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54.17

NLS2009063
August 17, 2009

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Response to Request for Additional Information for License Renewal Application Cooper Nuclear Station, Docket No. 50-298, DPR-46

References:
1. Letter from Tam Tran, U.S. Nuclear Regulatory Commission, to Stewart B. Minahan, Nebraska Public Power District, dated July 16, 2009, "Request for Additional Information for the Review of the Cooper Nuclear Station License Renewal Application (TAC No. MD9763 and MD9737)."
2. Letter from Stewart B. Minahan, Nebraska Public Power District, to U.S. Nuclear Regulatory Commission, dated September 24, 2008, "License Renewal Application."

Dear Sir or Madam:

The purpose of this letter is for the Nebraska Public Power District to respond to the Nuclear Regulatory Commission Request for Additional Information (RAI) (Reference 1) regarding the Cooper Nuclear Station License Renewal Application (LRA). These responses are provided in Attachment 1. Certain changes to the LRA (Reference 2) have been made to reflect these RAI responses. These changes are provided in Attachment 2.

Should you have any questions regarding this submittal, please contact David Bremer, License Renewal Project Manager, at (402) 825-5673.

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NRR

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 8/17/09
(Date)

Sincerely,

Brian J. O'Grady
Site Vice President

/wv

Attachments

cc: Regional Administrator w/ attachments
USNRC - Region IV

Cooper Project Manager w/ attachments
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ attachments
USNRC - CNS

Nebraska Health and Human Services w/ attachments
Department of Regulation and Licensure

NPG Distribution w/ attachments

CNS Records w/ attachments

ATTACHMENT 3 LIST OF REGULATORY COMMITMENTS©[4]

Correspondence Number: NLS2009063

The following table identifies those actions committed to by Nebraska Public Power District (NPPD) in this document. Any other actions discussed in the submittal represent intended or planned actions by NPPD. They are described for information only and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITMENT NUMBER	COMMITTED DATE OR OUTAGE
None		

Attachment 1

Response to Request for Additional Information
for License Renewal Application
Cooper Nuclear Station, Docket No. 50-298, DPR-46

The Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) regarding the License Renewal Application is shown in italics. The Nebraska Public Power District's (NPPD) response to each RAI is shown in block font.

NRC Request: *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.

NPPD Response:

NPPD found no current licensing basis requirement for a reactor vessel post-LOCA thermal shock analysis for boiling water reactors (BWR). There is no such analysis in the Cooper Nuclear Station (CNS) current licensing basis, and no discussion of reflood thermal shock in the CNS Updated Safety Analysis Report (USAR).

In the 1969 time frame, thermal shock was a concern for commercial reactor vessels. Regulatory Guide 1.2, Thermal Shock to Reactor Pressure Vessels, addressed these concerns. As more information came to light, it became clear that this was a concern only for pressurized water reactors (PWR) and not for BWRs. Regulatory Guide 1.2 was withdrawn. The withdrawal notice indicates that Regulatory Guide 1.2 was superseded by 10 CFR 50.61, Fracture Toughness Requirements for Protection against Pressurized Thermal Shock Events, and by Regulatory Guide 1.154, Format and Content of Plant-Specific Pressurized Thermal Shock Safety Analysis Reports for Pressurized Water Reactors. These two documents apply only to PWRs. There are no requirements for analysis of thermal shock in BWRs.

NRC Request: *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.

NPPD Response:

NPPD has found no current licensing basis requirement for a post-LOCA thermal shock analysis of the reactor vessel core shroud. There is no such analysis in the CNS current licensing basis and no discussion of reflood thermal shock of the core shroud in the CNS USAR.

NRC Request: *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.

NPPD Response:

The internal and external surfaces of the flame arrestors are the same in that they are not coated. The external surface is directly exposed to the outdoor environment while the internal surfaces of the flame arrestors can be exposed to both air-indoor and air-outdoor conditions at times due to the configuration of the flame arrestors. Because an air-outdoor environment is a harsher

environment than air-indoor, it is conservative to apply the air-outdoor environment on the internal surfaces when determining aging effects and programs. Because the materials and environments are the same for the internal and external surfaces, the External Surface Monitoring Program is an appropriate program for managing aging effects for both internal and external surfaces.

NRC Request: *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)."

NPPD Response:

NPPD reviewed all LRA drawings and applicable isometric drawings to verify that nonsafety-related piping attached to safety-related piping was included within the scope of license renewal up to and including a seismic anchor or bounding condition (base-mounted component, flexible connection, or the end of a piping run). The review revealed that seismic anchors or bounding conditions at the nonsafety-related to safety-related interface are included within the yellow highlighting as in scope and subject to aging management review (AMR) per the criterion of 10 CFR 54.4(a)(2).

There are also locations on the LRA drawings where components are highlighted as in scope and subject to AMR for functional 10 CFR 54.4 (a)(2) or 10 CFR 54.4(a)(3) without connected components being highlighted in yellow (10 CFR 54.4(a)(2)). For these instances, the highlighted components do not perform license renewal intended functions identified in 10 CFR 54.4(a)(1). Therefore, structural support is not required of attached nonsafety-related components to meet the criterion of 10 CFR 54.4(a)(2).

The review revealed that, in most cases, the nonsafety-related portions of the system in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2) included components up to a bounding condition (base-mounted component, flexible connection, or the end of a piping run). Therefore, identification of a seismic anchor is not necessary.

Additional seismic support location information is provided for the following LRA drawing locations and systems:

- Drawing LRA-2006-SH01 (E-10) – A seismic anchor is located in the nonsafety-related ASME Class IIS section of piping downstream of service water system valve SW-1490 prior to the 24" pipe tee.

- Drawing 2006-SH03 (F-8) – A seismic anchor is located upstream of service water system valves SW-113, SW-114, SW-109, and SW-110.

- Drawing LRA-2006-SH04 (G-3) - A seismic anchor is located downstream of service water system valve SW-817 prior to exiting the control building.

- Drawing LRA-2006-SH05 (G-5) – Seismic anchors are located downstream of each service water system valve SW-639, SW-648, SW-655, and SW-664.

- Drawing LRA-2031-SH02 (B-3) - A seismic anchor is located in the nonsafety-related ASME Class IIS section of piping near the downstream side of reactor equipment cooling water system flow element REC-FE-2151 prior to exiting the reactor building.

- Drawing LRA-2031-SH02 (B-2, H-2) – Highlighted piping and components, in yellow, continue to LRA-2031-SH03 and stop at the radwaste/reactor building wall located at (F-4, G-4). Seismic anchors are located in the nonsafety-related ASME Class IIS section of reactor equipment cooling water system piping prior to exiting the reactor building.

- Drawing LRA-2036-SH01 (G-10) – A seismic anchor is located on the 3" SW-2 line prior to service water system valve SW-796.

- Drawing LRA-2037 (G-9/10) – The off-gas instrumentation components associated with monitoring the differential pressure across the off-gas filters are nonsafety-related and are a continuation from safety-related off-gas instruments located at (C/D-10/11) on the same drawing. The seismic anchor between safety-related and nonsafety-related portions of the system is in the highlighted section of piping shown below nonsafety-related off-gas system valve OG-V-120.

- Drawing LRA-2038-SH01 (G-4) –The seismic anchor is located between the safety-related drywell discharge valve 766AV (AO-83), highlighted in blue, and the nonsafety-related radwaste system flow element RW-FE-353.

- Drawing LRA-2040-SH02 (H-2) – Refer to RAI 2.3.2.1-2 which clarifies that non-essential drain piping downstream of residual heat removal system valve RHR-MO-57 up to the reactor building wall should be highlighted in yellow because it is in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). A seismic anchor is located between valve RHR-MO-57 and the reactor building wall.

- Drawing LRA-2041 (D-1) - Seismic anchors are located on the nonsafety-related main steam system piping (3" MS-1) inside the reactor building near the flushing connection.

- Drawing LRA-2044 (B-9) - Seismic anchor located on the nonsafety-related reactor feedwater system piping (18" RF-1) downstream of safety-related valve RF-CV-13CV.

All seismic supports identified above are in scope and subject to AMR. Refer to LRA Table 2.4-4 (Bulk Commodities Components Subject to Aging Management Review), *Steel and Other Metals* component types 'Components and piping supports for ASME Class 1, 2, 3 and MC' and 'Components and piping supports.'

NRC Request: *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, DGJW-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.

NPPD Response:

The license renewal rule specifies that components subject to AMR are those that are not subject to replacement based on a qualified life or specified time period. NPPD reviewed all LRA drawings and applicable preventive maintenance (PM) plans and confirmed that components identified on LRA drawings as "Not A Long Lived Component" are replaced based on a specified time period. The review also identified that the heating and ventilation (HV) cooling water lines and flex hoses shown on LRA-2024-SH02 (G-3 and G-6) servicing 1-HV-DG-1A and 1-HV-DG-1B have now been isolated, drained, and retired in place. Therefore, these cooling water components and associated flex hoses are not in scope and are not subject to AMR.

NRC Request: *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.

NPPD Response:

The control building basement ventilator, as shown on drawing LRA-2006-SH04 (J-6), is included in LRA Table 2.3.3-14-11 (Heating and Ventilation System), as component type 'Fan housing.'

NRC Request: *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).

NPPD Response:

The line and disconnect downstream of valve SW-139 on drawing LRA-2036-SH01 (D-2) are in scope and subject to AMR for 10 CFR 54.4(a)(1) and should be highlighted. This line and disconnect are included in the component type 'Piping' in LRA Table 3.3.2-3 (Service Water System).

NRC Request: *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.

NPPD Response:

Failure of nonsafety-related OG and SGT components inside the Z sump cannot adversely affect safety-related components through spatial interaction since these components are not pressurized and normally contain air. In addition, the safety-related components in the sump are exposed to an environment that is normally wetted with the resulting aging effects managed by the Periodic Surveillance and Preventive Maintenance Program. Therefore, nonsafety-related OG and SGT piping and components inside the Z sump are not in scope and are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

As stated in Note 1 on drawing LRA-2009, other piping and components connected to the drain tank are not fluid filled and cannot spatially impact safety-related equipment. Other un-highlighted components shown on drawing LRA-2009 assigned to the OG system contain air or gas. Therefore, these components are not in scope and are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

The steam jet air ejectors and gland steam condenser are assigned to the main steam system. Since these are high energy components located in the turbine building basement, the components are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2), as discussed in the previously submitted NPPD response to RAI 2.1-1.[1]

NRC Request: *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 (Δp) 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 Δp equalization line and Δp 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.

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[1] NLS2009055, Stewart B. Minahan to USNRC, "Response to Request for Additional Information for License Renewal Application," dated July 29, 2009 (ADAMS Accession Number ML092160083).

NPPD Response:

A 2-inch to a 1-1/4-inch reducer located in the Z sump and shown on drawing LRA-2005-SH02 (G-10), is credited with ensuring the OG liquid drain line flow does not exceed the capacity of one sump pump. The reducer is identified as component type 'Piping' with an intended function of 'Pressure boundary' and 'Flow control' in LRA Table 2.3.3-12 (Plant Drains).

The component type 'Restriction orifice' listed in LRA Table 2.3.3-12 (Plant Drains) is shown on drawing LRA-2037 (B-9) and is not associated with the OG liquid drain line.

NRC Request: *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 above mentioned sensing lines to differential pressure instrumentation from the scope of license renewal.

NPPD Response:

OG system components OG-DPIS-550 and OG-DPT-550 are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). These instruments, associated piping, and isolation valves are nonsafety-related and are highlighted only on one side of OG-DPIS-550 and OG-DPT-550 since the instruments do not perform a pressure measuring function, but are part of the pressure boundary intended function for safety-related differential pressure (Δp) instruments OG-DPIS-114 and OG-DPT-114 shown on drawing LRA-2037 (C-10). The highlighting for this pressure boundary intended function should also include piping (12" AR-1) shown at location H-10. This piping is subject to AMR and is included as component type 'Piping' in LRA Table 2.3.3-12 (Plant Drains).

NRC Request: *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.

NPPD Response:

LRA Section 2.3.3.12 (Plant Drains) is being revised consistent with the response to RAI 2.3.3.12.OG-6, which states that the intended function: "Provide a barrier to ground level release via the Z sump during accidents where the standby gas treatment (SGT) system must operate" is performed only by the radwaste (RW) system. The RAI 2.3.3.12.OG-6 response also clarifies that this function, performed by nonsafety-related components of the RW system, is properly classified as an intended function in accordance with 10 CFR 54.4(a)(2), not 10 CFR 54.4(a)(1).

a) The response to RAI 2.3.3.12.OG-4 clarifies that the orange highlighted components associated with OG-DPIS-550 and OG-DPT-550 on drawing LRA-2037 (H-10) are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). These

instruments, associated piping, and isolation valves are part of the pressure boundary intended function for safety-related differential pressure (Δp) instruments OG-DPIS-114 and OG-DPT-114 shown on drawing LRA-2037 (C-10). The RAI response also clarifies that piping (12" AR-1) shown at location H-10 should be highlighted and is in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

b) The OG oil system components shown on drawing LRA-2037 (G-10) are located in the off-gas building, which does not contain any safety-related components. Therefore, fluid-filled components in this system are not in scope and are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

A review of the intended function, "Provide a barrier to ground level release via the Z sump during accidents where the standby gas treatment (SGT) system must operate," determined that this function is performed only by the RW system, not by the air ejector or gland seal subsystems of the OG system, nor by the air removal (AR) system. It was further determined that this function, performed by nonsafety-related components of the RW system, is properly classified as an intended function in accordance with 10 CFR 54.4(a)(2), not 10 CFR 54.4(a)(1).

Further review of OG system intended functions clarified that the OG system supports operation of the Z sump by venting the Z sump to the elevated release point (ERP) and by monitoring and

equalizing the vacuum between the OG 48" hold-up line and the Z sump, (see USAR Section IX-4.5.1.) The vent line to the ERP is part of the boundary for secondary containment.

LRA Section 2.3.3.12 has been revised to reflect the above information (see Attachment 2, Changes 1, 2, 3, 4, and 5).

NRC Request: *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.

NPPD Response:

The OG system supports operation of the Z sump by venting the Z sump to the ERP and by monitoring and equalizing the vacuum between the OG 48" hold-up line and the Z sump, (see USAR Section IX-4.5.1). Under post-accident conditions in support of SGT operation, the vent line to the ERP is part of the boundary for secondary containment (see response to RAI 2.3.3.12.OG-6). The safety-related components in the OG system are all associated with the Z sump and its functions. The components have a pressure boundary intended function and are listed below with the associated LRA drawings. These components are classified as 'Essential' in the CNS component database (SAP).

LRA Drawing 2037 [location]	LRA Drawing 2005 Sheet 2 [location]
OG-CV-8CV [C-11]	OG-V-84 [F-11]
OG-CV-12CV [C-11]	OG-V-113 [F-12]
OG-V-115 [C-11]	
OG-V-116 [C-11]	
OG-V-117 [C-11]	

LRA Drawing 2037 [location]	LRA Drawing 2005 Sheet 2 [location]
OG-V-119 [C-10]	
OG-V-121 [C-11]	
OG-V-122 [C-11]	
OG-V-123 [C-11]	
OG-V-124 [C-10]	
OG-V-129 [C-11]	

NRC Request: *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.

NPPD Response:

As stated in LRA Section 2.3.3.12 (Plant Drains), the air ejector off-gas subsystem and the gland seal off-gas subsystem are included in the OG system which is in scope and subject to AMR for 10 CFR 54.4 (a)(2).

The response to RAI 2.3.3.12.OG-6 states that the intended function "Provide a barrier to ground level release via the Z sump during accidents where the standby gas treatment (SGT) system must operate," is performed only by the RW system. The RAI response also clarifies that this function, performed by nonsafety-related components of the RW system, is properly classified as

an intended function in accordance with 10 CFR 54.4(a)(2), not 10 CFR 54.4(a)(1). The OG system (air ejector and gland seal off-gas) does not have this function.

The augmented off-gas (AOG) system is not part of the OG system. Passive mechanical components assigned to the AOG system are located in either the augmented radwaste building or the radwaste building. LRA Section 2.4.3 (Turbine Building, Process Facilities, and Yard Structures) states that neither of these structures contains safety-related components. In addition, none of these AOG components provide structural support for safety-related components. Therefore, the AOG system is not in scope and not subject to AMR for 10 CFR 54.4 (a)(2).

NRC Request: *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.

NPPD Response:

The two AR safety-related valves are AR-V-113 and AR-V-114, shown on LRA drawing 2037 (D-11) (as well as on LRA drawing 2005 sheet 2 (F-10)). These two AR system valves are part of the path that monitors the differential pressure that could occur between the OG hold-up line and the Z sump.

Further review of AR system intended functions determined that the system description in LRA Section 2.3.3.12 (Plant Drains) should more specifically describe how the AR system supports the Z sump (see Attachment 2, Change 3).

NRC Request: *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.

NPPD Response:

The isolation valves for the mechanical vacuum pumps have an intended function of isolating the vacuum pumps from the main condenser. Since these valves are nonsafety-related, this is an intended function in accordance with 10 CFR 54.4(a)(2). The control rod drop accident analysis assumes that the mechanical vacuum pumps trip and are isolated on high radiation. This prevents the vacuum pumps from drawing noncondensibles from the main condenser for discharge through the ERP. The valves perform this function with moving parts. The passive pressure boundary provided by the valve bodies is not required to prevent the vacuum pumps from actively discharging the noncondensibles through the ERP. As part of the main condenser pressure boundary, any leakage through the valve bodies is addressed as condenser leakage in USAR Section XIV-6.2.7.2. Since the isolation function is performed by active parts of the valves, the isolation valves are not subject to AMR. Since components on LRA drawings are only highlighted if they are in scope and subject to AMR, the isolation valves are not highlighted. LRA Section 2.3.3.12 (Plant Drains) has been revised to provide this discussion (see Attachment 2, Change 3).

NRC Request: *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.

NPPD Response:

The control rod drop accident analysis assumes that the steam jet air ejectors (SJAE) are isolated on high radiation. This prevents the SJAEs from drawing noncondensibles from the main condenser for discharge through the ERP, which supports the analysis assumption that the only leakage path for dose consequences, is from the main condenser into the turbine building and then to the environment. The isolation valve OG-AO-254 for the SJAEs is located outside the turbine building in the off-gas filter building, as shown in LRA drawing 2037 (F-8). To support the isolation function consistent with the analysis assumptions, the piping and components in the flowpath from the turbine building up to the isolation valve must maintain their pressure boundary. Since the piping and components in this flowpath are nonsafety-related, this SJAE isolation function is an intended function in accordance with 10 CFR 54.4(a)(2).

Piping and components in this flowpath, from the turbine building to the isolation valve in the off-gas filter building should be in scope and subject to AMR. Accordingly, the piping and components in the flow path shown on LRA drawing 2037 inside the off-gas filter building (H-10) (up to and including isolation valve (OG-AO-254) at (F-8)) have now been included in scope and evaluated in the plant drains AMR. LRA Sections 2.3.3.12 and B.1.31, and Tables 2.3.3-12 and 3.3.2-12 have therefore been revised (see Attachment 2, Changes 4, 7, 11 and 15).

NRC Request: *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.

NPPD Response:

On the LRA mechanical drawing 2005 sheet 2, the Z sump is not highlighted because it is a structural component and structural components are not highlighted on drawings. However, the Z sump structure is evaluated in the structural section. Specifically the Z sump is discussed under 'Elevated Release Point Tower,' and is in the scope of license renewal and subject to AMR. It is included within the LRA Table 2.4-3 *Concrete* line item 'Sump.' Other sumps included in Table 2.4-3 are those sumps associated with the turbine building and appendages, diesel generator building, augmented radwaste building, off-gas and fan building, and the radwaste building discussed in LRA Section 2.4.3 (Turbine Building, Process Facilities and Yard Structures).

NRC Request: *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.

NPPD Response:

Fluid-filled components in the turbine building (excluding the basement) are in scope and subject to AMR per 10 CFR 54.4(a)(2). Turbine building radioactive area sumps and associated components (pumps, piping, and valve bodies) shown on drawing LRA-2005-SH02 are assigned to the RW or non-radioactive floor drain system (FDN) and located in the turbine building basement which contains no safety-related components. Failure of these and other components in this area cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1). Therefore, these components are not in scope and are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

The safety function of the RW system components is to support Z sump function to assure SGT system operation. This is accomplished by removing excess water from the sump. The only safety-related components that perform this function are the sump pumps (1-Z-1, 1-Z-2), discharge check valves (RW-CV-58CV, RW-CV-59CV), and associated piping located outside the Z sump. Valves RW-V-10 and RW-V-11 and the remaining portion of the flowpath to the radwaste building are nonsafety-related. The RW system intended function to provide a barrier to ground level release via the Z sump during accidents where the SGT system must operate, is an intended function in accordance with 10 CFR 54.4(a)(2) criterion per the response to RAI 2.3.3.12.OG-6. Therefore, these components are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2) for functional support. Since there are no safety-related components in the radwaste building, fluid-filled components in this location are not in scope and are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

The piping (3" CH-4) below the indicated service water pump room wall up to the intake structure is in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2) and should be highlighted. It is included in LRA Table 2.3.3-14-1 (Auxiliary Condensate Drain System), as component type 'Piping.'

NRC Request: *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.

NPPD Response:

Pressure control valves are not excluded from the scope of license renewal. Drawing LRA-2012-SH02 (B-6) depicts the active air operator (shown in a divided circle) for control valve PCV-805. The passive mechanical valve body is shown next to the air operator in the auxiliary steam piping (4" AS-3) connected to the air operator line via tubing, which is highlighted as subject to AMR.

NRC Request: *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.

NPPD Response:

The 3" AS-3 piping segment and FE-115 are assigned to the main steam system. Since these are high energy components located in the turbine building basement, the components are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). Refer to the response to RAI 2.1-1 for discussion on scoping high energy components in the turbine building basement.[2] These piping and flow element components are included in LRA Table 2.3.4-2-9 (Main Steam System), as component types 'Piping' and 'Flow element.'

NRC Request: *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 above mentioned component types for inclusion in Table 2.3.3-14-2 and subject to an AMR.

NPPD Response:

The "tank/vessel" identified on drawing LRA-2002-SH03 as HTR A-1 and HTR B-1 represents feedwater heaters that are more clearly shown on drawing LRA-2003 and are included as component types 'Heat exchanger (shell)' in LRA Table 2.3.4-2-8 (Main Condensate System).

The component types 'Restricting orifice,' 'Flow element,' 'Thermowell,' and 'Rupture disk' shown on drawing LRA-2002-SH03 are assigned to the main steam system and included in LRA Table 2.3.4-2-9 (Main Steam System).

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[2] NLS2009055, Stewart B. Minahan to USNRC, "Response to Request for Additional Information for License Renewal Application," July 29, 2009 (ADAMS Accession Number ML092160083).

NRC Request: *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.

NPPD Response:

The passive mechanical portion of conductivity cells that performs the intended function of pressure boundary are included in component type 'Piping' in LRA Table 2.3.3-14-24 (Reactor Water Cleanup System).

NRC Request: *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 ACC-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.

NPPD Response:

The turbine equipment cooling (TEC) system components highlighted on drawing LRA-2007-0 are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2) because of the potential for spatial interaction. The treated water environment flows through tubes inside the housings/shells of the components described in the issue statement. The shells are not in scope because they contain gas or air and do not have the potential for spatial interaction. However, the end bells/bonnets associated with the coolers are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). Programs credited with managing the effects of aging in the turbine equipment cooling system apply to the end bells/bonnets. LRA Tables 2.3.3-14-29 and 3.3.2-14-29 have been accordingly revised (see Attachment 2, Changes 8 and 12).

NRC Request: *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.

NPPD Response:

The main turbine oil coolers are assigned to the lube oil system (LO) and have cooling water from the TEC system inside the endbell or bonnet, heat exchanger tubes, and lubricating oil on the shell. Only the heat exchanger shell and bonnets are in scope and subject to AMR due to the potential for spatial interaction. The component type 'Heat exchanger (shell)' is included in LRA Table 2.3.4-2-6 (Turbine Generator Lube Oil System).

The electro hydraulic (EH) governor coolers are assigned to the turbine generator EH fluid system (TGF) and have cooling water from the TEC system inside the bonnet and heat exchanger tubes, and lubricating oil on the shell. The component type 'Heat exchanger (shell)' is included in LRA Table 2.3.4-2-13 (Turbine Generator EH Fluid System).

The bonnets associated with these heat exchangers have been added to LRA Tables 2.3.3-14-29 and 3.3.2-14-29, as described in RAI 2.3.3.14.TEC-1.

NRC Request: *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).

NPPD Response:

Lines downstream of TEC system valves TEC-V-427 and TEC-V-428 shown on drawing LRA-2007 (B-8 / C-7) continue to the TEC system cooling units 1-FC-R-1KA and 1-FC-R-1KB shown on drawing LRA-2020 (H-4 to J-5). Though not highlighted, these components are in scope and subject to AMR based on the criterion of 10 CFR 54.4 (a)(2) and are included as component types 'Flexible connection,' 'Piping,' 'Thermowell,' 'Tubing,' and 'Valve body' in LRA Table 2.3.3-14-29 (Turbine Equipment Cooling System).

NRC Request: *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.

NPPD Response:

The piping and piping components shown on drawing LRA-2006-SH03 (C-8) continuing from drawing LRA-2013 (C-12) are demineralized water system (DW) components located in the turbine building basement which is an area that contains no safety-related components. Failure of these components cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1). Therefore, these components are not in scope and are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

Highlighting on drawing LRA-2029 (D-4) should stop at the system separation upstream of valve 12-CV (break between service air (SA) and DW systems). Components upstream of valve 12-CV contain dry air or gas, are not required for structural support of safety-related equipment, and are therefore not in scope and are not subject to AMR.

NRC Request: *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.

NPPD Response:

Drawing LRA-2005-SH01 does not have any DW system components that are in scope and subject to AMR.

Components assigned to the DW system are shown on drawing LRA-2005-SH02 in the area identified with coordinates A-1 to B-6 consisting of component types 'Valve body' and 'Piping.' These components are highlighted in yellow and subject to AMR based on the criterion of 10 CFR 54.4 (a)(2).

Components assigned to the DW system are also shown on drawing LRA-2009 in the area identified with coordinates H-4 to H-6 providing demineralized water to the mechanical vacuum tanks. These components are not in scope and are not subject to AMR per the criterion of 10 CFR 54.4 (a)(2) for spatial interaction due to their location in the turbine building basement which contains no safety-related components.

LRA Table 2.3.3.14-C (LRA Drawings for Auxiliary Systems in Scope for 10 CFR 54.4(a)(2) for Physical Interactions) incorrectly references LRA-2005-SH01 and has been revised (see Attachment 2, Change 6).

NRC Request: *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.

NPPD Response:

MI-A/B/C/D are not tanks, but are calorimeter units integrated into the system piping. Therefore, NPPD included these components within component type 'Piping' in LRA Table 2.3.4.2-9 (Main Steam System Nonsafety-Related Components Affecting Safety-Related Systems Components Subject to Aging Management Review). As shown on drawing LRA-2002-SH02, the moisture separators are equipped with level switches as part of the calorimeter assemblies. Consequently, component type 'Level gage' is not necessary to be listed in LRA Table 2.3.4.2-9.

NRC Request: *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.

NPPD Response:

The main steam isolation valve (MSIV) leakage pathway starts at the MSIVs shown on drawing LRA-2041. The pathway includes the main steam lines up to the main turbine stop valves and other branch and drain piping such as the turbine bypass valves and piping as shown on drawings LRA-2002-SH01/SH02/SH03 and LRA-2005-SH01.

A review was performed of the MSIV leakage pathway pressure boundary as shown on the LRA flow diagrams identified above to determine if additional components not already in scope and subject to AMR are required for structural support of MSIV leakage pathway components. The previous response to RAI 2.1-1 identified that the remaining main steam system components in the turbine building basement are in scope and subject to AMR.[3] These additional components include the components needed to provide structural support for MSIV leakage pathway components. As a result of this change, all seismic supports and piping needed for the MSIV leakage pathway are included in the scope of license renewal and subject to AMR. The pipe supports are included in the structural review of "Bulk Commodities" as described in LRA Section 2.4.4 (Bulk Commodities).

[3] NLS2009055, Stewart B. Minahan to USNRC, "Response to Request for Additional Information for License Renewal Application," July 29, 2009 (ADAMS Accession Number ML092160083).

NRC Request: *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.

NPPD Response:

Components labeled "FX" shown on drawing LRA-2008-SH01 are nonsafety-related flow test spool pieces used as connection interface for installation of temporary diagnostic instruments. The flow test spool pieces are part of component type 'Piping' in LRA Table 2.3.4-2-2 (Condensate Drain System Nonsafety-Related Components Affecting Safety-Related Systems Subject to Aging Management Review).

NRC Request: *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.

NPPD Response:

The subject strainer housings are in scope and subject to AMR based on criterion 10 CFR 54.4 (a)(2). LRA Tables 2.3.4-2-1 and 3.4.2-2-1 have been accordingly revised (see Attachment 2, Changes 9 and 13).

NRC Request: *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.

NPPD Response:

The feedwater heaters are assigned to the main condensate system (MC) and are listed as component type 'Heat exchanger (shell)' in LRA Table 2.3.4-2-8 (Main Condensate System). The environment of steam on heat exchanger shells should be included in the evaluation of MC system component types. LRA Table 3.4.2-2-8 has been accordingly revised (see Attachment 2, Change 14).

NRC Request: *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.

NPPD Response:

The non-highlighted piping and components opposite the blind flange are high energy components located in the turbine building basement assigned to the extraction steam system (ES). These components are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2) as discussed in the response to RAI 2.1-1. The components are included as component types 'Piping' and 'Valve body' in LRA Table 2.3.4-2-5 (Extraction Steam System).

NRC Request: *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.

NPPD Response:

The 10 CFR 54.4(a)(2) scoping and screening process used the CNS component database to determine the components assigned to a particular system and the potential for spatial interaction with safety-related equipment. These components are typically highlighted on CNS Flow Diagrams which become LRA drawings. In some cases, components are listed in the database and are in scope and subject to AMR, but are not shown on CNS Flow Diagrams or any other drawings that would be suitable to use as an LRA drawing. This is the case with many of the reactor feedwater pump and turbine lube oil (RFLO) system components.

All passive mechanical RFLO system components located in areas that contain safety-related equipment are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). These component types are associated with instrumentation support and are listed in LRA Table 2.3.4-2-11 (Reactor Feedwater Pump and Turbine Lube Oil System).

The reactor feedwater pumps are in the turbine building basement. Passive mechanical RFLO system component types 'storage tanks,' 'pumps,' 'vapor extraction fans,' 'filter housings,' 'heat exchangers,' 'tubing,' 'piping,' and 'valve body' providing lubricating oil for pump and turbine bearings as well as stop and nozzle valve assemblies are also in this location. Failure of these components cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1). Therefore, these component types are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

The "exhaust head" on drawing LRA 2011-SH01 (C-9) should be highlighted and is in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). This component is included with component type 'Piping' in LRA Table 2.3.4.2-6 (Turbine Generator Lube Oil System).

NRC Request: *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.

NPPD Response:

The 10 CFR 54.4(a)(2) scoping and screening process used the CNS component database to determine the components assigned to a particular system and the potential for spatial interaction with safety-related equipment based on equipment location. These components are then highlighted on CNS Flow Diagrams which become LRA drawings. In some cases, components included in the database are in scope and subject to AMR, but are not shown on CNS Flow Diagrams. This is the case with many of the turbine generator LO system components.

Using this approach, all passive mechanical LO system components located in spaces that contain safety-related equipment are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). These component types support main turbine and generator bearing operation and are listed in LRA Table 2.3.4-2-6 (Turbine Generator Lube Oil System).

Passive mechanical LO system component types 'Storage tanks,' 'Pumps,' 'Vapor extraction fans,' 'Filter housings,' 'Tubing,' 'Piping,' and 'Valve body' are located in the turbine building basement, which contains no safety-related equipment. Failure of these components cannot prevent satisfactory accomplishment of any 10 CFR 54.4(a)(1) system functions. Therefore, these component types are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

EH components are assigned to the TGF system. Refer to RAI 2.3.4.2.TGF-1 for a discussion of this system.

NRC Request: *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.

NPPD Response:

The 10 CFR 54.4(a)(2) scoping and screening process used the CNS component database to determine the components assigned to a particular system and the potential for spatial interaction with safety-related equipment based on equipment location. These components are then highlighted on CNS Flow Diagrams which become LRA drawings. In some cases, components included in the database are in scope and subject to AMR but are not shown on CNS Flow Diagrams. This is the case with most of the LOGT system components. All passive mechanical fluid-filled components assigned to the LOGT system are located in spaces that contain safety-related equipment, and therefore are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

NPPD Response:

The 10 CFR 54.4(a)(2) scoping and screening process used the CNS component database to determine the components assigned to a particular system and the potential for spatial interaction with safety-related equipment based on equipment location. These components are then highlighted on CNS Flow Diagrams which become LRA drawings. In some cases, components

included in the database are in scope and subject to AMR, but are not shown on CNS Flow Diagrams. TGF system components are shown exclusively on vendor drawings which are not suitable for use as LRA drawings. All passive mechanical fluid-filled components assigned to the TGF system are located in spaces that contain safety-related equipment, and are therefore in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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).

NPPD Response:

The non-highlighted piping (6" CH-3 and 16" CH-3) shown on drawing LRA-2004-SH02 (G/E-9 and G-12) is located in the turbine building basement. Failure of these components cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1). Therefore, these component types are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

The boundary identification designations on drawing LRA-2004-SH02 (B-2) for "turbine building" and "turbine building basement" should be reversed. This change clarifies the highlighted piping and piping components shown at this location.

NRC Request: *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.

NPPD Response:

The piping that provides suction to the condensate booster pumps as shown on drawing LRA-2004-SH02 (G-5) is located in the turbine basement. These components were evaluated as described in the response to RAI 2.1-1. Failure of these components cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1).[4] Therefore, these component types are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

NRC Request: *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.

[4] NLS2009055, Stewart B. Minahan to USNRC, "Response to Request for Additional Information for License Renewal Application – Aging Management Programs," July 29, 2009 (ADAMS Accession Number ML092160083).

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.

NPPD Response:

The feedwater heaters have endbells or bonnets that are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2). LRA Tables 2.3.4-2-8 and 3.4.2-2-8 have accordingly been revised (see Attachment 2, Changes 10 and 14).

NRC Request: *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.

NPPD Response:

Valves MC-V-222, 223, 224, 225 and associated drain piping for condensers 1A and 1B are located in the turbine building basement. Failure of these components cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1). Therefore, these component types are not subject to AMR based on the criterion of 10 CFR 54.4(a)(2).

Other piping and components on this drawing in the near vicinity that are highlighted are associated with lines that penetrate the condensers at higher turbine building elevations not in the basement.

NRC Request: *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.

NPPD Response:

The CNS component database was the main information source used to determine the components assigned to the CF system that are in scope and subject to AMR based on the criterion of 10 CFR 54.4(a)(2) for spatial interaction. This was done using the component

location relative to safety-related equipment. As shown on drawing LRA-2004-SH02 (A/B-10), the transition from the MC system to the CF system occurs at the radwaste building wall. Review of the component database found that the majority of the CF system components are located in the radwaste building which contains no safety-related components. Since these components are not subject to AMR for 10 CFR 54.4 (a)(2), the associated drawings were not provided. The components that are in scope and subject to AMR include valve body and piping components shown on drawing LRA-2049–SH04 (B/C-5).

NRC Request: *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.

NPPD Response:

The 4" overflow line on drawing LRA-2049-SH02 (D-9) is in scope and subject to AMR for 10 CFR 54.4(a)(2) and should be highlighted. This overflow line is included in the component type 'Piping' in LRA Table 3.4.2-2-4 (Condensate Makeup System [10 CFR 54.4(a)(2)]).

Tank 1B does not have a separate overflow line as it is compensated by the equalizing line joining tanks 1A and 1B.

NRC Request: *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).

NPPD Response:

The equalization line connecting the two emergency condensate storage tanks, as shown on drawing LRA-2049-SH02 (D-9), highlighted in yellow, should be highlighted in blue indicating that it is in scope and subject to AMR for 10 CFR 54.4(a)(1). This equalization line is included in the component type 'Piping' in Table 3.2.2-4 (High Pressure Coolant Injection System).

Attachment 2

Changes to the License Renewal Application
Cooper Nuclear Station, Docket No. 50-298, DPR-46

This attachment provides changes to the License Renewal Application based on the responses to the RAIs provided in Attachment 1. The changes are presented in underline/strikeout format.[1]

1. Section 2.3.3.12, Page 2.3.94, is revised as follows:

System Description

"The Z Sump, located beneath the elevated release point (ERP), receives drainage from the standby gas treatment system (SGT) and the OG system. The Z sump provides an active safety function of pumping out the collected water, which would otherwise eventually fill the sump and backup into the SGT exhaust line, impeding the flow of air. The Z sump pumps normally discharge to the waste collector tank. An alternate path, via a 3-way valve, is to the floor drain collector tank. Components that transfer liquid from the Z sump to the radwaste building provide a barrier to a ground-level release, ensuring that releases flow through an analyzed pathway (i.e., the ERP)."

Reference: Response to RAI 2.3.3.12.OG-6.

2. Section 2.3.3.12, Pages 2.3-95, 2.3-96, is revised to read:

Radwaste System

"Two RW system valves in the reactor vessel bottom drain line support the RCS (and RWCU) pressure boundary. The RW system contains components that support primary containment isolation. Several components in the RW system are associated with the Z sump and have the safety function of keeping the Z sump drained to assure SGT system function. ~~as well as~~ RW components also maintain~~ing~~ a barrier to ground level release from the Z sump during accidents where the SGT system must operate."

"The RW system has the following intended functions for 10 CFR 54.4(a)(1).

- Support Z sump function to assure SGT system operation.
- ~~Provide a barrier to ground level release via the Z sump during accidents where the SGT system must operate.~~

[1] The changes shown are made against the original LRA submitted on September 24, 2008. Where other previously made LRA changes affect the same text, a footnote is provided cross-referencing the letter where the previous change was made.

- Support primary containment isolation.
- Maintain integrity of the reactor coolant pressure boundary."

"The RW system has the following intended functions for 10 CFR 54.4(a)(2).

- Maintain secondary containment integrity with loop seals in drains.
- Provide adequate drainage in locations where essential equipment is protected by floor drains and gasoline-powered pumps from an external flooding event.
- Provide adequate drainage in locations where essential equipment is protected by floor drains from flooding in the event of a pipe break.
- Provide a barrier to ground level release via the Z sump during accidents where the SGT system must operate.
- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function."

Reference: Response to RAI 2.3.3.12.OG-6.

3. Section 2.3.3.12 describing the AR system is revised to read:

Air Removal (Pages 96 and 97)

"Noncondensible gases and entrained vapor from the after-condenser are exhausted to the offgas system. Air ejector exhaust is metered, sampled, and monitored prior to entering the off-gas holdup piping. Discharge from the mechanical vacuum pumps is routed to the off-gas system (the gland seal holdup subsystem), since average gaseous activity is low during startup and shutdown. The control rod drop accident analysis assumes that the mechanical vacuum pumps trip and are isolated on high radiation. This prevents the vacuum pumps from drawing noncondensibles from the main condenser. Because they are active, the isolation valves are not subject to aging management review. (A valve in the OG system isolates the SJAEs on high radiation. This function is discussed in the OG system description).

The AR system ~~contains two safety-related valves which~~ supports operation of the Z sump ~~function~~. ~~These~~ Two safety-related valves are part of the flow path that monitors and equalizes the differential pressure (Δp) that could occur between the off-gas hold-up line and the Z sump. AR system components restrict the flow from the off-gas liquid drain line to within the capacity of one Z sump pump. ~~Components associated with the Z sump have the safety functions of keeping the Z sump drained to assure SGT system function and maintaining a barrier to ground level release via the Z sump during accidents where the SGT system must operate.~~

The AR system has the following intended functions for 10 CFR 54.4(a)(1).

- Support Z sump function to assure SGT system operation.
- ~~Provide a barrier to ground level release via the Z sump during accidents where the SGT system must operate.~~

The AR system has the following~~no~~ intended functions for 10 CFR 54.4(a)(2) ~~or (a)(3)~~.

- Isolate the mechanical vacuum pumps on a high radiation signal."

The AR system has no intended functions for 10 CFR 54.4(a)(3).

Reference: Responses to RAI 2.3.3.12.AR-1, 2.3.3.12.AR-2, and 2.3.3.12.OG-6.

4. Section 2.3.3.12 under *Off Gas System,* Page 2.3-97 is revised to read:

"The purpose of the OG system is to collect and process gaseous radioactive effluents to minimize their release to the atmosphere. The OG system receives gaseous radwaste from the main condenser steam jet air ejectors (SJAEs), the mechanical vacuum pumps, the gland steam condensers, and other minor sources. The OG system includes the air ejector off-gas subsystem and the gland seal off-gas subsystem.

The control rod drop accident analysis assumes that the SJAEs are isolated on high radiation. This prevents the SJAEs from drawing noncondensibles from the main condenser for discharge through the elevated release point, which supports the analysis assumption that the only leakage path for dose consequences is from the main condenser into the turbine building and then to the environment.

The OG system includes components that support ~~drainage of the Z sump~~ operation ~~and integrity~~ of the Z sump system. ~~These components are safety-related.~~ Components that vent the Z sump to the ERP are safety-related because this vent line supports secondary containment during post-accident conditions. Other safety-related components monitor and equalize the vacuum between the OG hold-up line and the Z sump.

The OG system has the following intended functions for 10 CFR 54.4(a)(1).

- Support Z sump function to assure SGT system operation.
- ~~Provide a barrier to ground level release via the Z sump during accidents where the SGT system must operate.~~ Maintain secondary containment integrity.

The OG system has the following intended function for 10 CFR 54.4(a)(2).

- Maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.
- Isolate the SJAEs on a high radiation signal."

Reference: Response to RAI 2.3.3.12-AR-3 and 2.3.3.12.OG-6.

5. Section 2.3.3.12, Page 2.3-98 is revised to read:

"USAR References

FDN: Sections X-14.0 (non-radioactive drains only), X-10.4.5.2 (loop seals for control room pressurization boundary), and V-3.3.4 (secondary containment loop seals).

RW: Sections IX-2.0, IX-3.0 and X-14.0

AR: Section XI-4.0 (main condenser gas removal)

OG: Section IX-4.~~3~~0"

Reference: Response to RAI 2.3.3.12.OG-6.

6. Table 2.3.3.14-C (LRA Drawings for Auxiliary Systems in Scope for 10 CFR 54.4(a)(2) for Physical Interactions), on Page 2.3-114, is revised to read:

System	Drawing Numbers	
Demineralized Water	LRA-2004-SH01 ~~LRA-2005-SH01~~ LRA-2005-SH02 LRA-2006-SH03 LRA-2007	LRA-2009 LRA-2013 LRA-2018 LRA-2029 LRA-2031-SH02

Reference: Response to RAI 2.3.3.14.DW-3.

7. Table 2.3.3-12 (Plant Drains Components Subject to Aging Management Review), Page 2.3-129, is revised to include the following lines:

Filter housing	Pressure boundary
Trap	Pressure boundary

Reference: Response to RAI 2.3.3.12-AR-3.

8. Table 2.3.3-14-29 (Turbine Equipment Cooling System), on Page 2.3-159, is revised to add the following line item:

Component Type	**Intended Function(s)**
Heat exchanger (bonnet)	Pressure boundary

Reference: Response to RAI 2.3.3.14.TEC-1.

9. Table 2.3.4-2-1 (Circulating Water System), on Page 2.3-177, is revised to add the following line item:

Component Type	**Intended Function(s)**
Strainer housing	Pressure boundary

Reference: Response to RAI 2.3.4.2.CW-1.

10. Table 2.3.4-2-8 (Main Condensate System), on Page 2.3-184, is revised to include the following line item:

Component Type	**Intended Function(s)**
Heat exchanger (bonnet)	Pressure boundary

Reference: Response to RAI 2.3.4.2.MC-3.

11. Table 3.3.2-12 (Plant Drains), Pages 3.3-141 and 3.3-143, is revised to include the following line items:

Filter housing	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	External Surfaces Monitoring	V.II.I-8 (A-77)	3.3.1-58	A

Filter housing	Pressure boundary	Carbon steel	Condensation (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	VII.H2-21 (A-23)	3.3.1-71	E
Trap	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	External Surfaces Monitoring	V.II.I-8 (A-77)	3.3.1-58	A
Trap	Pressure boundary	Carbon steel	Raw water (int)	Loss of material	Periodic Surveillance and Preventive Maintenance	VII.C1-19 (A-38)	3.3.1-76	E

Reference: Response to RAI 2.3.3.12-AR-3.

12. Table 3.3.2-14-29 (Turbine Equipment Cooling System [10 CFR 54.4(a)(2)]), Page 3.3-262, is revised to add the following line items:

Heat exchanger (bonnet)	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	External surfaces monitoring	VII.I-8 (A-77)	3.3.1-58	A
Heat exchanger (bonnet)	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Water chemistry control – closed cooling water	VII.C2-1 (A-63)	3.3.1-48	B

Reference: Response to RAI 2.3.3.14.TEC-1.

13. Table 3.4.2-2-1 (Circulating Water System [10 CFR 54.4(a)(2)]), on Page 3.4-42, is revised to include the following line items:

Strainer housing	Pressure boundary	Carbon steel	Condensation (ext)	Loss of material	External surfaces monitoring	VIII.H-10 (S-42)	3.4.1-28	A
Strainer housing	Pressure boundary	Carbon steel	Raw water (int)	Loss of material	Periodic surveillance and preventive maintenance	VIII.G-36 (S-12)	3.4.1-8	E

Reference: Response to RAI 2.3.4.2.CW-1.

14. Table 3.4.2-2-8 (Main Condensate System [10 CFR 54.4 (a)(2)]), Pages 3.4-69 and 3.4-70, are revised to include the following line items:

Heat exchanger (bonnet)	Pressure boundary	Carbon steel	Air – indoor (ext)	Loss of material	External surfaces monitoring	VIII.H-7 (S-29)	3.4.1-28	A
Heat exchanger (bonnet)	Pressure boundary	Carbon steel	Treated water (int)	Loss of material	Water chemistry control – BWR	VIII.E-7 (S-18)	3.4.1-5	A, 402
Heat exchanger (shell)	Pressure boundary	Carbon steel	Steam (int)	Loss of material	Water chemistry control – BWR	VIII.A-15 (S-04)	3.4.1-2	C, 402

Reference: Response to RAIs 2.3.4.2.MC-3 and 2.3.4.2.ES-1.

15. Section B.1.31 is revised to add the following underlined program activity to the table:

Plant drains system[2]	Perform internal visual inspection of a representative sample of carbon steel, stainless steel, copper alloy, and gray cast iron plant drain components exposed to raw water (drain water) to manage loss of material. Perform internal visual inspection of a representative sample of carbon steel plant drain components exposed to condensation to manage loss of material. Perform visual inspection of the inside and outside surfaces of a representative sample of gray cast iron and aluminum pump casings exposed to raw water (drain water) to manage loss of material. Perform visual inspection of the outside surface of gasoline-powered gray cast iron pump casings exposed to air indoor to manage loss of material.

Reference: Response to RAI 2.3.3.12.AR-3.

[2] The plant drains system program activity on Page B-91 was previously changed in NLS2009055 (ADAMS Accession Number ML092160083) in response to RAI 3.2.2.1-2.