Audit and Review Plan for Plant Aging Management Programs, Reviews and Time-Limited Aging Analyses

Shearon Harris Nuclear Power Plant
Unit 1
Docket No.: 50-400

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1. INTRODUCTION

By letter dated November 14, 2006, (Agencywide Documents Access and Management System [ADAMS] ADAMS Accession Number ML0633502670 Carolina Power & Light Company, doing business as Progress Energy Carolinas, Inc., a subsidiary of Progress Energy, Inc., (the applicant) submitted to the U.S. Nuclear Regulatory Commission (NRC) its application for renewal of Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit 1, also known as the Harris Nuclear Plant (HNP). The applicant requested renewal of the operating license for an additional 20 years beyond the 40-year current license term.

In support of the staff's safety review of the license renewal application (LRA) for HNP, the Division of License Renewal (DLR), Branch C (RLRC), will lead a project team that will audit and review selected aging management reviews (AMRs) and associated aging management programs (AMPs), and time-limited aging analyses (TLAAs) developed by the applicant to support its LRA for HNP. The project team will include NRC staff and engineers provided by Information Systems Laboratories, Inc. (ISL), RLRC's technical assistance contractor. Appendix A, "Project Team Members," lists the project team members. This document is the RLRC plan for auditing and reviewing plant aging management reviews and aging management programs for HNP.

The project team will audit and review its assigned AMPs, AMRs, and TLAAs against the requirements of Title 10 of the Code of Federal Regulations (CFR), Part 54 (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants;" the guidance provided in NUREG-1800, Revision 1, "Standard Review Plan for Review of License Renewal Application for Nuclear Power Plants" (SRP-LR), dated September 2005; the guidance provided in NUREG-1801, Revision 1, "Generic Aging Lessons Learned (GALL) Report," dated September 2005; and this audit and review plan. For the scope of work defined in this audit and review plan, the project team will verify that the applicant's aging management activities and programs will adequately manage the effects of aging on structures and components, so that their intended functions will be maintained consistent with the HNP current licensing basis (CLB) for the period of extended operation.

The project team will perform its work at NRC Headquarters, Rockville, Maryland; at ISL's offices in Rockville, Maryland; and at the HNP site in New Hill, North Carolina. The project team will perform its work in accordance with the schedule shown in Appendix B, "RLRC Schedule for HNP LRA Safety Review."

This plan includes the following information:

- **Introduction and Background**. Summary of the license renewal requirements, as stated in the Code of Federal Regulations, and a summary of the documents that the project team will use to conduct the audit and review process described in this plan.

- **Objectives**. The objectives of the audits and reviews addressed by this audit and review plan.

- **Summary of Information Provided in License Renewal Application**. Description of the information contained in the license renewal application for HNP that is applicable to this audit and review plan.

- **Overview of the Audit, Review, and Documentation Procedure**. Summary of the process that the project team will follow to conduct its audit and review of the HNP LRA information that is within its scope of review.

- **Planning, Audit, Review, and Documentation Procedure**. The procedure that the project team will use to plan and schedule its work, to audit and review the HNP LRA information that is within its scope of review, and to document the results of its work.

- **Appendices**. Supporting information. The project team members are shown in Appendix A and the schedule is shown in Appendix B. The project team's work assignments are shown in Appendix C, "Aging Management Program Assignments," Appendix D, "Aging Management Review Assignments," and Appendix E, "Time-Limited Aging Analysis Review Assignments." Appendices F, G, and H are the worksheets that the individual project team members use to informally document the results of their audit and review work. The application of these worksheets is discussed in Section 6 of this audit and review plan. Appendix I is a list of the acronyms, abbreviations, and initialisms used in this audit and review plan.

2. BACKGROUND

In 10 CFR 54.4, the scope of license renewal is defined as those structures, systems, and components (SSCs) (1) that are safety-related, (2) whose failure could affect safety-related functions, and (3) that are relied on to demonstrate compliance with the NRC's regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout.

An applicant for a renewed license must review all SSCs within the scope of license renewal to identify those structures and components (SCs) subject to an AMR. SCs subject to an AMR are those that perform an intended function without moving parts or without a change in configuration or properties (passive), and that are not subject to replacement based on qualified life or specified time period (long-lived). Pursuant to 10 CFR 54.21(a)(3), an applicant for a renewed license must demonstrate that the effects of aging will be managed in such a way that the intended function(s) of those SCs will be maintained, consistent with the CLB, for the period of extended operation.

License renewal also requires the identification and updating of the TLAAs. During the design phase for a plant, certain assumptions are made about the length of time the plant can operate. These assumptions are incorporated into design calculations for several of the plant's SSCs. In accordance with 10 CFR 54.21(c)(1), the applicant must either show that these calculations will remain valid for the period of extended operation, project the analyses to the end of the period of extended operation, or demonstrate that the effects of aging on these SSCs can be adequately managed for the period of extended operation.

In addition, 10 CFR 54.21(d) requires that the applicant submit a supplement to the final safety analysis report (FSAR) that contains a summary description of the programs and activities that it credited to manage the effects of aging and the evaluation of time-limited aging analyses for the extended period of operation.

The SRP-LR provides staff guidance for reviewing applications for license renewal. The GALL Report is a technical basis document. It summarizes staff-approved AMPs for the aging management of a large number of SCs that are subject to an AMR. It also summarizes the aging management evaluations, programs, and activities acceptable to the NRC staff for managing aging of most of the SCs used in commercial nuclear power plants, and serves as a reference for both the applicant and staff reviewers to quickly identify those AMPs and activities that the staff has determined will provide adequate aging management during the period of extended operation. If an applicant commits to implementing these staff-approved AMPs, the time, effort, and resources needed to review an applicant's LRA will be greatly reduced, thereby improving the efficiency and effectiveness of the license renewal review process. The GALL Report identifies (1) SSCs, (2) component materials, (3) environments to which the components are exposed, (4) aging effects/aging mechanisms associated with the materials and environments, (5) AMPs that are credited with managing the aging effects, and (6) recommendations for further applicant evaluations of aging effects and their management for certain component types.

The GALL Report is treated in the same manner as an approved topical report that is generically applicable. An applicant may reference the GALL Report in its LRA to demonstrate that its programs correspond to those that the staff reviewed and approved in the GALL Report. If the material presented in the LRA is consistent with the GALL Report and is applicable to the applicant's facility, the staff will accept the applicant's reference to the GALL Report. In making this determination, the staff considers whether the applicant has identified specific programs described and evaluated in the GALL Report but does not conduct a review of the substance of the matters described in the GALL Report. Rather, the staff confirms that the applicant verified that the approvals set forth in the GALL Report apply to its programs.

If an applicant takes credit for a GALL Report program, it is incumbent on the applicant to ensure that its plant program addresses all ten program elements of the referenced GALL Report program. These elements are described in the SRP-LR, Appendix A.1, "Aging Management Review - Generic (Branch Technical Position RLSB-1)." In addition, the conditions at the plant must be bounded by the conditions for which the GALL Report program was evaluated. The applicant must certify in its LRA that it completed the appropriate verifications

and that those verifications are documented and retained by the applicant in an auditable form.

The SRP-LR also provides staff guidance for reviewing TLAAs. Pursuant to 10 CFR 54.21(c)(1), a license renewal application is required to provide a list of TLAAs, as defined in 10 CFR 54.3. In addition, the applicant must provide a list of plant-specific exemptions granted under 10 CFR 50.12 that are based on TLAAs. The number and type of TLAAs vary depending on the plant-specific CLB. All six criteria set forth in 10 CFR 54.3 must be satisfied to conclude that a calculation or analysis is a TLAA.

Pursuant to 10 CFR 54.3, TLAAs are those licensee calculations and analyses that:

1. Involve systems, structures, and components within the scope of license renewal, as delineated in 10 CFR 54.4(a).

2. Consider the effects of aging.

3. Involve time-limited assumptions defined by the current operating term, for example, 40 years.

4. Were determined to be relevant by the licenses in making a safety determination.

5. Involve conclusions or provide the basis for conclusions related to the capability of the system, structure, or component to perform its intended function(s), as delineated in 10 CFR 54.4(b).

6. Are contained or incorporated by reference in the CLB.

Finally, the applicant must demonstrate that the TLAAs remain valid for the period of extended operation; the TLAAs have been projected to the end of the period of extended operation; or the effects of aging on the intended function(s) will be adequately managed for the period of extended operation. The staff performs a technical review as well as reviews the area relating to the identification of TLAAs. The staff also confirms that the applicant did not omit any TLAAs, as defined in 10 CFR 54.3.

3. OBJECTIVES

The overall objective of the audit and review described in this audit and review plan is to verify compliance with 10 CFR 54.21(a)(3) and 10 CFR 54.21(c)(1). Therefore, the audit and review process helps ensure that for each structure and component within the scope of the project team's review, 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.

The audit and review procedure for HNP is described in Sections 5 and 6 of this audit and review plan. It is intended to accomplish the following objectives:

- For HNP AMPs that the applicant claims are consistent with GALL Report AMPs, verify that the plant AMPs contain the program elements of the referenced GALL AMP and that the conditions at the plant are bounded by the conditions for which the GALL Report AMPs were evaluated.

- For HNP AMPs that the applicant claims are consistent with GALL Report AMPs with exceptions, verify that the plant AMPs contain the program elements of the referenced GALL Report AMPs and that the conditions at the plant are bounded by the conditions for which the GALL Report AMPs were evaluated. In addition, verify that the applicant has documented an acceptable technical basis for each exception.

- For HNP AMPs that the applicant claims will be consistent with GALL Report AMPs after specified enhancements are implemented, verify that the plant AMPs, with the enhancements, will be consistent with the referenced GALL Report AMPs, or are acceptable on the basis of a technical review. In addition, verify that the applicant identified the enhancements as commitments in the FSAR or other docketed correspondence.

- For AMR line items that the applicant claims are consistent with the GALL Report, determine that these AMR line items are consistent with the recommendation of the GALL Report.

- For AMR line items (Table 1s) that the applicant claims are not applicable with the GALL Report, determine that these AMR line items are acceptable on the basis of a technical review.

- For AMR line items that the applicant claims consistent with AMR line items that the staff has previously approved for another plant, determine that these AMR line items are acceptable on the basis of a technical review.

- For AMR line items for which the GALL Report recommends further evaluation, determine that the applicant has addressed the further evaluation, and evaluated the AMRs in accordance with the SRP-LR.

- For TLAAs, determine that the applicant has properly identified the TLAAs. TLAAs are certain plant-specific safety analyses that are based on explicitly assumed 40-year plant life (for example, aspects of the reactor vessel design). Pursuant to 10 CFR 54.21(c)(1), a license renewal applicant is required to provide a list of TLAAs, as defined in 10 CFR 54.3. The area relating to the identification of TLAAs is reviewed. TLAAs may have developed since issuance of a plant's operating license. As indicated in 10 CFR 54.30, the adequacy of the plant's CLB, which includes TLAAs, is not an area within the scope of the license renewal review. Any question regarding the inadequacy of the CLB must be addressed under the backfit rule (10 CFR 50.109) and is separate from the

license renewal process.

- Determine that the applicant has demonstrated that (1) the TLAAs remain valid for the period of extended operation; (2) the TLAAs have been projected to the end of the period of extended operation; or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

4. SUMMARY OF INFORMATION PROVIDED IN THE LICENSE RENEWAL APPLICATION

4.1 Aging Management Review Results

The HNP LRA closely follows the standard LRA format presented in Nuclear Energy Institute (NEI) NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 6, June 2005. Section 3 of the HNP LRA provides the results of the aging management review for structures and components that the applicant identified as being subject to aging management review. Section 4 in the HNP LRA addressed time-limited aging analyses.

HNP LRA Table 3.0-1 provides descriptions of the service environments used in the AMRs to determine the aging effects requiring management. Results of the AMRs are presented in two different types of tables. The applicant refers to the two types of tables as Table 1 and Table 2.

The first table type is a series of six tables labeled Table 3.X.1, where "X" is the system/component group number (see table below), and "1" indicates it is a Table 1 type. For example, in the reactor coolant system subsection of HNP LRA Section 3, this is Table 3.1.1, and in the engineered safety features subsection of HNP LRA Section 3, this is Table 3.2.1. For ease of discussion, these table types will hereafter be referred to as "Table 1." These tables are derived from the corresponding tables in NUREG-1801, Volume 1, and present summary information from the AMRs.

Definition	
1	Reactor Vessel, Internals, and Reactor Coolant System
2	Engineered Safety Features Systems
3	Auxiliary Systems
4	Steam and Power Conversion Systems
5	Containments, Structures, and Component Supports
6	Electrical and Instrumentation and Controls

The second table type is a series of tables labeled Table 3.X.2-Y, where "X" is the system/component group number, "2" indicates it is a Table 2 type, and "Y" indicates the

subgroup number within group "X." For example, within the reactor coolant system subsection, the AMR results for the reactor vessel and internals are presented in HNP LRA Table 3.1.2-1, and the results for the reactor coolant system are presented in HNP LRA Table 3.1.2-3. In the engineered safety features subsection, the containment spray system results are presented in HNP LRA Table 3.2.2-1, and the high head safety injection system is in HNP LRA Table 3.2.2-2. For ease of discussion, these table types will hereafter be referred to as "Table 2." These tables present the results of the AMRs.

4.1.1 HNP AMR Comparison with the GALL Report

The applicant compared the HNP AMR results with information set forth in the tables of the GALL Report and provided the results of its comparisons in two table types that correlate with the two table types described above.

To take full advantage of the GALL Report, HNP AMR results have been compared with information set forth in the tables of NUREG-1801. Results of that comparison are provided in the following two table types, Table 1 and Table 2.

4.1.1.1 Purpose of Table 1

The purpose of Table 1 is to provide a summary comparison of how the HNP AMR results align with the corresponding table of NUREG-1801, Volume 1. These tables are essentially the same as Tables 1 through 6 provided in NUREG-1801, Volume 1, with the following exceptions:

- The "ID" column is labeled "Item Number" and the spacing has been expanded to include the table number.
- The "Type" column has been deleted. Items applicable to BWRs only are noted as such.
- The "Related Generic Item" and "Unique Item" columns have been replaced by a "Discussion" column.

The "Item Number" column provides a means to cross-reference Table 1 from Table 2s.

Further information is provided in the "Discussion" column. The following are examples of information that might be contained within this column:

- Any "Further Evaluation Recommended" information or reference to the location of that information.
- The name of a plant-specific program being used.
- Exceptions to the NUREG-1801 assumptions.

- A discussion of how the line item is consistent with the corresponding line item in NUREG-1801, Volume 1, when it may not be intuitively obvious.

- A discussion of how the line item is different than the corresponding line item in NUREG-1801, Volume 1, when it may appear to be consistent.

4.1.1.2 Purpose of Table 2

Table 2 provides results of the aging management reviews for those structures and components identified in Section 2 of the LRA as being subject to aging management review. There is a Table 2 for each aging management review within a NUREG-1801 system group. For example, the engineered safety features system group contains tables specific to the containment spray system, the high head safety injection system, the low head safety injection and residual heat removal system, and the passive safety injection system.

Table 2 consists of the following nine columns:

Component type

Column 1 identifies the component types from Section 2 of this application that are subject to aging management review. Similar to Section 2, component types are listed in alphabetical order. In the Class 1 tables in Section 3.1 and the structural tables in Section 3.5, component types are alphabetical by sub-groups.

The term “piping” in component lists may include pipe, pipe fittings (such as elbows and reducers), flow elements, orifices, and thermowells. If such components have unique tag numbers or the specific component has a function other than pressure boundary, then flow elements, orifices and thermowells are identified as a separate component type.

The term “heat exchanger (shell)” may include the bonnet/channel head and tubesheet. In cases where the bonnet/channel head and tubesheet provide a unique material and environment combination, they will be uniquely identified as a separate component type.

The general component type of “tank” includes components identified as tanks or accumulators on LRA drawings.

Intended Function

Column 2 identifies the license renewal intended functions (using abbreviations where necessary) for the listed component types. Definitions and abbreviations of intended functions are listed in Table 2.0-1 in Section 2.

Material

Column 3 lists the specific materials of construction for the component type being evaluated.

Environment

Column 4 lists the environment to which the component types are exposed. Internal/external service environments are indicated. A description of these environments is provided in Table 3.0-1.

Aging Effect Requiring Management (AERM)

Column 5 lists the aging effects requiring management for material and environment combinations for each component type.

Aging Management Programs (AMP)

Column 6 lists the programs used to manage the aging effects requiring management.

NUREG-1801, Vol. 2, Item

Column 7 documents identified consistencies by noting the appropriate NUREG-1801, Volume 2, item number. If there is no corresponding item number in NUREG-1801, Volume 2, for a particular combination of factors, Column 7 indicates “None” for this item.

Each combination of the following factors listed in Table 2 is compared to NUREG-1801, Volume 2, to identify consistencies:

- Component type
- Material
- Environment
- Aging effect requiring management
- Aging management program

Table 1 Item

Column 8 lists the corresponding line item from Table 1. If there is no corresponding item in NUREG-1801, Volume 1, Column 8 is left blank.

Each combination of the following that has an identified NUREG-1801, Volume 2 item number also has a Table 1 line item reference number:

- Component type
- Material
- Environment
- Aging effect requiring management
- Aging management program

Notes

Column 9 contains notes that are used to describe the degree of consistency with the line items in NUREG-1801, Volume 2. Notes that use letter designations are standard notes based on a letter from A. Nelson, NEI, to P. T. Kuo, NRC, "U.S. Nuclear Industry's Proposed Standard License Renewal Application Format Package, Request NRC Concurrence," dated January 24, 2003 (ML030290201). The staff concurred with the NEI standardized format for license renewal applications by letter dated April 7, 2003, from P. T. Kuo, NRC, to A. Nelson, NEI (ML030990052). Notes that use numeric designators are specific to HNP.

HNP LRA Table 2 contains the aging management review results and indicates whether the results correspond to line items in Volume 2 of the GALL Report. Correlations between the combination HNP LRA Table 2 and a combination for a line item in Volume 2 of the GALL Report are identified by the GALL Report item number in Column 7. If "None" is indicated in Column 7, the applicant did not identify a corresponding combination in the GALL Report. If the applicant identified a GALL Report line item, the next column provides a reference to a Table 1 row number. This reference corresponds to the GALL Report, Volume 2, "roll-up" to the GALL Report, Volume 1, tables.

4.1.2 Plant-Specific Programs

There are no plant-specific programs in the HNP LRA.

4.2 Time-Limited Aging Analyses

The HNP LRA closely follows the standard LRA format presented in Revision 6 of NEI 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule." Section 4 of the HNP LRA addresses TLAAs. In Section 4.1.1, the HNP LRA states that the calculations and evaluations that could potentially meet the six criteria of 10 CFR 54.3 were identified by searching CLB documents including the following:

- Technical Specifications
- HNP FSAR
- Docketed licensing correspondence
- Design basis documents
- Applicable Westinghouse analyses and reports for steam generator replacement and power uprate
- Applicable reactor vessel capsule surveillance reports.

Also, in Section 4.1.1, the HNP LRA states that as required by 10 CFR 54.21(c)(1), an evaluation of HNP-specific TLAAs must be performed to demonstrate that:

(i) The analyses remain valid for the period of extended operation;

(ii) The analyses have been projected to the end of the period of extended operation; or

(iii) The effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

In the HNP LRA, the applicant summarized the results of the above evaluations in Table 4.1-1. These evaluations are discussed in subsequent sections of HNP LRA Section 4.

Section 4.1.3 of the HNP LRA identifies plant-specific exemptions. 10 CFR 54.21(c) also requires that the application for a renewed license includes a list of plant-specific exemptions granted pursuant to 10 CFR 50.12 and in effect that are based on TLAAs as defined in 10 CFR 54.3. HNP performed this by reviewing docketed correspondence which identified HNP exemptions. As a result of this review, two exemptions were identified as meeting the definition of a TLAA.

The HNP LRA next includes a separate section for each of the identified TLAAs within the outline of the corresponding NUREG-1800 TLAA category. The TLAA categories are outlined in the following table.

TLAA Description	10 CFR 54.21(c)(1) Paragraph	Section
Reactor Vessel Neutron Embrittlement		**4.2**
Neutron Fluence	54.21(c)(1)(ii)	4.2.1
Upper Shelf Energy Analysis	54.21(c)(1)(ii)	4.2.2
Pressurized Thermal Shock Analysis	54.21(c)(1)(ii)	4.2.3
Operating Pressure-Temperature Limits Analysis	54.21(c)(1)(ii)	4.2.4
Low-Temperature Overpressure-Limits Analysis	Not applicable	4.2.5
Metal Fatigue		**4.3**
Explicit Fatigue Analysis (NSSS Components)	-	4.3.1
Reactor Vessel	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.3.1.1
Reactor Vessel Internals	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.3.1.2
Control Rod Drive Mechanism	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.3.1.3

TLAA Description	10 CFR 54.21(c)(1) Paragraph	Section
Reactor Coolant Pumps	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.3.1.4
Steam Generators	54.21(c)(1)(i), 54.21(c)(1)(ii), 54.21(c)(1)(iii)	4.3.1.5
Pressurizer	54.21(c)(1)(i), 54.21(c)(1)(ii), 54.21(c)(1)(iii)	4.3.1.6
Reactor Coolant Pressure Boundary Piping (ASME Class 1)	54.21(c)(1)(i), 54.21(c)(1)(ii), 54.21(c)(1)(iii)	4.3.1.7
Implicit Fatigue Analysis (ASME Class 2, Class 3, and ANSI B31.1 Piping)	-	4.3.2
ASME Class 2 and 3 Piping	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.3.2.1
ANSI B31.1 Piping	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.3.2.2
Environmental Fatigue Analysis	-	4.3.3
RCS Loop Piping Leak-Before-Break Analysis	54.21(c)(1)(ii)	4.3.4
Cyclic Loads That Do Not Relate to RCS Transients	-	4.3.5
Primary Sample Lines	54.21(c)(1)(i)	4.3.5.1
Steam Generator Blowdown Lines	54.21(c)(1)(i)	4.3.5.2
Environmental Qualification of Electric Equipment	**54.21(c)(1)(iii)**	**4.4**
Concrete Containment Tendon Prestress	**Not Applicable**	**4.5**
Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis		**4.6**
Containment Mechanical Penetration Bellows Fatigue	-	4.6.1
Mechanical Penetration Bellows - Valve Chambers	54.21(c)(1)(i)	4.6.1.1
Mechanical Penetration Bellows - Fuel Transfer Tube Bellows Expansion Joint	54.21(c)(1)(i)	4.6.1.2
Other Plant-Specific Time-Limited Aging Analyses		**4.7**
Turbine Rotor Missile Generation Analysis	54.21(c)(1)(ii)	4.7.1

TLAA Description	10 CFR 54.21(c)(1) Paragraph	Section
Crane Cyclic Analyses	-	4.7.2
Polar Crane	54.21(c)(1)(ii)	4.7.2.1
Jib Cranes	54.21(c)(1)(ii)	4.7.2.2
Reactor Cavity Manipulator Crane	54.21(c)(1)(ii)	4.7.2.3
Fuel Cask Handling Crane	54.21(c)(1)(ii)	4.7.2.4
Fuel Handling Bridge Crane	54.21(c)(1)(ii)	4.7.2.5
Fuel Handling Building Auxiliary Crane	54.21(c)(1)(ii)	4.7.2.6
Main and Auxiliary Reservoir Sedimentation Analysis	54.21(c)(1)(iii)	4.7.3
High Energy Line Break Location Postulation	54.21(c)(1)(i), 54.21(c)(1)(iii)	4.7.4

5. OVERVIEW OF AUDIT, REVIEW, AND DOCUMENTATION PROCEDURE

The project team will follow the procedure specified in Section 6 of this audit and review plan to perform its audits and reviews and to document the results of its work. The process covered by the procedure is summarized below.

5.1 Aging Management Programs

For the HNP AMPs for which the applicant claimed consistency with the AMPs included in the GALL Report, the project team will review the HNP AMP descriptions and compare program elements for the HNP AMPs to the corresponding program elements for the GALL Report AMPs. The project team will verify that the HNP AMPs contain the program elements of the referenced GALL Report program and that the conditions at the plant are bounded by the conditions for which the GALL Report program was evaluated. Table 1 of this audit and review plan summarizes the ten program elements that comprise an aging management program. The License Renewal Branch B (RLRB) will review and determine the adequacy of the applicant's 10 CFR 50, Appendix B Program. Other aspects of these program elements will be reviewed by the project team.

For HNP AMPs that have one or more exception and/or enhancement, the project team will review each exception and/or enhancement to determine whether the exception and/or enhancement is acceptable, and whether the HNP AMP, as modified by the exception and/or the enhancement, would adequately manage the aging effects for which it is credited. In some cases, the project team will identify differences that the applicant did not identify between the HNP AMPs credited by the applicant and the GALL Report AMPs. In these cases, the project team will review the difference to determine whether the HNP AMP, as modified by the difference, would adequately manage the aging effects for which it is credited.

5.2 Aging Management Reviews

The AMRs in the HNP LRA fall into three broad categories: (1) AMR results that are consistent with the GALL Report (i.e., those that the GALL Report concludes are adequate to manage aging of the components referenced in the GALL Report), (2) those for which the GALL Report concludes that aging management is adequate, but further evaluation is recommended for certain aspects of the aging management process, and (3) AMR results that are not consistent with or not addressed in the GALL Report. For the first category AMR reviews, the project team will determine (1) whether the AMRs reported by the applicant to be consistent with the GALL Report are indeed consistent with the GALL Report, and (2) whether the AMRs reported by the applicant to be managed using plant-specific AMPs are technically acceptable. For the second category AMR review, for which the applicant claimed consistency with the GALL Report, and for which the GALL Report recommends further evaluation, the project team will review the applicant's evaluation to determine if it adequately addressed the issues for which the GALL Report recommended further evaluation. For the third category AMR review, the project team will review the results of the AMRs for material, environment, AERM, and AMP combinations to determine the technical adequacy.

5.3 Time-Limited Aging Analyses

Generally, the TLAAs in the HNP LRA fall into the broad category of those that are consistent with the NUREG-1800 TLAA categories. However, there are 2 plant-specific exemptions identified in the HNP LRA that depend on TLAAs.

For its TLAA reviews, the project team will determine if the applicant had provided adequate information to meet the requirements of 10 CFR 54.21(c)(1) and 10 CFR 54.21(c)(2).

Further, the project team will conduct both regulatory evaluations and technical evaluations to determine, as defined in 10 CFR 54.3, that each TLAA meets the following six criteria:

1. Involve systems, structures, and components that are within the scope of license renewal, as delineated in 10 CFR 54.4(a).

2. Consider the effects of aging.

3. Involve time-limited assumptions defined by the current operating term (40 years).

4. Determined to be relevant by the applicant in making a safety determination.

5. Involve conclusions, or provide the basis for conclusions, related to the capability of the system, structure, and component to perform its intended functions, as delineated in 10 CFR 54.4(b).

6. Contained or incorporated by reference in the CLB.

In addition, the project team will also review the TLAAs to determine if there are emerging issues that should be further evaluated by technical specialists in the NRC Division of Component Integrity (DCI) or the Division of Engineering (DE). This is not expected to be an issue for TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) "the analyses remain valid for the period of extended operation" or 10 CFR 54.21(c)(iii) "the effects of aging on the intended function(s) will be adequately managed for the period of extended operation."

For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - "the analyses have been projected to the end of the period of extended operation," the audit team leader will be consulted to determine which TLAAs the audit team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis. Candidates for further review by technical specialists could be TLAAs such as the following:

A. Reactor Vessel Neutron Embrittlement
B. Plant-Specific TLAAs

5.4 NRC-Approved Precedents

To help facilitate the project team's review of its LRA, an applicant may reference NRC-approved precedents to demonstrate that its non-GALL Report programs correspond to reviews that the staff had approved for other plants during its review of previous applications for license renewal. When an applicant elects to provide precedent information, the project team will review and determine whether the material presented in the precedent is applicable to the applicant's facility, determine whether the plant program is bounded by the conditions for which the precedent was evaluated and approved, and determine that the plant program contains the program elements of the referenced precedent. In general, if the project team determines that these conditions are satisfied, it will use the information in the precedent to frame and focus its review of the applicant's program.

It is important to note that precedent information is not a part of the LRA; it is supplementary information voluntarily provided by the applicant as a reviewer's aid. The existence of a precedent, in and of itself, is not a sufficient basis to accept the applicant's program. Rather, the precedent facilitates the review of the substance of the matters described in the applicant's program. As such, in its documentation of its reviews of programs that are based on precedents, the precedent information is typically implicit in the evaluation rather than explicit. If the project team determines that a precedent identified by the applicant is not applicable to the particular plant program for which it is credited, it may refer the program to the NRR DE for review in the traditional manner, i.e., as described in the SRP-LR, without consideration of the precedent information.

5.5 FSAR Supplement Review

In accordance with the SRP-LR, for the AMRs and associated AMPs and the TLAAs that it will

review, the project team will review the FSAR supplement that summarizes the applicant's programs and activities for managing the effects of aging for the extended period of operation. The project team will also review any commitments associated with its programs and activities made by the applicant and verify that they are acceptable for the stated purpose. In addition, the project team will determine that the applicant identified the enhancements as commitments in the FSAR or other docketed correspondence.

5.6 Documents Reviewed by the Project Team

In performing its work, the project team will rely heavily on the HNP LRA, the audit and review plan, the SRP-LR, and the GALL Report. The project team will also examine the applicant's precedent review documents, its AMP, AMR, and TLAA basis documents (catalogs of the documentation used by the applicant to develop or justify its AMPs, AMRs, and TLAAs), and other applicant documents, including selected implementing procedures, to verify that the applicant's activities and programs will adequately manage the effects of aging on structures and components.

5.7 Status Meeting

At the conclusion of its audits and reviews, the project team will debrief the applicant's license renewal staff and management regarding the status of the audits and reviews of the LRA AMPs, AMRs and TLAAs assigned to the project team.

5.8 Documentation Prepared by the Project Team

The project team will prepare an audit and review plan, worksheets, work packages, requests for additional information (RAIs), an audit and review summary, and a safety evaluation report (SER) input. The project team will also prepare questions during site visits and will track the applicant's responses to these questions.

5.8.1 Audit and Review Plan

The project team leader will prepare a plant-specific audit and review plan as described herein.

5.8.2 Worksheets

Each project team member will informally document the results of his or her work on a variety of worksheets. The worksheets are shown in Appendix F, "Consistent with GALL Report AMP Audit/Review Worksheet;" Appendix G, "Plant-Specific AMP Audit/Review Worksheet;" and Appendix H, "Aging Management Review Comparison Worksheets." The use of the worksheets is described in Section 6 of this audit and review plan.

5.8.3 Questions

As specified in Section 6 of this audit and review plan, the project team members will ask the

applicant questions during the on-site audits, as appropriate, to facilitate its audit and review activities. The project team will also track and review the applicant's answers to the questions.

5.8.4 Work Packages

After each site visit, the project team leader, in conjunction with the NRC license renewal project manager, will assemble work packages for any work that the project team will refer to the Office of Nuclear Reactor Regulation (NRR) Division of Engineering (DE) or the Division of Component Integrity (DCI) for review. Each work package will include a work request and any applicable background information on the review item that was gathered by the project team.

5.8.5 Requests for Additional Information

The review process described in this audit and review plan is structured to resolve as many questions as possible during the site visits. The site visits are used to obtain clarifications about the HNP LRA and explanations as to where certain information may be found in the HNP LRA or its associated documents. Nevertheless, there may be occasions where an RAI is appropriate to obtain information to support an SER finding. The need for RAIs will be determined by the project team leader during the in-office project staff review or during site visits through discussions with the individual project team members. When the project team leader determines that an RAI is needed, the project team member who is responsible for the area of review will prepare the RAI. RAIs will include the technical and regulatory basis for requesting the information.

After the NRC receives a response to an RAI from the applicant, the project team leader will provide the response to the project team member who prepared the RAI. The project team will review the response and determine if it resolves the issue that was the reason for the RAI. The project team member will document the disposition of the RAI in the SER input.

5.8.6 Audit and Review Summary

At the conclusion of the audits and reviews, the project team will prepare a summary of the audits and reviews highlighting the status of its review and any potential RAIs.

5.8.7 Safety Evaluation Report Input

The project team will prepare SER input, based on its audit and review, as described in Section 6.5.2 of this audit and review plan.

6. PLANNING, AUDIT, REVIEW, AND DOCUMENTATION PROCEDURE

This section of the audit and review plan contains the detailed procedures that the project team will follow to plan, perform, and document its work.

6.1 Planning Activities

6.1.1 Schedule for Key Milestones and Activities

The project team leader will establish the schedule for the key milestones and activities, consistent with the overall schedule for making the licensing decision. Key milestones and activities include, as a minimum:

A. Receiving the LRA from the applicant
B. Receiving work split tables from the NRC license renewal project manager
C. Making individual work assignments
D. Training project team members
E. Holding the project team kickoff meeting
F. Preparing the audit and review plan
G. Scheduling site visits
H. Scheduling in-office review periods
I. Preparing questions
J. Preparing RAIs
K. Issuing audit and review summary report
L. Preparing draft and final SER input

Site visits will be scheduled on the basis of discussions between the project team leader, the NRC license renewal project manager, and the applicant.

Appendix B of this audit and review plan contains the target schedule for the key milestones and activities.

6.1.2 Work Assignments

The NRC technical assistance contractor will propose project team member work assignments to the NRC project team leader. The NRC project team leader will approve all work assignments. After the audit and review plan is issued, the NRC project team leader may reassign work as necessary.

The NRC technical assistance contractor will develop assignment tables that show which project team member will review each of the HNP AMPs and AMRs. Appendix A of this audit and review plan shows the project team members. Appendix C shows the project team member assignments for the AMPs. Appendix D of this audit and review plan shows the project team member assignments for the AMRs. Appendix E shows the project team member assignments for TLAAs.

6.1.3 Training and Preparation

The training and preparation will include the following:

A. A description of the audit and review process.

B. An overview of audit/review-related documentation and the documentation that the project team will audit and review.

(1) GALL Report
(2) SRP-LR
(3) Interim Staff Guidance for License Renewal (ISG-LR)
(4) LRA AMPs
(5) LRA AMRs
(6) LRA TLAAs
(7) Basis documents (catalogues of information assembled by the applicant to demonstrate the bases for its programs and activities)
(8) Implementing procedures
(9) Operating experience reports
(10) RAIs, audit and review reports, and SERs for similar plants
(11) Applicant's FSAR

C. The protocol for interfacing with the applicant.

D. Administrative issues such as travel, control of documentation, work hours, etc.

E. Process for preparing questions, RAIs, the audit and review summary report, and SER input.

F. Process for interfacing with NRC technical reviewers.

6.2 Aging Management Program Audits and Reviews

6.2.1 Types of AMPs

There are two types of AMPs: those that the applicant claims are consistent with AMPs contained in the GALL Report, and those that are plant-specific. The process for auditing and reviewing both types of AMPs is presented in the following sections of this audit and review plan.

6.2.2 Scope of AMP Program Elements to be Audited and Reviewed

Table 1 of this audit and review plan shows the 10 program elements that are used to evaluate the adequacy of each aging management program. These program elements are also presented in Branch Technical Position (BTP) RLSB-1, "Aging Management Review - Generic," in Appendix A of the SRP-LR, and are summarized in the GALL Report.

The program elements audited or reviewed is the same for both AMPs that are consistent with the GALL Report and for plant-specific AMPs. The RLRB will review and determine the adequacy of the applicant's 10 CFR 50, Appendix B Program. Other aspects of these program elements will be reviewed by the project team.

6.2.3 Plant AMPs that are Consistent with the GALL Report

Figure 1, "Audit of AMPs that are Consistent with the GALL Report," is the process flowchart that shows the activities and decisions used by the project team to review and audit each plant AMP that the applicant claims is consistent with the GALL Report.

Preparation

A. For the HNP AMP being reviewed, identify the corresponding GALL Report AMP.

B. Review the associated GALL Report AMP and identify those elements that will be audited.

C. Identify the documents needed to perform the audit. These may include, but are not limited to, the following:

(1) GALL Report
(2) SRP-LR
(3) ISG-LR
(4) RAIs and SERs for similar plants
(5) LRA
(6) Basis documents
(7) Implementation procedures
(8) Operating experience reports (plant-specific and industry)
(9) Applicant's FSAR

Audit/Review

A. Confirm that the HNP AMP program elements are consistent with the corresponding elements of the GALL Report AMP by answering the following questions and then following the process shown in Figure 1.

(1) Did the applicant identify any exceptions to the GALL Report AMP?
(2) Did the applicant identify any enhancements to the GALL Report AMP?
(3) Are the elements consistent with the GALL Report AMP?

B. If the above questions results in the identification of an exception/enhancement or a difference to the GALL Report AMP, determine whether it is acceptable on the basis of an "adequate technical justification."

C. If an acceptable basis exists for an exception/enhancement or difference, document the basis in the worksheet and later the SER input.

D. Review the industry and plant-specific operating experience associated with the AMP. The review is to identify aging effects requiring management that are not

identified by the industry guidance documents (such as Electric Power Research Institute [EPRI] tools) and to confirm the effectiveness of aging management programs. The project team members should consider the industry guidance when assessing operating experience and formulating questions for the applicant. The industry guidance (from NEI 95-10, Revision 6) is as follows:

(1) Plant-Specific Operating Experience with Aging Effects Requiring Management. A plant-specific operating experience review should assess the operating and maintenance history. A review of the prior 5 to 10 years of operating and maintenance history should be sufficient. The results of the review should confirm consistency with documented industry operating experience. Differences with previously documented industry experience, such as new aging effects or lack of aging effects, allow consideration of plant-specific aging management requirements.

(2) Plant-Specific Operating Experience with Existing Aging Management Programs. The operating experience of AMPs, including corrective actions resulting in program enhancements or additional programs, should be considered. The review should provide objective evidence to support the conclusion that the effects of aging will be managed so that the intended function(s) will be maintained during the extended period of operation. Guidance for reviewing industry operating experience is presented in BTP RLSB-1 in Appendix A.1 of the Branch Technical Positions in NUREG-1800.

(3) Industry Operating Experience. Industry operating experience and its applicability should be assessed to determine whether it changes plant-specific determinations. NUREG-1801 is based upon industry operating experience prior to its date of issue. Operating experience after the issue date of NUREG-1801 should be evaluated and documented as part of the aging management review. In particular, generic communications such as a bulletin, a generic letter, or an information notice should be evaluated for impact upon the AMP. The evaluation should check for new aging effects or a new component or location experiencing an already identified aging effect.

E. If it is necessary to ask the applicant a question to clarify the basis for accepting a justification, an exception, or a difference to the program element of the GALL Report, follow the logic process shown in Figure 1.

F. If it is necessary for the applicant to submit additional information to support the basis for accepting the justification, an exception, or a difference to a program element, the applicant may agree to voluntarily submit the required information as a supplement (docketed letter submitted under oath and affirmation) to the HNP LRA. If not, the NRC may issue an RAI to obtain the information.

AMP Audit Worksheets

Document the audits/reviews using the worksheet provided in Appendix F, "Consistent with GALL Report AMP Audit/Review Worksheet."

6.2.4 Plant-Specific AMPs

There are no plant-specific AMPs in the HNP LRA.

6.3 Aging Management Review Audits and Reviews

There are two types of AMRs: those that the applicant claims are consistent with the GALL Report, and those that are not consistent with or not included in the GALL Report. Audit and review of both types of AMRs are discussed below.

6.3.1 Plant AMRs that are Consistent with the GALL Report

Figure 2, "Review of AMRs that are Consistent with the GALL Report," is the process flowchart that shows the activities and decisions used to audit/review each AMR that the applicant claims is consistent with the GALL Report.

Preparation

A. For the HNP AMRs that the applicant claims are consistent with the GALL Report, identify the corresponding AMRs in Volume 2 of the GALL Report.

B. Review the associated GALL Report AMRs and identify those line items that will be audited/reviewed in conjunction with each of the HNP AMRs.

C. Identify the documents needed to perform the review. These may include, but are not limited to, the following:

(1) GALL Report
(2) SRP-LR
(3) ISG-LR
(4) RAIs and SERs for similar plants
(5) LRA
(6) Basis documents
(7) Implementation procedures
(8) Operating experience reports (plant-specific and industry)
(9) Applicant's FSAR
(10) Lessons learned developed by RLRC

Audit/Review

A. Each AMR line item is coded with a letter which represents a standard note designation[1]. The letter notes are described in Table 2 of this audit and review plan. Notes that use numeric designators are plant-specific. The note codes A though E are classified as "consistent with the GALL Report," and will be reviewed in accordance with the guidance contained in this audit and review plan.

B. The AMR review involves verification that the applicant has satisfied the requirements of 10 CFR 54.21(a)(3). This requirement states: "For each structure and component ... [within the scope of this part ... and ... subject to an aging management review] (the applicant) demonstrate(s) 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."

C. Determine compliance by following the process shown in Figure 2. The process is summarized below:

(1) For each AMR line item, perform the review associated with the letter note (A through E) assigned to the AMR line item. Specifically, determine if the AMR is consistent with the GALL Report for the elements associated with its note.

(2) If Note A applies, and the applicant uses a plant-specific AMP[2], determine if the component is within the scope of the cited plant AMP. If the component is within the scope of the plant AMP, the AMR line item is acceptable. If not acceptable, go to Step (7) below.

(3) If Note B applies, review the LRA exceptions and document the basis for acceptance in the worksheet, and later in the SER input. If not acceptable, go to Step (7) below.

(4) If Note C or D applies, determine if the component type is acceptable for the material, environment, and aging effect. If Note D applies, also review the LRA exceptions and document the basis for acceptance in the worksheet, and later in the SER input. If not acceptable, go to Step (7)

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1 The AMR line item letter notes are based on a letter from A. Nelson, NEI, to P. T. Kuo, NRC, "U.S. Nuclear Industry's Proposed Standard License Renewal Application Format Package, Request NRC Concurrence," dated January 24, 2003 (ML030290201). The staff concurred in the format of the standardized format for LRAs by letter dated April 7, 2003, from P.T. Kuo, NRC, to A. Nelson, NEI (ML030990052).

2 Some GALL AMRs reference the use of a plant-specific AMP. In such cases the AMR audit requires the project team member to confirm that the plant-specific AMP is appropriate to manage the aging effects during the period of extended operation.

below.

(5) If Note E applies, review the AMP audit report findings to determine if the scope of the alternate AMP envelopes the AMR line item being reviewed and satisfies 10 CFR 54.21(a)(3). If it does not, go to Step (7) below.

(6) Review the corresponding LRA Table 3.X.1 entry that is referenced in LRA Table 3.X.2.Y. If applicable, determine whether the applicant's "Further Evaluation Recommended" response in LRA Section 3.X.2.2.Z is enveloped by Section 3.X.2.2.Z of the SRP-LR. If not, go to Step (7) below. If the LRA section does not meet the acceptance criteria of Appendix A of the SRP-LR, go to Step (7) below.

(7) If during the review a difference is identified, prepare a question to the applicant, in order to obtain clarification.

a. Review the applicant's response to the question. If it appears acceptable, document the basis for acceptance and re-start the audit/review for the AMR line item from Step (1) above.

b. If the applicant's response does not resolve the question or issue, prepare an additional question to obtain the information needed to achieve resolution. Review the applicant's response to the second question. If it appears acceptable, document the basis for acceptance and re-start the audit/review for the AMR line item from Step (1) above.

c. If it is necessary for the applicant to submit additional information to resolve a question or an issue or to support a basis or conclusion, the applicant may submit the information as a supplement to the LRA or the NRC may issue an RAI to obtain the information. The project team leader should be consulted if docketed information may be needed.

d. If the applicant's response is relied upon as the basis for a finding made by the project team, the applicant's response needs to be docketed under oath and affirmation. This may be reached through the applicant voluntarily submitting the response to the NRC under oath and affirmation, or by the staff using the RAI process.

(8) Review LRA Table 3.X.1 for AMR line items (Table 1s) that the applicant claims are not applicable with the GALL Report, determine that the AMR line items are acceptable on the basis of a technical review.

AMR Audit/Review Worksheets

Document the audits/reviews of HNP AMRs using the worksheet provided in Appendix H, "AMR Comparison Worksheets," or on spreadsheets containing similar information.

6.3.2 Plant AMRs that Are Not Consistent with the GALL Report

Review LRA Tables 3.X.2-Y (Table 2s) for LRA Sections 3.1 thru 3.6, where the applicant indicated, via Notes F through J, that the combination of component type, material, environment, and AERM does not correspond to a line item in the GALL Report. Specifically, Note F indicates that the material for the AMR line item component is not evaluated in the GALL Report. Note G indicates that the environment for the AMR line item component and material is not evaluated in the GALL Report. Note H indicates that the aging effect for the AMR line item component, material, and environment combination is not evaluated in the GALL Report. Note I indicates that the aging effect identified in the GALL Report for the line item component, material, and environment combination is not applicable. Note J indicates that neither the component nor the material and environment combination for the line item is evaluated in the GALL Report. For component groups not evaluated in the GALL Report (Notes F-J), the project team reviews the applicant's evaluation in accordance with Branch Technical Position RLSB-1 (Appendix A.1 of the SRP-LR) to determine the technical adequacy. If during the review a difference is identified, prepare a question to the applicant, in order to obtain clarification. Review the applicant's response to the question and confirm that it is acceptance in accordance with Appendix A.1 of the SRP-LR.

The AMR review involves verification that the applicant has satisfied the requirements of 10 CFR 54.21(a)(3). This requirement states: "For each structure and component ... [within the scope of this part ... and ... subject to an aging management review] (the applicant) demonstrate(s) 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."

6.3.3 AMRs Based on NRC-Approved Precedents

Figure 3, "Review of AMRs Using NRC-Approved Precedents," is the process flowchart that shows the activities and decisions used to review HNP AMRs that the applicant has identified as being consistent with an NRC-approved precedent.

Preparation

Identify the documents needed to perform the audit/review. These may include, but are not limited to, the following:

(1) GALL Report
(2) SRP-LR
(3) ISG-LR
(4) RAIs and SERs for similar plants

(5) LRA
(6) Basis documents
(7) Implementation procedures
(8) Operating experience reports (plant-specific and industry)
(9) Applicant's FSAR
(10) Lessons learned developed by RLRC

Audit/Review

A. The AMR audit/review involves determination that the requirements of 10 CFR 54.21(a)(3) are satisfied. This criterion states that, "For each structure and component [within the scope of license renewal], demonstrate 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."

B. For AMRs with an NRC-approved precedent, this may be achieved by answering the following questions while following the assessment process shown in Figure 3.

(1) Is the precedent appropriate for the HNP AMR being reviewed?

(2) Is the NRC-approved precedent sufficiently documented or understood to technically support the adequacy of the HNP AMR being reviewed?

(3) Is the HNP AMR within the bounds of the chosen NRC-approved precedent?

(4) If any of these questions results in a 'No' answer, then additional information is required to make a determination that the AMR is acceptable.

(5) If it is necessary to ask the applicant a question to obtain clarification on the basis for accepting the HNP AMR, the process shown in Figure 3 should be used.

(6) If it is necessary for the applicant's response to be docketed as a basis for accepting the exception or difference, the applicant may voluntarily docket the response or the NRC may issue an RAI.

AMR Audit/Review Worksheets

Document the audits/reviews using the worksheet provided in Appendix H, "Aging Management Review Comparison Worksheets." As an alternate, the project team member may document its review electronically in the AMR spreadsheets.

6.4 Time-Limited Aging Analyses Audits and Reviews

Audit and review of TLAAs are discussed below. The project team will also review the TLAAs to determine if there are emerging issues that should be further evaluated by technical specialists in the NRC DCI or the DE. In general, the project team will review TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) "the analyses remain valid for the period of extended operation" or 10 CFR 54.21(c)(iii) "the effects of aging on the intended function(s) will be adequately managed for the period of extended operation." For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - "the analyses have been projected to the end of the period of extended operation," the project team leader will be consulted to determine which TLAAs the project team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis.

6.4.1 Identify Generic TLAA Issues

Figure 4, "Review of TLAAs and Exemptions," taken from NEI 95-10, Revision 6, shows the process of evaluating and reviewing TLAAs and also identifying the exemptions in effect. This process flowchart shows the activities and decisions used to audit/review each TLAA that the applicant identifies.

Pre-Review Preparation

A. For the HNP TLAAs that the applicant has identified as generic TLAA issues, identify the corresponding TLAAs in NUREG-1800, if appropriate.

B. Review the corresponding TLAAs in NUREG-1800 and identify those that will be audited/reviewed in conjunction with each of the HNP TLAAs.

C. Review the list of the HNP plant-specific exemptions granted pursuant to §50.12 and in effect that are based on TLAAs as defined in §54.3. The application shall include an evaluation that justifies the continuation of these exemptions for the period of extended operation.

D. Identify and locate the documents needed to perform the review. These may include, but are not limited to, the following:

   (1) Excel database on TLAAs summarizing how earlier LRAs and SERs were presented and reviewed

   (2) TLAAs

   (3) GALL Report

   (4) SRP-LR

(5) ISG-LR

(6) RAIs, audit and review reports, and SERs for similar plants

(7) LRA

(8) References listed by applicant for each TLAA

(9) NEI 95-10, Section 5.1 and Table 6.2-2

(10) Basis documents

(11) Implementation documents

(12) Operating experience reports (plant-specific and industry)

(13) Lessons-learned developed by RLRC

(14) Applicant's FSAR

E. In addition, the project team will also review the TLAAs to determine if there are emerging issues that should be further evaluated by technical specialists in the NRC DCI or the DE. This is not expected to be an issue for TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) "the analyses remain valid for the period of extended operation" or 10 CFR 54.21(c)(iii) "the effects of aging on the intended function(s) will be adequately managed for the period of extended operation." For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - "the analyses have been projected to the end of the period of extended operation," the project team leader will be consulted to determine which TLAAs the project team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis. Candidates for further review by technical specialists could be those such as the following:

(1) Reactor Vessel Neutron Embrittlement (HNP LRA Section 4.2)

(2) Metal Fatigue (HNP LRA Section 4.3)

(3) Environmental Qualification of Electrical Equipment (HNP LRA Section 4.4

(4) Concrete Containment Tendon Prestress (HNP LRA Section 4.5)

(5) Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis (HNP LRA Section 4.6)

(6) Other Plant-Specific Time-Limited Aging Analyses (HNP LRA Section 4.7)

Audit/Review

A. Confirm that each HNP TLAA listed in this section is appropriate. Refer to any analyses and evaluations created during the acceptance review process.

B. If a TLAA is listed in the SRP-LR or NEI 95-10 and not in its LRA, the HNP should state in this section that it does not apply.

C. Review any industry and plant-specific operating experience associated with the TLAA. This is an area of review emphasis. The project team should consider the following industry guidance (from NEI 95-10, Table 6.2-2) as follows:

(1) The application shall include a list of time-limited aging analyses, as defined by §54.3. The application should include the identification of the affected systems, structures, and components, an explanation of the time dependent aspects of the calculation or analysis, and a discussion of the TLAA's impact on the associated aging effect. The identification of the results of the time-limited aging analysis review, which may be provided in tabular form, may reference the section in the Integrated Plant Assessment-Aging Management Review chapter where more details of the actual review and disposition (as required by §54.21(c)(1)(i)-(iii)) are located.

(2) The application shall include a demonstration that (1) the analyses remain valid for the period of extended operation, (2) the analyses have been (or have been identified and will be) projected to the end of the period of extended operation or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

(3) The application shall include a list of plant-specific exemptions granted pursuant to §50.12 and in effect that are based on TLAAs as defined in §54.3. The application shall include an evaluation that justifies the continuation of these exemptions for the period of extended operation.

(4) Summary descriptions of the evaluations of TLAAs for the period of extended operation shall be included in the FSAR supplement (LRA Appendix A).

D. If it is necessary to ask the applicant a question to clarify the basis for their analyses, follow the logic process shown in Figure 4 of this audit and review plan.

E. If it is necessary for the applicant to submit additional information to support the basis for the conclusions in their TLAA, the applicant may agree to voluntarily submit the required information as a supplement (docketed letter submitted under oath and affirmation) to the HNP LRA. If not, the NRC may issue an RAI to obtain the information.

6.4.2 Metal Fatigue

Figure 4, "Review of TLAAs and Exemptions," taken from NEI 95-10, Revision 6, shows the process of evaluating and reviewing TLAAs and also identifying the exemptions in effect. This process flowchart shows the activities and decisions used to audit/review each TLAA that the applicant identifies.

Pre-Review Preparation

A. The project team will determine if the TLAAs identified in the HNP LRA to be within the NUREG-1800 TLAA category of "metal fatigue" have provided adequate information to meet the requirements of 10 CFR 54.21(c)(1) and 10 CFR 54.21(c)(2).

B. Identify and locate the documents needed to perform the review. These may include, but are not limited to, the following:

(1) Excel database on TLAAs summarizing how earlier LRAs and SERs presented and reviewed TLAAs

(2) GALL Report, especially Section X.M1

(3) SRP-LR

(4) ISG-LR

(5) RAIs, audit and review reports, and SERs for similar plants

(6) LRA

(7) References listed by applicant for each TLAA

(8) NEI 95-10, Section 5.1 and Table 6.2-2

(9) Basis documents

(10) Implementation documents

(11) Operating experience reports (plant-specific and industry)

(12) Lessons-learned developed by RLRC

(13) Applicant's FSAR

C. In addition, the project team will also review the HNP TLAAs within the NUREG-1800 TLAA category of "metal fatigue" to determine if there are emerging issues that should be further evaluated by technical specialists in the NRC DCI or the DE. This is not expected to be an issue for TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) "the analyses remain valid for the period of extended operation" or 10 CFR 54.21(c)(iii) "the effects of aging on the intended function(s) will be adequately managed for the period of extended operation." For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - "the analyses have been projected to the end of the period of extended operation," the project team leader will be consulted to determine which TLAAs the project team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis.

Audit/Review

A. Confirm that each HNP TLAA listed in this section is appropriate. Refer to any analyses and evaluations created during the acceptance review process.

B. If a TLAA is listed in the SRP-LR or NEI 95-10 and not in its LRA, HNP should state in this section that it does not apply.

C. The project team will conduct both regulatory evaluations and technical evaluations to determine, as defined in 10 CFR 54.3, that each TLAA meets the following six criteria:

(1) Involve systems, structures, and components that are within the scope of license renewal, as delineated in 10 CFR 54.4(a).

(2) Consider the effects of aging.

(3) Involve time-limited assumptions defined by the current operating term (40 years).

(4) Determined to be relevant by the applicant in making a safety determination.

(5) Involve conclusions, or provide the basis for conclusions, related to the capability of the system, structure, and component to perform its intended functions, as delineated in 10 CFR 54.4(b).

(6) Contained or incorporated by reference in the CLB.

D. The project team will ascertain that HNP satisfactorily demonstrates that (1) the analyses remain valid for the period of extended operation, (2) the analyses have been (or have been identified and will be) projected to the end of the period of extended operation or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

E. Review any industry and plant-specific operating experience associated with the TLAA. This is an area of review emphasis. The project team should consider the guidance presented in Table 6.2-2 of NEI 95-10, “Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule".

F. If it is necessary to ask the applicant a question to clarify the basis for their analyses, follow the logic process shown in Figure 4 of this audit and review plan.

G. If it is necessary for the applicant to submit additional information to support the basis for the conclusions in their TLAA, the applicant may agree to voluntarily submit the required information as a supplement (docketed letter submitted under oath and affirmation) to the HNP LRA. If not, the NRC may issue an RAI to obtain the information.

6.4.3 Environmental Qualification of Electric Equipment

Figure 4, “Review of TLAAs and Exemptions,” taken from NEI 95-10, Revision 6, shows the process of evaluating and reviewing TLAAs and also identifying the exemptions in effect. This process flowchart shows the activities and decisions used to audit/review each TLAA that the applicant identifies.

Pre-Review Preparation

A. The project team will determine if the TLAAs identified in the HNP LRA to be within the NUREG-1800 TLAA category of “environmental qualification of electric equipment” have provided adequate information to meet the requirements of 10 CFR 54.21(c)(1) and 10 CFR 54.21(c)(2).

B. Identify and locate the documents needed to perform the review. These may include, but are not limited to, the following:

(1) Excel database on TLAAs summarizing how earlier LRAs and SERs presented and reviewed TLAAs

(2) GALL Report, especially Section X.E1

(3) SRP-LR

(4) ISG-LR

(5) RAIs, audit and review reports, and SERs for similar plants

(6) LRA

(7) References listed by applicant for each TLAA

(8) NEI 95-10, Section 5.1 and Table 6.2-2

(9) Basis documents

(10) Implementation documents

(11) Operating experience reports (plant-specific and industry)

(12) Lessons-learned developed by RLRC

(13) Applicant's FSAR

C. In addition, the project team will also review the HNP TLAAs within the NUREG-1800 TLAA category of "environmental qualification of electric equipment" to determine if there are emerging issues that should be further evaluated by technical specialists in the NRC DCI or the DE. This is not expected to be an issue for TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) "the analyses remain valid for the period of extended operation." or 10 CFR 54.21(c)(iii) "the effects of aging on the intended function(s) will be adequately managed for the period of extended operation." For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - "the analyses have been projected to the end of the period of extended operation," the project team leader will be consulted to determine which TLAAs the project team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis.

Audit/Review

A. Confirm that each HNP TLAA listed in this section is appropriate. Refer to any analyses and evaluations created during the acceptance review process.

B. If a TLAA is listed in the SRP-LR or NEI 95-10 and not in its LRA, HNP should state in this section that it does not apply.

C. The project team will conduct both regulatory evaluations and technical

evaluations to determine, as defined in 10 CFR 54.3, that each TLAA meets the following six criteria:

(1) Involve systems, structures, and components that are within the scope of license renewal, as delineated in 10 CFR 54.4(a).

(2) Consider the effects of aging.

(3) Involve time-limited assumptions defined by the current operating term (40 years).

(4) Determined to be relevant by the applicant in making a safety determination.

(5) Involve conclusions, or provide the basis for conclusions, related to the capability of the system, structure, and component to perform its intended functions, as delineated in 10 CFR 54.4(b).

(6) Contained or incorporated by reference in the CLB.

D. The project team will ascertain that HNP satisfactorily demonstrates that (1) the analyses remain valid for the period of extended operation, (2) the analyses have been (or have been identified and will be) projected to the end of the period of extended operation or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

E. Review any industry and plant-specific operating experience associated with the TLAA. This is an area of review emphasis. The project team should consider the guidance presented in Table 6.2-2 of NEI 95-10, “Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule".

F. If it is necessary to ask the applicant a question to clarify the basis for their analyses, follow the logic process shown in Figure 4 of this audit and review plan.

G. If it is necessary for the applicant to submit additional information to support the basis for the conclusions in their TLAA, the applicant may agree to voluntarily submit the required information as a supplement (docketed letter submitted under oath and affirmation) to the HNP LRA. If not, the NRC may issue an RAI to obtain the information.

6.4.4 Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis

Figure 4, “Review of TLAAs and Exemptions,” taken from NEI 95-10, Revision 6, shows the process of evaluating and reviewing TLAAs and also identifying the exemptions in effect. This process flowchart shows the activities and decisions used to audit/review each TLAA that the applicant identifies.

Pre-Review Preparation

A. The project team will determine if the TLAAs identified in the HNP LRA to be within the NUREG-1800 TLAA category of “containment liner plate, metal containments, and penetrations fatigue” have provided adequate information to meet the requirements of 10 CFR 54.21(c)(1) and 10 CFR 54.21(c)(2).

B. Identify and locate the documents needed to perform the review. These may include, but are not limited to, the following:

(1) Excel database on TLAAs summarizing how earlier LRAs and SERs presented and reviewed TLAAs

(2) GALL Report

(3) SRP-LR

(4) ISG-LR

(5) RAIs, audit and review reports, and SERs for similar plants

(6) LRA

(7) References listed by applicant for each TLAA

(8) NEI 95-10, Section 5.1 and Table 6.2-2

(9) Basis documents

(10) Implementation documents

(11) Operating experience reports (plant-specific and industry)

(12) Lessons-learned developed by RLRC

(13) Applicant’s FSAR

C. In addition, the project team will also review the HNP TLAAs within the NUREG-1800 TLAA category of “containment liner plate, metal containments, and penetrations fatigue” to determine if there are emerging issues that should

be further evaluated by technical specialists in the NRC DCI or the DE. This is not expected to be an issue for TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) “the analyses remain valid for the period of extended operation.” or 10 CFR 54.21(c)(iii) “the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.” For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - “the analyses have been projected to the end of the period of extended operation,” the project team leader will be consulted to determine which TLAAs the project team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis.

Audit/Review

A. Confirm that each HNP TLAA listed in this section is appropriate. Refer to any analyses and evaluations created during the acceptance review process.

B. If a TLAA is listed in the SRP-LR or NEI 95-10 and not in its LRA, HNP should state in this section that it does not apply.

C. The project team will conduct both regulatory evaluations and technical evaluations to determine, as defined in 10 CFR 54.3, that each TLAA meets the following six criteria:

(1) Involve systems, structures, and components that are within the scope of license renewal, as delineated in 10 CFR 54.4(a).

(2) Consider the effects of aging.

(3) Involve time-limited assumptions defined by the current operating term (40 years).

(4) Determined to be relevant by the applicant in making a safety determination.

(5) Involve conclusions, or provide the basis for conclusions, related to the capability of the system, structure, and component to perform its intended functions, as delineated in 10 CFR 54.4(b).

(6) Contained or incorporated by reference in the CLB.

D. The project team will ascertain that HNP satisfactorily demonstrates that (1) the analyses remain valid for the period of extended operation, (2) the analyses have been (or have been identified and will be) projected to the end of the period of extended operation or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

E. Review any industry and plant-specific operating experience associated with the TLAA. This is an area of review emphasis. The project team should consider the guidance presented in Table 6.2-2 of NEI 95-10, “Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule".

F. If it is necessary to ask the applicant a question to clarify the basis for their analyses, follow the logic process shown in Figure 4 of this audit and review plan.

G. If it is necessary for the applicant to submit additional information to support the basis for the conclusions in their TLAA, the applicant may agree to voluntarily submit the required information as a supplement (docketed letter submitted under oath and affirmation) to the HNP LRA. If not, the NRC may issue an RAI to obtain the information.

6.4.5 Other Plant-Specific TLAAs

Figure 4, “Review of TLAAs and Exemptions,” taken from NEI 95-10, Revision 6, shows the process of evaluating and reviewing TLAAs and also identifying the exemptions in effect. This process flowchart shows the activities and decisions used to audit/review each TLAA that the applicant identifies.

Pre-Review Preparation

A. The project team will determine if the TLAAs identified in the HNP LRA to be within the NUREG-1800 TLAA category of “other plant-specific TLAAs” have provided adequate information to meet the requirements of 10 CFR 54.21(c)(1) and 10 CFR 54.21(c)(2).

B. Identify and locate the documents needed to perform the review. These may include, but are not limited to, the following:

(1) Excel database on TLAAs summarizing how earlier LRAs and SERs presented and reviewed TLAAs

(2) GALL Report

(3) SRP-LR

(4) ISG-LR

(5) RAIs, audit and review reports, and SERs for similar plants

(6) LRA

(7) References listed by applicant for each TLAA

(8) NEI 95-10, Section 5.1 and Table 6.2-2

(9) Basis documents

(10) Implementation documents

(11) Operating experience reports (plant-specific and industry)

(12) Lessons-learned developed by RLRC

(13) Applicant's FSAR

C. In addition, the project team will also review the HNP TLAAs within the NUREG-1800 TLAA category of "other plant-specific TLAAs" to determine if there are emerging issues that should be further evaluated by technical specialists in the NRC DCI or the DE. This is not expected to be an issue for TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) "the analyses remain valid for the period of extended operation." or 10 CFR 54.21(c)(iii) "the effects of aging on the intended function(s) will be adequately managed for the period of extended operation." For TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(ii) - "the analyses have been projected to the end of the period of extended operation," the project team leader will be consulted to determine which TLAAs the project team will be capable of reviewing. Consideration should be given to project team expertise, past precedent, and complexity of the provided analysis.

Audit/Review

A. Confirm that each HNP TLAA listed in this section is appropriate. Refer to any analyses and evaluations created during the acceptance review process.

B. If a TLAA is listed in the SRP-LR or NEI 95-10 and not in its LRA, HNP should state in this section that it does not apply.

C. The project team will conduct both regulatory evaluations and technical evaluations to determine, as defined in 10 CFR 54.3, that each TLAA meets the following six criteria:

(1) Involve systems, structures, and components that are within the scope of license renewal, as delineated in 10 CFR 54.4(a).

(2) Consider the effects of aging.

(3) Involve time-limited assumptions defined by the current operating term (40 years).

(4) Determined to be relevant by the applicant in making a safety determination.

(5) Involve conclusions, or provide the basis for conclusions, related to the capability of the system, structure, and component to perform its intended functions, as delineated in 10 CFR 54.4(b).

(6) Contained or incorporated by reference in the CLB.

D. The project team will ascertain that HNP satisfactorily demonstrates that (1) the analyses remain valid for the period of extended operation, (2) the analyses have been (or have been identified and will be) projected to the end of the period of extended operation or (3) the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.

E. Review any industry and plant-specific operating experience associated with the TLAA. This is an area of review emphasis. The project team should consider the following industry guidance on “other plant-specific TLAAs” (from NEI 95-10, Table 6.2-2) as follows:

(1) Identify and evaluate any plant-specific TLAAs.

F. If it is necessary to ask the applicant a question to clarify the basis for their analyses, follow the logic process shown in Figure 4 of this audit and review plan.

G. If it is necessary for the applicant to submit additional information to support the basis for the conclusions in their TLAA, the applicant may agree to voluntarily submit the required information as a supplement (docketed letter submitted under oath and affirmation) to the HNP LRA. If not, the NRC may issue an RAI to obtain the information.

6.5 Audit and Safety Review Documentation

As noted in Section 5.8 of this audit and review plan, the project team will prepare an audit and review plan, worksheets, work packages, requests for additional information, an audit and review summary, and SER input. This section of the audit and review plan addresses the preparation of the audit and review summary and the SER input.

6.5.1 Audit and Review Summary

The project team should prepare an audit and review summary upon completion of the on-site

audits and reviews of the AMPs, AMRs, and TLAAs assigned to the project team. This summary should provide the following information:

- Members who participated in the on-site audits,
- Dates and location of the audits
- Guidance documents used for the review
- Activities performed
- Documents reviewed
- Availability of question and answer database
- Status of the review

6.5.2 Safety Evaluation Report Input

A. General guidance

(1) Each project team member should prepare the SER input for the AMP and AMR audits and reviews that he or she performed. The NRC technical assistance contractor shall collect, assemble, and prepare the complete SER input.

(2) In general, the data and information needed to prepare the SER input should be available in the project team's audit and review question and answer database and the project team member's worksheets.

(3) SER inputs are to be prepared for:

a. Each HNP AMP that was determined to be consistent with the GALL Report, which has no exceptions or enhancements.

b. Each HNP AMP that was determined to be consistent with the GALL Report, which has exceptions (identified by either the applicant or the project team) or enhancements.

c. Each plant-specific AMP.

d. AMRs that are consistent with the GALL Report, for which no further evaluation is recommended.

e. AMRs that are consistent with the GALL Report, for which further evaluation is recommended.

f. Project team AMR review results.[3]

[3] AMRs that are not consistent with the GALL Report or not addressed in the GALL Report.

(4) The SER input should contain the following sections. (Note: The following section numbers (3. through 3.X.3) are based on the numbering system for the SER input. They are not a continuation of the numbering convention used throughout this audit and review plan.)

3. Aging Management Review Results
3.0 Applicant's Use of the Generic Aging Lessons Learned Report
3.01 Format of the LRA
3.02 Staff's Review Process
3.0.2.1 AMRs in the GALL Report
3.0.2.2 NRC-Approved Precedents
3.0.2.3 FSAR Supplement
3.0.2.4 Documentation and Documents Reviewed
3.0.3 Aging Management Programs
3.0.3.1 AMPs that are Consistent With the GALL Report
3.0.3.2 AMPs that are Consistent With GALL Report With Exceptions or Enhancements
3.0.3.3 AMPs that are Plant-Specific
3.0.4 Quality Assurance Program Attributes Integral to Aging Management Programs
3.X[4] Aging Management of _____
3.X.1 Summary of Technical Information in the Application
3.X.2 Staff Evaluation
3.X.2.1 Aging Management Evaluations that are Consistent with the GALL Report, for Which Further Evaluation is Not Required
3.X.2.2 Aging Management Evaluations that are Consistent with the GALL Report, for Which Further Evaluation is Recommended
3.X.2.3 AMR Results that are Not Consistent with or Not Addressed in the GALL Report

[4] The LRA AMR results are broken down into six sections and address the following system/structure groups: (1) Section 3.1, reactor vessel, internals and reactor coolant system, (2) Section 3.2, engineering safety features systems, (3) Section 3.3, auxiliary systems, (4) Section 3.4, steam power and conversion systems, (5) Section 3.5, structures and component supports, (6) Section 3.6, electrical and instrumentation and controls.

3.X.3 Conclusion

4.0 Time-Limited Aging Analyses
- 4.1 Identification of Time-Limited Aging Analyses
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification of Electrical Equipment
- 4.5 Concrete Containment Tendon Prestress
- 4.6 Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis
- 4.7 Other Plant-Specific Time-Limited Aging Analyses
  - 4.7.1 Turbine Rotor Missile Generation Analyses
  - 4.7.2 Crane Cyclic Analyses
  - 4.7.3 Main and Auxiliary Reservoir Sedimentation Analyses
  - 4.7.4 High Energy Line Break Location Postulation Based on Fatigue Cumulative Usage Factor
- 4.8 Conclusion for Time-Limited Aging Analyses

(5) For each AMP audited/reviewed by the project team, the SER shall include a discussion of the project team's review of the operating experience program element.

(6) If the applicant submitted an amendment or a supplement to its LRA that is associated with the project team's audit or review activities, document the submittal (include the date and ADAMS accession number) and explain the issue that the submittal resolved and discuss the basis for the resolution.

(7) If an RAI was issued, identify the RAI number and briefly discuss the RAI. State if the RAI remains open or if the applicant's response has been received and accepted. If the response was acceptable, identify the submittal (including the date and the ADAMS accession number) that provided the response and document the basis for its acceptance.

(8) Issues (e.g., RAIs) that have not been resolved by the applicant at the time the SER input is prepared should be identified as open items.

B. SER input

(1) For HNP AMPs determined to be consistent with the GALL Report, without exceptions, include the AMP title, the plant AMP paragraph number, and a discussion of the basis for concluding that the FSAR update (Appendix A of the HNP LRA) is acceptable. This SER input documents that the AMP is consistent with the GALL Report.

(2) For HNP AMPs determined to be consistent with the GALL Report, with exceptions or enhancements, the SER input should include a statement that the audit found the HNP AMP consistent with the GALL Report and that any applicant-identified exceptions to the GALL Report were found technically acceptable to manage the aging effect during the period of extended operation. The SER input should identify the exceptions and provide the basis for acceptance. The SER input will also address the FSAR supplement, and document the basis for concluding that it is acceptable.

(3) For plant-specific AMPs, the SER input should document the basis for accepting each of the ten program elements reviewed by the project team. The SER input should also include a discussion concerning the adequacy of the FSAR supplement.

(4) For aging management reviews that are consistent with the GALL Report,[5] the SER input should include the following:

a. Identify the HNP LRA section reviewed.

b. A summary of the type of information provided in the section of the HNP LRA reviewed, including a listing of the HNP AMPs reviewed.

c. Identify the HNP LRA Tables 3.X.2-Y reviewed.

d. A summary review of the AMR Notes A through E used to classify the AMR line items used in these tables.

e. A brief summary of what the staff (project team) reviewed to perform the audit (i.e., LRA and applicant basis documents and other implementation documents). Reference the appendix that lists the details of the documents reviewed.

f. The basis for accepting any exceptions to GALL Report AMRs that were identified by the applicant or the project team.

g. A finding that verifies that:

- The applicant identified the applicable aging effects.
- The applicant defined the appropriate combination of

[5] The audit results documented in this section address the AMRs consistent with the GALL Report for which no further evaluation is recommended.

materials and environments.

- The applicant specified acceptable AMPs.

h. A conclusion stating, if applicable, that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, and that 10 CFR 54.21(a)(3) has been satisfied.

(5) For aging management reviews that are consistent with the GALL Report, for which further evaluation is recommended, the SER input should include the following:

a. The HNP LRA section containing the applicant's further evaluations of AMRs for which further evaluation is required.

b. A list of the aging effects for which the further evaluation apply.

c. For the applicant's further evaluations, provide a summary of the basis for concluding that it satisfied the criteria of Section 3.X.3.2 of the SRP-LR.

d. A statement that the staff audited the applicant's further evaluations against the criteria contained in Section 3.X.3.2 of the SRP-LR.

(6) Staff AMR Review Results[6]. This section of the SER input documents the reviews of AMRs assigned to the project team that are not consistent with the GALL Report. The SER input should document the following:

a. The HNP LRA section reviewed.

b. A summary of the type of information provided in the section of the HNP LRA reviewed, including a listing of the HNP AMPs reviewed.

c. Identify the HNP LRA Tables 3.X.2-Y documented by this audit writeup.

d. A brief summary of what the staff (project team) reviewed (i.e., LRA and applicant basis documents and other implementation

[6] This section documents reviews of AMRs assigned to the project team that are not consistent with the GALL Report.

documents).

e. A finding that verifies, if true, that:

- The applicant identified the applicable aging effects.
- The applicant listed the appropriate combination of materials and environments.
- The applicant specified acceptable AMPs.

f. Provide a conclusion stating, if applicable, that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, and that 10 CFR 54.21(a)(3) has been satisfied.

(7) TLAA Review Results. This section of the SER input documents the reviews of TLAAs assigned to the project team. The SER input should include the following:

a. Summary of technical information in the application

b. Staff evaluation
   (i) Regulatory basis
   (ii) Scope of review and technical evaluation

c. FSAR supplement review - stating, if applicable, that the applicant has provided an FSAR supplement summary description of its TLAA evaluation.

d. Provide a conclusion stating, if applicable, that the applicant has demonstrated that TLAAs for which the applicant claims consistency with 10 CFR 54.21(c)(i) “the analyses remain valid for the period of extended operation,” or 10 CFR 54.21(c)(ii) “the analyses have been projected to the end of the period of extended operation,” or 10 CFR 54.21(c)(iii) “the effects of aging on the intended function(s) will be adequately managed for the period of extended operation.” The staff also concludes that the FSAR supplement contains an appropriate summary description of the activities for managing the effects of aging and the TLAA evaluation, as required by 10 CFR 54.21(d).

6.6 Documents Reviewed and Document Retention

Any documents reviewed that were used to formulate the basis for resolution of an issue, such as the basis for a technical resolution, the basis for the acceptance of an exception or an enhancement, etc., should be documented as a reference in the SER input.

Upon issuance of the SER input, all worksheets that were completed by contractor and NRC personnel shall be given to the NRC project team leader.

After the NRC has made its licensing decision, all copies of documents collected and all documents generated to complete the SER input, such as audit worksheets, question and answer tracking documentation, etc., are to be discarded.

Table 1. Aging Management Program Element Descriptions

Element		Description
1	Scope of the program	The scope of the program should include the specific structures and components subject to an aging management review.
2	Preventive actions	Preventive actions should mitigate or prevent the applicable aging effects.
3	Parameters monitored or inspected	Parameters monitored or inspected should be linked to the effects of aging on the intended functions of the particular structure and component.
4	Detection of aging effects	Detection of aging effects should occur before there is loss of any structure and component intended function. This includes aspects such as method or technique (i.e., visual, volumetric, surface inspection), frequency, sample size, data collection and timing of new/one-time inspections to ensure timely detection of aging effects.
5	Monitoring and trending	Monitoring and trending should provide prediction of the extent of the effects of aging and timely corrective or mitigative actions.
6	Acceptance criteria	Acceptance criteria, against which the need for corrective action will be evaluated, should ensure that the particular structure and component intended functions are maintained under all current licensing basis design conditions during the period of extended operation.
7*	Corrective actions	Corrective actions, including root cause determination and prevention of recurrence, should be timely.
8*	Confirmation process	The confirmation process should ensure that preventive actions are adequate and appropriate corrective actions have been completed and are effective.
9*	Administrative controls	Administrative controls should provide a formal review and approval process.
10	Operating experience	Operating experience involving the aging management program, including past corrective actions resulting in program enhancements or additional programs, should provide objective evidence to support a determination that the effects of aging will be adequately managed so that the structure and component intended functions will be maintained during the period of extended operation.

*The adequacy of the applicant's 10 CFR 50, Appendix B Program associated with this program element is audited by the Division of Engineering.

Table 2. Notes for License Renewal Application Tables 3.X.2-Y[7]

Note	Description
A	Consistent with NUREG-1801 [GALL Report] item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
B	Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
C	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
D	Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
E	Consistent with NUREG-1801 for material, environment, and aging effect, but a different aging management program is credited.
F	Material not in NUREG-1801 for this component.
G	Environment not in NUREG-1801 for this component and material.
H	Aging effect not in NUREG-1801 for this component, material and environment combination.
I	Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.
J	Neither the component nor the material and environment combination is evaluated in NUREG-1801.

[7] Each AMR line item is coded with a letter which represents a standard note designation based on a letter from A. Nelson, NEI, to P.T. Kuo, NRC, "U.S. Nuclear Industry's Proposed Standard License Renewal Application Format Package, Request NRC Concurrence," dated January 24, 2003 (ML030290201). The staff concurred in the format of the standardized format for license renewal applications by letter dated April 7, 2003, from P.T. Kuo, NRC, to A. Nelson, NEI (ML030990052).

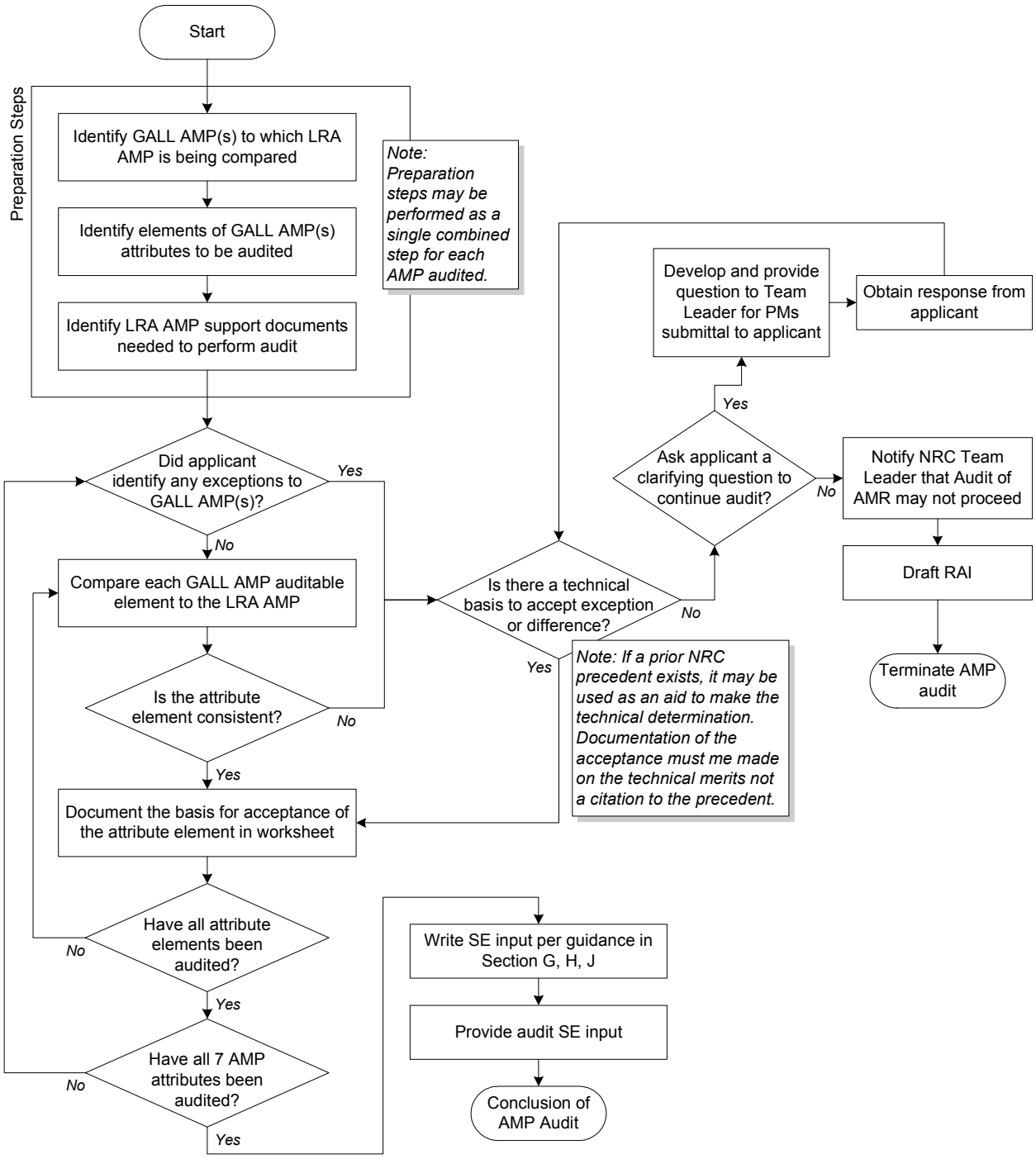

Figure 1. Audit of AMPs that are Consistent with the GALL Report

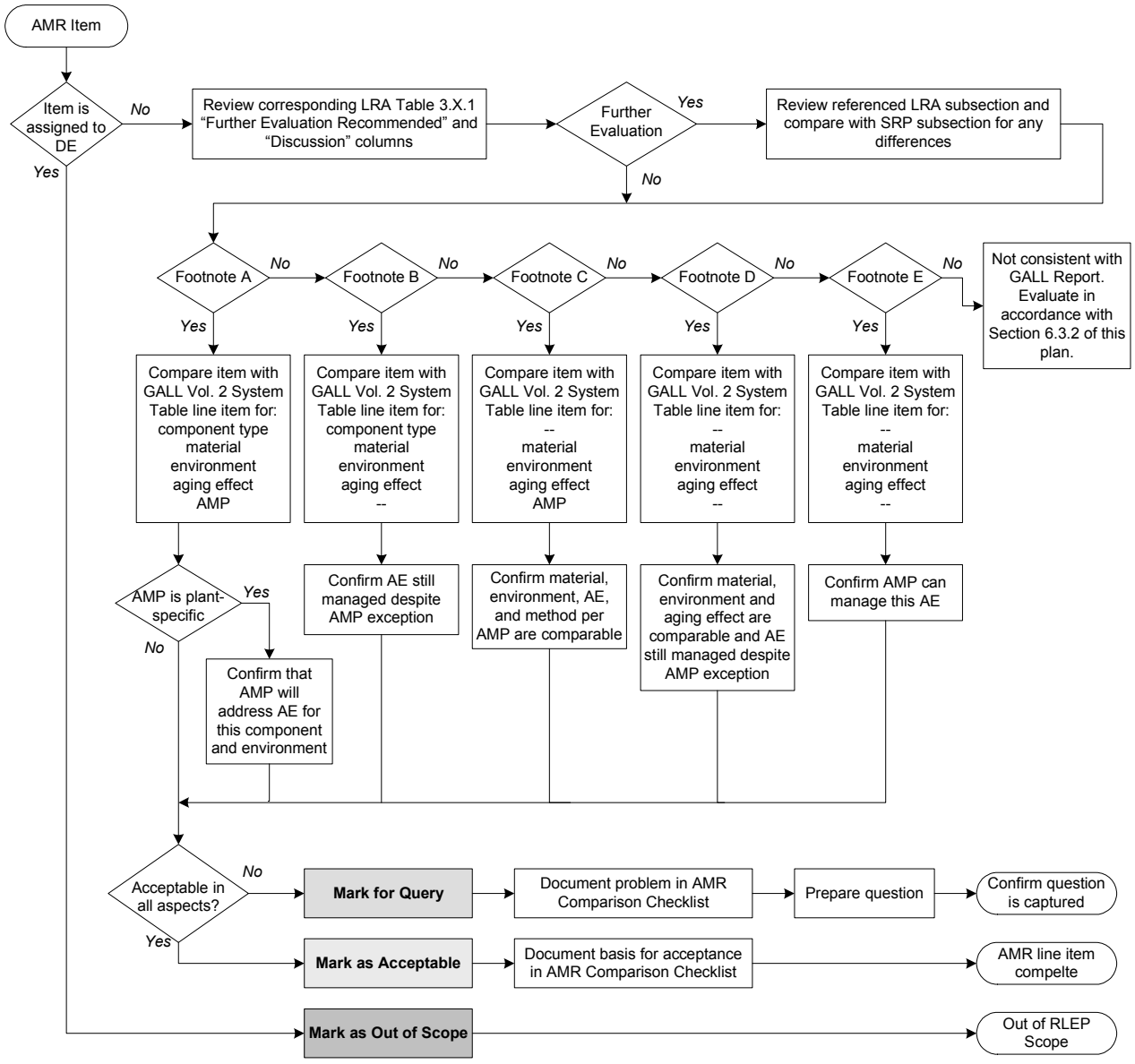

Figure 2. Review of AMRs that are Consistent with the GALL Report

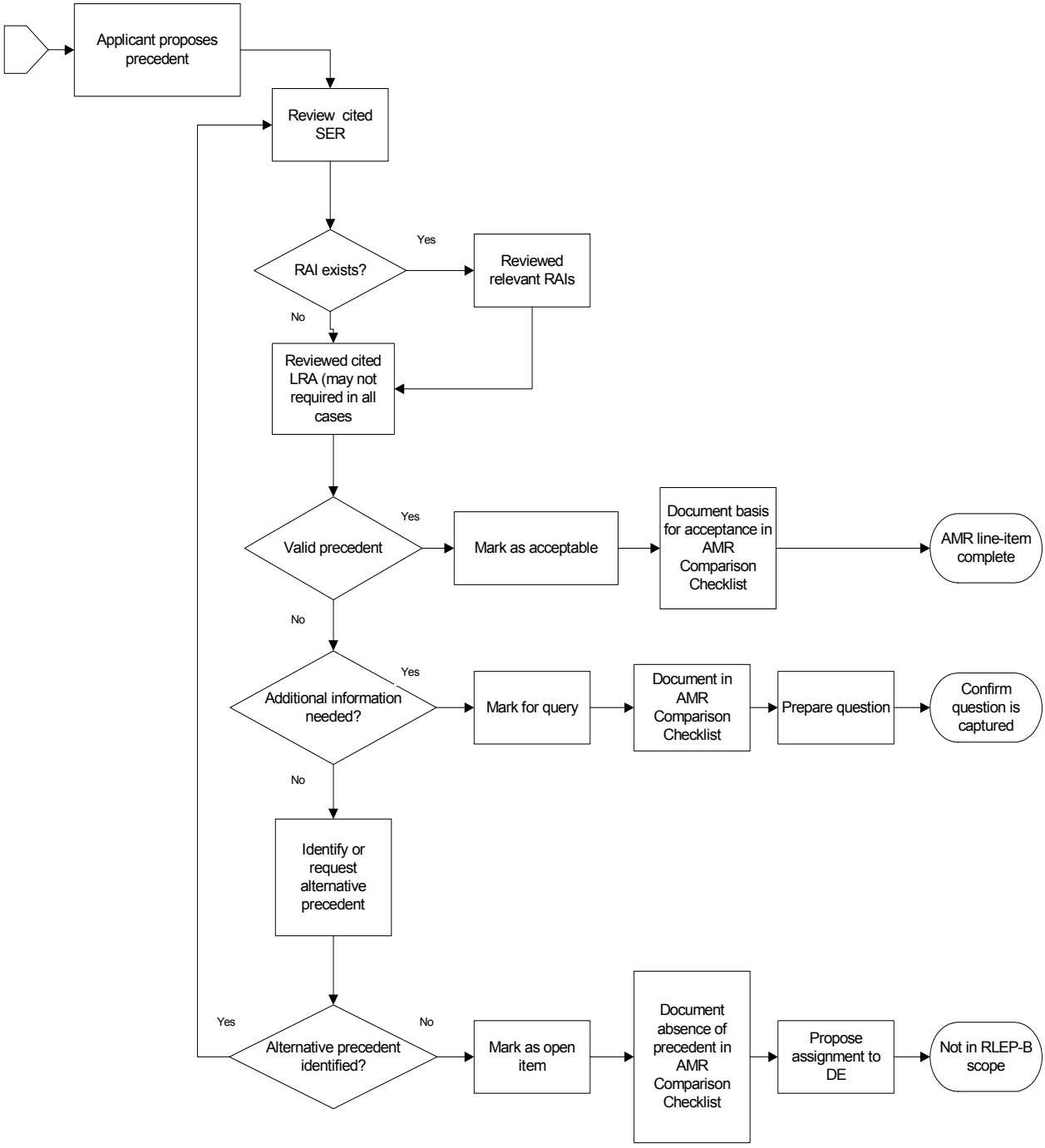

Figure 3. Review of AMRs Using NRC-Approved Precedents

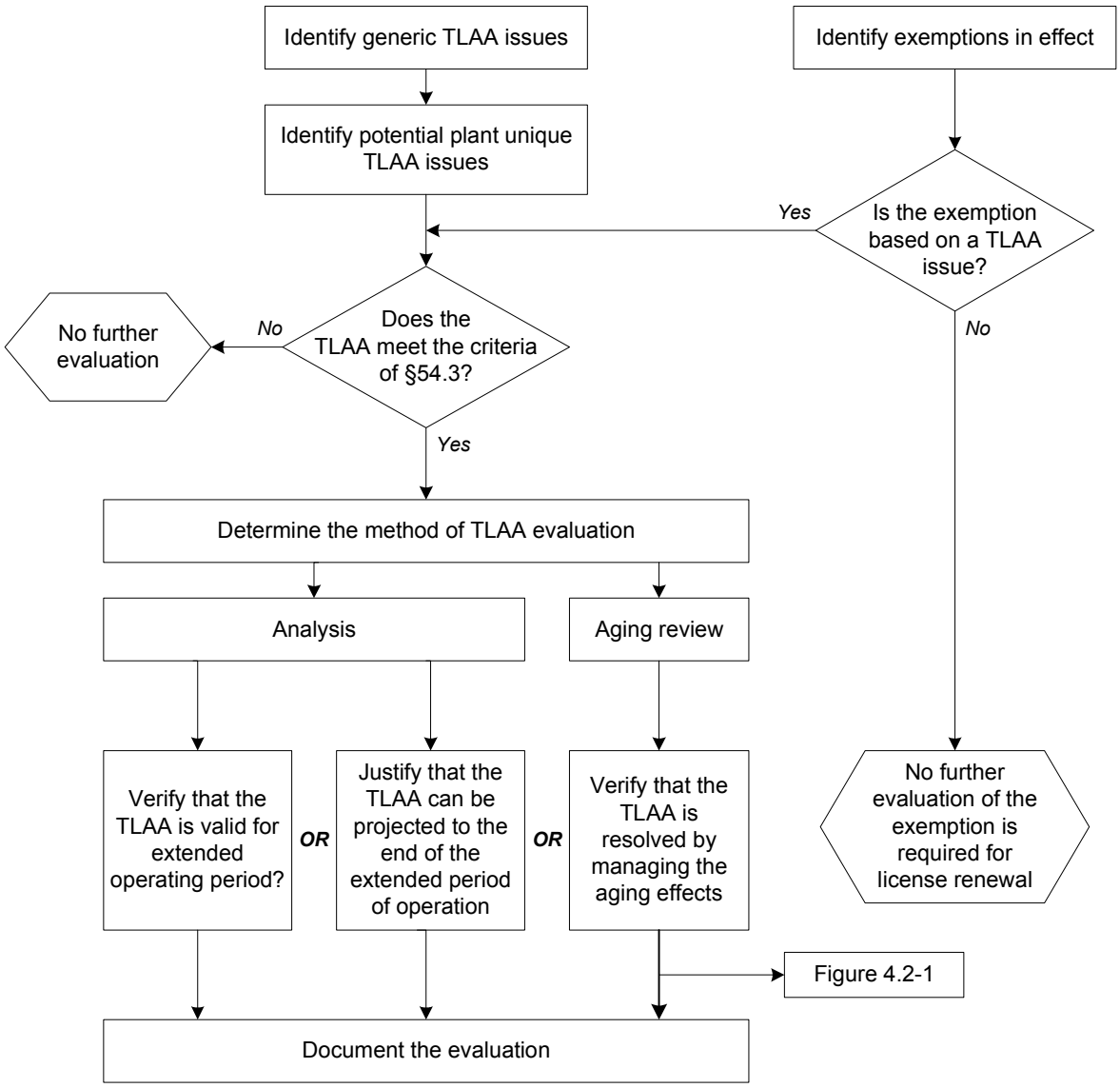

Figure 4. Review of TLAAs and Exemptions (from NEI 95-10, Revision 6)

Appendix A

Project Team Members

APPENDIX A

PROJECT TEAM MEMBERS

Organization	Name	Function
NRC/NRR/DLR/RLRC	Dave Wrona	Team Leader
NRC/NRR/DLR/RLRC	K.Robert Hsu	Back-up Team Leader
NRC/NRR/DLR/RLRC	Roy Mathew	Reviewer
NRC/NRR/DLR/RLRC	Farideh Saba	Reviewer
NRC/NRR/DLR/RLRC	Zhian Li	Reviewer
NRC/NRR/DLR/RLRC	Shyam Arora	Reviewer
NRC/NRR/DRA/AFP	Naeem Iqbal	Reviewer
Information Systems Laboratories, Inc.	Mike Kennedy	Contractor Lead, Reviewer
Information Systems Laboratories, Inc.	Jon Woodfield	Reviewer
Information Systems Laboratories, Inc.	Cliff Marks	Reviewer

Appendix B

RLRC Schedule for HNP LRA Safety Review

APPENDIX B

RLRC SCHEDULE FOR HNP LRA SAFETY REVIEW

Plant: Harris Nuclear Power Plant
Team Leader: Dave Wrona
Backup Team Leader: Robert Hsu
Project Manager: Maurice Heath
Contractor: Information Systems Laboratories, Inc.
Assignments:
Roy Mathew, Farideh Saba, Zhian Li, Shyam Arora, Naeem Iqbal, Mike Kennedy, Jon Woodfield, Cliff Marks

TAC No.: MD3599
Scope of Work:
AMPs - 36 of 39
AMRs - All line items
TLAAs - 5 of 6

RAI Target Date: 8/1/2007
SE Input to PM: 11/14/2007

ACTIVITY/MILESTONE		PLAN SCHEDULE	ACTUAL SCHEDULE	STATUS
1	Receive LRA	11/14/2006	11/14/2006	Complete
2	Complete Sufficiency Review	12/12/2006	12/12/2006	Complete
3	Make Review Assignments (RLRA PM)	3/19/2007	3/19/2007	Complete
4	Conduct Team Planning Meeting	3/19/2007	3/19/2007	Complete
5	Issue Audit Plan to PM	5/7/2007		
6	Draft AMP/AMR Questions Due to TL	4/27/2007		
7	Send Draft AMP/AMR Questions to Applicant	5/7/2007		
8	Conduct Site Visit 1 (AMP Audit and Review)	5/21-5/25/2007		
9	Draft AMP SER Input	6/11/2007		
10	Conduct In-Office AMR Reviews	5/28-6/22/2007		

ACTIVITY/MILESTONE		PLAN SCHEDULE	ACTUAL SCHEDULE	STATUS
11	Site Visit 2 (AMR/TLAA Audit and Review)	6/25-6/29/2007		
12	Optional Site Visit 3 (Resolve AMP, AMR and TLAA Questions)	7/16-7/20/2007		
13	Cutoff for Providing RAIs to PM	8/1/2007		
14	Draft AMR/TLAA SER Input	7/20/2007		
15	Peer Review of SER input	TBD		
16	Issue Audit Summary to PM	TBD		
17	Issue Final SER Input to PM	11/14/2007		
18	ACRS Subcommittee Meeting	4/2008		
19	ACRS Full Committee Meeting	9/2008		

Appendix C

Aging Management Program Assignments

APPENDIX C

AGING MANAGEMENT PROGRAM ASSIGNMENTS

No.	LRA AMP Number	GALL Report AMP Number	Aging Management Program	Consistent With GALL?			Assigned Auditor
					Exception	Enhancement	
1	B.2.1	XI.M1	Inservice Inspection Program (existing program)	X	X		Li
2	B.2.2	XI.M2	Water Chemistry Program (existing program)	X			Li
3	B.2.3	XI.M3	Reactor Head Closure Studs Program (existing program)	X	X		Li
4	B.2.4	XI.M10	Boric Acid Corrosion Program (existing program)	X			Li
5	B.2.5	XI.M11A	Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors Program (existing program)	X		X	Saba
6	B.2.6	XI.M13	Thermal Aging and Neutron Irradiation of Cast Austenitic Stainless Steel (CASS) Program	X			Saba
7	B.2.7	XI.M17	Flow-Accelerated Corrosion Program (existing program)	X		X	Li
8	B.2.8	XI.M18	Bolting Integrity Program (existing program)	X	X	X	Marks
9	B.2.9	XI.M19	Steam Generator Tube Integrity (existing program)	X	X	X	Saba
10	B.2.10	XI.M20	Open-Cycle Cooling Water System Program (existing program)	X			Kennedy
11	B.2.11	XI.M21	Closed-Cycle Cooling Water System Program (existing program)	X	X		Kennedy

No.	LRA AMP Number	GALL Report AMP Number	Aging Management Program	Consistent With GALL?			Assigned Auditor
					Exception	Enhancement	
12	B.2.12	XI.M22	Boraflex Monitoring (existing program)	X		X	Marks
13	B.2.13	XI.M23	Inspection of Overhead Heavy Load Handling Systems Program (existing program)	X		X	Woodfield
14	B.2.14	XI.M26	Fire Protection Program (existing program)	X		X	FP Branch
15	B.2.15	XI.M27	Fire Water System (existing program)	X		X	FP Branch
16	B.2.16	XI.M30	Fuel Oil Chemistry Program (existing program)	X	X	X	Kennedy
17	B.2.17	XI.M31	Reactor Vessel Surveillance Program (existing program)	X		X	DCI
18	B.2.18	XI.M32	One Time Inspection	X			Arora
19	B.2.19	XI.M33	Selective Leaching of Materials Program	X	X		Marks
20	B.2.20	XI.M34	Buried Piping and Tanks Inspection Program	X			Kennedy
21	B.2.21	XI.M35	One-Time Inspection of ASME Code Class 1 Small-Bore Piping Program	X	X		Arora
22	B.2.22	XI.M36	External Surfaces Monitoring Program (existing program)	X		X	Arora
23	B.2.23	XI.M37	Flux Thimble Tube Inspection Program (existing program)	X		X	Marks
24	B.2.24	XI.M38	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program	X			Arora
25	B.2.25	XI.M39	Lubricating Oil Analysis Program (existing program)	X		X	Kennedy

No.	LRA AMP Number	GALL Report AMP Number	Aging Management Program	Consistent With GALL?			Assigned Auditor
					Exception	Enhancement	
26	B.2.26	XI.S1	ASME Section XI, Subsection IWE Program (existing program)	X	X	X	Woodfield
27	B.2.27	XI.S2	ASME Section XI, Subsection IWL (existing program)	X	X		Arora
28	B.2.28	XI.S3	ASME Section XI, Subsection IWF Program (existing program)	X	X		Arora
29	B.2.29	XI.S4	10 CFR Part 50, Appendix J Program (existing program)	X		X	Marks
30	B.2.30	XI.S5	Masonry Wall Program (existing program)	X		X	Woodfield
31	B.2.31	XI.S6	Structures Monitoring Program (existing program)	X		X	Woodfield
32	B.2.32	XI.S7	RG 1.127, Inspection of Water Control Structures Associated With Nuclear Power Plant Program (existing program)	X		X	Woodfield
33	B.2.33	XI.E1	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	X			Mathew
34	B.2.34	XI.E2	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program	X			Mathew
35	B.2.35	XI.E3	Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	X			Mathew

No.	LRA AMP Number	GALL Report AMP Number	Aging Management Program	Consistent With GALL?			Assigned Auditor
					Exception	Enhancement	
36	B.2.36	XI.E4	Metal Enclosed Bus Program	X			Mathew
37	B.2.37	XI.E6	Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program	X			Mathew
38	B.3.1	X.M1	Reactor Coolant Pressure Boundary Fatigue Monitoring Program (existing program)	X		X	Saba
39	B.3.2	X.E1	Environmental Qualification (EQ) Program (existing program)	X			Mathew
40	NA	XI.M11	Nickel-Alloy Nozzles and Penetrations		Alloy 600 Program		Hsu
41	NA	XI.M12	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)				Saba
42	NA	XI.M14	Loose Part Monitoring				N/A
43	NA	XI.M15	Neutron Noise Monitoring				N/A
44	NA	XI.M24	Compressed Air Monitoring				Li
45	NA	XI.M28	Buried Piping and Tanks Surveillance				N/A
46	NA	XI.M29	Aboveground Steel Tanks				Li
47	NA	XI.S8	Protective Coating Monitoring and Maintenance Program				Woodfield
48	NA	XI.E5	Fuse Holders				Mathew
49	NA	X.S1	Concrete Containment Tendon Prestress				Woodfield

Appendix D

Aging Management Review Assignments

APPENDIX D

AGING MANAGEMENT REVIEW ASSIGNMENTS

Aging Management Reviews		Reviewer
3.1	Aging Management of Reactor Vessel, Internals, and Reactor Coolant System	Li Saba
3.2	Aging Management of Engineered Safety Features	Arora
3.3	Aging Management of Auxiliary Systems	Marks Kennedy
3.4	Aging Management of Steam and Power Conversion Systems	Arora
3.5	Aging Management of Containment, Structures, and Component Supports	Woodfield
3.6	Aging Management of Electrical and Instrumentation and Controls	Mathew

Appendix E

Time-Limited Aging Analyses Review Assignments

APPENDIX E

TIME-LIMITED AGING ANALYSIS REVIEW ASSIGNMENTS

LRA TLAA Number	TLAA Title	10 CFR 54.21(c)(1)		Assigned Reviewer
		(i) or (iii)	(ii)	
4.1	Identification of Time-Limited Aging Analyses			Hsu
4.2	Reactor Vessel Neutron Embrittlement		(ii)	DCI
4.3	Metal Fatigue	(i) or (iii)	(ii)	Hsu
4.4	Environmental Qualification of Electrical Equipment	(iii)		Mathew
4.5	Concrete Containment Tendon Prestress			N/A
4.6	Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis	(i)		Hsu
	Other TLAA			
4.7.1	Turbine Rotor Missile Generation Analysis		(ii)	Hsu
4.7.2	Crane Cyclic Analyses		(ii)	Hsu
4.7.3	Main and Auxiliary Reservoir Sedimentation Analyses	(iii)		Hsu
4.7.4	High Energy Line Break Location Postulation Based on Fatigue Cumulative Usage Factor	(i) or (iii)		Hsu

Appendix F

Consistent with GALL Report AMP Audit/Review Worksheet

APPENDIX F

CONSISTENT WITH GALL REPORT AMP AUDIT/REVIEW WORKSHEET

The worksheet provided in this appendix provides, as an aid for the reviewer, a process for documenting the basis for the assessment of the program elements contained in the GALL Report AMPs (Chapter XI of NUREG-1801, Volume 2). The worksheet provides a systematic method for recording the basis for assessments or to identify when the applicant needs to provide clarification or additional information. Information recorded in the worksheets will also be used to prepare the safety evaluation report input.

A complete set of GALL Report AMP worksheets can be found at ADAMS Accession Number ML060950189.

LRA Appendix Subsection:	LRA AMP Title:
GALL Report Subsection:	GALL Report Title:

A. Element Review and Audit

Program Description:
☐ Consistent with GALL Report ☐ Difference Identified

Discussion:

1. Scope of Program:
☐ Consistent with GALL Report ☐ Exception ☐ Enhancement ☐ Difference Identified

Discussion:

2. Preventive Action:
☐ Consistent with GALL Report ☐ Exception ☐ Enhancement ☐ Difference Identified

Discussion:

3. Parameters Monitored/Inspected:
☐ Consistent with GALL Report ☐ Exception ☐ Enhancement ☐ Difference Identified

Discussion:

4 Detection of Aging Effects:
☐ Consistent with GALL Report ☐ Exception ☐ Enhancement ☐ Difference Identified

Discussion:

5. Monitoring and Trending:
☐ Consistent with GALL Report ☐ Exception ☐ Enhancement ☐ Difference Identified

Discussion:

6. Acceptance Criteria:

☐ Consistent with GALL Report ☐ Exception ☐ Enhancement ☐ Difference Identified

Discussion:

7. Corrective Action:

8. Confirmation Process:

9. Administrative Controls:

10. Operating Experience:

B. FSAR Supplement Review: (Include any commitments.)

C. Remarks and Questions:

D. References/Documents Used: (Include number designation, full title, revision number, date, and page numbers, and ADAMS accession number.)

E. Applicant Contact:

Project Team Member: _____ **Date:** _____

Appendix G

Plant-Specific AMP Audit/Review Worksheet

APPENDIX G

PLANT-SPECIFIC AMP AUDIT/REVIEW WORKSHEET

There are no plant-specific AMPs in the HNP LRA.

Appendix H

Aging Management Review Comparison Worksheets

APPENDIX H

AGING MANAGEMENT REVIEW COMPARISON WORKSHEETS

The project team reviewer should document its AMRs determination in spreadsheets of the Table 1 and Table 2 AMR line items. The documentation should contain the same information as would have been captured in the table provided in this appendix.

The project team reviewer should use the tables provided in this appendix if the electronic spreadsheet format is not used.

HNP AMR Component (Table 1) Worksheet:			Audit Date:
Unit:	Table No.:	Chapter:	
Auditor Name(s):			

The audit team verified that items in Table 3.X.1 (Table 1) correspond to items in the GALL Report, Volume 1, Table X. All items applicable in Table 1 were reviewed and are addressed in the following table.

Item No.	Further Evaluation Recommended	Discussion

Audit remarks (Document all questions for applicant here):

Number	Question for applicant (draft per RAI guidance)	Response (with date)

References/Documents Used:

1.
2.
3.
4.

HNP AMR MEAP Comparison (Table 2) Worksheet			Audit Date:
Unit:	Table No.:	Chapter:	
Auditor Name(s):			

Line items to which Notes A, B, C, D, and E are applied or for which a precedent was cited (except for those assigned to DCI) were reviewed for: 1) consistency with NUREG-1801, Volume 2 tables, and 2) adequacy of the aging managing programs. All items in Table 2 of the system named above are acceptable with the exception of items in **boldface** type. (Reviewers need not duplicate information in the 2nd-5th columns that are reflected in the discussion.)

LRA Page No.	Component Type	Material	Environment	Aging Effect	Note	Discussion (draft as SER Input Insert)

Audit remarks (Document all questions for the applicant here):

No.	Question for applicant (draft per RAI guidance)	Response (with date)

References/Documents Used:

1.
2.
3.

Note: All Appendix H information can be documented in the AMR Excel spreadsheet; no need to create a separate worksheet.

Appendix I

Acronyms, Abbreviations, and Initialisms

APPENDIX I

ACRONYMS, ABBREVIATIONS, AND INITIALISMS

ADAMS	Agencywide Documents Access and Management System
AERM	Aging effect requiring management
AMP	aging management program
AMR	aging management review
ASME	American Society of Mechanical Engineers
BTP	Branch Technical Position
CASS	Cast Austenitic Stainless Steel
CFR	Code of Federal Regulations
CLB	current licensing basis
DCI	Division of Component Integrity
DE	Division of Engineering
DIPM	Division of Inspection Program Management
DLR	Division of License Renewal
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
FSAR	Final Safety Analysis Report
GALL	Generic Aging Lessons Learned
HNP	Harris Nuclear Power Plant
ISG-LR	Interim Staff Guidance for License Renewal
ISL	Information Systems Laboratories, Inc.

LRA	license renewal application
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
RAI	request for additional information
RLRB	License Renewal Branch B
RLRC	License Renewal Branch C
RLSB	License Renewal and Standardization Branch
SC	structures and components
SER	safety evaluation report
SRP-LR	Standard Review Plan - License Renewal
SSC	structure, system, and component
TLAA	Time Limited Aging Analysis