May 7, 2004

MEMORANDUM TO: P. T. Kuo, Program Director
License Renewal & Environmental Impacts Branch
Division of Regulatory Improvement Programs

FROM: Kamal A. Manoly, Chief ***(/RA by KAManoly)***
Civil and Engineering Mechanics Section
Mechanical and Civil Engineering Branch
Division of Engineering

SUBJECT: INPUT TO SAFETY EVALUATION REPORT FOR SECTION 2.4, "SCOPING AND SCREENING RESULTS: CONTAINMENTS, STRUCTURES, AND COMPONENT SUPPORTS," JOSEPH M. FARLEY NUCLEAR PLANT LICENSE RENEWAL APPLICATION (LRA)

The EMEB staff has completed its review of Section 2.4, "Aging Management of containments, structures, and component supports," of Joseph M. Farley Nuclear Plant license renewal applications. Our input to the staff's safety evaluation report for the subject section of the LRA is provided in the attachment.

Docket Nos. 50-348 and 50-364

Attachment: As stated

CONTACT: David Jeng, DE/EMEB
(301)- 415-2727

May 7, 2004

MEMORANDUM TO: P. T. Kuo, Program Director
License Renewal & Environmental Impacts Branch
Division of Regulatory Improvement Programs

FROM: Kamal A. Manoly, Chief ***(/RA by KAManoly)***
Civil and Engineering Mechanics Section
Mechanical and Civil Engineering Branch
Division of Engineering

SUBJECT: INPUT TO SAFETY EVALUATION REPORT FOR SECTION 2.4, "SCOPING AND SCREENING RESULTS: CONTAINMENTS, STRUCTURES, AND COMPONENT SUPPORTS," JOSEPH M. FARLEY NUCLEAR PLANT LICENSE RENEWAL APPLICATION (LRA)

The EMEB staff has completed its review of Section 2.4, "Aging Management of containments, structures, and component supports," of Joseph M. Farley Nuclear Plant license renewal applications. Our input to the staff's safety evaluation report for the subject section of the LRA is provided in the attachment.

Docket Nos. 50-348 and 50-364

Attachment: As stated

Distribution:
GImbro
SSLee
TLiu

G;\EMEB\Jeng\Farley Sec 2.4 SER Covltr.wpd
ADAMS ACCESSION NO.:ML041400538

Office	DE:EMEB	E	DE:EMEB	E
Name	DJeng		KManoly	
Date	04/09/2004		05/07/2004	

ORIGINAL RECORD COPY

J. M. Farley License Renewal Application
SER For Section 2.4, "Scoping and Screening Results: Containments, Structures, and Component Supports

2.4 Scoping and Screening Results - Structures

10 CFR 54.21(a)(1) requires an applicant to identify and list structures and components subject to an aging management review. These are passive, long-lived structures and components that are within the scope of license renewal. To verify that the applicant has properly implemented its methodology, the staff focuses its review on the implementation results. Such a focus allows the staff to confirm that there is no omission of structural components that are subject to an aging management review. If the review identifies no omission, the staff has the basis to find that there is reasonable assurance that the applicant has identified the structural components that are subject to an aging management review.

This SER section addresses the applicant's scoping and screening results for structures. The structures identified in LRA Table 2.2-1e as being within the scope of license renewal are

Containment Structure (LRA 2.4.1)
Auxiliary Building (LRA 2.4.2.1)
Diesel Generator Building (LRA 2.4.2.2)
Turbine Building (LRA 2.4.2.3)
Utility/Piping Tunnels (LRA 2.4.2.4)
Water Control Structures (LRA 2.4.2.5)
Steel Tank Structures (Foundations and Retaining Walls) (LRA 2.4.2.6)
Yard Structures (LRA 2.4.2.7)
Component Supports (LRA 2.4.3)

LRA Table 2.2-1h identifies structures that are not within the scope of license renewal. The staff's review of LRA Table 2.2-1h identified several areas in which additional information is necessary to complete the review of the applicant's scoping results. Therefore, by letter dated __ __ __, the staff issued RAI 2.4-1, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a). The staff's RAI is described below:

LRA Table 2.2-1h identifies structures that are not within the scope of license renewal. It is not obvious to the staff that all of the listed structures serve no intended function. The applicant is requested to provide its technical basis for this determination for the following structures: circulating water structures and cooling towers; containment equipment hatch access enclosure; river water intake structure; meteorological & microwave structures and equipment; and yard drainage system. Also verify that seismic II/I considerations are not applicable to any of the structures not in the scope of license renewal (e.g., containment equipment hatch access enclosure).

ATTACHMENT

In addition, while the staff acknowledges that the tendon access gallery does not serve an intended function in the strictest interpretation of the License Renewal Rule, there is significant industry operating experience related to flooding and corrosive environments in the tendon access gallery that have contributed to degradation of the tendon anchorage components and surrounding concrete. Management of the condition of the tendon access gallery is a preventive step to minimize aging effects for the prestressing system. The applicant is requested to submit its plant-specific operating/aging experience related to (1) flooding and corrosive environments in the tendon access gallery, and (2) degradation of the prestressing system components (both steel and concrete) in the tendon access gallery, and based on the FNP specific tendon gallery operating/aging experience, discuss FNP's basis for not including the tendon gallery structure within the AMR scope pursuant to 10 CFR 54.4(a)(2).

In its response to RAI 2.4-1, dated __ __ __, the applicant stated that:

SNC has verified for the structures listed in Table 2.2-1h "*Systems and Structures Not Within the Scope of License Renewal - Structures*," that seismic II/I considerations are not applicable.

The Staff requested the technical basis for determining the following structures are not in the scope of license renewal: circulating water structures and cooling towers; containment equipment hatch access enclosure; river water intake structure; meteorological & microwave structures and equipment; and yard drainage system. These structures do not house equipment relied upon in the licensing basis to perform safe shutdown, mitigate accidents, or address any of the regulated events in the scope of the rule. The structures cannot fail in a way that adversely affects a safety related function or the performance of safety related equipment. Therefore, these structures do not satisfy the criteria as defined in 10 CFR 54.4 (a) (1) - (3) and are not within the scope of license renewal. The applicant provided the following discussion for each structure as follows:

> Circulating Water Structures and Cooling Towers: The circulating water systems and structures, including the cooling towers, provide cooling water to the tube-side of the main condensers for removal of waste heat from the power cycle (including maintaining condenser vacuum in support of efficient turbine operation). During a normal plant shutdown heat is rejected to the main condenser via the non safety-related main steam dump valves, however this method is not credited for safe shutdown. The main steam safety valves and main steam atmospheric relief valves, which discharge directly to the atmosphere, provide the safety-related means for decay heat removal to maintain hot shutdown. The circulating water structures include the concrete basins under the cooling towers, concrete canals and tunnels that direct the water flow to and from the condensers, and the circulating water pump structures. The cooling towers are not located near any safety-related SSCs, and the circulating water structures cannot fail in any way that could interact with a safety related structure.
>
> Containment Equipment Hatch Access Enclosure: This non safety-related enclosure is a free-standing sheet metal and steel frame structure that provides shelter over the equipment hatch access area from inclement weather during outage activities. The enclosure is open on two sides to provide free access to the Containment Equipment Hatch. The structure is of lightweight construction such that failure of the structure

(e.g., during a seismic event) will not impair the ability of the containment structure (including equipment hatch) from performing its intended function.

River Water Intake Structure: Loss of the River Water Intake Structure is discussed in UFSAR Section 9.2.1.2.3.1 which states "The station cooling water system is designed such that safe shutdown of the plant is not dependent on the river water system as a cooling water source" and "The storage pond alone serves as the ultimate heat sink for the plant." The River Water Intake Structure is located remote from the plant's safety-related structures (over 2000 feet from the Auxiliary Buildings and from the pond) and houses the river water pumps and related equipment, none of which are required for safe shutdown (including in the event of a fire) or to mitigate any accident. The portions of the River Water System within the scope of License Renewal (i.e., the Service Water pond level instruments) described in LRA Section 2.3.3.5 are located at the pond and not at or in proximity of the River Water Intake Structure.

Meteorological & Microwave Structures: Instruments for measuring meteorological parameters are installed on a main and a backup tower located in a cleared area north of the plant site. Microwave communication equipment is also installed on these towers. The towers and equipment are non safety-related and do not pose any spatial interaction hazard to safety-related SSCs based on the remote location. In addition, the intended functions of these SSCs do not meet the 10 CFR 54.4(a) criteria for safety-related or regulated events. Some of the meteorological data is utilized for post-accident release assessment (R.G. 1.97 Category 3 variable) but is not safety-related (it does not mitigate, only assesses the consequences of an accident). The microwave communication is connected to the intra plant telephone switchboard to enable plant personnel to have dial service to other Alabama Power Company locations. The meteorological and microwave communication systems are not required in the licensing basis to safely shutdown the plant or mitigate an accident.

Yard Drainage System: The yard drainage system is a combined system of culverts and open ditches that direct water (from rainfall) to natural drainage channels. The power block area, which is located on a small plateau, utilizes the elevation difference and resultant topography to direct rainfall runoff away from the facility. The yard drainage system assists in directing the rainfall runoff however the probable maximum precipitation (PMP) evaluation assumed all of the buried storm drainage system was inoperative and the PMP runoff was carried off on the ground (refer to FSAR section 2.4.10). The PMP evaluation demonstrated no flooding of a doorway or opening of a safety-related building would occur from the runoff, and therefore an operating storm drainage system is an added safeguard but is not relied upon in the licensing basis for FNP.

Tendon Access Gallery

The requested FNP plant-specific operating/aging experience related to the tendon access gallery is stated below:

(1) Flooding and Corrosive Environments in the Tendon Access Gallery:

FNP experience has identified groundwater intrusion into the Containment Tendon Access Gallery. The groundwater intrusion is through construction joints between the non-safety related tendon access gallery wall and the containment foundation. A sump pump system is located in the Tendon Access Gallery to pump out the water from the gallery. A few inches of water accumulation has been identified at some areas in the gallery during inspections.

In summary, the FNP tendon access gallery is a high humidity environment with water accumulation controlled by the installed sump pump system.

(2) Degradation of Prestressing Components:

No noticeable degradation of the prestressing system components (both steel and concrete) in the tendon access gallery has been observed. The prestressing system steel components that are exposed (not in the concrete) to the tendon access gallery environment are protected by canned enclosures filled with grease. The condition of these "cans" is checked as part of the containment inspections.

Some minor concrete leaching has been observed in the containment access gallery. Leaching has been identified (along with groundwater intrusion) at the interface joint between the gallery and the bottom of the containment foundation. The leaching material from the interface joint is considered insignificant in causing any deterioration (the groundwater at FNP is non-aggressive) and therefore does not result in any loss of function.

The FNP basis for not including the Tendon Gallery structure within the AMR scope pursuant to 10 CFR 54.4(a)(2) is as follows:

SNC agrees with the following excerpt from NUREG-1800, which asserts that the tendon access gallery does not perform an intended function, and that containment inspections (i.e., IWL inspections) *"provide reasonable assurance that the aging effects of the tendon anchorages, including those in the gallery, will continue to perform their intended functions":*

"The intended function of the post-tensioning system is to impose compressive forces on the concrete containment structure to resist the internal pressure resulting from a DBA with no loss of structural integrity. Although the tendon gallery is not relied on to maintain containment integrity during DBEs, operating experience indicates that water infiltration and high humidity in the tendon gallery can contribute to a significant aging effect on the vertical tendon anchorages that could potentially result in loss of the ability of the post-tensioning system to perform its intended function. However, containment inspections provide reasonable assurance that the aging effects of the tendon anchorages, including those in the gallery, will continue to perform their intended functions. Because the tendon gallery itself does not perform an intended function, it is not within the scope of license renewal."

Due to conditions which exist in the Tendon Access Gallery, this area has been identified for

inspections during future outages to ensure that the gallery does not degrade to an unacceptable structural condition. However, these inspections are not credited for License Renewal.

Based on it's review, the staff finds the applicant's response to RAI 2.4-1 acceptable, because it clearly describes the technical bases for determining that the circulating water structures and cooling towers; containment equipment hatch access enclosure; river water intake structure; meteorological & microwave structures and equipment; and yard drainage system are not within the scope of license renewal. The applicant has also verified that seismic II/I considerations are not applicable to any of the structures listed in LRA Table 2.2-1h.

In addition, the applicant described its plant-specific operating/aging experience for the tendon access gallery, including water intrusion through construction joints and the use of a sump pump system in the gallery. To date, there has been no significant degradation of prestressing system components. The applicant has identified the tendon access gallery for inspections during future outages, to ensure that the gallery does not degrade to an unacceptable structural condition; however, these inspections are not credited for License Renewal. The applicant quoted from NUREG-1800, which states: "Because the tendon gallery itself does not perform an intended function, it is not within the scope of license renewal."

Therefore, the staff considers its concern described in RAI 2.4-1 resolved.

Load handling systems have components that are both mechanical and structural in nature. The structural components are passive and long-lived. If a specific load handling system serves an intended function, then it is subject to an AMR. The staff identified the need for additional information about the applicant's scoping, screening, and AMR results for load handling systems, in order to complete its review. Therefore, by letter dated __ __ __, the staff issued RAI 2.4-3, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below:

Please clarify the complete scope of load handling systems in the Farley LR scope. LRA Section 2.3.3.4 "Overhead Heavy and Refueling Load Handling System" appears to be limited to the major heavy lift and refueling-related systems. Are there any other load handling systems that serve an intended function (e.g., seismic II/I), and are included in the LR scope? If so, please provide a description of the other load handling systems in the LR scope; define their intended functions; identify whether they are in the Mechanical Systems scope or Structures scope; and specify where the AMR is located in the LRA.

In its response to RAI 2.4-3, dated __ __ __, the applicant stated that:

> Section 2.3.3.4 "Overhead Heavy and Refueling Load Handling System" is limited to the major heavy lift and the refueling-related load handling systems. Included in the scope of license renewal for this LRA system are the containment polar cranes, reactor cavity manipulator cranes, spent fuel bridge cranes, and the spent fuel cask crane. The new fuel load handling systems are non safety-related and not in scope. Based on the observations made during field walkdowns, failure of the new fuel load handling systems could not prevent satisfactory accomplishment of any safety related function (spatial interaction). Therefore, the

new fuel load handling systems were not brought into the scope of license renewal as part of the evaluation for the "Overhead Heavy and Refueling Load Handling System".

All load handling systems (e.g., monorails, jib crane, new fuel load handling systems) used in Category I structures were put in scope as part of the scoping of the associated structure in Section 2.4 of the LRA. The "spaces approach" used to scope the civil/structural components in these structures ensures all load handling systems that serve an intended function (e.g., seismic II/I) were included in the scope of license renewal.

These components are in structural scope (Section 2.4 of the LRA) and their intended function is Structural Support. The Component Type "Steel Components: All Structural Steel" for each building covers the passive long-lived components for these items (e.g., AMR Tables 3.5.2-2, 3.5.2-3, etc.). The Structural Monitoring Program is credited for aging management of these passive long-lived components.

Based on it's review, the staff finds the applicant's response to RAI 2.4-3 acceptable, because the applicant has clearly described the load handling systems that are within the scope of license renewal and has provided an acceptable technical basis for excluding the new fuel load handling systems from the license renewal scope. The containment polar cranes, reactor cavity manipulator cranes, spent fuel bridge cranes, and the spent fuel cask crane are included in LRA Section 2.3.3.4 "Overhead Heavy and Refueling Load Handling System" under Mechanical Systems scoping and screening. The applicant reviewed all other load handling systems in Category I structures using a "spaces approach". The load handling systems that serve an intended function (e.g., seismic II/I) are included under Structures scoping and screening (LRA Section 2.4), as structural components of the Category I structures in which they are located. The components are all structural steel components, and the Structural Monitoring Program is credited for their aging management.

Therefore, the staff considers its concern described in RAI 2.4-3 resolved.

2.4.1 Containment Structure

2.4.1.1 Summary of Technical Information in the Application

2.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 and the referenced FNP UFSAR Sections 3.8, 6C, 6.2.3.4.1, and 9.1.4.2. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the containment structure that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of the LRA Section 2.4.1 identified one area in which additional information is necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated March 2, 2004, the staff issued RAI 2.4-7, to determine whether the applicant

has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below:

LRA Section 2.4.1 "Containment Structure" contains the following discussion related to electrical penetrations through containment:

> **2.4.1.3 Penetrations**
> In general, a containment penetration consists of a sleeve embedded in the concrete wall or floor and welded to the containment liner plate. Loads on the penetration are transferred to the containment structure. The process pipe or cable feed-through assembly passes through the sleeve and is seal welded to the sleeve via an appropriate adapter. Additional detail is provided below.
>
> **Electrical Penetrations**
> Electrical penetrations consist of a sleeve that passes through the containment boundary. The sleeve is welded to the containment liner plate. A cable feed-through assembly is inserted in the sleeve and welded to the sleeve inside containment for Conax and GE type penetrations. The feed-through assembly is screwed to the clip angle for a Westinghouse type penetration.

LRA Table 2.2-1f "Systems and Structures within the Scope of License Renewal – Electrical Components" specifically lists "(Electrical) Containment Penetrations". However, LRA Table 2.5.1 "Electrical Component Types Subject to Aging Management Review and their Intended Functions" does not specifically identify the cable feed-through assembly.

LRA Table 2.4.1 "Containment Structure Component Types Subject to Aging Management Review and their Intended Functions" does not identify any component group that would obviously include the cable feed-through assembly.

From the information in the LRA, the staff was not able to determine whether the applicant is treating the cable feed-through assembly as a component of the containment structure or as an electrical component. The staff requested the applicant to clarify its treatment of the cable feed-through assembly, and also to identify where the AMR is located in the LRA.

In its response to RAI 2.4-7, dated March 31, 2004, the applicant stated that:

For the Farley LRA, the cable feed-through assembly is treated as an electrical component with the electrical connection function addressed in the electrical scoping and screening evaluations. However, the pressure-boundary and fission product barrier function of the assembly is included in the civil/structural scoping and screening for the containment structure.

The last paragraph of the system description subsection of LRA Section 2.3.2.2, "Containment Isolation System" outlines the division of responsibility for containment penetration assemblies between the various disciplines (mechanical, electrical, and civil), however some minor clarifications are needed. This paragraph should read as follows (changes are identified by bold italics and strikeouts):

> "Note that the pressure boundary ***~~(metallic)~~*** portions of electrical penetrations,

pipe sleeve assembly surrounding process penetrations, and miscellaneous/spare mechanical penetrations that are not associated with a process system are included in the civil/structural screening described in Section 2.4 of this application. The ~~**non-metallic and**~~ conductor portions ***(e.g., electrical cables and connections)*** of electrical penetrations are included in the electrical/I&C screening described in Section 2.5 of this application."

Pressure-Boundary And Fission Product Barrier Function:
LRA Tables 2.4.1 and 3.5.2-1 list Component Types "Penetration Sleeves, Penetration bellows" and "Seals, Gaskets, and Moisture Barriers". The cable feed-through assemblies for electrical penetrations and the closure assemblies for the miscellaneous/spare mechanical penetrations are included in the "Penetration Sleeves, Penetration bellows" component type. The sealants and gaskets used in these electrical and mechanical penetration assemblies are included under the "Seals, Gaskets, and Moisture Barriers" component type.

Note that "Pressure Boundary" should have been included in the LRA as an Intended Function for the "Seals, Gaskets, and Moisture Barriers" component type (for consistency).

Electrical Connection Function:
FNP has both EQ and Non-EQ containment electrical penetrations. The cable feed-through assemblies for electrical penetrations that are subject to 10 CFR 50.49 environmental qualification (EQ) requirements are treated as TLAAs and addressed in Section 4.4 of the LRA (refer to Table 3.6.1 Item 3.6.1-1). The cable feed-through assemblies for Non-EQ containment electrical penetrations are included in the first two component types in LRA Tables 2.5.1 and 3.6.2-1:

- "Electrical cables and connections not subject to 10 CFR 50.49 EQ Requirements;" and

- "Electrical cables used in instrumentation circuits not subject to 10 CFR 50.49 EQ requirements that are sensitive to reduction in conductor insulation resistance."

Based on it's review, the staff finds the applicant's response to RAI 2.4-7 acceptable, because it clarifies the applicant's evaluation of the cable feed-through assembly for containment electrical penetrations. The pressure-boundary and fission product barrier function of the assembly is included in the civil/structural scoping and screening for the containment structure. The cable feed-through assemblies for electrical penetrations are included in the "Penetration Sleeves, Penetration bellows" component types in LRA Tables 2.4.1 and 3.5.2-1. The sealants and gaskets used in these electrical assemblies are included under the "Seals, Gaskets, and Moisture Barriers" component type in LRA Tables 2.4.1 and 3.5.2-1. The applicant also noted that "Pressure Boundary" should have been included in the LRA as an Intended Function for the "Seals, Gaskets, and Moisture Barriers" component type.

Therefore, the staff considers its concern described in RAI 2.4-7 resolved.

The staff's review of the LRA Section 2.4.1 identified a second area in which additional information is necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated _____, the staff issued RAI 2.4-8, to determine whether

the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below:

The staff requires additional information concerning the possibility that thermal insulation may serve an intended function, in accordance with 10 CFR 54.4(a)(2), to control the maximum temperature of safety-related structures and structural components that meet 10 CFR 54.4(a)(1). Possible examples are (1) maintaining the maximum temperature of steel and/or concrete elements of NSSS supports below the levels assumed in the design basis of the supports; and (2) maintaining the maximum temperature of structural concrete below the threshold levels of 150^{o}F for general areas and 200^{o}F for local areas around hot penetrations.

Thermal insulation is typically passive and long-lived. If it also serves an intended function in accordance with 10 CFR 54.4(a)(2), then it meets the criteria for inclusion within the scope of license renewal. Consequently, the applicant was requested to (1) identify any thermal insulation at Farley that serves an intended function in accordance with 10 CFR 54.4(a)(2); (2) describe plant-specific operating experience related to degradation of (a) thermal insulation in general, and (b) thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2); and (3) describe the scoping and screening evaluation for thermal insulation that serves an intended function in accordance with 10 CFR 54.4(a)(2), including the technical basis for either inclusion within or exclusion from the scope of license renewal.

The staff has not received the applicant's response to RAI 2.4-8. Therefore, RAI 2.4-8 remains open.

2.4.1.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of its review, the staff concludes that, pending satisfactory resolution of RAI 2.4-8, there is reasonable assurance that the applicant has adequately identified the components of the containment structure that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the containment structure that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2 Other Structures

2.4.2.1 Auxiliary Building

2.4.2.1.1 Summary of Technical Information in the Application

2.4.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 and the referenced FNP UFSAR Sections 2B.6.3, 3.8, and 9.1. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the auxiliary building that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of the LRA Section 2.4.2.1 identified one area in which a clarification is necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated March 2, 2004, the staff requested a clarification, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a). The staff's request for clarification is described below:

LRA Section 2.4.2.1 states that the Auxiliary Building is a reinforced concrete slab, bearing directly on the Lisbon foundation. However, FSAR Section 3.8.4.1A indicates that portions of the foundation consist of a reinforced concrete slab placed over 9 ft. 5 in. of concrete fill, which in turn bears on the Lisbon formation. FSAR Section 3.8.4.1A further indicates that another portion of the foundation consists of a reinforced concrete slab placed over 30 ft. of compacted fill, which in turn rests on a reinforced concrete mat bearing directly on the Lisbon formation. In addition, FSAR Section 3.8.5.1B indicates that the eastern section of the Auxiliary Building is supported on spread footings which bear on the Lisbon formation, and also states that loads are transmitted through cast-in place reinforced concrete columns. The applicant was requested to clarify whether all the concrete structural elements of the Auxiliary Building foundation (as described in the FSAR) are within the scope of license renewal. If not, provide the technical basis for their exclusion.

In its response, dated March 31, 2004, the applicant clarified that all the concrete structural elements of the Auxiliary Building foundation (as described in the FSAR) are within the scope of license renewal. The staff finds the applicant's clarification acceptable.

2.4.2.1.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the auxiliary building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the auxiliary building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2.2 Diesel Generator Building

2.4.2.2.1 Summary of Technical Information in the Application

2.4.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.2 and the referenced FNP UFSAR Sections 2B.6.5 and 3.8. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the diesel generator building that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff found that those portions of the diesel generator building that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in LRA Section 2.4.2.2. The specific component types that are subject to an AMR in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) are included in LRA Table 2.4.2.2.

2.4.2.2.3 Conclusion
The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the diesel generator building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the diesel generator building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2.3 Turbine Building

2.4.2.3.1 Summary of Technical Information in the Application

2.4.2.3.2 Staff Evaluation
The staff reviewed LRA Section 2.4.2.3 and the referenced FNP UFSAR Section 2B.6.9. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the turbine building that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff found that those portions of the turbine building that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in LRA Section 2.4.2.3. The specific component types that are subject to an AMR in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) are included in LRA Table 2.4.2.3.

2.4.2.3.3 Conclusion
The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal

were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the turbine building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the turbine building that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2.4 Utility/Piping Tunnels

2.4.2.4.1 Summary of Technical Information in the Application

2.4.2.4.2 Staff Evaluation
The staff reviewed LRA Section 2.4.2.4 and the referenced FNP UFSAR Section 3.8. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the utility/piping tunnels that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff found that those portions of the utility/piping tunnels that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in LRA Section 2.4.2.4. The specific component types that are subject to an AMR in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) are included in LRA Table 2.4.2.4.

2.4.2.4.3 Conclusion
The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the utility/piping tunnels that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the utility/piping tunnels that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2.5 Water Control Structures

2.4.2.5.1 Summary of Technical Information in the Application

2.4.2.5.2 Staff Evaluation
The staff reviewed LRA Section 2.4.2.5 and the referenced FNP UFSAR Sections 2.4.8.1,

2B.6, 2B.7, and 3.8. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the water control structures that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of the LRA Section 2.4.2.5 identified one area in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated __ __ __, the staff issued RAI 2.4-5, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below:

To completely clarify the scope of the ultimate heat sink structures, provide the following additional information:

(1) Describe the River Water system that transports water from the river water intake structure to the storage pond and explain why the structures in this system are not within the scope of license renewal. Also, can there be a reverse flow of water that can reduce the water level in the storage pond, and consequently jeopardize the ultimate heat sink? What structures would prevent such an occurrence and are they included in the LR scope?

(2) In LRA Section 2.4.2.5, the discussion of the Storage Pond Spillway Structure does not include a description of the Spillway Intake and Discharge Canals. These canals are described in FSAR Section 2.4.8.2. Further information on these canals (channels) is provided in FSAR Section 2.4.14.2, which states:

> The spillway channel shall be inspected after each operation of sufficient magnitude to have a potential for erosion. A discharge of 80 ft^3/s corresponding to a pool at elevation 187.0 has been selected as the minimum flow for which inspection shall be required. At this discharge the flow in the grassed discharge channel would have an average velocity of about 1.3 ft per second with a flow depth of 1.3 ft. The pond level will be monitored in the control room. Whenever the operator observes or inspection of the chart indicates that the pool level is greater than or equal to elevation 187.0, the channels and structure shall be inspected at the end of the discharge period, as required by the Technical Requirements Manual. Eroded areas that affect or can affect the channel bank slopes or that are more than 4 ft deep should be promptly repaired. Because of the expected infrequent use of the spillway, the channels and structure shall also be inspected biennially, as required by the Technical Requirements Manual.

In light of the above information, clarify whether the Spillway Intake and Discharge Canals are within the scope of license renewal. If not, explain why not.

In its response to RAI 2.4-5, part (1), dated __ __ __, the applicant stated that:

Except for some pond level switches and associated tubing (addressed in LRA Tables 2.3.3.5 and 2.3.3.7), the river water system at FNP is not in the scope of license renewal because it

does not meet the criteria of 10 CFR 54.4 (a). The storage pond is supplied from the river water system and the supply line outlet is physically located above the storage pond's normal water level as well as above the minimum emergency water level. Although the supply line outlet is slightly below the pond's maximum possible flood level (spillway elevation), any siphoning effect would be broken well before the pond water level reached the normal elevation or the minimum emergency elevation. Any reverse flow of water from the storage pond to the river via a siphoning effect in the river water system cannot deplete that portion of the pond's volume credited for emergency use. Therefore, the pond volume relied upon in an emergency cannot be depleted via the river water system.

In its response to RAI 2.4-5, part (2), dated __ __ __, the applicant stated that:

The Spillway Intake and Discharge Canals are earthen canal design features for directing the spillage flow from the emergency cooling pond (ultimate heat sink) resulting from an unusual rainfall/flooding event (exceeding the maximum 5-year storm per UFSAR Section 2.4.14.2). The Spillway Intake and Discharge Canals do not perform a safe shutdown or accident mitigation function and therefore do not meet the scoping criteria of 10 CFR 54.4(a)(1). These features do not perform a function that demonstrates compliance with the Commission's regulations for any of the events listed in 10 CFR 54.4(a)(3). In addition, there is no failure mode for the canals that can adversely affect a safety related function or the performance of safety related equipment and therefore do not meet the scoping criteria of 10 CFR 54.4(a)(2). The canals are inspected periodically and after any significant discharge event as stated in UFSAR Section 2.4.14.2, therefore the current licensing basis ensures the material condition of the canals is maintained. UFSAR Section 2.4.8.2 states for the canals that "Additional erosion protection is not required since the spillway structure is designed to prevent impairment of emergency cooling pond banks in the unlikely event of extreme channel erosion and degradation." Therefore, the spillway structure "protects" the emergency cooling pond banks and is in scope for license renewal, but the canals do no meet any of the 10 CFR 54.4(a) scoping criteria. (The Storage Pond Spillway Structure is in the scope of License Renewal as indicated in LRA Table 2.2-1e and Section 2.4.2.5.)

In summary, these canals do not satisfy the criteria as defined in 10 CFR 54.4(a) and so are not within the scope of license renewal.

Based on it's review, the staff finds the applicant's response to parts (1) and (2) of RAI 2.4-5 acceptable, because it clearly and concisely describes the technical bases for excluding the River Water System and the Spillway Intake and Discharge Canals from the scope of license renewal. The staff concurs with the applicant's conclusions.

Therefore, the staff considers its concern described in RAI 2.4-5 resolved.

2.4.2.5.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the water control structures that are within the scope of license

renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the water control structures that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2.6 Steel Tank Structures (Foundations and Retaining Walls)

2.4.2.6.1 Summary of Technical Information in the Application

2.4.2.6.2 Staff Evaluation
The staff reviewed LRA Section 2.4.2.6 and the referenced FNP UFSAR Sections 3.8, 6.2.2, 6.3, 9.2.7, 9.5.4, and 9B.4.2.1. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the steel tank structures (foundations and retaining walls) that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of the LRA Section 2.4.2.6 identified one area in which a clarification is necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated March 2, 2004, the staff requested a clarification, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a). The staff's request for clarification is described below:

In LRA Section 2.4.2.6 "Steel Tank Structures (Foundations and Retaining Walls)", it states

> The Emergency Diesel Generator Fuel Oil Storage Tanks are 40,000 gallon, seismic category I underground tanks. The tanks are supported by poured concrete and buried for protection.

LRA Table 2.4.2.6 does not specifically identify a component type to cover a buried concrete foundation. The staff requests the applicant to confirm that the subject buried concrete foundation is in the scope of license renewal, and to identify the component type in LRA Table 2.4.2.6 that includes this foundation.

In its response, dated March 31, 2004, the applicant confirmed that the buried concrete foundation for the Emergency Diesel Generator Fuel Oil Storage Tanks is in the scope of license renewal, and further stated that:

The component type "Concrete: Foundation" in LRA Table 2.4.2.6 is applicable to the Emergency Diesel Generator Fuel Oil Storage Tanks buried concrete foundation. The buried environment is identified in LRA Table 3.5.2-7 component type "Concrete: Foundation" with a corresponding environment of Below Grade, and is inclusive of the Emergency Diesel Generator Fuel Oil Storage Tanks buried concrete foundations.

The staff finds the applicant's clarification acceptable.

2.4.2.6.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the steel tank structures (foundations and retaining walls) that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the steel tank structures (foundations and retaining walls) that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.2.7 Yard Structures

2.4.2.7.1 Summary of Technical Information in the Application

2.4.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 and the referenced FNP UFSAR Sections 8.2.1, 9B.4.2.1, 11.3.7, and 11.5. The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the yard structures that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of the LRA Section 2.4.2.7 identified one area in which additional information is necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated __ __ __, the staff issued RAI 2.4-2, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's RAI is described below:

In LRA Section 2.4.2.7, the plant vent stacks are identified as "yard structures". However, in the first paragraph, it is stated "The plant vent stacks are evaluated as part of the Auxiliary and Radwaste Ventilation System in Section 2.3.3.10." In LRA Section 2.4.2.7, under the heading "Plant Vent Stack", it states "The vent stack is a Seismic Category I structure that is not required for safe shutdown" and "The vent stack is a non safety-related structure but its function is to maintain its structural integrity during a design basis event such that it does not impact other SR structures or components." It appears that the plant vent stacks are in the LR scope for seismic II/I considerations. LRA Table 2.3.3.10 does <u>not</u> list the plant vent stacks as a "Component Type". Please clarify which section of the LRA Chapter 2 includes the plant vent stacks (and their foundations) in its scope, and also identify where the AMR for the plant vent stacks (and their foundations) is explicitly listed in Chapter 3.5 tables of the LRA.

In its response to RAI 2.4-2, dated __ __ __, the applicant stated that:

The plant vent stacks are in LR scope as meeting the criteria identified in 10 CFR 54.4(a)(2).

The last sentence of the first paragraph of Section 2.4.2.7, "Yard Structures", which is quoted in the RAI, should have read (changes indicated in bold italics):

> "The plant vent stacks***' noble gas radiation monitors*** are evaluated as part of the Auxiliary and Radwaste Ventilation System in Section 2.3.3.10."

The vent stack structural elements are addressed in LRA Sections 2.4.2 and 3.5 as discussed below.

Each unit's plant vent stack is a steel tubular structure used as a gaseous release point for various process, filtration and ventilation systems. Each plant vent stack is anchored at it's base to the Auxiliary Building's ground level (155' elev.) floor slab, and laterally restrained where it exits the Auxiliary Building roof. Lateral restraints provided between the top of the stack and the roof are mounted to the containment structure.

Supporting steel for the vent stack is addressed in the Yard Structures evaluation in the component type "Steel components: All Structural Steel" in Tables 2.4.2.7 and 3.5.2-8. The vent stack *foundation* is addressed in the Auxiliary Building evaluation in the component type "Concrete: Interior" listed in Tables 2.4.2.1 and 3.5.2-2.

The tubular steel portion of the vent stack is not specifically addressed in the LRA tables but is shown in the Structural Monitoring Program scope for license renewal as detailed in LRA Section B.4.3.5. Table 2.4.2.7, "Yard Structures Component Types Subject to Aging Management Review and their Intended Functions," should have included the following line item:

Component Type	Intended Function
Steel Vent Stack	NSR Structural Support

Correspondingly, the aging management review summary for Yard Structures in LRA Table 3.5.2-8 should have included the following entry:

Component Type	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Note #**
Steel Vent Stack	NSR Structural Support	Carbon Steel	Outside	Loss of Material	Structures Monitoring Program	III.B6.1-a	3.5.1-29	C

Based on it's review, the staff finds the applicant's response to RAI 2.4-2 acceptable, because it corrects and clarifies the evaluation of the plant vent stacks contained in the LRA. The applicant identified a correction to LRA section 2.4.2.7 and additions to LRA Tables 2.4.2.7 and 3.5.2-8, which clearly indicate that the plant vent stacks are in the Structures scope and that the AMR results are in LRA Section 3.5.

Therefore, the staff considers its concern described in RAI 2.4-2 resolved.

2.4.2.7.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the yard structures that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the yard structures that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).

2.4.3 Component Supports

2.4.3.1 Summary of Technical Information in the Application

2.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.3 and the referenced FNP UFSAR Sections 3.2, 3.6.5.1, 3.7.3.14, 3.8, 5.5, 9.4, and App. 3K (Attach. B). The staff's review was conducted in accordance with the guidance described in Section 2.4 of the NUREG-1800.

In the performance of the review, the staff reviewed the UFSAR to determine if there were any structural or component functions of the component supports that were not identified as an intended function, in accordance with the requirements of 10 CFR 54.4(a). The staff did not identify any omissions. The staff then verified that the passive, long-lived components were subject to an AMR, in accordance with 10 CFR 54.21(a)(1).

The staff's review of the LRA Section 2.4.3 identified one area in which a clarification is necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated March 2, 2004, the staff requested a clarification, to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4(a), and the screening criteria of 10 CFR 54.21(a)(1). The staff's request for clarification is described below:

LRA Table 2.3.1.3 identifies "Pressurizer - Support Lugs" and "Pressurizer - Support Skirt and Flange", with a "Structural Support" intended function. These component types appear to be the ASME Class 1 component support for the pressurizer. However, LRA Section 2.4.1.4 "Containment Internal Structures" states "RCS supports are addressed in Section 2.4.3, "Component Supports". LRA Section 2.4.3.1 "Supports for ASME and Non-ASME Piping and Components" describes the supports for the reactor vessel, steam generator, reactor coolant pumps, and pressurizer. In order to clarify the treatment of pressurizer supports in the LRA,

please

(1) verify that the ASME Class 1 component supports for the reactor vessel, steam generators, reactor coolant pumps, and pressurizer are included in the Structures scope, under Component Supports. In LRA Table 2.4.3, only "RPV Supports" are explicitly identified.

(2) explain the Pressurizer - Support Lugs and Pressurizer - Support Skirt and Flange entries in LRA Table 2.3.1.3.

In its response, dated March 31, 2004, the applicant confirmed that the ASME Class 1 component supports for the reactor vessel, steam generators, reactor coolant pumps, and pressurizer are included in the Structures scope, under Component Supports in LRA Section 2.4.3.1. “RPV Supports” are listed in LRA Table 2.4.3 as a unique component type. Supports for steam generators, reactor coolant pumps, and pressurizers are included in LRA Table 2.4.3 under the component type “ASME & Non-ASME Piping and Component Support Members.” The applicant further explained that the pressurizer support skirt and flange is welded to the bottom portion of the pressurizer vessel, and the pressurizer support lugs are welded to the upper head of the pressurizer, and are integral with the pressurizer. These pressurizer sub-components are evaluated with the pressurizer in LRA Section 2.3. Structural support members interfacing with the pressurizer support lugs and support skirt and flange are included as structural components and evaluated in LRA Section 2.4.3.

The staff finds the applicant’s clarification acceptable.

2.4.3.3 Conclusion

The staff reviewed the LRA and related structural/component information to determine whether any structures, systems, or components that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the components of the component supports that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the component supports that are subject to an aging management review, as required by 10 CFR 54.21(a)(1).