



Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 501 858 5000

August 30, 2000

1CAN080007

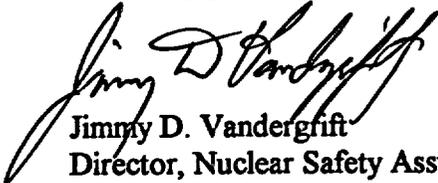
U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station OP1-17
Washington, DC 20555

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
License Renewal Application RAIs (TAC No. MA8054)

Gentlemen:

By letters dated May 2, 2000 (1CNA050004), May 5, 2000 (1CNA050002), and June 1, 2000 (1CNA060002), the NRC requested additional information concerning the Arkansas Nuclear One, Unit 1 (ANO-1) License Renewal Application (LRA). Attached are the responses to the requests for additional information (RAIs) pertaining to Section 2.0 of the ANO-1 LRA. Should you have any further questions, please contact me.

Very truly yours,


Jimmy D. Vandergrift
Director, Nuclear Safety Assurance

JDV/nbm

A001

U. S. NRC
August 30, 2000
1CAN080007 Page 2

cc: Mr. Ellis W. Merschoff
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

Mr. William D. Reckley
NRR Project Manager Region IV/ANO-1
U. S. Nuclear Regulatory Commission
NRR Mail Stop 04-D-03
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. Bob Prato
U. S. Nuclear Regulatory Commission
NRR Mail Stop O-12G15
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

**Request for Additional Information Regarding ANO-1 LRA
Section 2.0, dated May 2, 2000 (1CNA050004), May 5, 2000 (1CNA050002), and
June 1, 2000 (1CNA060002)**

2.2-1 In a letter dated November 19, 1999, the NRC staff identified several structures that comprise the ultimate heat sink. These structures include the Dardanelle Dam. During discussions with the staff, based on your interpretation of the current licensing basis for ANO-1, you ensured that actions are being taken to monitor and maintain the integrity and reliability of, among other things, the Dardanelle Dam. Upon reviewing the ANO-1 license renewal application, specifically Table 2.2-2, "List of ANO-1 Structures," no mention of the dam is made. Identify where in the LRA is the Dardanelle Dam identified as being within the scope of license renewal or provide a technical justification for excluding the dam from the scope of the rule.

As stated in correspondence dated November 19, 1999 (1CNA119903), the ultimate heat sink complex for ANO-1 consists of both the emergency cooling pond and Lake Dardanelle. Only the Entergy Operations-controlled portion of Lake Dardanelle was identified in the ANO-1 LRA as within the scope of license renewal. The intake and discharge canal embankments were identified as within the scope of license renewal and are discussed in the ANO-1 LRA Sections 2.4.5. Section 3.6.6 (page 3-107) provides the discussion regarding the aging management review of the intake and discharge canals. The Dardanelle Dam is not listed in Table 2.2-2 or elsewhere in the ANO-1 LRA, since it is not controlled by Entergy Operations.

Because the Dardanelle Dam was in existence prior to the construction of ANO-1 and is not under Entergy Operations' control, it was not identified in the ANO-1 LRA as within the scope of license renewal. The Dardanelle Dam is under the jurisdiction of the U.S. Army Corps of Engineers. The U.S. Army Corps of Engineers' inspection and maintenance programs are expected to adequately manage the effects of aging on the dam during the period of extended operation. NRC correspondence to the Nuclear Energy Institute dated May 5, 1999, "License Renewal Issue 98-0100, Crediting Federal Energy Regulatory Commission (FERC)-Required Inspection and Maintenance Programs for Dam Aging," states, "It is the staff's opinion that dam inspection and maintenance programs under the jurisdiction of FERC or the Army Corps of Engineers, continued through the period of license renewal, will be adequate for the purpose of aging management."

2.2-2 Table 2.2.1 lists mechanical and electrical systems at the ANO-1 site and documents which of those systems have components within the scope of license renewal. The Main Chiller Cooling Water system was identified as not being within the scope of license renewal. On page 2-43 of the LRA, however, you state that main chilled water system reactor building penetrations piping and valves are also included in the scope of license renewal since they provide for reactor building isolation. Please explain this discrepancy and, if required, provide any additional information required by 10CFR54.21.

The main chilled water system reactor building penetration piping and valves described in Section 2.3.3.9 (page 2-43) of the ANO-1 LRA are part of the "Chilled Water" system, which is listed in Table 2.2-1 as within the scope of license renewal (see drawing LRA-M-222). The main chiller cooling water system is a separate system, located outside the reactor building, that does not contain components or structures that meet the criteria for being within the scope of license renewal. Therefore, the "Main Chiller Cooling Water" system is not within the scope of license renewal as indicated in Table 2.2-1. Table 2.2-1 is correct regarding these two systems and is consistent with the discussion in Section 2.3.3.9.

2.2-3 Safety Analysis Report (SAR) Section 14.1.2.8.4 describes the operation of the atmospheric dump valves during a recovery from a complete loss of all unit alternating current (AC) power. Table 2.2-1, which identifies all of the mechanical and electrical systems within the scope of license renewal, indicates that the atmospheric vent system is not within the scope of license renewal. Provide a technical justification for excluding the atmospheric vent system from within the scope of license renewal.

The atmospheric dump valves are part of the main steam system as discussed in Section 2.3.4.1 of the ANO-1 LRA. The main steam system is within the scope of license renewal as indicated in Table 2.2-1. The atmospheric vent system (another system listed in Table 2.2-1) which does not contain the atmospheric dump valves, does not contain components or structures that meet the criteria for being within the scope of license renewal.

2.3.2.1-3 Only one intended function has been identified for flow restricting orifices (refer to Table 3.3-1 of the LRA), which is the pressure boundary function, per 10CFR54.4(a)(1)(I). However, some orifices are relied upon to limit the mass flow rate during postulated breaks, and loss of material can degrade this function. Provide a justification as to why limiting the mass flow rate during postulated breaks is not an intended function of some orifices, per 10CFR54.4(a)(1)(iii), or provide an aging management

review (AMR) for the orifices that have an intended function to limit mass flow rate.

The flow restricting orifices listed in Table 3.3-1 do not have a safety-related function to limit mass flow rate during postulated breaks. There is no flow required through the core flood tank vent lines during postulated breaks. The only function these components are required to maintain during the period of extended operation is pressure boundary.

- 2.3.2.2-1 Boric acid solution is stored in heated and insulated tanks, such as the BWST, and is piped in heat-traced and insulated lines to preclude precipitation of the boric acid. It is the staff's understanding that the heaters, heat tracing, and insulation are designed to maintain the emergency core cooling system (ECCS) inventory above technical specifications temperature limits during normal operation. In addition, the purpose of maintaining the required boron concentration during normal operation is to ensure the capability of the emergency systems to shut down the reactor and maintain it in a safe shutdown condition; and, to mitigate the consequences of the design basis events.**

Although insulation is nonsafety-related, in this application the insulation supports an intended function which satisfies the criteria defined in 10CFR54.4(a)(2); and therefore, should be included within the scope of license renewal. Provide a justification for excluding the thermal insulation of the low-pressure injection/decay heat and the high-pressure injection/makeup and purification systems from an AMR. Please consider the following plant-specific information when responding to this RAI:

- (a) The location and surrounding conditions of the subject insulated tanks and pipes, whether these are housed in buildings/structures, above or under the ground, exposed to high humidity, exposed to outside environment, their potential for flooding, or their vulnerability to damage from normal wear and tear.**

The BWST is outdoors, and the tank is exposed to ambient weather conditions in the outdoor environment. The piping runs through the tank bottom, the tank foundation oiled sand, concrete, and portions of the auxiliary building. The potential for flooding is discussed in the ANO-1 SAR Section 2.4.4. However, no credit is taken for the insulation on the tank or piping to support an intended function as discussed in part (b) of this RAI.

- (b) The required boron concentration and the corresponding boron solubility temperature of water. Calculations demonstrating that the required water temperature and boron concentration can be maintained with the heaters and heat tracers operating, but without the insulation (assuming failure of insulation before an event and that it remains undetected until the event occurs). If boron precipitation occurs inside the tanks and pipes as a result of insulation failure, the required boron concentration in the water may not be maintained and the piping may foul internally because of the deposition of crystallized boric acid.**

Please see ANO-1 Technical Specification 3.3.1(G), which indicates the boron concentration in the BWST is 2470+/-200 ppm boron at a temperature not less than 40°F. A limiting condition for operation is entered if this requirement is not met. As documented in NUREG-1723 at a concentration of 3000 ppm boron, the solubility temperature is less than 22°F. Therefore, the insulation material on the tank and piping is not required to support any system function that is required during or following any design basis event to satisfy the criteria of 10CFR54.4(a)(1)(i), 10CFR54.4(a)(1)(ii), or 10CFR54.4(a)(1)(iii). In addition, the insulation does not meet the criteria of 10CFR54.4(a)(2) or 10CFR54.4(a)(3). The insulation is therefore not within the scope of license renewal. This RAI is very similar to the Oconee RAI 2.5.5-2 and the Calvert Cliffs RAI 5.2.8. The responses to these RAIs also indicated that insulation was not within the scope of license renewal. In NUREG-1723 for BWST insulation it states, "The staff considers the applicant's assessment and the conclusion acceptable." The applicant's conclusion was: "The insulation, therefore, need not be within the scope of license renewal, and is not subject to an aging management review." Note that in NUREG-1705, the following is concluded by the NRC staff: "The staff concludes that, even if the chemical volume control system relied on the insulation to perform any accident mitigation functions, there are no plausible aging effects for the insulation that would warrant an aging management program."

- (c) Possibility of localized failure of insulation resulting in localized boron precipitation and fouling.**

Please see RAI response 2.3.2.2-1(b) above.

2.3.2.2-2 Tanks (including the vertical tanks erected in the field) are considered to be mechanical components. However, the tank foundation and anchorage systems are considered structural components. Vertical tanks, such as the borated water storage tank (BWST), can have tank foundations that are made of concrete or steel. Identify where in the

LRA are foundations or pads of the tanks identified as being within the scope of license renewal and subject to an AMR, or provide justification for the exclusion of these structural components from an AMR.

Foundations for tanks within the scope of license renewal are identified in Section 2.4.6.1 of the ANO-1 LRA. A summary of their aging management review is provided in Table 3.6-7.

- 2.3.2.2-5 Section 2.3.2.2 states that sump screens and vortex breakers used in pump suction lines were included within the scope of license renewal, and are subject to an AMR. Please clarify whether the tanks from which ECCS water is drawn have screens or vortex breakers inside them in order to protect the pumps from debris and cavitation. If so, identify which of these tanks are equipped with such passive components, and where in the application is the AMR for these components or provide a justification as to why these components are not within the scope of license renewal and subject to an AMR.**

Screens or vortex breakers are not required for the tanks from which ECCS water is drawn and are not installed.

- 2.3.2.3-4 Drawing No. LRA-M-231, sheet 3, Rev. 0, which is the piping and instrumentation diagram (P&ID) for the makeup and purification (MUP) system, shows that the piping section with valves MU-1210E, F, G, and H is not included within the scope of license renewal. Provide a discussion as why this section of the MUP system piping need not be included within the scope.**

Drawing LRA-M-231, sheet 3, is incorrect and should indicate valves MU-1210E, MU-1210F, MU-1210G, MU-1210H, and the associated tubing are within the scope of license renewal. They were evaluated during the aging management review for the makeup and purification system with the stainless steel "valves" and "piping" component commodity groupings in Table 3.3-3. Due to an administrative error, these valves and associated tubing were not highlighted on drawing LRA-M-231, sheet 3.

- 2.3.2.4-7 Section 2.3.2.4 of the LRA states that the components of the reactor building spray system within the scope of license renewal consists of both trains of pumps and supporting equipment (lube oil coolers and seal water cyclone separators), piping, valves, and spray headers. The sodium thiosulfate storage tank and its piping connected to the spray system, as seen in P&ID LRA-M-236, sheet 1, are not highlighted as being in-scope**

and are not included in Table 3.3-4 of the LRA for an AMR. Provide justification for excluding the thiosulfate storage tank and its piping from the scope of components subject to an AMR.

The sodium thiosulfate storage tank and its piping connected to the spray system, as seen in drawing LRA-M-236, sheet 1, are not within the scope of license renewal because they do not meet the scoping criteria of 10CFR54.4(a). Thus they are not subject to an aging management review. The sodium thiosulfate storage tank and its piping are no longer in service (spared in place).

2.3.2.4-8 Table 3.3-4 of the LRA listed the piping, tubing, and valves as the components subject to an AMR for the reactor building spray system. However, in Table 3.3-5 of the LRA for the reactor building cooling and purge system and Table 3.3-8 of the LRA for the hydrogen control system, tubing is not listed as the components subject to an AMR even though the tubes are used in the systems and are addressed in the notes of the tables. Identify where the AMR for tubing can be found in the LRA or provide a justification for excluding this tubing from the scope of components subject to an AMR.

In the reactor building spray system the instrument piping and tubing are a different pipe class than the main process line piping. Thus, they were evaluated separately during the aging management review and are listed separately in Table 3.3-4. There is no tubing in the reactor building cooling and purge system within the scope of license renewal. In the hydrogen control system, the tubing is located within and was evaluated as part of the sampling stations. Therefore, in Table 3.3-8, tubing is included within the "sample stations" component commodity grouping. The notes about tubes in Table 3.3-5 and Table 3.3-8 refer to heat exchanger tubes. Heat exchanger tubes were evaluated with the heat exchangers during the aging management review.

2.3.2.5-4 In P&ID LRA-M-261, sheet 1, the 2-inch temporary duct of the reactor building cooling and purge system from the supply air plenum to the box of temperature detectors is not identified as being within the scope of components subject to an AMR. Provide a justification for not including the duct in the scope of components subject to an AMR.

The 2-inch temporary duct of the reactor building cooling and purge system from the supply air plenum to the box of temperature detectors is not within the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). Thus it is not subject to an aging management review. In accordance with the ANO-1 current licensing basis, this temporary duct is not

required for the system to perform the function of reducing the post-accident temperature and pressure in the reactor building and providing mixing of the reactor building atmosphere following a loss of coolant accident. Additionally, its failure would not prevent the remainder of the system from performing its intended function.

- 2.3.2.6-6** In P&ID LRA-M-233, sheet 1, the chemical addition system is within the scope of license renewal, but the sodium hydroxide recirculating pump line from the chemical addition system to the sodium hydroxide storage tank is not highlighted as being in-scope. Provide justification for excluding the pump line from the scope of components subject to an AMR.

The sodium hydroxide recirculating pump line from the chemical addition system to the sodium hydroxide storage tank is not within the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). Thus the line is not subject to an aging management review. It is not required for the sodium hydroxide system to perform the intended function of providing a solution of sodium hydroxide to the ECCS suction headers. As is stated in note 2 on drawing LRA-M-233, sheet 1, "Pump P-29 provides recirculation prior to sampling." The drawing's functional representation of the system does not indicate the elevation at which the recirculation line enters the tank. The recirculation line enters the tank above the normal level and is isolated during normal plant operation.

- 2.3.2.7-1** In P&ID LRA-M-230, sheet 1, the containment boundary and isolation valves of the high pressure nitrogen line highlighted in the flow diagram are not clearly defined. Provide additional details (e.g., a sketch) for this portion of the containment isolation system.

Due to an administrative error, a license renewal boundary flag was omitted from drawing LRA-M-230, sheet 1. There should be a license renewal boundary flag at valve N2-61. The line continues, as shown, to drawing LRA-M-236, sheet 1, in zone D6, where it ties into pipe FCB-1-1", just inside the reactor building penetration. In ANO-1 SAR Table 5-1, on page 5.5-5, the isolation valves for penetration 31 are identified as MU-35A, N2-3, N2-61, and MU-36A.

- 2.3.2.7-2** In P&ID LRA-M-237, sheet 1, the redundant isolation valves (SS-1017B, SS-1018B) for the test connections of the sampling system are not highlighted as being within the scope of license renewal. However, containment isolation provisions require double isolation at the test

connections for greater assurance of containment integrity. Provide a justification as to why the second isolation valve on each test connection is not in-scope.

Please see ANO-1 SAR Table 5-1, Penetration 10, and note 8. This penetration is associated with the secondary side of the steam generator and is not subject to GDC-57. In accordance with the current licensing basis, the containment boundary or barrier against fission product leakage to the environment is the inside surface of the steam generator tubes, the outer surface of the lines emanating from the steam generator, and the outer surface of the steam generator between the tube sheets. Therefore, valves SS-1017B and SS-1018B do not meet the scoping criteria for license renewal.

2.3.2.7-3 Section 2.3.2.7 of the LRA states that the reactor building isolation system also seals penetrations that are not required for operation to provide a fission product barrier between the inside of the reactor building and the outside environment. However, Table 3.3-7 of the LRA only lists the piping, bolting, and valves as the components of the containment isolation system within the scope of license renewal. There are typically more components within a penetration isolation boundary other than piping, bolting, and valves that perform this intended function, such as leak-testable blank flange, weld end cap, orifice, and flow monitor (if any). Verify the list of the components to include all the components in the reactor building isolation barriers that are subject to an AMR for license renewal. Also, the valve type, such as check, motor-operated, remote manual or hand valve, used for the containment isolation purpose, should be identified in the table.

The component commodity grouping in Table 3.3-7 designated as "Piping" includes pipe, fittings and flanges. The components "leak testable blank flange, weld end cap, orifice" are considered to be "fittings and flanges" included in the "Piping" component commodity grouping. There are no flow monitors in the reactor building isolation system.

The valve type is identified on the drawings submitted to support the application. Please see Table 2.3-6 for the drawings associated with the reactor building isolation system. The legends for the drawings are provided in drawing LRA-M-200 sheets 1, 2, and 3. Additionally, Table 5-1 of the ANO-1 SAR identifies the valve type for the reactor building isolation valves.

2.3.2.8-5 The hydrogen control system is in scope. However, some of the system lines attached to the hydrogen control system outside the containment and the hydrogen samplers, such as the hydrogen purge air system and

post-accident gas sampling system, as seen in P&ID LRA-M-261, sheet 3, are not highlighted as being in scope of components subject to an AMR. Provide justification for excluding these system lines from the scope of components subject to an AMR.

The system lines attached to the hydrogen control system outside the containment, such as the hydrogen purge air system and post-accident gas sampling system, as seen in drawing LRA-M-261, sheet 3, are not within the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). Thus they are not subject to an aging management review. These lines are not a part of the pressure boundary of the hydrogen control system. The hydrogen purge air system is isolated and abandoned in place.

- 2.3.3.1-1 Flow diagram LRA-M-235, sheet 1 @ E6, a piping section downstream of valve SF-41 is identified as being within the scope of license renewal and subject to an AMR. However, the piping identification (i.e., size, material) for this piping is not identified. Please provide this information.**

The pipe size is 8 inches, and the material is type 304 stainless steel. However, as described in Section 2.3.3.1 of the ANO-1 LRA, the only spent fuel system piping within the scope of license renewal is the piping associated with the reactor building penetration. The highlighting on drawing LRA-M-235 should indicate that the only piping within the scope of license renewal is the piping at the reactor building penetration between flange M-307 and valve SF-42 and the fuel transfer tube. The highlighting of other piping on this drawing resulted from an administrative error.

- 2.3.3.1-2 Identify whether the strainer F-402 (LRA-M-235 @ H4) is within scope and subject to an AMR. If this strainer is subject to an AMR, provide the relevant information associated with this component to complete Table 3.4-1, "Spent Fuel System." Otherwise, provide a justification for its exclusion from the list of components subject to an AMR.**

The spent fuel pool suction nozzle strainer, F-402, is not within the scope of license renewal or subject to an aging management review because it does not meet any of the scoping criteria in 10CFR54.4(a). As described in Section 2.3.3.1, the only spent fuel system piping within the scope of license renewal is the piping at the reactor building penetration and the fuel transfer tube.

- 2.3.3.1-3 Spectacle blind M-307 (LRA-M-235, sheet 1 @ E6) is identified as being within the scope of license renewal and subject to an AMR. Please**

provide the relevant information associated with this component to complete Table 3.4-1, "Spent Fuel System."

Spectacle blind M-307 was included in the aging management review as part of the component commodity grouping "piping" in Table 3.4-1. Spectacle blind M-307 has the pressure boundary intended function, is stainless steel, and is normally in an air environment but is in a borated water environment occasionally. Its aging effects are cracking and loss of material (both aging effects are prevented by referenced program/activity) and its program/activity is Primary Chemistry Monitoring. Not including loss of material as a potential aging effect for stainless steel components exposed to a borated water environment in Table 3.4-1 was due to an administrative error.

- 2.3.3.1-4 Two lines off the within-scope BWST T-3 (LRA-M-235 sheet 1 @ H7) provide a pressure boundary function for T-3, but are not identified as being within scope for license renewal. These lines include valves CA-77 and SF-51. Verify that these lines are within the scope of license renewal and subject to an AMR and provide the appropriate information to complete Table 3.4-1, or provide a justification for their exclusion.**

These lines are nonsafety-related lines connected to the top of the borated water storage tank. These lines do not fulfill a pressure boundary function for the BWST and are not within the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). Drawing LRA-M-232 is a schematic representation that is not intended to depict the elevation of piping connections to the tank.

- 2.3.3.2-1 The ANO-1 LRA states that the ANO-1 component database includes structures, systems, and components (SSCs) required to meet 10CFR50.48 and Appendix R, Sections III.G, III.J, and III.O.**

(a) Identify the specific types of analyses or plant evaluations, and documentation (e.g., SAR, fire hazards analysis, safe shutdown analysis, safety evaluations, etc.) that were used to identify fire protection SSCs within the scope of license renewal.

A fire area analysis was performed at ANO-1 to evaluate the plant equipment required to place the plant in a safe shutdown condition for any single fire scenario. The fire analysis contains a listing of the ANO-1 components that can be used to place the plant in a safe condition following a fire. These components are in the scope of license renewal. Additional sources used to identify 10CFR50.48 SSCs were the ANO-1 SAR (Section 9.8), plant drawings, design basis documents, and the

ANO-1 component database as discussed in the ANO-1 LRA Section 2.1.2. The scope of 10CFR50.48 SSCs is consistent with ANO-1's current licensing basis.

- (b) Furthermore, state if the "fire reanalysis" referred to in LRA Section 2.3.3.4 is the same scoping methodology described above, to identify plant fire protection SSCs that are required to place the plant in a safe shutdown condition for any single fire scenario. If not, describe the "fire reanalysis" and how it was also used to identify fire protection SSCs within the scope of license renewal.

The "fire area reanalysis" is discussed in the ANO-1 LRA Section 2.1.2 (page 2-4) and is the analysis used to determine the ANO-1 components that can be used to place the plant in a safe condition following a fire, as discussed in part (a) of this RAI.

- (c) Define the scope of fire protection masonry walls that are included within the scope of license renewal.

The fire protection masonry walls within the scope of license renewal include block walls that provide 10CFR50.48-required fire protection. Refer to Table 3.6-4 on page 3-118 of the ANO-1 LRA.

- (d) If all walls included within the scope of IE Bulletin 80-11 are not included in the scope of license renewal, provide the technical justification for their exclusion.

ANO-1's safety-related masonry block walls that fall within the scope of IE Bulletin 80-11 are within the scope of license renewal.

- (e) During implementation of USI A-46, masonry walls that are important to safety, but not covered by IE Bulletin 80-11, were identified at a number of operating plants. If additional masonry walls important to safety were identified under the ANO-1 A-46 program, are these included in the scope of license renewal? If not, provide the technical justification for their exclusion.

No additional masonry walls important to safety were identified by the ANO-1 USI A-46 program.

2.3.3.2-2 System filters, fire extinguishers, fire hoses, and air packs are not included within the scope of license renewal and are not subject to an AMR. As a result of the staff's experience with license renewal, the staff has found that system filters, fire extinguishers, fire hoses, and air packs

(within the scope of license renewal) may be excluded, on a plant-specific basis, from an aging management review under 10CFR54.21(a)(1)(ii). These components are considered within the scope of license renewal and are typically replaced based on specific performance and condition monitoring activities that clearly establish a routine replacement practice based on a qualified life component. These components may be excluded based on specific performance and condition monitoring activities provided that the applicant (1) identifies and lists in the LRA each component type subject to such replacement, and (2) identifies the applicable programs that conform to appropriate standards (e.g., for fire protection components - applicable National Fire Protection Association (NFPA) standards and 42CFR Part 84). Justify the exclusion of these components from the scope of license renewal and an AMR.

Specific system filters, fire extinguishers, fire hoses, and air packs (i.e., self-contained breathing apparatus) are within the scope of license renewal. Filters, fire extinguishers, fire hoses, and air packs are considered short-lived. As discussed in NRC letter from C.I. Grimes to D.J. Walters, NEI, dated March 10, 2000, subject: License Renewal Issue No. 98-12, "Consumables," the screening process allows the exclusion of system and component filters, fire extinguishers, fire hoses, and air packs. Because filters within the scope of license renewal at ANO-1 are tested or inspected periodically and replaced as part of ANO-1 Technical Specification or preventive maintenance activities, these filters are not subject to aging management review. For example, see RAI responses 2.3.3.11-2(a), 2.3.3.12-1(c), 2.3.3.12-1(d), 2.3.3.12-1(f), 2.3.3.13-1(b), and 2.3.3.13-1(g). Because fire extinguishers and fire hoses are routinely monitored and replaced in accordance with NFPA-10 and NFPA-1962, respectively, they are not subject to aging management review. Because of an administrative error, Section 2.3.3.2 of the ANO-1 LRA indicates that fire hoses are outside of the scope of license renewal. This section should state that fire hoses are within the scope of license renewal but do not require aging management review. Finally, because air packs are maintained under the self-contained breathing apparatus program based on 42CFR84, 29CFR19.10, 29CFR19.26, NUREG-41, and ANSI-Z88.2, they do not require an aging management review.

- 2.3.3.2-3 LRA Section 2.3.3.2 does not list the following fire protection SSCs within the scope of license renewal: The fire protection jockey pump (casing), shown highlighted on LRA-M-219, sheet 1; the carbon dioxide system, listed as not being within the scope of license renewal in LRA Table 2.2-1; and the fire hydrants, which were not identified in LRA Section 2.3.3.2. These components appear to have fire protection intended functions required for compliance with 10CFR50.48 as stated in 10CFR54.4(a)(3).**

Provide justification for their exclusion from within the scope of license renewal.

The fire protection jockey pump (casing) is not required for safe shutdown under the ANO-1 current licensing basis and therefore is not within the scope of license renewal. The license renewal flag on drawing LRA-M-219, sheet 1, zone 3B, should be at valve FS-2C rather than at the jockey pump. Please see ANO-1 SAR page 9.8-2 which states, "A fire protection water supply system jockey pump is provided to minimize cycling of the main fire pumps." Also see ANO-1 SAR page 9.8-6 which states, "Failure of the jockey pump has no effect on the Fire Protection System as the main fire pump starts when the line pressure decreases to a pre-set pressure point."

The carbon dioxide system is not within the scope of license renewal because it does not meet any of the scoping criteria in 10CFR54.4(a). Fire hydrants are not within the scope of license renewal because they do not meet any of the scoping criteria in 10CFR54.4(a).

2.3.3.2-4 LRA-M-219, sheet 1, Note 5, states that fire pumps P6A, P613, and P11 draw water from the service water pump bays C, A, and B, respectively. LRA Section 2.3.3.10, "Service Water," states that the service water system is credited in the fire analysis because if the source of water from Lake Dardanelle is lost, the emergency cooling pond can supply the water to the intake structure for use by the fire pumps. Therefore, the source of fire water is then either Lake Dardanelle or the emergency cooling pond, which are both raw water sources. Since raw water sources are known to contain small particles of mud or debris which can clog small orifice sprinklers, NFPA 13, "Standard for the Installation of Sprinkler Systems," Section 3.7-6, provides guidance for the use of strainers for sprinkler heads below a certain orifice size. Strainers appear to be passive and long-lived and LRA Section 2.3.3.2, "Fire Protection," and LRA Table 3.4-2, "Fire Protection," do not identify strainers as a component within scope of license renewal that is subject to an AMR. State if strainers are used in the fire water system at ANO-1. If not, provide a justification based on the discussion provided above. If so, include them within the scope of license renewal and subject to an AMR or provide a justification for not including fire water system strainers within the scope of license renewal or not subjecting them to an AMR.

Strainers are used in the fire protection system at ANO-1. These strainers are within the scope of license renewal and were subject to an aging management review. Strainers are included within the "piping" component commodity groupings in Table 3.4-2.

2.3.3.2-5 LRA Section 2.3.3.2 states that the fire water distribution system including the portion of the outside loop, sectional control valves, isolation valves, standpipes, and hose stations that are required for protection of safety-related areas are included within the scope of license renewal and are subject to an aging management review. For the portion of the outside fire protection loop within the scope of license renewal, flow diagram LRA-M-2219, sheet 5, shows piping and valves connected to the outside fire protection loop, which are not highlighted.

- (a) Verify that the piping and valves which are not highlighted, are not required for the protection of safety-related areas. Furthermore discuss how the failure of the piping and valves which are not highlighted, would not effect the capability of the portion of the outer fire water loop, required for compliance with 10CFR50.48, to perform its intended.**

The piping and valves that are not highlighted, on drawing LRA-M-2219, sheet 5, are not required for the protection of safety-related areas. Failure of the piping and valves which are not highlighted, would not effect the capability of the portion of the outer fire water loop, required for compliance with 10CFR50.48, to perform its intended function for ANO-1. Please see ANO-1 SAR page 9.8-6, which states "The Fire Protection System can operate with any single failure. Failure of the jockey pump has no effect on the Fire Protection System as the main fire pump starts when the line pressure decreases to a pre-set pressure point. Failure of the main electric driven pump starts the diesel driven fire pump. The branches off the main fire piping yard loop are equipped with block valves that can be closed in case of failure of a branch line. The yard loop is equipped with sectional control valves to provide isolation of sections of the yard piping in case of failure of any section."

- (b) The standpipes have been identified in the LRA as being subject to an AMR. Describe the program that manages or detects aging of the standpipes and the criteria to determine acceptability.**

The programs that manage the effects of aging for the standpipes are the Fire Water Piping Thickness Evaluation and Service Water Chemical Control. Please see page B-52 of the ANO-1 LRA for the discussion of Service Water Chemical Control. Please see page B-63 for the discussion of Fire Water Piping Thickness Evaluation.

2.3.3.2-6 LRA Section 2.3.3.2 states that the diesel driven fire pump, including the engine gearbox oil cooler, the jacket water heat exchanger, and the lube

oil cooler are within the scope of license renewal and are subject to an aging management review. A comparison of LRA Table 3.4-2 to flow diagram LRA-M-219, sheet 1, shows that all of the components with intended functions that support the diesel fire water pump are highlighted on the flow diagram as being within the scope of license renewal. However, they are not all listed on Table 3.4-2 as being subject to an AMR. The components highlighted which are not listed in Table 3.4-2 as being subject to an AMR include the following: intake air filter, lube oil filter, turbocharger, and starter. These components appear to be passive, long-lived components that are subject to an AMR.

- (a) Provide justification for the exclusion of these components that support the diesel fire pump, from an AMR.

The passive long-lived subcomponents of the intake air filter, the lube oil filter and turbocharger were evaluated during the aging management review. The intake air filter and lube oil filter subcomponents are included in Table 3.4-2 in the "intake air" component commodity grouping and the "lube oil" component commodity grouping, respectively. The turbocharger is in both the "lube oil" component commodity grouping and the "exhaust air" component commodity grouping. The starter is a motor and as such is specifically excluded from an aging management review by 10CFR54.21(a)(1)(i).

- (b) Clarify if the lube oil and engine gear box oil cooler components are evaluated within the "commodity grouping" listed as cooling water, in Table 3.4-2.

The lube oil cooler and the gear box oil cooler are contained in the "heat exchangers" component commodity grouping in Table 3.4-2.

2.3.3.2-7 Flow diagram LRA-M-219, sheet 1 omits the following fire protection piping from within scope of license renewal:

- lube oil tank deluge system (D-3)
- lube oil storage tank T-26 (D-1)
- fuel oil tank sprinkler system (D-7)
- MFW pump deluge system (E-3)
- basement sprinkler system (E-3)
- piping located off of FS-43 and FS-90 (Column 2)

- hydrogen seal oil unit deluge system (F-3)
- outside firewater loop to wall sprinkler system (Column 1)

Provide justification for the exclusion of fire protection piping, for the systems listed above, from within the scope of license renewal.

The fire protection piping listed above is not in the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). As stated on page 2-38 of the ANO-1 LRA, "The safety function of the fire protection system is to minimize the effects of fires on structures, systems and components important to safety as required by 10CFR50 Appendix A, General Design Criteria 3. In accordance with 10CFR54, the components required for compliance with 10CFR50.48 are in the scope of license renewal." In accordance with ANO-1's current licensing basis, the fire protection piping listed above is not required for compliance with 10CFR50.48.

- 2.3.3.3-1 Subsection 8.3.1.1.7.1 of the SAR states that sufficient drainage is provided in the emergency diesel generator (EDG) rooms to "maintain the level of flooding water below that at which damage to the equipment will result." This drain piping may meet the scoping requirements of 10CFR54.4(a)(2). Identify the system or portion of system that provides drainage for the EDG rooms and identify where this system has been identified as being within the scope of license renewal in the license renewal application. If the drainage system is not considered within the scope of license renewal, provide a justification for its exclusion.**

The system that provides drainage for the EDG rooms is a 10-inch scupper or through-wall opening located behind a curb. The wall opening and curb are in the scope of license renewal and were evaluated as part of the auxiliary building in Sections 2.4.3 and 3.6 of the ANO-1 LRA.

- 2.3.3.3-2 The following components identified as being within the scope of license renewal on flow diagrams LRA-M-217 sheets 3 and 4, but are not included on Table 3.4-3. Table 3.4-3 lists the components subject to an AMR for the EDG system. Identify whether the following components are subject to an AMR, and if so, provide the relevant information about the components to complete Table 3.4-3. If a component is not considered subject to an AMR, provide a justification for its exclusion.**

- Exhaust silencer (M-217 sheet 3 @G7)
- Turbocharger (M-217 sheet 3 @ E8)

- Crankcase ejector (M-217 sheet 3 @ E7)
- Expansion joints (M-217 sheet 3 @ G8 and sheet 4 @ D7)

Exhaust silencer, M-112B, is included in the “piping” component commodity grouping in the air intake and exhaust subsystems section of Table 3.4-3. Turbocharger, M-225B, is included in the “turbocharger” component commodity grouping in the air intake and exhaust subsystems section of Table 3.4-3. Crankcase ejector, M-227B, is included with the “piping” component commodity grouping in the lube oil subsystem section of Table 3.4-3. Expansion joints XJ55 and XJ71 are included in the “expansion joint” component commodity grouping in the air intake and exhaust subsystems section of Table 3.4-3. Expansion joints XJ488 and XJ498 are included in the “piping” component commodity grouping in the starting air subsystems section of Table 3.4-3.

- 2.3.3.4-1 Valves located in the valve pits on LRA-M-213, sheet 2 @C7 are identified as being within the scope of license renewal. However, drain lines associated with these valves are not included in the scope of license renewal. Section 2.3.3.4 of the LRA states that the valves and piping that isolated the DH pump rooms which are credited as part of the room pressure boundary for offsite dose calculations are within the scope of license renewal and subject to an AMR. Please provide a justification for the exclusion of these piping sections.**

Due to an administrative error, drawing LRA-M-213, sheet 2 is incorrect in that it should indicate that the piping for room 10 and room 14, the decay heat removal pump rooms, upstream of valves ABS-13 and ABS-14 is within the scope of license renewal. This piping was evaluated during the aging management review and is included in the stainless steel “piping” component commodity grouping in Table 3.4-4.

- 2.3.3.5-1 The following pipe sections (tubing) were not identified as being within the scope of license renewal. Please verify that these components do not have a system-/component-level intended function that would require them to be included within the scope of license renewal.**

- Pressure sensing lines (including screw cap) to valves 2PCV-7239A, 2CV-7243, and 2CV-7241A,B,C (M-2241 sheet 4 @ F3, D3, and E/F2, respectively)
- Crank case vent line on (M-2241 sheet 2 @ C5)
- Crankcase pressure instrument lines (M-2241 sheet 4 @ C3)

- **Piping and components that support the operation of the pre-lube oil pump control valve 2CV-7243 (M-2241 sheet 4@ D1)**

Due to an administrative error, drawing LRA-M-2241, sheet 4 should indicate the pressure sensing lines to valves 2PCV-7239A, 2CV-7243, 2CV-7241A, 2CV-7241B, and 2CV-7241C are within the scope of license renewal. These lines were evaluated during the aging management review and are included in the “tubing” component commodity grouping in the starting air subsystem section of Table 3.4-3.

Crankcase vent lines, 2HBD-889-2” and crankcase pressure instrument lines are not in the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). No credible failure of these lines, including complete loss, will prevent the diesel engine from starting or continuing to run.

Due to an administrative error, drawing LRA-M-2241 sheet 4, location D-1 should indicate the tubing and valves that support the operation of the pre-lube oil pump control valve 2CV-7243 are in the scope of license renewal. The tubing was evaluated during the aging management review and is included in the “tubing” component commodity grouping in the starting air subsystem section of Table 3.4-3. The valves were evaluated during the aging management review and are included in the stainless steel “valves” component commodity grouping in the starting air subsystem section of Table 3.4-3.

2.3.3.5-2 Several components identified on flow diagrams M-2241, as being within the scope of license renewal are not included on Table 3.4-5. This table lists the components subject to an AMR for the Alternate AC (AAC) Diesel Generator System. Identify whether the following components are subject to an AMR, and if so, provide the relevant information to complete Table 3.4-5. If a component is not subject to an AMR, provide a justification for its exclusion.

- **Removable spool (M-2241 sheet 4 @ D/E3 and M-2241 sheet 5 @ B5/7)**
- **Lubricators 2M-21 A, B, C and 2M-22 (M-2241 sheet 4 @ E/F2 and D2)**
- **Pump casing (M-2241 sheet 4 @ D1)**
- **Governor 2M-9 (M-2241 sheet 4 @ 1311)**
- **Exhaust silencer 2M-12 (M-2241 sheet 2 @ G6)**
- **Lube oil system filters, e.g., 2F-7119A, B, C (M-2241 sheet 5 @ C6)**
- **Electric heating coil (M-2241 sheet 5 @ A6 and sheet 1 @ E5)**

- **Expansion tank sight glass (M-2241 sheet 1 @ H5)**
- **Vacuum breakers (M-2241 sheet 1 @ D8)**

The listed components were subject to an aging management review. Many of these components were not listed separately in Table 3.4-5 because the components are part of the skid-mounted, vendor-supplied equipment associated with the AAC diesel generator. Material and environment combinations are already addressed by the components that are listed in the table, and they are subject to the AAC Diesel Generator Testing and Inspection program. Additional details on each of the listed components are provided below.

- **Removable spools – stainless steel – included in the “piping” component commodity grouping in the starting air subsystem section of Table 3.4-5.**
- **Lubricators – aluminum and carbon steel – included in the “filter” component commodity grouping in the starting air subsystem section of Table 3.4-5.**
- **Pump casing – carbon steel – included in the “pumps” component commodity grouping in the lube oil subsystem section of Table 3.4-5.**
- **Governor 2M-9 – carbon steel – included in the “valves” component commodity grouping in the starting air subsystem section of Table 3.4-5.**
- **Exhaust silencer – carbon steel – included in the “muffler” component commodity grouping in the air intake and exhaust subsystem section of Table 3.4-5.**
- **Lube oil system filters – carbon steel – material is the same as that of the carbon steel “valves” component commodity grouping in the lube oil subsection of Table 3.4-5.**
- **Electric heating coils – carbon steel (housing only) – included in the “heater” component commodity grouping in the lube oil subsystem and in the cooling water subsystem of Table 3.4-5.**
- **Expansion tank sight glass – glass – not included in Table 3.4-5, but has no aging effect and needs no aging management program.**
- **Vacuum breakers – actually these are filter/traps, carbon steel – included in the “filter” component commodity grouping in the cooling water subsystem section of Table 3.4-5.**

2.3.3.6-1 The halon system provides fire protection for the ceiling and false floor of the ANO-1 control room as required by 10CFR50.48. LRA Section 2.3.3.6 states that the bottle racks, supports for the system, ceiling tiles, marinite boards, concrete walls, and concrete and false floor components which are required to enclose and allow effective use of the halon system are evaluated in Section 2.4.3, “Auxiliary Building.” Section 2.4.3 refers to a listing, contained in Table 3.6-4, of the auxiliary building passive, long-lived components and unique commodities, that are subject to an

AMR. The listing in Table 3.6-4 does not list the ceiling tiles, marinite boards, concrete walls, and concrete and false floor components as being subject to an AMR.

Verify that the control room halon system supports listed in LRA Table 3.6-4, include the ceiling tiles, marinite boards, concrete walls, and concrete and false floor components referred to in LRA Section 2.3.3.6. If they are not contained in the commodity grouping identified in LRA Table 3.6-4, provide justification for the exclusion of these components from an AMR.

Similar to the halon system supports and bottle racks, the control room's concrete walls and floor are listed in Table 3.6-4 of the ANO-1 LRA and were subject to an aging management review (refer to page 3-118). They have been grouped with other auxiliary building concrete walls and floor slabs within the scope of license renewal. The control room's marinite board, ceiling tiles, and false floor are not listed in Table 3.6-4 or in Table 3.6-8; however, an aging management review was performed.

Although marinite board is a type of fire wrap, unlike fire wraps which are 10CFR50.48-required fire barriers listed in Table 3.6-8, based on environment, no aging effects requiring management were identified for the control room's marinite board. The control room's ceiling tiles are either mineral fiber lay-in units or translucent plastic panels. Based on material and environment, no aging effects were identified. The false floor in the control room is a raised floor comprised of removable, vinyl tile laminated to aluminum panels. Based on environment, no aging effects requiring management were identified for the false floor. Therefore, the control room's marinite board, ceiling tiles, and false floor do not require an aging management program.

2.3.3.6-2 The halon smoke detectors found on LRA-M-219, sheet 2 are not shown within the scope of license renewal. SAR Section 9.8.2, "System Description and Evaluation," states that the halon system distribution nozzles may be automatically actuated by the smoke detectors for the control room ceiling, auxiliary control room ceiling, and auxiliary control room floor. The halon fire detection system appears to be within the scope of license renewal per 10CFR54.4. Provide justification for the exclusion of these smoke detectors from within the scope of license renewal.

The halon system is indicated as within the scope of license renewal on page 2-16 of the ANO-1 LRA. The system is discussed on page 2-41. The smoke detectors are active components. They are in the scope of license renewal but do not require an aging management review. They are not indicated as in the scope of license renewal on drawing LRA-M-219, sheet 2, because the

drawings primarily show the pressure boundary portions of systems within the scope of license renewal (e.g., they do not show electrical components within the scope of license renewal).

2.3.3.7-1 The following tanks have been identified as being within the scope of license renewal. Their intended functions include storing and supplying fuel oil to various diesel driven component. For each tank, however, the piping and components that vent the tank to atmosphere in not identified as being within the scope of license renewal. For these tanks, provide a justification of the exclusion of the vent line components, or identify the components as being within the scope of license renewal and determine whether an aging management review is required.

- AAC Diesel Fuel Oil Day Tank 2T-11
- Emergency Diesel Fuel Tank T-57A/B
- Diesel Oil Storage Tank T-25
- Fuel Oil Day Tank T-30 A/B
- Diesel Driven Fire Pump Day Tank T-29

The piping and components that vent the tanks to atmosphere are within the scope of license renewal. Their intended function is not pressure boundary but venting. No credible aging effect of the piping and components that vent the tanks to atmosphere, including complete loss, prevents the tanks from being vented.

2.3.3.7-2 The following pipe sections (tubing) were not identified as being within the scope of license renewal. Please verify that these components do not have a system-level intended function that would require them to be included within the scope of license renewal.

Level instrument tubing for the Fuel Oil Day Tank (M-217 sheet 2 @ H3), Governor instrumentation tubing for the diesel driven fire pump (M-219 sheet 1 @ 137)

The level instrument tubing for the fuel oil day tank is identified as within the scope of license renewal up to the level switches. The tubing that runs between the level switches and the main vent line is not within the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). No credible failure of level instrument tubing vent lines, including complete loss, will prevent the system from performing its intended functions. The instruments SE-5700, SI-5700, and SS-3604 are for measuring governor rpm, providing rpm indication and providing overspeed trip respectively. The lines connecting them are not tubing but rather mechanical linkage. The instruments

are within the scope of license renewal but require a change in configuration to perform their functions. Therefore, they do not require an aging management review.

2.3.3.7-3 EDG flow diagram M-217 sheet 1 includes a boundary point at location H3 where the EDG Fuel Oil Storage System connects to Fuel Oil Day Tank T-28. The boundary point does not include a boundary valve or other isolation device that prevents the fuel oil transfer system from performing its intended function should that section of pipe become degraded. Provide a justification for not including that portion of piping between the EDG fuel oil transfer system and the fuel oil day tank.

Due to an administrative error, the boundary flag on drawing LRA-M-217, sheet 1, at H-3 should be at valve FO-18. Also, on drawing LRA-M-219, sheet 1, at B-8, the boundary flag should be at valve FO-46. The excluded piping is not within the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). Replenishment of the diesel fire pump fuel oil day tank during a fire is not required for compliance with 10CFR50.48.

2.3.3.7-4 Several components identified on flow diagrams M-217, 219, 2241 as being within the scope of license renewal are not included on Table 3.4-7. This table lists the components subject to an AMR for the Fuel Oil System. Identify whether the following three components are subject to an AMR, and if so, provide the relevant information to complete Table 3.4-7. If a component is not subject to an AMR, provide a justification for its exclusion.

- Expansion joints (M-217 sheet 2,3 @ H2, G8)
- Flexible coupling connecting the filter to the system flow (M-219 sheet 1 @ A7 and M-2241 sheet 3 @ D4,E4)
- Sight glass on day tank T-29 (M-2241 sheet 3 @ A8)
- Orifice (2FO-7195 on M-2241 sheet 3 @ D6)

The listed components were subject to an aging management review. Expansion joints XJ52 and XJ53 are carbon steel and are included in the "piping" component commodity grouping in Table 3.4-7. Expansion joints XJ54, XJ55, XJ71, and XJ72 are carbon steel and included in the "expansion joint" component commodity grouping in the air intake and exhaust subsystems in Table 3.4-3. The RAI response 2.3.3.3-2 also addresses XJ55 and XJ71.

The flexible coupling connecting the filter to the system flow shown on flow diagram M-219, sheet 1 (at A7) is a subcomponent of the filter assembly. It is

a synthetic hose that is short-lived. It is inspected during preventive maintenance activities associated with the filter and replaced as necessary. The flexible couplings shown on flow diagram M-2241, sheet 3, are included in the "piping" component commodity grouping in the starting air subsystem section of Table 3.4-5, as discussed in RAI response 2.3.3.2-5.

The sight glass on day tank T-29 (shown on M-219, sheet 1, rather than on M-2241, sheet 3) is stainless steel (pressure boundary portion) exposed to fuel oil and is included in the "valve", "filter", and "thermowells" component commodity grouping in Table 3.4-7.

The orifice, 2FO-7195, was evaluated in the aging management review for the fuel oil system. It is included in the "piping" component commodity grouping in Table 3.4-7.

- 2.3.3.8-1 As indicated in the SAR, Table 9-2, air operated valves CV-6202 and CV-6203 provide containment isolation function in the event of a loss-of-coolant accident. Please indicate whether the pneumatic tubing from valves SV-6202/3 which controls the air supply to these valves is within scope for license renewal and subject to an AMR.**

The tubing is not highlighted as being within the scope of license renewal on diagram LRA-M-222 sheet 1 @ F5, but may perform a pressure boundary intended function. Valves SV-6202/3 are highlighted indicating the valves are within the scope of license renewal.

The valves SV-6201, SV-6202, and SV-6203 are in the scope of license renewal because they are required to open to cause CV-6202 and CV-6203 to close to isolate the reactor building under accident conditions. The solenoid valves vent the air that holds the control valves open. Failure of the tubing results in the control valves closing; therefore the tubing is not within the scope of license renewal since it does not meet the scoping criteria in 10CFR54.4(a).

2.3.3.9-1 Emergency feedwater (EFW) pumps are required for various design basis accidents. The EFW pump room unit coolers, which are cooled by chilled water, are not identified as being within the scope of license renewal. EFW pump operation under accident conditions may not be assured without adequate room cooling. Provide a justification for omitting these coolers from the scope of license renewal, or include EFW pump room coolers, and that portion of the Chilled Water system that supports the operation of the EFW pump room coolers.

The EFW pump room unit coolers are not in the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). They are not credited in any current licensing basis analysis related to the operation of the EFW pumps.

2.3.3.10-1 Lube oil drain valves LO-8430A, B, and C and its associated piping are not highlighted as being within the scope of license renewal on LRA-M-209. Should these valves degrade and leak, the service water pump may not be able to perform its intended function. Include these valves and piping within the scope of license renewal and subject to an AMR, or provide a justification for excluding them from the scope of license renewal.

The valves LO-8430A, LO-8430B, and LO-8430C are drain valves for the lube oil reservoirs for the service water pump motors. These valves are within the scope of license renewal. They are carbon steel valves with a lube oil environment. The aging effect is loss of material that is prevented by the oil analysis program.

2.3.3.10-2 Components F-510A and B are identified as part of service water system and are identified as being within the scope of license renewal (LRA-M-209 sheet 1 @ 131). The staff, however, could not find an adequate description (e.g., material, environment) of what these components are and whether they are identified on Table 3.4-10. Please provide a description of these components and state whether they are subject to an aging management review or indicate where on Table 3.4-10 the components are identified.

F-510A and F-510B are emergency cooling pond screens. They were subject to an aging management review and are contained in the stainless steel "piping" component commodity grouping in Table 3.4-10.

2.3.3.10-3 Strainer F-118C (LRA-M-209, sheet 1 @ C4) is not highlighted as being within the scope of license renewal. Please provide a justification for the omission of this component, or submit the appropriate information to complete Table 3.4-10.

Strainer F-118C is a traveling water screen. It is not in the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). Specifically, it is not safety-related; its failure would not prevent the satisfactory accomplishment of a safety-related function; and it is not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout.

2.3.3.10-4 Flow orifices in the suction piping to each service water pump are identified as being within the scope of license renewal on LRA-M-209 sheet 1, but are not listed on Table 3.4-10 as being subject to an AMR. Verify that these components are subject to an AMR or provide a justification for their exclusion from Table 3.4-10.

Flow orifices FO3672A, FO3672B, and FO3672C are within the scope of license renewal and were subject to an aging management review. They are included in the stainless steel "piping" component commodity grouping in Table 3.4-10.

2.3.3.11-1 Several components, identified on P&ID M-264, sheet 1, as being within the scope of license renewal, are not included on Table 3.4-11. Table 3.4-11 lists the components subject to an AMR for the PRVS. Identify whether the following components are subject to an AMR, and if so, provide the relevant information about the components to complete Table 3.4-11. If any component is not subject to an AMR, provide a justification for its exclusion.

(a) Piping (M-264 sheet 1 @ G3 through G7 for 10 inch and 12-inch diameter piping)

The 10-inch and 12-inch diameter piping (used as ductwork) highlighted on drawing LRA-M-264, sheet 1, was included in the aging management review. The 10-inch diameter piping and the 12-inch diameter piping located indoors are included in the component commodity grouping "duct" in Table 3.4-11 of the ANO-1 LRA. The 12-inch diameter piping located outdoors is included in the component commodity grouping "exhaust stack" in Table 3.4-11 of the ANO-1 LRA.

(b) Piping reducers (M-264, sheet 1 @ D5, D6, G3, G4, and G7)

The piping reducers highlighted on drawing LRA-M-264, sheet 1, were included in the aging management review and are included in the component commodity grouping “duct” in Table 3.4-11 of the ANO-1 LRA because they are made of the same material, are exposed to the same environment, and experience the same aging effect.

(c) Piping rectangular to round transition (M-264, sheet 1 @ D5 and D6)

The rectangular to round piping transitions highlighted on drawing LRA-M-264, sheet 1, were included in the aging management review and are included in the component commodity grouping “duct” in Table 3.4-11 of the ANO-1 LRA because they are made of the same material, are exposed to the same environment, and experience the same aging effect.

(d) Pitot tube connections plugged (M-264, sheet 1 @ B4, B7, D4, D7, F4, and F7)

The plugged pitot tube connections highlighted on drawing LRA-M-264, sheet 1, were included in the aging management review and are included in the component commodity grouping “duct” in Table 3.4-11 of the ANO-1 LRA because they are made of the same material, are exposed to the same environment, and experience the same aging effect.

(e) Bird screen or wire mesh, if provided as a protective cover, for an exhaust stack (M-264, sheet 1 @ G5)

The stainless steel screen welded over the end of the exhaust stack of the penetration room ventilation system was included in the aging management review. This screen was not added to Table 3.4-11 due to an administrative error. The relevant information for the screen is as follows:

Component Commodity Grouping	Intended Function	Material	Environment	Aging Effect	Program/Activity
Exhaust stack screen	Debris screening	Stainless steel	Gas-air External-ambient	None	None

2.3.3.11-2 Clarify the following component commodity grouping categories as stated in Table 3.4-1:

- (a) Does the "filter" commodity group include the filter housings, prefilters, absolute (high efficiency particulate air (HEPA)) filters and charcoal adsorbers (as shown in P&ID M-264)?**

The reference to Table 3.4-1 in the RAI should be to Table 3.4-11. The "filter" component commodity grouping listed in Table 3.4-11 of the ANO-1 LRA includes the housings for the prefilters, absolute (HEPA) filters, and charcoal absorbers. The prefilters, absolute (HEPA) filters, and charcoal absorbers are considered short-lived. In accordance with the NRC letter from C.I. Grimes to D.J. Walters, NEI, dated March 10, 2000, subject: License Renewal Issue No. 98-12, "Consumables," system filters may be excluded, on a plant-specific basis, from an aging management review under 10CFR54.21(a)(1)(ii). Because the performance and condition of these filters are tested periodically and the filters are replaced in accordance with ANO-1 Technical Specification 4.11, Penetration Room Ventilation System Surveillance, they are not subject to aging management review per the NRC guidance discussed above.

Clarify the following component commodity grouping categories as stated in Table 3.4-1:

- (b) Does the "blower" commodity group include the exhaust fans (VEF-38A/B) and fan housings, as stated in the text of LRA Section 2.3.3.11 and shown in P&ID M-264, sheet 1?**

The reference to Table 3.4-1 in the RAI should be to Table 3.4-11. The "blower" component commodity grouping listed in Table 3.4-11 of the ANO-1 LRA includes the housings for the exhaust fans (VEF-38A/B). The exhaust fans are active components and thus are not subject to an aging management review.

2.3.3.12-1 Several components on P&IDs M-262 sheets 1, 2, 3 and four, M-263 sheets 2 and 3, and in the text of LRA Section 2.3.3.12 are identified as being within the scope of license renewal are not included in Table 3.4-12. Table 3.4-12 lists the components subject to an AMR for the ABHVS. Identify whether the following components are subject to an AMR, and if so, provide the relevant information about the components to complete Table 3.4-12. If any component is not subject to an AMR, provide a justification for its exclusion.

(a) Damper bodies, blower housings, and cooler housings (Section 2.3.3.12, Paragraph 2)

The damper bodies, blower housings, and cooler housings that maintain the flow path for the safety-related portions of the subsystems in the auxiliary building heating and ventilation system were included in the aging management review. In Table 3.4-12 of the ANO-1 LRA, the damper bodies are included in the component commodity grouping "dampers"; the blower housings are included in the component commodity grouping "fans"; and the cooler housings are included in the appropriate component commodity grouping "heat exchangers" with the intended function "pressure boundary."

(b) Auxiliary building electrical room unit coolers (Section 2.3.3.12, Paragraph 3)

The auxiliary building electrical room unit coolers were included in the aging management review. These coolers were not specifically identified in Table 3.4-12 due to an administrative error. The results of the aging management review of these coolers are provided under the component commodity grouping "Heat exchangers (Switchgear room coolers)." This component commodity grouping should have been identified as "Heat exchangers (Switchgear room coolers and auxiliary building electrical room coolers)."

(c) Fan coil unit housings and filters for fan coil units VUC-1A/B/C/D (M-262, sheet 4 @ E7, E6, C/D4-C/D5, and C/D3)

The housings for the fan coil units VUC-1A/B/C/D (each unit containing a filter, cooler, and fan) were subject to an aging management review. The results of the review are shown in Table 3.4-12 for the component commodity grouping "Heat exchangers (Decay heat room coolers)" with the intended function "pressure boundary."

The filters associated with these units are considered short-lived. As discussed in NRC letter from C.I. Grimes to D.J. Walters, NEI, dated

March 10, 2000, subject: License Renewal Issue No. 98-12, "Consumables," the screening process allows the exclusion of component filters because they are inspected and replaced during preventive maintenance activities. Thus, based on this NRC guidance, these filters are not subject to aging management review.

(d) Fan coil unit housings and filters for fan coil units VUC-14A/C/D and VUC-2D/B (M-263, sheet 2 @ D5, F4, F2, and C/132)

The housings for the fan coil units VUC-14A/C/D and VUC-2B/D (each unit containing a filter, cooler, and fan) were subject to an aging management review. The results of the review are discussed in the response to part (b) of this RAI for the component commodity grouping "Heat exchangers (Auxiliary building electrical room coolers)" with the intended function "pressure boundary" and in Table 3.4-12 for the component commodity grouping "Heat exchangers (Switchgear room coolers)" with the intended function "pressure boundary."

The filters associated with these units are considered short-lived. As discussed in NRC letter from C.I. Grimes to D.J. Walters, NEI, dated March 10, 2000, subject: License Renewal Issue No. 98-12, "Consumables," the screening process allows the exclusion of component filters because they are inspected and replaced during preventive maintenance activities. Thus, based on this NRC guidance, these filters are not subject to aging management review.

(e) Diesel generator exhaust fan housings for exhaust fans VEF 24A/B/C/D (M-263, sheet 2 @ A5-A8)

The housings for the diesel generator exhaust fans VEF 24A/B/C/D were included in the aging management review and are included in the component commodity grouping "fans" in Table 3.4-12 of the ANO-1 LRA.

(f) Fan coil unit housings and filters for fan coil unit VUC 14B (M-263, sheet 3 @ A8)

The housing for the fan coil unit VUC-14B (which contains a filter, cooler, and fan) was subject to an aging management review. The results of the review are discussed in the response to part (b) of this RAI for the component commodity grouping "Heat exchangers (Auxiliary building electrical room coolers)" with the intended function "pressure boundary."

The filter associated with this unit is considered short-lived. As discussed in NRC letter from C.I. Grimes to D.J. Walters, NEI, dated March 10,

2000, subject: License Renewal Issue No. 98-12, "Consumables," the screening process allows the exclusion of component filters because they are inspected and replaced during preventive maintenance activities. Thus, based on this NRC guidance, this filter is not subject to aging management review.

- (g) Valve bodies for solenoid valves 2107, 2108, 2111, 2112, and 2116 (M-262, sheet 1 @ B3, B4, B7, and B8)**

The valve bodies for solenoid valves 2107, 2108, 2111, 2112, and 2116 are part of the instrument air system and not part of the auxiliary building heating and ventilation system. These valve bodies were included in the aging management review and are included in the component commodity grouping "valves" with the applicable material being brass, bronze, and admiralty in Table 3.4-8 of the ANO-1 LRA.

- (h) Valve bodies for solenoid valves 2100, 2101, 2102, 2114, and 2115 (M-262, sheet 2 @ E7, F7, G6, and H6)**

The valve bodies for solenoid valves 2100, 2101, 2102, 2114, and 2115 are part of the instrument air system and not part of the auxiliary building heating and ventilation system. These valve bodies were included in the aging management review and are included in the component commodity grouping "valves" with the applicable material being brass, bronze, and admiralty in Table 3.4-8 of the ANO-1 LRA.

- (i) Valve bodies for solenoid valves 2103, 2104, 2105, 2106, and 2113 (M-262, sheet 3 @ D6, and C6)**

The valve bodies for solenoid valves 2103, 2104, 2105, 2106, and 2113 are part of the instrument air system and not part of the auxiliary building heating and ventilation system. These valve bodies were included in the aging management review and are included in the component commodity grouping "valves" with the applicable material being brass, bronze, and admiralty in Table 3.4-8 of the ANO-1 LRA.

- j. Valve bodies for control valve 1621, 1622, 1635, 1636, and 1638 (M-262, sheet 4 @ D6, D5, F5, and 174)**

The reference to control valves 1621, 1622, 1635, 1636, and 1638 in the RAI should be to control valves 7621, 7622, 7635, 7636, and 7638. The valve bodies for control valves 7635 and 7636 are part of the instrument air system and not part of the auxiliary building heating and ventilation system. These valve bodies were included in the aging management review and are included in the component commodity grouping "valves" with the

applicable material being brass, bronze, and admiralty in Table 3.4-8 of the ANO-1 LRA.

Control valves CV-7621, CV-7622, and CV-7638 are dampers and are part of the auxiliary building heating and ventilation system. The bodies of these dampers were included in the aging management review and are included in the component commodity grouping "dampers" in Table 3.4-12 of the ANO-1 LRA.

2.3.3.12-2 The fuel handling accident is evaluated in safety analysis report (SAR) Section 14.2.2.3. SAR Section 14.2.2.3.4, "Results of Analysis," states that "The fuel handling building is ventilated, and discharge is through charcoal filters to the unit vent.... Dose conversion factors consistent with ICRP 30 were utilized." Based on the above, it seems that the ABHVS is credited in mitigating the fuel handling accident. However, P&ID M-262, sheet 1 and Table 3.4-12 exclude the fuel handling floor exhaust filtration system components from the scope of components subject to an AMR. Provide a justification for the exclusion or provide the relevant information about the fuel handling floor exhaust filtration system components (exhaust fans (VEF14A/B), exhaust filters (VFC-INFA-1/VFP-8), flow element (FE8002), control valves (CV7605/7606), associated ductwork, and flue) to complete Table 3.4-12.

The fuel handling ventilation system is not within the scope of license renewal since it is not safety-related, its failure would not prevent the satisfactory accomplishment of a safety-related function, and it is not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transient without scram, or station blackout.

This system is not needed to mitigate the consequences of the fuel handling accident. As stated in ANO-1 SAR Section 14.2.2.3.2, the criterion for reactor protection for the fuel handling accident is that resultant doses shall not exceed 25 percent of the 10CFR Part 100 limits. Since the 10CFR100 limits at the exclusion boundary are 25 rem to the whole body and 300 rem to the thyroid, the numerical criteria for the fuel handling accident are 25 percent of these values (based on the ANO-1 SAR criterion above), or 6.25 rem to the whole body and 75 rem to the thyroid. ANO-1 SAR Table 14-25 shows that a fuel handling accident with an unfiltered release would result in a dose at the exclusion boundary of 0.27 rem to the whole body and 63.599 rem to the thyroid. Since these doses are below the criteria, having a filtered ventilation path for the fuel handling accident is not necessary. Thus, operation of the fuel handling ventilation system is not required to meet the ANO-1 SAR criterion

for a fuel handling accident, and the system does not meet the 10CFR54.4(a) criteria for inclusion in the scope of license renewal.

2.3.3.12-3 LRA Section 2.3.3.12 states that some of the fire dampers in the ABHVS also have the function of closing in the unlikely event of a fire to meet 10CFR50.48 requirements. However, the fire dampers on P&IDs M-262, sheets 1 through 4, M-263, sheets 2 and 3, and in Table 3.4-12 are not identified as being within the scope of components subject to an AMR. Provide justification for the exclusion of the fire dampers from an AMR or provide the relevant information about its components to complete Table 3.4-12.

ANO-1 fire dampers required by 10CFR50.48 are within the scope of license renewal and the passive portions of these dampers (i.e., the mountings) were included in the aging management review. These fire damper mountings were treated generically in the structural portions of the ANO-1 LRA, specifically Section 3.6.1 and Table 3.6-8, except in the cases where fire dampers formed part of a pressure boundary of a system within the scope of license renewal. Fire damper mountings that were treated generically were not highlighted on the drawings since they were evaluated as structural components.

Fire damper components that form part of the outer pressure boundary of the auxiliary building heating and ventilation system (shown on drawings LRA-M-262, sheet 4 and LRA-M-263, sheet 2) and that are subject to aging management review were evaluated in Table 3.4-12 under the component commodity grouping "dampers."

2.3.3.12-4 Sealant materials are not identified as being within the scope of components subject to an AMR and are not included in Table 3.4-12. Provide justification for the exclusion of the sealant materials or provide the relevant information about the sealants to complete Table 3.4-12.

Sealant materials are within the scope of license renewal when they are part of components or commodities that are within the scope of license renewal and when they are important in maintaining the integrity of the component or commodity. For the auxiliary building heating and ventilation system components within the scope of license renewal, which are listed in Table 3.4-12, ANO preventive maintenance activities listed in Table 3.4-12 are credited for managing sealant aging effects. Sealants are routinely examined by inspections performed in accordance with preventive maintenance procedures. The sealant is replaced when its condition indicates it is no longer acceptable for service. Therefore, sealant materials used in the auxiliary building heating

and ventilation system are within the scope of license renewal and were subject to an aging management review.

2.3.3.12-5 Identify whether the following components are subject to an AMR, and if so, provide the relevant information about the components to complete Table 3.4-12. If a component is not considered subject to an AMR, provide a justification for its exclusion:

(a) Air bottles

- VRA 5, 6, and 8 (M-262, sheet 1 @ B3, B/C7, B/C8)
- VRA 2 and 7 (M-262, sheet 2 @ E3 and G7)
- VRA 3 and 4 (M-262, sheet 3 @ D6 and B/C6)

Air tanks VRA 2, 3, 4, 5, 6, 7, and 8 are part of the instrument air system and not part of the auxiliary building heating and ventilation system. The function of these air tanks is to provide a backup source of air to inflatable seals that are used to help maintain leak tightness in the penetration rooms under accident conditions. Because an analysis has established that the seals are not required to inflate in order for the penetration room ventilation system to draw a negative pressure on the penetration rooms, pressure boundary integrity is not required for these tanks and the associated piping and valves leading to these seals. Thus, these tanks are not within the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). Therefore, the tanks are not subject to an aging management review.

(b) Exhaust ductworks

- North electrical penetration room ductwork (M-262, sheet 1 @ A8)
- South piping penetration room and South electrical penetration room ductwork (M-262, sheet 2 @ C2-G2)
- Electrical equipment room and electrical penetration room ductwork (M-262, sheet 2 @ G7-G8)
- North piping penetration room ductwork (M-262, sheet 2 @ D8-F8)

The exhaust ductworks for the north and south electrical penetration rooms (two zones each), the north and south piping penetration rooms, and the electrical equipment room were included in the aging management review under the component commodity grouping "duct" in Table 3.4-11 of the ANO-1 LRA. The lack of highlighting on drawings LRA-M-262, sheets 1 and 2, to indicate that these exhaust ductworks (up to the associated isolation dampers) are in the scope of license renewal was an administrative error.

(c) Fan coil units

- VUC-6 (M-262, sheet 3 @ 132-133) for EFW pump room
- VUC-4A/B (M-263, sheet 2 @ H7, G7) for relay room
- VUC-3 (M-263, sheet 2 @ E7-E8) for cable spreading room
- VUC-13A (M-263, sheet 2 @ C-D4) and VUC-13B (M-263, sheet 2 @ E5) with condenser units VE-1 A/B (M-263, sheet 2 @ H4, H5/6) for north/south charger rooms
- VUC-2A (M-263, sheet 2 @ F1) and VUC-2C (M-263, sheet 2 @ F3) for north and south electrical switchgear rooms
- VUC-11 (M-263, sheet 2 @ D2) and condenser unit VE-2 (M-263, sheet 2 @ D1) for south electrical equipment room
- VUE 32/33/34/35 (M-263, sheet 2 @ C5-C8) for diesel generator rooms K4 A/B

Fan coil units VUC-2A/C, VUC-3, VUC-4A/B, VUC-6, VUC-11 (including VE-2), VUC-13A/B (including VE-1A/B), and VUE-32/33/34/35 are not within the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). Specifically, these units are not safety-related; their failure would not prevent the satisfactory accomplishment of a safety-related function; and they are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. Because they are not within the scope of license renewal, they are not subject to an aging management review.

(d) Exhaust Filtration units and vent with associated ductwork and fire dampers

- VEF8A/B (M-262, sheet 1 @ F/G7-F/G8)
- VEF 33 (M-263, sheet 2 @ C3) for south battery and charger rooms
- VEF 34 (M-263, sheet 2 @ E7) for north battery and charger rooms
- Vent VPH-6 (M-263, sheet 2 @ 1-18)

Exhaust filtration units VEF-8A/B, VEF-33, and VEF-34, vent VPH-6, and their associated ductwork are not within the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). Specifically, these items are not safety-related; their failure would not prevent the satisfactory accomplishment of a safety-related function; and they are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. Because they

are not within the scope of license renewal, they are not subject to an aging management review.

As noted in the RAI response 2.3.3.12-3, ANO-1 fire dampers required by 10CFR50.48 are within the scope of license renewal and the passive portions of these dampers (i.e., the mountings) were included in the aging management review. These fire damper mountings were treated generically in the structural portions of the ANO-1 LRA, specifically Section 3.6.1 and Table 3.6-8, except in the cases where fire dampers formed part of a pressure boundary of a system within the scope of license renewal. Fire damper mountings that were treated generically were not highlighted on the drawings since they were evaluated as structural components.

The fire dampers associated with the aforementioned exhaust filtration units and vent do not form part of a pressure boundary of a system within the scope of license renewal, and thus they are treated generically in the structural portions of the ANO-1 LRA as discussed in the above paragraph.

(e) Flow element and control valves

- Flow element FEB001 (M-262, sheet 1 @ 1-17)
- Valve bodies for control valves CV7603/7604 (M-262, sheet 1 @ G7)

The reference to flow element FEB001 in the RAI should be to flow element FE8001. Flow element FE-8001 and valve bodies for control valves CV-7603 and CV-7604 are not within the scope of license renewal because they do not meet the scoping criteria in 10CFR54.4(a). Specifically, these components are not safety-related; their failure would not prevent the satisfactory accomplishment of a safety-related function; and they are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. Because these component are not within the scope of license renewal, they are not subject to an aging management review.

2.3.3.13-1 Several components identified to be within the scope of license renewal on P&IDs-263 sheet 1 and in the text of LRA Section 2.3.3.13 are not included in Table 3.4-13. Table 3.4-13 lists the components subject to an AMR for the CRVS. Identify whether the following components are subject to an AMR, and if so, provide the relevant information about the components to complete Table 3.4-13. If a component is not considered subject to an AMR, provide a justification for its exclusion.

(a) Damper bodies, blower housings, and cooler housings (text of Section 2.3.3.13, Paragraph 2)

The damper bodies, blower housings, and cooler housings that maintain the flow path for the safety-related portions of the control room ventilation system were included in the aging management review. In Table 3.4-13 of the ANO-1 LRA, the carbon steel damper bodies are included in the component commodity grouping “dampers”; the blower housings are included in the component commodity grouping “fans”; and the cooler housings are included in the component commodity grouping “heat exchangers (evaporators)” with the intended function “pressure boundary.” Damper bodies in the control room ventilation system that are subject to an aging management review also are made of aluminum, and the results of the evaluation of these damper bodies were not included in Table 3.4-13 due to an administrative error. The relevant information for these damper bodies is as follows:

Component Commodity Grouping	Intended Function	Material	Environment	Aging Effect	Program/Activity
Dampers	Pressure boundary	Aluminum	Gas-air External-ambient	None	None

(b) Control room emergency unit coolers (text of Section 2.3.3.13, Paragraph 3)

The control room emergency unit coolers were included in the aging management review and are included in the component commodity grouping “heat exchangers (evaporators)” in Table 3.4-13 of the ANO-1 LRA.

(c) Electrical equipment room 2150 emergency cooling units ((to maintain the Freon pressure boundary) (text of Section 2.3.3.13, Paragraph 3))

The copper tubes in the electrical equipment room 2150 emergency cooling units that maintain the freon pressure boundary for control room

emergency cooling were included in the aging management review. These tubes are included in the component commodity grouping "heat exchangers (evaporators)" in Table 3.4-13 of the ANO-1 LRA, with the intended function being "pressure boundary" and the material being "copper."

- (d) Filtration unit housings for emergency filter and fan units VSF-9 (M-263, sheet 1 @ E4/5), 2VSF-9 (M-263 sheet 1 @ A7-08), and outside air emergency filter unit housing ((M-263, sheet 1 @ F4/5)**

The housings for the emergency filter and fan units VSF-9 and 2VSF-9 and the outside air emergency filter unit were included in the aging management review. The results of the review are shown in Table 3.4-13 for the component commodity groupings "Fans" and "Filters."

- (e) Valve bodies for control valves CV-7905 (M-263 sheet 1 @ E6), CV-7907 (M-263, sheet 1 @ G6), and CV-7910 (M-263, sheet 1 @ F5)**

The bodies for control valves (dampers) CV-7905, CV-7907, and CV-7910 were included in the aging management review. The results of the review are shown in Table 3.4-13 under the component commodity grouping "dampers."

- (f) Air operated dampers and its operators 2PCD-8607 (M-263, sheet 1 @ 138), 2UCD-8609 (M-263 sheet 1 @ A7), 2PCD-8685 (M-263, sheet 1 @ C3), and 2UCD-8683 (M-263, sheet 1 @ C3)**

The bodies for air-operated dampers 2PCD-8607A/B, 2UCD-8609, 2PCD-8685, and 2UCD-8683 were included in the aging management review. The results of the review are discussed in the response to part (a) of this RAI under the component commodity grouping "dampers" for damper bodies made of aluminum (i.e., 2PCD-8607A and 2UCD-8609), and in Table 3.4-13 of the ANO-1 LRA under the component commodity grouping "dampers" for the damper bodies made of carbon steel (i.e., 2PCD-8607B, 2PCD-8685, and 2UCD-8683). The dampers and their operators are active components and thus are not subject to an aging management review.

- (g) Air handling unit housings, and heating and cooling coils for 2 VUC-27A/B (M-263, sheet 1 @ F3, E3)**

The housings and cooling coils for the fan and cooling units 2 VUC-27A/B (which each contains a filter, cooler, and fan) were subject to an aging management review. The results of the review for these carbon steel housings and copper cooling coils are shown in Table 3.4-13 of the ANO-1 LRA for the component commodity grouping "Heat exchangers

(Evaporators)” with the intended function “pressure boundary.” The coolers contained in these units are also evaluated in the table with regard to their heat transfer function.

2.3.3.13-2 Describe the areas that constitute the main control room envelope (MCRE) for ANO-1. Verify that all CRVS components (including air handling units and fan coil units with their associated ductwork, fire damper and control valves, air intake, and exhaust fan with purge ductwork) inside MCRE, which are relied on to perform the safety-related cooling and filtration functions (in order to maintain the control room habitability (CRH) and the CLB, are identified to be within the scope of LRA and subject to an AMR, on M-263, sheet 1 and in Table 3.4-13. If any component is not considered subject to an AMR, provide a justification for its exclusion.

The main control room envelope for ANO-1 includes the auxiliary building walls, floor, ceiling, and doors that encompass the control room, piping penetrations, fire dampers, and the safety-related components in the control room ventilation system. The walls, floor, ceiling, and doors of the control room and the piping penetrations were included in the structural review (see Section 2.4.3 and 3.6 of the ANO-1 LRA). Fire dampers also were included in the structural review except for those fire dampers that form part of the pressure boundary for the safety-related portions of the control room ventilation system. These fire dampers were included in the aging management review of the control room ventilation system. The control room ventilation system components (including air handling units and fan coil units with their associated ductwork, fire damper and control valves, air intakes, and exhaust fan with purge ductwork), which are relied on to perform the safety-related cooling and filtration functions for the main control room, are within the scope of license renewal. Of these components, the passive and long-lived components were subject to an aging management review. The results of the aging management review are presented in Table 3.4-13.

2.3.3.13-3 Clarify whether sealants used to maintain the MCRE at positive pressure with respect to the adjacent areas in order to prevent the unfiltered inleakages inside MCRE are included in the scope of license renewal and subject to AMR, and if so, provide the relevant information to complete Table 3.4-12. If the sealants are not considered subject to an AMR, provide a justification for their exclusion.

Sealants used to maintain the main control room envelope at positive pressure with respect to adjacent areas in order to prevent unfiltered inleakage are included within the scope of license renewal. Structural sealants are

considered to be parts of the control room components and are not identified as separate structural components. The scoping and aging management review for structural components that include sealants is part of the auxiliary building discussion in Section 2.4.3 and Section 3.6, respectively. Sealants are routinely examined by inspections in accordance with maintenance procedures and fire barrier inspection procedures. The sealant is replaced when its condition indicates it is no longer acceptable for service. Therefore, sealant materials used to maintain positive pressure in the control room are within the scope of license renewal and were subject to an aging management review.

2.3.3.13-4 The design-basis function of radiation and chlorine monitors is stated in SAR Section 9.7.2.1 as follows: "The control room is continuously monitored with alarms for high radiation. The control room inlet air radiation monitor consists of an auto digital ratemeter, preamplifier, and Beta-Gamma sensitive scintillation detector.... A high alarm causes isolation of the control room.... Redundant quick acting chlorine detectors are presently in place in the control room fresh air inlets which institute closing of the isolation dampers upon attaining 5 PPM C12 levels in the incoming air...." However, the radiation monitor and chlorine detectors are neither shown and identified on the P&ID M-263, sheet 1 and Table 3.4-13 nor listed in LRA, Section 2.3.3.13, as in scope of license renewal and subject to an AMR. Provide the relevant information about the radiation and chlorine monitors to complete Table 3.4-13. If the monitors are not subject to an AMR, provide a justification for its exclusion.

The ANO-1 main control room supply vent radiation detectors (2RE8001A and 2RE8001B) and the ANO-2 main control room supply vent radiation detectors (2RE-8750-1A and 2RE-8750-1B) are shown on drawing LRA-M-263, sheet 1, at locations E6 and B2. These detectors, which function to isolate the control rooms on high inlet air radiation, are safety-related and are within the scope of license renewal. However, these detectors are active components, and thus are not subject to an aging management review. The passive and long-lived electrical and instrumentation and controls components associated with these detectors were subject to an aging management review and are evaluated in Sections 2.5 and 3.7 of the ANO-1 LRA.

The ANO-1 main control room radiation monitor (RE-8001) is shown on drawing LRA-M-263, sheet 1, at location B5. This radiation monitor is an area radiation monitor and is not attached to any process piping. This component is not within the scope of license renewal because it does not meet the scoping criteria in 10CFR54.4(a). Specifically, this monitor is not safety-related; its failure would not prevent the satisfactory accomplishment of a safety-related function; and it is not relied on in safety analyses or plant

evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. Because the monitor is not within the scope of license renewal, it is not subject to an aging management review. Additionally, the monitor is an active component.

The chlorine detectors (2CLS-8760-2, 2CLS-8761-1, 2CLS-8762-2, and 2CLS-8763-1) are shown on drawing LRA-M-263, sheet 1, at locations E6, E6, A2, and B2. Although the purpose of these detectors is to isolate the normal control room ventilation in the event of a chlorine spill outside of the control room, they are not within the scope of license renewal because they do not meet the criteria in 10CFR54.4(a). Specifically, these detectors are not safety-related, their failure would not prevent the satisfactory accomplishment of a safety-related function, and they are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. Because the detectors are not within the scope of license renewal, they are not subject to an aging management review. Additionally, the detectors are active components.

2.3.4-1 In Drawing No. LRA-M-206, sheet 1, Location F6 (Steam Generator Secondary System), the tubing and valve (No. MS-2652), which connect instrument Nos. PT2652, HS2652 to the steam generator, are not highlighted as within the scope of license renewal. The tubing and valve appear to serve as a pressure boundary. Verify that the tubing and valve are within the scope of license renewal and subject to an AMR and provide the appropriate information to complete Table 3.5-1, or provide a justification for their exclusion.

The valve body for valve MS-2652 and the associated instrument tubing are within the scope of license renewal and were included in the aging management review. These components, which are made of carbon steel, are included in the component commodity groupings "valves" and "tubing" in Table 3.5-1 of the ANO-1 LRA. The lack of highlighting on drawing LRA-M-206, sheet 1, to indicate that these components are in the scope of license renewal was an administrative error.

- 2.3.4-2 In Section 2.3.4.1 (Main Steam), EFW turbine steam supply piping, but not EFW turbine casing, is identified as a component within the scope of license renewal. Verify that the EFW turbine casing is within the scope of license renewal and subject to an AMR and provide the appropriate information to complete Table 3.4-1, or provide a justification for its exclusion.**

The reference to Table 3.4-1 in the question should be to Table 3.5-1. The EFW turbine casing, which is part of the EFW system, is within the scope of license renewal and was included in the aging management review. The results of the aging management review for this casing are provided in Table 3.5-3 under the steam supply and exhaust subsystem. [Note: The EFW turbine steam supply piping has a portion of its piping located in the main steam system and the other portion located in the EFW system (see drawings LRA-M-204, sheet 6, and LRA-M-206, sheet 1). Section 2.3.4.1 addresses the portion of the piping in the main steam system.]

- 2.3.4-3 As shown in Drawing No. LRA-M-206, sheet 2, a small portion of the Emergency Feedwater Initiation and Control (EFIC) system is included within the scope of license renewal. Provide a justification as to why the rest of the EFIC system is excluded from the scope of license renewal.**

The EFIC system is not a mechanical system, and thus it is not color coded on the drawings as being within the scope of license renewal. Drawing LRA-M-206, sheet 2, does not indicate that a small portion of the EFIC system is within the scope of license renewal, rather it shows three solenoid operated valves located in the instrument air system that are within the scope of license renewal. Operation of these valves is controlled by the EFIC system.

As indicated in Table 2.2-1 of the ANO-1 LRA, the EFIC system is within the scope of license renewal and was included in the review of ANO-1 electrical and instrumentation and controls systems as described in Sections 2.5 and 3.7 of the ANO-1 LRA.

- 2.3.4-4 Identify, if any, filters, orifices, or expansion joints in the main steam system (Section 2.3.4.1) are within the scope of license renewal. State specifically as to whether or not they serve a pressure boundary function.**

For the main steam system, no filters or expansion joints are within the scope of license renewal. Two orifices in the main steam system are within the scope of license renewal and were included in the aging management review. These orifices, which are made of stainless steel, serve a pressure boundary function

with respect to aging management and are included in the component commodity grouping "piping" in Table 3.5-1 of the ANO-1 LRA.

- 2.3.4-5 Justify the exclusion of the demineralizer of the condensate storage and transfer system (Section 2.3.4.4) from the scope of license renewal. The demineralizer appears to serve as a pressure boundary for the condensate storage system.**

Although the condensate storage and transfer system is filled with demineralized water, it does not contain a demineralizer. The source of make-up water to the condensate storage and transfer system is from the mobile water treatment facility via the make-up water degasification system. The make-up line to the safety-related condensate storage tank is not safety-related and its failure would not prevent the tank from performing its intended function. Thus the line is not within the scope of license renewal.

Condensate demineralizers exist within another ANO-1 system (i.e., the condensate demineralizer system), but these demineralizers do not interface with the safety-related portions of the condensate storage and transfer system.

- 2.3.4-6 Identify, if any, filters, mechanical expansion joint, orifice, and strainers in the condensate storage and transfer system (Section 2.3.4.4) are within the scope of license renewal.**

For the condensate storage and transfer system, no filters, mechanical expansion joints, orifices, or strainers are within the scope of license renewal.

- 2.4-1 Section 2.4.1 of the LRA states that many components are not typically associated with unique equipment identifiers and are not individually identified during the identification of components. Provide examples of some of these types of components within the reactor building internals. Provide a discussion as to how these components will be included within the scope of license renewal, and how the applicable components will be subject to an AMR and maintained during the period of extended operation.**

As further stated in the ANO-1 LRA Section 2.4.1, an aging management review was typically performed for component groupings, rather than for individual components. For example, 'structural shapes' made of steel and 'columns' made of concrete support or protect in-scope system components or equipment and are referred to in Table 3.6-3. Therefore, 'structural shapes' and 'columns' have been included within the scope of license renewal and have

been subject to an aging management review. In the aging management review, aging effects were determined based on materials of construction and the environments to which these components are exposed. As summarized in Table 3.6-3, aging effect(s) requiring management for these components will be managed during the period of extended operation by credited aging management programs.

- 2.4-2** Section 2.4.2 of the LRA states that the reactor building internals consist of the reactor cavity, two steam generator compartments, and a fuel transfer canal. Provide a justification as to why the in-core instrumentation cavity and the reactor building sump are not included in the scope of license renewal.

ANO-1's instrumentation tunnel is part of the basement floor slab that is within the scope of license renewal. Similarly, the reactor building sump is also part of the basement floor slab. Due to an administrative error, the component grouping for the instrumentation tunnel and sump was deleted in the last row of Table 3.6-3 on page 3-114 of the ANO-1 LRA. For this row, under the column heading 'Component/ Commodity Grouping' it should read "basement floor slab" rather than "reinforced concrete." "Reinforced concrete" should be under the column heading 'Material.' The remaining information listed for this row is correct.

- 2.4-3** Section 2.4.2.1 of the LRA states that the steel also provides support for several nuclear safety-related components, including core flood tanks, reactor building cooling units, emergency core cooling system piping, and instrumentation, control, and power. However, the support steel for the coolant pumps is not listed in Table 3.6-3 of the LRA. Verify whether the lateral support steel that holds the snubbers or turnbuckles for the steam generators and coolant pumps should be included in the list of components subject to an AMR (in Table 3.6-2 of the LRA as the components of the reactor building internals, or in Table 3.6-8 of the LRA as the bulk commodities), or provide a justification for not requiring an AMR.

Referring to Table 3.6-8 for bulk commodities, the support steel for snubbers associated with the steam generators and coolant pumps is included under the commodity grouping 'Piping and tubing supports'. General note 'G' of Table 3.6-1 states that this grouping includes mounting brackets for snubbers. Steel supporting equipment, such as the lateral support steel for turnbuckles for the steam generators and coolant pumps are considered bulk commodities and are included under the commodity grouping 'Equipment supports' in Table 3.6-8.

2.4-4 As stated in Section 2.4.3 of the LRA, one of the intended functions of the auxiliary building and its structural components is to serve as missile barriers. Table 3.6-4 listed only missile shield doors and walls. Are there any missile protective devices for internal missiles such as the barriers for protecting safety-related SSCs from pipe whipping or jet forces due to main stream line or feedwater line breaks or pressure relief valve failures.

Yes, there are other missile protective devices within the auxiliary building in addition to missile shield doors and walls. Referring to Table 3.6-4, the 'control room extension substructure' is a missile barrier. As stated in Section 2.4.3, commodities considered common to the auxiliary building and other in-scope structures are listed in Table 3.6-8 (Bulk Commodities). This includes missile barrier hatches that are under the commodity grouping 'Hatch frames/covers' for steel or under the commodity grouping 'Hatch covers/plugs' for concrete. Pipe whip restraints and impingement barriers are also addressed in Table 3.6-8.

2.4-5 Section 2.4.3 of the LRA states that the turbine building itself is not within the scope of license renewal, some fire doors, fire walls, and slab within the turbine building are in scope and subject to an AMR. These components are addressed along with those for the auxiliary building. However, these in-scope components in the turbine building provide a rated fire barrier to confine a fire from spreading to adjacent areas of the plant. The turbine building must be added to the scope of license renewal because it contains components that were subject to an AMR. In addition, turbine buildings typically provide shelter, protection, and support to safety-related piping or cables routed through the turbine building. Please verify that the turbine building does not contain any safety-related piping or cabling, and if so, identify the safety-related components or equipment in the turbine building, and the applicable turbine building structures and components that provide shelter, support, or protection.

There are no safety-related pipes or cables within the turbine building. The turbine building has been included in the scope of license renewal because it contains 10CFR50.48-required components and commodities that are subject to an aging management review as identified in the ANO-1 LRA Sections 2.4.3 and 2.4.6.2.

2.4-6 Section 2.4.3 of the LRA states that for the material group elastomers, none of the components or unique commodities are subject to an AMR and there are no components or unique commodities associated with the material groups earthen structures or Teflon. However, some of the

components or commodities associated with the elastomers or Teflon group in the auxiliary building are listed in Table 3.6-8 of the LRA as the bulk commodities that are subject to an AMR. Provide an explanation for these differences and verify that the earthen structures have no components or commodities subject to an AMR.

As further stated in Section 2.4.3, commodities considered common to the auxiliary building and other in-scope structures are discussed in Section 2.4.6.2, entitled "Bulk Commodities".

For the material group elastomers, while none of the auxiliary building's elastomeric components or "unique" commodities were subject to an aging management review, in contrast and as indicated in Table 3.6-8 (Bulk Commodities), its waterstops, which are common to other structures and therefore considered a "bulk" commodity, were subject to an aging management review.

For the material group Teflon, there are no components or "unique" commodities associated with this material group, within the auxiliary building. However, as indicated in Table 3.6-8, there are several "bulk" commodities within the auxiliary building, as well as other structures, constructed of polytetrafluoroethylene materials (Teflon) that were subject to an aging management review.

In the auxiliary building, there are no components, "unique" commodities or "bulk" commodities associated with the material group, earthen embankments. For structures and components constructed of earthen embankments, refer to Section 3.6.6 and Table 3.6-6.

2.4-7 Section 2.4.4 of the LRA states that Category 2 structures in the intake structure are not within the scope of 10CFR54.4(a)(2). These structures typically provide functional support to non-safety-related equipment whose failure could prevent satisfactory accomplishment of safety-related functions. Provide a discussion that verifies and explains why the Category 2 structures are not required to meet the intent of 10CFR54.4(a)(2).

As described in Section 5.1.2.2 of the ANO-1 SAR, the intake structure (excluding the service water system) is a seismic category 2 structure. Seismic category 2 structures, systems and equipment are defined as those whose failure "would not result in the uncontrolled release of radioactivity and would not prevent a safe reactor shutdown", but may interrupt power generation. Section 9.3.2.1 of the ANO-1 SAR further states that the failure of seismic category 2 equipment in the proximity to the in-scope service water system will

not impact the latter's integrity. Therefore, the intake structure's category 2 building areas do not meet the criteria of 10CFR54.4(a)(2).

2.4-8 Table 3.3-6 of the LRA listed the emergency cooling pond, intake canal, and discharge canal as the components of the earthen embankments that are subject to an AMR. These are natural soil embankment constructions. Explain why structures associated with these embankments, such as the spillway, weir, canal inlet, and outlet structures, are not (listed in the table) subject to AMR for license renewal

Referring to Section 2.4.5.1 of the ANO-1 LRA, the spillway and weir are components of the emergency cooling pond. They are primarily constructed of natural soils and although they are not specifically identified in Table 3.6-6, they were subject to an aging management review along with the overall emergency cooling pond. Similarly, the canal inlets and outlets are components of the intake and discharge canals and are constructed primarily of natural soils. They were subject to an aging management review as part of the intake and discharge canals. A discussion of the aging effects evaluation for earthen embankments is provided in Section 3.6.6.

2.4-9 Section 2.4.6.1 of the LRA describes the aboveground and underground yard structures and trenches. However, there is no supporting information or document that can be used to verify the content of this section. Provide a drawing or sketch that shows the location of the yard structures and trenches and highlights the components that are within the scope of license renewal (send a site plan similar to the site plan, drawing No. OLR-1, of the Oconee LRA.

Please find enclosed ANO-2 SAR Figure 1.2-1, Drawing C-2003, revision 20, entitled "Plot Plan". As requested, the in-scope yard structures are highlighted. The pipe trench associated with the Q-CST is depicted on Drawing C-2056, sheet 3, revision 0, entitled "Anchor Bolt Locations, T41B Condensate Storage Tank" and the seismic category 1 electrical manholes are shown on Drawing C-31, revision 23, entitled "Yard Underground Utilities".

**THIS PAGE IS AN
OVERSIZED DRAWING
OR FIGURE,**

**THAT CAN BE VIEWED AT
THE RECORD TITLED:**

**DWG. NO. C-2003
PLOT PLAN**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DOCUMENT/REPORT
DWG. NO. C-2003**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-1

**THIS PAGE IS AN
OVERSIZED DRAWING
OR FIGURE,**

**THAT CAN BE VIEWED AT
THE RECORD TITLED:**

DWG. NO. C-2056

**ANCHOR BOLT LOCATIONS
T41B CONDENSATE STORAGE
TANK**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DOCUMENT/REPORT
DWG. NO. C-2056**

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-2

**THIS PAGE IS AN
OVERSIZED DRAWING
OR FIGURE,**

**THAT CAN BE VIEWED AT
THE RECORD TITLED:**

DWG. NO. C-31

**YARD UNDERGROUND
UTILITIES**

**WITHIN THIS PACKAGE...OR,
BY SEARCHING USING THE
DOCUMENT/REPORT**

DWG. NO. C-31

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

D-3