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2CAN060401

June 10, 2004

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Subject: Request for Additional Information Responses for  
License Renewal Application TAC No. MB8402  
Arkansas Nuclear One – Unit 2  
Docket No. 50-368  
License No. NPF-6

Dear Sir or Madam:

By letter dated May 11, 2004 (2CNA050403), the NRC requested additional information on the Arkansas Nuclear One, Unit 2 (ANO-2) License Renewal Application (LRA) within 30 days. The requests for additional information (RAIs) are from the LRA Section 2.2, Plant Level Scoping Results and Section 2.3, Systems Scoping and Screening. The responses to the RAIs are contained in the attachment.

There are no new commitments contained in this submittal. Should you have any questions concerning this submittal, please contact Ms. Natalie Mosher at (479) 858-4635.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 10, 2004.

Sincerely,

Timothy G. Mitchell  
Director, Nuclear Safety Assurance

TGM/nbm

Attachment

A100

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**Attachment 1**

**2CAN060401**

**RAI Responses**

## Section 2.2 and 2.3 RAI Responses

**RAI 2.2-1:** LRA Tables 2.2-2 and 2.2-4 contain a listing of the mechanical systems and structures that were determined not to be within the scope of license renewal. However, some of these systems are not described in the Safety Analysis Report (SAR). The Staff cannot determine whether these systems have intended functions that would meet any of the criteria in 10CFR54.4(a)(1) through (a)(3). For those systems that are not described in the SAR, provide a brief description of the system including the intended function of the system.

**Response:** There are six mechanical systems identified in Table 2.2-2 that do not have a SAR reference identified. The following provides additional information for each of these mechanical systems:

**Administration Building Heating and Ventilation (ADHV):**

The administration building heating and ventilation system is a nonsafety-related heating and air conditioning system that provides ventilation to the administration building. The building is used as an office building for site personnel.

**Diesel Fuel Services (ED):**

The diesel fuel services ED system code in the plant component database includes only two mechanical components which are nonsafety-related drain valves for the enclosures around the emergency diesel generator (EDG) fuel oil day tanks.

**Emergency Operations Facility (EOF):**

The mechanical components in this system code include a backup diesel generator, heating, ventilation, and air conditioning components including heat exchangers, blowers, filters, etc. for the EOF. The EOF serves as an alternate location for the technical support center and the operational support center if required by the site emergency plan. The building is located 0.65 miles from the reactor buildings and serves as a training center during normal plant operation.

**Low-Level Radwaste (LLRW):**

The mechanical components in this system code include tanks, filters, valves, compressors, and piping that support various activities in handling low-level radioactive waste in the low-level radwaste building which is located outside the plant power block away from safety-related structures. The purpose of the low-level radwaste storage building is to temporarily store low-level radioactive waste prior to shipment offsite. This system is only required to support the collection and handling of low-level solid radioactive waste

**Miscellaneous (MISC):**

The miscellaneous system code includes miscellaneous site equipment that needs to be entered into the site component database for work tracking, etc. but is not a part of an existing system. The mechanical components include a portable hoist and backup power diesel generators for site office buildings.

**Startup Boiler (SU):**

The purpose of the startup boiler is to provide auxiliary steam for plant heating and testing as required during periods when the plant is shutdown. The system consists of the boiler, pumps, filters, valves, piping and other miscellaneous mechanical components.

**RAI 2.3-1:** LRA Section 2.1.1 states that license renewal drawings were prepared to indicate components subject to aging management review. However, the license renewal drawing legends indicate that the highlighted portions of the systems with flags represent the systems and components that are within the scope of license renewal. There appears to be an inconsistency between the drawing legend and the LRA statement.

The Staff requested the applicant to clarify which one is correct. 10CFR54.21(a)(2) requires applicants to describe and justify the methods used in paragraph (a)(1) of 10CFR54.21. LRA Section 2.1.2 briefly describes the screening methodology as such: "for each mechanical system within the scope of license renewal, the screening process identified those components that are subject to an aging management review." This description of the screening methodology, specifically for mechanical systems, is not clear to the Staff. It does not adequately describe the method used to determine how a component is screened from further evaluation. Please provide an appropriate description and justification for the methodology used to perform the screening of mechanical components, including a discussion of how the system evaluation boundaries were established and component intended functions were determined.

**Response:** Section 2.1.1 states, "License renewal drawings were prepared to indicate components subject to aging management review." This statement is correct. License renewal boundary flags and color highlighting are used to indicate the piping and components within the scope of license renewal that are subject to aging management review. The drawings are intended to be an aid used in conjunction with the tables in Section 2.0 of the LRA to "identify and list those structures and components subject to an aging management review" as required by 10CFR54.21(a)(1).

Scoping was performed at the system level. Systems and structures that perform intended functions are in scope as indicated in Tables 2.2-1a, 2.2-1b, and 2.2-3. Systems and structures that are not within the scope of license renewal are listed in Tables 2.2-2 and 2.2-4. If a system is in scope, then all of the components in that system are conservatively considered within the scope of license renewal for the purpose of identifying components and structures that are subject to aging management review. Screening is then performed to determine which components are subject to aging management review. For screening in accordance with 10CFR54.21(a)(1), structures and components subject to aging management review are those that perform an intended function without moving parts or a change in configuration or properties and that are not subject to replacement based on a qualified life or specified time period. Functions for the systems were identified based on reviews of applicable plant licensing and design documentation. The applicable sections of the SAR, technical specifications, Maintenance Rule Scoping Documents, Upper Level Documents, and ANO topical reports for the NRC regulations identified in 10CFR54.4(a)(3) were used to determine system functions and identify the components that perform intended functions required to accomplish those system functions. The license renewal boundary on the drawings may be defined as the boundary between the portion of the system that performs an intended function (requires an aging management review) and the portion of the system that does not perform an intended function (does not require an aging management review).

**RAI 2.3.3.3-1:** The following active components are highlighted on the associated license renewal drawings:

- License Renewal Drawing LRA-M-2217, Sheet 1: Exhaust Turbo Chargers (2M-202A, 203A, 202B, 203B) at locations G-4 and G-5, H-4 and H-5 (these Turbo Chargers are also shown on Sheet 3)
- License Renewal Drawing LRA-M-2217, Sheet 3: components 2K-4A and 2K-4B at locations D-3 and D-7
- License Renewal Drawing LRA-M-2241, Sheet 1: Cylinder Block and Head (CBH) at location E-4/5
- License Renewal Drawing LRA-M-2241, Sheet 2: Turbo Chargers (2M-13A and B) at locations E-5 and E-7
- License Renewal Drawing LRA-M-2241, Sheet 5: bearings (housing) at location D-4 piston cooling jets (housing) at location D-4 engine sump at location C-6

These components do not appear to be in LRA Tables 2.3.3-3 or 2.3.3-4 for an aging management review. As stated in LRA Section 2.1.1, all components highlighted on license renewal boundary drawings are subject to an aging management review. Clarify if these highlighted active components are subject to an aging management review. If so, justify their exclusion from the LRA tables. If it is the applicant's intention to have these components subject to an aging management review, then Tables 2.3.3-3, 2.3.3-4, 3.3.2-3, and 3.3.2-4 should be updated to include these components.

**Response:** The passive portion of the turbochargers are shown in Tables 2.3.3-3 and 3.3.2-3 as component type blower housing.

Components 2K-4A and 2K-4B on LRA M-2217 sheet 3 are the EDG engines which in accordance with NEI 95-10 Appendix B and consistent with NUREG-1800 Table 2.1-5 are not subject to aging management review and as such should not have been highlighted.

The cylinder block and head at location E-4/5 on License Renewal Drawing LRA-M-2241, Sheet 1 were inadvertently highlighted. The block and head are part of the alternate AC (AAC) diesel generator engine assembly which in accordance with NEI 95-10 Appendix B and consistent with NUREG-1800 Table 2.1-5 are not subject to aging management review. As such, they are not included in Tables 2.3.3-4 and 3.3.2-4 and should not have been highlighted.

The passive portion of the turbochargers shown on drawing LRA-M-2241, Sheet 2 are shown in Tables 2.3.3-4 and 3.3.2-4 as component type of blower housing.

The bearings, piston cooling jets and sump on License Renewal Drawing LRA-M-2241, Sheet 5 were inadvertently highlighted. These components are part of the AAC diesel generator engine assembly which in accordance with NEI 95-10 Appendix B and consistent with NUREG-1800 Table 2.1-5 are not subject to aging management review and as such they are not included in Tables 2.3.3-4 and 3.3.2-4 and should not have been highlighted.

**RAI 2.3.3.4-1:** SAR Section 8.3.3, "Alternate AC Power Source," states that the engine generator set has Class F insulation. The insulated piping is shown on license renewal drawing LRA-M-2241, sheet 2 as not being subject to aging management review. Briefly state the basis for excluding this insulation (e.g., system efficiency, heat load calculations, environmental qualification (EQ) purposes, etc.) The insulation is passive and long-lived and should be subject to an aging management review in accordance with the requirements of 10CFR54.21(a)(1) if it is relied upon for EQ purposes. Verify whether the Class F insulation is subject to an aging management review.

**Response:** SAR Section 8.3.3 states that the generator has Class F insulation. This refers to the insulation on the generator windings not to piping insulation. As part of the alternate AC generator system, the generator and the piping are in the scope of license renewal. However, the generator with its associated insulation is an active component that is not subject to aging management review. The insulation shown on exhaust piping on the referenced drawing though not specifically highlighted is subject to aging management review. This insulation is indoors and hence, is protected from the weather. A review of ANO-2 operating experience verified that the plant has not experienced aging-related degradation of piping insulation in indoor environments. Therefore, based on operating experience, there are no aging effects requiring management for indoor insulation at ANO-2. This is consistent with NUREG-1705, which states: "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."

**RAI 2.3.3.11-1:** Section 2.3.3.11 Miscellaneous Systems in Scope for 10CFR54.4(a)(2) LRA Section 2.1.1 states that components subject to an aging management review based only on meeting 10CFR54.4(a)(2) criterion are not indicated on license renewal drawings. LRA Section 2.3.3.11 provides a listing of those systems that are within the scope of license renewal based on this criterion along with a brief description and a SAR reference for the particular system. During the conference call on December 15, 2003, the Staff requested the applicant to provide further information to conduct its review. On December 16, the Staff reviewed a copy of the Engineering Report (No. A2-ME-2003-001-0, Revision 0), entitled, "Aging Management Review of Nonsafety-Related Systems and Components Affecting Safety-Related Systems." For each mechanical system at ANO-2, the results of the applicant's 10CFR54.4(a)(2) review is documented in this report. The Staff reviewed the report for those systems specifically listed in LRA Section 2.3.3.11. Based on that review, the Staff needs the following additional information or clarification:

(a) Engineering Report A2-ME-2003-001-0 (Revision 0), Section 3.62, "Plant Heating" and Section 3.87, "Turbine Building Sump", list cast iron components (i.e., valves and piping) as requiring an aging management review. However, Table 3.3.2-11 does not contain an entry for cast iron valve bodies or piping for the environments cited in the engineering report. Explain why a separate entry in Table 3.3.2-11 does not exist for cast iron components, or update the table to include them.

**Response:** The cast iron material type is included in the general material type "carbon steel" since the aging effect (loss of material) and aging management programs (system walkdowns for all components and water chemistry control for treated water systems) are the same for carbon steel or cast iron components in the a(2) report. This inclusion of cast iron in carbon steel material type is indicated in the engineering report A2-ME-2003-001 by

the phrase in Sections 3.62 and 3.87 "carbon steel (including cast iron)" or "carbon steel (cast iron)". Selective leaching is identified in these subsections of engineering report A2-ME-2003-001 as an aging mechanism that will result in the aging effect of loss of material for cast iron components.

**RAI 2.3.3.11-1(b):** LRA Section 2.3.3.11 lists components in the regenerative waste system. This list includes tanks and filters. Engineering Report A2-ME-2003-001-0, "Aging Management Review of Nonsafety-Related Systems and Components Affecting Safety-Related Systems," Section 3.75, lists the passive mechanical components in the system that require aging management review to meet 10CFR54.4(a)(2). This list does not include tanks or filters. Explain why these tanks and filters are not subject to an aging management review, but the piping and valves leading to them are subject to an aging management review.

**Response:** As identified in Engineering Report A2-ME-2003-001-0, Aging Management Review of Nonsafety-related Systems and Components Affecting Safety-related Systems, a large portion of the regenerative waste system is not used. This system was originally designed with radioactive waste evaporators and other associated components that are no longer utilized.

There are no tanks in the system that require aging management review per 10CFR54.4(a)(2) since the tanks that are in the system are empty or are located in areas that cannot affect safety-related components. Two filters, as well as the piping and valves, associated with the regenerative waste system are in the auxiliary building and are subject to aging management review. These two filters were not specifically identified in Section 3.75 of A2-ME-2003-001-0 but were included in Attachment 2 of A2-ME-2003-001-0. They are included in LRA Tables 2.3.3-11 and 3.3.2-11 as component type filter housing.

**RAI 2.3.3.11-1(c):** 10CFR54.21(a) requires license renewal applicants to identify and list those structures and components subject to an aging management review. However, the application does not satisfy this requirement because mechanical components within the scope of license renewal in accordance with 10CFR54.21(a)(2) are neither identified as being subject to an aging management review on license renewal drawings nor by any designator or specific description in the engineering report. The engineering report (A2-ME-2003-0001-0) provides a general description on aging management of non-safety-related systems and components affecting safety-related systems but does not specify or identify the components that require an aging management review for each system. The Staff requested that the applicant provide a means of specifically identifying mechanical components subject to an aging management review.

**Response:** Section 2.1.1.2 of the LRA describes the application of 10CFR54.4(a)(2) criterion at ANO-2. The impacts of nonsafety-related structures, systems, and components (SSCs) failure were considered as either functional or spatial. In a functional failure, the failure of an SSC to perform its normal function impacts another safety function. In a spatial failure, a safety function is impacted by the loss of structural or mechanical integrity of an SSC in physical proximity to a safety-related component. Spatial failures result in the inclusion of the most equipment. Section 2.1.1.2.2 of the LRA provides information on how and where nonsafety-related equipment can impact safety-related equipment through spatial interaction. As documented in engineering report A2-ME-2003-0001-0, a review of

all mechanical systems at ANO-2 was performed. If a system contained components that required aging management review for 10CFR54.4(a)(2), then the component types that required aging management review were listed in the system section. Highlighted flow diagrams that indicate 10CFR54.4(a)(2) components would be of limited value to a reviewer since flow diagrams do not provide equipment location information. Without location information, it cannot be determined if nonsafety-related equipment has a potential for spatial interaction such as from leakage or spray with safety-related equipment.

In addition, as described in engineering report A2-ME-2003-0001-0 the following conservative approach was used to identify systems that meet 10CFR54.4(a)(2) and components that are subject to aging management review for leakage and spray.

First the structures at ANO-2 containing safety-related equipment were identified. The ANO-2 containment building, auxiliary building, intake structures, and emergency diesel fuel oil storage vault are the primary seismic Class 1 structures at ANO-2 containing safety-related plant equipment. These areas contain the relevant targets, i.e., safety-related SSCs with the potential to be affected by failure of nonsafety-related components. All ANO-2 mechanical systems were reviewed. If the system contained liquid or steam and had nonsafety-related equipment in the containment building, auxiliary building, intake structures, or emergency diesel fuel oil storage vault then a review of individual system components was performed. This was performed with the ANO-2 component database information that identifies component locations. Liquid or steam filled nonsafety-related components in the safety-related structures specified above were reviewed for their potential for interaction with safety-related equipment using equipment location information in the ANO-2 component database and equipment layout drawings. As a very conservative first cut, all nonsafety-related components containing liquid or steam located in the containment building, auxiliary building, intake structure and emergency diesel fuel storage vault were considered subject to aging management review unless no safety-related equipment was in the area of the nonsafety-related component. This process resulted in many nonsafety-related components being included even though they likely cannot impact safety-related equipment. In limited cases, additional reviews were performed to exclude specific nonsafety-related components where design features, such as room separation, walls, panels or enclosures, would protect safety-related equipment from leakage or spray. This conservative approach for scoping and screening of nonsafety-related components assures that components within the scope of license renewal and subject to an aging management review in accordance with the requirements of 10CFR54.4(a)(2) have been identified to the extent necessary to assure effective management of the effects of aging.

**RAI 2.3.3.11-1(cont.):** Please identify the nonsafety-related components having either functional or spatial impacts on safety-related components and that are subject to an aging management review using one of the following previously accepted methods or another equally effective method: (1) listing specific systems and specific identifiable plant areas where all components of the listed system are within the scope of license renewal, (2) listing specific components subject to an aging management review, or (3) identifying components within the scope of license renewal by highlighting system drawings.

**Response:** As stated in the response to item (c) above, the method for nonsafety-related components having either functional or spatial impacts on safety-related components is very similar to method (1) in that all the mechanical systems with components included for

10CFR54.4(a)(2) are provided in Section 2.3.3.11 of the LRA. The plant buildings/areas where these components are located are provided in the response to item (c) above. The limited population of components in these buildings that were excluded from review is addressed in Section 3.0 of engineering report A2-ME-2003-0001-0.

**RAI 2.3.3.11-1(cont.):** Also, for certain systems with the credible potential to cause broad spatial effects through flooding (i.e., large-diameter fire water and service water piping), provide the basis for concluding that the effect of a leak from a component failure in these systems would be limited to direct spray on nearby safety-related components.

**Response:** ANO-2 utilized a conservative approach to identify components that required aging management review per 10CFR54(a)(2) criteria. The fire water piping and service water system piping in safety-related buildings that was not already reviewed as part of the system review was identified as requiring aging management review per 10CFR54(a)(2). Therefore the portions of the fire water and service water systems that could cause flooding of safety-related components are in the scope of license renewal and subject to aging management review.

**RAI 2.3.3.12-1:** License renewal drawing LRA-M-2260, Sheet 1, Revision 0 (at location A, B, 2-4) shows the ventilation for the intake structure. Two exhaust fans, shutoff dampers and associated ducts are indicated as being subject to aging management review. SAR Section 9.4.6, "Intake Structure," states that exhausted air is replaced through an opening in the roof and two openings in louvered doors. The openings and fans are not highlighted on the license renewal drawing. The two fans that the openings support are necessary to ventilate the rooms during a design basis accident to maintain safe equipment operating temperatures. Provide justification as to why the openings which replace the exhausted air are not subject to an aging management review.

**Response:** The ventilation intake openings are subject to aging management review as part of the intake structure. They are listed as support for roof hatches and louvered doors in LRA Table 2.4-3.

**RAI 2.3.3.12-2** License renewal drawing LRA-M-2260, Sheet 1, Revision 0 (at location B-3-8) shows two exhaust fans as being subject to an aging management review. Clarify if the housings for these fans are included in a component type listed on LRA Tables 2.3.3-8 and 3.3.2-8. If not, update the corresponding tables to include these components.

**Response:** The housings for exhaust fans 2VEF-25A and 2VEF-25B, shown on LRA-M-2260 Sheet 1, Revision 0 (at location B-3), are included in LRA Tables 2.3.3-8 and 3.3.2-8 as component type blower housing.

**RAI 2.3.3.12-3** LRA Section 2.3.3.12 states that the nitrogen supply system contains safety-related components and is therefore within the scope of license renewal based on the criterion of 10CFR54.4(a)(1). During the December 16, 2003, teleconference, the applicant stated that if a system is determined to be in the scope of license renewal then it conservatively assumed that all components in that system are within the scope of license renewal. Portions of the nitrogen supply system are highlighted on license renewal drawings LRA-M-2232, Sheet 1, Revision 0 (at locations B-8, D-8, F-8, and H-8), LRA-M-2231, Sheet 1, Revision 0 (at locations B-5 and B-6), and LRA-M-2206, Sheet 1, Revision 0 (at locations G-1 and G-8). However, the supply lines to the above locations are

not highlighted on license renewal drawing LRA-M-2239, Sheet 1, Revision 0; only portions associated with the containment penetrations are highlighted. The Staff asked the applicant to explain why the portions of the nitrogen supply system, in particular the supply lines discussed above as shown on drawing LRA-M-2239, are not subject to an aging management review.

**Response:** The nitrogen supply system is within the scope of license renewal based on the criterion of 10CFR54.4(a)(1) because it contains safety-related components. However, only those passive and long-lived components that perform a license renewal intended function are subject to aging management review. As stated in 10CFR54.21(a),

“For those systems, structures, and components within the scope of this part, as delineated in § 54.4, identify and list those structures and components subject to an aging management review. Structures and components subject to an aging management review shall encompass those structures and components —

- (i) that perform an intended function, as described in § 54.4, without moving parts or without a change in configuration or properties.” ... “; and
- (ii) that are not subject to replacement based on a qualified life or specified time period.”

Passive and long-lived components in the containment penetration portion of the supply lines (highlighted on LRA-M-2239, Sheet 1) perform a containment isolation function and are therefore subject to aging management review. Passive and long-lived nitrogen supply system components such as those highlighted on license renewal drawings LRA-M-2232, Sheet 1; LRA-M-2231, Sheet 1; and LRA-M-2206, Sheet 1 perform a system level pressure boundary function for a system with a license renewal intended function and are therefore subject to aging management review. The remainder of the nitrogen supply system (including the non-highlighted supply lines on drawing LRA-M-2239) does not perform a license renewal intended function. Thus, passive and long-lived components in the non-highlighted nitrogen supply lines are not subject to aging management review.

**RAI 2.3.4.1-1:** SAR Section 10.2.3.1 states that, a venturi flow element and a flow restrictor are installed in each main steam line and steam generator outlet nozzle, respectively, to limit blowdown rate following a main steam line break. The component type "orifice", which would include the venturi flow element and the flow restrictor, is listed in LRA Table 2.3.4-1 as being subject to an aging management review. However, the table lists "pressure boundary" as the only intended function of the component type "orifice" and neglects to list "flow control" as a second intended function. Please justify why flow control should not be listed as an intended function for the component type "orifice" in the table or revise the table accordingly.

**Response:** There is no Section 10.2.3.1 of the SAR. As described in the third paragraph of Section 10.3.2.1 of the SAR, “The venturi flow element can also function to limit the blowdown rate following a postulated pipe rupture in the main steam line; however, the main steam flow restrictors installed in the steam generator outlet nozzles are credited with performing this function (see Section 5.5.4).” As a result this venturi (orifice) is not credited with the function of flow control and as such flow control is not listed in Table 2.3.4-1 as an intended function. The main steam flow restrictors in the steam generator are included in

the reactor coolant system in Table 2.3.1-5 as a flow-limiting insert and have the intended function of flow control and pressure boundary.

**RAI 2.3.4.2-1:** LRA Section 2.3.4.2 states that the second block valve (outboard) on each train of the main feedwater system is safety-related. License renewal drawing LRA-M-2206, Sheet 1, does not highlight the valves (2-CV-1023-2 and 2CV-1073-2) as being subject to aging management review. These valves (as the backup main feedwater isolation valves) receive an isolation signal to close during steam line breaks (either via the main steam isolation signal or the containment spray actuation signal). These valves are credited in the SAR Chapter 15 analyses. Provide justification for not including the outboard second feedwater block valve within the scope of license renewal, and not including its valve body as being subject to an aging management review.

**Response:** The second (outboard) block valves are within the scope of license renewal (as part of the main feedwater system) but are not subject to aging management review as they perform their intended function with moving parts. Their only intended function is to provide feedwater isolation, which relies on the closure of the valve disc by the motor operator. The loss of pressure boundary in this portion of the system would not prevent satisfactory isolation of feedwater flow to the steam generators

**RAI 2.3.4.3-1:** License renewal drawing LRA-M-2204, Sheet 4, does not show the nonsafety-related auxiliary feedwater (AFW) pump and its auxiliaries as being subject to aging management review. SAR Section 10.4.9.2 states that one of the functions of the AFW pump is to provide feedwater to the steam generators when both safety-related emergency feedwater (EFW) pumps are not available. SAR Section 3.6.4.1.5.2 states that a high-energy line break is postulated in the common steam line from both the steam generators at valve 2CV-0340-2 (license renewal drawing LRA-M-2202, Sheet 4 (at location B-4)). As a result of this postulated break, the turbine driven EFW pump will not be available to supply feedwater to the steam generators. As described in SAR Section 3.6, a single failure of the remaining EFW pump would require the AFW pump to provide feedwater flow to the steam generators to bring the plant to a safe shutdown condition. However, SAR Section 3.6 does not explain how plant safe shutdown will be achieved with this postulated break. If the AFW pump is used to mitigate the consequences of a postulated high energy line break in the SAR, then the AFW pump should be within the scope of license renewal to meet the criteria of 10CFR54.4(a)(2). Justify the exclusion of the AFW pump and its auxiliaries from being subject to an aging management review.

**Response:** Section 3.6.4.1.5.2 of the SAR states that a break in the 4-inch steam line to the emergency feedwater pump driver will not require safety systems actuation since the blowdown in the line is within the makeup of the main feedwater pumps to the steam generators. Isolation valves are available in the lines from the individual steam generators to isolate a break in the common steam line. The AFW pump and its auxiliaries are not subject to aging management review since the AFW pump and its auxiliaries have no intended functions that support the functions in the scoping criteria of 10CFR54.4(a)(1), (a)(2) or (a)(3).

**RAI 2.3.4.3-2:** License renewal drawing LRA-M-2204, Sheet 4 (at locations E7 and G4), shows only a portion of the minimum recirculation lines (upstream of valves 2EFW-10A and 2EFW-10B) as being subject to an aging management review. These valves are throttling valves, which do not necessarily provide an adequate pressure boundary function. The minimum recirculation piping extends beyond this drawing to another drawing M-2229, which is not provided. Failure of the downstream piping could result in a loss of pressure boundary intended function. Provide drawing M-2229 so that the Staff can determine if any passive failures downstream could impact the function of the system, and therefore, should be included in scope and subject to an aging management review for license renewal.

**Response:** Each minimum recirculation line contains an orifice and globe valve. The orifices allow the minimum required recirculation flow for the pumps while ensuring sufficient flow is provided to the steam generators as required for design basis events. Thus, piping and components downstream of the orifices and globe valves are not required to maintain pressure boundary for the steam generators to receive sufficient flow for design basis events, and they do not have an intended function based on the criteria of 10CFR54.4(a)(1) or 10CFR54.4(a)(3).

Passive components in the minimum recirculation line downstream of 2EFW-10A and 2EFW-10B do have a pressure boundary intended function for 10CFR54.4(a)(2). In accordance with Section 2.1.1 of the LRA, components subject to aging management review based only on the criterion of 10CFR54.4(a)(2) are not indicated on the LRA drawings. The nonsafety-related portions of the emergency feedwater system that require aging management review based on the criterion of 10CFR54.4(a)(2) are evaluated in Section 2.3.3.11 of the LRA.