3.4 AGING MANAGEMENT OF STEAM AND POWER CONVERSION SYSTEM

Review Responsibilities

Primary - Branch responsible for materials and chemical engineering
Secondary - Branch responsible for mechanical engineering

3.4.1 Areas of Review

This review plan section addresses the aging management review of the Steam and Power Conversion System. For a recent vintage plant, the information related to the Steam and Power Conversion System is contained in Chapter 10, "Steam and Power Conversion System," of the plant's Final Safety Analysis Report (FSAR), consistent with the Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (NUREG-0800) (Ref. 1). Typical steam and power conversion systems that are subject to an aging management review for license renewal are steam turbine, main steam, extraction steam, feedwater, condensate, steam generator blowdown (PWR), and auxiliary feedwater (PWR). The aging management for portions of the BWR main steam and main feedwater systems, extending from the reactor vessel to the outermost containment isolation valve is reviewed separately following the guidance in Section 3.1 of this standard review plan.

The staff has issued a Generic Aging Lessons Learned (GALL) report (Ref. 2) addressing aging management for license renewal. The GALL report documents the staff's basis for determining when generic existing programs are adequate to manage aging without change and when generic existing programs should be augmented for license renewal. The GALL report may be referenced in a license renewal application and should be treated in the same manner as an approved topical report.

Because a license renewal applicant may or may not be able to reference the GALL report as explained below, the following areas are reviewed:

3.4.1.1 Aging Management Programs Evaluated in the GALL Report that are Relied on for License Renewal

An applicant may reference the GALL report in a license renewal application to demonstrate that the applicant's programs at its facility correspond to those reviewed and approved in the GALL report, and that no further staff review is required. If the material presented in the GALL report is applicable to the applicant's facility, the staff should find the applicant's reference to the GALL report acceptable. In making this determination, the staff should consider whether the applicant has identified specific programs described and evaluated in the GALL report. The staff, however, should not repeat its review of the substance of the matters described in the GALL report. Rather, the staff should ensure that the applicant verifies that the approvals set forth in the GALL report for generic programs apply to the applicant's programs.

3.4.1.2 Further Evaluation of Aging Management as Recommended by the GALL Report

The GALL report provides the basis for identifying those programs that warrant further evaluation during the staff review of a license renewal application. The staff review should focus on augmented programs for license renewal.

3.4.1.3 Aging Management Programs or Evaluations that Are Different from those Described in the GALL Report

The GALL report provides a generic staff evaluation of certain aging management programs. If an applicant does not rely on a particular program for license renewal, or if the applicant indicates that the generic staff evaluation of the elements of a particular program does not apply to its plant, the staff should review each such aging management program to which the GALL report does not apply.

3.4.1.4 Components or Aging Effects that are not Addressed in the GALL Report

The GALL report provides a generic staff evaluation of certain components and aging effects. If an applicant has identified particular components subject to aging management review for its plant, or particular aging effects for a component that are not addressed in the GALL report, the staff should review the applicant's aging management programs applicable to these particular components and aging effects.

3.4.1.5 FSAR Supplement

The FSAR supplement summarizing the programs and activities for managing the effects of aging for the period of extended operation is reviewed.

3.4.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for determining if the applicant has met the requirements of the Commission's regulations in 10 CFR 54.21.

3.4.2.1 Aging Management Programs Evaluated in the GALL Report that are Relied on for License Renewal

Acceptable methods for managing aging of the Steam and Power Conversion System are described and evaluated in Chapter VIII of the GALL report (Ref. 2). In referencing the GALL report, an applicant should indicate that the material presented in the GALL report is applicable to the specific plant involved and provide the information necessary to adopt the finding of program acceptability as described and evaluated in the GALL report. An applicant should also verify that the approvals set forth in the GALL report for generic programs apply to the applicant's programs. An applicant may reference appropriate programs as described and evaluated in the GALL report.

3.4.2.2 Further Evaluation of Aging Management as Recommended by the GALL Report

The GALL report indicates that further evaluation should be performed for:

3.4.2.2.1 Cumulative Fatigue Damage

Fatigue is a time-limited aging analysis (TLAA) as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c). The evaluation of this TLAA is addressed separately in Section 4.3 of this standard review plan.

3.4.2.2.2 Loss of Material Due to General, Crevice, and Pitting Corrosion

The management of loss of material due to general, crevice, and pitting corrosion should be further evaluated for carbon steel piping and fittings, valve bodies and bonnets, pump casing, pump suction and discharge lines, and tanks, except for main steam system components. The water chemistry program relies on monitoring and control of water chemistry based on EPRI guidelines of TR-103515 for water chemistry in BWRs (Ref. 3) and TR-102134 (Ref. 4) for secondary water chemistry in PWRs to manage the effects of loss of material due to crevice or pitting corrosion. However, crevice or pitting corrosion may occur at locations of stagnant flow conditions. Therefore, verification of the effectiveness of the chemistry control program should be performed to ensure that corrosion is not occurring. The GALL report recommends further evaluation of programs to manage loss of material due to crevice and pitting corrosion to verify the effectiveness of the water chemistry program. A one-time inspection of select components and susceptible locations is an acceptable method to ensure that corrosion is not occurring and the component's intended function will be maintained during the period of extended operation.

3.4.2.2.3 General Corrosion, Microbiologically-Influenced Corrosion, and Biofouling

Loss of material due to general corrosion and microbiologically-influenced corrosion (MIC) could occur in stainless steel and carbon steel shells, tubes, and tubesheets within the bearing oil coolers (for steam-turbine pumps) in the PWR auxiliary feedwater system. Buildup of deposits due to biofouling and loss of material due to general corrosion and microbiologically-influenced corrosion (MIC) could occur in carbon steel piping and fittings for untreated water from backup water supply in the PWR auxiliary feedwater system. The GALL report recommends further evaluation to ensure that these aging effects are adequately managed. Acceptance criteria are described in Branch Technical Position RLSB-1, Appendix A.1 of this standard review plan.

3.4.2.2.4 Quality Assurance for Aging Management of Non-Safety-Related Components

Acceptance criteria are described in Branch Technical Position IQMB-1, Appendix A.2 of this standard review plan.

3.4.2.3 Aging Management Programs or Evaluations that Are Different from those Described in the GALL Report

Acceptance criteria are described in Branch Technical Position RLSB-1, Appendix A.1 of this standard review plan.

3.4.2.4 Components or Aging Effects that are not Addressed in the GALL Report

Acceptance criteria are described in Branch Technical Position RLSB-1, Appendix A.1 of this standard review plan.

3.4.2.5 FSAR Supplement

The summary description of the programs and activities for managing the effects of aging for the period of extended operation in the FSAR supplement should provide appropriate description such that later changes can be controlled by 10 CFR 50.59. The description should contain information associated with the bases for determining that aging effects will be managed during the period of extended operation.

3.4.3 Review Procedures

For each area of review, the following review procedures are to be followed:

3.4.3.1 Aging Management Programs Evaluated in the GALL Report that are Relied on for License Renewal

An applicant may reference the GALL report in its license renewal application, as appropriate. The staff should not repeat its review of the substance of the matters described in the GALL report. If the applicant has provided the information necessary to adopt the finding of program acceptability as described and evaluated in the GALL report, the staff should find the applicant's reference to the GALL report in a license renewal application acceptable. In making this determination, the reviewer verifies that the applicant has provided a brief description of the system, components, materials, and environment. The reviewer also verifies that the applicant has stated that the applicable aging effects and industry and plant-specific operating experience had been reviewed by the applicant and are evaluated in the GALL report. The reviewer verifies that the applicant has identified those aging effects for the Steam and Power Conversion System components that are contained in the GALL report as applicable to its plant. In addition, the reviewer ensures that the applicant has stated that the plant programs covered by the applicant's reference contain the same program elements that the staff evaluated and relied upon in approving the corresponding generic program in the GALL report.

The applicant may state that certain of its aging management programs contain the same program elements as the corresponding generic program described in the GALL report and upon which the staff relied in its evaluation, as described in the GALL report in accepting the generic program. The applicant may then state that the GALL report is applicable to its plant with respect to these programs. The reviewer verifies that the applicant has identified the appropriate programs as described and evaluated in the GALL report. Programs evaluated in the GALL report regarding the Steam and Power Conversion System components are tabulated in Table 3.4-1 of this review plan section. No further staff evaluation is necessary if so recommended in the GALL report.

3.4.3.2 Further Evaluation of Aging Management as Recommended by the GALL Report

3.4.3.2.1 Cumulative Fatigue Damage

Fatigue is a TLAA as defined in 10 CFR 54.3. TLAAs are required to be evaluated in accordance with 10 CFR 54.21(c). The staff reviews the evaluation of this TLAA separately following the guidance in Section 4.3 of this standard review plan.

3.4.3.2.2 Loss of Material Due to General, Crevice, and Pitting Corrosion

The GALL report recommends further evaluation of programs to manage loss of material due to general, crevice, and pitting corrosion of carbon steel piping and fittings, valve bodies and bonnets, pump casing, pump suction and discharge lines, and tanks, except for main steam system components, to verify the effectiveness of the water chemistry program. An acceptable verification program consists of a one-time inspection of select components and susceptible locations in the system. The water chemistry program relies on monitoring and control of water chemistry based on EPRI guidelines of TR-103515 for water chemistry in BWRs (Ref. 3) and TR-102134 (Ref. 4) for secondary water chemistry in PWRs to manage the effects of loss of material due to crevice or pitting corrosion. However, crevice or pitting corrosion may occur at locations of stagnant flow conditions. Therefore, verification of the effectiveness of the chemistry control program should be performed to ensure that significant degradation is not occurring and the component's intended function will be maintained during the extended period of operation.

The staff reviews the applicant's proposed program to ensure that corrosion is not occurring and the component's intended function will be maintained during the period of extended operation. If an applicant proposes a one-time inspection of select components and susceptible locations to ensure that corrosion is not occurring, the reviewer verifies that the applicant's selection of susceptible locations is based on severity of conditions, time of service, and lowest design margin. The reviewer also verifies that the proposed inspection would be performed using techniques similar to ASME Code and ASTM standards.

3.4.3.2.3 General Corrosion, Microbiologically-Influenced Corrosion, and Biofouling

The GALL report recommends further evaluation of programs to manage the loss of material due to general corrosion and microbiologically-influenced corrosion (MIC) for stainless steel and carbon steel shells, tubes, and tubesheets within the bearing oil coolers (for steam-turbine pump) in the PWR auxiliary feedwater system. Such corrosion may be due to water contamination that affects the quality of the lubrication oil. The GALL report recommends further evaluation of programs to manage buildup of deposits due to biofouling and loss of material due to general corrosion and microbiologically-influenced corrosion (MIC) in carbon steel piping and fittings for untreated water from backup water supply in the PWR auxiliary feedwater system. The staff reviews the applicant's proposed program on a case-by-case basis to ensure that an adequate program will be in place for the management of these aging effects.

3.4.3.2.4 Quality Assurance for Aging Management of Non-Safety-Related Components

An applicant's aging management programs for license renewal should contain the elements of corrective actions, confirmation process, and administrative controls. Safety-related components are covered by 10 CFR Part 50, Appendix B, which is adequate to address these program elements. However, Appendix B does not apply to non-safety-related components that are subject to an aging management review for license renewal. Nevertheless, an applicant has the option to expand the scope of its 10 CFR Part 50, Appendix B, program to include these components and address these program elements. If an applicant chooses this option, the reviewer verifies that the applicant has documented such a commitment in the FSAR supplement. If an applicant chooses other alternative means, the branch responsible for quality assurance should be requested to review the applicant's proposal on a case-by-case basis.

3.4.3.3 Aging Management Programs or Evaluations that Are Different from those Described in the GALL Report

Review procedures are described in Branch Technical Position RLSB-1, Appendix A.1 of this standard review plan.

3.4.3.4 Components or Aging Effects that are not Addressed in the GALL Report

Review procedures are described in Branch Technical Position RLSB-1, Appendix A.1 of this standard review plan.

3.4.3.5 FSAR Supplement

The reviewer verifies that the applicant has provided an FSAR supplement for aging management of the Steam and Power Conversion System for license renewal with information equivalent to that in Table 3.4-2 of this review plan section. The reviewer also verifies that the applicant has provided information to be included in the FSAR supplement for Subsection 3.4.3.3, "Aging Management Programs or Evaluations that are Different from those Described in the GALL Report," and Subsection 3.4.3.4, "Components or Aging Effects that are Not Addressed in the GALL Report," of this review plan section with information equivalent to that in Table 3.4-2. The staff expects to impose a license condition in the renewed license, if granted, to require the applicant to update its FSAR to include this FSAR supplement at the next update required pursuant to 10 CFR 50.71(e)(4). As part of the license condition, until the FSAR update is complete, the applicant may make changes to the programs described in its FSAR supplement without prior Commission approval, provided that the applicant evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59.

As noted in Table 3.4-2, an applicant need not incorporate the implementation schedule into its FSAR. However, an applicant should identify and commit to any future aging management activities to be completed before the period of extended operation. The staff expects to impose a license condition in the renewed license, if granted, to ensure that the applicant will complete these activities no later than the committed date.

3.4.4 Evaluation Findings

The reviewer verifies that the applicant has provided information sufficient to satisfy the provisions of this review plan section and the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

> The staff concludes that the applicant has demonstrated that the aging effects associated with the Steam and Power Conversion System will be adequately managed so that there is reasonable assurance that these systems will perform their intended functions in accordance with the current licensing basis during the period of extended operation. The staff also concludes that the FSAR supplement contains an appropriate summary description of the programs and activities for managing the effects of aging for the Steam and Power Conversion System.

3.4.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

3.4.6 References

1. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, July 1981.

2. NUREG-xxxx, "Generic Aging Lessons Learned (GALL)," U.S. Nuclear Regulatory Commission, XXXX.

3. EPRI TR-103515, BWR Water Chemistry Guidelines-Revision 3, Normal and Hydrogen Water Chemistry, Electric Power Research Institute, Palo Alto, CA, February 1994.

4. EPRI TR-102134, PWR Secondary Water Chemistry Guideline-Revision 3, Electric Power Research Institute, Palo Alto, CA, May 1993.

5. NUREG-1339, Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants, Richard E. Johnson, U.S. Nuclear Regulatory Commission, June 1990.

6. EPRI NP-5769, Degradation and Failure of Bolting in Nuclear Power Plants, Volumes 1 and 2, Electric Power Research Institute, Palo Alto, CA, April 1988.

7. EPRI NP-5067, Good Bolting Practices, A Reference Manual for Nuclear Power Plant Maintenance Personnel, Volumes 1: Large Bolt Manual, 1987, and Volume 2: Small Bolts and Threaded Fasteners, 1990, Electric Power Research Institute, Palo Alto, CA.

8. ASME Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, The ASME Boiler and Pressure Vessel Code, 1989 or later edition as approved in 10 CFR 50.55a, The American Society of Mechanical Engineers, New York, NY.

9. EPRI TR-107396, Closed Cooling Water Chemistry Guidelines, Electric Power Research Institute, Palo Alto, CA, November 1997.

10. NSAC-202L-R2, Recommendations for a Effective Flow Accelerated Corrosion Program, Electric Power Research Institute, Palo Alto, CA, April 8, 1999.

11. NACE-RP-01-69, Control of External Corrosion on Underground or Submerged Metallic Piping Systems, Approved August 1969, Reaffirmed 1996-September 13.

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

13. ASME OM S/G, Part 2, Requirements for Performance Testing of Nuclear Power Plant Closed Cooling Water Systems, Standards and Guides for Operation and Maintenance of Nuclear Power Plants, The American Society of Mechanical Engineers, New York, NY.

14. NRC Generic Letter 88-05, Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants, March 17, 1988.

15. NRC Regulator Guide 1.54, “Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants” Rev. 1, July 2000.

Table 3.4-1. Summary of Aging Management Programs for Steam and Power Conversion System Evaluated in Chapter VIII of the GALL Report

Type	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended
PWR	Piping and fittings in main feedwater line and in steam line	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA. (see subsection 3.4.2.2.1)
PWR/ BWR	Carbon steel piping, valve bodies, pump casing, and tanks. (except main steam system)	Loss of material from general, crevice, and pitting corrosion	Water chemistry	Yes, detection of aging effects should be further evaluated. (see subsection 3.4.2.2.2)
PWR	Oil coolers and AFW piping	Loss of material from general and microbiologically influenced corrosion, and buildup of deposit from biofouling	Plant-specific	Yes, plant specific. (see subsection 3.4.2.2.3)
BWR/ PWR	Carbon steel piping, valve bodies, and pump casings	Wall thinning from flow-accelerated corrosion	Flow-accelerated corrosion	No
BWR/ PWR	Carbon steel piping and valve bodies in main steam system	Loss of material from crevice and pitting corrosion	Water chemistry	No
BWR/ PWR	Closure bolting in high-pressure or high-temperature systems	Loss of material from atmospheric corrosion, loss of preload from stress relaxation, and crack initiation and growth from cyclic loading, stress corrosion cracking.	Bolting integrity	No

Table 3.4-1. Summary of Aging Management Programs for Steam and Power Conversion System Evaluated in Chapter VIII of the GALL Report (cont'd)

Type	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended
BWR/ PWR	Heat exchangers and coolers/ condensers serviced by open-cycle cooling water	Loss of material from general and microbiologically influenced corrosion, and buildup of deposit from biofouling	Open-cycle cooling water system	No
BWR/ PWR	Heat exchangers and coolers/ condensers serviced by closed-cycle cooling water	Loss of material from general corrosion	Closed-cycle cooling water system	No
BWR/ PWR	External surface of above-ground condensate storage tank	Loss of material from general corrosion	Outer surface of above ground carbon steel tanks	No
BWR/ PWR	External surface of buried condensate storage tank and AFW piping	Loss of material from general, galvanic, & microbiologically influenced corrosion	Outer surface of buried piping and components	No
PWR	External surface of carbon steel components	Loss of material from boric acid corrosion	Boric acid corrosion	No
BWR/ PWR	External surface of carbon steel components	Loss of material from atmospheric corrosion	Protective coating monitoring and maintenance	No

Table 3.4-2. FSAR Supplement for Aging Management of Steam and Power Conversion System

Program	Description of Program	Implementation Schedule*
Bolting Integrity (BWR/PWR)	This program consists of guidelines on materials selection, strength and hardness properties, installation procedures, lubricants and sealants, corrosion considerations in the selection and installation of pressure-retaining bolting for nuclear applications, and enhanced inspection techniques. This program relies on the bolting integrity program delineated in NUREG–1339 (Ref. 5) and industry's recommendations delineated in EPRI NP-5769 (Ref. 6), with the exceptions noted in NUREG 1339, for safety related bolting, and EPRI NP-5067 (Ref. 7) for other bolting.	Existing program
Boric acid corrosion (PWR)	The program consists of (1) visual inspection of external surfaces that are potentially exposed to borated water for leaks, (2) timely discovery of leak path and removal of the boric acid residues, (3) assessment of the damage, and (4) follow up inspection for adequacy. This program is implemented in response to GL 88-05 (Ref. 14) and in accordance with ASME Section XI inservice inspection for reactor coolant leak tests (Ref. 8).	Existing program
Closed-cycle cooling water system (BWR/PWR)	The program relies on preventive measures to minimize corrosion by maintaining corrosion inhibitors by surveillance testing and inspection in conformance with the ASME OM Standards and Guides, Part 2 (Ref. 13). Corrosion inhibitor concentrations are maintained within the limits specified in the guidelines of EPRI-TR-107396 (Ref. 9) for closed-cycle cooling water systems.	Existing program

Table 3.4-2. FSAR Supplement for Aging Management of Steam and Power Conversion System (cont'd)

Program	Description of Program	Implementation Schedule*
Flow accelerated corrosion (BWR/PWR)	The program consists of the following; (1) conduct appropriate analysis and baseline inspection, (2) determine extent of thinning and replace/repair components, and (3) perform follow up inspections to confirm or quantify and take longer-term corrective actions. The program relies on implementation of EPRI guidelines of NSAC–202L–R2 (Ref. 10).	Existing program
Inservice inspection (BWR/PWR)	The program consists of periodic volumetric, surface, and/or visual examination of components and their supports for signs of degradation, assessment, and corrective actions. This program is in accordance with ASME Section XI, 1989 or later edition as approved in 10 CFR 50.55a (Ref. 8).	Existing program
One-Time Inspection (BWR/PWR)	To verify the effectiveness of the water chemistry program, a one–time inspection of internal surfaces of carbon steel piping, valve bodies, pump casing, and tanks, is performed using suitable techniques at the most susceptible locations is performed to ensure that corrosion is not occurring.	The inspection should be completed before the period of extended operation.
Open-cycle cooling water system (BWR/PWR)	The program includes (a) surveillance and control of biofouling, (b) tests to verify heat transfer, (c) routine inspection and maintenance program, (d) system walk down inspection, and (e) review of maintenance, operating, and training practices and procedures. The program provides assurance that open-cycle cooling water system is in compliance with General Design Criteria and Quality Assurance to ensure open-cycle cooling water (or service water) system can be managed for an extended period of operation. This program is in response to NRC Generic Letter 89–13 (Ref. 12).	Existing program

Table 3.4-2. FSAR Supplement for Aging Management of Steam and Power Conversion System (cont'd)

Program	Description of Program	Implementation Schedule*
Outer surface of above ground carbon steel tanks (BWR/PWR)	The program includes preventive measures to mitigate corrosion by protecting the external surface of carbon steel components, per standard industry practice with sealant or caulking at the interface of concrete and component. Paint or coatings are maintained according to the "Protective Coating Monitoring and Maintenance Program". Visual inspection during periodic system walk downs should be sufficient to monitor degradation of the protective paint, coating, calking or sealant. Verification of the effectiveness of the program by measuring the thickness of the tank bottoms ensures that significant degradation is not occurring and the component intended function would be maintained during the extended period of operation.	Existing program
Outer surface of buried piping and components (BWR/PWR)	The program includes preventive measures to mitigate corrosion by protecting the external surface of buried piping and components, with preventive measures external such as coating, wrapping, a cathodic protection system, and surveillance and monitoring of the coating conductance versus time or current. This program is based on standard industry practices as described in NACE-RP-01-69 (Ref. 11).	Existing program
Plant-specific AMP (PWR)	The description should contain information associated with the bases for determining that aging effects will be managed during the period of extended operation.	Program should be implemented before the period of extended operation.
Protective coating monitoring and maintenance (BWR/PWR)	This program consists of guidance for selection, application, inspection, and maintenance of protective coating. This program is implemented in accordance with Regulatory Guide 1.54, Rev. 1 (Ref. 15), except that coating outside containment need not be qualified for a design basis accident.	Existing program

Table 3.4-2. FSAR Supplement for Aging Management of Steam and Power Conversion System (cont'd)

Program	Description of Program	Implementation Schedule*
Quality assurance (BWR/PWR)	The 10 CFR Part 50, Appendix B program provides for corrective actions, confirmation process, and administrative controls for aging management programs for license renewal. The scope of this existing program will be expanded to include non-safety-related structures and components that are subject to an aging management review for license renewal.	Program should be implemented before the period of extended operation.
Water Chemistry (BWR/PWR)	To mitigate aging effects on component surfaces that are exposed to water as process fluid, chemistry programs are used to control water chemistry for impurities (e.g., chloride, fluoride, and sulfate) that accelerate corrosion. The water chemistry program relies on monitoring and control of water chemistry based on EPRI guidelines of TR-103515 (Ref. 3) for water chemistry in BWRs and TR-102134 (Ref. 4) for secondary water chemistry in PWRs.	Existing program

*An applicant need not incorporate the implementation schedule into its FSAR. However, an applicant should identify and commit to any future aging management activities to be completed before the period of extended operation. The staff expects to impose a license condition in the renewed license, if granted, to ensure that the applicant will complete these activities no later than the committed date.