COOPER NUCLEAR STATION LICENSE RENEWAL
REQUEST FOR ADDITIONAL INFORMATION

RAI 4.2-1

Reactor Pressure Vessel (RPV) Reflood Thermal Shock Analysis

An end-of-life thermal shock analysis is to be performed on the RPV for a design basis loss of coolant accident (LOCA) followed by a low pressure coolant injection. The effects of embrittlement assumed by this thermal shock analysis will change with an increase in the licensed operating period. The applicant should perform this analysis to satisfy the criteria of 10 CFR 54.3(a) and, as such, this analysis should be a time-limited aging analysis (TLAA). If the applicant decides that this item does not require TLAA, an explanation should be provided by the applicant for not performing the analysis.

RAI 4.2-2

Reflood Thermal Shock Analysis of the Reactor Vessel Core Shroud

Radiation embrittlement may affect the ability of reactor vessel internals, particularly the core shroud, to withstand a low-pressure coolant injection (LPCI) thermal shock transient. The analysis of core shroud strain due to reflood thermal shock during an LPCI thermal shock transient is based on the calculated neutron fluence at the end of facility's license. This analysis should satisfy the criteria of 10 CFR 54.3(a), and as such, this analysis is a TLAA. If the applicant decides that this item does not require a TLAA, an explanation should be provided by the applicant for not performing the analysis.

RAI 3.3.2-1

Background
In license renewal application (LRA) Tables 3.3.2-5, the applicant proposed to manage loss of material for aluminum flame arrestor in an outdoor air (external) environment using the External Surface Monitoring. The program is also credited with managing loss of material from internal surfaces for situations in which internal and external material and environment combinations are the same such that external surface condition is representative of internal surface condition.

Issue
It is not clear why external and internal surfaces aging effect is managed in the same manner when there would be different environmental interactions both outside and inside of the flame arrestor.

Request
Please justify why external and internal surfaces of aluminum are managed in the same manner.

ENCLOSURE

RAI 2.3.3-2

Background
10 CFR 54.4, "Scope," states in part:

a) Plant systems, structures, and components (SSC) within the scope of [license renewal]
b) All nonsafety-related SSC whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1)(i), (ii), or (iii) of this section.

NUREG-1800 provides information in Section 2.1.3.1.2: that "…the reviewer must verify that the applicant's methodology would include (1) the remaining NRS [non safety-related] piping up to its anchors and (2) the associated piping anchors as being within the scope of license renewal under 10 CFR 54.4(a)(2)."

NEI 95-10, Revision 6, Appendix F, Section 2, further informs:

For a non safety-related SSC that is connected to a safety-related SSC, the non-safety-related SSC should be included within the scope of license renewal up to the first seismic anchor past the safety/non-safety interface.

Issue
Cooper Nuclear Station (CNS) License Renewal Application (LRA) Section 2.1.2.1.2 states: "Nonsafety-related components connected to safety-related components were included to the first seismic anchor or base-mounted components." A review of the license renewal drawings identified the use of anchors in only the Instrument air system. Based on experience, the staff would expect to see anchors identified in other systems.

Request
Confirm that the only system containing anchors in accordance with LRA Section 2.1.2.1.2 is for the Instrument Air system. If this is not the case, provide a list of all cases where the "Non safety-related components connected to safety-related components were included to the first seismic anchor or base-mounted components" is satisfied by means of a seismic anchor. The information should provide sufficient detail to allow the staff to verify "(1) the remaining NRS [nonsafety-related] piping up to its anchors and (2) the associated piping anchors as being within the scope of license renewal under 10 CFR 54.4(a)(2)."

RAI 2.3.3-3

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an aging management review (AMR).

Issue
Guidance in NEI 95-10 states "If the structure or component is not subject to replacement based on a qualified life or specified time period, then it is considered long-lived pursuant to §54.21(a)(1)(ii) of the Rule." 10 CFR 54.21 specifically states that valve bodies are long-lived components; however, the staff noted on LRA drawings: 2005 sheet 2, 2010 sheet 2, 2020, 2022 sheet 1 and 2, 2027 sheet 1, 2028, 2037, 2044, the applicant identifies components such as: relief valves, check valves, some three and four way valves as not long lived components. The applicant does not provide a reason these component types were identified as not long-lived in the LRA. In addition to valves, the applicant identifies flexible connections as not long-lived components on LRA drawings 2012 sheet 4, and 2024 sheet 2, 2031 sheet 4, DG-JW-0, KSV-46-5-0; and the applicant identifies rupture disk on LRA drawing 2044 as not long-lived components.

Request
Justify the exclusion of each of these components as not long-lived for the scope of license renewal.

RAI 2.3.3.3.SW-1

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR.

Issue
License renewal drawing LRA-2006-SH04, Zone J-6, identifies the "CONTROL BLDG. BASEMENT VENTILATOR as in scope for license renewal in accordance with 10 CFR 54.4(a)(2) and subject to AMR. However, the "CONTROL BLDG. BASEMENT VENTILATOR" is not included in Table 2.3.3-3, the list of components subject AMR.

Request
Provide a basis for not including the "CONTROL BLDG. BASEMENT VENTILATOR" in Table 2.3.3-3.

RAI 2.3.3.3.SW-2

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR.

Issue
License renewal drawing LRA-2036-SH01, Zone D-2, the line downstream of valve SW-139 is not highlighted as in scope of license renewal and subject to AMR for 10 CFR 54.4(a)(1) or (a)(3) up through the disconnect. Other similar lines, e.g. Zone d_3, downstream of valve SW-140, are shown as in scope of license renewal 10 CFR 54.4(a)(1) or (a)(3) and subject to AMR up through the disconnect.

Request
Provide a basis for not including the line from valve SW-139 through the disconnect in scope of license renewal and subject to AMR in accordance with 10 CR 54.4(a)(1) or (a)(3).

RAI 2.3.3.12.OG-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an aging management review (AMR).

Issue
The staff noted on LRA drawing 2005 sheet 2 (G-10), the applicant shows the Off-Gas (OG) system piping and valves, and standby gas treatment (SGT) system piping and valves inside the "Z" sump in the same area as components highlighted in scope per 10 CFR 54.4(a)(1). The applicant does not highlight the OG and SGT system valves and piping inside the same space as the (a)(1) components. In accordance with the methodology present in LRA Section 2.1, the applicant states; "For spatial interaction, engineered safety features system components containing oil, steam, or liquid and located in spaces containing safety-related equipment are subject to aging management review in this 54.4(a)(2) review if not already included in another system review. Components are excluded from review if their location is such that no safety function can be impacted by component failure. During the scoping audit, the applicant reported there were no components evaluated that would exclude them from the spaces approach. The "Z" sump appears to be an exception from this approach.

Request
Justify the exclusion of OG and SGT components inside the "Z" sump from the scope of license renewal subject to an AMR.

RAI 2.3.3.12.OG-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2009 (D-9), the applicant highlights the off-gas sample drain tank and associated components in yellow, indicating they are included in scope for license renewal for 54.4 (a)(2). However, there are other fluid-filled components on this drawing that are not highlighted, e.g., steam jet air ejectors, gland steam condenser, and there is no physical barrier indicated on the LRA drawing. The staff is unclear why these select off-gas components were identified as in scope for (a)(2) concerns when the rest of the components on this drawing were not selected for inclusion in scoping under 10 CFR 54.4(a)(2).

Request
Explain why if these off-gas components were included in scope under 10 CFR 54.4(a)(2), and justify why additional components on LRA drawing in the same 'space' were not included in the scope of license renewal and subject to an AMR.

RAI 2.3.3.12.OG-3

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
In LRA Section, 2.3.3.12, the applicant states that a differential pressure (∆p) can occur between the off-gas hold-up line and the "Z" sump, resulting in liquid being held up in the off-gas hold-up line interfering with safety-related post-accident function of the "Z" sump. In order to mitigate this condition, the applicant installed: 1) in the off-gas liquid drain line a flow restrictor to ensure that the drain rate is less than the capacity of one "Z" sump pump, and 2) an off-gas ∆p equalization line and ∆p pressure monitoring equipment to equalize the vacuum between the off-gas hold-up line and the "Z" sump. In LRA Table 2.3.3.12, the applicant lists the component "flow restrictor"; however, the staff can not readily identify this component on any of the LRA drawings provided by the applicant.

Request
Identify the location of the flow restrictor to verify the component is in the scope of license renewal and that other components were not omitted from the scope of license renewal.

RAI 2.3.3.12.OG-4

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2037, the applicant highlights in orange a ¾" line off the 12" AR-1 holdup line to differential pressure transmitter (DPI-550) and switch (DPIS-550). LRA Section 2.3.3.12 states that the AR system components only has intended functions for 10 CFR 54.4 (a)(1) and no intended functions for 10 CFR 54.4(a)(2) or (a)(3). The applicant highlights only one side of the sensing lines to both instruments. The non-highlight sensing lines go out to the 12" AR-1 piping downstream of the off-gas filters. In order for these pressure sensing instruments to perform their function, they would need to sense accurate pressure on both sides; therefore, both sides sensing lines should be included in the scope of license renewal.

Request
Justify the exclusion of the abovementioned sensing lines to differential pressure instrumentation from the scope of license renewal.

RAI 2.3.3.12.OG-5

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
In LRA Section 2.3.3.12, the applicant identifies the intended functions for 10 CFR 54.4 (a)(1) for the air removal (AR) and off-gas (OG) systems as 1) support "Z" sump function to assure SGT system operation, and 2) provide a barrier to ground level release via the "Z" sump during accidents where the SGT system must operate. On LRA drawing 2037 (H-10), the applicant shows several piping runs with instrumentation in the off-gas filter building highlighted in orange as being in scope for license renewal for 54.4 (a)(1).

a) The applicant does not highlight the attached piping/duct. In accordance with the applicant's scoping methodology in LRA Section 2.1.1.2.2, systems containing such nonsafety-related structures, systems, and components (SSCs) directly connected to safety-related SSCs should be included within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2).
b) On LRA drawing 2037 (G-10), the applicant shows an oil system to support the OG system components. The applicant does not show any of these fluid-filled components highlighted in scope for 10 CFR 54.4(a)(2). In accordance with the applicant's methodology all fluid-filled components in the same "space" as safety-related components are included in scope because they have the potential to affect the function of components performing a function per 10 CFR 54.4 (a)(1).

Request
Justify the exclusion of the abovementioned attached piping/duct and any fluid-filled components from the scope of license renewal and subject to an AMR.

RAI 2.3.3.12.OG-6

Background
10 CFR 54.4(a) provides three criteria for determining whether systems or components are in scope for license renewal. The applicant follows their stated methodology to ensure that this regulation is met.

Issue
The LRA describes the Off-Gas system having a 10 CFR 54.4(a)(1) function of providing barrier to ground level release. The updated safety analysis report (USAR) describes two subsystems that comprise of the Off-Gas system, which are the air ejector and gland seal systems. Both of these subsystems serve as holdup lines for gases dispensed from the Main Condenser air ejectors, Mechanical Vacuum pumps, and Gland Seal condensers. No description of how both of these subsystems perform the intended function is described in the LRA and CNS USAR to identify if all of the subsystems for the Off-Gas system were correctly placed in scope.

Request
Clarify how both subsystems (Air Ejectors and Gland Seal Systems) for the OG system perform the intended function of providing a barrier to ground level release.

RAI 2.3.3.12.OG-7

Background
10 CFR 54.4(a) provides three criteria for determining whether systems or components are in scope for license renewal. One such criteria is whether a system or component is considered safety-related. The applicant follows their stated methodology to ensure that this regulation is met.

Issue
The LRA indicates that the Off-Gas system includes components that are safety-related. However, the staff could not indicate what these components were in the LRA or USAR.

Request
Clarify what components are considered safety-related in the Off-Gas system and how they perform the 10 CFR 54.4(a)(1) intended functions as described in the LRA.

RAI 2.3.3.12.OG-8

Background
10 CFR 54.21(a)(1) requires the applicant to provide a list of structures and components subject to an AMR. The staff reviews the LRA, USAR, and license renewal boundary drawings to verify that list of components provided for each system is complete.

Issue
The LRA lists the mechanical systems on Table 2.2-2 that were determined by the applicant to not be in scope for license renewal. The Augmented Off-Gas system is listed among the mechanical systems excluded from being in scope for license renewal. The USAR describes the Augmented Off-Gas system as being part of the subsystems (Air Ejector and Gland Seal), in which both systems are described in the LRA and USAR to provide a barrier for ground level release. The Augmented Off-Gas system should be considered for spatial interaction with those subsystems in possible interference with the intended function.

Request
Provide explanation of why the Augmented Off-Gas system is excluded for 10 CFR 54.4(a)(2) for spatial interaction with the two subsystems for the Off-Gas system.

RAI 2.3.3.12.AR-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
In LRA Section 2.3.3.12, the applicant states that “The AR system contains two safety-related valves which support the “Z” sump function.” The staff can not identify the location of these two valves in order to verify the proper scoping of these components and any nonsafety-related components that may interfere with these valves’ function.

Request
The staff requests the applicant identify these two valves safety-related valves mentioned in the AR system LRA, their location and their function they provide to support “Z” sump operation.

RAI 2.3.3.12.AR-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
In the USAR Chapter XIV, Section 6.2.7.2, ‘Fission Products Released From the Turbine Building,” the applicant credits several structures, systems, and components in order for the control rod drop accident source term not reaching the environment via the off-gas treatment system flow paths. At low power operation, main steam line high radiation signal immediately

trips the mechanical vacuum pumps and closes the mechanical vacuum pump inlet and outlet valves. In the USAR, Chapter IX, Section 4.3.1.3, the applicant states that upon a main steam line radiation monitor isolation signal, the mechanical vacuum pumps trip and the inlet and outlet valves to the mechanical vacuum pumps close. The staff notes that the applicant takes credit for isolation of the mechanical vacuum pump on high radiation (USAR figure G-5-36) during the control rod drop accident. The staff assumes these valves are AO-157, AO-158, AO-159 and AO-160 which are shown on LRA drawing 2009; however, these valves are not highlighted to indicate within the scope of license renewal.

Request
The staff requests the applicant discuss and verify the exclusion of the isolation valves for the mechanical vacuum pumps from the scope of license renewal and subject to an AMR.

RAI 2.3.3.12-AR-3

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
The staff notes that the applicant takes credit in the USAR for monitoring and closure of the outlet isolation valve on the steam jet air ejectors in order to mitigate the dose consequences to maintain with limits specified in 10 CFR 20 and 10 CFR 50 (USAR figure G-5-13). In the CNS USAR, Chapter IX, Section 4.3.1.2, the applicant states that valves are placed in each of the air ejector off-gas subsystems, which automatically close on an isolation signal from both air ejector process radiation monitors. During normal power operation when the steam jet air ejectors (SJAEs) are in service, there is a 30-minute holdup line downstream of the SJAE exhaust provides for decay of fission gases. A SJAE off-gas radiation monitor high radiation signal initiates a 15-minute timer which isolates the off-gas system downstream of the 30-minute holdup line. USAR Chapter 4, Gaseous Radwaste System, Section 4.3.1.2, Air Ejector Off-Gas Subsystem, describes valves in each of the air ejector off-gas subsystems, which automatically close on an isolation signal from both air ejector process radiation monitors. LRA drawing 2037 (F-8) show valve AO-258 as not highlighted, indicating it is not within the scope of license renewal and subject to an AMR.

Request
Describe and justify the exclusion of the isolation valves for the SJAEs from the scope of license renewal and subject to an AMR.

RAI 2.3.3.12-PD-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2005 sheet 2, the applicant shows the "Z" sump not highlighted, indicating it is not in the scope of license renewal. The "Z" sump contains safety-related components and is essential to keeping the elevated release point (ERP) clear of water. Table 2.4-3, Turbine Building, Process Facilities and Yard Structures, lists sumps as a component, for the intended function of Support for Criterion (a)(1)/(a)(2)/(a)(3) equipment. However, the applicant does not specifically identify which sump is in scope and subject to an AMR; whereas the applicant specifically identifies the reactor building sump structure and liner and drywell sumps and liners as being in scope.

Request
Identify which sumps are included in Table 2.4-3, especially whether the "Z" sump is included in the scope of license renewal and subject to an AMR.

RAI 2.3.3.12-PD-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2005, sheet 2, the applicant shows several piping runs coming out of the turbine building radioactive area sumps, passing through the "turbine building" then transition into the yard or into the radwaste building. The applicant has specified fluid-filled components in the "turbine building" as in scope per 10 CFR 54.4(a)(2). However, the applicant does not highlight the sump pumps and discharge piping on this LRA drawing as in scope for license renewal per 10 CFR 54.4 (a)(2).

Request
The staff requests the applicant justify the exclusion of the above mentioned piping and pumps from scope of license renewal and other components in this area that may have been omitted from scope.

RAI 2.3.3.12-PD-3

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2005 sheet 2, the applicant shows the discharge piping coming out of the two ERP "Z" sump pumps, transitioning to one pipe (3" FDR-1), which continues onto LRA drawing 2038 sheet 1 (J-1) , where the piping passing through the reactor building then transition into the radwaste building on LRA drawing 2032 sheet 2 (D-1). One branch continues into the "floor drain collection tank", and the other piping continues onto LRA drawing 2033 sheet 2 (C-5), where the piping ends in the "waste collector tank."

The applicant has identified structures and components (SCs) supporting the operation of the "Z" sump pumps in scope per 10 CFR 54.4(a)(1). As detailed above, the components supporting this function transit into the radwaste building; therefore, based upon the applicant's methodology scoping of nonsafety-related system components or nonsafety-related portions of safety-related systems containing oil, steam or liquid, SCs in the radwaste building are considered within the scope of license renewal based on the criterion of 10 CFR 54.4(a)(2) since these components are located in a space containing safety-related SSC.

Request
The staff requests the applicant justify the exclusion of SCs in the radwaste building from the scope of license renewal under 10 CFR 54.4(a)(2) and subject to an AMR.

RAI 2.3.3.14-ACD-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2012 sheet 2 (C-3), the applicant shows the auxiliary condensate drain line (ACD-105-3") in scope of license renewal per 10 CFR 54.4 (a)(2) in the service water pump room until it tees into 1-ACD-105-1 ¼ " piping (1 ¼" CH-4). The 3" piping continues in the service water pump room until it transitions into the intake structure; however, this segment of 3" piping is not highlighted, but should be in accordance with 10 CFR 54.4 (a)(2).

Request
The staff requests the applicant to justify the exclusion of this 3" piping for license renewal and subject to an AMR.

RAI 2.3.3.14-AS-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2012 sheet 2 (B-6) the applicant highlights the auxiliary steam piping (4" V123-169), indicating in scope for license renewal under 10 CFR 54.4 (a)(2). However, the staff noted within this piping run, the applicant did not highlight the pressure control valve (PCV-805) as in scope. In accordance with 10 CFR 54.21, valves bodies are passive components and subject to an AMR.

Request
The staff requests the applicant to justify the exclusion of PCV-805 and any other pressure control valves from the scope of license renewal and subject to an AMR.

RAI 2.3.3.14-AS-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2002 sheet 2 (E-4), the applicant highlights piping run 3" AS-3 as in scope for license renewal per 10 CFR 54.4 (a)(2). The piping run continues onto LRA drawing 2002 sheet 3 (F-3), where the same piping continues and contains FE-115, but the continuation piping is no longer shown highlighted. Then the piping transitions through a barrier into the "turbine building" and is shown highlighted, indicating in scope of license renewal.

Request
The staff requests the applicant to justify the exclusion of this segment of 3" AS-3 piping containing FE-115, shown as not highlighted, from the scope of license renewal and subject to an AMR.

RAI 2.3.3.14-AS-3

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
The staff has noted several component types that were highlighted on LRA drawings for the auxiliary steam system that were not included in LRA Table 2.3.3-14-2 on LRA drawing 2002 sheet 3. The following component types were examples of component types missing from the table: "Tank/Vessel", "Restricting Orifice", "Flow Element", "Thermowell", and "Rupture Disk."

Request
The staff requests the applicant justify the exclusion of the abovementioned component types for inclusion in Table 2.3.3-14-2 and subject to an AMR.

RAI 2.3.3.14.RWCU-1

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR.

Issue
License renewal drawing LRA-2027-SH01, Zone A-1, shows a conductivity cell in scope for 10 CFR 54.4(a)(2). However, the conductivity cell is not listed in Table 2.3.3-14-24, "Reactor Water Cleanup System Nonsafety-Related Components Affecting Safety-Related Systems Components Subject to Aging Management Review".

Request
Provide basis for not listing the conductivity cells in Table 2.3.3-14-24 as a component subject to AMR.

RAI 2.3.3.14.TEC-1

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR. The staff confirms inclusion of all component types subject to an AMR by reviewing component types within the license renewal boundary.

Issue
License renewal drawing LRA -2007-0 identifies several components that have lines shown as in scope for license renewal and subject to AMR in accordance with 10 CFR 54.21(a)(1). However, the attached components are not identified as in scope for 10 CFR 54.4(a)(2) and subject to AMR. These components are:

- Zones A-10/11: Lines going into and coming out of Hydrogen Coolers (4 coolers) with the coolers not identified as in scope for license renewal.
- Zones G-10/11: Lines going into and coming out of the Generator Bus Duct Heat Exchanger with the heat exchanger not shown as in scope for license renewal.
- Zones E-9/10/11: Lines going into and coming out of the Exciter Air Coolers (4 coolers) with the coolers not identified as in scope for license renewal.
- Zone H-3: Lines going into and coming out of the Control Room A/C Condenser Unit AC-C-1A with the condenser unit not identified as in scope for license renewal.

Request
Provide a basis for not including the attached components in scope for license renewal. The response should also address the endbells.

RAI 2.3.3.14.TEC-2

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR.

Issue
License renewal drawing LRA-2007-0 identifies several components as in scope for license renewal in accordance with 10 CFR 54.4(a)(2) but not listed in Table 2.3.3-14-29 as components subject to aging management review. These components are:

- Zones B-5/6: Identifies 'MAIN TURBINE OIL COOLERS " as in scope for (a)(2). However, the oil coolers are not identified in Table 2.3.3-14-29 as components subject to AMR.
- Zones B-8/9: Identifies "ELECTRO HYDRAULIC GOVERNOR COOLER" (2) as in scope for (a)(2). However, the coolers are not identified in Table 2.3.3-14-29 as components subject to AMR.

Request
Provide a basis for not including the identified components in Table 2.3.3-14-29 as components subject to AMR. The response should also address the endbells.

RAI 2.3.3.14.TEC-3

Background
License renewal rule 10 CFR 54.2(a)(1) requires applicants to identify and list all components subject to an AMR. The staff confirms inclusion of all component types subject to an AMR by reviewing component types within the license renewal boundary.

Issue
License renewal drawing LRA-2007-0, Zones B-8 / C-7 identifies lines downstream of valves V253X(427) and V253X(428) as in scope of license renewal in accordance with 10 CFR 54.4(a)(2) continuing to drawing LRA-2020 Zone H-6. The continuations on drawing LRA-2020 are not shown as in scope for licensing renewal.

Request
Provide a basis for not including the continuations of the subject lines as in scope of license renewal in accordance with 10 CFR 54.4(a)(2).

RAI 2.3.3.14.DW-1

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR. The staff confirms inclusion of all component types subject to an AMR by reviewing component types within the license renewal boundary.

Issue
License renewal drawing 2013, Zone C12, line 1-DW-108-1" is shown in scope for license renewal in accordance with 10 CFR 54.4(a)(2) and subject to AMR. The continuation of this line on license renewal drawing LRA-2006 SH 3 is not shown in scope of license renewal in accordance with 10 CFR 54.4(a)(2) and subject to AMR.

Request
Provide a basis for the continuation of line 1-DW-108-1" on license renewal drawing LRA-2006-SH-03 not being in scope of license renewal and subject to AMR.

RAI 2.3.3.14.DW-2

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR. The staff confirms inclusion of all component types subject to an AMR by reviewing component types within the license renewal boundary.

Issue
License renewal drawing 2029, Zone D-4 shows the line upstream of valve ¾"V-3265-1 coming from drawing 2010 SH 3 Zone D-1 as in scope of license renewal and subject to AMR. The continuation line shown on license renewal drawing LRA-2010-SH03 is not identified as in scope of license renewal and subject to AMR.

Request
Provide a basis for the continuation of the subject line on drawing 2010 not being in scope of license renewal and subject to AMR.

RAI 2.3.3.14.DW-3

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR. The staff confirms inclusion of all component types subject to an AMR by reviewing component types within the license renewal boundary.

Issue
License renewal drawings LRA-2005-SH01/SH03 and LRA-2009 are identified as “LRA Drawings for Auxiliary Systems in Scope for 10 CFR 54.4(a)(2) for Physical Interactions.” A review of these drawings did not identify any demineralized water components on the drawings.

Request
Confirm that there are no demineralized water components on these drawings or identify zones where the demineralized water components can be found.

RAI 2.3.4.1.MS-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2002 sheet 2, the applicant shows the moisture separator/reheaters having individual level indicator tanks (MI-A,B,C,D) and are highlighted yellow, indicating in scope of license renewal under 10 CFR 54.4 (a)(2). Yet LRA Table 2.3.4-2-9 for the nonsafety-related main steam system does not list the component type “pressure vessel” or “tank” to represent the indicator tanks. In LRA Section 2, the applicant defines the term "piping" in component lists to include pipe and pipe fittings, such as elbows and reducers, but not tanks. Tanks are shown as a separate component type in the other LRA AMR tables.

In addition, typically these indicating tanks have associated instrumentation to indicate level inside the tank. However, Table 2.3.4-2-9 does not include such component types as “sight glass” or “level indicator.”

Request
Provide a justification for the exclusion of the component type “tank” from Table 2.3.4-2-9, and clarify if the tanks have level instrumentation that would require the component type “level gage” be included in the scope of license renewal and subject to an AMR.

RAI 2.3.4.1.MS-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
The applicant takes credit for and identifies the MSIV leakage pathway in scope for license renewal up to isolation valves; however, the seismic support for the piping may be past the valve or to the next base mounted equipment. According to Regulatory Guide 1.183, " A reduction in MSIV releases that is due to holdup and deposition in main steam piping downstream of the MSIVs and in the main condenser, including the treatment of air ejector effluent by off-gas systems, may be credited if the components and piping systems used in the release path are capable of performing their safety function during and following a safe shutdown earthquake (SSE)." The applicant does not show seismic supports or boundaries. The staff walkdown of the turbine building looked at one of the isolation valves to the turbine feedwater pump, and did not see a seismic support near the valve. Therefore, the applicant may have omitted some structures and components from the scope of license renewal needed to maintain the seismic qualification of this MSIV leakage pathway piping.

Request
Verify that the seismic supports and piping needed to credit the MSIV pathway are included in the scope of license renewal and subject to an AMR.

RAI 2.3.4.2.CD-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2008 sheet 1, the applicant shows on the heater drain piping a component type labeled "FX", referred to as a flow test device. This component type is not listed as a component type in LRA Table 2.3.4.2-2 for the condensate drain system.

Request
Explain what a flow test device is and whether it is included in one of the component types in Table 2.3.4.2-2 or needs to be included.

RAI 2.3.4.2.CW-1

Background
License renewal rule 10 CFR 54.21(a)(1) requires applicants to identify and list all components subject to an AMR. The staff confirms inclusion of all component types subject to an AMR by reviewing component types within the license renewal boundary.

Issue
License renewal drawing LRA-2006-SH03, Zones A/B-8, shows strainers CW-STRN-10/11/12/13/1/14/15/16/17PV attached to a functional (a)(2) component (condenser) and with piping identified as in scope for license renewal in accordance with 10 CFR 54.4(a)(2) for physical interaction. However, the strainers are not identified as in scope for license renewal and subject to AMR.

Request
Provide a basis for not including the strainers referenced above in the scope of license renewal and subject to AMR.

RAI 2.3.4.2.ES-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2003, the applicant highlights the feedwater heaters in scope for license renewal under 10 CFR 54.4(a)(2). However, LRA Table 2.3.4-2-5, Extraction Steam System, does not list a component type to represent the feedwater heaters. LRA Table 2.3.4-2-8, for the main condensate system, shows the component type "heat exchanger (shell)"; however, the table only shows an internal environment of treated water not steam. The staff can not verify that the feedwater heaters were evaluated properly for an AMR within the extraction steam system.

Request
Justify the exclusion of the component type "feedwater heaters (shell side)" from Table 2.3.4-2-5, for extraction steam system.

RAI 2.3.4.2.ES-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2002, sheet 2 (C-7), the applicant highlights piping run 8" AS-2 (1-AS-100-8) coming from the auxiliary boilers and ending in a blind flange, indicating it is in scope of license renewal. Then the piping line starts back up again as not highlighted. No transition is indicated on the drawing into the turbine building basement on this branch line, which may protrude up onto the 932' turbine building elevation.

Request
Justify the exclusion from scope of license renewal the continuation of piping 8" AS-2 after the blind flange.

RAI 2.3.4.2.RFLO-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR. For other systems in the LRA, the applicant has typically provided marked drawings and tables to show which portions are subject to an AMR. For the Reactor Feedwater Lube Oil (RFLO) system, the applicant has not provided drawings that show which portions are within the scope of license renewal. [The RFLO system provides lubricating and hydraulic fluid to the feed pump bearings, turbine bearings, and the stop and nozzle valve assemblies.] Since this information is not provided, the staff can not verify which portions of the RFLO system are within the scope of license renewal and what components are subject to an AMR.

Issue
LRA Table 2.3.4.2-A lists the Reactor Feedwater Pump and Turbine Lube Oil (RFLO) system to be within the scope of license renewal for physical interaction with safety-related components. LRA Table 2.3.4-2-11 shows the RFLO system components subject to an aging management review (AMR). The applicant provided drawing 2011 SH 1, "Flow Diagram Turbine Oil Purification & Transfer Sys & Diesel Oil Sys," which shows the RFLO oil reservoirs and transfer pumps, none of which is shown to be within the scope of license renewal.

Request
Provide the drawing(s) of the complete RFLO system showing portions within and not within the scope of license renewal and which components are subject to an AMR; or provide a description and justification of the methods used to determine which portions of the RFLO system are within the scope of license renewal and which structures and components of the RFLO system are subject to an AMR.

RAI 2.3.4.2.RFLO-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2011 sheet 1 (C-9), the applicant shows a component labeled "exhaust head" not highlighted, indicating the component is not in the scope of license renewal. However, every other component connected to this component is highlighted, indicating they are in scope of license renewal in accordance with 10 CFR 54.4 (a)(2).

Request
Justify the exclusion of this component labeled "exhaust head" for the scope of license renewal and subject to an AMR.

RAI 2.3.4.2.LO-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR. For other systems in the LRA, the applicant has typically provided marked drawings and tables to show which portions are subject to an AMR.

Issue
LRA Table 2.3.4.2-A lists the Turbine Generator Lube Oil (LO) system to be within scope of license renewal for physical interaction with safety-related components. LRA Table 2.3.4-2-6 shows the LO system components subject to an aging management review (AMR). The applicant provided drawing 2011 SH 1, "Flow Diagram Turbine Oil Purification & Transfer Sys & Diesel Oil Sys," which shows some components of the LO system, but not the lines to lubricate the journal bearings and thrust bearing of the main turbine and generator, neither the lines to the Electro Hydraulic (EH) system, nor the trip protection to the main turbine. Since the drawings provided in the LRA do not show the complete LO system, the staff can not verify which portions of the LO system are within the scope of license renewal and what components are subject to an AMR.

Request
Provide the drawing(s) of the complete LO system showing portions within and not within the scope of license renewal and which components are subject to an AMR; or provide a description and justification of the methods used to determine which portions of the LO system are within the scope of license renewal and which structures and components of the LO system are subject to an AMR.

RAI 2.3.4.2.LOGT-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR. For other systems in the LRA, the applicant has typically provided marked drawings and tables to show which portions are subject to an AMR.

Issue
License Renewal Application (LRA) Table 2.3.4.2-A lists the Turbine Lube Oil-Instruments (LOGT) system to be within scope of license renewal for physical interaction with safety-related components. LRA Table 2.3.4-2-7 show the LOGT system components subject to an aging management review (AMR). The applicant provided drawing 2011 SH 1, "Flow Diagram Turbine Oil Purification & Transfer Sys & Diesel Oil Sys," which shows some components of the LOGT system. Since the drawing does not show the complete system, the staff can not verify which portions of the LOGT system are within the scope of license renewal and what components are subject to an AMR.

Request
Provide the drawing(s) of the complete LOGT system showing portions within and not within the scope of license renewal and which components are subject to an AMR; or provide a description and justification of the methods used to determine which portions of the LOGT system are within the scope of license renewal and which structures and components of the LOGT system are subject to an AMR.

RAI 2.3.4.2.TGF-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR. For other systems in the LRA, the applicant has typically provided marked drawings and tables to show which portions are subject to an AMR.

Issue
License Renewal Application (LRA) Table 2.3.4.2-A lists the Turbine Generator EH Fluid (TGF) system to be within the scope of license renewal for physical interaction with safety-related components. LRA Table 2.3.4-2-13 shows the TGF system components subject to an aging management review (AMR). For the TGF system, the applicant has not provided drawings that show which portions are within the scope of license renewal. Since this information is not provided, the staff can not verify which portions of the TGF system are within the scope of license renewal and what components are subject to an AMR.

Request
Provide the drawing(s) of the complete TGF system showing portions within and not within the scope of license renewal and which components are subject to an AMR; or provide a description and justification of the methods used to determine which portions of the TGF system are within the scope of license renewal and which structures and components of the TGF system are subject to an AMR.

RAI 2.3.4.2.MC-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
The applicant identified the "turbine building" as an area where nonsafety-related piping has the potential to prevent component in scope under 10 CFR (a)(1) from performing their function; hence the components were included in scope under 10 CFR 54.4 (a)(2). However, the staff has identified the following areas where the applicant depicts fluid-filled components in the 'turbine building but did not highlight in scope for license renewal. This identification of scope contradicts the applicant's position that components in the "turbine building basement" are not in scope and components in the "turbine building" are in scope.

On LRA drawing 2004 sheet 2, the applicant shows the piping 6" CH-3 (G-9) and 16" CH-3 (E-9/G-12) transitioning from the yard to the turbine building. This piping is not shown highlighted in scope.

On LRA drawing 2004 sheet 2 (B-2), the applicant shows a 6" condensate piping line (6" CH-2) transitioning from the "turbine building" into the "turbine building basement." The applicant highlights the line yellow, indicating the piping is in scope per 10 CFR 54.4 (a)(2) after the line transitions into the basement, but does not highlight the line while it is in the turbine building.

Request
Justify the exclusion of the condensate piping while it is in the "turbine building" from scope of license renewal in accordance with 10 CFR 54.4 (a)(2).

RAI 2.3.4.2.MC-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2004 sheet 2 (B-8), the applicant highlights 24" condensate piping (24" CH-3) in yellow, indicating it is included in scope per 10 CFR 54.4 (a)(2); however, when the piping continues at location G-5, the piping is no longer highlighted. There are no indications that the piping transitioned to another room, space, or building; therefore, the piping should still be highlighted in scope under 10 CFR 54.4 (a)(2).

Request
Justify the exclusion of the 24" condensate piping and associated condensate booster pumps from being included in scope of license renewal. In addition, LRA Table 2.3.4-2-8 does not include the component type "Pump Casing", which will be a required component type if the condensate booster pumps are added to scope of license renewal.

RAI 2.3.4.2.MC-3

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2004 sheet 3, the applicant shows condensate flowing through the feedwater heater trains, and the feedwater heaters are highlighted in scope. LRA Table 2.3.4-2-8 includes the component type "heat exchanger shell" to account for steam side of the feedwater heaters, but doesn't account for an environment of steam (refer to RAI 2.3.4.2 - Extraction Steam – 1).

Typical feedwater heaters have endbells attached to both sides of the shell, which contains the same fluid that is in the tubes, but it is a separate component from the heat exchanger shell. LRA Table 2.3.4-2-8, for the main condensate system, does not include a component type describing the heat exchanger endbells. In one other LRA table (Table 2.3.3-11) the applicant identifies "Heat exchanger (bonnet)" as the component type for endbells.

Request
Justify the exclusion of the component type "heat exchanger endbells" from an AMR in accordance with 10 CFR 54.21.

RAI 2.3.4.2.MC-4

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2005 sheet 1 (E-8 and E-10), the applicant shows two sets of pipe extending out from each of the two main condensers into what is assumed the "turbine building" labeled: 4" V2IIF-222, 4" V2IIF-223, 4" V211F-224, and 4" V211F-225. These lines are not highlighted as being in scope of license renewal, yet all the other piping and components on this LRA drawing in the near vicinity are highlighted as being in scope of license renewal per 10 CFR 54.4 (a)(2).

Request
Justify the exclusion of these four piping segments from the scope of license renewal and subject to an AMR.

RAI 2.3.4.2.CF-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
The applicant included the condensate filter demineralizer (CF) system in the LRA under Section 2.3.4.2. The applicant states that the CF system maintains the required purity of feedwater to the reactor using seven demineralizer units and the system's components are located on LRA drawing 2049 sheet 4. The applicant indentified this system is in scope for (a)(2) for potential spatial interaction and listed piping and valves as components requiring an AMR. However, the staff can not positively identify the components related to this system on the specified drawing.

The staff noted the most logical location for this system was on LRA drawing 2004 sheet 2, where the condensate piping transitions to the condensate polisher demineralizers onto drawing 2035 sheet 1. However, drawing 2035 sheet 1 was not included by the applicant. On LRA drawing 2004 sheet 2 the applicant highlighted the 24" feedwater piping in the control building, but did not highlight the condensate piping once it left the control building into radwaste building, where the polishers are located.

Request
Identify the CF components in scope for license renewal and provide the appropriate drawing of the condensate filter demineralizer system showing the components in scope of license renewal in order for the staff to verify no components were omitted from scope.

RAI 2.3.4.2.CM-1

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2049 sheet 2 (D-9), the applicant shows a non-highlighted 4" overflow piping coming off of the 4" vent piping (4" CH-4) on emergency condensate storage tank 1A to the overflow piping continuing to the control building sump. The 4" vent piping is highlighted blue, indicating it is in scope under 10 CFR 54.4 (a)(1), and there is no class boundary indicated on this 4" overflow piping. There is no similar overflow line on the emergency condensate storage tank 1B indicated on LRA drawing 2049 sheet 2. The tank 1B may be compensated by an equalization line over to the 1A tank. Safety-related piping is required to be included in scope per 10 CFR 54.4 (a)(1) and nonsafety-related piping attached to safety-related piping is required to be in scope for license renewal per 10 CFR 54.4 (a)(2).

Request
Justify exclusion of this 4" overflow line from scope of license renewal. Confirm whether there is a similar overflow line on the 1B tank.

RAI 2.3.4.2.CM-2

Background
10 CFR 54.21 requires each applicant to describe and justify the methods used to identify and list those structures and components subject to an AMR.

Issue
On LRA drawing 2049 sheet 2 (D-9), the applicant shows a possible equalization line (6" CH-4) connecting the two emergency condensate storage tanks highlighted in yellow, indicated it is in scope of license renewal under 54.4 (a)(2). There are no isolation valves in this piping connecting two safety-related tanks, and there is no class boundary identified on this piping; thus indications are that this piping is also safety-related. Therefore, this piping should be identified as in scope under 10 CFR 54.4 (a)(1).

Request
Justify the exclusion of this 6" CH-4 piping from being in scope under 10 CFR 54.4 (a)(1) and evaluate any additional components that need to be included scope under 10 CFR 54.4 (a)(2).