

December 5, 2001

LICENSEES: Virginia Electric Power Company

FACILITIES: North Anna, Units 1 and 2
Surry, Units 1 and 2

SUBJECT: SUMMARY OF NOVEMBER 14, 19, and 21, 2001, TELECOMMUNICATION
WITH VIRGINIA ELECTRIC AND POWER COMPANY

On November 14, 19, and 21, 2001, the U.S. Nuclear Regulatory Commission (NRC) staff had conference calls with representatives of Virginia Electric and Power Company (VEPCO) to discuss information relating to the staff's review of the North Anna, Units 1 and 2 (NAS 1 and 2), and Surry, Units 1 and 2 (SPS 1 and 2) license renewal applications (LRAs) review. The information discussed, the applicant's responses, and the follow-up actions are in Attachment 1. A list of participants is included in Attachment 2.

A draft of this telephone conversation summary was provided to VEPCO to allow them the opportunity to comment on the contents of its input prior to the summary being issued.

/RA/

Robert J. Prato, Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-338, 50-339, 50-280, and 50-281

Attachments: As stated

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**SUMMARY OF TELECOMMUNICATION WITH
VIRGINIA ELECTRIC AND POWER COMPANY
NOVEMBER 14, 19, and 21, 2001**

Item2.3.3.10-1 On license renewal drawing 11715-LRM-107A, Sh 1, 2, 3, and 4 for North Anna, Unit 1 EDG starting air system: Please explain why air dryers, after coolers, and associated piping are not in scope. Is this equipment considered ancillary? Note that diesel after coolers are listed in the license renewal application (LRA), Table 2.3.3-10, as requiring an aging management review (AMR). Which after coolers does this refer to? The equipment in question depicted on this drawing is comprised of:

| <u>Air Dryers</u> | <u>After Coolers</u> |
|-------------------|----------------------|
| 1-ED-D-1HA | 1-ED-AC-1HA |
| 1-ED-D-1HB | 1-ED-AC-1HB |
| 1-ED-D-1JA | 1-ED-AC-1JA |
| 1-ED-D-1JB | 1-ED-AC-1JB |

Also, same question for air dryers and after coolers depicted on 12050-LRM-107A SH 1, 2, 3, and 4 for North Anna, Unit 2.

The applicant responded that the North Anna air dryers and after coolers listed above are not in the scope of license renewal. This equipment is not relied on for the starting air system to perform its intended function. The air receivers in the starting air system provide the required starting air (5 cycles) to start the diesel engine.

The "Diesel After Coolers" listed in Table 2.3.3-10 refers to the Diesel Combustion Air System coolers on drawings 11715-LRM-107D, SH 1 and 2 for Unit 1 and 12050-LRM-107AD, SH 1 and 2 for Unit 2.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item2.3.3.11-1 Regarding the Surry LRA, Section 2.3.3.11, "Alternate AC (AAC) Diesel Generator Systems," AAC diesel cooling water (BCW) system, please explain why the housings for the jacket water radiator fans 0-BCW-F-1A and 1B, depicted on license renewal drawing 11448-LRB-046D, SH3, are not in scope. Also, please explain why the housing for fuel oil cooler fan 0-BFO-F-1 on license renewal drawing 11448-LRB-038B is not in scope. Note that "Fan/Blower Housings" is listed on Table 2.3.3-11 as a component requiring and AMR.

The jacket water radiator fans 0-BCW-F-1A and 1B housings do not perform a license renewal of intended function. The radiator fans (active) cools the diesel jacket water during operation. The fan housings are wire mess type housing, not used to direct air flow, but to protect personnel from moving equipment.

The fuel oil cooler fan 0-BFO-F-1 housing does not perform a license renewal intended function. The fuel oil cooler fan cools excess fuel oil returning from the injectors to the fuel oil tank. The housing is not relied on to direct air flow to the fuel oil cooler.

The fan/blower housings listed on Table 2.3.3-11 refer to the diesel generator turbocharger housing that require an AMR and are in scope of license renewal.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-1

In both LRAs, Table 2.3.3-21, the applicant lists components that are subject to an AMR for the heating and ventilation (HV) system. However, for some systems that are within the scope of license renewal select components are not highlighted. Verify that the following components are not within the scope of license renewal and, therefore, not subject to an AMR. If determined to be within the scope of license renewal, provide the relevant information needed to complete Table 2.3.3-21.

- a. For the North Anna station (NAS), the exhaust fan housings (1-HV-F-5A and 1-HV-F-5B; 1-HV-F-7A and 1-HV-F-7B; 1-HV-F-56A and 1-HV-F-56B) and their respective dampers are not highlighted on the LRA drawing (11715-LRB-006A, Unit 1, AC&PS Sh.3 @ F-7, B-7, and C-8).

The applicant responded that the NAS exhaust fans, fan housings, and respective dampers do not perform an intended function consistent with scoping criteria under 10 CFR 54.4(a) and, therefore, are not within the scope of license renewal.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- b. For the Surry power station (SPS), exhaust fan housings (1-VS-F-40A and 1-VS-F-40B; 1-VS-F-8A and 1-VS-F-8B; 1-VS-F-59; 2-VS-F-40A and 2-VS-F-40B) are not highlighted on the LRA drawing (11448-LRB-006D, Units 1 & 2, AVS Sh.2 @ B-7, C-4, B-4, and E-7).

Exhaust fan housings (1-VS-F-56A and 1-VS-F-56B; 1-VS-F-7A and 1-VS-F-7B with respective dampers) are not highlighted on

the LRA drawing (11448-LRB-006D, Units 1 & 2, AVS Sh.3 @ E-4 and B-4).

The applicant responded that the SPS exhaust fans, fan housings, and respective dampers do not perform an intended function consistent with scoping criteria under 10 CFR 54.4(a) and, therefore, are not within the scope of license renewal.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- c. Bird screen or wire mesh is not identified, if provided as a protective cover for a vent stack (NAS drawing 11715-LRB-006A, Unit 1, AC&Ps, Sh.3 @ F-7, B-7, and C-8) (Surry drawings 11448-LRB-006D, Units 1 & 2, AVS Sh.4 @ E-3 and E-8).

The applicant informed the staff that there is no bird wire or wire mesh used as a protective cover for the vent stack.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-2 With regard to the NAS LRA, please define "Future HEPA Charcoal" and briefly explain its relationship to the scope of license renewal for the auxiliary building (LRA drawing 11715-LRB-006A, Unit 1).

The applicant responded that the filter unit is a three element housing where two of the three element compartments are being used as "HEPA" and "Charcoal" filtering functions. The third compartment has nothing installed and is labeled as "Future"

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-3 In both LRAs, sealant materials in the auxiliary building heating, ventilation, and air conditioning (HVAC) are not identified as being within the scope of license renewal and its component group is not included in Table 2.3.3-21 of the LRA. Verify whether the sealant materials are used to control the unfiltered out-leakage to the outside environment. Provide justification for the exclusion of the sealant materials or provide information about the sealants to complete Table 2.3.3-21.

The applicant responded that for both SPS and NAS, sealant material is not used in the auxiliary building HVAC system. SPS and NAS auxiliary building ventilation systems use welded and interlocking joints. Structural sealants are used in the auxiliary building and are addressed under structural scoping.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-4

In both LRAs, although the evaluation boundary of the main control room and the different switchgear rooms are identified, the applicant does not define the areas that constitute the main control room envelope.

Describe the main control room envelope in terms of systems, subsystems, and spaces, and its intended functions, for both NAS and SPS in sufficient detail such that the staff can perform its review consistent with the information provided in the LRAs. Ensure that the discussion includes sufficient correlation with the scoping and AMR activities contained in the LRA to allow the staff to utilize the information already provided. Identify any structures and components (SCs) that need to be added to the already identified scope of license renewal, and include all the applicable scoping and AMR information.

The applicant stated that they understand the concern and will respond to this request for additional information (RAI) in writing.

The staff will provide a request for this additional information.

Item 2.3.3.21-5

Clarify whether sealants used to maintain the main control room envelope at positive pressure with respect to the adjacent areas are included within the scope of license renewal and subject to an AMR. If in the scope of license renewal, identify where in the LRA is the AMR for sealants. If the sealants are not subject to an AMR, provide justification for its exclusion.

The applicant responded that sealants used to maintain the control room pressure boundary are in the scope of license renewal. The sealants are covered under Sections 2.4.11 and 3.5.11 of the application, "Miscellaneous Structural Commodities." The sealants are identified as "fire barrier penetration seals" in Tables 2.4.11-1 and 3.5.11-1.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-6

For the NAS LRA, Table 2.3.3-21, describe the components that make up the commodity "Instrumentation." Discuss why the SPS LRA, Table 2.3.3-21, does not identify a similar commodity group.

The applicant responded that as indicated in a footnote to Table 2.3.3-21 of the NAS LRA, the component group "Instrumentation" includes miscellaneous in-line instrumentation that perform a pressure boundary function. The SPS ventilation system does not have similar components that would be included in a similar component group, therefore, an instrumentation component group is not included in Table 2.3.3-21 of the SPS LRA.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-7

For both LRAs, the respective updated final safety analysis reports (UFSARs) discuss radiation, chlorine, and smoke detection monitors. However, these monitors are not consistently highlighted on the HV LRA drawings or included in Table 2.3.3-21 of either LRA. Radiation, chlorine, and smoke detection monitors are not identified in Section 2.3.3.21 of the LRA relative to the scope of license renewal and an AMR. Discuss the function of these monitors relative to including or excluding them from the scope of license renewal.

The applicant responded that Chlorine detectors are not installed at either SPS or NAS. Smoke detectors are within the scope of license renewal for SPS and NAS. However, the smoke detectors are local, self-contained units. The detectors themselves are active and, therefore, there are no smoke detector components that are subject to an AMR. With the exception of the containment high range radiation monitors (CHRRMs) at SPS and NAS, there are no radiation monitors that are within the scope of license renewal. The CHRRMs are local, self-contained units. The detectors themselves are active and, therefore, there are no CHRRMs components that are subject to an AMR.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.21-8

In both LRAs, various drawings identify air bottles as being within the scope of license renewal. However, Table 2.3.3-21 of the SPS LRA lists air bottles as a commodity of component that is subject to an AMR. Then NAS LRA, Table 2.3.3-21, does not identify air bottles as a commodity, please explain this difference in Table 2.3.3-21 of the LRAs.

The applicant responded that the Surry Ventilation System (VS) contains gas bottles that are included within the scope of license renewal. The corresponding gas bottles for North Anna, however, are contained in systems other than the HV system as clarified below.

The control room air bottles for both stations are in LR scope and perform a passive pressure boundary function and, as such, are highlighted on the LR drawings. However, the bottles are periodically replaced and, therefore, do not require an aging management review and are not shown on LRA screening summary tables. The control room air bottles are contained within the VS system for Surry and the compressed air (CA) system for North Anna.

The Surry VS system also contains an in-scope long-lived air bottle which performs an intended function for air operated dampers within the VS System. This air bottle is represented by the component group "Gas

Bottles" in SPS LRA Table 2.3.3-21. The corresponding gas bottles for the North Anna are also within scope and are long-lived; but are contained within the Instrument Air (IA) system. See NAS LRA Table 2.3.3-14.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.3.31-1

In regards to both LRAs, NUREG-1800 includes water based fire protection components within the scoping of AMR. Sprinkler system alarm components, such as retard chambers, pressure switches, orifice plates, and associated piping are typically within the scope of components that require an AMR. These components provide a pressure boundary during system activation and are made of carbon-steel which is subject to the effects of corrosion. Within the SPS license application, the sprinkler system alarm components are not shown on the flow diagrams and are assumed to be excluded from scope of license renewal.

The applicant stated that they did not initially include these components as being within the scope of license renewal. However, after discussions with the staff, they agreed to add them to the scope for both sites.

The staff will provide an RAI requesting the additional information.

Item 2.3.3.31-2

In regards to both LRAs, the rule, 10 CFR 50.54(a)(3), requires SSCs relied on for compliance with 10 CFR 50.48, Fire Protection (FP), to be within the scope of license renewal. In addition, operating licenses, in general, contain a license condition for FP that defines the 10 CFR 50.48 Fire Protection Program. The license condition states that the licensee "shall implement and maintain in effect the provisions of the approved fire protection program" as described in the UFSAR and/or as approved in a safety evaluation report (SER). Comparing the applicable information contained in the LRA with the UFSAR and SER, the listed (below) fire protection systems were identified in the UFSAR and /or SER, but not included within the scope of license renewal.

North Anna, Units 1 and 2

1. Component Cooling Water Area Sprinkler System
2. Cooling Tower Deluge System
3. Fuel Oil Storage Tank Foam System
4. Water House No. 2 Sprinkler System
5. Records Room Halon and Sprinkler Systems
6. Service Building Warehouse Sprinkler System
7. Service Bldg Cable Vault and Tunnel Carbon Dioxide and Sprinkler Systems
8. N-16 Instrument Enclosure and N-16 Enclosure Sprinkler Systems

9. ACC (SBO) Building Sprinkler System
10. On-line Chemistry Monitoring System Computer Room Sprinkler System
11. Security Building Sprinkler System
12. Records Storage Building Sprinkler System
13. Training Center Building Sprinkler System
14. Service Water Chemical Addition System Bldg Sprinkler System
15. Warehouse #2 Sprinkler System

Surry, Units 1 and 2

1. Turbine Oil Storage Room Sprinkler System
2. Fuel Oil Storage Tank Foam System
3. ACC (SBO) Building Sprinkler System
4. Station and Chemical Warehouse Sprinkler Systems
5. On-Line Chemical Monitoring Computer Room Sprinkler System
6. Construction Clean Change Building Sprinkler System
7. Training Center Halon & Sprinkler Systems
8. Security Building Sub-Floor Halon System
9. Technical Support Center Charcoal Filter Carbon Dioxide System

The applicant also indicated the Surry Rad-waste building sprinkler system is in the scope of license renewal, but was not specifically identified within the license application, please verify. In addition, please provide justification for exclusion of the other fire protection systems from the aging management review.

Upon consideration of the staff's request, and its review of applicable documentation, the applicant decided to submit a letter to clarify its CLB consistent with 10 CFR 50.48 and address each of the items listed in a letter to the staff in response to this request for additional information. The applicant is expected to submit this clarification before the end of 2001.

The staff finds the applicants proposed solution acceptable and will provide an RAI requesting this additional information.

Item 2.3.4.1-1 In both LRAs, Auxiliary steam drawings (NAS) 11715-LRM-072A, Sh. 2, and 12050-LRM-072A, Sh. 2, and (SPS) 11448-LRM-066A, Sh. 2 and 11548-LRM-066A, Sh. 2 show the associated piping and valves for containment penetration 89 as being within the scope of license renewal.

- a. Why was containment isolation not identified as an intended function in the system description?

The applicant responded that Penetration 89 components have SV and VP system designations indicating that they are part of the secondary vent system and vacuum priming system, and not part of the auxiliary steam system. In both LRAs, Section 2.3.3.19, the "Secondary Vent

System,” and Section 2.3.3.20, the “Vacuum Priming System,” identifies containment pressure boundary as a system function.

The staff found the applicant’s response acceptable, and will not need any additional information regarding this matter.

- b. The penetration itself is not highlighted, please verify that the associated penetration is included as being within the scope of license renewal and is included in the AMR for containment penetration in the containment section of the LRA.

The applicant responded that penetrations, in general, are considered structural components, and all penetrations are identified as being within the scope of license renewal and subject to an AMR in the associated scoping and AMR sections for the containment.

The staff found the applicant’s response acceptable, and will not need any additional information regarding this matter.

- c. Why was the scope of this containment isolation for SPS not extend to the second outside containment isolation valve (similar to the arrangement for the similar penetrations for NAS)?

The applicant responded that criteria for the containment isolation boundary for SPS is different than that for NAS. Consistent with the SPS UFSAR, Table 5.2-1, and the current licensing basis, only a single isolation valve is included within the scope of license renewal.

The staff found the applicant’s response acceptable, and will not need any additional information regarding this matter.

Item 2.3.4.1-2 In both LRAs, Auxiliary steam drawings (NAS) 11715-LRM-072A, Sh. 1, and 12050-LRM-072A, Sh. 1, and (SPS 11448-LRM-066A, Sh. 1, and 11548-LRM-066A, Sh. 1, Note B, states that the large bore piping downstream of the main steam (MS) trip and bypass valves is in scope. However, the integrity of the small bore piping does not impact the Appendix R or SBO function. Please verify that the drain-lines to the first steam traps are not within scope of these events under your CLB. If not, please provide a brief explanation as to how the station can cope with these events without the integrity of these lines?

The applicant responded that Appendix R and SBO loss of pressure boundary function for large bore MS piping is to prevent excessive reactor cooldown in the event the main steam trip valves (MSTVs) can not be shut due to a related event. Smaller lines, such as 3/4 inch lines to the steam trap header, do not provide the capacity for excessive reactor cooldown.

The staff found the applicant’s response acceptable, and will not need any additional information regarding this matter.

Item 2.3.4.2-1 For the SPS LRA, identify the system that cools the secondary side of the blowdown heat exchangers? If it is component cooling water (CC), why aren't the blowdown heat exchanger shells within scope for license renewal in an analogous fashion to the North Anna blowdown heat exchanger shells for CC pressure boundary integrity intended function?

The applicant responded that SPS blowdown heat exchangers are cooled by the condensate system (Refer to drawings 11448-LRM-124A, Sh.4, and 11548-LRM-124A, Sh.4), and are not in the scope of license renewal.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.3-1 In the NAS LRA, Section 2.3.4.3, the Condensate (CN) System, the applicant states that the primary purpose of the CN system is to provide chemically treated water to the suction of the main feedwater pumps at sufficient pressure to support main feedwater pump operation. The CN system also provides the piping, valves, water storage, and make-up supply for auxiliary feedwater. An emergency condensate storage tank is provided for each unit. Each tank supplies water to the three auxiliary feedwater pumps through individual lines. These tanks and the associated components up to the suction of the pumps comprise the portion of the CN system that is subject to aging management review. Provide the following information:

- a. Why are valves not identified as being within the scope of license renewal on Table 2.3.4-3?

The applicant responded that valves in question have a FW designation and are evaluated accordingly in the feedwater section of the LRA.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- b. Why is the 6" line up to and including the vacuum breaker on condensate storage tank 1-CN-TK-1 and the similar 4" line to the vacuum breaker on condensate storage tank 2-CN-TK-1 not identified as being within license renewal scope? Can the failure of these lines jeopardize the safety function of the vacuum breaker? If so, can the failure of the vacuum breaker cause the failure of the associated tank?

The applicant stated that they understood the staff concern and will provide its response in writing.

The staff will provide an RAI requesting this additional information.

- c. Confirm that there is an open 6" vent line on condensate storage tank 2-CN-TK-1, along with a parallel nitrogen pressurization system and a vacuum breaker.

The applicant stated that they understood the staff concern and will provide its response in writing.

The staff will provide an RAI requesting this additional information.

- d. Regarding UFSAR, Section 10.4.4.2, the condenser air ejector discharge is diverted to the reactor containment on high radioactivity. Is this function credited in the safety analysis or otherwise considered safety-related? At a minimum it would appear that the containment isolation portions of this line, shown on UFSAR Figure 10.4.3, Condensate system sheet 3 of 4, should be on a license renewal drawing for the condensate system with some segments within scope.

The applicant responded that the diversion function is not credited in any safety analysis or otherwise needs to be considered safety related and, therefore, is not within the scope of license renewal. The containment isolation function itself is addressed in Section 2.4.1 of both LRAs.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.3-2 In the SPS LRA, Section 2.3.4.3, the Condensate (CN) System, the applicant states that the primary purpose of the CN system is to provide chemically treated water to the suction of the main feedwater pumps at sufficient pressure to support main feedwater pump operation. The CN system also provides the piping, valves, water storage, and make-up supply for auxiliary feedwater. An emergency condensate storage tank is provided for each unit. Each tank supplies water to the three auxiliary feedwater pumps through individual lines. These tanks and the associated components up to the suction of the pumps comprise the portion of the CN system that is subject to aging management review. A portion of the CN system provides the component cooling (CC) system pressure boundary at the make-up connection to the CC surge tank. The components that support this function are also subject to aging management review. Provide the following information:

- a. As noted in UFSAR, Section 10.3.6.2, a radiation monitor is installed in the evacuation exhaust path to control the release of potentially radioactive materials from the main condenser. Is this function credited in the safety analysis or otherwise considered safety-related?

The applicant responded that the "diversion" function is not credited in the safety analysis or otherwise safety-related. Therefore, it is not a license renewal intended function.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- b. The main condenser is identified as being within scope for license renewal on drawings 11448-LRM-071A, Sh. 2 and 11548-LRM-071A, Sh. 2. For the purpose of the AMR (Table 2.3.4-3 Condensate) is the condenser shell within scope for pressure boundary, and if so, how is it included as being within the scope of license renewal (as a tank)? If not the shell, what portion of the main condenser is in scope and what is the intended function?

The applicant responded that the condenser shell is not in scope for license renewal. The condenser water boxes that form the CW system pressure boundary are in-scope as indicated in Table 2.3.3-5.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.4-1 In both LRAs (NAS Unit 1 drawing 11715-LRM-070A, Sh. 3 and Unit 2 drawing 12050-LRM-070A, Sh. 3) (SPS, Unit 1 drawing 11448-LRM-064A, Sh. 4 and Unit 2 drawing 11548-LRM-064A, Sh. 4), the applicant shows the turbine cases for auxiliary feedwater pumps to be within the scope of license renewal. Provide a technical justification as to why the 6" lines attached to the casing that vents the exhaust to atmosphere and any bolting attaching these lines are not also within the scope and subject to an AMR or subject these components to an AMR.

The applicant stated that they understood the staff concern and will provide its response in writing.

The staff will provide an RAI requesting this additional information.

Item 2.3.4.4-2 In the NAS LRA, Unit 1 drawing 11715-LRM-074A, Sh. 1, and Unit 2 drawing 12050-LRM-074A, Sh. 1, the applicant identifies the 16 inch main feedwater lines as being within the scope of license renewal for high energy line break considerations. These lines contain flow elements 1-FW-FE-1476, -1486, and -1496 and 2-FW-FE-2476, -2486, and -2496. Table 2.3.4-4 lists the flow elements as being within the scope for both the pressure boundary and the flow restriction intended functions. State if the flow elements are included for its flow detection intended function of providing the source of a safety-related sensing function. If not provide a technical justification as to these flow elements are not subject to an aging management review for its flow measuring intended function.

The applicant stated that the flow elements are in scope of license renewal and have intended functions of pressure boundary and restrict flow. The flow restriction intended function includes the flow detection intended function.

The staff considered the applicant's response but still needs a clarification as to the safety-related sensing function of the flow elements. The staff will provide a request for additional information asking the applicant to describe the flow element output and its functions, and to discuss whether the output signal is safety-related.

Item 2.3.4.4-3 In the SPS LRA, Table 3.4-4, the applicant lists stainless steel and carbon steel as the materials for the filters and strainers. The NAS LRA, Table 3.4-4, only identifies carbon steel as the material for filters and strainers. The drawings do not indicate any differences in the components. The tables do not highlight any differences between the tables as is done throughout the application. Please confirm that the differences in the tables are accurate and discuss any differences in convention from the rest of the application and provide any appropriate justification.

The applicant responded that the feedwater filter/strainers at SPS are constructed of carbon steel and stainless steel. The feedwater filter/strainers at NAPS are constructed of carbon steel. The information in the tables is accurate and the conventions for identifying plant specific information described in Table 1.1-1 did not require the identification of a difference.

The staff reviewed the applicant's response but still does not understand why the differences in the tables are not highlighted, therefore, the staff will provide an RAI requesting the applicant to document this information.

Item 2.3.4.4-4 In the NAS LRA, Table 3.3-4, the applicant did not identify accumulators as a commodity group subject to an AMR even though accumulators are included in the evaluation boundary as indicated on drawings 11715-LRM-074A, Sh. 4 and 12050-LRM-074A, Sh. 4 for auxiliary feedwater system (AFW) flow control valves. Clarify that these components are within the scope of license renewal and identify where the AMR for these components can be found in the LRA. If not subject to an AMR, provide a technical justification for not requiring an AMR.

The applicant responded that the subject air accumulators are included within the feedwater system as "Gas Bottles" which are included with the components subject to an AMR referenced in Section 2.3.4.4 and Table 2.3.4-4 "Feedwater."

The staff reviewed the applicant's response and, although the accumulators of concern are subject to an AMR, gas bottles are typically considered as short-lived and not subject to an AMR. Therefore, the staff will provide an RAI requesting the applicant to document its response.

Item 2.3.4.4-5 The SPS LRA identifies cavitating venturis that have been installed in the 3-inch auxiliary feedwater lines leading to each steam generator. Clarify the intended function of these components (e.g., flow restrictors or flow elements). Identify where in the LRA is the AMR for these components, or provide a technical justification as to why these components are not subject to an AMR.

The applicant responded that the cavitating venturis are within the scope of license renewal. The cavitating venturis are identified as "Flow Elements" and have passive functions of pressure boundary and restrict flow. Refer to the LRA, Section 2.3.4.4 and Table 2.3.4-4 "Feedwater."

The staff considered the applicant's response, but would like the applicant to specifically address fatigue as an applicable aging effect for these components. Provide a technical justification as to why fatigue is not an applicable aging effect for these cavitating venturis.

Item 2.3.4.4-6 In the SPS LRA, Unit 1 drawing 11448-LRM-068A, Sh. 1 and Unit 2 drawing 11548-LRM-068A, Sh. 1, the applicant does not include the 14 inch main feedwater lines in the scope of license renewal. These 14 inch lines contain flow elements 1-FW-FE-1476, -1486, and -1496 and 2-FW-FE-2476, -2486, and -2496. Provide a technical justification for not including these flow elements and the associated lines within the scope of license renewal. Please include in your discussion the safety related sensing function (flow restriction for measurement purpose - reactor power measurement; feedwater flow for various actuations), as well as any other intended function that should be considered when determining the scope of license renewal and the need to subject them to an AMR.

The applicant stated that they understood the staff concern and will provide its response in writing.

The staff will provide an RAI requesting the additional information.

Item 2.3.4.4-7 In contrast to the NAS LRA, the SPS LRA does not identify the auxiliary feedwater pump turbine lube oil cooling as being within the scope of license renewal, nor was this difference identified in the LRAs (highlighted per the stated conventions). Provide a technical justification as to why the auxiliary feedwater pump turbine lube oil cooling is not within scope of license renewal or include this system within the scope of license renewal and perform an AMR.

The applicant responded that the auxiliary feedwater pump turbine lube oil cooling for SPS is in the scope of license renewal. See drawing 11448-LRM-068A, Sh 3 (D-7). Section 2.3.4.4 of the SPS and NAS LRAs states, "The auxiliary feedwater pumps lubricating oil and seal cooling components support the function of the pump and are also subject to aging management review."

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.4-8 In the SPS LRA, Section 2.3.4.4, the applicant identifies back-up compressed air components, required to support the function of selected feedwater isolation valves that are subject to an AMR. The SPS UFSAR, Section 10.3.5.2, notes that steam enters the turbine-driven pump through two parallel air operated valves. These parallel air operated valves are controlled by double acting piston actuators that normally hold the valves closed. On a loss-of-power to the air supply solenoid, the pneumatic double acting piston actuator fails the valves open. A bottled nitrogen system is installed to provide control of the air operated valves for a minimum of 2 hours independent of instrument air. Although similar components were identified in the NAS LRA as being within scope of license renewal (drawings 11715-LRM-074A, Sh. 4 and 12050-LRM-074A, Sh. 4 for AFW flow control valves), these components do not appear on the feedwater system drawings referenced in the SPS application. Provide a technical

justification for not including these components within the scope of license renewal and subject to an AMR.

The applicant responded that similar components are within the scope of license renewal for Surry. The back-up compressed air system components for the Surry turbine-driven auxiliary feedwater pump steam admission valves, 1(2)-MS-PCV-102A/B, are Instrument Air (IA) system components, and are shown on Surry drawings 11448-LRM-075C, sheet 3 and 11548-LRM-075D, sheet 1 listed in LRA, Section 2.3.3.14. The associated nitrogen bottles are replaced on a set frequency and have been deemed to be short-lived and not requiring aging management review.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item2.3.4.5-1 In regards to the NAS LRA, provide a technical justification as to why the piping from the exhausts of the main steam (MS) safety valves and power operated relief valve to atmosphere are not included within scope of license renewal (Unit 1 drawings 11715-LRM-070B, Sh. 1, 11715-LRM-070B, Sh. 2, 11715-LRM-070B, Sh. 3; Unit 2 drawings 12050-LRM-070B, Sh. 1, 12050-LRM-070B, Sh. 2, 12050-LRM-070B, Sh. 3). In your justification, discuss the potential safety-related, station blackout (SBO), and Appendix R applications associated with this piping?

The applicant stated that they understood the staff concern and will provide its response in writing.

The staff will provide an RAI requesting this additional information.

Item2.3.4.5-2 In the NAS LRA, the MS evaluation boundary ends at a manual valve immediately upstream of the pneumatically controlled decay heat release valves (1-MS-HCV-104 and 2-MS-HCV-204 on drawings 11715-LRM-070B, Sh. 2 and 12050-LRM-070B, Sh. 2, respectively). The UFSAR notes that the decay heat release valve is a Seismic Class I, Quality Assurance Category I valve located in the MS valve house. Provide a technical justification as to why this valve is not within the scope of license renewal. In your justification, include a discussion on the potential safety-related, SBO, and Appendix R applications for this valve.

The applicant responded that 1-MS-HCV-104 and -204 do not perform an intended function and the valves are isolated by a manual valve.

The staff reviewed the applicant's response and will provide an RAI asking the applicant to specifically discuss the function of the valve and to document its potential safety-related, SBO, and Appendix R applications.

Item2.3.4.5-3 In the NAS LRA, Drawing 11715-LRM-070B, Sh. 1, the applicant identifies a set of air cylinders for valve 1-MS-TV-101A. The other Unit 1 valves and the similar Unit 2 valves do not show air cylinders. The NAS UFSAR indicates that air pressure is released to trip these valves. Please discuss the potential omission of other lines. In addition, clarify the purpose of the air service to MSTV with regards to its safety-related, SBO, or Appendix R application.

The applicant responded that MSTV do not require air to trip closed. The MSTVs are not opened during a design basis event (DBE), Appendix R, or SBO event. Therefore, the air supply to the trip valves is not required to support a license renewal intended function. The MSTVs are within the scope of license renewal since they perform a pressure boundary function.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item2.3.4.5-4 In both LRA, the evaluation boundary for the piping leading to the small bore piping downstream of the MSTVs such as MS drains does not extend to any valve or trap. The license renewal boundary for this portion of piping terminates at the large bore pipe connection, without any physical means of isolation. A note on the drawings states that large bore piping downstream of the MS trip and trip bypass valves is in scope of license renewal for SBO or Appendix R applications, but the small bore piping does not impact the intended functions, thus is not in scope. Provide additional technical justification, for this statement. Include such information as to the means for this determination and such details as to what size line break can be tolerated while still fulfilling the SBO and Appendix R intended functions. Also discuss the fact that drain lines are consistently shown as out of scope; however, the small drain lines eventually combine together into a large bore (12-inch) MS line exhausting into the main condenser (e.g., SPS drawings 11448-LRM-064A, Sh. 5 ((Unit 1) and 11548-LRM-064A, Sh. 5 (Unit 2)).

The applicant responded that MS turbine stop valves, the condenser steam dump valves, and their associated MS piping are credited for providing MS system pressure boundary in the SBO and Appendix R analysis and are included in the scope of license renewal. This pressure boundary ensures that an uncontrolled cooldown will not occur in the event that a MSTV fails to close. The cooldown analysis is based on a 6-inch opening in the MS system. Therefore, failure of a line smaller than 6 inches will not result in an uncontrolled cooldown of the reactor coolant system.

In addition, the applicant indicated that the individual drain lines to the 12-inch condenser drain header are equipped with steam traps, that limits continuous blowdown from these lines.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item2.3.4.5-5 In both LRAs (NAS drawing 11715-LRM-070A, Sh. 2) (SPS drawing 11715-LRM-070A, Sh. 2), a 3 inch line branching from the 8 main inch line is shown as not being within scope for license renewal for two of the four moisture separator reheaters (MSR) for each unit. The line size for the symmetrical lines to the other MSRs (A and B) are not shown. Similarly, the line size for the branch line is not shown for MSR B (NAS drawing 12050-LRM-070A, Sh. 2) (SPS drawing 12050-LRM-070A, Sh. 2). What size are these branch lines? Provide a technical justification for excluding these lines from the scope of license renewal.

The applicant responded that the branch lines in question are the moisture separator reheater warm-up lines. These are 3-inch diameter lines at North Anna and 1-inch diameter lines at Surry.

In addition, the MS turbine stop valves, the condenser steam dump valves, and their associated MS piping are credited for providing MS system pressure boundary in the SBO and Appendix R analysis and are included in the scope of license renewal. This pressure boundary ensures that an uncontrolled cooldown will not occur in the event that a MSTV fails to close. The cooldown analysis is based on a 6-inch opening in the MS system. Therefore, failure of a line smaller than 6 inches will not result in an uncontrolled cooldown of the reactor coolant system.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.3.4.5-6 The NAS UFSAR notes that flow limiting devices were installed during the steam generator replacement modification to limit the blowdown rate of steam from the steam generator in the unlikely event of a MS line rupture. In addition, a venturi tube flow restrictor is located in the MS line downstream of each steam outlet nozzle. These flow restrictors were installed during original construction of the plant, prior to the installation of the steam nozzle flow limiting devices, and functioned both as the flow limiters during a postulated MS line rupture downstream of the venturis and as flow elements for steam flow measurement during normal operation of the unit. The applicable drawings do not show these flow limiting devices as being within the scope of license renewal. Provide a technical justification for not including the MS line flow limiting devices within the scope of license renewal.

The flow limiting device integral with the steam generator outlet nozzle (steam flow limiter) is addressed in NAPS LRA Table 2.3.1-5 (page 2-147), and the flow limiting device integral with the flow venturi in the MS piping is addressed in NAPS LRA Table 2.3.4-5 (page 2-207) and is shown highlighted on drawings 11715-LRM-070B, Shs. 1, 2 and 3. These items are in scope of license renewal.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.3.4.5-7 The NAS UFSAR notes that an atmospheric steam dump valve with a manually adjustable setpoint is provided on each MS header upstream of the non-return valve outside the containment. Control air is supplied to the atmospheric dump valves from the instrument air system with seismic backup including an air tank for each valve. The air lines and tanks are not shown on the MS license renewal drawings. Identify where in the LRA these air supplies are included within the scope of license renewal, or provide a technical justification as to why they are not in scope of license renewal.

The applicant responded that the air supplies are identified in LRA Section 2.3.3.14, "Instrument Air." The subject air-lines and seismic tanks are shown on

LR drawings 11715-LRM-082M sheet 1 of 1 and on LR drawing 12050-LRM-082C sheet 1 of 2.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item2.3.4.5-8 In the SPS LRA, the piping from the exhausts of the MS safety valves and MS power operated relief valve to atmosphere is not included within scope of license renewal (Unit 1 drawings 11448-LRM-064A, Sh. 1, 11448-LRM-064A, Sh. 2, 11448-LRM-064A, Sh. 3; Unit 2 drawings 11548-LRM-064A Sh. 1, 11548-LRM-064A, Sh. 2, 11548-LRM-064A, Sh. 3). Provide a technical justification for excluding this piping for the scope of license renewal. Include in your justification safety-related, SBO, and Appendix R applications.

The applicant stated that they understood the staff concern and will provide its response in writing.

The staff will provide an RAI requesting this additional information.

Item2.3.4.5-9 In regards to the SPS LRA, clarification is needed on the purpose of the air service to MSTVs and its safety-related, SBO, or Appendix R applications. Venting of the air pressure is noted to place the valves in their closed position to isolate the steam generators. Drawings 11448-LRM-064A, Sh. 1, 11448-LRM-064A, Sh. 2, 11448-LRM-064A, Sh. 3, 11548-LRM-064A, Sh. 1, 11548-LRM-064A, Sh. 2, 11548-LRM-064A, Sh. 3 indicates that this service is outside the scope of license renewal, while the remainder of the MS piping downstream of the MS trip valve is in scope. Provide a technical justification for excluding this valve from the scope of license renewal.

The applicant responded that the MSTV do not require air to trip closed. The MSTV are not opened during a DBE, Appendix R, or Station Blackout event. Therefore, the air supply to the trip valves is not required to support a license renewal intended function. The main trip valves are within the scope of license renewal since they perform a pressure boundary function.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item2.3.4.5-10 The SPS LRA, drawings 11448-LRM-064A, Sh. 5 (Unit 1) and 11548-LRM-064A, Sh. 5 (Unit 2) contain capped pipe segments immediately upstream of the turbine stop trip valves that are not identified as being within the scope of license renewal. These capped segments are attached to the in-scope MS pipe without an isolation valve/device. Provide a technical justification for not including these capped pipe segments within the scope of license renewal.

The applicant responded that the MS turbine stop valves, the condenser steam dump valves, and their associated MS piping are credited for providing MS system pressure boundary in the SBO and Appendix R analysis and are included in the scope of license renewal. This pressure boundary ensures that an

uncontrolled cooldown will not occur in the event that a MSTV fails to close. The cooldown analysis is based on a 6-inch opening in the MS system. Therefore, failure of these 3/4 inch capped pipe segments (smaller than 6 inches) will not result in an uncontrolled cooldown of the reactor coolant system.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.5-11 In the SPS UFSAR notes that a flow limiting device is installed at the outlet nozzle of the steam generator. Is this the flow device that limits the blowdown rate of steam from the steam generator in the unlikely event of a MS line rupture, or are the venturi tube flow restrictors located in the MS line downstream of each steam outlet nozzle credited with this function? Identify where in the LRA is the AMR for this MS line flow limiting devices, or provide a technical justification for not including this device as being within the scope of license renewal, and subjecting it to an AMR.

The applicant responded that the flow restrictor (steam flow limiter) in the steam generator outlet is the restrictor that is taken credit for in the event of a MS line break. The flow restrictors are addressed in SPS LRA, Table 2.3.1-5.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.6-1 In the NAS LRA, Section 2.3.4.6, that provides the scoping for the steam drain (SD) system, the applicant only includes a single isolation valve for the MS system pressure boundary function performed by the SD system. Should there be double isolation, if not, please provide a brief explanations as to why not. This question also applies to the steam generator (S/G) water treatment (WT) system.

The applicant responded that, consistent with its CLB and as stated in the LRA, Section 2.1.5.1, the license renewal boundaries for a system have typically been extended to the first normally-closed manual valve, check valve or automatic valve that gets a signal to go closed. The SD and WT valves are normally closed.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.6-2 The NAS components of the SD system that are within the scope of license renewal identify isolation valves, however, only piping is identified in Table 2.3.4.6-1. However, the staff noted that the valves have an MS designation. Please confirm that the valves identified as being within the scope of license renewal for this system are included in the AMR for the MS system.

The applicant confirmed that the valves in question have an MS system designator, and that they are included within the component group “valves” for the MS system, Table 2.3.4-5, “Main Steam.”

The staff found the applicant’s response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.7-1 In the NAS LRA Section 2.3.4.7, the NAS WT system chemical addition line to the steam generator does not include an isolation valve, none is shown on drawings 11715-LRM-074A, Sh. 1, and 12050-LRM-074A. If one of the functions that brings the WT system within the scope of license renewal is steam generator pressure boundary, then should there be an isolation valve for this portion of the system. If so, identify the valve and include it in the AMR for the WT system, or provide a technical justification as to why an isolation valve is not needed.

The applicant responded that the WT system between the steam generator and the outside containment isolation check valve is within the steam generator pressure boundary and is within the scope of license renewal. The WT piping shown on 11715-LRM-074A, Sh. 1, indicates that the line is continued on 11715-LRM-102A Sh 2. This drawing indicates that the piping is within scope of license renewal, including two normally closed manual isolation valves for each steam generator inside containment, and one containment isolation check valve for each steam generator outside of containment. The unit 2 configuration is similar.

The staff found the applicant’s response acceptable and will not need any additional information regarding this matter.

Item 2.3.4.7-2 In the SPS LRA, Section 2.3.4.7, drawings 11448-LRM-124A Shts 1-3 and 11448-LRM-124B Shts 1-3, the applicant the WT system from the S/G to 1-RT-1 and from 1-RT-2 to 1-RT-6 as being within the scope of license renewal. From the S/G to 1-RT-1 provides the S/G pressure boundary function. 1-RT-2 to 1-RT-6 provides the containment pressure boundary function. In both LRAs, containment penetrations are included under the containment scoping, Section 2.4.1, which is provided by the components between 1-RT-2 to 1-RT-6. Steam generators are required to be isolated to ensure pressure boundary is maintained during select modes of plant operation. However, it is unclear if a double isolation is required for the steam generators. If so, then the piping within 1-RT-1, 1-RT-2, 1RT RV-100a, and 1 RT-63 should be included within the scope of license renewal. Please confirm that only a single isolation is required for the S/Gs and the basis, or include within the scope of license renewal, the piping between 1-RT-1, 1-RT-2, 1RT RV-100a, and 1 RT-63.

The applicant responded that the piping between valves 1-RT-1 and 1-RT-2 is not in license renewal scope. As stated in Section 2.1.5.1, of both LRAs, the license renewal boundaries for a system have typically been extended to the first normally-closed manual valve, check valve, or automatic valve that gets a signal

to go closed. The section of pipe in question is beyond the single isolation valve system pressure boundary and not within the containment double isolation valve boundary.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.4.8-1 In the NAS LRA, Section 2.4.8, the applicant states that the AMR results for the safety-related service water (SWR) reservoir spray piping braced frame superstructure are provided in section 3.5.10, General Structural Supports. The components associated with the braced frame superstructure do not appear to be included in table 3.5.10-1, General Structural Supports. Table 3.5.10-1 should be revised to include SCs identified as part of the braced frame superstructure of the spray piping system in section 2.4.8 that are subject to an AMR.

The applicant responded that structural members associated with the SWR reservoir spray piping braced frame superstructure are within the scope of LR and have been evaluated as part of General Structural Supports. The environment for these structural members is described on page 3-73 of the NAS LRA and Table 3.5-10 identifies these structural members as "structural support subcomponents such as plate and structural shapes."

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.4.8-2 In the NAS LRA, Section 2.4.8, the applicant states that an underwater bypass system is installed for winter operations. The underwater bypass system is an integral part of the SWR in supporting normal operation of safety-related equipment and cooling water for plant shutdown. The staff requests the applicant to clarify whether the underwater bypass system needed for winter operation of the SWR are included within the scope of license renewal and subject to an AMR.

The applicant responded that the under water bypass system is included in the SWR system for the NAS LRA. See license renewal Drawing 11715-LRM-078H, Sheet 1 of 1.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.4.8-3 In the SPS LRA, Section 2.4.8, the applicant states that the intake canal is located between the low level and high level intake structure as indicated on page 2-116 of the LRA. The UFSAR, Section 15.6, Other Class I Structures, page 15.6-1, states that the high level portion of the intake canal has under drains and pressure relief valves that prevent uplift of the concrete liner by unbalanced hydrostatic pressure. The staff request the applicant to clarify whether this system of under drains and pressure relief valves extends the

length of the intake canal. Since the under drains and pressure relief valves provide protection to the intake canal concrete liner the applicant should include these SCs within the scope of license renewal or provide a justification for why they should not be included within the scope and subject to an AMR.

The applicant responded that the under drains extend the length of the intake canal. The underdrains and pressure relief valves were provided to prevent uplift of the concrete liner by unbalanced hydrostatic pressure that could have occurred during construction. There is no potential for uplift on the concrete liner with water maintained in the intake canal. Therefore, these drains do not perform an intended function.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.4.8-4 In the SPS LRA, Section 2.4.8, the applicant states that at three separate locations, concrete storm sewer lines are installed underneath the canal to route storm runoff. These storm drains appear to be integral to the intake canal structure in providing protection from excessive storm run-off. The staff request the applicant to provide justification as to why the storm sewer lines are not within the scope of license renewal and subject to an AMR.

The applicant responded that storm sewer lines are in scope of license renewal and are included in Table 2.4.8-1- Earthen Structures on page 2-238 as concrete culverts.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.4.10-1 In both LRAs, Section 2.4.10, the applicant states that, as a commodity evaluation, there are structural supports included within the evaluation boundary that, upon detailed review, would not be included within the scope of license renewal. Provide the staff with information regarding how these components were reviewed and three examples of supports that were within the evaluation boundary, reviewed, and excluded from the scope of license renewal.

The applicant responded that in both LRAs, structural supports were evaluated as a commodity. As such, in the areas of the plant that mechanical and electrical components within the scope of license renewal are located, there was no attempt to exclude from the scope of license renewal structural supports located in these areas. All of the structural supports located in the areas that housed components within the scope of license renewal were evaluated as part of the AMR process.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 2.4.12-1 In both LRAs, Section 2.4.12, the applicant states that elements of load-handling cranes and devices that are subject to AMR are limited to those load bearing elements that support the lift in a passive manner. Provide the staff with detailed drawings of two examples indicating the SCs in the load path subject to an AMR. Additionally, structural systems on the load handling cranes and devices support mechanical and electrical systems. Provide justification for why the structural components that support the mechanical and electrical systems of cranes and other load-handling devices were excluded from the scope of license renewal and not subject to an AMR.

The applicant responded that in Section 2.4-12 of both LRAs, the structural members that are within the scope of license renewal and subject to an AMR include structural beams, girders, columns, trolley rails, base plates and anchors for attachment to structures, and retaining clips. These structural members also provide support for mechanical and electrical systems for cranes and other load-handling devices. However, elements that can be classified as moving parts or as components that change configuration are active components and are not subject to an AMR.

The staff found the applicant's response acceptable and will not need any additional information regarding this matter.

- Item 3.5.5-1 In the Surry LRA, Section 3.5.5 and Table 3.5.5-2 (Service Building), the applicant identify cracking and change in material properties of elastomers in an air environment as requiring aging management. The Work Control Process aging management activity (AMA) is credited for managing these aging effects. However, the description of the Work Control Process AMA in the Surry LRA, Appendix B, does not identify elastomers as a component within its scope. Therefore, staff is requesting that the applicant verify that elastomers in the service building, and miscellaneous structural commodities that are within the scope of this AMA and are specifically inspected (not managed by extrapolation of inspection results from other structures and components). The staff also requests the same information for elastomer materials requiring aging management in the intake structure and the miscellaneous structural commodities.

The applicant informed the staff that the work control process is used to manage elastomers in the service building, and miscellaneous structural commodities that are within the scope for cracking and change in material properties. The applicant also informed the staff, that in response to RAI B2.2.19-1, they verified that these components, specifically, have been and are expected to continue to be inspected under the Work Control Process.

The staff found the applicant's response to this concern acceptable; however, the staff will provide an RAI to more formally document this information.

- Item 3.5.6-1 In the NAS LRA, Section 3.5.6, the applicant identifies concrete as a material used in the construction of the intake structures, but does not identify the need to

manage the aging of this concrete for loss of material, change in material properties, and cracking. A generic concern regarding the managing of aging on all concrete structures and concrete members was raised in RAI 3.5-7 that was provided to the applicant in a letter dated October 11, 2001, and previously discussed with the applicant in a telecommunication on August 8, 2001. This question is being raised again to ensure that the applicant understands that the staff's position that all concrete structures and structural members that are within the scope of license renewal are required to be managed for loss of material, change in material property, and cracking, and any exception needs to be documented and technically justified in its response to RAI 3.5-7.

The applicant stated that they clearly understand the staff's concern and will address it in response to RAI 3.5-7.

The staff found the applicant's response to this concern acceptable; however, the staff will provide an RAI to more formally document this information.

- Item 3.5.6-2 In the NAS LRA, Section 3.5.6, the applicant specifies the water velocities for the various intake structures. These velocities are lower than the threshold velocity for loss of concrete material due to abrasive erosion and cavitation, identified by the applicant in the LRA, Appendix C3.1.13. The staff notes, however, that erosion varies with the type and amount of abrasive material, size of the abrasive material, velocity, angle of contact, obstructions, and changes in the direction of flow or the presence of eddies. Cavitation varies with the mean velocity, boundary roughness, growth and formation of boundary layers, and stream turbulence. Therefore, the applicant will need to specifically address these concerns relating to loss of concrete material (due to abrasive erosion and cavitation) in its response to RAI 3.5-7 (previously submitted to the applicant in a letter dated October 11, 2001), if the applicant intends to provide a technical justification that loss of material is not an applicable aging effect for NAS concrete intake structures or concrete elements of earthen structures (Section 3.5.8 of the LRA) that are exposed to flowing water.

The applicant stated that they clearly understand the staff's concern and will address it in response to RAI 3.5-7.

The staff found the applicant's response to this concern acceptable; however, the staff will provide an RAI to more formally document this information.

- Item 3.5.6-3 For the intake structures discussed in LRA Section 3.5.6, it is not clear why the change in material properties and cracking of elastomers is limited to an air environment. Rubber material is used in the circulating water pipe at Surry as a concrete pipe joint gasket. The circulating water in the pipe is a raw water (brackish) environment. Therefore, the staff is requesting that the applicant provide a technical justification for not requiring aging management of elastomers in a raw water environment for cracking and change in material properties. This request also applies to the rubber gasket material used in the

concrete culvert at Surry (even though the water may not be brackish), identified in LRA Section 3.5.8 (Earthen Structures).

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting the referenced information.

- Item 3.5.6-4 For Surry, the applicant credits the Civil Engineering Structural Inspection activities to manage change in material properties and cracking of rubber gaskets used in the intake structures (LRA Section 3.5.6) and polysulfide sealant material used in earthen structures (LRA Section 3.5.8). From the AMA description presented in the LRA, Appendix B2.2.6, it is not clear that the Civil Engineering Structural Inspection activities cover these elastomer materials within its scope. Therefore, the staff is requesting that the applicant verify that elastomers are covered in the scope of the Civil Engineering Structural Inspection activity and to describe how aging of elastomers is managed.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting the referenced information.

- Item 3.5.8-1 In the NAS LRA, Section 3.5.8, the applicant discusses the aging management of the concrete for the SWR liner and spread footings. The applicant needs to recognize that they have to address these structures, including the concrete portion of the flood wall (culvert), in its response to RAI 3.5-7.

The applicant stated that they clearly understand the staff's concern and will address it in response to RAI 3.5-7.

The staff found the applicant's response to this concern acceptable; however, the staff will provide an RAI to more formally document this information.

- Item 3.5.8-2 In the NAS LRA, Section 3.5.8, the applicant does not discuss the loss of material and loss of form of soil used in earthen structures exposed to a raw water environment. Loss of material and loss of form may occur to the soil due to the various aging mechanisms described in the LRA, Appendix C (e.g., erosion, sedimentation, subsurface flow, etc.). Therefore, the staff requests that the applicant provide a technical basis as to why loss of material and loss of form of the soil in a raw water environment are not included as applicable aging effects requiring aging management.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Item 3.5.9-1 In both LRAs, Section 3.5.9, the applicant indicates that the Westinghouse Owners Group (WOG) Generic Technical Report (GTR), WCAP-14422, is directly applicable to the Surry and North Anna NSSS Supports, and that the scope of the NSSS supports described in the GTR bounds the installed supports with some minor exceptions. Section 8.0 of the WOG GTR provides a detailed implementation procedure that an applicant should follow in order to verify that its plant is bounded by the GTR. This procedure instructs the applicant to identify and justify deviations regarding plant characteristics, applicable aging effects, and aging management program features. In its review, the staff found a number of deviations from the WOG GTR that were neither identified nor justified in the LRA. They include the following:

- a. The WOG GTR recommends an aging management program (AMP-1.2) for concrete local to reactor coolant system (RCS) support concrete embedments. The applicant's responses to Applicant Action items 1, 10, 13, 14, 15, and 16 indicate that the concrete portion of RCS supports are evaluated under Containment, and that there are no aging effects that require management for concrete structural members within Containment. The applicant should identify this as a deviation to the WOG GTR and provide technical justification for concluding that the aging effects due to aggressive chemical attack and corrosion as described in the WOG GTR do not require management.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- c. The WOG GTR recommends an aging management program to manage aging effects due to aggressive chemical attack and corrosion in RCS support steel components (AMP-1.1). The program includes IWF inspections, leakage identification walkdowns, and leakage monitoring. In response to Applicant Action Items 10 and 14, the applicant did not provide any detailed information on a leakage monitoring program. If a leakage monitoring program is not credited for managing these aging effects, this should be identified as a deviation from the WOG GTR and a technical justification for its omission should be provided.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- d. Materials of construction of NSSS supports identified in LRA Section 3.5.9 include "maraging" steel. This material is not included in the WOG GTR. Dominion should identify this as a deviation to the WOG GTR, and provide a description and results of a plant-specific aging management review for components fabricated from this material.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- e. LRA Table 3.5.9-1 identifies bronze as a bearing plate material. This material is not included in the WOG GTR. Section 2.3 of the WOG GTR indicates that the type of base material used for the Lubrite plates is ASTM A-48. The applicant should identify this as a deviation to the WOG GTR, and provide a description and results of a plant-specific aging management review for components fabricated from bronze.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- Item 3.5.9-2 Section 4.1 of the WOG GTR states that RCS support components are not generally designed to use bolted joint connections requiring pre-load. However, it also states that in the event that pre-load is important for a specific support design, a locking mechanism can be used to ensure that the pre-load is not lost. If a locking mechanism is not used, a plant-specific CLB inspection program may include an inspection of the connection for loss of pre-load if deemed necessary. In both LRAs, Section 3.5.9, the applicant states that pre-load has been utilized, but it did not indicate that locking mechanisms were used or that an inspection program is in place. Therefore, the staff requests that the applicant identify the specific supports that rely on bolt pre-load to remain functional, identify the bolt materials, and provide technical justification for not providing a locking mechanism or performing inspections.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- Item 3.5.9-3 The applicant's response to Applicant Action Item 6 did not address the staff's concern discussed in Section 3.3.1.7 of the FSER on the WOG GTR. The staff noted that many WOG plants used the 1963 AISC Code, which allowed the use of materials that did not have as great a yield strength or fatigue resistance as the more modern steels listed in Table 2-4 of the WOG GTR. For this reason, the staff was concerned that the results of the Westinghouse aging effects evaluation for fatigue (Table 3-2 of the WOG GTR), which concludes that fatigue is not an aging concern for RCS supports, may not be bounding for those plants. Surry used the 1963 AISC Code. Therefore, the staff requests that the applicant provide additional information to confirm that the conclusion of the Westinghouse generic aging effects evaluation for fatigue is applicable to the Surry RCS supports.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- Item 3.5.9-4 LRA Table 3.5.9-1, Footnote 2, indicates that for the neutron shield tank support structure and the reactor coolant pumps, steam generators, and pressurizers support structures, the carbon steel and low-alloy steel material group includes high-strength bolting. However, the table does not identify cracking of high-strength bolting as an aging effect requiring management. Therefore, the staff requests that the applicant provide technical justification for this omission. (This request also applies to LRA Section 3.5.10, General Structural Supports.)

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- Item 3.5.9-5 LRA Table 3.5.9-1 credits the inservice inspection (ISI) Program - Component and Component Support Inspections for managing cracking of high strength maraging steel bolting in an air environment. As described in the LRA, Appendix B2.2.11, the program is based on ASME IWF Category F-A for component supports that require VT-3 visual inspection method. It is not apparent to the staff that a VT-3 visual inspection is capable of detecting stress corrosion cracking in high strength support bolting before the intended function is compromised. Therefore, the staff requests that the applicant provide additional technical justification on the adequacy of this inspection method for managing stress corrosion cracking in a high strength support bolts.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- Item 3.5.10-1 In the staff's review of Section 3.5.10, "General Structural Supports," in both LRAs, the staff identified the need for the following clarifications:

- a. In both IRAs, Section 3.5.9 and 3.5.10, the applicant recognizes the need to manage supports for the purpose of maintaining the intended functions of the associated SCs under design load conditions. However, the applicant did not identify the need to manage those supports that are within the scope of license renewal and perform the functions of allowing for thermal expansion and seismic restraint. Buildup of debris or material on the non-moving surface can cause an obstruction that can impede the ability to expand and, therefore, prohibit the ability to allow for thermal expansion. Therefore, the staff requests that the applicant include fouling of the component surface as an applicable aging effect for these supports that needs to be managed and to identify the AMA that will be

used to manage this fouling, or provide a technical justification as to why fouling is not an applicable aging effect.

- b. In both LRAs, Section 2.4.10, the applicant indicates that supports for mechanical equipment (e.g., fans) are within the scope of the general structural support AMR. Fans and other mechanical equipment are often mounted on vibration isolating supports, that employ various non-metallic materials to absorb equipment vibration. The staff considers change in material property and cracking as aging effects requiring management for vibration isolation supports. However, the applicant's AMR does not identify any non-metallic materials, and does not specifically indicate that vibration isolating supports are within the scope of the AMR for general structural supports. Therefore, the staff requests that the applicant: (1) clarify whether there are any vibration isolating supports within the scope of license renewal, and where in the LRA is the AMR for these structural supports; and (2) describe the AMR for vibration isolating supports, including the materials and environments, the applicable aging effects, and the AMAs credited to manage aging. If the applicant has concluded that no AMA is required for these supports, then a detailed technical justification for its exclusion is required.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- 3.5.10-2 The issue of reduction in concrete anchor capacity due to degradation, described in Item 3.5.9-1 for NSSS Supports, also applies to LRA Section 3.5.10 - General Structural Supports and LRA Section 3.5.12 - Load-handling Cranes and Devices. LRA, Section 3.5.10, does not address the aging effect of reduction in concrete anchor capacity due to degradation of the embedded portion of the anchor or the concrete and grout surrounding the anchor. LRA, Section 3.5.12, (Table 3.5.12-1) identifies that baseplates and anchors for load-handling cranes and devices are included within the AMR; however, the concrete surrounding the anchor and the grout beneath the baseplates are not listed. Anchor capacity may be reduced due to local concrete and grout degradation (i.e., cracking, loss of material) and degradation of the steel anchor. The applicant states in the LRA that these items are addressed under the building structures that support these components. However, the AMR for the building structures concludes that, with few exceptions, there are no aging effects requiring management for concrete members. Therefore, the staff requests the applicant to describe the AMR for the potential reduction in concrete anchor capacity that may occur due to degradation of the (1) surrounding concrete, (2) grout, and (3) embedded steel anchor. In addition the applicant needs to describe the aging management program credited to manage this aging effect.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Item 3.5.11-1 In both LRAs, Table 3.5.11-1, the applicant states (in Footnote 1) that carbon and low-alloy steel bus duct enclosures, electrical component supports, panels and cabinets, and switchgear enclosures in an air environment do not require aging management because they are not subject to intermittent wetting. This statement implies that intermittent wetting is a prerequisite for loss of material from carbon and low-alloy steel in an air environment. This does not appear to be consistent with the applicant's previous determinations that carbon steel and low-alloy steel plant components in an air environment require aging management for loss of material. Therefore, the staff requests that the applicant provide additional information concerning intermittent wetting as a prerequisite for causing loss of material, and also to describe how humidity was addressed in the North Anna and Surry AMRs.

The staff also notes that the applicant identified a borated water leakage environment for junction, terminal, and pull boxes, and for panels and cabinets, but not for bus duct enclosures, electrical component supports (inside panels and cabinets), and switchgear enclosures. Therefore, the staff requests that the applicant provide an explanation for excluding a borated water leakage environment for bus duct enclosures, electrical component supports (inside panels and cabinets), and switchgear enclosures.

The applicant's AMR for North Anna identifies 3M E53A mats and mineral wool bats as materials used for fire wraps and also identifies gypsum boards, which serve a fire protection function. In NAS LRA, Table 3.5.11-1, the applicant has indicated that these materials in an air environment do not require aging management. No basis for this conclusion is provided in the LRA. Therefore, the staff requests that the applicant provide a technical justification for this conclusion and to specifically address the potential effect of humidity on degradation of the fire protection function of these materials.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Section B2.2.6, "Civil Engineering Structural Inspection"

Item B2.2.6-1 Under "Parameters Monitored or Inspected," the applicant indicates that the Civil Engineering Structural Inspection includes:

- a. For concrete structures - cracks, delaminations, honeycombs, water in-leakage, chemical leaching, peeling paint, and discoloration. However, for structural concrete located only in a sheltered air environment, there are no aging effects requiring management.

- b. For masonry walls - inspections check for cracks of joints and missing or broken blocks.
- c. For steel structures - inspections look for deformation, alteration, and significant rust on structural members; loose, missing, and damaged anchors, fasteners, and pads; missing and degraded grout under base plates; and cracked welds.
- d. For earthen structures - inspections look for erosion, cracking, depressed areas, evidence of shifting, settlement, movement, seepage, and leakage.

The staff also has a concern relating to masonry walls. Some masonry walls within the LR scope may have been structurally modified with steel supports to meet the requirements of IE Bulletin 80-11. Aging management of these steel supports is as important as inspections for joint cracking and missing/broken blocks. Therefore, the staff requests the applicant to describe its AMR for these supports, identify any aging effects requiring management, and identify the AMA credited for license renewal.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Section B2.2.10, "Inspection Activities - Load Handling Cranes and Devices"

- Item B2.2.10-1 In the introduction of Section B2.2.10 of both LRAs, the applicant states that the Work Control Process directs structural integrity inspections of applicable cranes that include steps to check the condition of structural girders on the cranes, and the runways along which the cranes move. The visual inspection of the girders checks for corrosion. The aging effect of concern is loss of material. Since LRA Section B2.2.10 is intended to describe the Inspection Activities - Load Handling Cranes and Devices, it is not clear why the applicant describes the Work Control Process. Therefore, the staff requests that the applicant explain why the Work Control Process description is included within the Inspection Activities - Load Handling Cranes and Devices aging management activity.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- Item B2.2.10-2 Under operating experience, the applicant states that anomalous conditions with cranes and lifting devices have been identified. These anomalies have principally involved misaligned runways. Such misalignment is not considered age-related degradation and consequently, is not a concern for license

renewal. However, the applicant needs to clarify that there is no operating history associated with aging of SC subject to an AMR relating to cranes and lifting devices.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Section B2.2.11, "ISI Program - Component and Component Support Inspections"

Item B2.2.11-1 Aging management activity (AMA) B2.2.11, entitled "ISI Program- Component and Component Support Inspections," includes within its scope ASME Section XI, Subsection IWC, Examination Category C-F-2. The AMA description under "Scope" states "License renewal concerns with respect to Subsection IWC include only the carbon steel piping that is susceptible to high energy line breaks in the feedwater and main steam systems."

- a. Subsection IWC identifies a number of examination categories applicable to Class 2 systems. The staff requests the applicant to either (1) describe the AMA credited to manage aging of Class 2 systems, in lieu of IWC, or (2) explain the technical basis for concluding that Class 2 systems do not require aging management.
- b. This AMA does not reference Subsection IWD, applicable to Class 3 systems. The staff requests the applicant to either (1) describe the AMA credited to manage aging of Class 3 systems, in lieu of IWD, or (2) explain the technical basis for concluding that Class 3 systems do not require aging management.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Section B2.2.12, "ISI Program - Containment Inspection"

Item B2.2.12-1 Under program scope, the applicant states that the scope of the Subsection IWE Inspection Program for the containment steel liner is in compliance with the requirements of 10 CFR 50.55a, that invokes ASME Section XI. The scope of Subsection IWE inspections described in the LRAs, Section B2.2.12, include the following items and is implemented for accessible areas:

| Component Type Category | Category | Method |
|-------------------------|------------------|--------------|
| Containment surfaces | E-A ¹ | Visual, VT-3 |

| | | |
|---|-----|--------------------------|
| Containment surfaces requiring augmented inspection | E-C | Visual, VT-1, Volumetric |
| Pressure retaining bolting | E-G | Visual, VT-1 |
| All pressure retaining components | E-P | Visual, VT-2 |

E-A¹- Examination includes attachment welds between structural attachments and the pressure-retaining boundary (i.e., the containment liner).

- a. The above footnote, should also indicate that examination includes the reinforcing structures and attachment welds to reinforcing structures (e.g., stiffening rings, manhole frames, and reinforcement around openings) as required by footnotes 2 and 5 of ASME Subsection IWE, Table IWE-2500-1. In addition, the examination of welds should include the weld metal and base metal for ½ inch beyond the edge of the weld. Therefore, the staff requests the applicant to include the examinations related to reinforcing structures and attachment welds to reinforcing structures (if applicable), and the examination of welds needs to include the weld metal and base metal for ½ inch beyond the edge of the weld.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- b. The Component Type Category list does not include seals, gaskets, and moisture barriers, identified as Examination Category E-D in ASME, Section XI, Subsection IWE. LRA Table 3.5.1-1 indicates that aging effects for containment O-rings are managed by the Work Control Process. Questions related to the aging management of seals, gaskets (including O-rings), and moisture barriers have been raised in a telecommunication documented in a letter to the applicant date October 11, 2001, specifically, staff Items 3.5-6, 3.5-9, 3.5-18. If a plant specific program, such as the Work Control Process, is credited to manage aging effects of seals, gaskets, and moisture barriers used in the containment structure, in lieu of Examination Category E-D of IWE, then sufficient information must be provided so that the staff evaluation can conclude that the effects of aging will be adequately managed by the credited program during the period of extended operation. Therefore, the staff requests that the applicant describe the scope and aging management activities of the Work Control Process as it applies to seals, gaskets, and moisture barriers used in the containment structure.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

- c. The above table identifies visual examination, VT-1, for pressure retaining bolting. For bolted connections that are not disassembled and reassembled during the inspection interval, the examination method should require bolt torquing or tension testing in accordance with the requirements contained in ASME Section XI, Subsection IWE, Table IWE-2500-1. Therefore, the staff requests the applicant to include bolt torquing or tension testing as the examination method for bolted connections that are not disassembled and reassembled during the inspection interval, or provide technical justification for not including this examination requirement.

The applicant stated that they understand the staff's concern and will provide the requested information.

The staff will provide an RAI requesting this additional information.

Item B2.2.12-2 Under "Monitoring and Trending," the applicant indicates that revision of the IWE/IWL Program Plan for each unit will be implemented prior to the end of each interval, to reflect the appropriate update of the ASME Code, and to reflect any revised inspection requirements. The revision to the IWE/IWL Program Plan should be consistent with the current approved editions of the ASME Code, in accordance with revisions to 10 CFR 50.55a (as stated in the GALL *Federal Register* notice). The staff requests that the applicant clarify its statement to confirm that it is consistent with this staff position, or provide a more detailed explanation as to why it is different from the staff's position.

The applicant stated that they will use the approved version of the IWE/IWL Program Plan consistent with the approved edition of the ASME Code that is current at the time of application in accordance with revisions to 10 CFR 50.55a, and the staff's stated position.

The staff found the applicant's response to this concern acceptable; however, the staff will provide an RAI to more formally document this information.

Telecom Participants by Topic

Section 2, “Scoping”

| | |
|-------------------|-------|
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| Gregory Hatchett | NRC |
| Paul Lain | NRC |
| Janak Raval | NRC |
| Ron Young | NRC |
| Robert Prato | NRC |

Section 3.5, “Aging Management of Structures and Component Supports”

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Section B2.2, “Existing Aging Management Activities” (B2.2.6, B2.2.10, B2.2.11, B2.2.12)

| | |
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