MEETING HANDOUTS

Enclosure 3

CYL (11/1/02)

Comments for NEI Presentation at the Public Workshop (October 22, 2003)

Chapter 2:

There are two kinds of "intended functions" normally used in the LRA, namely system intended function and component intended function. The system intended functions are used to identify portions of the system that meet 10 CFR 54.4 criteria. The component intended functions are used to perform aging management review and are listed in tables of both Chapter 2 and Chapter 3. Some of the previous applicants identified component intended functions as "intended function" without knowing that they did not address the system intended function in their LRAs, which are important information for the scoping review. When the "component intended function" are used in the LRA, don't abbreviate as "intended function." Describe the system intended functions in the system description section of 2.3.x as related to 54.4 criteria.

* Pages 2-1 and 2-2: Change the term "Intended Function" in the title and heading of Table 2.1-1to "Component Intended Function."

* Page 2-3, second paragraph: Add a sentence to explain which intended system function of the CS system meets 10 CFR 54.(a)(3).

* Page 2-3: Under <u>System Description</u>, add the following:
  The purpose of the containment isolation system is ...
  The containment isolation system meets 10 CFR 54.4(a)(1) and the components subject to an AMR are piping and valves between the isolation valves.

* Page 2-4: Under <u>System Description</u>, add the following:
  The purpose of the emergency core cooling system is ...
  The emergency core cooling system meets 10 CFR 54.4(a)(1).

* Tables 2.3.2-1, 2.3.2-2, and 2.3.2-3: Change the heading "Intended Function(s)" to "Intended Component Function(s)."

* Page 2-7: add an item of "valves" into Table 2.3.2-2 because the containment isolation system includes containment isolation valves and the piping between the valves.

* Slide #12, Proposed Standard LRA Section 2 Subsection: Under System Description, add "including the intended system functions that meet 10 CFR 54.4 criteria" after "- Description of the system, structures, or commodities within the scope of the subsection"

CHAPTER 3 COMMENTS

1.) For the table notes, we agreed to change the nomenclature such that the standard notes are lettered and the plant-specific notes are numbered.

2.) The first four notes should be clarified with respect to aging management programs as follows:

Note 1 (or A) Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.

Note 2 (or B) Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is generally consistent with NUREG-1801 AMP, but with some exceptions.

Note 3 (or C) Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.

Note 4 (or D) Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP is generally consistent with NUREG-1801 AMP, but with some exceptions.

3.) It does not assist the staff review to differentiate between Notes 6 and 7. Are there other reasons to differentiate, such as helping to focus on what should be added to GALL?

4.) Just a reminder that we would always expect to see a plant-specific note accompanying Note 9.

5.) In section 3, add a brief system description that the staff can quote in the SER. The brief description lists the materials, environments, AERMs, and AMPs used for each system. As an example, see a recent SER (such as Peach Bottom).

"Class of '03"
Standard License Renewal Application

Appendix B Proposal

(NRC Meeting 11/06/02)

Proposed Standard LRA Appendix B

- Divided into 4 sections:
  - Introduction
  - Aging Management Programs
  - TLAA Support Activities
  - References

2

Proposed Standard LRA Appendix B

- Introduction (B1):
  - Overview
    - Road map
  - Method of Discussion
  - Quality Assurance Program and Administrative Controls
  - Operating Experience
  - Aging Management Programs
  - Time Limited Aging Analyses Aging Management Programs

3

Proposed Standard LRA Appendix B

- Aging management programs (B2):
  - Table listing NUREG-1801 programs correlated to plant programs, followed by plant specific programs

NUREG-1801 ID NUMBER	NUREG-1801 PROGRAM	PLANT PROGRAM
XI.M1	ASME Section XI Inservice Inspection, Subsections IWB IWC, & IWD	ASME Section XI, Subsections IWB IWC & IWD Inservice Inspection Program [Section B.2.1.1]
XI.M2	Water Chemistry	Water Chemistry Control Program [Section B.2.1.28]
XI.M3	Reactor Head Closure Studs	ASME Section XI, Subsections IWB IWC & IWD Inservice Inspection Program [Section B.2.1.1]
XI.M4	BWR Vessel ID Attachment Welds	Not Applicable - Plant are PWR
XI.M5	BWR Feedwater Nozzle	Not Applicable - Plant are PWR

Proposed Standard LRA Appendix B

- Aging management programs (B2) - continued:
  - Those that correlate to NUREG-1801
    - Program Description
    - NUREG-1801 Consistency
    - Exceptions to NUREG-1801
    - Enhancements
    - Operating Experience
    - Conclusion

Proposed Standard LRA Appendix B

- Aging management programs (B2) - continued:
  - Plant specific Programs
    - Program Description
    - 10 elements
    - Enhancements
    - Conclusion

Proposed Standard LRA Appendix B

- TLAA support activities (B3):
  - Example: Environmental Qualification (EQ) program
- References (B4)
  - Appendix B references

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B1.0 INTRODUCTION

B1.1 Overview

Aging management program descriptions are provided in this appendix for each program credited for managing aging effects based upon the aging management review results provided in Sections 3.1 through 3.6.

Each of the aging management programs described in this section has ten elements which are consistent with the definitions described in Section A.1, "Aging Management Review - Generic," Table A.1-1, "Elements of an Aging Management Program for License Renewal," of the NUREG 1800, SRP-LR (Reference 1). The 10 element detail is not provided when the program is deemed to correlate with the GALL. See [Section B1.2] below.

B1.2 Method of Discussion

For those Aging Management programs that are consistent with the assumptions made in Sections X and XI of NUREG-1801 each program discussion is presented in the following form.

- A Program Description abstract of the overall program form and function is provided.
- A NUREG-1801 Consistency statement is made about the program.
- Exceptions to the NUREG-1801 program are outlined and a justification provided.
- Enhancements to the program and a proposed schedule for completion is discussed.
- Operating Experience information specific to the program is provided.
- A Conclusion section provides a reasonable assurance that the program is or will be effective once enhanced.

For those programs that are plant specific, the above form is generally followed with the additional discussion of each of the ten elements.

B1.3 Quality Assurance Program and Administrative Controls

The Quality Assurance Program implements the requirements of 10 CFR 50, Appendix B, and is consistent with the summary in Appendix A.2 of NUREG-1800 (Reference 1). The Quality Assurance Program includes the elements of corrective action, confirmation process, and administrative controls, and is applicable to the safety-related and non-safety-relate structures, systems, and components that are subject to aging management review. In many cases, existing activities were found adequate for managing aging effects during the period of extended operation. Generically the three elements are applicable as follows:

Corrective Actions:

A single corrective actions process is applied regardless of the safety classification of the structure or component. Corrective actions are implemented through the initiation of an Action Request (AR) in accordance with plant procedures established in response to 10 CFR 50, Appendix B. Plant procedures require the initiation of an AR for actual or potential problems, including unexpected plant equipment degradation, damage, failure, malfunction or loss. Site documents that implement aging management activities for license renewal will direct that an AR be prepared in accordance with those procedures whenever non-conforming conditions are found (i.e., the acceptance criteria are not met).

Equipment deficiencies are corrected through the initiation of a Work Order (WO) in accordance with plant procedures. Although equipment deficiencies may initially be documented by a WO, the corrective action process specifies that an AR also be initiated if required.

Confirmation Process:

The focus of the confirmation process is on the follow-up actions that must be taken to verify effective implementation of corrective actions. The measure of effectiveness is in terms of correcting the adverse condition and precluding repetition of significant conditions adverse to quality. Plant procedures include provisions for timely evaluation of adverse conditions and implementation of any corrective actions required, including root cause determinations and prevention of recurrence where appropriate (e.g., significant conditions adverse to quality). These procedures provide for tracking, coordinating, monitoring, reviewing, verifying, validating, and approving corrective actions, to ensure effective corrective actions are taken. The AR process is also monitored for potentially adverse trends. The existence of an adverse trend due to recurring or repetitive adverse conditions will result in the initiation of an AR. The aging management activities required for license renewal would also uncover any unsatisfactory condition due to ineffective corrective action.

Since the same 10 CFR 50, Appendix B corrective actions and confirmation process is applied for nonconforming SR and NSR structures and components subject to an AMR for license renewal, we have concluded that the corrective action program is currently consistent with the NUREG -1801 attributes.

Administrative Controls:

Procedure and administrative controls procedures provide information on procedures and other forms of administrative control documents, as well as guidance on classifying documents into the proper document type. Procedure attachments provide a chart showing the administrative controls hierarchy and a document type decision tree,.

B1.4 Operating Experience

Industry operating experience was incorporated into the License Renewal process through a review of industry documents to identify aging effects and mechanisms that could challenge the intended function of systems and structures within the scope of License Renewal. Review of plant specific operating experience was performed to identify aging effects experienced. The review of plant specific operating experience involved electronic database searches of plant information. In addition, discussions with system engineers and long time company employees were conducted, and identified some additional aging concerns.

For those materials and environments identified in NUREG 1801 (Reference 3), few additional aging effects requiring management were identified that were not already identified somewhere in the GALL. However, additional materials and environments were identified with aging effects that require managing. The additional materials and environments and associated aging effects are identified in Section 3. The programs identified for aging management are discussed in this appendix.

B1.5 Aging Management Programs

The following aging management programs are described in the sections listed in this appendix. The programs are either generic in nature as discussed in NUREG -1801 or are site specific. Site specific programs are listed near the end of the table in Section B2.0. All generic programs are fully consistent with or are, with some exceptions, consistent with programs discussed in NUREG-1801.

1. ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection Program [Section B2.1.1]
2. ASME Section XI, Subsections IWE & IWL Inservice Inspection Program [Section B2.1.2]
3. ASME Section XI, Subsection IWF Inservice Inspection Program [Section B2.1.3]
4. Bolting Integrity Program [Section B2.1.4]
5. Boraflex Monitoring Program [Section B2.1.5]
6. Boric Acid Corrosion Program [Section B2.1.6]
7. Buried Services Monitoring Program [Section B2.1.7]
8. Cable Condition Monitoring Program [Section B2.1.8]
9. Closed-Cycle Cooling Water System Surveillance Program [Section B2.1.9]

10. Compressed Air Monitoring Program
11. Fire Protection Program [Section B2.1.11]
12. Flow-Accelerated Corrosion Program [Section B2.1.12]
13. Fuel Oil Chemistry Control Program [Section B2.1.13]
14. One-Time Inspection Program [Section B2.1.14]
15. Open-Cycle Cooling (Service) Water System Surveillance Program [Section B2.1.15]
16. Periodic Surveillance and Preventive Maintenance Program [Section B2.1.2]
17. Reactor Coolant System CASS Embrittlement Program [Section B2.1.17]
18. Reactor Coolant System Alloy 600 Inspection Program [Section B2.1.18]
19. Reactor Vessel Internals Program [Section B2.1.19]
20. Reactor Vessel Surveillance Program [Section B2.1.20]
21. Steam Generator Integrity Program [Section B2.1.21]
22. Structures Monitoring Program [Section B2.1.22]
23. Systems Monitoring Program [Section B2.1.23]
24. Tank Internal Inspection Program [Section B2.1.24]
25. Thimble Tube Inspection Program [Section B2.1.25]
26. Water Chemistry Control Program [Section B2.1.26]

B1.6 Time Limited Aging Analyses Aging Management Programs:

1. Environmental Qualification Program [Section B3.1]
2. Fatigue Monitoring Program [Section B3.2]
3. Pre-Stressed Concrete Containment Tendon Surveillance Program [Section B3.3]

B2.0 AGING MANAGEMENT PROGRAMS

Correlation between NUREG-1801 (Generic Aging Lessons Learned (GALL)) programs and Sample Plant programs are shown below. For the Sample Plant Programs, links to appropriate sections of this appendix are provided.

GALL ID NUMBER	GALL PROGRAM	Plant Program
XI.M1	ASME Section XI Inservice Inspection, Subsections IWB, IWC, & IWD	ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection Program [Section B2.1.1]
XI.M2	Water Chemistry	Water Chemistry Control Program [Section B2.1.26]
XI.M3	Reactor Head Closure Studs	ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection Program [Section B2.1.1]
XI.M4	BWR Vessel ID Attachment Welds	Not Applicable,Sample is a PWR.
XI.M5	BWR Feedwater Nozzle	Not Applicable, Sample is a PWR.
XI.M6	BWR Control Rod Drive Return Line Nozzle	Not Applicable, Sample is a PWR.
XI.M7	BWR Stress Corrosion Cracking	Not Applicable, Sample is a PWR.
XI.M8	BWR Penetrations	Not Applicable, Sample is a PWR.
XI.M9	BWR Vessel Internals	Not Applicable, Sample is a PWR.
XI.M10	Boric Acid Corrosion	Boric Acid Corrosion Program [Section B2.1.6]
XI.M11	Nickel-Alloy Nozzles and Penetrations	Reactor Coolant System Alloy 600 Inspection Program [Section B2.1.18]
XI.M12	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)	Reactor Coolant System CASS Embrittlement Program (On-Hold) [Section B2.1.17]
XI.M13	Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)	Reactor Vessel Internals Program [Section B2.1.19]

GALL ID NUMBER	GALL PROGRAM	Plant Program
XI.M14	Loose Part Monitoring	Not Applicable-not credited for aging management. Reactor Vessel Internals Program [Section B2.1.19] was determined to be adequate to manage identified aging effects.
XI.M15	Neutron Noise Monitoring	Not Applicable-not credited for aging management. Reactor Vessel Internals Program [Section B2.1.19] was determined to be adequate to manage identified aging effects.
XI.M16	PWR Vessel Internals	Reactor Vessel Internals Program [Section B2.1.19]
XI.M17	Flow-Accelerated Corrosion	Flow-Accelerated Corrosion Program [Section B2.1.12]
XI.M18	Bolting Integrity	ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection Program [Section B2.1.1] Systems Monitoring Program [Section B2.1.23] Structures Monitoring Program [Section B2.1.22] ASME Section XI, Subsection IWF Inservice Inspection Program [Section B2.1.3] Periodic Surveillance and Preventive Maintenance Program [Section B2.1.2]
XI.M19	Steam Generator Tube Integrity	Steam Generator Integrity Program [Section B2.1.21]
XI.M20	Open-Cycle Cooling Water System	Open-Cycle Cooling (Service) Water System Surveillance Program [Section B2.1.15]
XI.M21	Closed-Cycle Cooling Water System	Closed-Cycle Cooling Water System Surveillance Program [Section B2.1.9]

GALL ID NUMBER	GALL PROGRAM	Plant Program
XI.M22	Boraflex Monitoring	Boraflex Monitoring Program [Section B2.1.5]
XI.M23	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	Structures Monitoring Program [Section B2.1.22]
XI.M24	Compressed Air Monitoring	Compressed Air Monitoring Program [Section B2.1.10]
XI.M25	BWR Reactor Water Cleanup System	Not Applicable, Sample is a PWR.
XI.M26	Fire Protection	Fire Protection Program [Section B2.1.11]
XI.M27	Fire Water System	Fire Protection Program [Section B2.1.11]
XI.M28	Buried Piping and Tanks Surveillance	Not Applicable-See XI.M34.
XI.M29	Aboveground Carbon Steel Tanks	Systems Monitoring Program [Section B2.1.23] Tank Internal Inspection Program [Section B2.1.24]
XI.M30	Fuel Oil Chemistry	Fuel Oil Chemistry Control Program [Section B2.1.13]
XI.M31	Reactor Vessel Surveillance	Reactor Vessel Surveillance Program [Section B2.1.20]
XI.M32	One-Time Inspection	One-Time Inspection Program [Section B2.1.14]
XI.M33	Selective Leaching of Materials	One-Time Inspection Program [Section B2.1.14]
XI.M34	Buried Piping and Tanks Inspection	Buried Services Monitoring Program [Section B2.1.7]
XI.E1	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Cable Condition Monitoring Program [Section B2.1.8]
XI.E2	Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	Cable Condition Monitoring Program. [Section B2.1.8]

GALL ID NUMBER	GALL PROGRAM	Plant Program
XI.E3	Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Cable Condition Monitoring Program [Section B2.1.8]
XI.S1	ASME Section XI, Subsection IWE	ASME Section XI, Subsections IWE & IWL Inservice Inspection Program [Section B2.1.2]
XI.S2	ASME Section XI, Subsection IWL	ASME Section XI, Subsections IWE & IWL Inservice Inspection Program[Section B2.1.2]
XI.S3	ASME Section XI, Subsection IWF	ASME Section XI, Subsection IWF Inservice Inspection Program [Section B2.1.3]
XI.S4	10 CFR 50, Appendix J	ASME Section XI, Subsections IWE & IWL Inservice Inspection Program [Section B2.1.2]
XI.S5	Masonry Wall Program	Structures Monitoring Program [Section B2.1.22]
XI.S6	Structures Monitoring Program	Structures Monitoring Program [Section B2.1.22]
XI.S7	RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants	Structures Monitoring Program [Section B2.1.22]
XI.S8	Protective Coating Monitoring and Maintenance	Not Applicable-no credit is taken for protective coatings inside containment to prevent aging effects.
Chapter X		
X.M1	Metal Fatigue of Reactor Coolant Pressure Boundary	Fatigue Monitoring Program [Section B3.2]
X.E1	Environmental Qualification (EQ) of Electrical Components	Environmental Qualification Program [Section B3.3]
X.S1	Concrete Containment Tendon Prestress	Pre-Stressed Concrete Containment Tendon Surveillance Program [Section B3.1]

GALL ID NUMBER	GALL PROGRAM	Plant Program
NA	Plant Specific Program	Thimble Tube Inspection Program [Section B2.1.25]
NA	Plant Specific Program	Tank Internal Inspection Program [Section B2.1.24]
NA	Plant Specific Program	Periodic Surveillance and Preventive Maintenance Program [Section B2.1.2]
NA	Plant Specific Program	Systems Monitoring Program [Section B2.1.23]

B2.1 Aging Management Programs

B2.1.1 ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program

Program Description

The ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection (ISI) Program inspections are performed to identify and correct degradation in Class 1, 2, and 3 piping, components and their integral attachments. The program includes periodic visual, surface and/or volumetric examinations and leakage tests of all Class 1, 2 and 3 pressure-retaining components, and their integral attachments, including welds, pump casings, valve bodies, and pressure-retaining bolting. These components and their integral attachments are identified in ASME Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, or commitments requiring augmented inservice inspections in accordance with ASME Section XI, and are within the scope of License Renewal.

NUREG-1801 Consistency

The ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program is an existing program that is consistent with, but includes exceptions to, the NRC Generic Aging Lessons Learned (GALL) Report, Section XI.M1 (ASME Section XI Inservice Inspections Program, Subsections IWB, IWC, and IWD), and XI.M3 (Reactor Head Closure Studs) (Reference 3).

Exceptions to NUREG-1801

The exception to the GALL assumption is that the Sample Plant Sample ISI Program is based on the 1998 edition through 2000 addenda of ASME Section XI. The GALL uses the 1989 edition of ASME Section XI with 1995 edition through 1996 addenda changes noted.

Enhancements

Enhancements to the ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program include revisions to existing activities which will be credited for license renewal to ensure that the applicable aging effects are discovered and evaluated.

Enhancements are scheduled for completion prior to the period of extended operation.

Operating Experience

Both industry and Sample Plant -specific operating experience relating to the ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program was reviewed.

A search of action requests and Maintenance Work Orders on Reactor Vessel Head Closure Studs for both Unit 1 and 2 at Sample Plant revealed that no degradation of the studs or nuts was present. The examinations and inspections are conducted according to the requirements specified in Table IWB-2500-1.

The review of Sample Plant-specific operating experience revealed two instances where ISI examinations discovered flaws through means other than the system leakage test. Flaw indications were discovered in each reactor vessel outlet nozzle-to-shell weld during the ultrasonic examination of reactor vessel welds at Sample Plant -1. A fracture mechanics evaluation was performed that demonstrated that the flaws posed no threat to continued safe operation of the reactor vessel.

As a result of industry experience review and additional examinations, some degradation (a crack) was discovered via radiography performed on a Masoneilan containment isolation valve seat cavity. The radiographic examination was performed as a result of industry experience with cracking caused by thermal cycling in similar valves. Sample Plant personnel determined the affected valve remained operable based on an analysis that predicted very slow growth for this flaw.

The ISI Program at Sample Plant is frequently updated to account for industry operating experience. ASME Section XI is also revised every three years and addenda issued in the interim, which allows the code to be updated to reflect operating experience. The requirement to update the ISI Programs to reference more recent editions of ASME Section XI at the end of each inspection interval, ensures the ISI Program reflect enhancements due to operating experience that have been incorporated into ASME Section XI.

Conclusion

The ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program has been effective in managing aging effects including loss of material due to corrosion, erosion or wear; cracking; and loss of mechanical closure integrity at bolted or welded connections due to wastage from borated coolant leakage, wear, or stress relaxation.

An NRC inspection documented a review of the Inservice Inspection Program. No violations were identified, and the implementation of the Program was found to meet ASME Code Requirements.

A review of NRC Inspection Reports, QA Audit/Surveillance Reports, and Self-Assessments since 1999 revealed no issues or findings that could impact the effectiveness of the Flow Accelerated Corrosion Program. As additional operating experience is obtained, lessons learned may be used to adjust this program, as needed.

Based upon the above, the continued implementation of the ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program provides reasonable assurance that the aging effects will be managed such that the systems and components within the scope of this program basis document will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

B2.1.2 Periodic Surveillance and Preventive Maintenance Program

Program Description

The Periodic Surveillance and Preventive Maintenance Program is an existing plant-specific program that consists of the appropriate ten elements described in Branch Technical Position RLSB-1, "Aging Management Review-Generic," which is included in Appendix A of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants." The Periodic Surveillance and Preventive Maintenance Program manages aging effects for SSCs within the scope of license renewal. The program provides for visual inspection and examination of surfaces of selected equipment items and components, including fasteners, for evidence of defects and age-related degradation on a specified frequency based on operating experience. Leak inspections of piping and components in selected portions of systems are also performed on a specified frequency. Additionally, the program provides for replacement or refurbishment of certain components on a specified frequency based on operating experience. The Periodic Surveillance and Preventive Maintenance Program is also used to verify the effectiveness of other aging management programs.

Aging Management Program Elements

The key elements aging management activities, which are used in the Periodic Surveillance and Preventive Maintenance Program, are described below. The results of an evaluation of each key element against the appropriate ten elements described in Branch Technical Position RLSB-1, "Aging Management Review-Generic," which is included in Appendix A of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," is also provided below.

Scope of Program

The Periodic Surveillance and Preventive Maintenance Program manages aging effects for SSCs within the scope of license renewal. The program provides for visual inspection and examination of surfaces of selected equipment items and components, including fasteners, for evidence of defects and age-related degradation on a specified frequency based on operating

experience. Leak inspections of piping and components in selected portions of systems are also performed on a specified frequency. Additionally, the program provides for replacement or refurbishment of certain components on a specified frequency based on operating experience. The Periodic Surveillance and Preventive Maintenance Program is also used to verify the effectiveness of other aging management programs.

This element is consistent with the corresponding element described in the Branch Technical Position.

Preventive Actions

The Periodic Surveillance and Preventive Maintenance Program is a condition monitoring program. There are no preventive measures associated with the aging effects of concern for license renewal. The visual inspection and examination of surfaces of selected equipment items and components, including fasteners, and leak inspections of piping and components in selected portions of systems on a specified frequency are intended to identify the extent to which aging effects are occurring (i.e. condition). The replacement or refurbishment of certain components on a specified frequency does not prevent aging effects from occurring. These components are replaced or refurbished on a given frequency based on operating experience.

This element is consistent with the corresponding element described in the Branch Technical Position.

Parameters Monitored, Inspected, and/or Tested

Surface conditions of selected equipment items and components, including fasteners, are monitored through visual inspection and examination for evidence of defects and age-related degradation on a specified frequency based on operating experience. Piping and components in selected portions of systems are monitored through visual inspection for evidence of leaks on a specified frequency. Certain components are replaced or refurbished on a given frequency based on operating experience.

This element is consistent with the corresponding element described in the Branch Technical Position.

Detection of Aging Effects

The aging effects of concern will be detected by visual inspection and examination of surfaces of selected equipment items, piping and components, including fasteners, for evidence of defects and age-related degradation. Guidelines provided in the Westinghouse Aging Assessment Field Guides (Ref. 9.11) may be used as an aid in the identification of undesirable conditions.

This element is consistent with the corresponding element described in the Branch Technical Position.

Monitoring and Trending

The Periodic Surveillance and Preventive Maintenance Program is a condition monitoring program. Detailed material surface condition and leakage inspections and examinations, and component replacement or refurbishment activities are performed on a specified frequency based on operating experience. The results of these surveillance and preventive maintenance activities are documented, and subject to review and approval.

The periodicity of most surveillance and preventive maintenance activities that are credited for license renewal will usually be driven by considerations other than aging, since the effects of aging usually occur slowly over time. For example, a check valve internal inspection is more likely to be driven by seat/disc/hinge pin wear than by erosion or corrosion of the valve body. Therefore, the specified frequencies of surveillance and preventive maintenance activities credited for license renewal may be adjusted or the performance of these activities deferred subject to the following constraints.

The frequency of surveillance and preventive maintenance activities that are credited for license renewal may be adjusted provided an engineering evaluation is performed justifying the revised frequency based on plant and industry operating experience. This element is consistent with the corresponding element described in the Branch Technical Position.

Acceptance Criteria

Acceptance criteria for visual inspection and examination of surfaces of selected equipment items and components, including fasteners, and leak inspections of piping and components in selected portions of systems are provided in the surveillance and preventive maintenance activities credited for license renewal. The acceptance criteria are related to the aging effect(s) of concern and are tailored to each individual inspection and examination considering the aging effect(s) being managed. This element is consistent with the corresponding element described in the Branch Technical Position.

Corrective Actions

Corrective actions are implemented in accordance with the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 9.10), as committed in the Sample Plant FSAR. Provisions for timely evaluation of adverse conditions and implementation of any corrective actions required, including root cause determinations and prevention of recurrence where appropriate, are included in the corrective action program.

Corrective actions are implemented through the initiation of an Action Request in accordance with NP 5.3.1, "Action Request Process" (Ref. 9.9). Equipment deficiencies are corrected through the initiation of a Work Order in accordance with NP 10.2.4, "Work Order Processing." The results of an evaluation of these corrective action procedures are documented in a formal Evaluation of Quality Assurance Program Attributes.

This element is consistent with the corresponding element described in the Branch Technical Position.

Confirmation Process

The confirmation process is part of the corrective action program, which is implemented in accordance with the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (Ref. 9.8), and ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 9.10), as committed in the Sample Plant FSAR. The aging management activities required by this program would also uncover any unsatisfactory condition due to ineffective corrective action.

The Action Request mProcess includes provisions for tracking, coordinating, monitoring, reviewing, verifying, validating, and approving corrective actions, to ensure effective corrective actions are taken. The Action Request Process is also monitored for potentially adverse trends. The existence of an adverse trend due to recurring or repetitive adverse conditions will result in the initiation of an Action Request. The Post Maintenance Testing Procedure includes provisions for verifying the completion and effectiveness of corrective actions for equipment deficiencies. This proceudre establishes criteria for the selection and documentation of Post-Maintenance Tests (PMTs), guidelines to ensure equipment will perform its intended function prior to return to service, and guidelines to ensure the original equipment deficiency is corrected and a new deficiency has not been created. The results of an evaluation of these confirmation process procedures are documented in a formal Evaluation of Quality Assurance Program Attributes.

This element is consistent with the corresponding element described in the Branch Technical Position.

Administrative Controls

The Periodic Surveillance and Preventive Maintenance Program is implemented through various plant administrative procedures. These implementing documents are subject to administrative controls, including a formal review and approval process, in accordance with the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," as committed in the Sample Plant FSAR .

Various procedures provide the required administrative controls, including a formal review and approval process, for procedures and other forms of administrative control documents. The results of an evaluation of these administrative control procedures are documented in a formal Evaluation of Quality Assurance Program Attributes.

This element is consistent with the corresponding element described in the Branch Technical Position.

Operating Experience

The Periodic Surveillance and Preventive Maintenance Program has been effective in maintaining the intended functions of long-lived passive SSCs, with an improving trend noted in the internal and external assessments performed over the past several years. Many Condition Reports, Action Requests and Work Orders have been generated and resolved through the implementation of this program, which demonstrates the effectiveness of this program to identify and correct age-related degradation prior to a loss of intended function. The effectiveness of this program is also demonstrated by the level of system/equipment availability as documented via the Maintenance Rule Periodic Assessments.

This element is consistent with the corresponding element described in the Branch Technical Position.

Enhancements

Revise applicable procedures to reflect the 10 element description above.

Enhancements are scheduled for completion prior to the period of extended operation.

Conclusion

The Periodic Surveillance and Preventive Maintenance Program is an established program at Sample Plant. It uses as its bases various INPO and industry standards, including ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."

The Periodic Surveillance and Preventive Maintenance Program has been effective in maintaining the intended functions of long-lived passive SSCs, with an improving trend noted in the internal and external assessments performed over the past several years. Although the preventive maintenance program for non-ASME Code and non-Technical Specification required equipment is not fully developed, preventive maintenance activities entered in CHAMPS are effectively implemented. Surveillance and preventive maintenance activities credited for license renewal will be specified by call-ups maintained in CHAMPS, flagged as license renewal commitments, and subject to additional requirements and controls, including the constraints placed on deferrals, cancellations and frequency changes for license renewal. Therefore, there is reasonable assurance that aging effects will be managed by the Periodic Surveillance and Preventive Maintenance Program such that SSCs within the scope of license renewal will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation. In addition, the Periodic Surveillance and Preventive Maintenance

Program is subject to periodic internal and external assessments to insure its effectiveness and continuous improvement.

NRC Inspection Reports, QA Audit/Surveillance Reports, and Self-Assessments since 1999, and the INPO March 2000 Evaluation Report were reviewed to determine the effectiveness of the Periodic Surveillance and Preventive Maintenance Program. Many surveillance and preventive maintenance activities were noted as being effectively performed. However, several areas for improvement were identified with an overall improving trend noted in recent assessments.

B3.0 TLAA SUPPORT ACTIVITIES

B3.1 Environmental Qualification Program

Program Description

The Environmental Qualification Program (EQ) manages component thermal, radiation and cyclical aging, as applicable, through the use of aging evaluations based on 10 CFR 50.49(f) qualification methods. As required by 10 CFR 50.49, EQ components not qualified for the current license term are to be refurbished, replaced, or have their qualification extended prior to reaching the aging limits established in the evaluation. Aging evaluations for EQ components that specify a qualification of at least 40 years are considered TLAA for license renewal. The EQ Program ensures that these EQ components are maintained within the bounds of their qualification bases.

NUREG-1801 Consistency

The Environmental Qualification Program is an existing program, as currently established to meeample Plant commitments for 10 CFR 50.49, that is consistent with the NRC Generic Aging Lessons Learned (GALL) Report, Section X.E1, "Environmental Qualification (EQ) of Electric Components" (Reference 3).

Exceptions to NUREG-1801

None

Enhancements

Under Development

Enhancements are scheduled for completion prior to the period of extended operation.

Operating Experience

The Environmental Qualification Program includes consideration of operating experience to modify qualification bases and conclusions, including qualified life. Compliance with 10 CFR 50.49 provides reasonable assurance that components can perform their intended function(s) during accident conditions after experiencing the effects of inservice aging. Based upon a review of the existing program and operating experience, the continued implementation of the Environmental Qualification Program provides reasonable assurance that the aging effects will be managed and that EQ components will continue to perform their intended function(s) for the period of extended operation.

This element is consistent with the corresponding NRC GALL Report aging management program element.

Conclusion

The Environmental Qualification Program has been demonstrated to be capable of programmatically managing the qualified lives of the components falling within the scope of the program for license renewal. Based upon a review of the existing program and operating experience, the continued implementation of the Environmental Qualification Program provides reasonable assurance that the aging effects will be managed and that EQ components will continue to perform their intended function(s) for the period of extended operation. The Environmental Qualification Program will also continue to be subject to periodic internal and external assessments to insure its effectiveness and continuous improvement. This result meets the requirements of 10 CFR 54.21(c)(iii).

B4.0 REFERENCES

1. NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, U.S. Nuclear Regulatory Commission, July 2001.

2. 10 CFR 50 Appendix B

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

4. 10 CFR 50.49

5. Westinghouse Owners Group, Life Cycle Management, Aging Assessment Field Guide, Buried Commodities, issued 1995

6. NRC Generic Letter 96-04 "Boraflex Degradation in Spent Fuel Pool Storage Racks," June 26, 1996

7. NRC Information Notice 87-43, Gaps in Neutron Absorbing Material in High Density Spent Fuel Storage Racks, U.S. Nuclear Regulatory Commission, September 8, 1987.

8. NRC Information Notice 93-70, Degradation of Boraflex Neutron Absorber Coupons, U.S. Nuclear Regulatory Commission, September 10, 1993

9. NRC Information Notice 95-38, "Degradation of Boraflex Neutron Absorber in Spent Fuel Storage Racks", U.S. Nuclear Regulatory Commission, September 8, 1995

10. NRC Inspection Report No. 50-266/2000003(DRP);50-301/20000003(DRP)

11. EPRI TR-105714, "PWR Primary Water Chemistry Guidelines," Revision 4, Electric Power Research Institute.

12. EPRI TR-102134, "PWR Secondary Water Chemistry Guidelines," Revision 5, Electric Power Research Institute.

13. NUREG/CR-5643

14. IEEE Std. P1205

15. SAND 96-0344, "Aging Management Guideline for Commercial Nuclear Power Plants - Electrical Cable and Terminations," Sandia National Laboratories for the U. S. Department of Energy, September 1996.

16. EPRI TR-109619

"Class of '03" Standard License Renewal Application

Appendix B Proposal

(NRC Meeting 11/06/02)

Proposed Standard LRA Appendix B

- Divided into 4 sections:
  - Introduction
  - Aging Management Programs
  - TLAA Support Activities
  - References

Proposed Standard LRA Appendix B

- Introduction (B1):
  - Overview
    - Road map
    - 10 elements definitions
  - Method of Discussion
  - Quality Assurance Program and Administrative Controls
  - Operating Experience
  - Aging Management Programs
  - Time Limited Aging Analyses Aging Management Programs

Proposed Standard LRA Appendix B

- Aging management programs (B2):
  - Table listing GALL programs correlated to plant programs, followed by plant specific programs

GALL ID NUMBER	GALL PROGRAM	PLANT PROGRAM
XI.M1	ASME Section XI Inservice Inspection, Subsections IWB, IWC, & IWD	ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection Program [Section B2.1.1]
XI.M2	Water Chemistry	Water Chemistry Control Program [Section B2.1.26]
XI.M3	Reactor Head Closure Studs	ASME Section XI, Subsections IWB, IWC, & IWD Inservice Inspection Program [Section B2.1.1]
XI.M4	BWR Vessel ID Attachment Welds	Not Applicable - Plant is a PWR
XI.M5	BWR Feedwater Nozzle	Not Applicable - Plant is a PWR

Proposed Standard LRA Appendix B

- Aging management programs (B2) - continued:
  - Those that correlate to GALL
    - Program Description
    - NUREG-1801 Consistency
    - Exceptions to NUREG-1801
    - Enhancements
    - Operating Experience
    - Conclusion

Proposed Standard LRA Appendix B

- Aging management programs (B2) - continued:
  - Plant specific Programs
    - Program Description
    - 10 elements
    - Enhancements
    - Conclusion

Proposed Standard LRA Appendix B

- TLAA support activities (B3):
  - Example: Environmental Qualification (EQ) program
- References (B4):
  - Appendix B references

2.3.3.26 Liquid and Solid Waste (LW)

System Description

The liquid and solid waste (LW) system is common to both units and is designed to process potentially radioactive liquid and solid wastes produced by the operation of the plant.

The portion of the LW system that is subject to aging management review consists of the components that provide the pressure boundary for the chemical and volume control (CH) and component cooling (CC) systems.

UFSAR Reference

Additional LW system details are provided in Section 11 2 of the UFSAR.

License Renewal Drawings

The license renewal drawings for the LW system are listed below:

Unit 1	Unit 2
11715-LRM-079C, Sh 1	Common
11715-LRM-087D, Sh. 1	
11715-LRM-087D, Sh. 2	

Components Subject to AMR

The component groups for this system that require aging management review are indicated in Table 2.3 3-26, Liquid and Solid Waste (LW). The table provides the passive function and a reference to the aging management review results section for each component group.

NOTE: Text enclosed in thick border indicates technical information specific to **NORTH ANNA.**

Table 2.3.3-26 Liquid and Solid Waste (LW)

Component Group	Passive Function(s)	LRA Section Containing AMR Results
S/G Blowdown Heat Exchangers	Provides pressure boundary	Section 3 3.7, Drain and Liquid Processing Systems
Valve Bodies[1]	Provides pressure boundary	Section 3.3.7, Drain and Liquid Processing Systems

1. The piping associated with these components is included in the radwaste (RW) system.

Text enclosed in a thick border indicates technical information specific to NORTH ANNA.