3.3 Aging Management of Auxiliary Systems

This section of the SER documents the staff's review of the applicant's AMR results for the auxiliary systems components and component groups associated with the following systems:

- spent fuel pool system
- water suppression fire protection system
- emergency diesel generator system
- alternate AC diesel generator system
- chemical and volume control system
- halon fire protection and RCP motor oil leakage collection system
- fuel oil system
- service water system
- auxiliary building ventilation system
- control room ventilation system
- miscellaneous systems in scope for 10 CFR 54.4(a)(2)

3.3.1 Summary of Technical Information in the Application

In Section 3.3 of the LRA, the applicant provided the results of the aging management review of the auxiliary systems components and component types listed in Tables 2.3.3-1 through 2.3.3-11 of the LRA. The applicant also listed the materials, environments, aging effects requiring management, and aging management programs associated with each system.

In Table 3.3.1, "Summary of the Aging Management Programs for the Auxiliary Systems Evaluated in Chapter VII of NUREG-1801," of the LRA, the applicant provided a summary comparison of its AMRs with the AMRs evaluated in the GALL Report for the auxiliary systems components and component types. In Section 3.3.2.2 of the LRA, the applicant provided information concerning Table 3.3.1 components for which further evaluation is recommended by the GALL Report.

3.3.2 Staff Evaluation

The staff reviewed Section 3.3 of the LRA to understand the applicant's review process and to determine whether the applicant provided sufficient information to demonstrate that the effects of aging for the auxiliary systems components that are within the scope of license renewal and subject to an AMR will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).

The staff performed an audit and review to confirm the applicant's claim that certain identified AMRs are consistent with the staff-approved AMRs in the GALL Report. The staff did not repeat its review of the matters described in the GALL Report. However, the staff did verify that the material presented in the LRA was applicable and that the applicant had identified the appropriate GALL AMRs. The staff's audit findings are summarized in Section 3.3.2.1 of this SER.

The staff also audited those AMRs that are consistent with the GALL Report and for which

further evaluation is recommended. The staff verified that the applicant's further evaluations were consistent with the acceptance criteria in Section 3.3.3.2 of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," (SRP-LR). The staff's audit findings are summarized in Section 3.3.2.2 of this SER.

The staff conducted a technical review of the remaining AMRs that are not consistent with the GALL Report. The review included evaluating whether all plausible aging effects were identified and whether the aging effects listed were appropriate for the combination of materials and environments specified. The staff's review findings are documented in Section 3.3.2.3 of this SER.

Finally, the staff reviewed the AMP summary descriptions in the UFSAR Supplement to ensure that they provide an adequate description of the programs credited with managing or monitoring aging for the auxiliary systems and associated components.

The staff's review of the auxiliary systems and associated components followed one of several approaches. One approach, documented in Section 3.3.2.1, involves the staff's review of the AMR results for components in the auxiliary systems that the applicant indicated are consistent with the GALL Report and do not require further evaluation. Another approach, documented in Section 3.3.2.2, involves the staff's review of the AMR results for components in the auxiliary systems that the applicant indicated are consistent with the GALL Report and for which further evaluation is recommended. A third approach, documented in Section 3.3.2.3, involves the staff's review of the AMR results for components in the auxiliary systems that the applicant indicated are not consistent with the GALL Report or are not addressed in the GALL Report. The staff's review of AMPs that are credited to manage or monitor aging effects of the auxiliary systems components is documented in Section 3.0.3 of this SER.

3.3.2.1 Aging Management Evaluations that are Consistent with the GALL Report, for Which No Further Evaluation is Required

Summary of Technical Information in the Application

In Section 3.3.2.1 of the LRA, the applicant identified the materials, environments, and aging effects requiring management. The applicant identified the following programs that manage the aging effects related to the auxiliary systems components:

- Boric Acid Corrosion Prevention Program
- System Walkdown Program
- Water Chemistry Control Program
- Bolting and Torquing Activities Program
- Buried Piping Inspection Program
- Fire Protection Program
- Oil Analysis Program
- Wall Thinning Monitoring Program
- Heat Exchanger Monitoring Program
- Periodic Surveillance and Preventive Maintenance Program
- Diesel Fuel Monitoring Program
- Service Water Integrity Program

- Flow-accelerated Corrosion Program

Staff Evaluation

In Tables 3.3.2-1 through 3.3.2-11 of the LRA, the applicant provided a summary of AMRs for the auxiliary systems components and identified which AMRs it considered to be consistent with the GALL Report.

For component groups evaluated in the GALL Report for which the applicant has claimed consistency with the GALL Report, and for which the GALL Report does not recommend further evaluation, the staff performed an audit and review to determine whether the plant-specific components contained in these GALL Report component groups were bounded by the GALL Report evaluation.

The applicant provided a note for each AMR line item. The notes described how the information in the tables aligns with the information in the GALL Report. The staff audited those AMRs with Notes A through E, which indicated the AMR was consistent with the GALL Report.

Note A indicated that the AMR line item is consistent with the GALL Report for component, material, environment, and aging effect. In addition, the AMP is consistent with the AMP identified in the GALL Report. The staff audited these line items to verify consistency with the GALL Report and the validity of the AMR for the site-specific conditions.

Note B indicated that the AMR line item is consistent with the GALL Report for component, material, environment, and aging effect. In addition, the AMP takes some exceptions to the AMP identified in the GALL Report. The staff audited these line items to verify consistency with the GALL Report. The staff verified that the identified exceptions to the GALL AMPs had been reviewed and accepted by the staff. The staff also determined whether the AMP identified by the applicant was consistent with the AMP identified in the GALL Report and whether the AMR was valid for the site-specific conditions.

Note C indicated that the component for the AMR line item is different, but consistent with the GALL Report for material, environment, and aging effect. In addition, the AMP is consistent with the AMP identified by the GALL Report. This note indicates that the applicant was unable to find a listing of some system components in the GALL Report. However, the applicant identified a different component in the GALL Report that had the same material, environment, aging effect, and AMP as the component that was under review. The staff audited these line items to verify consistency with the GALL Report. The staff also determined whether the AMR line item of the different component was applicable to the component under review and whether the AMR was valid for the site-specific conditions.

Note D indicated that the component for the AMR line item is different, but consistent with the GALL Report for material, environment, and aging effect. In addition, the AMP takes some exceptions to the AMP identified in the GALL Report. The staff audited these line items to verify consistency with the GALL Report. The staff verified whether the AMR line item of the different component was applicable to the component under review. The staff verified whether the identified exceptions to the GALL AMPs had been reviewed and accepted by the staff. The

staff also determined whether the AMP identified by the applicant was consistent with the AMP identified in the GALL Report and whether the AMR was valid for the site-specific conditions.

Note E indicated that the AMR line item is consistent with the GALL Report for material, environment, and aging effect, but a different aging management program is credited. The staff audited these line items to verify consistency with the GALL Report. The staff also determined whether the identified AMP would manage the aging effect consistent with the AMP identified by the GALL Report and whether the AMR was valid for the site-specific conditions.

The staff conducted an audit and review to confirm the applicant's claim that certain identified AMRs are consistent with the staff-approved AMRs in the GALL Report. The staff reviewed the information provided in the LRA and program bases documents, which were available at the applicant's engineering office. The staff did not repeat its review of the matters described in the GALL Report. However, the staff did verify that the material presented in the LRA was applicable and that the applicant had identified the appropriate GALL AMRs. The staff evaluation is discussed below.

3.3.2.1.1 Loss of Material Due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion

The staff reviewed Table 3.3.1, Item Number 3.3.1-15, and associated AMRs consistent with the GALL Report.

The applicant stated that it uses the plant-specific periodic surveillance and preventive maintenance (PSPM) program (AMP B.1.18) to manage loss of material for heat exchanger (bonnet and shell) components exposed to treated water of the emergency diesel generator system. The staff's evaluation of the PSPM program is documented in Section 3.0.3.3.7 of this SER. The staff found that the use of the PSPM program in lieu of the auxiliary systems water chemistry control program (AMP B.1.30.1) is not adequate for the carbon steel components of the emergency diesel generator and alternate AC diesel generator systems that are exposed internally to treated water. The PSPM program's emergency diesel generator maintenance inspections detect aging effects but do not sample or control water chemistry to manage aging effects. The auxiliary systems water chemistry control program, evaluated in Section 3.0.3.3.11 of this SER, controls and monitors water chemistry in addition to performing sampling and analyses on the emergency diesel generator cooling water system.

By letter dated March 24, 2004, the applicant stated that the auxiliary systems water chemistry control program applies to the emergency diesel generator heat exchanger bonnet and shell in treated water (page 3.3-51 of the LRA) rather than the PSPM program. Subsequently, by letter dated May 19, 2004, the applicant committed, in response to Question B.1.30.1-6, to update the UFSAR supplement LRA Section A.2.1.31 to reflect industry guidance used for auxiliary systems water chemistry control program (AMP B.1.30.1). This is now consistent with the GALL Report, and on that basis the staff finds it acceptable.

3.3.2.1.2 Loss of Material Due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion and Biofouling; Buildup of Deposit Due to Biofouling

The staff reviewed Table 3.3.1, Item Number 3.3.1-17, the AMP descriptions in the LRA, and

the associated AMRs consistent with the GALL Report.

The applicant stated that it uses the plant-specific, periodic surveillance and preventive maintenance program (AMP B.1.18) to manage this aging effect. The staff's evaluation of the PSPM program is documented in Section 3.0.3.3.7 of this SER. The staff found that the use of the PSPM program in lieu of the service water integrity program (AMP B.1.24) is not acceptable for managing the loss of material aging effect for emergency diesel generator heat exchanger bonnets in a fresh, raw water environment.

By letter dated March 24, 2004, the applicant stated that the PSPM program manages loss of material for the emergency diesel generator heat exchanger bonnet in fresh raw water (page 3.3-51 of the LRA) in Table 3.3.2-3 through periodic internal inspections during emergency diesel generator overhauls. The applicant further stated that, in addition to the periodic surveillance and preventive maintenance program, the service water integrity program is conservatively included as an AMP since it provides additional aging management of this component. The evaluation of this program is discussed in Section 3.0.3.2.7 of this SER. On the basis of the review of the service water integrity program and the applicant's response, the staff finds this acceptable.

On the basis of its audit and review, the staff determined that for all other AMRs not requiring further evaluation, as identified in the Table 3.3.1 (Table 1), the applicant's references to the GALL Report are acceptable and no further staff review is required.

Staff RAIs Pertaining to Recent Operating Experience and Emerging Issues

Because the GALL Report and SRP-LR were issued in July 2001, these documents do not reflect the most current recommendations for managing certain aging effects that have been the subject of recent operating experience or the topic of an emerging issue. As a result, the staff issued RAIs to determine how the applicant proposed to address these items for license renewal. The applicant's responses to these RAIs, and the staff's evaluations of the responses, are documented as follows.

< Evaluation To Be Provided by DE/EMEB >

Conclusion

The staff has verified the applicant's claim of consistency with GALL Report. The staff also has reviewed information pertaining to the applicant's consideration of recent operating experience and proposals for managing associated aging effects. On the basis of its review, the staff finds that the AMR results, which the applicant claimed to be consistent with the GALL Report, are consistent with the AMRs in the GALL Report. Therefore, the staff finds that the applicant has demonstrated that the effects of aging for these components will be adequately managed so that their intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).

On the basis of its audit and review, the staff concludes that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation, as required by

10 CFR 54.21(a)(3).

3.3.2.2 Aging Management Evaluations that are Consistent with the GALL Report, for Which Further Evaluation is Recommended

Summary of Technical Information in the Application

In Section 3.3.2.2 of the LRA, the applicant provides further evaluation of aging management as recommended by the GALL Report for auxiliary systems. The applicant provided information concerning how it will manage the following aging effects:

- loss of material due to general, pitting, and crevice corrosion
- hardening and cracking or loss of strength due to elastomer degradation or loss of material due to wear
- cumulative fatigue damage
- crack initiation and growth due to cracking or stress corrosion cracking
- loss of material due to general, microbiologically influenced, pitting, and crevice corrosion
- loss of material due to general, galvanic, pitting, and crevice corrosion
- loss of material due to general, pitting, crevice, and microbiologically influenced corrosion and biofouling
- quality assurance for aging management of non-safety-related components
- crack initiation and growth due to stress corrosion cracking and cyclic loading
- reduction of neutron-absorbing capacity and loss of material due to general corrosion
- loss of material due to general, pitting, crevice, and microbiologically influenced corrosion

Staff Evaluation

For component groups evaluated in the GALL Report for which the applicant has claimed consistency with the GALL Report, and for which the GALL Report recommends further evaluation, the staff reviewed the applicant's evaluation to determine whether it adequately addressed the issues that were further evaluated. In addition, the staff reviewed the applicant's further evaluations against the criteria contained in Section 3.3.2.2 of the SRP-LR. Details of the staff's audit and review are documented in the staff's audit and review report.

The GALL Report indicates that further evaluation should be performed for the aging effects described in the following sections of this SER.

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

In Section 3.3.2.2.1 of the LRA, the applicant addressed loss of material in components of the spent fuel pool system.

Section 3.3.2.2.1 of the SRP-LR states that loss of material due to general, pitting, and crevice corrosion could occur in the channel head and access cover, tubes, and tubesheets of the heat exchanger in the spent fuel pool cooling and cleanup. The water chemistry program relies on monitoring and control of reactor water chemistry based on EPRI guidelines of TR-105714 for

primary water chemistry and TR-102134 for secondary water chemistry to manage the effects of loss of material from general, pitting or crevice corrosion. However, high concentrations of impurities at crevices and locations of stagnant flow conditions could cause general, pitting, or crevice corrosion. 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 from general, pitting, and crevice corrosion to verify the effectiveness of the water chemistry program. A one-time inspection of select components at susceptible locations is an acceptable method for ensuring that corrosion is not occurring and that the component's intended function will be maintained during the period of extended operation. No loss of material aging effects are observed for stainless steel components exposed to air.

Further, Section 3.3.2.2.1 of the SRP-LR states that loss of material due to pitting and crevice corrosion could occur in the filter housing, valve bodies, and nozzles of the ion exchanger in the spent fuel pool cooling and cleanup system. The water chemistry program relies on monitoring and control of reactor water chemistry based on EPRI guidelines of TR-105714 for primary water chemistry and TR-102134 for secondary water chemistry to manage the effects of loss of material from pitting or crevice corrosion. However, high concentrations of impurities at crevices and locations of stagnant flow conditions could cause pitting, or crevice corrosion. 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 from pitting and crevice corrosion to verify the effectiveness of the water chemistry program. A one-time inspection of select components at susceptible locations is an acceptable method to ensure that corrosion is not occurring and that the component's intended function will be maintained during the period of extended operation.

The applicant stated that the portion of the spent fuel pool system that supplies emergency makeup is subject to an AMR, and the applicant credited the primary and secondary water chemistry control program (AMP B.1.30.3) to manage loss of material. The staff reviewed the primary and secondary water chemistry control program and its evaluation is documented in Section 3.0.3.1 of this SER. The water chemistry control program provides for the inspection of systems when they are opened for maintenance, which addresses the verification program recommendation in the GALL Report. The water chemistry control program is credited with managing loss of material for stainless steel components in this portion of the spent fuel pool system that are exposed to borated treated water. This is consistent with the GALL Report and acceptable to the staff.

3.3.2.2.2 Hardening and Cracking or Loss of Strength Due to Elastomer Degradation or Loss of Material Due to Wear

In Section 3.3.2.2.2 of the LRA, the applicant addressed the potential for degradation of elastomers in collars and seals in spent fuel cooling systems and ventilation systems.

Section 3.3.2.2.2 of the SRP-LR states that hardening and cracking due to elastomer degradation could occur in elastomer linings of the filter, valve, and ion exchangers in spent fuel pool cooling and cleanup systems. Hardening and loss of strength due to elastomer degradation could occur in the collars and seals of the duct and in the elastomer seals of the

filters in the control room area, auxiliary and radwaste area, and primary containment heating ventilation systems and in the collars and seals of the duct in the diesel generator building ventilation system. Loss of material due to wear could occur in the collars and seals of the duct in the ventilation systems. The GALL Report recommends further evaluation to ensure that these aging effects are adequately managed.

The applicant stated that the portion of the spent fuel pool system that is subject to an AMR contains no elastomers. The applicant stated that for the ventilation systems, the plant-specific periodic surveillance and preventive maintenance program (AMP B.1.18) is used to manage degradation of elastomers. The staff reviewed the PSPM program and concludes that is acceptable. Its evaluation is documented in Section 3.0.3.3.7 of this SER.

The applicant further stated that for other systems, management of elastomer degradation is provided by the PSPM program supplemented by the fire protection program (AMP B1.10). The staff reviewed the fire protection program and its evaluation is documented in Section 3.0.3.2.5 of this SER.

The staff finds that the PSPM program is an acceptable program for managing cracking and change in material properties for elastomer expansion joints and flex hose in the alternate AC diesel generator system and the fuel oil system exposed to outdoor air and air expansion joints associated with control room and auxiliary building heating, ventilation, and air conditioning (HVAC) systems. However, Section 3.3.2.2.2 of the LRA stated that: "Elastomers are used in other [other than spent fuel pool and ventilation systems] systems. For these systems, management of elastomer degradation is provided by the PSPM program supplemented by the fire protection program." Based on this statement, the staff found that the PSPM program should be supplemented by the fire protection program for elastomers in the alternate AC diesel generator and water suppression fire protection systems.

By letter dated March 24, 2004, the applicant stated that for these systems, management of elastomer degradation is provided by the PSPM program and supplemented by the fire protection program. The words "supplemented by" were meant that for fire protection elastomers, the fire protection program is used instead of the periodic surveillance and preventive maintenance program. The staff finds assignment of these AMRs to the fire protection program to be acceptable.

3.3.2.2.3 Cumulative Fatigue Damage

As stated in the SRP-LR, 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)(1). The staff's review of the applicant's evaluation of this TLAA is documented in Section 4.3 of this SER. In performing this review, the staff followed the guidance in Section 4.3 of the SRP-LR.

< DE to verify >

3.3.2.2.4 Crack Initiation and Growth Due to Cracking or Stress Corrosion Cracking

In Section 3.3.2.2.4 of the LRA, the applicant addressed the potential for cracking in the high pressure pumps of the chemical and volume control system.

Section 3.3.2.2.4 of the SRP-LR addresses crack initiation and growth due to cracking in the high-pressure pump in the chemical and volume control system. The GALL Report recommends further evaluation to ensure that these aging effects are adequately managed.

In the engineered safety features (ESF) section of the GALL Report, Volume 2, Item V.D.1.1-a, the management of stainless steel components performing a pressure boundary function is addressed by using the water chemistry program. The applicant stated that it uses the primary and secondary water chemistry control program (AMP B.1.30.3) to manage cracking and SCC of these stainless steel components. The staff reviewed the primary and secondary water chemistry control program and its evaluation is documented in Section 3.0.3.1 of this SER. This is consistent with the GALL Report and therefore acceptable to the staff.

3.3.2.2.5 Loss of Material Due to General, Microbiologically Influenced, Pitting, and Crevice Corrosion

In Section 3.3.2.2.5 of the LRA, the applicant addressed the loss of material from corrosion that could occur on internal and external surfaces of components exposed to air and the associated range of atmospheric conditions.

Section 3.3.2.2.5 of the SRP-LR states that loss of material due to general, pitting, and crevice corrosion could occur in the piping and filter housing and supports in the control room area, the auxiliary and radwaste area, the primary containment heating and ventilation systems, in the piping of the diesel generator building ventilation system, in the above ground piping and fittings, valves, and pumps in the diesel fuel oil system and in the diesel engine starting air, combustion air intake, and combustion air exhaust subsystems in the EDG system. Loss of material due to general, pitting, crevice, and MIC could occur in the duct fittings, access doors, and closure bolts, equipment frames and housing of the duct, due to pitting and crevice corrosion could occur in the heating/cooling coils of the air handler heating/cooling, and due to general corrosion could occur on the external surfaces of all carbon steel SCs, including bolting exposed to operating temperatures less than 212°F in the ventilation systems. The GALL Report recommends further evaluation to ensure that these aging effects are adequately managed.

The applicant credited the system walkdown system (AMP B.1.28) for managing loss of material of carbon steel components in the spent fuel pool, emergency diesel generator, alternate AC diesel generator, fuel oil, water suppression fire protection, service water, and the control room and auxiliary building HVAC systems for external and internal surfaces exposed to air and outdoor air. The staff reviewed the system walkdown program and concludes that it is acceptable. Its evaluation is documented in Section 3.0.3.3.9 of this SER.

The applicant stated that it uses the plant-specific periodic surveillance and preventive maintenance program (AMP B.1.18) to manage loss of material for the external surfaces of emergency diesel generator and alternate AC diesel generator system carbon steel components with internal exposure to exhaust gas, treated and untreated air, outdoor air, and the control room and auxiliary building HVAC systems. The PSPM program is also used for managing loss of material of carbon steel components in an external environment of air in the halon fire protection and reactor coolant pump motor oil leakage collection system. The staff reviewed the PSPM program and concludes that is acceptable. Its evaluation is documented in

Section 3.0.3.3.7 of this SER.

The applicant credited the wall thinning monitoring program (AMP B.1.29) for managing loss of material for the external surfaces of the emergency diesel generator and alternate AC diesel generator system carbon steel piping, silencer, and tank with internal exposure to exhaust gas and untreated air. The staff reviewed the wall thinning monitoring program and concludes that it is acceptable. Its evaluation is documented in Section 3.0.3.3.10 of this SER.

3.3.2.2.6 Loss of Material Due to General, Galvanic, Pitting, and Crevice Corrosion

In Section 3.3.2.2.6 of the LRA, the applicant addressed further evaluation of programs to manage loss of material in the reactor coolant pump oil collection system to verify the effectiveness of the fire protection program.

Section 3.3.2.2.6 of the SRP-LR states that loss of material due to general, galvanic, pitting, and crevice corrosion could occur in tanks, piping, valve bodies, and tubing in the RCP oil collection system in fire protection. The fire protection program relies on a combination of visual and volumetric examinations in accordance with the guidelines of 10 CFR Part 50 Appendix R and Branch Technical Position 9.5-1 to manage loss of material from corrosion. However, corrosion may occur at locations where water from wash downs may accumulate. Therefore, verification of the effectiveness of the 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 general, galvanic, pitting, and crevice corrosion to verify the effectiveness of the program. A one-time inspection of the bottom half of the interior surface of the tank of the RCP oil collection system is an acceptable method to ensure that corrosion is not occurring and that the component's intended function will be maintained during the period of extended operation.

The applicant stated that it uses the plant-specific periodic surveillance and preventive maintenance program(AMP B.1.18) to manage loss of material in lieu of the one-time inspection. Carbon steel components in this system are included in visual inspection for loss of material and will be monitored for degradation. The staff reviewed the PSPM program and finds that the program will adequately manage the effects of aging so that the intended functions will be maintained. Its evaluation is documented in Section 3.0.3.3.7 of this SER.

3.3.2.2.7 Loss of Material Due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion and Biofouling

In Section 3.3.2.2.7 of the LRA, the applicant addressed further evaluation of programs to manage loss of material in the diesel fuel oil system to verify the effectiveness of the diesel fuel monitoring program.

Section 3.3.2.2.7 of the SRP-LR states that loss of material due to general, pitting, and crevice corrosion, MIC, and biofouling could occur in the internal surface of tanks in the diesel fuel oil system and due to general, pitting, and crevice corrosion and MIC in the tanks of the diesel fuel oil system in the EDG system. The existing AMP relies on the fuel oil chemistry program for monitoring and control of fuel oil contamination in accordance with the guidelines of ASTM Standards D4057, D1796, D2709 and D2276 to manage loss of material due to corrosion or

biofouling. Corrosion or biofouling may occur at locations where contaminants accumulate. 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 corrosion/biofouling to verify the effectiveness of the program. A one-time inspection of selected components at susceptible locations is an acceptable method to ensure that corrosion is not occurring and that the component's intended function will be maintained during the period of extended operation.

The applicant stated that it uses the diesel fuel monitoring program (AMP B.1.7) to manage loss of material for the diesel fuel oil system. This program also provides for the periodic inspection of the fuel oil tanks, which addresses the one-time inspection recommendation in the GALL Report.

The staff reviewed the diesel fuel monitoring program and finds that the program will adequately manage the effects of aging so that the intended functions will be maintained. Its evaluation is documented in Section 3.0.3.1 of this SER.

3.3.2.2.8 Quality Assurance for Aging Management of Non-safety-related Components

< Evaluation To Be Provided by NRR DIPM >

3.3.2.2.9 Crack Initiation and Growth Due to Stress Corrosion Cracking and Cyclic Loading

In Section 3.3.2.2.9 of the LRA, the applicant addressed further evaluation of programs to manage cracking in the chemical and volume control system to verify the effectiveness of the water chemistry control program.

Section 3.3.2.2.9 of the SRP-LR states that crack initiation and growth due to SCC and cyclic loading could occur in the channel head and access cover, tubesheet, tubes, shell and access cover, and closure bolting of the regenerative heat exchanger and in the channel head and access cover, tubesheet, and tubes of the letdown heat exchanger in the chemical and volume control system. The water chemistry program relies on monitoring and control of water chemistry based on the guidelines of TR-105714 for primary water chemistry to manage the effects of crack initiation and growth due to SCC and cyclic loading. Verification of the effectiveness of the chemistry control program should be performed to ensure that crack initiation and growth are not occurring. The GALL Report recommends further evaluation to manage crack initiation and growth from SCC and cyclic loading for these systems 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 crack initiation and growth are not occurring and that the component's intended function will be maintained during the period of extended operation.

The GALL Report recommends that the water chemistry program be augmented by verifying the absence of cracking due to SCC and cyclic loading, or loss of material due to pitting and crevice corrosion. The GALL Report states that an acceptable verification program is to include temperature and radioactivity monitoring of the shell side water, and eddy current testing of tubes.

The applicant credited the primary and secondary water chemistry control program (AMP B.1.30.3) with minimizing cracking in the heat exchangers and providing for the inspection of systems when they are opened for maintenance. This inspection of opened systems is used to address the verification program recommendation in the GALL Report. The staff reviewed the primary and secondary water chemistry control program and concludes that is acceptable. Its evaluation is documented in Section 3.0.3.1 of this SER.

On the basis that the GALL Report recommends the water chemistry control program for managing SCC and cyclic loading, supplemented by a plant-specific program, the staff finds the use of the primary and secondary water chemistry control program acceptable. The inspection of these heat exchangers whenever they are opened for maintenance is an acceptable substitute for the one-time inspection of susceptible locations.

3.3.2.2.10 Reduction of Neutron-Absorbing Capacity and Loss of Material Due to General Corrosion

In Section 3.3.2.2.10 of the LRA, the applicant addressed reduction of neutron-absorbing capacity and loss of material due to general corrosion, which could occur in the neutron absorbing sheets of the spent fuel storage rack in the spent fuel storage.

Section 3.3.2.2.10 of the SRP-LR states that reduction of neutron-absorbing capacity and loss of material due to general corrosion could occur in the neutron-absorbing sheets of the spent fuel storage rack in the spent fuel storage. The GALL Report recommends further evaluation to ensure that these aging effects are adequately managed.

The applicant stated that it does not credit the sheets of neutron-absorbing materials affixed to the spent fuel racks with neutron absorption and stated that ANO-2 components are not subject to this aging effect. Because the sheets of the neutron-absorption materials affixed to the spent fuel racks are not credited with neutron absorption, the staff finds that this aging effect is not applicable to ANO-2.

3.3.2.2.11 Loss of Material Due to General, Pitting, Crevice, and Microbiologically Influenced Corrosion

In Section 3.3.2.2.11 of the LRA, the applicant addressed the potential for loss of material in buried piping of the service water and diesel fuel oil systems.

Section 3.3.2.2.11 of the SRP-LR states that loss of material due to general, pitting, and crevice corrosion and MIC could occur in the underground piping and fittings in the open-cycle cooling water system (SW system) and in the diesel fuel oil system. The buried piping and tanks inspection program relies on industry practice, frequency of pipe excavation, and operating experience to manage the effects of loss of material from general, pitting, and crevice corrosion and MIC. The effectiveness of the buried piping and tanks inspection program should be verified to evaluate an applicant's inspection frequency and operating experience with buried components, ensuring that loss of material is not occurring.

The applicant credited the buried piping inspection program (AMP B.1.4) for managing loss of material for buried components of the service water and diesel fuel oil systems. This is

consistent with GALL AMP XI.M34, “Buried Piping Inspection”. The staff reviewed the applicant's operating history and found that the frequency of pipe excavation was sufficient to manage the effects of loss of material. The staff reviewed the buried piping inspection program and concludes that it is acceptable. Its evaluation is documented in Section 3.0.3.2.2 of this SER.

Conclusion

On the basis of its review, for component groups evaluated in the GALL Report for which the applicant has claimed consistency with the GALL Report, and for which the GALL Report recommends further evaluation, the staff determined that the applicant adequately addressed the issues that were further evaluated. In addition, the staff reviewed the applicant's further evaluations against the criteria contained in Section 3.4.2.2 of the SRP-LR. The staff finds 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 during the period of extended operation, as required by 10 CFR 54.21(a)(3).

3.3.2.3 AMR Results that are Not Consistent with the GALL Report or Not Addressed in the GALL Report

Summary of Technical Information in the Application

In Tables 3.3.2-1 through 3.3.2-11 of the LRA, the staff reviewed additional details of the results of the AMRs for material, environment, aging effect requiring management, and AMP combinations that are not consistent with the GALL Report.

In Tables 3.3.2-1 through 3.3.2-11, the applicant indicated, via Note F through J, that neither the identified component nor the material and environment combination is evaluated in the GALL Report and provided information concerning how the aging effect require management will be managed.

Note F indicated that the material is not in the GALL Report for the identified component.

Note G indicated that the environment is not in the GALL Report for the identified component and material.

Note H indicated that the aging effect is not in the GALL Report for component, material, and environment combination.

Note I indicated that the aging effect in the GALL Report for the identified component, material, and environment combination is not applicable

Note J indicated that neither the identified component nor the material and environment combination is evaluated in the GALL Report.

Staff Evaluation

For component type, material and environment combination that are not evaluated in the GALL

Report, the staff reviewed the applicant's evaluation to determine whether the applicant had demonstrated that the effects of aging will be adequately managed so that the intended function will be maintained consistent with the CLB during the period of extended operation.

The staff evaluation is discussed below.

3.3.2.3.1 Spent Fuel Pool System Summary of Aging Management - Table 3.3.2-1

The staff reviewed Table 3.3.2-1 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the spent fuel pool system component groups.

The applicant proposed to manage loss of material for stainless steel and nickel-based alloy components exposed to treated, borated water by using only the primary and secondary water chemistry control program (AMP B.1.30.3). The applicant stated that stainless steel components to be managed this way include heat exchanger tubes, orifices, piping, pump casings, thermowells, tubing, and valves. Nozzles made of nickel-based alloy components are also to be managed with the water chemistry control program, as will the stainless steel cladding of a tank made of carbon steel. The staff reviewed the primary and secondary water chemistry control program and concludes that is acceptable. Its evaluation is documented in Section 3.0.3.1 of this SER.

The staff reviewed stainless steel and nickel-based alloy components exposed to treated, borated water. The staff concludes that since the effects of pitting and crevice corrosion on stainless steel and nickel-based alloy components are not significant in chemically treated borated water, inspection of selected components to verify the absence of loss of material is not required. On the basis that the primary and secondary water chemistry control program is consistent with the GALL Report, the staff finds this acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.2 Water Suppression Fire Protection System Summary of Aging Management Table 3.3.2-2

The staff reviewed Table 3.3.2-2 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the water suppression fire protection system component groups.

The applicant was asked to provide the technical basis for treating cast iron components (i.e., filter housing, heat exchanger housing, diesel engine cooling water subsystem components, and valves) in a manner similar to carbon steel components. The applicant's position is that the aging effects for carbon steel and cast iron that is not gray cast iron in this environment are the same. The staff finds that the use of an AMP considered acceptable to manage aging effects of carbon steel components is appropriate for cast iron components.

Additionally, the applicant stated that the aging effects for carbon steel and gray cast iron are the same except gray cast iron is susceptible to selective leaching. By letter dated March 24, 2004, the applicant stated that where selective leaching is possible, an additional program is credited unless the one specified program will manage selective leaching such as the diesel fuel monitoring and oil analysis programs. Selective leaching does not normally occur in air,

lube oil, or fuel oil due to the lack of an aqueous environment. In the LRA, the applicant stated that where cast iron components are gray cast iron and are exposed to an environment conducive to selective leaching, then they are managed by a periodic surveillance and preventive maintenance program, service water integrity program, or fire protection program that includes the management of loss of material due to selective leaching. On the basis that these programs manage the aging effects of selective leaching for gray cast iron components, the staff finds this acceptable.

The applicant's reference to the GALL Report, Volume 2, Item VII.H2.1-a, for copper-alloy valve components in treated water did not match the material, aging effect, and program cited. By letter dated March 24, 2004, the applicant stated that reference to the GALL Item VII.H2.1-a is not appropriate for "valve," and the correct note is 301 rather than "E" in Table 3.3.2-2 of the LRA (Page 3.3-43 of the LRA).

The staff reviewed the applicant's response and finds 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 during the period of extended operation.

In Table 3.3.2-2 of the LRA (Page 3.3-43), the applicant proposed to manage loss of material of copper-alloy valves exposed to lube oil using the oil analysis program (AMP B.1.17). Loss of material due to pitting corrosion is an applicable aging effect for copper-alloy materials in a lubricating oil environment at locations containing oxygenated water with contaminants such as halide ions, particularly chloride ions. In addition, loss of material due to galvanic corrosion in a lubricating oil environment can occur only when materials with different electrochemical potentials are in contact in the presence of water. Loss of material due to crevice corrosion can also occur in brass, bronze, and copper materials in a lubricating oil environment at locations containing oxygenated water. Oxygen is required for the initiation of crevice corrosion. Lube oil that is not contaminated with water does not contain oxygen in sufficient quantities for crevice corrosion to occur.

Water contamination of lubricating oil can occur and is required for the introduction of oxygen. However, only high-quality (water and contaminant free) lubricating oil is received and periodic sampling is performed to ensure the quality is maintained.

Loss of material due to microbiologically influenced corrosion is an applicable aging effect for brass and copper materials exposed to lubricating oil. The applicant treated the lubricating oil with biocides to limit the presence of microbiological organisms and, therefore, microbiologically influenced corrosion has not been a concern for those portions of the water suppression fire protection system that are within the scope of license renewal, and the associated materials exposed to lubricating oil.

On the basis of its audit and review, the staff finds that the applicant has demonstrated that the effects of aging of loss of material due to pitting, galvanic corrosion and crevice corrosion will be adequately managed by the oil analysis program so that the intended functions will be maintained consistent with the CLB during the period of extended operation.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.3 Emergency Diesel Generator System Summary of Aging Management -Table 3.3.2-3

The staff reviewed Table 3.3.2-3 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the EDG system component groups.

During the audit, the staff asked the applicant to justify, for emergency diesel generator heat exchanger shell component types in LRA Table 3.3.2-3 that are consistent with the GALL Report (LRA Note A), that the aging management program applied to carbon steel remains applicable to cast iron with a similar environment.

By letter dated March 24, 2004, the applicant stated that where selective leaching is possible, an additional program is credited unless the one specified program will manage selective leaching such as the diesel fuel monitoring and oil analysis programs. Selective leaching does not normally occur in air, lube oil, or fuel oil due to the lack of an aqueous environment. In its response, the applicant further stated that if cast iron components are gray cast iron and are exposed to an environment conducive to selective leaching, then they are managed by a periodic surveillance and preventive maintenance program, service water integrity program, or fire protection program that includes the management of loss of material due to selective leaching. On the basis that these programs manage the aging effects of selective leaching for gray cast iron components, the staff finds this acceptable.

The applicant credited the periodic surveillance and preventive maintenance program (AMP B.1.18) and not the service water integrity program (AMP B.1.24) for managing loss of material for components exposed to a raw water environment. The applicant agreed to add the service water integrity program for these components. By letter dated March 24, 2004, the applicant stated that the PSPM program manages loss of material for the emergency diesel generator heat exchanger bonnet in fresh raw water (page 3.3-51of the LRA) through periodic internal inspections during emergency diesel generator overhauls. In addition to the PSPM program, the service water integrity program is conservatively included as a program since it provides additional aging management of this component. On the basis that these programs manage the aging effects of loss of material for components exposed to a raw water environment, the staff finds this acceptable.

The applicant credited the periodic surveillance and preventive maintenance program (AMP B.1.18) and not the auxiliary systems water chemistry control program (AMP B.1.30.1) for managing loss of material for components internally exposed to a treated-water environment. The applicant agreed that the auxiliary water chemistry control program should have been credited for bonnet and shell components internally exposed to a treated water environment, which is acceptable to the staff. By letter dated March 24, 2004, the applicant stated that the auxiliary systems water chemistry control program applies to the emergency diesel generator heat exchanger bonnet and shell in treated water (page 3.3-51 of the LRA) rather than the PSPM program. On the basis that this program manages the aging effects of loss of material for components internally exposed to a treated water environment, the staff finds this acceptable.

The applicant credited the auxiliary systems water chemistry control program (AMP B.1.30.1) to manage loss of material of carbon steel heater housing and orifice, carbon and stainless steel piping, emergency diesel generator pump casing and tank, tubing, and valves in an internally

treated water environment. This is consistent with Item VII.H2.1-a of the GALL Report with a different AMP credited than the GALL AMP XI.M21, closed-cycle cooling water system. If this is the case, LRA Note D should be changed to LRA Note E. By letter dated March 24, 2004, the applicant stated that reference to LRA Note D is not appropriate for the emergency diesel generator heater housing and orifice (page 3.3-54 of the LRA), the carbon and stainless steel piping (page 3.3-56 of the LRA), the emergency diesel generator pump casing and tank (page 3.3-57 of the LRA), tubing (page 3.3-59 of the LRA), and valve (page 3.3-61 of the LRA) in treated water. The correct note is LRA Note E. The staff finds the applicant's response acceptable and consistent with the LRA Notes.

In the case of a copper-alloy lubricator housing exposed to air, the applicant identified no aging effect. On the basis of the staff's evaluation that copper-alloy components exposed to air have no aging effects, the staff concludes that this is acceptable.

The staff reviewed the emergency diesel generator system stainless steel components exposed to an air environment. The staff observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.4 Alternate AC Diesel Generator System Summary of Aging Management Table 3.3.2-4

The staff reviewed Table 3.3.2-4 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the alternate AC diesel generator system component groups.

During the audit, the applicant was asked to provide a technical basis for treating cast iron components in the diesel engine cooling water subsystem in a manner similar to carbon steel components. The applicant's position is that the aging effects for carbon steel and cast iron in this environment are the same. The staff agrees that use of an AMP considered acceptable for carbon steel is appropriate for these components.

The staff identified a discrepancy in the classification of AMRs where water chemistry control programs are used: LRA Note B and LRA Note D were assigned when LRA Note E is more appropriate. By letter dated March 24, 2004, the applicant stated that reference to "water chemistry control" for the alternate AC diesel generator stainless steel expansion joint in treated water (page 3.3-67 of the LRA) in Table 3.3.2-4 means the auxiliary systems water chemistry control program. In addition, wherever LRA Notes B or D were used in Tables 3.3.2-3 and 3.3.2-4 with the auxiliary systems water chemistry control program as an AMP, LRA Note E should have been used since the auxiliary systems water chemistry control program is the water chemistry control program for treated water, and it is a plant-specific program. Based on the review of the applicant's response, the staff finds that these corrections are consistent with the LRA note classifications and are acceptable.

The staff reviewed the alternate AC diesel generator system stainless steel components

exposed to an air environment. The staff has observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.5 Chemical and Volume Control System Summary of Aging Management Table 3.3.2-5

The staff reviewed Table 3.3.2-5 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the chemical and volume control system component groups.

For the chemical and volume control system pump casing, cracking-fatigue is identified as an aging effect managed with the periodic surveillance and preventive maintenance program (AMP B.1.18). This aging effect is not included in the detection of aging effects program element description in Appendix B, Section B.1.18 of the LRA. By letter dated March 24, 2004, the applicant stated that cracking-fatigue is identified as an aging effect for the chemical and volume control system pump casing (page 3.3-84 of the LRA) in Table 3.3.2-5 with the PSPM program as an AMP. Cracking-fatigue should be included as an aging effect for the chemical and volume control system charging pumps in the “detection of aging effects” program element of Appendix B, Section B.1.18 of the LRA. Based on the its review of the applicant’s response, the staff finds the correction to the “detection of aging effects” program element for the PSPM AMP acceptable.

The staff reviewed the chemical and volume control system stainless steel components exposed to an air environment. The staff has observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

For the management of cracking in the stainless steel regenerative heat exchanger exposed internally to treated borated water > 270° F (page 3.3-83 of the LRA), the applicant credited the water chemistry control program.

The GALL Report, Volume 2, Item Number VII.E1.7-c calls for augmentation of water chemistry control by verification that cracking is absent using temperature and radioactivity monitoring of the shell-side water, and eddy-current testing of tubes. The applicant responded that the heat exchanger tubes are not required to satisfy the pressure boundary function of the regenerative heat exchanger. On this basis, the staff finds this to be acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.6 Halon Fire Protection and RCP Motor Oil Leakage Collection System Summary of Aging Management - Table 3.3.2-6

The staff reviewed Table 3.3.2-6 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the halon fire protection and reactor coolant pump motor oil leakage collection system component groups.

The staff reviewed the halon fire protection and RCP motor oil leakage collection system stainless steel components exposed to an air environment. The staff has observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.7 Fuel Oil System Summary of Aging Management -Table 3.3.2-7

The staff reviewed Table 3.3.2-7 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the fuel oil system component groups.

The applicant was asked to provide a technical basis for treating cast iron components in the fuel oil system in a manner similar to carbon steel components. The applicant's position is that the aging effects for carbon steel and cast iron in this environment are the same. The staff agrees that use of an AMP considered acceptable for carbon steel is appropriate for these components.

The applicant credited the system walkdown program (AMP B.1.28) to manage the aging effects of loss of material of heat exchangers (tubes) made of carbon steel with aluminum fins in external air. In Note 302 of the table, the applicant states that the aging effect only applies to the carbon steel portion of the component. The staff finds that aluminum is corrosion resistant in dry air environment and that there are no applicable aging effects requiring aging management. On that basis, the staff finds it acceptable.

The staff reviewed the fuel oil system stainless steel components exposed to an air environment. The staff has observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.8 Service Water System Summary of Aging Management - Table 3.3.2-8

The staff reviewed Table 3.3.2-8 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the SW system component groups.

During the audit, the staff asked the applicant to justify, for service water system component types in LRA Table 3.3.2-8 that are consistent with the GALL Report (LRA Note A), that the aging management program applied to carbon steel remains applicable to cast iron with a similar environment.

By letter dated March 24, 2004, the applicant stated that where selective leaching is possible, an additional program is credited unless the one specified program will manage selective leaching such as the diesel fuel monitoring and oil analysis programs. Selective leaching does not normally occur in air, lube oil, or fuel oil due to the lack of an aqueous environment. In its response, the applicant further stated that if cast iron components are gray cast iron and are exposed to an environment conducive to selective leaching, then they are managed by a periodic surveillance and preventive maintenance program, service water integrity program, or fire protection program that includes the management of loss of material due to selective leaching. On the basis that these programs manage the aging effects of selective leaching for gray cast iron components, the staff finds this acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.9 Auxiliary Building Ventilation System Summary of Aging Management - Table 3.3.2-9

The staff reviewed Table 3.3.2-9 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the auxiliary building ventilation system component groups.

The staff reviewed the auxiliary building ventilation system component groups exposed to an air environment. The staff has observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.10 Control Room Ventilation System Summary of Aging Management - Table 3.3.2-10

The staff reviewed Table 3.3.2-10 of the LRA, which summarizes the results of AMR evaluations in the SRP-LR for the control room ventilation system component groups.

The staff reviewed the control room ventilation system stainless steel components exposed to an air environment. The staff observed that stainless steel components exposed to air/gas, containment air, indoor air (not air-conditioned), and outdoor environments show no aging effect. An air/gas environment is not identified in the GALL Report for these components and materials. The staff finds that no aging effects are applicable, and on that basis the staff finds that the absence of an AMP for stainless steel components exposed to air is acceptable.

<Additional Evaluation To Be Provided by DE/EMCB >

3.3.2.3.11 Miscellaneous Systems in Scope for 10 CFR 54.4(a)(2) Summary of Aging Management - Table 3.3.2-11

The staff reviewed Table 3.3.2-11 of the LRA, which summarized the results of AMR evaluations in the SRP-LR for the miscellaneous systems in scope for 10 CFR 54.4(a)(2) component groups.

The project team's scope of AMR evaluations for LRA Table 3.3.2-11 did not include AMR line items not consistent with the GALL Report.

<Evaluation To Be Provided by DE/EMCB >

Conclusion

On the basis of its review, the staff finds that the applicant appropriately evaluated AMR results involving material, environment, aging effect requiring management, and AMP combinations that are not evaluated in the GALL Report. The staff finds 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, as required by 10 CFR 54.21(a)(3).

3.3.3 Conclusion

The staff concluded that the applicant provided sufficient information to demonstrate that the effects of aging for the auxiliary system components that are within the scope of license renewal and subject to an AMR will be adequately managed so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).