May 11, 2004

Mr. Jeff Forbes Vice President, Operations ANO Entergy Operations, Inc. 1448 S. R. 333 Russellville, AR 72801

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE ARKANSAS NUCLEAR ONE, UNIT 2, LICENSE RENEWAL APPLICATION (TAC NO. MB8402)

Dear Mr. Forbes:

The U.S. Nuclear Regulatory Commission (NRC) is reviewing a license renewal application (LRA) submitted by Entergy Operators Inc. (Entergy or the applicant) dated October 14, 2003 for the renewal of the operating licenses for Arkansas Nuclear One, Unit 2, pursuant to Title 10 *Code of Federal Regulations* Part 54 (10 CFR Part 54). The NRC staff has identified, in the enclosure, areas where additional information is needed to complete the review. Specifically, the enclosed requests for additional information (RAIs) are from Section 2.2 Plant Level Scoping Results and Section 2.3 Systems Scoping and Screening: Mechanical. These RAIs have been discussed with your staff.

Your responses to these RAI's are requested within 30 days from the date of this letter. If you have any questions on the revised review schedule, please contact me at (301) 415-1124 or e-mail gxs@nrc.gov.

Sincerely,

## /RA/

Gregory F. Suber, Project Manager License Renewal Section A License Renewal and Environmental Impacts Program Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

Docket No.: 50-368

Enclosure: As stated

cc w/encl: See next page

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# REQUEST FOR ADDITIONAL INFORMATION PLANT SYSTEMS BRANCH DIVISION OF SYSTEMS SAFETY AND ANALYSIS ARKANSAS NUCLEAR ONE - UNIT 2 LICENSE RENEWAL APPLICATION DOCKET NO. 50-368

# 2.2 PLANT LEVEL SCOPING RESULTS

<u>RAI 2.2-1</u>

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 UFSAR. The staff cannot determine whether these systems have intended functions that would meet any of the criteria in 10 CFR 54.4(a)(1) through (a)(3). For those systems that are not described in the UFSAR, provide a brief description of the system including the intended function of the system.

# 2.3 SYSTEMS SCOPING AND SCREENING: MECHANICAL

## <u>RAI 2.3-1</u>

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. 10 CFR 54.21(a)(2) requires applicants to describe and justify the methods used in paragraph (a)(1) of 10 CFR 54.21. 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.

# Section 2.3.3.3 Emergency Diesel Generator

# <u>RAI 2.3.3.3-1</u>

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 & 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 these components 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 and 2.3.3-4 and Tables 3.3.2-3 and 3.3.2-4 should be updated to include these components.

# Section 2.3.3.4 Alternate AC Diesel Generator

# <u>RAI 2.3.3.4-1</u>

UFSAR 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, 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 10 CFR 54.21(a)(1) if it is relied upon for EQ purpose. Verify whether the Class F insulation is subject to an aging management review .

# Section 2.3.3.11 Miscellaneous Systems

# RAI 2.3.3.11-1

Section 2.3.3.11 Miscellaneous Systems in Scope for 10 CFR 54.4(a)(2) LRA Section 2.1.1 states that components being subject to an aging management review based only on meeting 10 CFR 54.4(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 UFSAR 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 Non-safety-related Systems and Components Affecting Safety-related Systems." For each mechanical system at ANO-2, the results of the applicant's 10 CFR 54.4(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.
- (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 10 CFR 54.4(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.
- (c) 10 CFR 54.21(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 10 CFR 54.21(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.

Please identify the non safety-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.

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.

#### Section 2.3.3.12 Other Miscellaneous Systems

Intake Structure (Ventilation)

## 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. UFSAR 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 (DBA) 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.

#### 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.

#### 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 10 CFR 54.4(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, Rev. 0 (at locations B-8, D-8, f-8, and H-8), LRA-M-2231, Sheet 1, Rev. 0 (at locations B-5 and B-6), and LRA-M-2206, Sheet 1, Rev. 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, Rev. 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 AMR.

# Section 2.3.4.1 Main Steam System

#### RAI 2.3.4.1-1

UFSAR 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.

## Section 2.3.4.2 Main Feedwater

## 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-CV1023-2 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 UFSAR 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.

## Section 2.3.4.3 Emergency Feedwater

## RAI 2.3.4.3-1

License renewal drawing LRA-M-2204, Sheet 4, does not show the non-safety-related auxiliary feedwater (AFW) pump and its auxiliaries as being subject to aging management review . UFSAR 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. UFSAR 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 UFSAR 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, UFSAR 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 UFSAR, then the AFW pump should be within the scope of license renewal to meet the criteria of 10 CFR 54.4 (a)(2). Justify the exclusion of the AFW pump and its auxiliaries from being subject to an aging management review.

#### 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 2EFW10A 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 AMR for license renewal.

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