

ATTACHMENT 29

SAFETY EVALUATION REPORT WRITING GUIDELINES AND SAMPLES

Background

The U.S. Nuclear Regulatory Commission (NRC)'s Office of the Inspector General (OIG) audited the effectiveness of the license renewal program, as documented in OIG-07-A-15, "Audit of the NRC's License Renewal Program," dated September 6, 2007 (ML072490486). The report, which is publicly available, concluded that, overall, the NRC has developed a comprehensive license renewal process to evaluate applications for extended operation. However, the OIG identified several areas where improvements would enhance program operations. One area pertained to improving license renewal reporting, including safety evaluation reports (SERs), because the OIG stated that those who read the reports could conclude that regulatory decisions are not adequately reviewed and documented. To enhance this program area the OIG suggested in its first recommendation that the NRC establish report-writing standards for describing the license renewal review methodology and providing support for conclusions.

Purpose

The purpose of these writing guidelines and samples (guidelines) is to augment the previous SER shell in certain areas to make sure that the staff adequately documents its review methodology and the technical basis for its findings and conclusions. The attached guidelines and the expectations in Attachment 9, "SER Style Guide," Section 9, "General Safety Evaluation Report Writing Expectations," address the OIG's first recommendation. These guidelines are a living document and will be improved over time through implementation and lessons learned. Management encourages staff members to provide comments and suggestions to the Program Operations Branch Chief.

Implementation

The following information describes how the staff should document the technical evaluations in the SER. From the current SER template, the key sections are identified. Throughout numbered guidance tables indicate areas where the staff should provide its evaluations. These tables consist of two columns: the left identifies certain management expectations and the right shows particular samples of how these expectations could be met.

In general, the existing shell provides adequate information to address two areas in the Office of Nuclear Reactor Regulation's Office Instruction LIC-101, Revision 3, "License Amendment Review Procedure:" the introduction and the regulatory evaluation. Some guidelines indicate modifications to enhance the SER template in these areas; however, the main focus is on the technical evaluations.

Discussion

The staff should utilize these guidelines in preparing license renewal SERs. The guidelines for each section of the SER may differ from each other. However, in general, the guidelines prescribe some expected language for each technical area in the SER. The guidelines for several sections indicate that like-treated reviews should be grouped together, while still referencing specific applicable sections of the license renewal application (LRA), NUREG-1800, Revision 1, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), and NUREG-1801, Revision 1, "Generic Aging Lessons Learned (GALL) Report." This grouping will result in a more concise SER while still ensuring that the staff's review methodology and its findings and conclusion, and their bases, are adequately documented.

Most importantly, the guidelines contain tables, called "guidance tables," for staff use that describe key issues that must be addressed in the SER and examples of appropriate write-ups. For example, with regard to aging management programs (AMPs) with exceptions to the GALL Report, the guidelines for SER Section 3 contain a table that, among other things, asks in the left column whether the resolution of each issue was adequately described. The right column then contains several examples of appropriate documentation for various scenarios, e.g., a case where the staff resolved an issue with a request for additional information and the applicant response. The guidance tables are not to be inserted into the SER.

Also, the guidelines contain certain instructions which are indicated within open and closed square brackets. In preparing the SER the staff should make sure to follow the bracketed instructions and either remove them, or replace them with appropriate information, if so indicated.

SECTION 1

INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the license renewal application (LRA) for ... [use the existing template language]

1.2 Regulatory Evaluation

1.2.1 Background

Pursuant to the Atomic Energy Act of 1954, as amended, and NRC regulations, operating licenses for commercial power reactors are issued for 40 years and can be renewed for up to 20 additional years ... [use the existing template language formerly in SER Section 1.2]

1.2.2 Safety Review

License renewal requirements for power reactors are based on two key principles ... [use the existing template language formerly in SER Section 1.2.1]

1.2.3 Environmental Review

Part 51 of 10 CFR contains regulations on environmental protection regulations. In December 1996, the staff revised the environmental protection regulations to facilitate the environmental review for license renewal ... [use the existing template language formerly in SER Section 1.2.2]

1.3 Principal Review Matters

Part 54 of 10 CFR describes the requirements for renewal of operating licenses for nuclear power plants ... [use the existing template language]

1.4 Interim Staff Guidance

License renewal is a living program ... [use the existing template language]

1.5 Summary of Open Items

As a result of its review of the LRA, including additional information submitted through ... [use the existing template language]

1.6 Summary of Confirmatory Items

As a result of its review of the LRA, including additional information submitted through ... [use the existing template language]

1.7 Summary of Proposed License Conditions

Following the staff's review of the LRA, including subsequent information and clarifications from the applicant, the staff identified ... [use the existing template language]

SECTION 2

STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW

2.1 Scoping and Screening Methodology

[Use the provided input and make sure that it is consistent with Attachment 9, “SER Style Guide,” Section 9, “General Safety Evaluation Report Writing Expectations.” In addition, make sure to remove “reasonable assurance” from all conclusions.]

2.2 Plant-Level Scoping Results

[Use the provided input and make sure that it is consistent with Attachment 9, Section 9. In addition, make sure to remove “reasonable assurance” from all conclusions.]

2.3 Scoping and Screening Results: Mechanical Systems

[Use the provided input and make sure that it is consistent with Attachment 9, Section 9. In addition, make sure to remove “reasonable assurance” from all conclusions.]

2.4 Scoping and Screening Results: Structures

[Use the provided input and make sure that it is consistent with Attachment 9, Section 9. In addition, make sure to remove “reasonable assurance” from all conclusions.]

2.5 Scoping and Screening Results: Electrical and Instrumentation and Controls Systems

[Use the provided input and make sure that it is consistent with Attachment 9, Section 9. In addition, make sure to remove “reasonable assurance” from all conclusions.]

2.6 Conclusion for Scoping and Screening

The staff reviewed the information in LRA Section 2, “[Title of LRA Section 2]” and determines that the applicant’s scoping and screening methodology was consistent with 10 CFR 54.21(a)(1) and the staff’s positions on the treatment of safety-related and nonsafety-related SSCs within the scope of license renewal and on SCs subject to an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

On the basis of its review, the staff concludes[, **pending resolution of [List Any Open or Confirmatory Items],**] that the applicant has adequately identified those systems and components within the scope of license renewal, as required by 10 CFR 54.4(a), and those subject to an AMR, as required by 10 CFR 54.21(a)(1).

The staff concludes that the applicant will continue to conduct the activities authorized by the renewed license[s] in accordance with the CLB and any changes to the CLB in order to comply with 10 CFR 54.21(a)(1), in accordance with the Atomic Energy Act of 1954, as amended, and NRC regulations.

SECTION 3

AGING MANAGEMENT REVIEW RESULTS

This section of the safety evaluation report (SER) evaluates aging management programs (AMPs) and aging management reviews ... [use the existing template language]

3.0 Applicant's Use of the Generic Aging Lessons Learned Report

In preparing its LRA, the applicant credited NUREG-1801, Revision 1, "Generic Aging Lessons Learned (GALL) Report," dated September 2005. The GALL Report contains the staff's generic evaluation of the existing plant programs ... [use the existing template language]

3.0.1 Format of the License Renewal Application

The applicant submitted an application that follows the standard LRA format agreed to by the staff and the Nuclear Energy Institute (NEI) by letter dated April 7, 2003 (ML030990052). This revised LRA format ... [use the existing template language]

3.0.1.1 Overview of Table 1s

Each Table 1 compares in summary how the facility aligns with the corresponding tables in the GALL Report. The tables are essentially the same as Tables 1 through 6 in the GALL Report ... [use the existing template language]

3.0.1.2 Overview of Table 2s

Each Table 2 provides the detailed results of the AMRs for components identified in LRA Section 2 as subject to an AMR. The LRA has a Table 2 for each of the systems or structures within a specific system grouping ... [use the existing template language]

3.0.2 Staff's Review Process

The staff conducted three types of evaluations of the AMRs and AMPs ... [use the existing template language]

3.0.2.1 Review of AMPs

For AMPs for which the applicant claimed consistency with the GALL AMPs, the staff conducted either an audit or a technical review to verify the claim. For each AMP with one or more deviations ... [use the existing template language]

3.0.2.2 Review of AMR Results

Each LRA Table 2 contains information concerning whether or not the AMRs identified by the applicant align with the GALL Report AMRs. For a given AMR in a Table 2, the staff reviewed the intended function, material, environment, AERM, and AMP combination ... [use the existing template language]

3.0.2.3 [FSAR] Supplement

Consistent with the SRP-LR for the AMRs and AMPs that it reviewed, the staff also reviewed the [FSAR] supplement ... [use the existing template language]

3.0.2.4 Documentation and Documents Reviewed

In its review, the staff used the LRA, LRA supplements, the SRP-LR, and the GALL Report ... [use the existing template language]

3.0.3 Aging Management Programs

SER Table 3.0.3-1 presents the AMPs credited by the applicant and described in LRA Appendix B. The table also indicates ... [use the existing template language]

Table 3.0.3-1 [Short Plant Name or Abbreviation] Aging Management Programs
[insert into the existing table a new column for the FSAR supplement]

Program Name	LRA Section Containing the Program Description	LRA Section Containing the FSAR Supplement	New or Existing Program	Applicant Comparison to the GALL Report	GALL Report AMPs	LRA Systems or Structures That Credit the AMP	SER Section Containing the Staff's Evaluation
[Aboveground Steel Tanks Program]	[B.1.5]	[A.1.5]	[Existing]	[Consistent]	[XI.M29]	[auxiliary systems / steam and power conversion systems]	[3.0.3.2.1]

3.0.3.1 AMPs Consistent with the GALL Report

SER Table 3.0.3-1 identifies all the programs which the applicant claimed as completely consistent with the GALL Report. The staff reviewed the corresponding LRA Appendix B sections and the applicant's onsite bases documents to determine whether the applicant's programs are in-fact consistent with the GALL Report's recommendations.

As documented in the [Onsite Review Report], the staff found that the following AMPs are consistent with the GALL Report recommendations:

Guidance Table 3-A	
Management Expectation	Sample Documentation
Did you list all the programs verified to be completely consistent with the GALL Report?	<ul style="list-style-type: none"> • Fuel Oil Chemistry Program • ASME Section XI, Subsection IWF Program • Containment Leak-Rate Program

Therefore, the staff concludes that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).

For these programs the staff also reviewed the corresponding [FSAR] supplement information as identified in SER Table 3.0.3-1. The staff found that the information in these LRA sections is consistent with the SRP-LR acceptance criteria. Therefore, the staff concludes that these sections provide adequate summary descriptions of the programs, as required by 10 CFR 54.21(d).

However, in performing its review, the staff identified issues concerning certain AMPs which potentially did not meet the staff's acceptance criteria. The staff identified that these programs had potential inconsistencies with the GALL Report's recommendations, or that the [FSAR] supplement information did not initially meet the staff's acceptance criteria. These are the programs which the applicant claimed to be consistent with the GALL Report, but for which the staff identified potential issues:

Guidance Table 3-B	
Management Expectation	Sample Documentation
Did you list all the programs claimed to be consistent with the GALL Report, but for which the staff identified potential inconsistencies?	<ul style="list-style-type: none"> • Closed-Cycle Cooling Water System Program • Flow-Accelerated Corrosion Program

The staff's resolutions on these issues are in the following sections. Except for the areas discussed, the staff found all other aspects of these programs acceptable.

Guidance Table 3-C	
Management Expectation	Sample Documentation
Did you identify the technical review area with an SER section number and the program name?	3.0.3.1.1 Closed-Cycle Cooling Water System Program
Note: The Project Manager should determine the last subsection number.	
Program Review	
Did you adequately identify each issue encountered during your review?	In LRA Section B.1.6, the applicant claimed that its Closed-Cycle Cooling Water System Program is consistent with the program described in GALL Report

Guidance Table 3-C	
Management Expectation	Sample Documentation
	Section XI.M21, "Closed-Cycle Cooling Water System." However, during its on-site review, the staff found that the applicant's program does not rely on chemical inhibitors to minimize corrosion. The GALL Report recommends use of chemical inhibitors under the "preventive actions" program element description.
<p>Did you adequately describe how you resolved each issue, or why an issue is currently unresolved?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	By letter dated March 28, 2008, the staff issued RAI B.1.6-1 to request information as to how the applicant's Closed-Cycle Cooling Water System Program adequately manages aging effects without relying on chemical inhibitors as a preventive action. The applicant responded by letter dated April 28, 2008, and committed to revise the program to include the use of chemical inhibitors (Commitment No. 6 in SER Appendix A).
Did you state a finding on each issue regarding its acceptability, and did you provide an appropriate technical basis ("because" statement) to substantiate this finding?	The staff finds this program acceptable because the applicant's commitment to include use of chemical inhibitors makes the applicant's program consistent with the one described in GALL Report Section XI.M21.
Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?	Therefore, the staff concludes that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).
FSAR Supplement Review	
Did you adequately identify any issues concerning the FSAR supplement information for this program?	The applicant's UFSAR supplement in LRA Section A.1.6 does not indicate that the Flow-Accelerated Corrosion Program implements EPRI guidelines of NSAC-202L-R2. The example description for this program in SRP-LR Table 3.4-2 includes specific mention of these guidelines. The licensing basis for the period of extended operation may not be adequate if the applicant does not incorporate this information in its UFSAR supplement.

Guidance Table 3-C	
Management Expectation	Sample Documentation
<p>Did you adequately describe how you resolved each issue, or why an issue is currently unresolved?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	<p>By letter dated March 28, 2008, the staff issued RAI A.1.16-1 to request justification as to why the applicant did not include the referenced EPRI guidelines. By letter dated April 28, 2008, the applicant responded to the staff's concern by amending LRA Section A.1.6 to state that the Flow-Accelerated Corrosion Program relies on implementing the EPRI guidelines of NSAC-202L-R2.</p>
<p>Did you state a finding on each issue regarding its acceptability, and did you provide an appropriate technical basis ("because" statement) to substantiate this finding?</p>	<p>With this LRA amendment, the staff finds the UFSAR supplement for the Flow-Accelerated Corrosion Program acceptable because it is consistent with the corresponding program description in SRP-LR Table 3.4-2.</p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p>Therefore, the staff concludes that the UFSAR supplement for this AMP provides an adequate summary description of the program, as required by 10 CFR 54.21(d).</p>

3.0.3.2 AMPs Consistent with the GALL Report with Exceptions and/or Enhancements

SER Table 3.0.3-1 identifies all the programs which the applicant claimed as consistent with the GALL Report with exceptions and/or enhancements. The staff reviewed the corresponding LRA Appendix B sections and the applicant's onsite bases documents to determine whether portions of the applicant's programs, which the applicant claimed to be consistent with the GALL Report, are in-fact consistent with the GALL Report's. The [Onsite Review Report], documents the staff findings on those AMP areas found to be consistent with the GALL Report.

The staff's evaluations on any potential inconsistencies, exceptions, and enhancements are discussed in the following sections.

Guidance Table 3-D	
Management Expectation	Sample Documentation
<p>Did you identify the technical review area with an SER section number and the program name?</p> <p>Note: The Project Manager should determine the last subsection number.</p>	<p>3.0.3.2.1 Open-Cycle Cooling Water System Program</p>
Program Review	
<p>Did you adequately identify each exception or enhancement?</p> <p>Did you identify any issues concerning the particular exception, enhancement,</p>	<p>In LRA Section B.1.25, the applicant stated that its Open-Cycle Cooling Water System Program is consistent with the program described in GALL Report Section XI.M20, "Open-Cycle Cooling Water System;"</p>

Guidance Table 3-D	
Management Expectation	Sample Documentation
<p>or other aspect of the program?</p>	<p>however, the applicant stated an exception to the “monitoring and trending” program element regarding inspections during refueling outages. The applicant took this exception because it conducts yearly system inspections and plant operating experience demonstrates that they have been adequate to prevent system failures. However, the staff noted that the referenced GALL Report program includes specific mention to refueling outage inspections because industry operating experience has shown them to detect localized pitting in areas only accessible during refueling.</p>
<p>Did you adequately describe how you resolved each issue, or why an issue is currently unresolved?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	<p>By letter dated November 30, 2008, the staff issued RAI B.1.25-1 to request further explanation as to why the applicant does not intend to inspect the open-cycle cooling water system during refueling outages. The applicant responded by letter dated December 30, 2008, and amended the LRA by deleting the exception and providing a program enhancement which would commit the applicant to revising the program procedures so as to include inspections during refueling outages.</p>
<p>Did you state a finding on the acceptability of each exception, enhancement, or other issue, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?</p>	<p>With the information provided in the applicant’s RAI response, the staff finds its concern regarding the program exception acceptable because the applicant instead submitted an enhancement which makes the program consistent with the one described in GALL Report Section XI.M20.</p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p>Therefore, the staff concludes that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).</p>
<p>FSAR Supplement Review</p>	

Guidance Table 3-D	
Management Expectation	Sample Documentation
<p>Did you adequately identify the information reviewed and any issues concerning this information?</p> <p>If there are any issues, did you identify with the correct date all applicable correspondence pertaining to each issue?</p> <p>Did you state a finding on the acceptability of the FSAR supplement, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?</p>	<p>The staff reviewed this program’s FSAR supplement in LRA Section A.1.6 and found it acceptable because it meets the acceptance criteria specified in the SRP-LR.</p> <p><i>Note: Refer to Guidance Table 3-C for samples on how to document issues concerning FSAR supplement information.</i></p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p>Therefore, the staff concludes that the FSAR supplement for this AMP provides an adequate summary description of the program, as required by 10 CFR 54.21(d).</p>

3.0.3.3 AMPs Not Consistent with or Not Addressed in the GALL Report

For AMPs not consistent with or not addressed in the GALL Report the staff’s complete review determined their adequacy to monitor or manage aging. The staff’s review of these plant-specific AMPs is documented in the following sections.

Guidance Table 3-E	
Management Expectation	Sample Documentation
<p>Did you identify the technical review area with an SER section number and the program name?</p> <p>Note: The Project Manager should determine the last subsection number.</p>	<p>3.0.3.3.1 Fire Barrier Inspection Program</p>
Program Review	
<p>Did you adequately identify each program element reviewed?</p> <p>Did you identify any issues concerning the particular program element?</p>	<p>Sample 1: No Issues Identified</p> <p><u>Scope of Program.</u> The staff reviewed the “scope of program” program element and identified no issues.</p> <p>Sample 2: Issues Identified</p> <p><u>Acceptance Criteria.</u> The staff reviewed the “acceptance criteria” program element and identified an issue concerning timely detection of degradation.</p>

Guidance Table 3-E	
Management Expectation	Sample Documentation
<p>Did you adequately describe how you resolved each issue, or why an issue is currently unresolved?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p style="text-align: center;"><i>No discussion is necessary.</i></p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>By letter dated February 2, 2002, the staff issued RAI B3.12.1-1 requesting a description of the inspection procedures that permit the timely detection of cracking/delamination and separation of the fire barrier penetration seals. The staff also requested the specific limits and the basis for their selection. The applicant responded by letter dated March 11, 2002, indicating that the acceptance criteria limits are based on experimental tests and engineering analysis as performed by the National Fire Protection Association (NFPA).</p>
<p>Did you state a finding on each issue regarding its acceptability, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p>The staff finds that the applicant’s implementing procedures and associated drawings identify all fire barriers and sealing devices within the program’s scope. The staff reviewed LRA Section 2.1.1.3.1 and Tables 3.3-26 and 3.3-27 and verified that the scope of the program included all fire barriers identified therein. The staff finds that the “scope of program” program element is acceptable because it meets the criterion in SRP-LR Section A.1.2.3.1.</p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>With the information provided in the applicant’s RAI response, the staff finds this program’s “acceptance criteria” program element acceptable because the applicant’s tests and analyses show that the program can timely detect cracking/delamination and separation of the fire barrier penetration seals. The staff also finds that the applicant’s procedures state appropriate limits and selection bases. As such, the staff finds that the</p>

Guidance Table 3-E	
Management Expectation	Sample Documentation
	“acceptance criteria” program element acceptable because it meets the criteria in SRP-LR Section A.1.2.3.6.
Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?	Therefore, the staff concludes that the applicant has demonstrated that effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).
FSAR Supplement Review	
Did you adequately identify the information reviewed and identify any issues concerning this information?	The staff reviewed this program’s FSAR supplement in LRA Section A.1.6 and found it acceptable because it meets the acceptance criteria specified in the SRP-LR.
If there are any issue, did you identify with the correct date all applicable correspondence pertaining to each issue?	<i>Note: Refer to Guidance Table 3-C for samples on how to document issues concerning FSAR supplement information.</i>
Did you state a finding on the acceptability of the FSAR supplement, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?	
Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?	Therefore, the staff concludes that the FSAR supplement for this AMP provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

3.0.4 QA Program Attributes Integral to Aging Management Programs

Pursuant to 10 CFR 54.21(a)(3), the applicant is required to demonstrate that the effects of aging on SCs subject to an AMR will be adequately managed ... [use the existing template language, make sure the evaluation follows the guidance in Attachment 9, Section 9]

3.[X'] Aging Management of [Identify Corresponding LRA Area]

This section of the SER documents the staff's review of the applicant's AMR results for ... [use the existing template language]

3.[X].1 Summary of Technical Information in the Application

LRA Section 3.1 provides AMR results for ... [use the existing template language]

3.[X].2 Staff Evaluation

The staff reviewed LRA Section 3.1 to determine whether the applicant provided sufficient information to demonstrate that the effects of aging ... [use the existing template language]

[eliminate the existing SER Table 3.X-1 and references to it]

3.[X].2.1 AMR Results Consistent with the GALL Report

The staff compared the applicant's AMR results in [List LRA Table Type 2s] with those documented in the GALL Report to confirm the applicant's claim of consistency with the GALL Report. From this comparison the staff found, with a few exceptions as discussed below, that for the AMR results which the applicant claimed to be consistent with the GALL Report, are indeed consistent with the GALL Report.

Therefore, the staff concludes that the applicant has demonstrated that the effects of aging for these components will be adequately managed so that their intended function(s) will be maintained consistent with the CLB during the period of extended operation, as required by 10 CFR 54.21(a)(3).

However, as noted above, the staff identified some exceptions concerning certain AMRs which potentially do not meet the staff's acceptance criteria because the AMR line item was found to be potentially inconsistent with the GALL Report line item to which it was compared. The staff's resolutions on these AMR items are in the following sections.

Guidance Table 3-F	
Management Expectation	Sample Documentation
Did you identify the technical area with an SER section number and appropriate title?	3.1.2.1.1 Loss of Material Due to Pitting and Crevice Corrosion
Note: The Project Manager should determine the last subsection number.	

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- 1 X = "1" for the generic reactor vessel, internals, and reactor coolant system area
"2" for the generic engineered safety features area
"3" for the generic auxiliary systems area
"4" for the generic steam and power conversion system area
"5" for the generic containments, structures, and component supports area
"6" for the generic electrical and instrumentation and controls area

Guidance Table 3-F	
Management Expectation	Sample Documentation
Did you adequately identify each issue within this technical area and encountered during your review?	The staff noted that the applicant did not credit the GALL Report AMR, Item III.D.1, in LRA Table 3.1.1, for loss of material due to pitting and crevice corrosion in stainless steel reactor vessel internals components.
Did you adequately describe how you resolved each issue? Did you identify with the correct date all applicable correspondence pertaining to each issue?	By letter dated April 13, 2008, the staff issued RAI 3.1.1-1 requesting the applicant to justify why it did not credit this item for managing the aging effect. The applicant responded by letter dated May 13, 2008, and committed to use BWR VIP-103 for managing this aging effect.
Did you state a finding on each issue regarding its acceptability, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?	The GALL Report recommends the generic ASME Section XI, Subsection IWB, inservice inspection, and water chemistry programs to manage this aging effect. The staff finds the applicant’s use of BWR VIP-103 acceptable because it encompasses the ASME Section XI, Subsection IWB, inservice inspection, and water chemistry programs. As such, the applicant’s proposal to address loss of material due to pitting and crevice corrosion in stainless steel reactor vessel internals components is therefore consistent with GALL Report Item III.D.1.
Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?	Therefore, the staff concludes that the applicant has demonstrated that the effects of aging for these components will be adequately managed so that their intended function(s) will be maintained consistent with the CLB during the period of extended operation, as required by 10 CFR 54.21(a)(3).

3.[X].2.2 AMR Results Consistent with the GALL Report for Which Further Evaluation is Recommended

The staff also reviewed those AMRs consistent with the GALL Report and for which the GALL Report recommends further evaluation. The applicant described these areas in LRA Section 3.[X].2.2. The staff’s acceptance criteria for determining whether the applicant’s AMRs meet the requirements of 10 CFR 54.21(a)(3) are in SRP-LR Section 3.[X].2.2. To determine whether the application contains information sufficient to satisfy these acceptance criteria, the staff followed the review procedures outlined in SRP-LR Section 3.[X].3.2. The staff’s findings on these areas are in the following sections.

Guidance Table 3-G	
Management Expectation	Sample Documentation
Did you identify the technical area with an SER section number which is the same as the LRA section number?	3.1.2.2.1 Loss of Material Due to Pitting and Crevice Corrosion
Did you adequately identify each issue within this technical area and encountered during your review?	The GALL Report, under Item IV.B.1, recommends further evaluation of the applicant's AMR results. An acceptable method for managing cracking due to cyclic loading in control rod drive return line nozzles is to implement enhanced inspection in accordance with NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking." However, the applicant proposed to use its Leakage Monitoring Program.
Did you adequately describe how you resolved each issue? Did you identify with the correct date all applicable correspondence pertaining to each issue?	By letter dated May 7, 2008, the staff issued RAI 3.1.2.2-1 to obtain details as to how the applicant's Leakage Monitoring Program effectively manages loss of material due to pitting and crevice corrosion without relying on the NUREG-0619 recommended enhanced inspections. The applicant responded by letter dated March 28, 2008, and committed to incorporate the enhanced inspections as described in NUREG-0619.
Did you state a finding on each issue regarding its acceptability, and did you provide an appropriate technical basis ("because" statement) to substantiate this finding?	The staff finds the applicant's management of loss of material due to pitting and crevice corrosion acceptable because the applicant satisfied the acceptance criteria in SRP-LR section 3.1.2.2.1, and therefore the applicant's AMR is consistent with the one under GALL Report Item IV.B.1.
Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?	Therefore, the staff concludes that the applicant has demonstrated that the effects of aging for these components will be adequately managed so that their intended function(s) will be maintained consistent with the CLB during the period of extended operation, as required by 10 CFR 54.21(a)(3).

3.[X].2.3 AMR Results Not Consistent with or Not Addressed in the GALL Report

The staff also conducted a technical review of the remaining AMRs not consistent with or not addressed in the GALL Report. The technical review evaluated whether all plausible aging effects have been identified and whether the aging effects listed were appropriate for the

material-environment combinations specified. Also, for SSCs which the applicant claimed were not applicable or required no aging management, the staff reviewed the AMR line items and the plant's operating experience to verify the applicant's claims. The staff's findings on these areas are in the following sections.

Guidance Table 3-H	
Management Expectation	Sample Documentation
<p>Did you identify the technical area with an SER section number?</p> <p>Note: The Project Manager should determine the last subsection number.</p>	<p>3.1.2.3.1 Bolting Integrity in the Isolation Condenser</p>
<p>Did you adequately identify each issue within this technical area and encountered during your review?</p>	<p>The GALL Report, under Item V.E.2, recommends the program described in GALL Report Section XI.M18, "Bolting Integrity," for managing loss of bolting integrity in the isolation condenser. However, in LRA Table 3.3.2-17, the applicant instead proposed to use its Loose Part Monitoring Program.</p>
<p>Did you adequately describe how you resolved each issue?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	<p>By letter dated August 1, 2008, the staff issued RAI 3.3.2-1 requesting the applicant to justify its use of the Loose Part Monitoring Program for managing these aging effects. By letter dated September 1, 2008, the applicant responded by revising the AMR line item to instead credit the Bolting Integrity Program.</p>
<p>Did you state a finding on each issue regarding its acceptability, and did you provide an appropriate technical basis ("because" statement) to substantiate this finding?</p>	<p>The staff finds the applicant's response acceptable because use of the Bolting Integrity Program for managing this aging effect as it is consistent with the recommendation in GALL Report Item V.E.2.</p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p>Therefore, the staff concludes that the applicant has demonstrated that the effects of aging for these components will be adequately managed so that their intended function(s) will be maintained consistent with the CLB during the period of extended operation, as required by 10 CFR 54.21(a)(3).</p>

3.[X].3 Conclusion

The staff concludes[, **pending resolution of [List Any Open or Confirmatory Items],**] that the applicant has provided sufficient information to demonstrate that the effects of aging for the [identify area corresponding to LRA Section 3.X] components within the scope of license renewal and subject to an AMR will be adequately managed so that the intended function(s) will

be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).

3.7 Conclusion for Aging Management Review Results

The staff reviewed the information in LRA Section 3, “[Title of LRA Section 3],” and LRA Appendix B, “[Title of LRA Appendix B].” On the basis of its review of the AMR results and AMPs, the staff concludes[, **pending resolution of [List Any Open or Confirmatory Items],**] that the applicant has demonstrated that the aging effects will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff also reviewed the applicable [FSAR] supplement program summaries and concludes that the supplement adequately describes the AMPs credited for managing aging, as required by 10 CFR 54.21(d).

With regard to these matters, the staff concludes that the applicant will continue to conduct the activities authorized by the renewed license[s] will continue to be conducted in accordance with the CLB, and any changes made to the CLB, in order to comply with 10 CFR 54.21(a)(3), are in accordance with the Atomic Energy Act of 1954, as amended, and NRC regulations.

SECTION 4

TIME-LIMITED AGING ANALYSES

This section of the safety evaluation report (SER) addresses the identification of time-limited aging analyses (TLAAs). In license renewal application (LRA) Sections 4.2 through 4.[X], [Long Applicant Company Name] ([Short Applicant Company Name or Abbreviation] or the applicant) addressed the TLAAs for [Long Plant Name] ([Short Plant Name or Abbreviation])[, List Units if Applicable]. SER Sections 4.2 through 4.[X] document the review of the TLAAs conducted by the staff of the United States (US) Nuclear Regulatory Commission (NRC) (the staff). [Move this text from the former Section 4.1]

4.1 Identification of Time-Limited Aging Analyses

TLAAs are certain plant-specific safety analyses that involve time-limited assumptions defined by the current operating term. Pursuant to Title 10, Section 54.21(c)(1), of the *Code of Federal Regulations* (10 CFR 54.21(c)(1)), applicants must list TLAAs as defined in 10 CFR 54.3. In addition, pursuant to 10 CFR 54.21(c)(2), applicants must list plant-specific exemptions granted under 10 CFR 50.12 based on TLAAs. For any such exemptions, the applicant must evaluate and justify the continuation of the exemptions for the period of extended operation.

Guidance Table 4-A	
Management Expectation	Sample Documentation
Did you identify where the applicant listed its TLAAs and where it addressed TLAA-based exemptions?	In LRA Table 4.1-1, "List of Time-Limited Aging Analyses and Resolution," the applicant listed the TLAAs applicable to its facility. In addition, LRA Section 4.1.2 states that the applicant identified no exemptions, granted under 10 CFR 50.12, and based on a TLAA, as defined in 10 CFR 54.3.
Did you identify any issues concerning the applicant's list of TLAAs or identification of TLAA-based exemptions?	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p>The staff reviewed the applicant's list of TLAAs and identified no omissions of TLAAs applicable to the plant.</p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>The applicant did not list pressurizer surge line fatigue usage factor calculations as a TLAA. In response to NRC Bulletin 88-11, the applicant determined that the pressurizer surge line fatigue usage factor was not an issue for the period of the initial license. However, because it based these calculations on assumptions defined by the period of the initial license, pressurizer surge line fatigue usage factors should be</p>

Guidance Table 4-A	
Management Expectation	Sample Documentation
	analyzed for the period of extended operation. This issue meets the definition of a TLAA and should be listed per the requirements in 10 CFR 54.21(c)(1).
<p>Did you adequately describe how you resolved each issue, or why an issue is currently unresolved?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p style="text-align: center;"><i>No discussion is necessary.</i></p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>By letter dated April 21, 2008, the staff issued RAI 4.1-1 to request information as to why the applicant did not identify pressurizer surge line fatigue usage factor calculations as a TLAA. By letter dated May 21, 2008, the applicant amended its LRA so as to list this issue as a TLAA.</p>
<p>Did you state a finding on the acceptability of the TLAA list and identification of exemptions, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p>The staff finds that there are no TLAA-based exemptions justified for continuation through the period of extended operation because the applicant provided sufficient information on its results and the process it used to identify these exemptions.</p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>With the information provided in its RAI response, the staff finds the applicant’s list of TLAAs acceptable because it identified those as applicable to its facility.</p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p>On the basis of its review, the staff concludes that the applicant has provided an acceptable list of TLAAs, as required by 10 CFR 54.21(c)(1). The staff confirmed, as required by 10 CFR 54.21(c)(2), that no exemption to 10 CFR 50.12 had been granted based on a TLAA.</p>

Guidance Table 4-B	
Management Expectation	Sample Documentation
<p>Did you identify the technical review area with an SER section number and title, and do these correspond exactly to the LRA section number and title under review?</p> <p>Does the formatting follow conventions in the SER Style Guide?</p> <p>Note: The Project Manager should determine the overall structure for SER Section 4.</p>	<p><u>4.5 Concrete Containment Tendon Prestress Analysis</u></p>
TLAA Review	
<p>Did you adequately identify the information reviewed?</p>	<p>In LRA Section 4.5, the applicant summarized its evaluation of concrete containment tendon pre-stress analysis for the period of extended operation.</p>
<p>Did you identify the appropriate regulatory basis for the staff's review based on the applicant's choice of 10 CFR 54.21(c)(1)(i), 10 CFR 54.21(c)(1)(ii), and/or 10 CFR 54.21(c)(1)(iii)?</p> <p>Note: Some TLAA's are evaluated against more than one subsection of 10 CFR 54.21(c)(1).</p>	<p style="text-align: center;">Scenario 1: §§ 54.21(c)(1)(i) Review</p> <p>The staff reviewed LRA Section 4.5, pursuant to 10 CFR 54.21(c)(1)(i), to verify that the analyses remain valid for the period of extended operation.</p> <p style="text-align: center;">Scenario 2: §§ 54.21(c)(1)(ii) Review</p> <p>The staff reviewed LRA Section 4.5, pursuant to 10 CFR 54.21(c)(1)(ii), to verify that the analyses have been projected to the end of the period of extended operation.</p> <p style="text-align: center;">Scenario 3: §§ 54.21(c)(1)(iii) Review</p> <p>The staff reviewed LRA Section 4.5, pursuant to 10 CFR 54.21(c)(1)(iii), to verify that the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.</p>
<p>If applicable, did you identify specific SRP-LR acceptance criteria and/or review procedures followed?</p>	<p>SRP-LR Section 4.5.2.1.1 states an acceptable method for meeting the requirements in 10 CFR 54.21(c)(1)(iii). To verify whether the applicant met this acceptance criterion, the staff followed the review procedure described in SRP-LR Section 4.5.3.1.1.</p>

Guidance Table 4-B	
Management Expectation	Sample Documentation
<p>Did you adequately identify any issues concerning the applicant's TLAA?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p>In its review, the staff identified no issues concerning the applicant's TLAA.</p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>In its review, the staff noted that the applicant did not compare quantitatively the measured pre-stressing force trend line with the predicted lower limits or with the minimum required values.</p>
<p>Did you adequately describe how you resolved each issue, or why an issue is currently unresolved?</p> <p>Did you identify with the correct date all applicable correspondence pertaining to each issue?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p style="text-align: center;"><i>No discussion is necessary.</i></p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>By letter dated March 28, 2008, the staff issued RAI 4.5-1 to request the applicant to provide a quantitative comparison of the measured pre-stressing force trend line with the predicted lower limits or with the minimum required values, or to justify why such a comparison is unnecessary. The applicant responded by letter dated April 28, 2008, and provided a quantitative comparison with the minimum required values. The staff reviewed this additional information and noted that the applicant excluded from this analysis the result of the steam generator change and the re-tensioning of a large number of vertical tendons. Therefore, the staff requested additional information in RAI 4.5-1A, sent by letter dated May 10, 2008, concerning when the steam generator change and re-tensioning were performed, and how the applicant performed the analysis due to the exclusion of a large number of vertical tendons. In a response dated May 31, 2008, the applicant provided additional information on the steam generator replacement dates and re-tensioning.</p>

Guidance Table 4-B	
Management Expectation	Sample Documentation
<p>Did you state a finding on the acceptability of each exception, enhancement, or other issue, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?</p>	<p style="text-align: center;">Sample 1: No Issues Identified</p> <p>The staff finds the applicant’s TLAA acceptable because it meets the staff’s acceptance criteria specified in SRP-LR Section 4.5.2.1.1.</p> <p style="text-align: center;">Sample 2: Issues Identified</p> <p>With the additional information provided on this issue, the staff finds the applicant’s comparison of the measured pre-stressing force trend line with the minimum required values acceptable because the applicant tested the re-tensioned tendons in three previous surveillances and intends to not exclude them from future testing.</p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p style="text-align: center;">Scenario 1: §§ 54.21(c)(1)(i) Review</p> <p>Therefore, the staff concludes that the applicant has demonstrated, pursuant to 10 CFR 54.21(c)(1)(i), that the analyses remain valid for the period of extended operation.</p> <p style="text-align: center;">Scenario 2: §§ 54.21(c)(1)(ii) Review</p> <p>Therefore, the staff concludes that the applicant has demonstrated, pursuant to 10 CFR 54.21(c)(1)(ii), that the analyses have been projected to the end of the period of extended operation.</p> <p style="text-align: center;">Scenario 3: §§ 54.21(c)(1)(iii) Review</p> <p>Therefore, the staff concludes that the applicant has demonstrated, pursuant to 10 CFR 54.21(c)(1)(iii), that the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.</p>
FSAR Supplement Review	

Guidance Table 4-B	
Management Expectation	Sample Documentation
<p>Did you adequately identify the information reviewed and identify any issues concerning this information?</p> <p>If there are any issues, did you identify with the correct date all applicable correspondence pertaining to each issue?</p> <p>Did you state a finding on the acceptability of the FSAR supplement, and did you provide an appropriate technical basis (“because” statement) to substantiate this finding?</p>	<p>The staff reviewed this TLAA’s FSAR supplement information in LRA Section A.2.5 and finds it acceptable because it meets the acceptance criteria specified in SRP-LR Section 4.5.2.2.</p> <p><i>Note: Refer to Guidance Table 3-C for samples on how to document issues concerning FSAR supplement information.</i></p>
<p>Did you include at the end of the evaluation a regulatory conclusion with a provisional statement for open items or confirmatory items, if applicable?</p>	<p>Therefore, the staff concludes that the FSAR supplement contains an appropriate summary description of the TLAA evaluation, as required by 10 CFR 54.21(d).</p>

4.[X] Conclusion for TLAAs

The staff reviewed the information in LRA Section 4, “[Title of LRA Section 4].” On the basis of its review, the staff concludes[, **pending resolution of [List Any Open or Confirmatory Items],**] that the applicant has provided a sufficient list of TLAAs, as defined in 10 CFR 54.3 and that the applicant has demonstrated that: (1) the TLAAs will remain valid for the period of extended operation, as required by 10 CFR 54.21(c)(1)(i); (2) the TLAAs have been projected to the end of the period of extended operation, as required by 10 CFR 54.21(c)(1)(ii); or (3) that the effects of aging on intended function(s) will be adequately managed for the period of extended operation, as required by 10 CFR 54.21(c)(1)(iii). The staff also reviewed the [FSAR] supplement for the TLAAs and finds that the supplement contains descriptions of the TLAAs sufficient to satisfy the requirements of 10 CFR 54.21(d). In addition, the staff concludes, as required by 10 CFR 54.21(c)(2) that [no plant-specific, TLAA-based exemptions are in effect].

With regard to these matters, the staff concludes that the activities authorized by the renewed license[s] will continue to be conducted in accordance with the CLB, and that any changes made to the CLB, in order to comply with 10 CFR 54.29(a), are in accordance with the Atomic Energy Act of 1954, as amended, and NRC regulations.

[include this section after discussion on all TLAAs]

SECTION 5

REVIEW BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

In accordance with Title 10, Part 54, of the *Code of Federal Regulations*, the Advisory Committee on Reactor Safeguards (ACRS) will review the license renewal application ... [use the existing template language]

SECTION 6

CONCLUSION

The staff of the United States (US) Nuclear Regulatory Commission (NRC) (the staff) reviewed the license renewal application (LRA) for [Long Plant Name and Units, if applicable], in accordance with NRC regulations and NUREG-1800, Revision 1, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," dated September 2005. Title 10, Section 54.29, of the *Code of Federal Regulations* (10 CFR 54.29) sets the standards for issuance of a renewed license.

On the basis of its review, the staff concluded that the applicant adequately identified those systems, structures, and components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and those structures and components that are subject to an aging management review, as required by 10 CFR 54.21(a)(1). The staff also concluded that the applicant demonstrated that the aging effects will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis (CLB) for the period of extended operation, as required by 10 CFR 54.21(a)(3). Further, the staff concluded that the applicant demonstrated that (1) the time-limited aging analyses (TLAAs) will remain valid for the period of extended operation, as required by 10 CFR 54.21(c)(1)(i), (2) the TLAAs had been projected to the end of the period of extended operation, as required by 10 CFR 54.21(c)(1)(ii), or (3) that the aging effects will be adequately managed for the period of extended operation, as required by 10 CFR 54.21(c)(1)(iii). On the basis of its evaluation of the LRA, the staff determined that the requirements of 10 CFR 54.29(a) have been met, that there is reasonable assurance that the activities authorized by the renewed license[s] will continue to be conducted in accordance with the CLB, and that any changes made to the CLB, in order to comply with 10 CFR 54.29(a), are in accordance with the Atomic Energy Act of 1954, as amended, and NRC regulations.

The staff notes that any requirements of 10 CFR Part 51, Subpart A, are documented in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)," [Draft] Supplement [GEIS Supplement No.], "[Title of Draft or Final Plant-Specific GEIS Supplement]," dated [Issue Date of the Draft or Final Plant-Specific GEIS Supplement].