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May 10, 2004

Docket Nos.: 50-348  
50-364

NL-04-0831

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant Units 1 and 2  
Application for License Renewal – Requests for Additional Information

Ladies and Gentlemen:

This letter is in response to your letter dated April 12, 2004 requesting additional information for the review of the Joseph M. Farley Nuclear Plant, Units 1 and 2, License Renewal Application. Responses to these Requests for Additional Information (RAIs) are provided in the Enclosure.

Mr. L. M. Stinson states he is a vice president of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

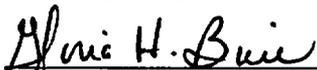
If you have any questions, please contact Charles Pierce at 205-992-7872.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

  
L. M. Stinson

Sworn to and subscribed before me this 10<sup>th</sup> day of May, 2004.

  
Notary Public

My commission expires: 6-7-05

LMS/JAM/slb

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Application for License Renewal - Responses to April 12, 2004 Requests for  
Additional Information

cc: Southern Nuclear Operating Company  
Mr. J. B. Beasley Jr., Executive Vice President  
Mr. D. E. Grissette, General Manager – Plant Farley  
Document Services RTYPE: CFA04.054; LC# 14034

U. S. Nuclear Regulatory Commission  
Ms. T. Y. Liu, License Renewal Project Manager  
Mr. L. A. Reyes, Regional Administrator  
Mr. S. E. Peters, NRR Project Manager – Farley  
Mr. C. A. Patterson, Senior Resident Inspector – Farley

Alabama Department of Public Health  
Dr. D. E. Williamson, State Health Officer

**ENCLOSURE**

**Joseph M. Farley Nuclear Plant Units 1 and 2  
Application for License Renewal  
Responses to April 12, 2004 Requests for Additional Information**

**RAI 2.4-8**

The staff requests 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 54.21(a)(1). Possible examples are maintaining the maximum temperature of steel and/or concrete elements of nuclear steam supply system (NSSS) supports below the levels assumed in the design basis of the supports; and maintaining the maximum temperature of structural concrete below the threshold levels of 150°F for general areas and 200°F for local areas around hot penetrations.

Thermal insulation is typically passive and long-lived. If it also serves an intended function, then it meets the criteria for inclusion within the scope of license renewal, in accordance with 10 CFR 54.4(a)(2). Consequently, the applicant is requested to (1) identify any thermal insulation at FNP, Units 1 and 2, 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.

**Response**

SNC brought thermal insulation into the scope of license renewal when the insulation served an intended function as defined in 10 CFR 54.4(a). Examples of thermal insulation that have been considered to be within the scope of license renewal are cable fire wrap (Reference: SNC responses to RAI 2.3.3.13-2 and RAI 2.3.3.13-3) and CO<sub>2</sub> tank insulation (Reference: FNP LRA Table 2.3.3-13). In a telephone conversation held on April 30, 2004, the NRC clarified that the scope of this question is limited to insulation to control the maximum temperature of safety-related structural elements.

The subject thermal insulation at FNP is not in scope under the provisions of 10 CFR 54.4(a)(1). Thermal insulation is not relied upon in FNP's current licensing basis (CLB) to perform any safety related function. Specifically, the thermal insulation at FNP does not serve a safety-related function to limit the temperature of structural steel and/or concrete elements, including the supports for the NSSS components. Thermal insulation is neither installed on the containment liner nor installed in any of the hot pipe penetrations. During normal operations, area and room temperature monitoring activities assure environmental temperatures are maintained within established limits. Environmental control systems that maintain temperatures during power operations and are not relied upon for safe shutdown or accident mitigation (e.g., reactor cavity cooling, containment air recirculation system, etc.) are non safety-related in FNP's CLB.

The subject thermal insulation at FNP is also not in scope under the provisions of 10 CFR 54.4(a)(2). SNC followed the guidance provided by the Commission and the staff in determining the non safety-related systems, structures, and components (SSCs) whose failure could prevent satisfactory accomplishment of a safety function. The Rule's Statement of Considerations (SOC) in Section III.c(iii), "Bounding the Scope of Review," provides the following guidance to assist an applicant in determining the extent to which failures must be considered when applying the scoping criterion:

*“Consideration of hypothetical failures that could result from system interdependencies that are not part of the CLB and that have not been previously experienced is not required. [...] However, for license renewal applicants, the Commission cannot exclude the possibility that hypothetical failures that are part of the CLB may require consideration of second-, third- or fourth-level support systems.”*

NUREG-1800 reiterates and expands on the 10 CFR 54.4(a)(2) scoping guidance provided in the Rule’s Statement of Considerations (SOC). NUREG-1800 section 2.1.3.1.2 states:

*“... the applicant should consider those failures identified in (1) the documentation that makes up its CLB, (2) plant-specific operating experience, and (3) industry-wide operating experience that is specifically applicable to its facility. The applicant need not consider hypothetical failures that are not part of the CLB, have not been previously experienced, or are not applicable to its facility.”*

The failure of thermal insulation during a design basis accident in containment (e.g., from damage due to jet impingement) is evaluated and determined not to cause clogging/blockage of the containment emergency sumps in the FNP CLB. No other failures of thermal insulation are identified in the CLB.

Thermal insulation is not identified in the FNP CLB as a supporting feature for structural SSCs that perform safety-related functions. The SNC position that the insulating property of insulation is not within the scope of the Rule concurs with prior applicants, most recently V. C. Summer Nuclear Station (refer to response to NRC RAI S AMR-1 in Attachment 1 of VCSNS response dated September 24, 2003).

In addition, SNC has conducted a review of FNP-specific and industry-wide operating experience associated with insulation. The review has determined that FNP has not experienced degradation of insulation impacting structural temperatures. Minor damage to insulation has occurred at FNP, due most often to mishandling, improper installation, and other human performance errors. A review of industry operating experience resulted in similar findings for insulation types used at FNP. The degradations identified were not aging related. SNC has concluded that there are no plausible aging effects for the subject insulation at FNP that would warrant an aging management program. This determination is consistent with previous applicants and NRC staff determinations (e.g., Safety Evaluation Report for the License Renewal Application for the Calvert Cliffs Nuclear Plant, December 1999, Section 2.2.3.13.2.1). Thus, under 10 CFR 54.4, SNC maintains that insulation will not fail in a manner that could prevent satisfactory accomplishment of any of the safety-related functions identified under 10 CFR 54.4(a)(1), or in a manner that could adversely impact the function of a safety-related SSC.

There has been specific ongoing discussion between the NRC Staff and SNC with regard to insulation used on the reactor coolant system (RCS) components and the impact of the loss of the insulation upon concrete temperatures inside the containment. As stated above, the failure of the insulation is not required to be considered, since that failure is neither considered in the FNP CLB nor identified through operating experience.

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However, there is additional defense-in-depth beyond the RCS insulation that assures concrete temperature limits are not exceeded. Technical Specification 3.6.5 limits bulk containment temperature to 120 °F or below. Various containment fans limit hot spots such that SNC does not expect containment concrete temperature thresholds would ever be exceeded. This position is in agreement with the positions of prior applicants, who have also not included the RCS system insulation within the scope of 10 CFR 54.4(a).

In conclusion, specific applications of thermal insulation at FNP are in scope under the criteria of 10 CFR 54.4(a)(3). Thermal insulation at FNP is not in scope under the provisions of 10 CFR 54.4(a)(1) or 10 CFR 54.4(a)(2).

**RAI B.3.4-1**

In the [Operating Experience] program attribute for the Reactor Vessel Surveillance Program (RVSP), Southern Nuclear Operating Company (SNC) states that it may use other industry surveillance data (i.e., supplemental or external surveillance data) that are relevant to the neutron irradiation embrittlement assessments (i.e., pressurized thermal shock (PTS), upper-shelf energy (USE), adjusted reference temperature, and P-T limit assessments) for FNP, Units 1 and 2. In Generic Letter 92-01, Revision 1, Supplement 1, "Reactor Vessel Structural Integrity," the staff recommended that U.S. licensees owning light-water power reactors apply all reactor vessel (RV) surveillance data deemed relevant to the neutron irradiation embrittlement assessments for their facilities' RV materials. In Section 2.3 of NRC NUREG-1511, Supplement 2, "Reactor Vessel Integrity Status Report," the staff provided its recommendations on how to apply supplemental, external surveillance data to the neutron irradiation embrittlement assessments for any given RV at a U.S. nuclear power plant.

If SNC is going to apply supplemental, external surveillance data to the neutron irradiation embrittlement assessments for FNP, Units 1 and 2, the staff requests that SNC provide additional clarification on how the supplemental surveillance data will be applied to the assessments and justification as to why the supplemental surveillance data are considered to be valid for incorporation into these assessments. Specifically, clarify whether or not the use of supplemental surveillance data will conform to the NRC's recommendations in GL 92-01, Revision 1, Supplement 1, and with the recommended guidelines in Section 2.3 of NUREG-1511, Supplement 2. Discuss which heats of material in the FNP, Units 1 and 2, RVs will be addressed by the supplemental data and clarify whether or not the use of the supplemental surveillance data will be implemented on a one-to-one equivalent basis with a corresponding heat of material in the RV. In addition, clarify whether the supplemental surveillance data will be adjusted to account for any variances in the irradiation temperatures for the FNP, Units 1 and 2, RVs and those for the external RVs (units other than FNP) from which the data has been taken. If supplemental surveillance data is to be used, clarify how the data will impact the results of the neutron irradiation embrittlement assessments that are evaluated in Section 4.2 of the LRA.

**Response**

In response to Generic Letter 92-01, Revision 1, Supplement 1, SNC applied all relevant industry data to determine "best estimate" copper and nickel values for FNP weld material. FNP's result was that using the "best estimate" copper and nickel content for FNP weld material did not cause the weld material to become limiting so FNP's neutron irradiation embrittlement assessments were not affected. The NRC has already accepted FNP's response to Generic Letter 92-01 and no additional supplemental or external data is expected to be applied to the Farley Reactor Vessel Surveillance Program.

**RAI B.3.4-2**

In the conclusion for the Reactor Vessel Surveillance Program (RVSP), as given in Section B.3.4.15 of LRA aging management program (AMP) B.3.4, SNC creates some ambiguity as to what types of exceptions from 10 CFR Part 50, Appendix H, that the applicant is referring to. 10 CFR 50.60(a) requires licensees of operating U.S. light-water reactors to implement the fracture toughness requirements of 10 CFR Part 50, Appendix G, and the RVSP requirements of 10 CFR Part 50, Appendix H. 10 CFR 50.60(b) permits licensees to use proposed alternatives to the requirements in these appendices if an exemption is requested and granted by the Commission under the exemption provisions of 10 CFR 50.12. The staff does not have an issue with the conclusion section for the RVSP if the exceptions the applicant is referring to are exemptions that have been requested under the provisions of 10 CFR 50.60(b) and granted by the staff under 10 CFR 50.12. However, if SNC is referring to any deviation from the pertinent requirements of 10 CFR Part 50, Appendix H, that has been identified as an exception to GALL AMP XI.M31, 10 CFR 50.60(b) requires that the exception be submitted as an exemption request for staff review and approval. The staff therefore requests confirmation that SNC will modify the conclusion section for the RVSP (LRA AMP B.3.4) to state that "The RVSP will be implemented and maintained in accordance with the requirements of 10 CFR Part 50, Appendix H, unless alternatives to the requirements of the rule have been requested and granted under the exemption provisions of 10 CFR 50.60(b) and 10 CFR 50.12," or else withdraw the statement "with NRC-approved exceptions" from the conclusion section for the AMP.

**Response**

No new exemptions to Appendix H requirements are anticipated for FNP. The statement in the FNP LRA refers to an existing exemption. That exemption is discussed in detail in FNP FSAR Section 5.4.3.6 and the NRC approved it in Supplement 5 to the FNP SER. Should a new exemption to Appendix H requirements be sought in the future, it will be requested under the exemption provisions of 10 CFR 50.60(b) and 10 CFR 50.12.