Draft Audit and Review Plan for Plant Aging Management Programs and Reviews

Nine Mile Point Nuclear Station, Units 1 and 2 Docket Nos.: 50-220 and 50-410

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Revision 1

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Table of Contents

1. Introduction 1
2. Background 2
3. Objectives 3
4. Summary of Information Provided in the License Renewal Application 4
5. Overview of Audit, Review, and Documentation Procedure 7
   - 5.1 Aging Management Programs 7
   - 5.2 Aging Management Reviews 8
   - 5.3 NRC-Approved Precedents 8
   - 5.4 UFSAR Supplement Review 9
   - 5.5 Documents Reviewed by the Project Team 9
   - 5.6 Public Exit Meeting 9
   - 5.7 Documentation Prepared by the Project Team 9
     - 5.7.1 Audit and Review Plan 9
     - 5.7.2 Worksheets 9
     - 5.7.3 Questions 9
     - 5.7.4 Work Packages 10
     - 5.7.5 Request for Additional Information 10
     - 5.7.6 Audit and Review Report 10
     - 5.7.7 Safety Evaluation Report Input 10
6. Planning, Audit, Review, and Documentation Procedure 11
   - 6.1 Planning Activities 11
     - 6.1.1 Schedule for Key Milestones and Activities 11
     - 6.1.2 Work Assignments 11
     - 6.1.3 Training and Preparation 11
   - 6.2 Aging Management Program Audits and Reviews 12
     - 6.2.1 Types of AMPs 12
     - 6.2.2 Scope of AMP Program Elements to be Audited And Reviewed 12
     - 6.2.3 Plant AMPs that are Consistent with the GALL Report 12
     - 6.2.4 Plant-Specific AMPs 14
   - 6.3 AMR Audits and Reviews 16
     - 6.3.1 Plant AMRs that are Consistent with the GALL Report 16
     - 6.3.2 AMRs Based on NRC-Approved Precedents 18
   - 6.4 Audit and Safety Review Documentation 19
     - 6.4.1 Audit and Review Report 19
     - 6.4.2 Safety Evaluation Report Input 20
   - 6.5 Documents Reviewed and Document Retention 23

Appendix A Project Team Members A-1
Appendix B RLEP-B Schedule for LRA Safety Review B-1
Appendix C Aging Management Program Assignments C-1
Appendix D Aging Management Review Assignments D-1

Appendix E Consistent with GALL Report AMP Audit/Review Worksheet E-1
Appendix F Plant-Specific AMP Audit/Review Worksheet F-1
Appendix G AMR Comparison Worksheets G-1
Appendix H Abbreviations and Acronyms H-1

Tables

Table 1. Aging Management Program Element Descriptions 24
Table 2. Notes for License Renewal Application Tables 3.X.2.A-Y and 3.X.2.B-Y 25

Figures

Figure 1. Audit of AMPs That Are Consistent With the GALL Report 26
Figure 2. Audit of Plant-Specific AMPs 27
Figure 3. Review of AMRs That Are Consistent With the GALL Report 28
Figure 4. Review of AMRs Using NRC-Approved Precedent 29

Audit and Review Plan for Plant Aging Management Programs and Reviews
Nine Mile Point Nuclear Station, Units 1 and 2

1. Introduction

By letter dated May 26, 2004 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML041490213), Nine Mile Point Nuclear Station, LLC (NMPNS, the applicant) submitted to the U.S. Nuclear Regulatory Commission (NRC) its application for renewal of Operating License DPR-63 and Operating License NPF-69 for Nine Mile Point (NMP) Nuclear Station Units 1 and 2, respectively (ML041490223). The applicant requested renewal of the operating license for an additional 20 years beyond the 40-year current license term.

By letter dated March 3, 2005 (ML050680270), the applicant requested a grace period to recover the quality of the LRA for NMP Units 1 and 2. This action temporarily suspended the formal review of the LRA. By letter dated July 14, 2005 (ML052000163), the applicant submitted an amended LRA addressing all issues that had been communicated by the NRC staff as well as a number of areas identified by the applicant as in need of enhancement. The amended LRA is not a new or revised application, but rather an enhancement to the original LRA submitted by the applicant on May 26, 2004. In the remainder of this audit and review plan, the amended LRA will be referred to simply as the LRA unless there is a specific reason to differentiate the original LRA from the amended LRA for clarity purposes.

The project team performed the review of the original NMP LRA under Revision 0 of this audit and review plan. In completing its review of the amended LRA, the project team will make use of the work performed under Revision 0 of this audit and review plan to the fullest extent possible.

In support of the staff's safety review of the license renewal application (LRA) for NMP Units 1 and 2, the License Renewal and Environmental Impacts Program, Section B (RLEP-B), will lead a project team that will audit and review selected aging management reviews (AMRs) and aging management programs (AMPs) developed by the applicant to support its LRA for NMP. The project team will include NRC staff and engineers provided by Information Systems Laboratories, Inc. (ISL), RLEP-B's technical assistance contractor. Appendix A, "Project Team Members," lists the project team members. This document is the RLEP-B plan for auditing and reviewing of assigned aging management reviews and aging management programs for NMP.

The project team will audit and review its assigned AMPs and AMRs against the requirements of Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants;" the guidance provided in NUREG-1800, "Standard Review Plan for Review of License Renewal Application for Nuclear Power Plants" (SRP-LR); the guidance provided in NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," and this audit and review plan. For the scope of work defined in this audit and review plan, the project team will determine 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 NMP 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 applicant's offices in Oswego, New York. The project team will perform its work in accordance with the schedule shown in Appendix B, "RLEP-B

Schedule for LRA Safety Review." The project team will conduct a public exit meeting at the applicant's offices in Oswego, New York, after it completes its on-site work.

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 NMP that is applicable to this 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 NMP LRA.

- **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 NMP 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 Appendices C and D. Appendices E, F, and G are the worksheets that the individual project team members use to document the results of their audit and review audit work. The application of these worksheets is discussed in Section 6 or this audit and review plan. Appendix H is a list of the abbreviations and acronyms 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 or functions of those SCs will be maintained, consistent with the CLB, for the period of extended operation. 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 during 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 extended period of 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) systems, structures, and components, (2) component materials, (3) the environments to which the components are exposed, (4) the aging effects associated with the materials and environments, (5) the AMPs that are credited to manage the aging effects, and (6) recommendations for further evaluations of aging effects and 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 re-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 AMP, it is incumbent on the applicant to ensure that the plant AMP contains all the program elements of the referenced GALL Report AMP. In addition, the conditions at the plant must be bounded by the conditions for which the GALL Report AMP was evaluated. The applicant must certify in its LRA that it completed the verifications and that they are documented on-site in an auditable form.

3. Objectives

The overall objective of the audit and review described in this plan is to determine compliance with 10 CFR 54.21(a)(3). 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 NMP is described in Sections 5 and 6 of this audit and review plan. It is intended to accomplish the following objectives:

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

- For NMP AMPs that the applicant claims are consistent with GALL Report AMPs with exceptions, determine 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, determine and evaluate that the applicant has documented an acceptable technical basis for each exception.

- For NMP AMPs that the applicant claims will be consistent with GALL Report AMPs after specified enhancements are implemented, determine 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, determine that the applicant identified the enhancements as commitments in the Updated Final Safety Analysis Report (UFSAR) or other docketed correspondence.

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

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

- 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 evaluating the AMRs in accordance with the SRP-LR.

4. Summary of Information Provided in the License Renewal Application

The NMP LRA closely follows the standard LRA format presented in NEI 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule." Section 3 of the NMP LRA provides the results of the aging management review for structures and components that the applicant identified as being subject to aging management review.

NMP LRA Table 3.0-1 provides descriptions of the mechanical, structural, and electrical service environments, respectively, used in the AMRs to determine the aging effects requiring management. Table 3.0-2 provides descriptions of 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 five tables labeled Table 3.X.1.A, where "X" is the system/component group number (see table below), "1" indicates it is a Table 1 type, and "A" indicates Unit 1. For example, in the reactor coolant system subsection of the NMP LRA Section 3, this is Table 3.1.1.A for Unit 1, and in the engineered safety features subsection of NMP LRA Section 3, this is Table 3.2.1.A for Unit 1. For Unit 2, the tables' labels remain the same, however, "A" is being replaced with "B," where "B" indicates Unit 2. For example, in the reactor coolant system subsection of the NMP LRA Section 3, this is Table 3.1.1.B, and in the engineered safety features subsection of NMP LRA Section 3, this is Table 3.2.1.B. For the electrical and instrumentation and controls systems, there is a single Table 1, Table 3.6.1, which is for both Units 1 and 2.

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

The second table type is a series of tables labeled Table 3.X.2.A-Y, where "X" is the system/component group number, "2" indicates it is a Table 2 type, "A" indicates Unit 1, and "Y" indicates the subgroup number within group "X". For example, within the "reactor coolant system" (group 1), the AMR results for the reactor pressure vessel (subgroup 1) are presented in NMP LRA Table 3.1.2.A-1 for Unit 1, and the results for the reactor vessel internals (subgroup 2) are presented in NMP LRA Table 3.1.2.A-2. Under the "engineered safety features system" (group 2), the emergency core cooling system (subgroup 1) results are presented in Table 3.2.2.A-1 of the NMP LRA for Unit 1, and the containment spray system (subgroup 2) is in Table 3.2.2.A-2 of the NMP LRA for Unit 1. For Unit 2, the table labels remain the same; however, "A" is replaced with "B," where "B" indicates Unit 2. For the electrical and instrumentation and controls systems, the AMR results are presented in a series of tables labeled Table 3.6.2.C-Y, where Y is the subgroup number.

The applicant compared the NMP 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.

NMP LRA Tables 3.1.1.A through 3.5.1.A, 3.1.1.B through 3.5.1.B and 3.6.1 (Table 1 types) provide a summary comparison of how the NMP AMR results align with Tables 1 through 6 of the GALL Report, Volume 1. These NMP LRA tables are essentially the same as Tables 1 through 6 of the GALL Report, Volume 1, except that the "Type" column has been replaced by an "Item Number" column, the GALL Volume 2 Item Number column has been deleted, and a "Discussion" column has been added. The "Item Number" column provides a means to cross-reference between NMP LRA Table 3.X.2.A-Y and Table 3.X.2.B-Y and Table 3.6.2.C-Y (Table 2 type) and NMP LRA Table 3.X.1.A, Table 3.X.1.B and Table 3.6.1 (Table 1 type). The "Discussion" column includes further information. The following are examples of information that might be contained within the "Discussion" 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 GALL Report recommendations
- A discussion of how the line item is consistent with the corresponding line item in the GALL Report, when it may not be intuitively obvious
- A discussion of how the line item differs from the corresponding line item in the GALL Report, when it may appear to be consistent.

NMP LRA Table 2 types provide the detailed results of the AMRs for those SCs that are subject to an aging management review. There is a Table 2 for each subgroup within the six system/component groups. For example, the engineered safety features system group contains tables specific to emergency core cooling, containment spray, containment cooling, containment penetrations, and hydrogen control. Table 2 of the NMP LRA consists of the following nine columns.

- *Component Type.* Column 1 identifies the component types that are subject to an AMR. The component types are listed in alphabetical order. In the structural tables, component types are sub-grouped by material.

- *Intended Function.* Column 2 identifies the license renewal intended functions for the listed component types. Definitions and abbreviations of intended functions are listed in Table 2.0-1 in Section 2 of the NMP LRA.

- *Material.* Column 3 lists the particular materials of construction for the component type being evaluated.

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

- *Aging Effect Requiring Management.* Column 5 lists the aging effects identified as requiring management for the material and environment combinations of each component type.

- *Aging Management Programs.* Column 6 lists the programs used to manage the aging effects requiring management.

- *GALL Report (Vol. 2) Item.* Each combination of the following factors listed in LRA Table 2 is compared to the GALL Report to identify consistencies: component type, material, environment, aging effect requiring management, and aging management program. Column 7 documents identified consistencies by noting the appropriate GALL Report item number. If there is no corresponding item number in the GALL Report for a particular combination of factors, Column 7 is left blank.

- *LRA Table 1 Item.* Each combination of the following that has an identified GALL Report item number also has a Table 1 line item reference number: component type, material, environment, aging effect requiring management, and aging management program. Column 8 lists the corresponding line item from Table 1. If there is no corresponding item in the GALL Report (Volume 1), Column 8 is left blank.

- *Notes.* Column 9 contains notes that are used to describe the degree of consistency with the line items in the GALL Report. Notes that use letter designations are standard notes based on the 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).[1] These standard notes

[1] The staff concurred with the standardized format for license renewal applications by letter dated April 7, 2003, from P.T. Kuo, NRC, to A. Nelson, NEI (ML030990052).

are shown in Table 2 of this plan. Notes that use numeric designators are specific to NMP.

NMP 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 in NMP 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 Column 7 is blank, 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. Many of the GALL Report evaluations refer to plant-specific programs. In these cases, the applicant considers the NMP evaluation to be consistent with the GALL Report if the other program elements are consistent. Any appropriate NMP AMP is considered to be a match to the GALL Report AMP for line items referring to a plant-specific program.

5. Overview of Audit, Review, and Documentation Procedure

The project team will follow the process 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 is summarized below.

5.1 Aging Management Programs

Table 1 of this audit and review plan summarizes the ten program elements that comprise an aging management program. For the NMP AMPs for which the applicant claimed consistency with the AMPs included in the GALL Report, the project team will review the NMP AMP descriptions and compare program elements for the NMP AMPs to the corresponding program elements for the GALL Report AMPs. The project team will determine that the NMP AMPs contain the program elements of the referenced GALL Report AMP and that the conditions at the plant are bounded by the conditions for which the GALL Report program was evaluated. In addition, for program elements 7, Corrective Actions, 8, Confirmation Process, and 9, Administrative Controls, the Division of Inspection Program 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 NMP 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 NMP AMP, as modified by the exception and/or 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 NMP AMPs credited by the applicant and the GALL Report AMPs. In these cases, the project team will review the difference to determine whether or not it is acceptable and whether or not the NMP AMP, as modified with the difference, would adequately manage the aging effects.

For those NMP AMPs that are not included in the GALL Report (i.e., plant-specific AMPs), the project team will review the NMP AMP against the ten program elements defined in Appendix A of the SRP-LR. For program elements 7, Corrective Actions, 8, Confirmation Process, and 9, Administrative Controls, the Division of Inspection Program 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. On the basis of its reviews, the project team will determine whether these AMPs will manage the aging effects for which they are credited.

5.2 Aging Management Reviews

The AMRs in the GALL Report fall into two broad categories: (1) those that the GALL Report concludes are adequate to manage aging of the components referenced in the GALL Report, and (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. For its 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 plant-specific AMRs reported by the applicant to be based on an approved precedent are technically acceptable and applicable. For component groups evaluated in the GALL Report 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.

5.3 NRC-Approved Precedents

To help facilitate the project team staff review of its LRA, an applicant may reference NRC-approved precedents to demonstrate that its non-GALL 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 Office of Nuclear Reactor Regulation (NRR) Division of Engineering (DE) for review in the traditional manner, i.e., as described in the SRP-LR, without consideration of the precedent information.

5.4 UFSAR Supplement Review

Consistent with the SRP-LR, for the AMRs and associated AMPs that it will review, the project team will review the UFSAR 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 determine 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 Updated Final Safety Analysis Report (UFSAR) or other docketed correspondence.

5.5 Documents Reviewed by the Project Team

In performing its work, the project team will rely heavily on the NMP 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 and AMR basis documents (catalogs of the documentation used by the applicant to develop or justify its AMPs and AMRs), and other applicant documents, including selected implementing procedures, to determine that the applicant's activities and programs will adequately manage the effects of aging on structures and components.

5.6 Public Exit Meeting

After it completes its audits and reviews, the project team will hold a public exit meeting to discuss the scope and results of its audits and reviews.

5.7 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 report, 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.

5.7.1 Audit and Review Plan

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

5.7.2 Worksheets

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

5.7.3 Questions

As specified in Section 6 of this audit and review plan, the project team will ask the applicant questions, while on-site, as appropriate, to facilitate its audit and review activities. The project team will also track and review the applicant's answers to these questions.

5.7.4 Work Packages

During the audit and review process, 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 NRR DE 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.

5.7.5 Request for Additional Information

The audit and review process described in this audit and review plan is structured to resolve as many questions as possible during the on-site visits. As examples, the on-site visits are used to obtain clarifications about the NMP LRA and explanations as to where certain information may be found in the NMP 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 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 project team 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 member 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 audit and review report (unless the report was issued before the RAI response was received) and in the SER input. If the audit and review report was issued before the applicant submitted its response to an RAI, the project team's evaluation of the response will be documented in the SER related to the NMP LRA.

5.7.6 Audit and Review Report

The project team will document the results of its work in an audit and review report. The project team will prepare its report as described in Section 6.4.1 of this audit and review plan and the latest version of the *Writing Guide and Template for Preparing License Renewal Application Audit and Review Report.*

5.7.7 Safety Evaluation Report Input

The project team leader will prepare SER input, based on the audit and review report, as described in Section 6.4.2 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, conduct, and document its audit and review 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 renewal 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 on-site visits
H. scheduling in-office review periods
I. preparing questions
J. preparing RAIs
K. preparing draft and final audit and review report
L. preparing draft and final SER input

On-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 plan contains the target schedule for the key milestones and activities.

6.1.2 Work Assignments

The NRC technical assistance contractor will provide a proposed project team member work assignments to the project team leader. The project team leader will approve all work assignments. After the audit and review plan is issued, the 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 NMP 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 plan shows the project team member assignments for the AMRs.

6.1.3 Training and Preparation

The training and preparation, if applicable, 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 (ISG)
(4) LRA AMPs
(5) LRA AMRs
(6) basis documents (catalogues of information assembled by the applicant to demonstrate the bases for its programs and activities)
(7) implementation procedures
(8) operating experience reports
(9) RAIs, audit and review reports, and SERs for other plants
(10) applicant's UFSAR

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 report, and SER input.

F. Process for interfacing with DE 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 plan shows the ten 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. However, for program elements 7, Corrective Actions, 8, Confirmation Process, and 9, Administrative Controls, the Division of Inspection Program 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 audit and review each plant AMP that the applicant claims is consistent with the GALL Report.

Preparation

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

B. Review the associated GALL Report AMP.

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) ISGs
(4) RAIs, audit and review reports, and SERs for similar plants
(5) LRA
(6) basis documents
(7) implementation procedures
(8) operating experience reports (plant-specific and industry)
(9) applicant's UFSAR

Audit/Review

A. Confirm that the NMP 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) Are the program elements consistent with the GALL Report AMP?

B. If either of the above questions results in the identification of an exception 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 or difference, document the basis in the worksheet and later in the audit and review report and 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 (NEI 95-10) is as follows:

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

(2) Plant-Specific Operating Experience with Existing Aging Management Programs. The operating experience of aging management programs, 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 issuance. Operating experience after the issuance date of NUREG-1801 should be evaluated and documented as part of the aging management review. In particular, generic communications such as a Bulletin 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 the 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 to the NMP 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 E, "Consistent with GALL Report AMP Audit/Review Worksheet."

6.2.4 Plant-Specific AMPs

Figure 2, "Audit of Plant-Specific AMPs," is the process flowchart that shows the activities and decisions used to audit/review each plant-specific AMP.

Pre-review preparation

A. Review Section A.1.2.3 of the SRP-LR and identify those element criteria that will be reviewed.

B. 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) ISGs
(4) RAIs, audit and review reports, and SERs for similar plants

(5) LRA
(6) basis documents
(7) implementation procedures
(8) operating experience reports (plant-specific and industry)
(9) applicant's UFSAR

Audit/review

A. Audit/review the NMP AMP program elements and determine that they are consistent with the corresponding elements of Section A.1.2.3 of the SRP-LR.

B. Review the industry and plant-specific operating experience associated with the AMP. This is an area of review emphasis. They require review to identify aging effects requiring management that are not identified by the industry guidance documents (such as 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) is as follows:

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

(2) Plant-Specific Operating Experience with Existing Aging Management Programs. The operating experience of aging management programs, 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 issuance. Operating experience after the issuance date of NUREG-1801 should be evaluated and documented as part of the aging management review. In particular, generic communications such as a Bulletin 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 the 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 to the NMP LRA. If not, the NRC may issue an RAI to obtain the information.

AMP review worksheets

Document the audit/review using the worksheet provided in Appendix F, "Plant-Specific AMP Audit/Review Worksheet."

6.3 AMR Audits and Reviews

Audit and review of AMRs are discussed below. In general, the project team will review AMRs that are consistent with the GALL Report and AMRs that are based on an NRC-approved precedent that the applicant has identified. NRR/DE will review AMRs that are not consistent with or not addressed in the GALL Report.

6.3.1 Plant AMRs that are Consistent with the GALL Report

Figure 3, "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 NMP 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 NMP 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) ISGs
(4) RAIs, audit and review reports, and SERs for similar plants
(5) LRA
(6) basis documents
(7) implementation procedures
(8) operating experience reports (plant-specific and industry)
(9) applicant's UFSAR

Audit/review

A. Each AMR line item is coded with a letter which represents a standard note designation.[2] The letter notes are described in Table 2 of this 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 determination that the applicant has satisfied the requirements of 10 CFR 54.21(a)(3). This requirement 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 extended period of operation."

C. Determine compliance by following the process shown in Figure 3. 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[3], 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 audit and review report. 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 audit and review report. If not acceptable, go to Step (7) 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 NMP LRA Table 3.X.1.A entry that is referenced in NMP LRA Table 3.X.2.A-Y or Table 3.X.2.B-Y. If applicable, determine whether the applicant's "Further Evaluation Recommended" response in NMP 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 NMP 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.

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[2] 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).

[3] 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.

(a) Review the applicant's response to the question. If it appears acceptable, restart 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, 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 team leader should be consulted if docketed information may be needed.

AMR audit/review worksheets

Document the audits/reviews of NMP AMRs using the worksheet provided in Appendix G, "Aging Management Review Worksheets." As an alternate, the project team reviewer may document its review electronically in the AMR spreadsheets.

6.3.2 AMRs Based on NRC-Approved Precedents

Figure 4, "AMR Review Using NRC-Approved Precedent," is the process flowchart that shows the activities and decisions used to review NMP AMRs that the applicant has identified as being consistent with an NRC-approved precedent.[4]

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) ISGs
(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 UFSAR

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."

[4] Applicant identified NRC-approved precedents are only to be used as an aid for performing AMR audits. The audit conclusions will be based on the technical basis of the AMR and its applicability to the plant being reviewed. It is not acceptable to simply cite the NRC-approved precedent as its basis.

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 4.

(1) Is the precedent appropriate for the NMP AMR being reviewed?
(2) Is the NRC-approved precedent sufficiently documented or understood to technically support the adequacy of the NMP AMR being reviewed?
(3) Is the NMP 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 NMP AMR, the process shown in Figure 4 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 G, "Aging Management Review Worksheets." As an alternate, the project team member may document its review electronically in the AMR spreadsheets.

6.4 Audit and Safety Review Documentation

As noted in Section 5.7 of this audit and review plan, the project team will prepare an audit and review plan, worksheets, work packages, requests for additional information, and an audit and review report. The project team leader will prepare the SER input. This section of the audit and review plan addresses the preparation of the audit and review report and the SER input.

6.4.1 Audit and Review Report

Details on documentation of the audit and review report can be found in the latest version of the *Writing Guide and Template for Preparing License Renewal Application Audit and Review Report.*

In general, the audit and review report should include the following:

A. Cover page
B. Table of Contents
C. Section 1.0, Introduction and General Information
    Section 1.1, Introduction
    Section 1.2, Background
    Section 1.3, Summary of Information in the License Renewal Application
    Section 1.4, Audit and Review Scope
    Section 1.5, Audit and Review Process
    Section 1.6, Exit Meeting
D. Section 2.0, Aging Management Programs Audit and Review Results
E. Section 3.0, Aging Management Review Audit and Review Results

F. Attachments

Attachment 1, Abbreviations and Acronyms
Attachment 2, Project Team and Applicant Personnel
Attachment 3, Elements of an Aging Management Program for License Renewal
Attachment 4, Disposition of Requests for Additional Information, LRA Supplements, and Open Items
Attachment 5, List of Documents Reviewed
Attachment 6, List of Commitments

6.4.2 Safety Evaluation Report Input

1. General guidance

A. The project team leader will prepare the SER input for the AMP and AMR audits and reviews.

B. In general, the data and information needed to prepare the SER input should be available in the project team's audit and review report and the project team member's worksheets.

C. SER inputs are to be prepared for:

(1) each NMP AMP that was determined to be consistent with the GALL Report, which has no exceptions or enhancements.
(2) each NMP 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.
(3) each plant-specific AMP
(4) AMRs that are consistent with the GALL Report
(5) project team AMR review results[5]

D. 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
3.0.1 Format of the LRA
3.0.2 Staff's Review Process
3.0.2.1 AMRs in the GALL Report
3.0.2.2 NRC-Approved Precedents
3.0.2.3 UFSAR 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

[5] AMRs that are not 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[6] Aging Management of _____
3.X.1 Summary of Technical Information in the Application
3.X.2 Staff Evaluation
3.X.2.1 Aging Management Review Results that are Consistent with the GALL Report
3.X.2.2 Aging Management Review Results For Which Further Evaluation is Recommended by the GALL Report
3.X.2.3 Aging Management Review Results that are Not Consistent with or Not Addressed in the GALL Report
3.X.3 Conclusion

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

F. If the applicant submitted 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.

G. If an RAI was issued, identify the RAI number and briefly discuss the RAI. State if the RAI remains open or if the applicant 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.

H. 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.

2. SER input

A. For NMP 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 UFSAR update (Appendix A of the NMP LRA) is acceptable. This SER input documents that the AMP is consistent with the GALL Report.

B. For NMP AMPs determined to be consistent with the GALL Report, with exceptions or enhancement, the SER input should include a statement that the audit found the NMP AMP consistent with the GALL Report and that any applicant-identified exceptions to the GALL Report were found technically acceptable to manage the

[6] 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 systems, (2) Section 3.2, engineered 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.

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 UFSAR supplement, and document the basis for concluding that it is acceptable.

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

D. For aging management evaluations that are consistent with the GALL Report,[7] the SER input should include the following:

(1) Identify the NMP LRA section reviewed.
(2) A summary of the type of information provided in the section of the NMP LRA reviewed, including a listing of the NMP AMPs reviewed.
(3) Identify the NMP LRA Tables 3.X.2.A-Y or Tables 3.X.2.B-Y reviewed.
(4) A summary review of the AMR Notes A through E used to classify the AMR line items used in these tables.
(5) 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.
(6) The bases for accepting any exceptions to GALL Report AMRs that were identified by the applicant or the project team member.
(7) A finding that determines that:
    (a) the applicant identified the applicable aging effects
    (b) the applicant defined the appropriate combination of materials and environments
    (c) the applicant specified acceptable AMPs
(8) 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.

E. For aging management evaluations that are consistent with the GALL Report, for which further evaluation is recommended, the SER input should include the following:

(1) The NMP LRA section containing the applicant's further evaluations of AMRs for which further evaluation is required.
(2) A list of the aging effects for which the further evaluation apply.
(3) 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.
(4) 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.
(5) A statement that the audit and review report contains additional information. Also identify the issue date and the ADAMS accession number for the audit and review report.

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

F. Staff AMR Review Results.[8] 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 audit report should document the following, based on a precedent identified by the applicant:

(1) The NMP LRA section reviewed
(2) A summary of the type of information provided in the section of the LRA, reviewed, including a listing of the AMPs reviewed for this LRA section.
(3) Identify the NMP LRA Tables 3.X.2.A-Y or Tables 3.X.2.B-Y documented by this audit writeup.
(4) A brief summary of what the staff (project team) reviewed, i.e., LRA and applicant basis documents and other implementation documents.
(5) A finding that determines, if true, that:
    (a) The applicant identified the applicable aging effects
    (b) The applicant listed the appropriate combination of materials and environments
    (c) The applicant specified acceptable AMPs
(6) 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.

6.5 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 audit and review report.

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

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

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

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.

* Division of Inspection Program will review and determine the adequacy of the applicant's 10 CFR 50, Appendix B Program.

Table 2. Notes for License Renewal Application Tables 3.X.2.A-Y[9] and 3.X.2.B-Y

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.

[9] 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).

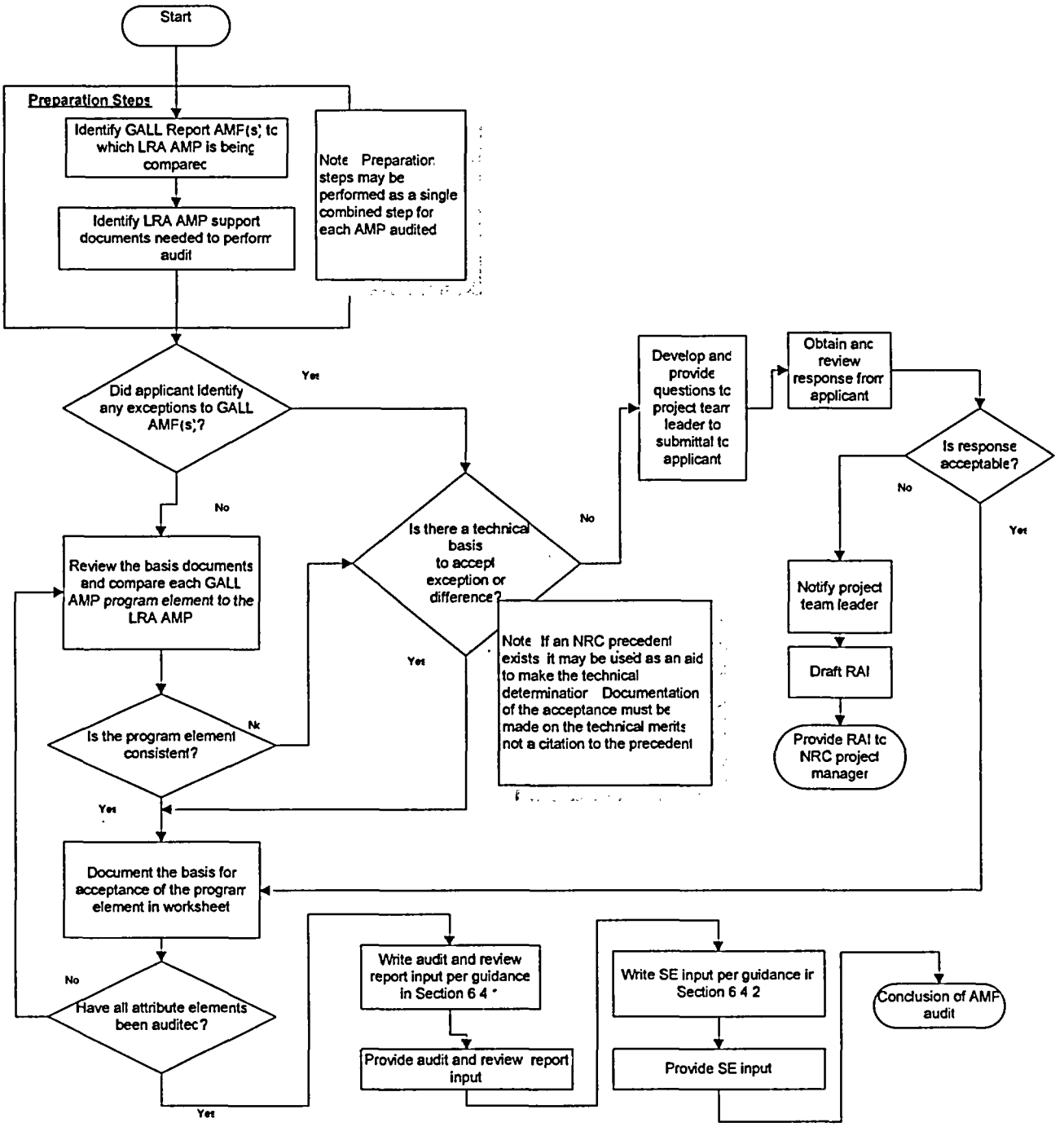

Figure 1. Audit of AMPs That Are Consistent with the GALL Report

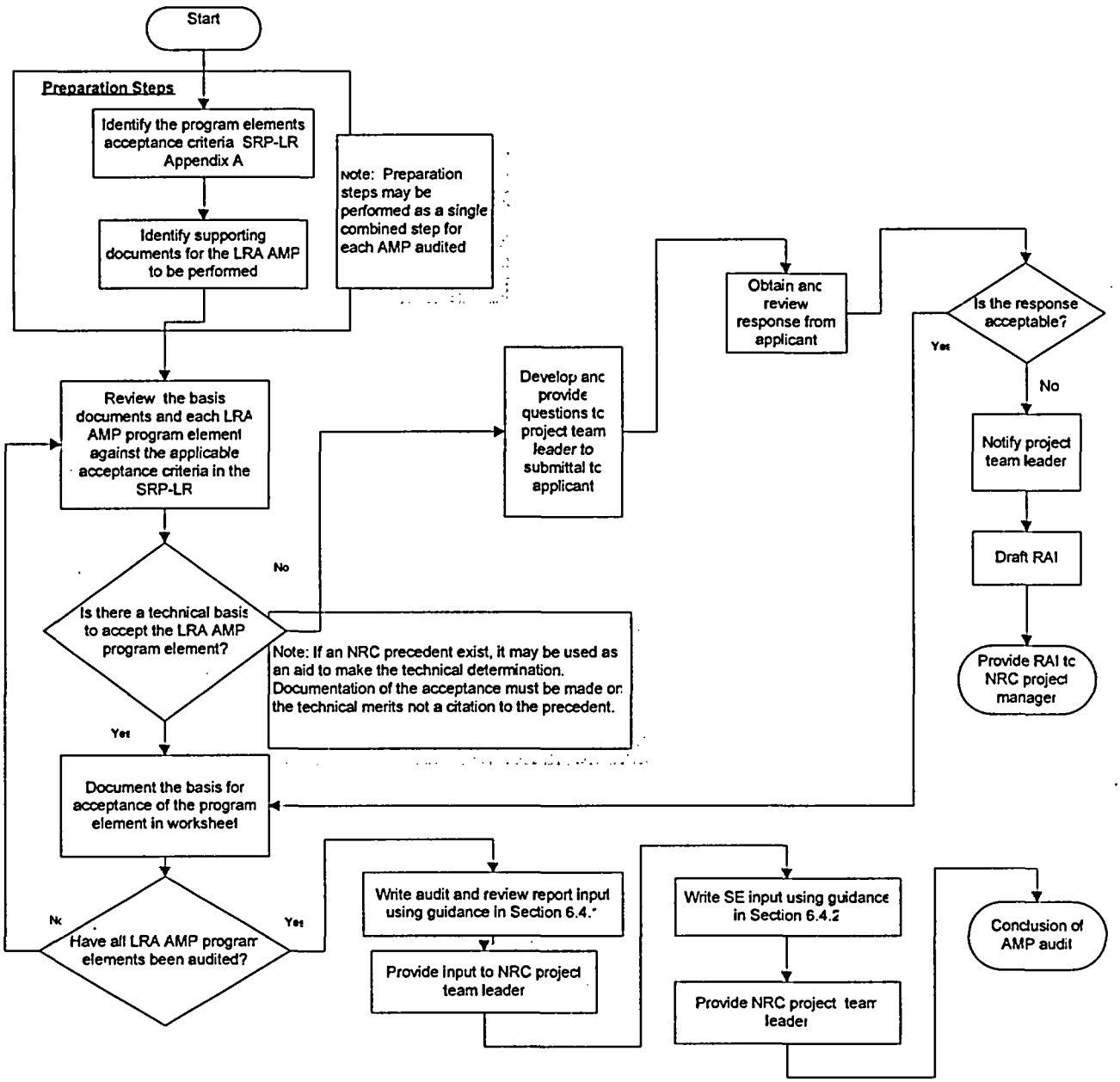

Figure 2. Audit of Plant-Specific AMPs

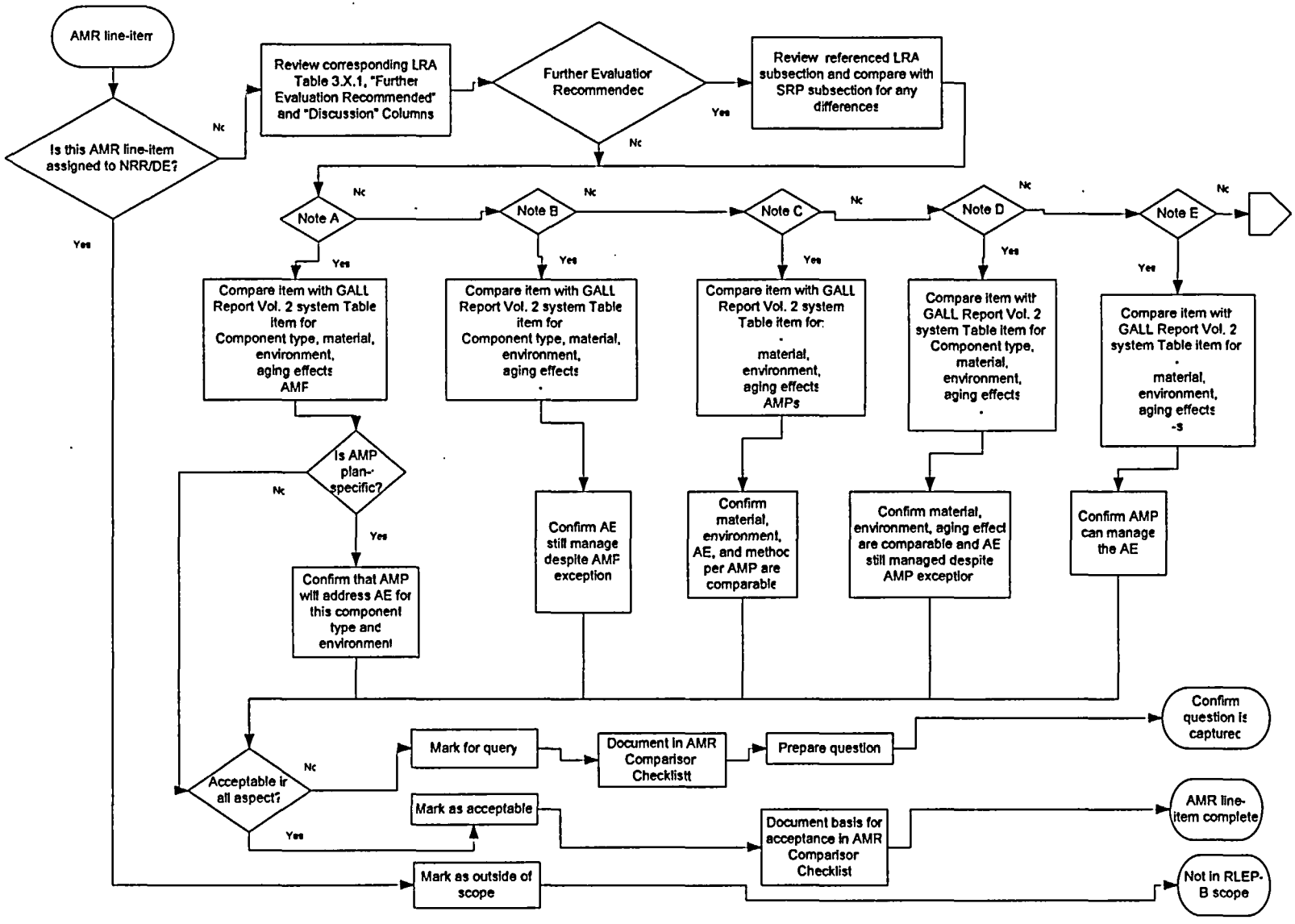

Figure 3. Review of AMRs That Are Consistent with the GALL Report

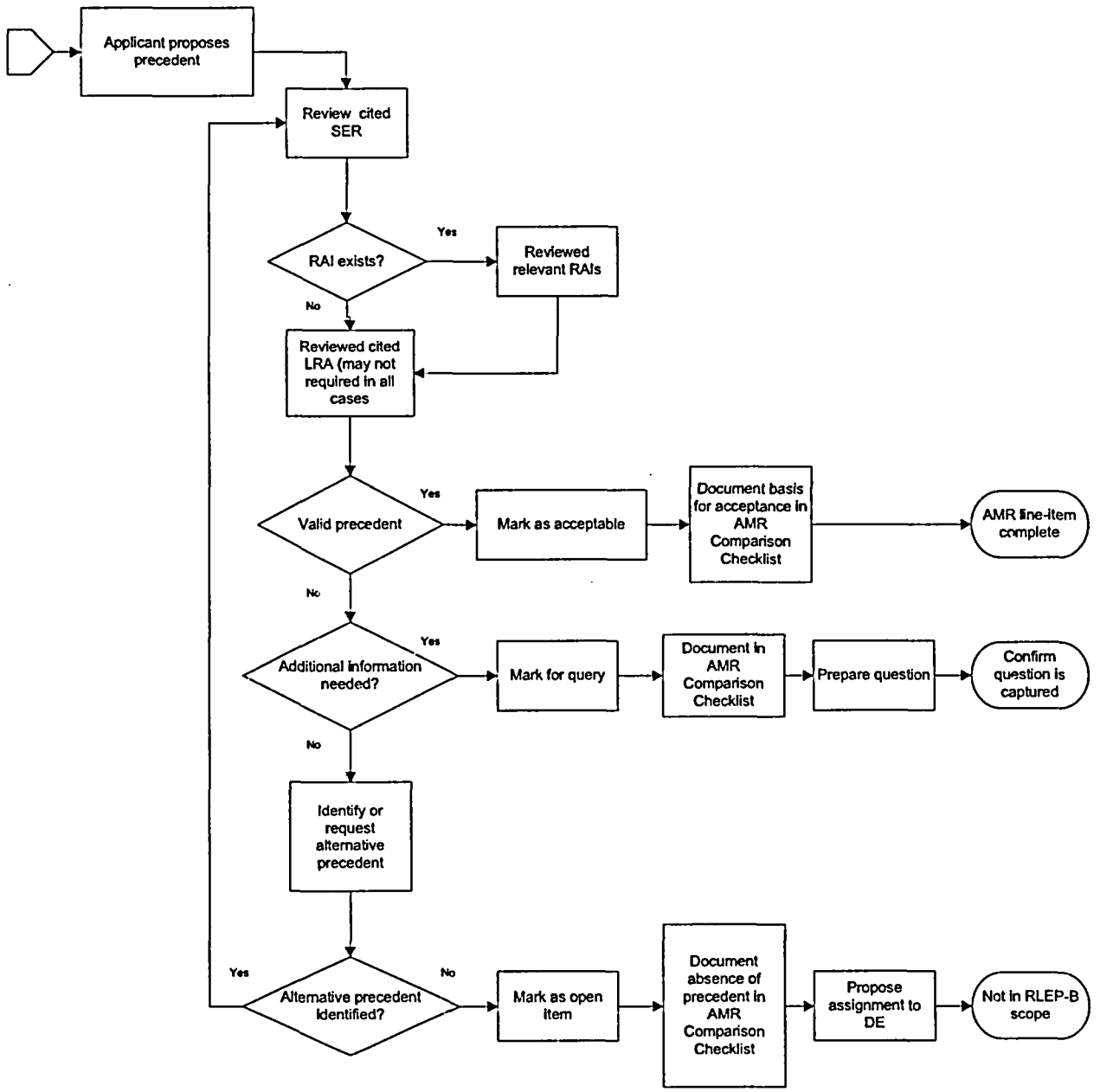

Figure 4. Review of AMRs Using NRC-Approved Precedent

Appendix A

Project Team Members

Appendix A

Project Team Members

Organization	Name	Function
NRC/NRR/DRIP/RLEP-B	K. Chang	Project Team Leader
NRC/NRR/DRIP/RLEP-B	K. Hsu	Backup Team Leader
NRC/NRR/DRIP/RLEP-B	P. Wen	Reviewer
NRC/NRR/DE	D. Nguyen	Reviewer
NRC/NRR/DIPM/IROB	T. Le	Reviewer
Information Systems Laboratories, Inc.	M. Kennedy	Contractor Lead, Reviewer
Information Systems Laboratories, Inc.	M. Patterson	Reviewer
Information Systems Laboratories, Inc.	F. Saba	Reviewer
Information Systems Laboratories, Inc.	J. Woodfield	Reviewer

Appendix B

RLEP-B Schedule for LRA Safety Review

Appendix B

RLEP-B Schedule for LRA Safety Review

Plant: Nine Mile Point
Team Leader: Ken Chang
Backup Team Leader: Robert Hsu
Project Manager: Ngoc (Tommy) Le
Contractor: ISL
Assignments: (Mike Kennedy, Jon Woodfield
Malcolm Patterson, Farideh Saba)

TAC: MC3272, MC3273
Scope of Work:
AMPs - (35 of 43, 81%)
AMRs - (1709 of 2948 lines, 58%)
RAI Target Date: 11/07/05
SE Input to PM: 12/31/05

	ACTIVITY/MILESTONE	PLAN SCHEDULE
1	Receive LRA	7/15/05
2	Complete Sufficiency Review	NA
3	Make Review Assignments (RLEP-A PM)	8/01/05
4	Conduct Team Planning Meeting	8/22/05
5	Issue Audit Plan to PM	9/12/05
6	Conduct Site Visit 1 (AMP/AMR audit and review)	9/19-9/23/05
7	Draft AMP Audit Report Input	NA
8	Conduct in-office AMR reviews	NA
9	Site Visit 2 (AMP/AMR audit and review)	10/24-10/28/05
10	Draft Audit Report	11/14/05
11	Optional Site Visit 3 (resolve AMR and AMP questions)	NA
12	Public Exit Meeting	11/18/05
13	Cutoff for providing RAIs to PM	11/07/05
14	Peer Review of Final Draft Audit and Review Report	11/21/05
15	Issue Final Audit and Review Report	12/09/05
16	Draft SER input (AMPs/AMRs)	12/16/05
17	Issue Final Draft SER Input to PM	12/31/05
18	ACRS Subcommittee Meeting	TBD
19	ACRS Full Committee Meeting	TBD

Appendix C

Aging Management Program Assignments

Appendix C

Aging Management Program Assignments

The following AMPs have been assigned to the project team for review.

LRA AMP Number	GALL Report AMP Number	AMP Title	Consistent with GALL Report		Assigned Reviewer
			Yes	No	
B2.1.1	XI.M1	ASME Section XI Inservice Inspection (Subsections IWB, IWC, IWD) Program	X		HSU
B2.1.2	XI.M2	Water Chemistry Control Program	X		SABA
B2.1.3	XI.M3	Reactor Head Closure Studs Program	X		PATTERSON
B2.1.4	XI.M4	The BWR Vessel ID Attachment Welds Program	Yes		HSU
B2.1.5	XI.M5	BWR Feedwater Nozzle Program	X		PATTERSON
B2.1.6	XI.M7	BWR Stress Corrosion Cracking Program	X		HSU
B2.1.7	XI.M8	The BWR Penetrations Program	Yes		HSU
B2.1.8	XI.M9	BWR Vessel Internals Program	Yes		HSU
B2.1.9	XI.M17	Flow-Accelerated Corrosion Program	Yes		WEN
B2.1.10	XI.M20	Open-Cycle Cooling Water System Program	Yes		KENNEDY
B2.1.11	XI.M21	Closed-Cycle Cooling Water System Program	Yes		KENNEDY
B2.1.12	XI.M22	Boraflex Monitoring Program (NMP1 Only)	Yes		WEN
B2.1.13	XI.M23	Inspection of Overhead Heavy Load and Light Load Handling Systems Program	Yes		WOODFIELD
B2.1.14	XI.M24	Compressed Air Monitoring Program (NMP1 only)	X		WEN
B2.1.15	XI.M25	BWR Reactor Water Cleanup System Program	X		SABA
B2.1.16	XI.M26	Fire Protection Program	X		LE
B2.1.17	XI.M27	Fire Water System Program	Yes		LE

LRA AMP Number	GALL Report AMP Number	AMP Title	Consistent with GALL Report		Assigned Reviewer
			Yes	No	
B2.1.18	XI.M30	Fuel Oil Chemistry Program	X		SABA
B2.1.19	XI.M31	Reactor Vessel Surveillance Program	Yes		DE
B2.1.20	XI.M32	One-Time Inspection Program	Yes		PATTERSON
B2.1.21	XI.M33	Selective Leaching of Materials Program	Yes		PATTERSON
B2.1.22	XI.M34	Buried Piping and Tanks Inspection Program	Yes		SABA
B2.1.23	XI.S1	ASME Section XI Inservice Inspection (Subsection IWE) Program	X		WOODFIELD
B2.1.24	XI.S2	ASME Section XI Inservice Inspection (Subsection IWL) Program	X		WOODFIELD
B2.1.25	XI.S3	ASME Section XI Inservice Inspection (Subsection IWF) Program	X		WOODFIELD
B2.1.26	XI.S4	10 CFR 50 Appendix J Program	Yes		WEN
B2.1.27	XI.S5	Masonry Wall Program	Yes		WOODFIELD
B2.1.28	XI.S6	Structures Monitoring Program	Yes		WOODFIELD
B2.1.29	XI.E1	Non-EQ Electrical Cables and Connections Program	Yes		NGUYEN
B2.1.30	XI.E2	Non-EQ Electrical Cables and Connections Used in Instrumentation Circuits Program	Yes		NGUYEN
B2.1.32	NA	Preventive Maintenance Program	PS		DE
B2.1.33	NA	System Walkdown Program	PS		DE
B2.1.34	NA	Non-Segregated Bus Inspection Program	PS		DE
B2.1.35	NA	Fuse Holder Inspection Program	PS		DE
B2.1.36	XI.M18	Bolting Integrity Program	Yes		DE
B2.1.37	XI.M6	BWR Control Rod Drive Return Line (CRDRL) Nozzle Program	X		PATTERSON
B2.1.38	XI.S8	Protective Coating Monitoring and Maintenance Program	X		WOODFIELD

LRA AMP Number	GALL Report AMP Number	AMP Title	Consistent with GALL Report		Assigned Reviewer
			Yes	No	
B2.1.39	NA	Non-EQ Electrical Cable Metallic Connections Inspection Program	PS		NGUYEN
B2.1.40	NA	Wooden Power Pole Inspection Program (NMP2 Only)	PS		DE
B3.1	X.E1	Environmental Qualification Program	Yes		NGUYEN
B3.2	X.M1	Fatigue Monitoring Program	Yes		PATTERSON
B3.3	NA	Torus Corrosion Monitoring Program (NMP1 Only)	PS		DE

DE = Division of Engineering
PS = plant specific
X = with exceptions

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	HSU
3.2 Aging Management of Engineered Safety Features	PATTERSON
3.3 Aging Management of Auxiliary Systems	KENNEDY
3.4 Aging Management of Steam and Power Conversion Systems	WEN
3.5 Aging Management of Containment, Structures, and Component Supports	WOODFIELD
3.6 Aging Management of Electrical and Instrumentation and Controls	NGUYEN

The NMP work assignment tables, which are mark-ups of the Type 2 tables in the NMP LRA, identify the scope and division of work between the DRIP/RLEP project team and DE. Due to the large amount of data, the NMP work assignment tables are provided in a separate document (ADAMS Accession No. ML XXXXXXXXXX).

The specific AMR line items to be reviewed by the project team are shown in the NMP work assignment tables. The project team will review all AMR line items that are NOT grayed out in the tables. The AMR line items that are grayed out will be evaluated by DE. The results of evaluations by DE will be reported in Section 3 of the SER related to the NMP LRA.

Appendix E

Consistent with GALL Report AMP Audit/Review Worksheet

Appendix E

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 the GALL Report, 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 audit and review report and the safety evaluation report input.

This appendix contains only those worksheets required for the new AMPs contained in the amended LRA and which were assigned to the project team for review. These are B2.1.37 and B2.1.38. Review of the original NMP AMPs was documented under Revision 0 of this audit and review plan.

PLANT: Nine Mile Point Nuclear Plant (NMP)

LRA AMP: B2.1.37 BWR Control Rod Drive Return Line (CRDRL) Nozzle Program

GALL AMP: XI.M6 BWR Control Rod Drive Return Line Nozzle

AUDIT WORKSHEET
GALL REPORT AMP

PLANT: Nine Mile Point Nuclear Plant

LRA AMP: B2.1.37 BWR Control Rod Drive Return Line (CRDRL) Nozzle Program

GALL AMP: XI.M6 BWR Control Rod Drive Return Line Nozzle

REVIEWER: _____

DATE: _____

PROGRAM ELEMENT	AUDITABLE GALL CRITERIA	DOCUMENTATION OF AUDIT FINDING
Program Description	**A** This program includes enhanced inservice inspection (ISI) in conformance with the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWB, Table IWB 2500-1 (1995 edition through the 1996 addenda) and the recommendations of NUREG-0619	**Consistent with GALL AMP:** ☐ Yes ☐ No **Document(s) used to confirm Criteria:** Comment:
"	**B** system modifications and maintenance programs to mitigate cracking.	**Consistent with GALL AMP:** ☐ Yes ☐ No **Document(s) used to confirm Criteria:** Comment:
"	**C** The program specifies periodic liquid penetrant and ultrasonic inspection of critical regions of boiling water reactor (BWR) control rod drive return line (CRDRL) nozzle.	**Consistent with GALL AMP:** ☐ Yes ☐ No **Document(s) used to confirm Criteria:** Comment:

1. Scope of Program	**A** The program includes systems modifications, enhanced ISI, and maintenance programs to monitor the effects of crack, initiation and growth on the intended function of CRDRL nozzles.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
2. Preventive Actions:	**A** Mitigation occurs by system modifications, such as rerouting the CRDRL to a system that connects to the reactor vessel. A one-time inspection.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**B** For some classes of BWRs, or those that can prove satisfactory system operation, mitigation also is accomplished by confirmation of proper return flow capability, two-pump operation and cutting and capping the CRDRL nozzle without rerouting.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
3. Parameters Monitored/Inspected:	**A** The aging management program (AMP) monitors the effects if cracking on the intended function of the component by detecting and sizing cracks by ISI in accordance withTable IWB 2500-1 and NUREG-0619.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

4. Detection of Aging Effects:	**A** The extent and schedule of inspection, as delineated in NUREG 0619.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**B** Inspection recommendations include liquid penetrant testing (PT) of the CRDRL nozzle blend radius and bore regions and the reactor vessel wallarea beneath the nozzle, return-flow-capacity demonstration, CRD-system-performance testing and ultrasonic inspection of welded connections in the rerouted line. The inspection is to include base metal to a distance of one-pipe-wall thickness or 0.5 in., whichever is greater, on both sides of the weld.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
5. Monitoring and Trending:	**A** The inspection schedule of NUREG-0619 provides timely detection of cracks.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
6. Acceptance Criteria:	**A** Any cracking is evaluated in accordance with IWB-3100 by comparing inspection results with the acceptance standards of IWB-3400 and IWB-3500.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

"	**B** All cracks found in the CRDRL nozzles are to be removed by grinding.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
7. *Corrective Actions:*	Not reviewed by RLEP-B project team	N/A
8. Confirmation Process:	Not reviewed by RLEP-B project team	N/A
9. Administrative Controls:	Not reviewed by RLEP-B project team	N/A
10. Operating Experience:	**A** Cracking has occurred in several BWR plants (NUREG-0619). The present AMP has been implemented for nearly 20 years and found to be effective in managing the effect of cracking on the intended function of CRDRL nozzles.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

EXCEPTIONS

Item Number	Program Elements	LRA Exception Description	Basis for Accepting Exception	Documents Reviewed (Identifier, Para.# and/or Page #)
1.				
2.				
...				

ENHANCEMENTS

Item Number	Program Elements	LRA Enhancement Description	Basis for Accepting Enhancement	Documents Reviewed (Identifier, Para.# and/or Page #)
1.				
2.				
...				

Document Reviewed During Audit:

DOCUMENT NUMBER	IDENTIFIER (NUMBER)	TITLE	REVISION AND/OR DATE
1.			
2.			
3.			
4.			
....			

PLANT: Nine Mile Point Nuclear Plant (NMP)

LRA AMP: B2.1.38 Protective Coating Monitoring and Maintenance Program

GALL AMP: XI.S8 Protective Coating Monitoring and Maintenance Program

AUDIT WORKSHEET
GALL REPORT AMP

PLANT: Nine Mile Point Nuclear Plant

LRA AMP: B2.1.38 Protective Coating Monitoring and Maintenance Program

GALL AMP: XI.S8 Protective Coating Monitoring And Maintenance Program

REVIEWER: _____

DATE: _____

PROGRAM ELEMENT	AUDITABLE GALL CRITERIA	DOCUMENTATION OF AUDIT FINDING
Program Description	**A** Regulatory Position C4 in RG 1.54, Rev. 1, describes an acceptable technical basis for a Service Level I coatings monitoring and maintenance program that can be credited for managing the effects of corrosion for carbon steel elements inside containment.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**B** A comparable program for monitoring and maintaining protective coatings inside containment, developed in accordance with RG 1.54, Rev. 0 or the American National Standards Institute (ANSI) standards (since withdrawn) referenced in RG 1.54, Rev. 0, and coatings maintenance programs described in licensee responses to GL 98-04, is also acceptable as an aging management program (AMP) for license renewal	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

1. Scope of Program	**A** The minimum scope of the program is Service Level Icoatings, defined in RG 1.54, Rev 1, as follows: "Service Level I coatings are used in areas inside the reactor containment where the coating failure could adversely affect the operation of post-accident fluid systems and thereby impair safe shutdown."	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
2. Preventive Actions:	**A** With respect to loss of material due to corrosion of carbon steel elements, this program is a preventive action.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
3. Parameters Monitored/Inspected:	**A** Regulatory Position C4 in RG 1.54, Rev 1, states that "ASTM D 5163-96 provides guidelines that are acceptable to the NRC staff for establishing an in-service coatings monitoring program for Service Level I coating systems in operating nuclear power plants..." ASTM D 5163-96, subparagraph 9.2, identifies the parameters monitored or inspected to be "any visible defects, such as blistering , cracking, flaking, peeling, rusting, and physical damage."	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
4. Detection of Aging Effects:	**A** ASTM D 5163-96, paragraph 5, defines the inspection frequency to be each refueling outage or during other major maintenance outages as needed.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

"	**B** ASTM D 5163-96, paragraph 8, discusses the qualifications for inspection personnel, the inspection coordinator and the inspection results evaluator.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**C** ASTM D 5163-96, subparagraph 9.1, discusses development of the inspection plan and the inspection methods to be used.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**D** After a walk-through, thorough visual inspections shall be carried out on previously designated areas and on areas noted as deficient during the walk-through.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**E** A thorough visual inspection shall also be carried out on all coatings near sumps or screens associated with the Emergency Core Cooling System (ECCS). • " This subparagraph also addresses field documentation of inspection results. ASTM D 5163-96, subparagraph 9.5, identifies instruments and equipment needed for inspection.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
5. Monitoring and Trending:	**A** ASTM D 5163-96 identifies monitoring and trending activities in subparagraph 6.2, which specifies a pre-inspection review of the previous two monitoring reports, and in subparagraph 10.1.2, which specifies that the inspection report should prioritize repair areas as either needing repair during the same outage or postponed to future outages, but under surveillance the interim period.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

6. Acceptance Criteria:	**A** ASTM D 5163-96, subparagraphs 9.2.1 through 9.2.6, 9.3 and 9.4, contain guidance for characterization, documentation, and testing of defective or deficient coating surfaces.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment:
"	**B** ASTM D 5163-96, paragraph 11, addresses evaluation. It specifies that the inspection report is to be evaluated by the responsible evaluation personnel, who prepare a summary of findings and recommendations for future surveillance or repair, including an analysis of reasons or suspected reasons for failure.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment:
7. *Corrective Actions:*	Not reviewed by RLEP-B project team	N/A
8. Confirmation Process:	Not reviewed by RLEP-B project team	N/A
9. Administrative Controls:	Not reviewed by RLEP-B project team	N/A
10. Operating Experience:	**A** NRC Generic Letter 98-04 describes industry experience pertaining to coatings degradation inside containment and the consequential clogging of sump strainers. RG 1.54, Rev. 1, was issued in July 2000. Monitoring and maintenance of Service Level I coatings conducted in accordance with Regulatory Position C4 is expected to be an effective program for managing degradation of Service Level I coatings, and consequently an effective means to manage loss of material due to corrosion of carbon steel structural elements inside containment.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment:

EXCEPTIONS

Item Number	Program Elements	LRA Exception Description	Basis for Accepting Exception	Documents Reviewed (Identifier, Para.# and/or Page #)
1.				
2.				
...				

ENHANCEMENTS

Item Number	Program Elements	LRA Enhancement Description	Basis for Accepting Enhancement	Documents Reviewed (Identifier, Para.# and/or Page #)
1.				
2.				
...				

Document Reviewed During Audit:

DOCUMENT NUMBER	IDENTIFIER (NUMBER)	TITLE	REVISION AND/OR DATE
1.			
2.			
3.			
4.			
....			

Appendix F

Plant-Specific AMP Audit/Review Worksheet

Appendix F

Plant-Specific 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 assessments concerning individual program elements contained in Branch Technical Position RLSB-1 "Aging Management Review - Generic," in Appendix A to the SRP-LR. The worksheet provides a systematic method to record the basis for assessments or identifying when the applicant needs to provide additional information. Information recorded in these worksheets will be used when preparing the audit and review report and the safety evaluation report input.

PLANT: Nine Mile Point Nuclear Plant (NMP)

LRA AMP: B2.1.39 Non-EQ Electrical Cable Metallic Connections Inspection Program

GALL AMP: NA

AUDIT WORKSHEET
GALL REPORT AMP

PLANT: Nine Mile Point Nuclear Plant

LRA AMP: B2.1.39 Non-EQ Electrical Cable Metallic Connections Inspection Program

REVIEWER: _____

DATE: _____

GALL AMP: Plant-Specific Program

PROGRAM ELEMENT	AUDITABLE GALL CRITERIA	DOCUMENTATION OF AUDIT FINDING
Program Description		
1. Scope of Program	**A** The specific program necessary for license renewal should be identified. The scope of the program should include the specific structures and components of which the program manages the aging.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
2. Preventive Actions:	**A** The activities for prevention and mitigation programs should be described. These actions should mitigate or prevent aging degradation.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

"	**B** For condition or performance monitoring programs, they do not rely on preventive actions and thus, this information need not be provided. More than one type of aging management program may be implemented to ensure that aging effects are managed.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
3. Parameters Monitored/Inspected:	**A** The parameters to be monitored or inspected should be identified and linked to the degradation of the particular structure and component intended function(s).	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**B** For a condition monitoring program, the parameter monitored or inspected should detect the presence and extent of aging effects. Some examples are measurements of wall thickness and detection and sizing of cracks.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**C** For a performance monitoring program, a link should be established between the degradation of the particular structure or component intended function(s) and the parameter(s) being monitored. A performance monitoring program may not ensure the structure and component intended function(s) without linking the degradation of passive intended functions with the performance being monitored.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**D** For prevention and mitigation programs, the parameters monitored should be the specific parameters being controlled to achieve prevention or mitigation of aging effects.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment

4. Detection of Aging Effects:	**A** The parameters to be monitored or inspected should be appropriate to ensure that the structure and component intended function(s) will be adequately maintained for license renewal under all CLB design conditions.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**B** Provide information that links the parameters to be monitored or inspected to the aging effects being managed.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
"	**C** **Thus, the effects of aging on a structure or component should be managed to ensure its availability to perform its intended function(s) as designed when called upon.**	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**D** A program based solely on detecting structure and component failure should not be considered as an effective aging management program for license renewal.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**E** This program element describes "when," "where," and "how" program data are collected (i.e., all aspects of activities to collect data as part of the program).	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment

"	**F** Provide justification, including codes and standards referenced, that the technique and frequency are adequate to detect the aging effects before a loss of SC intended function. A program based solely on detecting SC failures is not considered an effective aging management program.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**G** When sampling is used to inspect a group of SCs, provide the basis for the inspection population and sample size. The inspection population should be based on such aspects of the SCs as a similarity of materials of construction, fabrication, procurement, design, installation, operating environment, or aging effects. The sample size should be based on such aspects of the SCs as the specific aging effect, location, existing technical information, system and structure design, materials of construction, service environment, or previous failure history.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**H** The samples should be biased toward concern in the period of extended operation. Provisions should also be included on expanding the sample size when degradation is detected in the initial sample.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:
5. Monitoring and Trending:	**A** Monitoring and trending activities should be described, and they should provide predictability of the extent of degradation and thus effect timely corrective or mitigative actions. Plant-specific and/or industry-wide operating experience may be considered in evaluating the appropriateness of the technique and frequency.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment:

"	**B** This program element describes "how" the data collected are evaluated and may also include trending for a forward look. This includes an evaluation of the results against the acceptance criteria and a prediction regarding the rate of degradation in order to confirm that timing of the next scheduled inspection will occur before a loss of SC intended function.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment:
"	**C** The parameter or indicator trended should be described.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment
"	**D** The methodology for analyzing the inspection or test results against the acceptance criteria should be described.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment
"	**E** Trending is a comparison of the current monitoring results with previous monitoring results in order to make predictions for the future.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment
6. Acceptance Criteria:	**A** The acceptance criteria of the program and its basis should be described.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment:

"	**B** The acceptance criteria, against which the need for corrective actions will be evaluated, should ensure that the structure and component intended function(s) are maintained under all CLB design conditions during the period of extended operation.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**C** The program should include a methodology for analyzing \ the results against applicable acceptance criteria.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**D** Corrective action is taken, such as piping replacement, before reaching this acceptance criterion.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**E** Acceptance criteria could be specific numerical values, or could consist of a discussion of the process for calculating specific numerical values of conditional acceptance criteria to ensure that the structure and component intended function(s) will be maintained under all CLB design conditions. Information from available references may be cited.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment
"	**F** It is not necessary to justify any acceptance criteria taken directly from the design basis information that is included in the FSAR because that is a part of the CLB. Also, it is not necessary to discuss CLB design loads if the acceptance criteria do not permit degradation because a structure and component without degradation should continue to function as originally designed.	**Consistent with GALL AMP:** ☐ **Yes** ☐ **No** **Document(s) used to confirm Criteria:** Comment

"	**G** Acceptance criteria, which do permit degradation, are based on maintaining the intended function under all CLB design loads.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment
"	**H** Qualitative inspections should be performed to same predetermined criteria as quantitative inspections by personnel in accordance with ASME Code and through approved site specific programs.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment
7. *Corrective Actions:*	Not reviewed by RLEP-B project team	N/A
8. Confirmation Process:	Not reviewed by RLEP-B project team	N/A
9. Administrative Controls:	Not reviewed by RLEP-B project team	N/A
10. Operating Experience:	**A** Operating experience with existing programs should be discussed. The operating experience of aging management programs, including past corrective actions resulting in program enhancements or additional programs, should be considered. A past failure would not necessarily invalidate an aging management program because the feedback from operating experience should have resulted in appropriate program enhancements or new programs. This information can show where an existing program has succeeded and where it has failed (if at all) in intercepting aging degradation in a timely manner. This information should provide objective evidence to support the conclusion that the effects of aging will be managed adequately so that the structure and component intended function(s) will be maintained during the period of extended operation.	**Consistent with GALL AMP:** ☐ **Yes** ☐**No** **Document(s) used to confirm Criteria:** Comment:

EXCEPTIONS

Item Number	Program Elements	LRA Exception Description	Basis for Accepting Exception	Documents Reviewed (Identifier, Para.# and/or Page #)
1.				
2.				
...				

ENHANCEMENTS

Item Number	Program Elements	LRA Enhancement Description	Basis for Accepting Enhancement	Documents Reviewed (Identifier, Para.# and/or Page #)
1.				
2.				
...				

Document Reviewed During Audit:

DOCUMENT NUMBER	IDENTIFIER (NUMBER)	TITLE	REVISION AND/OR DATE
1.			
2.			
3.			
4.			
....			

Appendix G

Aging Management Review Worksheets

Appendix G

AMR Comparison Worksheets

The project team reviewer should document its AMR reviews 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.

NMP 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 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 the applicant here):

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

References/Documents Used:

1.
2.
3.
4.

NMP 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 DE) were reviewed for: 1) consistency with NUREG-1801, Volume 2 tables, and 2) adequacy of the aging managing programs. All items in the 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/draft audit report.)

LRA Page No.	Component Type	Material	Environment	Aging Effect	Note	Discussion (draft as Audit Report input)

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

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

References/Documents Used:

5.
6.
7.

Appendix H

Acronyms and Abbreviations

Appendix H

Abbreviations and Acronyms

ADAMS	Agencywide Documents Access and Management System
AMP	aging management program
AMR	aging management review
ASME	American Society of Mechanical Engineers
BTP	Branch Technical Position
CLB	current licensing basis
DE	Division of Engineering
DIPM	Division of Inspection Program Management
EPRI	Electric Power Research Institute
FSAR	final safety analysis report
GALL	Generic Aging Lessons Learned
ISG	interim staff guidance
ISL	Information Systems Laboratories, Inc.
LRA	license renewal application
NEI	Nuclear Energy Institute
NMP	Nine Mile Point
NMPNS	Nine Mile Point Nuclear Station
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
RAI	request for additional information
RLEP-B	License Renewal and Environmental Impacts Program, Section B
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
UFSAR	updated final safety analysis report