.3.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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	<p>The following statement was added in "Aging Management Program" column for these items: "An acceptable AMP consists of the following elements: identify the most susceptible or limiting items, develop appropriate inspection techniques to permit detection and characterizing of the features (cracks) of interest and demonstrate the effectiveness of the proposed techniques, and implement the inspections during the license renewal term." This statement was added to B4.4.2, B4.4.4-B 4.4.8.</p> <p>The GALL report was revised to address this comment.</p>
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).	<p>A statement was added to Chapter X1.M2, "Thermal Aging and Neutron Embrittlement of Cast Austenitic Stainless Steel (CASS)," about participation in industry program to determine fluence threshold for irradiation embrittlement of CASS components.</p> <p>The GALL report was revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The GALL report was revised appropriately. VIP-62 reference has been added to the GALL report for plants using hydrogen water chemistry. Both VIP-62 and VIP-75 were added as references. (VIP-75 refers to revised inspection program for piping.) The GALL report was revised to address this comment.
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.	The BWRVIP guideline was included in GALL as suggested by the comment. The GALL report was revised to address this comment.
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 EMC B 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.	See NRC disposition of NEI comment G-IVA1-1 in this Appendix B, Table B.2.3. The GALL report was not revised to address this comment.
G-IVC2-1	Page IVC2-11 through IVC2-19	Multiple entries with "same as..." are not in italics. Convert all "same as..." to italics.	Need to be consistent with general format.	The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	SCC was removed as an aging mechanism for carbon steel pipe. The GALL report was revised to address this comment.
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.	A global change was made deleting the words "not anticipated" or "unanticipated" as related to thermal and mechanical loading. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	Operating experience demonstrates that small-bore piping has an aging effect that requires managing in the extended term. GALL recommends that a plant-specific destructive examination or a nondestructive examination (NDE) that permit inspection of the inside surfaces of the piping needs to be conducted. For Class 1 piping with a diameter smaller than nominal pipe size (NPS) 4 inch, GALL recommends the one-time inspection be performed to confirm whether crack initiation and growth due to stress corrosion cracking (SCC) or cyclic loading is occurring or not. This one-time inspection can also verify the effectiveness of the chemistry program. The GALL report was not revised to address this comment.
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.	Carbon steel was deleted as a material for small-bore piping. The GALL report was revised to address this comment

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The AMP and Technical basis text correctly refers to thermal aging of RCP casing. The GALL report was not revised to address this comment.
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	Add SS to "Materials" column and cracking and loss of preload to "Aging Mechanism" column. The GALL report was revised to address this comment.
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	Add aging effect of loss of material on external surface of the manway. The GALL report was revised to address this comment.
G-IVC2-9	C2.5.12	Cracking at weld that connects the pressurizer support plate to the shell was omitted.	BAW-2244A	Add cracking at weld that connects the pressurizer support plate to the shell. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	NRC IN 90-04 does refer to general corrosion and pitting of inside surface of SG shell girth weld. IN 90-04 states: "However, if general corrosion pitting of the SG shell is known to exist, the requirements of Section XI of the ASME Code may not be sufficient to differentiate isolated cracks from inherent geometric conditions" (see IN 90-04, 3rd page, 2nd paragraph). Pitting has been reported at the PWR steam generator girth welds (NUREG/CR 4868). ASME Section XI requires only volumetric inspections of the girth welds to detect cracks. But additional examinations (i.e., visual and surface examinations) are required to detect pitting and general corrosion. IN 90-04 also states: "The flaw indications can be detected with enhanced UT procedures that are performed by experienced nondestructive examination personnel. The upper shell-to-transition cone weld is located at a gross structural discontinuity. The weld is relatively wide and typically has an irregular crown. These inherent geometric features commonly result in innocuous reflectors. In addition, subsurface flaw indications are known to exist near the inside diameter surface of SGs at several

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
G-IVD1-1 (cont.)				<p>plant sites. In order to distinguish innocuous reflectors from cracks, the following processes may be necessary: scanning at a high gain, the use of multiple transducers with optimum angles, careful plotting of reflector locations, and examination by experienced personnel."</p> <p>The rules of Section XI of the ASME Code require a volumetric examination of one upper shell-to-transition cone weld during each 10-year inspection interval. The required examinations may be limited to one SG or may be distributed among all the SGs. However, if general corrosion pitting of the SG shell is known to exist, the requirements of Section XI of the ASME Code may not be sufficient to differentiate isolated cracks from inherent geometric conditions. In lieu of volumetric examinations, visual and MT examinations of the interior circumference of the girth weld were used by the licensee of Indian Point Unit 2 to detect the surface-connected flaws.</p> <p>The GALL report was not revised to address this comment.</p>

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	D1.1.9 was made consistent with items A2.4.1 to A2.4.3 and required the following changes: Deleting discussion about potential cracking in cladding remote from welds and (2) Changing Further Evaluation column from “yes” to “no.” The GALL report was revised to address this comment.
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 be reconfirmed for the period of life extension.	The type of fatigue analysis is different for certain tube locations.	The analysis for 88-02 was made a part of the denting AMP; fatigue was left alone. Environmental effects were also considered. The GALL report was revised to address this comment.
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.	The revised AMP “Steam Generator Tube Integrity” (XI.M19) was revised to incorporate the gist of the NEI comment and to reference NEI 97-06 as suggested. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	The revised AMP "Steam Generator Tube Integrity" (XI.M19) was revised to incorporate the gist of the NEI comment and to reference NEI 97-06 as suggested. The GALL report was revised to address this comment.
G-IVD1-5 (cont.)		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.	The revised AMP "Steam Generator Tube Integrity" (XI.M19) was revised to incorporate the gist of the NEI comment and to reference NEI 97-06 as suggested. The GALL report was revised to address this comment.
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.	The revised AMP "Steam Generator Tube Integrity" (XI.M19) was revised to incorporate the gist of the NEI comment and to reference NEI 97-06 as suggested. The GALL report was revised to address this comment.
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.	Add "corrosion of carbon steel tube support" in "Aging Mechanism" column. This was also UCS report review finding. The GALL report was revised to address this comment.

Table B.2.3: Disposition of NEI Comments on Chapter IV of GALL Report (continued)

Comment Number	Item Number	Comment/Proposed Change	Basis for Comment	NRC Disposition
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.	Add additional item to address corrosion of carbon steel tube support plate (Item D1.2.4). Aging effect is ligament cracking. The AMP was in accordance with NEI 97-06. The GALL report was revised to address this comment.
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	Delete SS safe ends and add loss of material due to boric acid corrosion on external surface of nozzles. The GALL report was revised to address this comment.
G-IVD2-2	D21.8, page D2-12	Secondary side nozzles are susceptible to SCC and not PWSCC.		Secondary side nozzles are susceptible to SCC and not PWSCC. The GALL report was revised to address this comment.

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