COOPER NUCLEAR STATION LICENSE RENEWAL
REQUEST FOR ADDITIONAL INFORMATION

RAI 4.2-3

Data in Table 4.2-3 Cooper Nuclear Station (CNS) Equivalent Margin Analysis

The license renewal application (LRA) states in Table 4.2-3, "CNS Equivalent Margin Analysis for Lower-Intermediate Circumferential Weld (1-240) for 54 EFPY," that the 54 EFPY fluence at ¼ of the thickness of the RPV wall (¼ T) for the limiting beltline weld is 1.07E+17 n/cm^2 (E > 1.0 MeV). Tables 4.2-2 and 4.2-1 show a value of 1.07E+18 n/cm^2 for the ¼ T fluence at 54 EFPY for the same weld. Please confirm that this entry into Table 4.2-3 is a typographical error and should read 1.07E+18 n/cm^2 (E > 1.0 MeV) or explain the difference between the values in the tables mentioned.

RAI B.1.22-3

Background
LRA Section B.1.22, "Metal-Enclosed Bus," states that this is a new program implemented consistent with GALL Report Aging Management Program (AMP) XI.E4, "Metal Enclosed Bus," with an exception to inspect the external portions of the bus under GALL Report AMP XI.E4. GALL Report AMP XI.E4, Program Element "Detection of Aging Effects," specify inspection frequencies for testing and alternative visual inspection of metal-enclosed bus bolted connections. NUREG-1800 Revision 1, Table 3.6.2, "FSAR Supplement for Aging Management of Electrical and Instrumentation and Control Systems," also identifies the testing and alternative visual inspection test frequencies specified by GALL Report AMP XI.E4.

Issue
LRA Appendix A, Section A.1.1.22, "Metal-Enclosed Bus Inspection Program," USAR supplement for AMP B.1.22 does not specify the frequency of inspection as described in GALL AMP XI.E4 and NUREG-1800 Revision 1, Table 3.6.2,

Request
Revise LRA Appendix A, Section A.1.1.22 to include the testing and alternative visual inspection test frequencies as identified by GALL Report AMP XI.E4 and NUREG-1800 Revision 1, Table 3.6.2, "FSAR Supplement for Aging Management of Electrical and Instrumentation and Control Systems, Metal Enclosed Bus Program."

RAI B.1.13-3

Background
LRA Section B.1.23, "Environmental Qualification (EQ) of Electric Components," states that this is an existing program implemented consistent with GALL Report AMP X.E1, "Environmental Qualification (EQ) of Electric Components," GALL Report AMP X.E1 and LRA Section B.1.13 program descriptions include EQ reanalysis attributes. LRA Chapter 4.0, Time-Limited Aging Analysis, Section 4.4, "Environmental Qualification (EQ) of Electric Equipment," also states that the EQ program is an existing program that is consistent with GALL Report AMP X.E1 and that the aging effects associated with TLAA for EQ of electric equipment will be managed for the period of extended operation in accordance with 10 CFR 54.21(c)(1)(iii). NUREG-1800 Revision 1, Table 4.4.2, "Examples of FSAR Supplement for Environmental Qualification of Electrical Equipment TLAA Evaluation," also shows that an EQ program implementation that is in accordance with 10 CFR 54.21(c)(1)(iii) includes reanalysis attributes in the FSAR supplement description.

Issue
The applicant's USAR supplements included in LRA Appendix A, Section A.1.1.13, "Environmental Qualification (EQ) of Electric Components Program," and Section A.1.2.3, "Environmental Qualification of Electrical Components," do not include reanalysis attributes as shown in LRA Section B.1.23, GALL Report AMP X.E1 and SRP Table 4.4.2.

Request
Provide the reanalysis attributes as per NUREG-1800 Revision 1, "Examples of FSAR Supplement for Environmental Qualification of Electrical Equipment TLAA Evaluation," and GALL Report AMP X.E1.

RAI 2.3.2.1-1

Residual Heat Removal

LRA pages 11 and 12 read:

> "Appropriate LRA drawings for the systems were reviewed to identify safety-to-nonsafety interfaces. Nonsafety-related components connected to safety-related components were included to the first seismic anchor or base-mounted component. A seismic anchor is defined as hardware or structures that, as required by the analysis, physically restrain forces and moments in three orthogonal directions. Scope was typically determined by the bounding approach, which included piping beyond the safety-to-nonsafety interface up to a base-mounted component, flexible connection, or the end of a piping run (such as a vent or drain line). Also, piping isometrics were used to identify seismic anchors when required to establish scope boundary."

On LRA-2040-SH01 in zones B/C/D-8/9/10 valve RHR-27 is highlighted/color coded red for reactor coolant pressure boundary while the downstream pipe and valve RHR-28 are highlighted yellow (non-safety related affecting safety related). RHR-29 and RHR-30 are similarly highlighted. However, RHR-24 and RHR-25 are both highlighted in red while the piping downstream of RHR-25 is highlighted yellow. In zone C-9 drain valve RHR-297 downstream piping is highlighted red as being in scope as safety related. The drain lines downstream of most other drain valves are highlighted in yellow as being in scope as non-safety related affecting safety related. Please explain the scoping basis (safety related reactor coolant system pressure boundary or non-safety related affecting safety related) for inclusion of these and similar drain/vent/test connection valves and downstream piping?

RAI 2.3.2.1-2

Residual Heat Removal

Drawing LRA-2040-SH02 shows in zone H-2 the line downstream of MO-57 to be highlighted aqua/cyan for inclusion as residual heat removal safety related while the code boundary flag shows this section of line to be "NC". Is this section of pipe included in scope because it is safety related or non-safety related affecting safety related?

RAI 2.3.2.7-1

Primary Containment

Drawing LRA-2084 shows instrument lines to PT-2104A and PI-2104AG at zone A-3 branching off an instrument line from penetration X-40A with root valve NBI-49. Drawing LRA-2026-SH01 shows NBI-49 as being the root valve for a Jet Pump 6 flow instrument line. Should the valve identified as NBI-49 shown on LRA-2084 actually be shown as PC-49 as it is shown on drawing LRA-2026-SH01?

RAI 2.3.2.7-2

Primary Containment

Drawing LRA-2084 shows a spare instrument line connection with isolation valve PC-426 at zone B-7 branching off an instrument line from penetration X-40D with root valve NBI-63. Drawing LRA-2026-SH01 shows NBI-63 as being the root valve for a Jet Pump 11 flow instrument line. Should the valve identified as NBI-63 shown on LRA-2084 actually be shown as PC-63 as it is shown on drawing LRA-2026-SH01?

RAI 2.3.2.7-3

Primary Containment

Drawing LRA-2022-SH01 shows at zones E-3/4 an instrument line with isolation valve PC-370 to a PI-3063 on electrical penetration X-101E. This line is not highlighted as being in scope as safety related or non-safety related affecting safety related. The code boundary flag associated with PC-370 appears to show this line as class 2. The lines containing PC-542 and PC-541 from the drywell personnel airlock are color coded as being in scope with the primary containment. Are the pressure gage and test connection instrument lines on this (and similarly for other) electrical penetrations in scope?

RAI 2.3.3.8-1

Heating, Ventilation and Air Conditioning

Drawing LRA-2024-SH02 shows the H&V Units 1-HV-DG-1A and 1-HV-DG-1B enclosures and associated inlet ducting and damper and exhaust ducting are not highlighted as being in scope. The USAR description indicates that these units normally operate continuously and does not indicate that they are shutdown when the larger H&V units (1-HV-DG-1C and 1-HV-DG-1D) start. The exhaust air flow shown on the drawing appears to be the sum of both the large and small H&V units supply flow. Are these smaller H&V units credited for maintaining acceptable diesel generator room temperatures when the diesels are operating? Could there be any failure of the housing/ducting/dampers associated with these smaller diesel generator room H&V units that could result in a diversion/disruption of adequate airflow/cooling of the diesel generator rooms when the diesels are operating?

RAI 2.3.3.8-2

Heating, Ventilation and Air Conditioning

Drawing LRA-2024-SH02 in zones G/H-6/7 shows a cooling coil condensation/leakage drain line from the 1-HV-DG-1D H&V Unit as not being highlighted as being in scope while the sister unit 1-HV-DG-1C has its cooling coil drain line highlighted as being in scope due to non-safety related affecting safety related. Please explain the difference in scoping of these drain lines.

RAI 2.3.3.8-3

Heating, Ventilation and Air Conditioning

Drawing LRA-2018 in zones H/J-6/7 shows the battery rooms non-essential exhaust subsystem not highlighted as being in scope. Could there be any failure of the ducting/dampers in this non-essential subsystem that could result in a diversion/disruption of adequate airflow in the essential control building HVAC system?

RAI 2.3.3.14-1

Auxiliary Systems in Scope for 10 CFR 54.4(a)(2)

Drawing LRA-2012-SH01 at grid location B-2 shows a valve ACD-23 and section of downstream line as not being highlighted as in scope while the line it connects to is highlighted as being in scope. The note in red next to the valve reads “AC UNIT ISOLATED”. Is ACD-23 the boundary between the AC Unit and the drain line and if so, should it be highlighted as being in scope?

RAI 2.3.3.14-2

Auxiliary Systems in Scope for 10 CFR 54.4(a)(2)

Drawing LRA-2004-SH02 in zone B-8 shows a 2” flanged Tee and downstream flanged spool piece highlighted as being in scope that has a Note “TEE FOR PRE-OP CHEMICAL FLUSH, DURING NORMAL OPERATION REMOVE TEE & BLIND FLANGE ENDS.” Is this TEE and this spool piece normally removed as the note suggests and are the blind flanges that would “normally” be installed included in scope?

RAI 2.3.3.14-3

Auxiliary Systems in Scope for 10 CFR 54.4(a)(2)

Drawing LRA-2042-SH01 in zone B-4 shows the 6” RWCU line from MO-18 out to flow element FE-170 and the ¾” instrument lines associated with FE-170 highlighted red as being in scope as part of the reactor coolant system boundary. The drawing shows the code boundary to be at MO-18. Please confirm that these components are in scope as being part of the reactor coolant system boundary rather than non-safety related affecting safety related.

RAI 2.3.3.14-4

Auxiliary Systems in Scope for 10 CFR 54.4(a)(2)

Drawing LRA-2027-SH01 in zones A/B-3 shows the line between test connection valves RR-41 and RR-42 as well as RR-42 as not being highlighted as being in scope. This seems to be at variance with similar configurations where the scope boundary extends outboard of the first test, vent, drain line valve to a second valve, cap or flange. Please explain the scoping rationale for not including the test connection line past RR-42.

RAI B.1.7-5

Regarding the exception to the Boiling Water Reactor (BWR) Stress Corrosion Cracking (SCC) AMP

<u>Background</u>
In LRA Appendix B Section B.1.7, the applicant stated that the BWR Stress Corrosion Cracking Program has an exception to the GALL Report. The applicant stated that the exception is that the scope of welds selected for examination is based on risk-informed inservice inspection (RI-ISI) methodology approved by the NRC as well as NRC GL 88-01 and the RI-ISI methodology creates a different inspection schedule for GL 88-01 Category A welds than that delineated in GL 88-01.

In addition, the applicant stated that the applicant’s RI-ISI methodology provides an acceptable level of quality and safety and in order to continue the alternative in subsequent intervals during the period of extended operation (beyond the fourth 10-yr interval) approval must be obtained in accordance with 10 CFR 50.55a.

Issue
With or without modifications allowed by BWRVIP-75-A, GL 88-01 requires a specific inspection extent and schedule for Category A welds depending on the water chemistry of reactor coolant. The staff requests the following information to evaluate whether the applicant's methodology is adequate in comparison with GL 88-01.

Request

1. Confirm whether only Category A welds may have a different inspection extent and schedule in the applicant's program when the program is compared with GL 88-01. If the RI-ISI methodology affects any other GL 88-01 inspection category welds in terms of inspection extent and schedule, clarify what categories are affected by the RI-ISI methodology.

2. Provide what actions will be taken in the applicant's program if the extent and schedule of the affected categories, which were identified in the first request, do not meet the requirements of GL 88-01. Provide the justification why the applicant's actions are adequate for the aging management of stress corrosion cracking in the stainless steel and nickel alloy components.

RAI B.1.7-6

BWR SCC AMP Scope over Class 1 versus Non-Class 1

Background
In LRA Table 3.1.2-3 for the components in the reactor coolant pressure boundary, the applicant addressed AMR items of non-Class 1 flow element, instrument line snubber, piping and fittings, tubing and valve body made of stainless steel that are subject to stress corrosion cracking (SCC) in a treated water (> 140 °F) environment in relation to Table 1 item 3.2.1-8. The LRA Table also indicated that the non-Class 1 components are less than 4 inches NPS and are not the part of the pressure boundary as described by Plant-Specific Note 105.

Although the applicant stated that the components are less than 4 inches NPS, the staff was concerned that if the BWR Stress Corrosion Cracking Program is not credited for non-Class 1 components with a nominal diameter of 4 inches or larger, the aging management approach might be in potential conflict with the requirements of GL 88-01 and BWRVIP-75-A as cited in the GALL Report BWR Stress Corrosion Cracking Program that applies to relevant BWR components regardless of ASME Code classification including non-Class 1 components.

Issue
In addition, in LRA Appendix B Section B.1.7, the applicant stated that the BWR Stress Corrosion Cracking Program of the applicant manages SCC and its effect on the reactor coolant pressure boundary components and in LRA Section 2.3.1.3, the applicant stated that the major components of the reactor coolant pressure boundary include the reactor vessel, recirculation loops and the Class 1 portions of various systems connected to the reactor vessel. The statements of the applicant suggest that the applicant's BWR SCC program mainly manages SCC and its effect for Class 1 components only.

Request

1. Clarify whether the applicant's program manages SCC and its effect on non-Class 1 components as well as Class 1 components.

2. Clarify whether the CNS has non-Class 1 components that are subject to the scope of the GALL Report BWR SCC Program in conjunction with GL 88-01.

3. If the CNS has non-Class 1 components under the scope of the GALL Report BWR SCC Program in conjunction with GL 88-01 and the applicant's BWR SCC Program does not manage the aging effect of the non-Class 1 components, clarify what aging management program is used to manage SCC and its effect on non-Class 1 components and provide the justification why a different program is used for the aging management.

RAI 3.1.2.1-1

ESF and Aux. systems

Background
In LRA Table 3.1.2-3, the applicant addressed the AMR items of stainless steel piping, piping components and piping elements that are part of the reactor coolant boundary and are subject to SCC in a treated water (> 140 °F) environment.

In LRA Table 3.2.2-1, 3.2.2-8-1, 3.2.2-8-3 and 3.2.2-8-4, the applicant also addressed the AMR items of stainless steel piping, piping components and piping elements in the engineered safety features system that are subject to SCC in a treated water (> 140 °F) environment.

Similarly, in LRA Tables 3.3.2-2, 3.3.2-14-3, 3.3.2-14-13, 3.3.2-14-16 and 3.3.2-14-21, the applicant addressed the AMR items of stainless steel piping, piping components and piping elements in the auxiliary systems that are subject to SCC in a treated water (> 140 °F) environment.

In LRA Table 3.2.1, item 3.2.1-18 related to the AMR items of the reactor coolant pressure boundary and engineered safety features system and LRA Table 3.3.1, item 3.3.1-38 related to the AMR items of the auxiliary systems, the applicant stated that the BWR Water Chemistry Control – BWR Program is used to manage the aging effect and the effectiveness of the programs will be confirmed by the One-Time Inspection Program.

However, in LRA Table 3.1.2-3, 3.2.2-1, 3.2.2-8-1, 3.2.2-8-3, 3.2.2-8-4, 3.3.2-2, 3.3.2-14-3, 3.3.2-14-13, 3.3.2-14-16 and 3.3.2-14-21, the detailed AMR items credited only the Water Chemistry Control – BWR Program with no additional note for the One-Time Inspection Program in contrast to the statements in LRA Table 3.2.1, item 3.2.1-18 and in LRA Table 3.3.1, item 3.3.1-38.

Issue
It is not clear whether the One-Time Inspection will be used in conjunction with the Water Chemistry Control – BWR Program to manage the aging effect of the AMR items for the reactor coolant pressure boundary, engineered safety features system and auxiliary systems, respectively.

Request
Clarify whether the One-Time Inspection will be used in conjunction with the Water Chemistry Control – BWR Program to manage the aging effect of the AMR items for the reactor coolant pressure boundary, engineered safety features system and auxiliary systems, respectively.

RAI 3.1.2.1-2

Background
In LRA Table 3.1.2-3 (page 3.1-54), the applicant addressed the stainless steel piping, piping elements and piping components in the control rod drive system that are the part of the reactor pressure boundary and are subject to stress corrosion cracking in a treated water environment (> 140 F). The applicant credited the Inservice Inspection – ISI Program and Water Chemistry Control – BWR Program for the aging management. The applicant also indicated that the consistency note for the AMR item is Note E, which means that the AMR item is consistent with the GALL Report in terms of component, material, environment and aging effect, but a different aging management program is credited for the aging management.

Issue
It is not clear why the applicant did not credit the BWR Stress Corrosion Cracking Program even though the AMR item is regarded to be included in the program scope.

Request
Clarify why this AMR item of the CRD system did not credit the BWR Stress Corrosion Cracking although this item is regarded to be included in the scope of the BWR SCC program. Provide the justification why the Inservice Inspection Program in conjunction with the water chemistry control program can provide adequate aging management for the AMR item.

RAI 3.2.2.3-1

Background
In LRA Tables 3.2.2-4 and 3.2.2-5, the applicant addressed the AMR items of stainless steel flex hose, tubing, valve body, piping and restriction orifice in the engineered safety features (ESF) system that are subject to cracking in a lubricating oil environment.

In LRA Table 3.3.2-4, the applicant also addressed the AMR items of stainless steel restriction orifice, thermowell, tubing and valve body in the auxiliary systems that are subject to cracking in a lubricating oil environment.

The applicant credited the Oil Analysis Program to manage the cracking. However, the applicant did not provide the aging mechanisms associated with the aging effect.

Issue
The applicant did not provide the aging mechanism of cracking that the staff needs to know in order to evaluate the adequacy of the applicant's aging management program.

Request
As for each of the systems (ESF and auxiliary systems): Clarify what aging mechanism causes the stainless steel cracking in the lubricating oil environment. Provide the justification why the Oil Analysis Program can adequately manage the aging effect.

RAI 3.2.2.1-2

Carbon Steel

Background
SRP-LR and LRA Table 3.2.1-32 address the loss of material due to general corrosion from the internal surfaces of steel piping, piping components, and piping elements exposed to uncontrolled indoor air. The applicant proposes to manage this aging process through the use of its aging management program "External Surfaces Monitoring" (LRA B.1.14). The GALL Report recommends that this aging process be managed through the use of the aging management program "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" (GALL Report Volume 2 Chapter XI.M38). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.2.1-32 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its review of LRA Table 3.2.1-32 the staff noted that the component being considered is the internal surface of piping and ducting. The staff also noted that the aging management program proposed by the applicant is primarily designed to monitor the condition of external surfaces. The staff further noted that the prediction of internal corrosion based on monitoring external surfaces of the same component is possible only when the interior and exterior environments are identical. Lastly the staff noted that sufficient information was not provided in the application to permit a determination that the interior and exterior environments of the components under consideration were identical.

Request
Please select an aging management program designed to monitor the internal surfaces of piping and ducting exposed to uncontrolled indoor air or justify why an external inspection is appropriate to manage the aging of internal corrosion. Justification should be sufficient to demonstrate that the environments are identical in terms of items such as coatings, temperature, velocity, humidity, and contaminants.

RAI 3.2.2.1-3

Background
LRA and SRP Tables 3.2.1-32 address the loss of material due to general corrosion from the internal surfaces of steel piping, piping components, and piping elements exposed to uncontrolled indoor air. The applicant proposes to manage this aging process through the use of its aging management program "Fire Protection" (LRA B.1.16). The GALL Report recommends that this aging process be managed through the use of the aging management program "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components" (GALL Report Vol. 2 XI.M38). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.2.1-32 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its review of LRA Table 3.2.1-32 the staff noted that the aging effect being considered is the loss of material due to general corrosion on the internal surface of piping and ducting. The staff also noted that the scope of the proposed aging management program does not include either the internal surfaces of piping in ducting or detection of loss of material due to general corrosion.

Request
Please select an aging management program with a scope which includes detecting loss of material due to general corrosion on the internal surfaces of piping and ducting exposed to uncontrolled indoor air or justify how the currently proposed aging management program will adequately address the corrosion of the components under consideration.

RAI 3.2.2.1-6

Background
LRA and SRP Tables 3.3.1-58 address the loss of material due to general corrosion from the external surfaces of steel components exposed to uncontrolled indoor air, outdoor air, and condensation. The applicant proposes to manage this aging process through the use of its aging management program "Fire Protection" (LRA B.1.16). The GALL Report recommends that this aging process be managed through the use of the aging management program "External Surfaces Monitoring" (GALL Report Volume 2 Chapter XI.M36). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.3.1-58 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its review of LRA Table 3.3.1-58 the staff noted that the aging effect being considered is the loss of material due to general corrosion on the external surface of steel components. The staff also noted that the scope of the proposed aging management program does not include the detection of loss of material due to general corrosion.

Request
Please select an aging management program with a scope which includes detecting loss of material due to general corrosion on external steel surfaces exposed to uncontrolled indoor air, outdoor air, or condensation or justify how the currently proposed aging management program will adequately address the corrosion associated with these components.

RAI 3.2.2.1-7

Background
LRA and SRP Tables 3.3.1-71 address the loss of material due to general, pitting, and crevice corrosion from the internal surfaces of steel piping, piping components, and piping elements exposed to moist air or condensation. The applicant proposes to manage this aging process through the use of its aging management program “Periodic Surveillance and Preventive Maintenance” (LRA B.1.31). The GALL Report recommends that this aging process be managed through the use of the aging management program “Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components” (GALL Report Volume 2 Chapter XI.M38). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.3.1-71 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its review of LRA Table 3.3.1-71 the staff noted that the proposed and recommended aging management programs appear to differ in how many components are inspected and the frequency of that inspection. The proposed program appears to indicate that a sample of sufficient size to provide 90% confidence that 90% of the components will not degrade will be inspected every 5 years. The recommended program indicates that all components will be inspected whenever the component is accessible. Based on the difference in the sample size outlined above it is not clear to the staff that the same level of inspection is provided by the proposed AMP when compared with the AMP recommended by the GALL Report.

Request
Please demonstrate that the level of inspection provided by the proposed aging management program is equivalent to that provided by the recommended aging management program.

RAI 3.4.2.1-2

Background
LRA and SRP Tables 3.4.1-30 address the loss of material due to general, crevice and pitting corrosion from the internal surfaces of steel piping, piping components, and piping elements exposed to outdoor air or condensation. The applicant proposes to manage this aging process through the use of its aging management program “External Surfaces Monitoring” (LRA B.1.14). The GALL Report recommends that this aging process be managed through the use of the aging management program “Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components” (GALL Report Volume 2 Chapter XI.M38). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.4.1-30 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its review of LRA Table 3.4.1-30 the staff noted that the component being considered is the internal surface of steel piping. The staff also noted that the aging management program proposed by the applicant is primarily designed to monitor the condition of external surfaces. The staff further noted that the prediction of internal corrosion based on monitoring external

surfaces of the same component is possible only when the interior and exterior environments of that component are identical. Lastly the staff noted that sufficient information was not provided in the application to permit a determination that the interior and exterior environments of the components under consideration are identical.

Request
Please select an aging management program designed to monitor the internal surfaces of steel piping exposed to outdoor air or condensation or justify why an external inspection is appropriate to manage internal corrosion. Justification should be sufficient to demonstrate that the environments are identical in terms of items such as coatings, temperature, velocity, humidity, and contaminants.

RAI 3.4.2.1-3

Background
LRA and SRP Tables 3.4.1-32 address the loss of material due to pitting, crevice, and microbiologically influenced corrosion of stainless steel piping, piping components, and piping elements exposed to raw water. The applicant proposes to manage this aging process through the use of its aging management program "One Time Inspection" (LRA B.1.29). The GALL Report recommends that this aging process be managed through the use of the aging management program "Open Cycle Cooling Water System" (GALL Report Vol. 2 XI.M20). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.4.1-32 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its consideration of these aging management review items the staff notes that the One Time Inspection AMP is designed to be used when the environment to which a system, structure or component is exposed is invariant with time, for example treated water systems where the water chemistry is frequently monitored and carefully controlled. In such systems, the lack of prior corrosion may be an indicator that future corrosion will not occur. Raw water systems cannot be considered to be invariant with time in terms of chemistry or microbiology. Since stainless steel is highly susceptible to microbiological corrosion and since microbiological corrosion can occur rapidly, the absence of past corrosion cannot be considered a reliable predictor of future corrosion. The staff also notes that the structures, systems, and components under consideration appear to be subject to Generic Letter 89-13 and that a one time inspection of these components appears to be inconsistent with the requirements of the Generic Letter.

Request
Please propose a program to manage the aging of the components under consideration which is consistent with Generic Letter 89-13, which recognizes the variability of the chemistry and microbiology of raw water, and which acknowledges the inability to use past corrosion performance as an indicator of future corrosion under such circumstances.

RAI 3.3.2.3-1

Background
LRA Table 3.3.2-1 addresses the loss of material from the internal surfaces of the phenolic coated carbon steel accumulator in the standby liquid control system which is exposed to sodium pentaborate solution. The applicant proposes that this combination of material, environment and component is not contained in the GALL Report. The applicant acknowledges that corrosion for this material and environment combination is possible and proposes to manage that corrosion through the use of their plant-specific Aging Management Program "Periodic Surveillance and Preventive Maintenance". The applicant further states that the phenolic coating is not credited as part of the management of aging. Based on this statement, the staff considered the efficacy of the proposed aging management program relative to bare carbon steel material exposed to sodium pentaborate solution.

Issue
In its review of LRA Table 3.3.2-1 the staff noted that, for sodium pentaborate solutions exposed to stainless steel components, the GALL Report states that aging in the form of loss of material may occur and that this aging may be managed through a combination of the aging management programs "Water Chemistry – BWR" (GALL Volume 2, Chapter XI.M2) and "One Time Inspection" (GALL Volume 2, Chapter XI.M2). Given that the probability of corrosion for bare carbon steel in sodium pentaborate solutions is greater than for stainless steel, the staff believes that the aging management program used should be more comprehensive than that proposed for stainless steel. The staff also noted that the water chemistry program recommended by the GALL Report will be able to detect changes in the sodium pentaborate solution which may affect its corrosivity and will be able to detect soluble corrosion products in the solution.

Request
propose an aging management program containing periodic inspections and water chemistry analyses or to justify how the existing program, which does not appear to include water chemistry measurements, will adequately manage corrosion of the carbon steel accumulator.

RAI 3.3.2.1-1

Background
LRA and SRP Tables 3.3.1-53 address the loss of material due to general and pitting corrosion from the internal surfaces of steel piping, piping components, and piping elements exposed to condensation in the compressed air system. The applicant proposes to manage this aging process through the use of its aging management program "Periodic Surveillance and Preventive Maintenance" (LRA B.1.31). The GALL Report recommends that this aging process be managed through the use of the aging management program "Compressed Air Monitoring" (GALL Report Volume 2 Chapter XI.M24). The proposed aging management program is not consistent with the aging management program proposed by the GALL Report. As a result, the applicant proposes that the aging management review items associated with Table 3.3.1-53 are consistent with the GALL Report in terms of material, environment, and aging effect but a different aging management program is credited (generic note E).

Issue
In its review of LRA Table 3.3.1-53 the staff noted that the proposed aging management program includes the internal inspection of a single containment penetration associated with the compressed air system. The staff also noted that the aging management program recommended by the GALL Report is much more comprehensive including inspection, testing, and preventive maintenance. Given the difference in the programs, the staff questions the effectiveness of the proposed program.

Request
Please select an aging management program designed to detect general and pitting corrosion on the internal surfaces of piping, piping components and piping elements exposed to condensation in the compressed air system as well as a program which includes the testing and preventive maintenance components included in the AMP recommended by the GALL Report or justify how the proposed program will accomplish those functions.

RAI 3.4-1

Background
On LRA page 3.4-79 of LRA Table 3.4.2-2-9, the applicant indicates that copper alloy >15% Zn or >8% Al valve bodies exposed to steam (internal) environment are susceptible to loss of material. In the applicable AMR items for these components, the applicant credits only the Water Chemistry Control – BWR program for aging management.

Issue
The LRA defines steam as “treated water that has been converted to steam”. Table IX.C in Volume 2 of the GALL Report, Revision 1 identifies components made from copper alloy containing >15% Zn or aluminum bronzes (copper-aluminum) alloy containing >8% Al may be susceptible to loss of material due to selective leaching. As a result, the GALL Report recommends that a program corresponding to GALL Report AMP XI.M35, “Selective Leaching of Materials”, be used to manage loss of material due to selective leaching as a result of exposing these materials to a treated water environment.

Request
Please clarify if this material and environment combination is susceptible to loss of material due to selective leaching:

- If yes, please justify the Water Chemistry Control – BWR program’s ability for aging management without being augmented by the Selective Leaching program to verify loss of material due to selective leaching is not occurring.

- If not, please justify the Water Chemistry Control – BWR program’s ability for aging management without being augmented by the One-Time Inspection program to verify loss of material is not occurring.

RAI 3.3-4

Background
In LRA Tables 3.2.2-01, 3.2.2-03, 3.2.2-04, 3.2.2-06, 3.2.2-07, 3.3.2-01, 3.3.2-04, 3.3.2-06, 3.3.2-07, 3.3.2-08, 3.3.2-12, 3.3.2-13, 3.3.2-14-16 and 3.3.2-14-20, the LRA states that numerous stainless steel, copper alloy and copper alloy >15%Zn or >8%Al components (which cite a note G), which are exposed to air – indoor (internal) do not have an aging effect requiring management, therefore an aging management program is not applicable.

Issue
The applicant did not provide the justification for determining these materials are not subject to an aging effect requiring management when exposed to air-indoor (internal). The staff is concerned the internal environment may contain contaminants and stagnant air which is not the same as freely circulating air-indoor on the external surface.

Request
Please describe in detail, the environmental conditions that exist in the internal environment in each of these components described above and how it compares to the external environment. Also please justify why these components do not experience an aging effect requiring management.

RAI 3.3.2-4

Background
In LRA Tables 3.3.2-6, 3.3.2-12, 3.3.2-14-18, and 3.3.2-14-29, the applicant did not identify the type of plastic materials being used for the listed components.

Issue
Plastic materials have different materials properties that vary depending on chemical compositions which may or may not have an aging effect in indoor air (internal and external) environment.

Request
Please provide the specific type of plastic material used for the various components listed In LRA Tables 3.3.2-6, 3.3.2-12, 3.3.2-14-18, and 3.3.2-14-29 and the applicable aging effect for their given environment.

Please evaluate whether there are any degrading interactions with these plastic materials with the treated water and treated air environment and a justification of why these specific plastic materials do not require an aging effect requiring management or aging managing program.

RAI 3.3.2-6

Background
In LRA Tables 3.3.2-4, the applicant did not identify an aging effect requiring management or Aging managing program for a fiberglass silencer in an indoor air (external/internal) environment.

Issue
The staff reviewed the applicant's usage of fiberglass under an air-indoor (external/internal) environment. The applicant states that an air-indoor environment is on systems with temperatures higher than the dew point and condensation may occur but only rarely, equipment surfaces are normally dry. The staff finds this not acceptable because humidity is easily absorbed in fiberglass. Fiberglass absorbs and can expand microcracks within the matrix of the material and decrease its tenacity.

Request
Please provide justification as to why fiberglass under an air-indoor environment is acceptable for this component.

RAI B.1.15-10

(Follow up to RAI B.1.15-4)

Background
Program Element 6 of NUREG-1801 Section X.M1 is concerning acceptance criteria. Under the CNS Fatigue Monitoring program, B.1.15 (CNS-RPT-LRD02, Revision 1), program element 6 subsection b states: "The Fatigue Monitoring Program acceptance criteria are that none of the transients exceeded the allowable numbers in USAR Table III-3-1 …"

Issue
Clarification is deemed necessary, as described below.

Request
Questions (b) and (c) of RAI B.1.15-3 apply here. Please explain accordingly.

GALL Report Section X.M1 Element 6 requires maintaining fatigue usage below the design code limit considering environmental fatigue effects. CNS FMP Element 6 does not mention environmental fatigue effects. Please explain why.

RAI 3.2-1

Background
In each of the LRA Tables 3.2.2-7, 3.3.2-3, 3.3.2-4, 3.3.2-14-27, and 3.3.2-14-28, the applicant stated that no aging effect requiring management (AERM) was identified, and no aging managing program (AMP) was required, for one glass item (flow indicators or sight glasses) in gas (internal), condensation (external and internal), or sodium pentaborate (internal) environments. The AMR line items cite Generic Note G, which indicates that the environment is not addressed in the GALL Report for these components and materials.

Issue
The LRA does not identify the type of glasses in the five items and does not provide a technical basis for no AERM or AMP being applicable to these components.

Request
The staff requests further detail on the type of glasses in the table items that cite Generic Note G, and the resistance of those glasses to the specific environments to confirm that there are no aging effects requiring management. Also identify the specific gas environment for the glass flow indicators in Table 3.2.2-7 and 3.3.2-14-28.

RAI 3.3.2.2.6-1

Neutron Absorber Monitoring

Background
The GALL Report identifies loss of material/general corrosion and reduction of neutron-absorbing capacity as aging effects requiring management (AERM) for Boral in BWR treated water, and calls for further evaluation of a plant-specific aging management program.

Issue
CNS LRA Section 3.3.2.6, “Reduction of Neutron-Absorbing Capacity and Loss of Material due to General Corrosion,” states that, for Boral spent fuel storage racks exposed to a treated water environment, loss of material is an AERM and reduction of neutron-absorbing capacity is insignificant and requires no aging management. The second statement references CNS plant operating experience with Boral coupons inspected in 2002. The LRA does not address applicability of recent adverse operating experience (plant-specific and industry) with Boral.

The LRA states that management of loss of material is performed by the Neutron Absorber Monitoring and Water Chemistry Control – BWR Programs. However, the CNS LRA does not present sufficient specific plant information on how these programs will manage loss of material for Boral in the spent fuel pool.

Request

1. To enable the staff to assess the adequacy of the existing Neutron-Absorber Monitoring and Water Chemistry Control Programs for managing aging effects for Boral:

    a. Discuss how the CNS Water Chemistry Control – BWR Program will be used to manage the loss of material for Boral spent fuel storage racks, what will be analyzed and measured; if the aluminum content of the spent fuel pool water is not monitored, provide the basis for the adequacy of the program in managing loss of material.

    b. Provide a program description and scope of the Neutron-Absorber Monitoring, including the structures and components, including Boral surveillance coupons, that will be under surveillance. Indicate whether the Boral panels and coupons in the CNS spent fuel pool are vented or not.

    c. Indicate the installation date of the Boral panels/racks in the CNS spent fuel pool.

    d. Describe how the loss of material and degradation of material will be monitored or inspected, specifically the methods, techniques (e.g., visual, weight, volumetric, surface inspection), frequency, sample size, data collection, timing and acceptance criteria.

    e. Discuss the correlation between measurements of the physical properties of Boral coupons and the integrity of the Boral panels in the storage racks.

f. Identify the subcritical margin used in the criticality analysis. Describe how the program acceptance criteria account for potential degradation between surveillance periods.

g. For the CNS Boral coupon samples:

   i. Identify the quantity and location of coupons relative to the spent fuel racks during the license renewal period.

   ii. Describe how the coupons are mounted and whether they are fully exposed to the spent fuel pool water.

   iii. Describe the specific testing that will be done for determining the Boral Boron-10 areal density, verifying surface corrosion (if any) and examining for blister formation.

   iv. After removal from the pool for inspection will the coupons be inserted back at the same locations in the pool?

h. Please describe how the results from the inspections of the Boral coupons will be monitored and trended, including frequency and sample size (e.g., the number of coupons examined at each surveillance).

i. Please describe the corrective actions that would be implemented if coupon test results are not acceptable.

j. Please discuss the CNS operating experience applicable to the Boral panels and coupons, including:

   i. Coupon descriptions, parameters tested or inspected, procedures used, results and conclusions for the 1982 and 1992 inspections and tests and any others, including:

      a) What was the location of coupons relative to the spent fuel racks?

      b) How were the coupons mounted and were they fully exposed to the spent fuel pool water?

      c) What specific testing for determining the Boral Boron-10 areal density, verifying surface corrosion (if any) and examining for blister formation?

      d) After removal from the pool for inspection were the coupons inserted back at the same locations in the pool?

   ii. Describe the findings from these inspections, in particular any adverse findings, such as blistering or swelling noted in some coupon inspections.

2. In September 2003, inspection of Boral test coupons at Seabrook Nuclear Station revealed bulging and blistering of the aluminum cladding. Blistering and/or bulging on Boral coupons has also been noted at Three Mile Island and Beaver Valley.

  a. Please discuss the impact that these findings, along with any relevant findings at CNS, have on the continued functionality of Boral at CNS.

  b. Since formation of blisters may affect the efficiency of the Boral panels to attenuate neutrons (through flux trap formation) and may cause deformation of the fuel cells, please justify the basis for concluding that blistering will not be a safety concern at CNS.

3. With recent industry and plant-specific operating experience indicating conditions that could ultimately lead to reduction in neutron absorbing capacity of Boral at CNS, and the GALL Report listing reduction in neutron absorbing capacity as an AERM for Boral:

  a. Justify why reduction of neutron absorption capability has not been identified as an aging effect requiring management (AERM) for the Boral materials used in the CNS spent fuel pool storage racks, particularly when loss of material has been identified as an AERM for this material.

  b. Describe how the neutron-absorbing capacity and degradation of material will be monitored, including a description of the parameters, calculations, and acceptance criteria.

  c. Clarify the applicability of the LRA Section 3.3.2.2.6 references, BNL-NUREG-25582 and NUREG-1787 to the CNS program for managing reduction of neutron-absorbing capacity due to sustained irradiation of Boral, considering findings from the CNS coupon surveillance program and those at other plants.

RAI 2.3.3.6-1

Section 2.1 "Fire Protection System Clean Water Supply," of the CNS Safety Evaluation Report, dated April 29, 1983, states that "…A clean water fire protection system is being installed at CNS which upgrades the existing system that takes suction from the Missouri River…"LRA drawing LRA-2016-SH01A-0 shows the water treatment system as being in the scope of the license renewal and subject to an AMR. This drawing show the 15,000-gallon fire system flushing tank and associated components at locations A10, A11, B10, and B11 as out of scope (i.e., not colored in red). The staff requests that the applicant verify whether the 15,000-gallon fire system flushing tank and associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.6-2

The LRA drawing LRA-2016-SH02-0 shows fire water system valves and nozzles at locations F9, G10, and H9 as out of scope (i.e., not colored in red). The staff requests that the applicant verify whether the above fire hose connections are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If these hose connections are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.6-3

Section 4.3.1.4, "Interior Hose Stations," of the CNS Safety Evaluation Report, dated May 23, 1979, states that "…Fifty-four interior stations are strategically located through the plant…" The staff requests that the applicant verify whether all fifty-four hose stations are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If any is excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.6-4

Section 4.3.1.6, "Foam Suppression System," of the CNS Safety Evaluation Report, dated May 23, 1979, states that "…The licensee will provide an automatic foam suppression system over the diesel fire pump in the intake structure and manual foam capability to include inductors and foam concentration in a readily available location." The staff requests that the applicant verify whether the automatic foam suppression system over the diesel fire pump is in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If automatic foam suppression system and associated components are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.6-8

LRA Section 2.3.3-6, states that, "…The FP – water system includes water storage tanks, one diesel-driven 3000 gpm fire pump, one electric-driven 3000 gpm fire pump, one 30 gpm jockey fire pump…" "…Two above-ground fire protection water storage tanks, each having a gross capacity of 500,000 gallons of water, provide the dedicated water supply of fire protection use…" "…The tanks supply water to two fire pumps located in the fire pump house, one electric-driven and one diesel-driven. A third fire pump takes suction directly from the Missouri River and provides a backup supply to the system…" LRA Section 2.3.3.6 discusses requirements for the fire water supply system but does not mention trash racks and traveling screens for the backup fire pump suction water supply. Trash racks and traveling screens are typically located upstream of the fire pump suctions to remove any major debris from the fresh or raw water to prevent clogging of the fire protection water supply system. Trash racks and traveling screens are typically considered to be passive, long-lived components. Both the trash racks and traveling screens are located in a fresh or raw water/air environment and are typically constructed of carbon steel. Carbon steel in a fresh or raw water environment or water/air environment is subject to loss of material, pitting, crevice formation, and microbiologically influenced corrosion and fouling. Explain the apparent exclusion of the trash racks and traveling screens that are located upstream of the fire pump suctions from the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1).

Scoping and Screening Audit, May 5-8, 2009

RAI 2.1-1

Background
10 CFR 54.4(a)(2) requires that all nonsafety-related systems, structures, and components (SSCs) whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1)(i-iii) be included within the scope of license renewal.

LRA Section 2.1.1.2.2, "Physical Failures of Nonsafety-Related SSCs," states:

> "The review utilized a spaces approach for scoping of nonsafety-related systems with potential spatial interaction with safety-related SSCs. The spaces approach focuses on the interaction between nonsafety-related and safety-related SSCs that are located in the same space. A "space" is defined as a room or cubicle that is separated from other spaces by substantial objects (such as wall, floors, and ceilings). The space is defined such that any potential interaction between nonsafety-related and safety-related SSCs, including flooding, is limited to the space. Nonsafety-related systems that contain water, oil, or steam with components located inside structures containing safety-related SSCs are potentially in scope for possible spatial interaction under criterion 10 CFR 54.4(a)(2). These systems were evaluated further to determine if system components were located in a space such that safety-related equipment could be affected by a component failure."

Issue
During the scoping and screening methodology audit, the staff performed a walk-down of the turbine building. The staff determined that the basement portion of the turbine building, which contains high-energy, fluid-filled, nonsafety-related systems, was not included within the scope of license renewal although there is a direct open path from the basement to higher elevations, which contain safety-related SSCs.

Request
The staff determined that the nonsafety-related, fluid-filled SSCs were not located in a separate space from safety-related SSCs as described in LRA Section 2.1.1.2.2. The staff requests that the applicant describe the methods used and the basis for conclusions, in determining to not include nonsafety-related, fluid-filled SSCs within the scope of license renewal when located in the same space as safety-related SSCs.

As part of your response, please address the extent of condition and additional scoping reviews performed for nonsafety-related SSCs located within the same space as safety-related SSCs, with the potential to affect safety-related SSCs. List any additional SSCs included within the scope of license renewal as a result of the review, and list those structures and components for which aging management reviews were conducted. For each structure and component, describe the aging management programs, as applicable, to be credited for managing the identified aging effects.

RAI 2.1-2

Background
10 CFR 54.4(a)(2) requires that all nonsafety-related systems, structures, and components (SSCs) whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1)(i-iii) be included within the scope of license renewal

LRA Section 2.1.2.1.2, "Identifying Components Subject to Aging Management Review Based on Support of an Intended Function for 10 CFR 54.4(a)(2)," states:

> "Appropriate LRA drawings for the systems were reviewed to identify safety-to-nonsafety interfaces. Nonsafety-related components connected to safety-related components were included to the first seismic anchor or base-mounted component. A seismic anchor is defined as hardware or structures that, as required by the analysis, physically restrain forces and moments in three orthogonal directions. Scope was typically determined by the bounding approach, which included piping beyond the safety-to-nonsafety interface up to a base-mounted component, flexible connection, or the end of a piping run (such as a vent or drain line). Also, piping isometrics were used to identify seismic anchors when required to establish scope boundary. This is consistent with the guidance in NEI 95-10, Appendix F."

Issue
The staff determined that the license renewal drawings identified, by color coding, certain piping as being within the scope of license renewal in accordance with 10 CFR 54.4(a)(1) up to a room or building boundary (wall). However, the drawing does not indicate that the attached piping on the opposite side of the wall, is within the scope of license renewal (the piping is not color coded to indicate being within the scope of license renewal in accordance with 10 CFR 54.4(a)(1) or 10 CFR 54.4(a)(2)).

Request
The staff requests that the applicant address whether all nonsafety-related piping, attached to safety-related piping at room boundaries and extending beyond the room which contains the safety-related piping, was included within the scope of license renewal up to and including a seismic anchor or bounding condition.

As part of your response, please address the extent of condition and additional scoping reviews performed for nonsafety-related SSCs attached to safety-related SSCs. List any additional SSCs included within the scope of license renewal as a result of the review, and list those structures and components for which aging management reviews were conducted. For each structure and component, describe the aging management programs, as applicable, to be credited for managing the identified aging effects.

RAI 3.1-2

Background
In each of LRA Sections 3.2.2.2.1, 3.3.2.2.1 and 3.4.2.2.1, an identical statement which reads "Evaluation of this TLAA is addressed in Section 4.3." is included.

Issue
It is unclear to the staff whether LRA Section 4.3 has covered fatigue TLAA for the components under groups of Engineered Safety Features (ESF), Auxiliary Systems (AUX), and Steam and Power Conversion (SPC), corresponding to the three sections listed above, as the applicant claimed. At least, the information provided in LRA Section 4.3 is inadequate or insufficient to enable readers to identify which of the three groups each TLAA is associated with.

Request
Please list the components (or identify subsections under LRA Section 4.3) that have fatigue TLAA analyzed for ESF. Similarly list the components evaluated for AUX, and SPC. If none is identified in any of the groups, explain the reason for omission and correct inconsistency for the LRA sections listed in Background.

RAI 3.1-3

Background
LRA Table 3.3.2-14-2 lists the AMR results for components in the AUX group, in which 16 of the 18 TLAA items identified being consistent with the GALL Report were simultaneously cited with Note C and Note 305. In addition, the applicant also correlated these items to GALL Vol. 2 items VIII.B1-10 and VIII.B2-5.

Issue
Note 305 states that "… Although this environment does not directly compare with any NUREG-1801 defined environment, it is considered the equivalent of steam or treated water for the evaluation of cracking due to fatigue." Comparing the environments indicated in GALL VIII.B1 and VIII.B2 against the environments indicated in the AMR lines of interest, the staff found that both the GALL and the LRA essentially mentioned the same environments: treated water and steam. Furthermore, GALL Table 2 items VIII.B1 is intended for PWR plants but CNS is a BWR plant. Additionally, Note C and Note 305 contradict each other because Note C says that everything is consistent with the GALL, including environment, except for the component while Note 305 says "environment does not directly compare with any NUREG-1801 defined environment"

Request

(a) Provide basis regarding using Note 305 for the 16 items mentioned in Background.

(b) Provide basis for correlating components to the GALL VIII.B1 items which is for PWRs, when CNS is a BWR plant.

(c) Note C and Note 305 appear to be conflicting. Justify using these two notes for the same item.

Structural-Related Aging Management Program Audit, June 15-17, 2009

RAI B.1.10-2

Background
Industry experience has shown that the suppression chamber, or torus, in BWR Mark I Containments may be susceptible to accelerated corrosion rates.

Issue
Plant-specific operating experience at CNS includes pitting and accelerated corrosion throughout the torus.

Request
Discuss any plans to recoat the torus prior to or during the period of extended operation to reduce the corrosion rate.

RAI B.1.10-3

Background
Industry experience has shown that the suppression chamber, or torus, in BWR Mark I Containments may be susceptible to accelerated corrosion rates.

Issue
Plant-specific operating experience at CNS indicates that corrosion rates and available corrosion margins may be an issue during the period of extended operation.

Request
Discuss the process for ensuring aging effects on the primary containment are captured in a timely fashion and the containment structure remains within code and design allowable values. Also explain how the IWE code required inspection results are recorded, evaluated, and/or repaired as part of the Containment Inservice Inspection Program.

RAI B.1.10-4

Background
During the audit, the staff reviewed CNS calculations which justified continued operation of the suppression chamber with current pitting corrosion, until Refueling Outage 25 (July 2009).

Issue
Calculation NEDC 94-214 concludes that the suppression chamber pitting identified in 2005 is acceptable until July 2009, assuming a corrosion rate of .0026"/yr.

Request
Explain how the corrosion rate of .0026"/yr was determined. Also, explain how the pitting will be handled during the period of extended operation when the current calculation says that the existing condition of the torus is acceptable until July 2009.