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Power Company
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AEP:NRC:4034-05
10 CFR 54

May 20, 2004

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

SUBJECT: Donald C. Cook Nuclear Plant, Units 1 and 2
Docket Nos. 50-315 and 50-316
License Renewal Application – Response to Requests for
Additional Information on Scoping and Screening Results
(TAC Nos. MC 1202 and MC 1203)

Dear Sir or Madam:

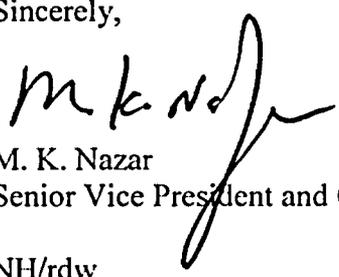
By letter dated October 31, 2003, Indiana Michigan Power Company (I&M) submitted an application to renew the operating licenses for Donald C. Cook Nuclear Plant (CNP), Units 1 and 2.

In the course of the Nuclear Regulatory Commission (NRC) review process, the NRC staff transmitted a number of draft requests for additional information (RAIs) to I&M. In a public meeting held on April 13, 2004, the Staff instructed I&M to consider these draft RAIs final, and provide responses as required to support NRC review of the license renewal application (LRA). This letter provides I&M's responses to LRA Section 2 draft RAIs received between April 1 and April 15, 2004.

The enclosure to this letter provides an affirmation pertaining to the statements made in this letter. Attachment 1 provides I&M's responses to the RAIs; Attachment 2 provides a copy of the CNP Unit 1 and Unit 2 feedwater system flow diagrams, as required to facilitate the review of the response to RAI 2.3.4.1-2. There are no new commitments contained in this submittal.

Should you have any questions, please contact Mr. Richard J. Grumbir, Project Manager, License Renewal, at (269) 697-5141.

Sincerely,


M. K. Nazar
Senior Vice President and Chief Nuclear Officer

NH/rdw

A104

Enclosure: Affirmation

Attachments:

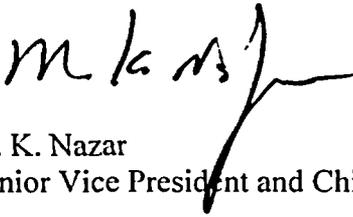
1. Response to Requests for Additional Information for the Donald C. Cook Nuclear Plant License Renewal Application - Scoping and Screening Results
2. Flow Diagrams for the Donald C. Cook Nuclear Plant, Units 1 and 2, Feedwater System (OP-1-5106-49 and OP-2-5106-44)

c: J. L. Caldwell, NRC Region III
K. D. Curry, AEP Ft. Wayne, w/o attachments
J. T. King, MPSC, w/o attachments
J. G. Lamb, NRC Washington DC
J. G. Rowley, NRC Washington DC
MDEQ – WHMD/HWRPS, w/o attachments
NRC Resident Inspector

AFFIRMATION

I, Mano K. Nazar, being duly sworn, state that I am Senior Vice President and Chief Nuclear Officer of American Electric Power Service Corporation and Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

American Electric Power Service Corporation



M. K. Nazar
Senior Vice President and Chief Nuclear Officer

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 20th DAY OF May, 2004



Notary Public

My Commission Expires 6/10/2007

BRIDGET TAYLOR
Notary Public, Berrien County, MI
My Commission Expires Jun. 10, 2007



**Response to Requests for Additional Information for the Donald C. Cook Nuclear Plant
License Renewal Application - Scoping and Screening Results**

This attachment provides Indiana Michigan Power Company's (I&M's) responses to the Donald C. Cook Nuclear Plant (CNP) License Renewal Application (LRA), Section 2, Requests for Additional Information (RAIs) received between April 1 and April 15, 2004.

RAI 2.3.1.2-1:

In Table 2.3.1.2-1 of the LRA, Note 1, it was stated that although the vessel lifting lugs do not directly support any intended function, they are included for completeness. The staff, however, believes that the subject component should be in scope in accordance with 10 CFR 54.4(a)(2), because its failure may prevent some of the safety related components from performing their intended functions if the RPV [reactor pressure vessel] head drops while being lifted. Please state the true basis, consistent with the rule, for which components are determined to be in scope requiring aging management.

I&M Response to RAI 2.3.1.2-1:

Although the safety-related reactor vessel head is credited for performing a pressure boundary intended function, the reactor vessel head lifting lugs are not relied on to support this license renewal intended function. The reactor vessel head lifting lugs are not relied on to remain functional during and following design basis events (DBEs) to ensure the 10 CFR 54.4(a)(1) functions are satisfied. Notwithstanding their safety classification, operating procedures limit the load path and elevation of the head while suspended from the lifting lugs such that failure of the lifting lugs could not prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1)(i), (a)(1)(ii), or (a)(1)(iii) of 10 CFR 54.4. Since the lifting lugs are part of the reactor vessel head, they are safety-related and hence do not meet the criterion of 10 CFR 54.4(a)(2). The lifting lugs are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations listed in 10 CFR 54.4(a)(3).

RAI 2.3.1.3-1:

In page 11, Chap. 3, of the UFSAR [Updated Final Safety Analysis Report] for Unit 1 (and page 29 for Unit 2), it is stated that a small amount of inlet water is directed into the vessel head plenum to provide cooling of the vessel head. According to WCAP-14577-A, the components associated with this cooling system should be in scope of license renewal requiring aging management. Since it appears that the subject components were not identified in Table 2.3.1-2 of the LRA, please confirm whether the components associated with RPV head cooling system are within the scope requiring aging management.

I&M Response to RAI 2.3.1.3-1:

To provide vessel head plenum cooling, a small amount of bypass flow is directed from the inlet downcomer into the upper head. The flow path for this bypass flow consists of 16 spray holes located in the flange of the core barrel. Similar spray holes are provided at corresponding locations in the upper support plate. These spray holes are located outside the outer diameter of the holddown spring, allowing a small, unimpeded bypass flow from the inlet downcomer below the core barrel flange, through the annulus outside of the holddown spring, and up through the upper support plate into the upper head plenum. The spray holes are integral with the component types "Core barrel" and "Upper support plate," listed as subject to aging management review in LRA Tables 2.3.1-2 and 3.1.2-2.

RAI 2.3.1.4-1:

Staff position on reactor vessel flange leak-off lines is that unless a plant specific justification is provided, the components should be in scope requiring aging management. Please confirm whether any of the component type listed in Table 2.3.1-3 of the LRA includes the subject components. If not, then the subject components should be identified as within scope requiring aging management, or provide a plant specific justification.

I&M Response to RAI 2.3.1.4-1:

The flange leak-off lines are included within the scope of license renewal and are identified as requiring aging management review. The flow path from the O-ring groove to the outer surface of the reactor vessel flange is included in the component type "Flange leak tubes" listed in LRA Table 2.3.1-1. Downstream of the outer surface of the reactor vessel, the flange leak-off lines are shown at location G5 on license renewal drawings LRA-1-5128 and LRA-2-5128, and are included as the following component types listed in Table 2.3.1-3:

- Piping and fittings (including blind flanges) [Nominal Pipe Size] NPS < 4-inches
- Class 1 valve bodies and/or bonnets ≤ 2-inches

RAI 2.3.1.4-2:

Pursuant to 10 CFR 50, App. R, Sec. III O, the reactor coolant pump (RCP) lube oil collection subsystem is designed to collect oil from the RCPs and drain it to a collection tank to prevent a fire in the Containment Building during normal plant operations. The staff believes that the subsystem and the tank should be within scope requiring aging management. However, it appears that the subject components were not identified in the LRA (Tables 2.3.1-3); and therefore, the staff requests the applicant to provide an explanation.

I&M Response to RAI 2.3.1.4-2:

The lube oil collection system is a non-Class 1 system with an intended function of meeting fire protection requirements; therefore, the lube oil collection system was included in the fire protection system aging management review. System component types "Fittings," "Piping," "Tank," and "Valve" are subject to aging management review and are listed in LRA Table 2.3.3-7 for the fire protection system. Components in the lube oil collection system are included in LRA Table 3.3.2-7 with the external and internal environments "Lube oil and borated water leakage," which is identified in LRA Table 3.0-1 as an environment specific to the lube oil collection system.

RAI 2.3.1.5-1:

Intergranular and transgranular type stress corrosion cracking were observed in the past in the welded section of pressurizer instrumentation nozzles in Westinghouse PWRs [pressurized water reactors]. Please confirm whether an aging management review (AMR) was performed for the welded portion of instrumentation nozzles.

I&M Response to RAI 2.3.1.5-1:

An aging management review for the attachment welds of the pressurizer instrument nozzles was performed at CNP. Similar to other pressurizer nozzles such as the spray, surge, and relief nozzles, the instrument nozzle attachment welds were reviewed with the welded item itself, and are included in the component type "Instrument nozzles and couplings" listed in LRA Table 2.3.1-4. The aging management review results for pressurizer instrument nozzles and couplings, as listed in LRA Table 3.1.2-4 (page 3.1-76), include the attachment welds.

RAI 2.3.1.5-2:

LRA Drawing 5128A and Table 2.3.1-4 did not include the pressurizer relief/quench tank within the scope. In order for the staff to make a determination whether the exclusion was justified, the staff requests the applicant to provide the following additional information:

- a) Does the failure of pressurizer relief tank prevent effective pressure control or prevent depressurization through the relief/safety valves?*
- b) In the event the relief tank is not functional, and as a result, high pressure and high velocity steam need to be discharged into the containment, what are the consequences? The response should include discussions on potential of failure of other safety related components by the discharging steam.*

I&M Response to RAI 2.3.1.5-2:

- a) The function of the pressurizer relief tank (PRT), as described in UFSAR Section 4.2.2.3, is to condense and cool the discharge from the pressurizer safety and relief valves, as well as several smaller relief valves. By means of its connection to the waste disposal system, the PRT also provides a means for removing any non-condensable gases, which might collect in the pressurizer, from the reactor coolant system. The PRT does not serve a pressurizer pressure control or depressurization prevention function.
- b) The consequences of a steam discharge from the PRT to the containment atmosphere are enveloped by various safety analyses described in detail in each unit's UFSAR Chapter 14. UFSAR Section 14.2.5 discusses the analysis of a steam pipe rupture. UFSAR Section 14.3.1 describes the analysis for a large break loss of coolant accident. Unit 2 UFSAR Section 14.4.11, which includes the Unit 1 analysis, states that equipment inside containment must be qualified to demonstrate that it can perform its safety-related function following a high-energy line break (HELB). Unit 2 UFSAR Tables 14.4.2.1 and 14.4.2.1A include pressurizer safety and relief valves, and supporting components, in the equipment required for shutdown following a HELB. The PRT is not included in the lists of equipment in UFSAR Tables 14.4.2.1 or 14.4.2.1A.

RAI 2.3.1.5-3:

In Table 2.3.1-4 of the LRA, spray head was listed as a component type subject to an AMR having an intended function of pressure control; and in page 2.3-10 of the LRA, it is stated that the spray head and heaters provide pressure control during certain design basis events (DBE). But the LRA drawing # 5128A shows the component not in scope. Please clarify. If the spray head was excluded from the scope, then the following additional information is requested:

- a) *How do you reconcile the fact that the component is relied upon for pressure control function during certain DBE, but the same component does not require any aging management?*
- b) *The staff requests the applicant to clarify if the current licensing basis (CLB) for fire protection (FP) complies with certain sections of Appendix R, particularly Section III.G, which provides the requirements for the fire protection safe shutdown capability. Discuss if the pressurizer spray head and associated piping are credited and relied upon in the fire protection safe shutdown analysis to bring the plant to cold shutdown conditions within a given time for compliance with Appendix R. If it is credited in the fire protection safe shutdown analysis, the pressurizer spray head and associated piping would satisfy 10 CFR 50.48, Appendix R requirements; and therefore, should be included within the scope of license renewal. The specific intended function of the subject components which meets the 10 CFR 54.4(a)(3) requirements is the spray function, and the particular components which help perform this function are the section of piping and the spray head located inside the pressurizer. Note that the subject components do not have pressure boundary function. The staff requests the applicant to describe whether the loss of spray function can make it impossible to bring the plant to cold shutdown conditions within the given time for compliance with Appendix R. If so, then the staff requests that the spray head and the associated piping inside pressurizer having the spray function be included within the scope requiring aging management so that it should provide a reasonable assurance that an adequate spray function will be maintained inside the pressurizer during the extended period of operation.*

I&M Response to RAI 2.3.1.5-3:

The pressurizer spray head is in scope and an aging management review was performed on this item. This review resulted in the component types "Spray head," "Spray head locking bar," and "Spray head coupling" being listed in LRA Tables 2.3.1-4 and 3.1.2-4. Highlighting of the spray head was inadvertently omitted on license renewal drawings LRA-1-5128A and LRA-2-5128A.

RAI 2.3.1.6-1:

In Table 2.3.1-5 of the LRA, the staff notes that the SG [steam generator] partition plate has been identified as within the scope of license renewal requiring aging management. However, one of the most significant intended functions of the component, namely the flow distribution, was not identified in the table. The SG partition plate is located in the lower head of each SG and separates the hot leg primary fluid from the cold leg primary fluid. Reactor coolant is located on both sides of the SG partition plate. The staff's understanding is that the intended function of SG partition plates is flow distribution, i.e., forcing the hot leg primary flow through the SG tubes, and thereby, enabling the SG to perform its primary function of heat transfer. As a result, failure of partition plate will degrade the heat transfer function of the SG. Degradation of the heat transfer function of SG has several safety consequences such as, inability of the reactor

to safely shutdown, loss of natural circulation heat removal through the SG which may be credited for prevention or mitigation of design-basis events, accidents, and/or the Commission's regulated events. In addition, the staff believes that there are potential for loose parts being originated from a degraded partition plate due to aging, which may lead to flow blockage of the SG tubes, and thus causing degradation of SG heat transfer function. The staff, therefore, requests the applicant to specify "flow distribution" as one of the intended functions of SG partition plates, and to prescribe an aging management program (AMP) that provide a reasonable assurance that the plates will not fail in a manner which can result in the primary coolant bypassing the SG tubes, and/or generate loose parts.

I&M Response to RAI 2.3.1.6-1:

The steam generator partition plate is a pressure boundary between the reactor coolant system (RCS) inlet and outlet areas of the lower head. This partition plate separates the primary coolant inlet chamber from the outlet chamber. Failures that bypass the steam generator tubes and loose parts that could cause flow blockage of the steam generator tubes would be readily apparent due to the impact on steam generator performance during normal power operation.

Aging effects associated with the component type "Partition plate" listed in LRA Table 3.1.2-5 include loss of material and cracking. These aging effects are managed by the Water Chemistry Program, the Alloy 600 Aging Management Program, and the Inservice Inspection Program. These programs provide reasonable assurance that the steam generator partition plate will not fail in a manner that could result in reactor coolant bypassing the steam generator tubes or generating loose parts. The addition of "flow distribution" as an intended function for the partition plate would have no effect on the CNP aging management review results.

RAI 2.3.1.6-2:

The staff notes that SG feedwater ring and "J" tubes were not identified in Table 2.3.1-5 of the LRA as within the scope of license renewal requiring aging management. The staff requests the applicant to provide the following additional information in order to conclude whether the exclusion of subject components from scope was justified:

- a) In page 19 (Chap.4) of the UFSAR, it is stated that the "J" tubes prevent rapid drainage of the feedwater ring due to a drop in steam generator water level and thus eliminate or reduce the possibility of water hammer in the feedwater line. On the basis of the above statement made in the UFSAR, it appears that the subject components are needed to prevent or mitigate accidents; and therefore, should be in scope in accordance with 10 CFR 54.4(a)(1)(iii).*
- b) Explain, if the components were relied upon to demonstrate compliance during a design basis event, such as feedwater line break accident, and/or Commission's regulated events.*

- c) *Explain, why failure of the components will not prevent in-scope components within the SG from performing their intended functions.*
- d) *Explain, whether the subject components are covered under any existing inspection and/or monitoring programs, such as SG Integrity program.*

I&M Response to RAI 2.3.1.6-2:

- a) The steam generator feedwater ring and “J” tubes are not subject to aging management review because they do not directly support the steam generator pressure boundary function. Prevention of conditions that may result in water or steam hammer is sound engineering practice exercised throughout the entire CNP plant design. Water hammer is not a DBE; the text in the UFSAR only identifies a design feature of the feedwater ring and “J” tubes that may reduce the potential for water hammer in the event of a reduction in steam generator water level below the feedwater ring.
- b) There are no DBEs or regulated events at CNP that rely upon the steam generator feedwater ring or “J” tubes to demonstrate successful mitigation and recovery from the event.
- c) As stated by the Commission in the Statement of Considerations for the Final Part 54 Rule, “Consideration of hypothetical failures that could result from system interdependencies that are not part of the CLB and that have not been previously experienced is not required.” CNP has not experienced any water hammer events in the feedwater rings that led to a line failure or DBE. Pressure boundary would be maintained in the event of failure of the “J” tubes and feedwater ring.
- d) The steam generator feedwater ring and “J” tubes are monitored as part of the Steam Generator Monitoring Program, which implements the Steam Generator Integrity Program described in LRA Section B.1.31. The chemistry of the feedwater and the secondary fluid within the steam generators is controlled by the Primary and Secondary Water Chemistry Control Program, which is described in LRA Section B.1.40.1, to mitigate corrosion and stress corrosion cracking. No new AMPs are required for these items.

RAI 2.3.2.3-1:

In page 11 (Chapter 6) of the UFSAR, it was stated that screen assemblies and vortex suppressors are used in the containment sump which provides water for the ECCS [emergency core cooling system] recirculation phase, and one of the intended functions is to protect the ECCS pumps from debris and cavitation due to harmful vortex following an LOCA [loss of coolant accident]. Although, the LRA (Table 2.4-1) listed the screens (fine and coarse) as subject to AMR, the vortex suppressors and their intended function, which also should require an AMR, was not identified. Please explain.

I&M Response to RAI 2.3.2.3-1:

The CNP containment recirculation sump design does not employ vortex suppressors to prevent cavitation due to vortexing. The fine and coarse screens listed in LRA Table 2.4-1 serve as flow strainers and mitigate vortex formation by equalizing local velocity differences. The containment recirculation sump design provides sufficient flow area over the trash curb ahead of the sump and adequate net positive suction head for the residual heat removal and containment spray pumps to operate in the recirculation mode. The water level in the sump at the time of switchover from the injection phase to the recirculation phase has been established to ensure sufficient submergence to preclude vortexing or air entrainment. Additionally, CNP analyses demonstrate that water inventory delivered or released to the containment from the refueling water storage tank, ice melt, RCS, and safety injection accumulators is sufficient to ensure that the minimum containment recirculation sump level is sufficient to preclude vortex formation in the suction flow to the ECCS and containment spray system pumps.

RAI 2.3.3.1-2:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as

defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawing LRA-12-5136 depict all the components within the spent fuel pool (SFP) system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawing LRA-12-5136 or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.1-2:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Structures depicted on license renewal drawing LRA-12-5136 that perform an intended function are discussed in LRA Section 2.4.2 and included in the structure / component / commodity types "Spent fuel pit steel (including swing gate, attachments, liner, and fuel racks)," "Spent fuel pit walls and slab," and "Fuel transfer canal" listed in LRA Table 2.4-2. Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in the Nuclear Energy Institute (NEI) document, NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators. License renewal drawing LRA-12-5136 does not depict any short-lived components that perform a 10 CFR 54.4 intended function.

Marking up the license renewal drawings to show components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a list of SFP component types that perform a 10 CFR 54.4(a)(2) intended function.

RAI 2.3.3.2-4:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5113, LRA-1-5113A, LRA-1-5113B, LRA-1-5113C, LRA-1-5149, LRA-1-5151B, LRA-1-5151D, LRA-2-5113, LRA-2-5113A, LRA-2-5113B, LRA-2-5113C, LRA-2-5149, LRA-2-5151B, and LRA-2-5151D, depict all the components within the essential service water (ESW) system that

perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.2-4:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators. No short-lived components that perform an 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5113, 5113A, 5113B, 5113C, 5149, 5151B, 5151D, LRA-2-5113, 5113A, 5113B, 5113C, 5149, 5151B, or 5151D.

Marking up the license renewal drawings to show components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a list of ESW component types that perform a 10 CFR 54.4(a)(2) intended function.

RAI 2.3.3.3-6:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components

within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5113, LRA-1-5129A, LRA-1-5135A, LRA-1-5135B, LRA-1-5135C, LRA-1-5135D, LRA-1-5135E, LRA-1-5135F, LRA-1-5135G, LRA-1-5143, LRA-2-5113, LRA-2-5129A, LRA-2-5135A, LRA-2-5135B, LRA-2-5135C, LRA-2-5135D, LRA-2-5135E, LRA-2-5135F, LRA-2-5135G, and LRA-2-5143 depict all the components within the component cooling water (CCW) system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.3-6:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). The aging management review for the structural elements of the CCW containment penetrations, shown on license renewal drawings LRA-1-5135F, LRA-1-5135G, LRA-2-5135F, and LRA-2-5135G, are grouped with the structural review in LRA Section 2.4.1. The CCW system includes components with a potential for 10 CFR 54.4(a)(2) functional failure, as well as components with a 10 CFR 54.4(a)(2) spatial interaction concern.

Since potential for a 10 CFR 54.4(a)(2) functional failure exists, clarification of the CCW system drawings for the CCW miscellaneous services header components that are within the scope of

license renewal and subject to aging management review is warranted. This additional clarification is provided in I&M's response to RAI 2.3.3.3-5 (Reference 1). Marking up the license renewal drawings to show components that are in scope and subject to aging management review based solely on the spatial interaction aspects of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a list of CCW component types that perform a 10 CFR 54.4(a)(2) intended function.

Active components that were screened out and not highlighted on flow diagrams are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

No short-lived components that perform an 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5113, 5129A, 5135A, 5135B, 5135C, 5135D, 5135E, 5135F, 5135G, 5143; LRA-2-5113, 5129A, 5135A, 5135B, 5135C, 5135D, 5135E, 5135F, 5135G, or 5143; or flow diagrams OP-1-5141B, OP-1-5141G, and OP-2-5141G, which were provided in I&M's response to RAI 2.3.3.3-5 (Reference 1).

RAI 2.3.3.3-7:

LRA Section 2.1.2.1.2 states the following:

Licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review. Components that are within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the drawings but are described in Section 2.3 and listed in Table 3.3.2-11.

10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff does not believe the applicant met this requirement because the components of the component cooling water (CCW) system meeting 10 CFR 54.4(a)(2) are neither identified on drawings, nor listed. The applicant included these components as "component types" in LRA Table 2.3.3-2 instead of as individually listed components.

The CCW system is identified in LRA Section 2.3.3.11 as containing components that meet criteria 10 CFR 54.4(a)(2). Confirm that the system components marked on licensing renewal drawings LRA-1-5113, LRA-1-5129A, LRA-1-5135A, LRA-1-5135B, LRA-1-5135C, LRA-1-5135D, LRA-1-5135E, LRA-1-5135F, LRA-1-5135G, LRA-1-5143, LRA-2-5113, LRA-2-5129A, LRA-2-5135A, LRA-2-5135B, LRA-2-5135C, LRA-2-5135D, LRA-2-5135E, LRA-2-5135F, LRA-2-5135G, and LRA-2-5143 depict all the components within the CCW system

that meet criteria of 10 CFR 54.4(a)(2). If not, provide a list of these components that are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.3-7:

Since potential for a 10 CFR 54.4(a)(2) functional failure concern exists, clarification of the license renewal drawings for the CCW miscellaneous services header components that are within the scope of license renewal and subject to aging management review is warranted. This additional clarification is provided in I&M's responses to RAI 2.3.3.3-5 and RAI 2.3.3.11-1 (Reference 1).

Marking up the license renewal drawings to show components that are in scope and subject to aging management review based solely on the spatial interaction criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included in scope if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's "spaces" approach to identifying 10 CFR 54.4(a)(2) components with a potential for spatial interaction, which is based upon the physical location of safety-related SSCs (targets) that could be adversely affected by nonsafety-related components, results in a more functional and conservative accounting of the 10 CFR 54.4(a)(2) component types than could be provided by marked-up flow diagrams, which provide no physical location information.

As stated in the staff's request, components meeting 10 CFR 54.4(a)(2) are listed as "component types" in the LRA tables instead of as individual components. With few, if any, exceptions this is the practice followed by previous license renewal applicants, including those who have been granted a renewed license. This is true for components meeting 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(3), as well as those meeting 10 CFR 54.4(a)(2).

As stated in LRA Section 2.1.2.1.2, components within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the license renewal drawings, but are described in LRA Section 2.3 and listed in LRA Table 3.3.2-11. These components are listed as component types, as stated in the above paragraph. The description and table listing meet the 10 CFR 54.21(a)(1) requirement to identify and list those structures and components subject to an aging management review, and is consistent with previously approved LRAs. As a reviewer's aid, I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a matrix of systems and component types that perform a 10 CFR 54.4(a)(2) intended function.

RAI 2.3.3.4-3:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list

those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5120D, LRA-1-5120E, LRA-1-5120NN, LRA-1-5120R, LRA-1-5120S, LRA-1-5128A, LRA-2-5120D, LRA-2-5120E, LRA-2-5120KK, LRA-2-5120R, LRA-2-5120S, LRA-2-5128A, LRA-12-5118B, and LRA-12-5120B depict all the components within the compressed air (CA) system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.4-3:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10 Appendix B. This includes items such as instrumentation, motors and valve operators.

In the compressed air system, a number of relief valves on nonsafety-related piping are identified as safety-related on license renewal drawings (e.g., LRA-1-5120D at locations F7 and E9; LRA-2-5120D at locations C6 and F8; LRA-1-5120E at locations C9 and F7; and LRA-2-5120E at locations C8, C9, G6, and G7). These relief valves perform the active function of providing overpressure protection of fail-safe, air-operated valves in the event of a regulator failure. The pressure boundary function is not required to be maintained for these components because they are not in a safety-related containment isolation boundary or in a portion of the system with a required backup accumulator. Therefore, an aging management review is not required for these relief valves.

Mechanical components in the back-up compressed air supply to the pressurizer power-operated relief valves are highlighted on license renewal drawings LRA-1-5120D and LRA-2-5120D. The reserve control air tanks, TK-253-1 and TK-253-2, are subject to aging management review. The air bottles, TK-253-3 through TK-253-8, are frequently replaced with new bottles; therefore, these air bottles are not long-lived components, and do not require aging management review.

Mechanical components in the back-up air supply for the post-accident containment hydrogen monitoring system are shown on license renewal drawings LRA-1-5120NN, and LRA-2-5120KK. The backup air tanks, TK-400-1 through TK-400-4, are frequently replaced with new tanks; therefore, these tanks are not long-lived components, and are not subject to aging management review.

Nonsafety-related air components do not pose a hazard to other plant equipment, and cannot adversely affect safety-related components due to leakage or spray. This has been confirmed by an operating experience review. As a result, nonsafety-related components in the compressed air system that contain only dry air or gas have been determined to not meet the 10 CFR 54.4(a)(2) criterion, and are not in the scope of license renewal.

No short-lived components that perform a 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5120E, 5120R, 5120S, 5128A; LRA-2-5120E, 5120R, 5120S, 5128A; LRA-12-5118B, or 5120B.

RAI 2.3.3.8-5:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5151A, LRA-1-5151B, LRA-1-5151C, LRA-1-5151D, LRA-1-5120Y, LRA-2-5151A, LRA-2-5151B, LRA-2-5151C, LRA-2-5151D, and LRA-2-5120Y depict all the components within the emergency diesel generator (EDG) system that perform an intended function (i.e., within the system

evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.8-5:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet 10 CFR 54.21(a)(1)(i) as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

The “Diesel Fuel Oil Equipment Location Plan” sketches included on license renewal drawings LRA-1-5151A, LRA-1-5151C, LRA-2-5151A, and LRA-2-5151C depict equipment layout, rather than process flow information. This information is duplicative of that shown elsewhere on the license renewal drawings for the EDGs; consequently, these equipment location plans are not highlighted.

No short-lived components that perform a 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5151A, 5151B, 5151C, 5151D, 5120Y, LRA-2-5151A, 5151B, 5151C, 5151D, or 5120Y. No EDG system components are in scope for the 10 CFR 54.4(a)(2) criterion.

RAI 2.3.3.9-4:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawing LRA-12-5150B depict all the components within the security system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.3.9-4:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

No short-lived components that perform a 10 CFR 54.4 intended function are depicted on license renewal drawing LRA-12-5150B. No security diesel system components are in scope for the 10 CFR 54.4(a)(2) criterion.

RAI 2.3.4.1-2:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5105D and LRA-2-5105D depict all the components within the main feedwater (FW) system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those

components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.1-2:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of feedwater regulating and isolation valves, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

Flow diagrams OP-1-5106 and OP-2-5106 (Attachment 2 to this letter) are provided to show the feedwater regulating valves (FRVs) and the feedwater isolation valves, which have an active function of feedwater isolation upon receipt of an engineered safety feature actuation system (ESFAS) signal. The ESFAS functions of feedwater isolation and FRV closure rely on the active function of closure of the motor-operated feedwater isolation valves or the pneumatically-operated FRVs. Both sets of valves function to prevent feedwater from being supplied to the steam generators and do not require pressure boundary integrity of this portion of the system. If pressure boundary is lost in this portion of the system (including these valves), interruption of feedwater flow to the steam generator would occur (i.e., fail to the safe state). Therefore, these feedwater valves and this portion of the system do not require aging management review.

Marking up the license renewal drawings to show components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a list of feedwater system component types that perform a 10 CFR 54.4(a)(2) intended function.

No short-lived components that perform a 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5105D and LRA-2-5105D.

RAI 2.3.4.1-3:

LRA Section 2.1.2.1.2 states the following:

Licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review. Components that are within the scope of

license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the drawings but are described in Section 2.3 and listed in Table 3.3.2-11.

10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff does not believe the applicant met this requirement because the components of the feedwater (FW) system meeting 10 CFR 54.4(a)(2) are neither identified on drawings, nor listed. The applicant included these components as "component types" in LRA Table 2.3.4-1 instead of as individually listed components.

The FW system is identified in LRA Section 2.3.3.11 as containing components that meet criteria 10 CFR 54.4(a)(2). Confirm that the system components marked on licensing renewal drawings LRA-1-5105D and LRA-2-5105D, depict all the components within the FW system that meet criteria of 10 CFR 54.4(a)(2). If not, provide a list of these components that are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.1-3:

The RAI correctly states that the components meeting 10 CFR 54.4(a)(2) are grouped as "component types" in the LRA tables instead of as individual components. With few, if any, exceptions this approach was followed by previous license renewal applicants, including those who have been granted a renewed license. This is true for components meeting 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(3), as well as those meeting 10 CFR 54.4(a)(2).

As stated in LRA Section 2.1.2.1.2, components within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the license renewal drawings but are described in LRA Section 2.3 and listed in LRA Table 3.3.2-11. These components are grouped as component types, as stated in the above paragraph. The description and table listing meet the 10 CFR 54.4(a)(1) requirement to identify and list those structures and components subject to an aging management review, and is consistent with previously approved LRAs.

Showing components on the license renewal drawings that are within the scope of license renewal and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are typically included based on proximity to safety-related SSCs. I&M's "spaces" approach to identifying 10 CFR 54.4(a)(2) components, which is based upon the physical location of safety-related SSCs (targets) that could be adversely affected by nonsafety-related components, results in a more functional and conservative accounting of the 10 CFR 54.4(a)(2) component types than could be provided by marked-up flow diagrams, which provide no physical location information. As a reviewer's aid, I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a matrix of systems and component types that perform a 10 CFR 54.4(a)(2) intended function.

RAI 2.3.4.2-3:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5105D, LRA-1-5141A, LRA-2-5105D, and LRA-2-5141A depict all the components within the main steam (MS) system that perform an intended function (i.e., within the system evaluation

boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.2-3:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

Marking up the license renewal drawings to show components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a list of main steam system component types that perform a 10 CFR 54.4(a)(2) intended function.

No short-lived components that perform a 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5105D, LRA-1-5141A, LRA-2-5105D, or LRA-2-5141A.

RAI 2.3.4.2-4:

LRA Section 2.1.2.1.2 states the following:

Licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review. Components that are within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the drawings but are described in Section 2.3 and listed in Table 3.3.2-11.

10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff does not believe the applicant met this requirement because the components of the main steam (MS) system meeting 10 CFR 54.4(a)(2) are neither identified on drawings, nor listed. The applicant included these components as "component types" in LRA Table 2.3.4-2 instead of as individually listed components.

The MS system is identified in LRA Section 2.3.3.11 as containing components that meet criteria 10 CFR 54.4(a)(2). Confirm that the system components marked on licensing renewal drawings LRA-1-5105D, LRA-1-5141A, LRA-2-5105D, and LRA-2-5141A depict all the components within the MS system that meet criteria of 10 CFR 54.4(a)(2). If not, provide a list of these components that are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.2-4:

As correctly stated in the RAI, components meeting 10 CFR 54.4(a)(2) are grouped as “component types” in the LRA tables instead of as individual components. With few, if any, exceptions this is the approach followed by previous license renewal applicants, including those who have been granted a renewed license. This is true for components meeting 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(3), as well as those meeting 10 CFR 54.4(a)(2).

As stated in LRA Section 2.1.2.1.2, components within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the license renewal drawings, but are described in LRA Section 2.3 and listed in LRA Table 3.3.2-11. These components are grouped as component types, as stated in the above paragraph. The description and table listing meet the 10 CFR 54.4(a)(1) requirement to identify and list those structures and components subject to an aging management review, and is consistent with previously approved LRAs.

Showing components on the license renewal drawings that are within the scope of license renewal, and subject to aging management review, based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are typically included based on proximity to safety-related SSCs. I&M’s “spaces” approach to identifying 10 CFR 54.4(a)(2) components, which is based upon the physical location of safety-related SSCs (targets) that could be adversely affected by nonsafety-related components, results in a more functional and conservative accounting of the 10 CFR 54.4(a)(2) component types than could be provided by marked-up flow diagrams, which provide no physical location information. As a reviewer’s aid, I&M’s response to RAI 2.3.3.11-1 (Reference 1) provides a matrix of systems and component types that perform a 10 CFR 54.4(a)(2) intended function.

RAI 2.3.4.3-4:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5105D, LRA-1-5105E, LRA-1-5106A, LRA-1-5110A, LRA-1-5110B, LRA-1-5113, LRA-2-5105D, LRA-2-5105E, LRA-2-5106A, LRA-2-5110B, and LRA-1-5113 depict all the components within the auxiliary feedwater (AFW) system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.3-4:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived

components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

No short-lived components that perform an 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5105D, 5105E, 5106A, 5110A, 5110B, 5113, LRA-2-5105D, 5105E, 5106A, 5110B, or 5113. No AFW system components are in scope for the 10 CFR 54.4(a)(2) criterion.

RAI 2.3.4.4-2:

For those systems, structures, and components (SSCs) within the scope of license renewal in accordance with 10 CFR 54.4, 10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff was unable to decide whether the applicant has considered all the SSCs within the scope of license renewal in accordance with 10 CFR 54.4 in order to satisfy this requirement.

LRA Section 2.1.2.1.1 states the following:

The identification of components subject to aging management review began with the determination of the system evaluation boundary. The system evaluation boundary includes those portions of the system that are necessary to ensure that the intended functions of the system will be performed. Components needed to support each of the system-level intended functions identified in the scoping process are included within the system evaluation boundary.

However, the staff is unable to verify whether the applicant has identified all the components that perform an intended function because in its LRA the applicant has not identified the components within the system evaluation boundary. The staff needs to verify this information in order to effectively review the LRA using the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (NUREG-1800), dated July 2001, of which Section 2.3.1 gives the following guidance:

For a mechanical system that is within the scope of license renewal, the applicant should identify the portions of the system that perform an intended function, as defined in 10 CFR 54.4(b). The applicant may identify these particular portions of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

LRA Section 2.1.2.1.2 states that "licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review."

The information provided in the LRA is not sufficient for the staff to complete its review of the scoping of components within mechanical systems because licensing renewal drawings marked only those portions of the mechanical systems that require an AMR.

Confirm that the system components marked on licensing renewal drawings LRA-1-5105, LRA-1-5105B, LRA-1-5105D, LRA-1-5141A, LRA-2-5105B, LRA-2-5105D, and LRA-2-5141A depict all the components within the steam generator blowdown (BD) system that perform an intended function (i.e., within the system evaluation boundary). If not, provide a list of those components that perform an intended function but are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.4-2:

The system components highlighted on the license renewal drawings indicate all components that perform an intended function with the exception of structures, active and short-lived components, and those components that are in scope and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2). Active components that were screened out, and not highlighted on flow diagrams, are those that do not meet the 10 CFR 54.21(a)(1)(i) criteria, as identified in NEI 95-10, Appendix B. This includes items such as instrumentation, motors and valve operators.

Marking up the license renewal drawings to show components that are in scope, and subject to aging management review, based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are included if they are installed in the area of safety-related SSCs, and proximity to safety-related SSCs cannot be determined from functional flow diagrams. I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a list of BD system component types that perform a 10 CFR 54.4(a)(2) intended function.

No short-lived components that perform a 10 CFR 54.4 intended function are depicted on license renewal drawings LRA-1-5105, 5105B, 5105D, 5141A, LRA-2-5105B, 5105D, or 5141A.

RAI 2.3.4.4-3:

LRA Section 2.1.2.1.2 states the following:

Licensing renewal drawings were created by marking mechanical flow diagrams to indicate only those components within the system evaluation boundaries that require an aging management review. Components that are within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the drawings but are described in Section 2.3 and listed in Table 3.3.2-11.

10 CFR 54.21(a)(1) requires the applicant to identify and list those structures and components subject to an AMR. The staff does not believe the applicant met this requirement because the components the blowdown (BD) system meeting 10 CFR 54.4(a)(2) are neither identified on drawings, nor listed. The applicant included these components as "component types" in LRA Table 2.3.4-4 instead of as individually listed components.

The BD system is identified in LRA Section 2.3.3.11 as containing components that meet criteria 10 CFR 54.4(a)(2). Confirm that the system components marked on licensing renewal drawings LRA-1-5105, LRA-1-5105B, LRA-1-5105D, LRA-1-5141A, LRA-2-5105B, LRA-2-5105D, and LRA-2-5141A depict all the components within the BD system that meet criteria of 10 CFR 54.4(a)(2). If not, provide a list of these components that are not marked on licensing renewal drawings or provide revised drawings as needed to include the additional components.

I&M Response to RAI 2.3.4.4-3:

The RAI correctly states that the components meeting 10 CFR 54.4(a)(2) are grouped as "component types" in the LRA tables instead of as individual components. With few, if any, exceptions this is the approach followed by previous license renewal applicants, including those who have been granted a renewed license. This is true for components meeting 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(3), as well as those meeting 10 CFR 54.4(a)(2).

As stated in LRA Section 2.1.2.1.2, components within the scope of license renewal based solely on the criterion of 10 CFR 54.4(a)(2) are not generally indicated on the license renewal drawings but are described in LRA Section 2.3 and listed in LRA Table 3.3.2-11. These components are grouped as component types, as stated in the above paragraph. The description and table listing meet the 10 CFR 54.4(a)(1) requirement to identify and list those structures and components subject to an aging management review, and is consistent with previously approved LRAs. Showing components on the license renewal drawings that are within the scope of license renewal and subject to aging management review based solely on the criterion of 10 CFR 54.4(a)(2) would be of minimal, if any, value since such components are typically included based on proximity to safety-related SSCs. I&M's "spaces" approach to identifying

10 CFR 54.4(a)(2) components, which is based upon the physical location of safety-related SSCs (targets) that could be adversely affected by nonsafety-related components, results in a more functional and conservative accounting of the 10 CFR 54.4(a)(2) component types than could be provided by marked-up flow diagrams, which provide no physical location information. As a reviewer's aid, I&M's response to RAI 2.3.3.11-1 (Reference 1) provides a matrix of systems and component types that perform a 10 CFR 54.4(a)(2) intended function.

References

1. Letter from M. K. Nazar, I&M, to NRC Document Control Desk, "Donald C. Cook Nuclear Plant, Units 1 and 2, License Renewal Application – Response to Requests for Additional Information on Scoping and Screening Results," AEP:NRC:4034-01, dated May 7, 2004.

Attachment 2 to AEP:NRC:4034-05

Flow Diagrams for the Donald C. Cook Nuclear Plant, Units 1 and 2, Feedwater System
(OP-1-5106-49 and OP-2-5106-44)

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