

June 2, 2004

LICENSEE: Southern Nuclear Operating Company
FACILITY: Joseph M. Farley Nuclear Plant, Units 1 and 2
SUBJECT: SUMMARY OF TELEPHONE CONFERENCES ON MARCH 15, 16, 17, AND 18, 2004, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND THE SOUTHERN NUCLEAR OPERATING COMPANY CONCERNING DRAFT REQUESTS FOR ADDITIONAL INFORMATION ON JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. MC0774 AND MC0775)

The U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Southern Nuclear Operating Company (SNC or the applicant) held telephone conferences on March 15, 16, 17, and 18, 2004, to discuss requests for additional information (RAIs), draft requests for additional information (D-RAIs), and questions concerning the Joseph M. Farley Nuclear Plant (FNP) license renewal application.

The conference calls were useful in clarifying the intent of the staff's questions. On the basis of the discussion, the applicant was able to better understand the staff's questions. No staff decisions were made during the telephone conferences. In some cases, the applicant agreed to provide information for clarification.

Enclosure 1 provides a list of the telephone conference participants. Enclosure 2 contains a listing of the RAIs, D-RAIs, questions discussed with the applicant, including a brief description on the status of the items. The applicant has had an opportunity to review and comment on this summary.

/RA/

Tilda Y. Liu, Project Manager
License Renewal Section A
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos: 50-348 and 50-364

Enclosures: As stated

cc w/enclosures: See next page

June 2, 2004

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SUBJECT: SUMMARY OF TELEPHONE CONFERENCES ON MARCH 15, 16, 17, AND 18, 2004, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND THE SOUTHERN NUCLEAR OPERATING COMPANY CONCERNING DRAFT REQUESTS FOR ADDITIONAL INFORMATION ON JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. MC0774 AND MC0775)

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Nuclear Plant, Units 1 and 2, Summary of Telephone Conferences, Dated June 2, 2004

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DRAFT REQUESTS FOR ADDITIONAL INFORMATION
MARCH 15-18, 2004**

March 15, 2004

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DRAFT REQUESTS FOR ADDITIONAL INFORMATION (Cont.)**

MARCH 15-18, 2004

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REVIEW OF LICENSE RENEWAL APPLICATION (LRA) FOR FARLEY UNITS 1 AND 2 APPLICANT'S RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION (RAI)

March 15, 2004

The U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Southern Nuclear Operating Company (SNC) held a telephone conference on March 15, 2004, to discuss the applicant's responses to staff's RAIs, dated March 5, 2004, and to follow-up a telephone conference, held on March 10, 2004, regarding certain D-RAIs. On the basis of the discussion, the applicant plans to revise some of its responses. A summary of the questions discussed and the applicant's proposed actions are presented below.

Question from Table 3.5.1

Item 3.5.1-23, Table 3.5.1 (page 3.5-27) of the FNP LRA lists Water Chemistry Program and monitoring of spent fuel pool water level as aging management programs credited to manage aging of Group 5 liners. FNP stated under the discussion column that AMR results are consistent with NUREG-1801 with some minor exceptions and loss of material due to localized corrosion will be managed by FNP Water Chemistry Control Program. The staff asked the applicant to clarify what constitutes the referred "some minor exceptions". The staff further asked whether spent fuel pool water level monitoring is credited as part of the FNP's AMPs for aging management of this item, and that if not, the applicant was requested to consider the spent fuel pool water level monitoring program as indicated in NUREG-1801, item III A5.2-b (page III A5-10).

Discussion: The applicant indicated that it understood the question. The staff indicated that this question would be sent as RAI 3.5-12.

RAI 3.5-4

In discussion of Item 3.5.12 in Section 3.5.2.2.4, the applicant notes that the moisture barrier is monitored under IWE for aging degradation. The industry experience indicates that the moisture barrier degrades with time, and any moisture accumulation in the degraded barrier corrodes the steel liner. The applicant is requested to provide information regarding the operating experience related to the degradation of moisture barrier and the containment liner plate at FNP. Please include a discussion of acceptable liner plate corrosion before it is reinstated to the nominal thickness.

Discussion: The staff asked the applicant to clarify the extent of liner plate bowing stated in the applicant's response dated March 5, 2004. Specifically, the applicant is requested to confirm if the bowing affects the integrity of the liner plate anchorages in the containment concrete. The applicant indicated that it understood the question, and agreed to provide a response to address this question via e-mail for clarification. The following is the applicant's e-mail response to the staff's request for clarification:

The liner plate is bowed out in mid span area (between supports). There is no indication of yielding of the support (inserts and welded studs).

Enclosure 2

RAI 4.3.4-1

10 CFR 54.21(c)(1)(ii) requires that the applicant demonstrate the adequacy of the analysis projected for the extended period of operation. In order for the staff to make a reasonable assurance conclusion, the applicant is requested to provide the following information:

- (a) Minimum required prestressing forces for each group of tendons,
- (b) Trend lines of the projected prestressing forces for each group of tendons based on the regression analysis of the measured prestressing forces (see NRC Information Notice 99-10 for more information).
- (c) Plots showing comparisons of prestressing forces projected to the end of the extended period of operation with the minimum required prestress for each group of tendons.

Discussion: The staff asked the applicant to present the minimum required prestressing forces in a format consistent with past industry practices, such as tendon/wire. The applicant indicated that it understood the question. The applicant agreed that it will inform or discuss with the staff if an alternative approach differing from what the staff proposed will need to be provided.

Section 4.2.3: Pressurized Thermal Shock

D-RAI 4.2.3.2-1

In License Renewal Application Table 4.2.3-1, Southern Nuclear Operating Company (SNC or the applicant) did not appear to apply the "ratio procedure" of Title 10 of the *Code of Federal Regulations* Parts 50.61(c)(2)(ii)(B) (10 CFR) when it performed its calculation of the 54 EFPY RT_{PTS} value for Reactor Vessel (RV) Intermediate Shell Axial Weld Seams 19-894 A & B (Heat No. 33A277). In this case, SNC calculated the 54 EFPY RT_{PTS} value for Intermediate Shell Axial Weld Seams 19-894 A & B to be 129°F, which was in exact agreement with the 54 EFPY RT_{PTS} value calculated by the staff for the welds when the "ratio procedure" was not included as part of the staff's basis for the RT_{PTS} calculation. When the "ratio procedure" of 10 CFR 50.61(c)(2)(ii)(B) was applied by the staff to its independent calculation of the 54 EFPY RT_{PTS} value for the welds, the staff calculated the 54 EFPY RT_{PTS} values to be 217°F, which causes the welds to become the limiting 54 EFPY beltline materials for PTS at Farley Unit 1. SNC's omission to apply the "ratio procedure" to the calculation of the 54 EFPY RT_{PTS} value for Intermediate Shell Axial Weld Seams 19-894 A & B is not in compliance with the requirements of 10 CFR 50.61(c)(2)(ii)(B) and must be corrected for the application to ensure that the 54 EFPY RT_{PTS} value for the RV beltline materials will continue to be calculated correctly in accordance with the requirements of 10 CFR 50.61.

Discussion: The applicant stated that it had provided the requested information which demonstrated that the ratio procedure had been correctly applied to the RT_{PTS} calculations for Farley Unit 1 Intermediate Shell Axial Welds 19-894 A & B (Weld Heat No. 33A277), contained in Section 4.2.3 of the LRA. Therefore, this question is WITHDRAWN and would not be sent as a RAI.

D-RAI 4.2.3.3-1

SNC's FSAR Supplement summary description for the time-limited aging analysis of pressurized thermal shock (i.e., TLAA for PTS, as described in Section A.4.1.2 of the application) summarizes the applicable PTS requirements that must be met to ensure continued compliance with 10 CFR 50.61 and discusses why the RV beltline materials at Farley Units 1 and 2 will be in compliance with the applicable requirements in 10 CFR 50.61, as projected through the expiration of the extended periods of operation for the units. However, the limiting RT_{PTS} value cited by the applicant for Farley Unit 1 in the FSAR Supplement summary description (i.e., 191 °F for Lower Shell Plate B6919-1) was determined using a process that was not in compliance with the applicable requirements of 10 CFR 50.61 for calculating the RT_{PTS} values operating reactors and is therefore not conservative (Please refer to the compliance issue raised in RAI 4.2.3.2-1). The limiting RT_{PTS} value cited by the applicant for Farley Unit 1 in the FSAR Supplement summary description must be corrected appropriately pending acceptable resolution of RAI 4.2.3.2-1. In addition, the limiting RT_{PTS} value cited by the applicant for Farley Unit 2 in the FSAR Supplement summary description (i.e., 193 °F) is not consistent with the limiting RT_{PTS} value cited by the applicant in Table 4.2.3-2 of the application (i.e., 208 °F, based on Intermediate Shell Plant B7212-1) and must be corrected appropriately.

Discussion: Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

RAI 4.2.3.3-1

Southern Nuclear Operating Company's (SNC's) FSAR Supplement summary description for the time-limited aging analysis of pressurized thermal shock (i.e., TLAA for PTS), is described in Section A.4.1.2 of the application. The limiting RT_{PTS} value cited by the applicant for Farley Unit 2 in the FSAR Supplement summary description (i.e., 193 °F) is not consistent with the limiting RT_{PTS} value cited in Table 4.2.3-2 of the LRA (i.e., 208 °F, based on Intermediate Shell Plant B7212-1). The staff requests that SNC revise the limiting RT_{PTS} value cited in the FSAR Supplement A.4.1.2 for Farley Unit 2 to be consistent with the limiting RT_{PTS} value reported in Table 4.2.3-2 of the LRA (i.e., 208 °F).

Section 4.2.4: Adjusted Reference Temperatures

D-RAI 4.2.4.2-1

The limiting 1/4T and 3/4T adjusted reference temperature values (i.e, RT_{NDT} values) for the reactor vessel (RV) beltline materials in operating reactors are used in the calculations of pressure-temperature (P-T) limits, which are calculated under the scope of the requirements of Section IV.A.2 to 10 CFR Part 50, Appendix G. The applicant did not provide the 3/4T RT_{NDT} values for the limiting 3/4T beltline materials in the RVs of Farley Units 1 and 2. In addition, according to independent calculations performed by the staff, it appears that SNC also did not apply the "ratio procedure" in Position 2.1 of RG 1.99, Revision 2, as part of its process for calculating the 1/4T RT_{NDT} value for Intermediate Shell Axial Welds 19-894 A & B (Heat No. 33A277), which are represented in the Farley Unit 1 RV Surveillance Program.

There is a regulatory basis for requiring that the "ratio procedure" be applied to the 1/4T and 3/4T RT_{NDT} calculations for the beltline welds represented in the Farley Unit 1 and 2 RV Surveillance Programs. The omission to apply the "ratio procedure" to the RT_{NDT} calculations is a non-compliance with the provisions of Technical Specification 5.6.6 for the Farley Pressure Temperature Limits Report (PTLR), and may effect both the current set (34 EFPY) and extended set (54 EFPY) of pressure-temperature (P-T) limit curves administratively controlled in the PTLR. Technical Specification 5.6.6 invokes the methodology of WCAP-14040-NP-A for calculating the Farley P-T limits that are administratively controlled in the Farley PTLR. The methods of WCAP-14040-NP-A require that the 1/4T and 3/4T RT_{NDT} calculations be performed in accordance with the methods of Regulatory Guide (RG) 1.99, Revision 2 [May 1988]. For welds represented in the RV Materials Surveillance Program, the methods of RG 1.99, Revision 2, dictate that the "ratio procedure" be applied to the surveillance data calculations when there is "clear evidence that the copper or nickel content for the surveillance welds differs from that of the vessel weld."

According to Table 1 of WCAP-14689, Revision 6, "Farley Units 1 and 2 Heatup and Cooldown Limit Curves for Normal Operation and PTLR Support Documentation," this is the case for the surveillance weld representing Intermediate Shell Axial Welds 19-894 A and B in the Farley Unit 1 RV Material Surveillance Program. The copper and nickel values listed for Intermediate Shell Axial Welds 19-894 A and B (Heat No. 33A277) are 0.258% Copper and 0.165% Nickel. The copper and nickel values listed for corresponding surveillance welds fabricated from this heat are 0.140% Copper and 0.190% Nickel. According to the staff's independent calculations, when these copper and nickel values, the "credible" surveillance data, and the "ratio procedure" are applied to the 1/4T and 3/4T RT_{NDT} calculations for Unit 1 Intermediate Shell Axial Welds 19-894 A and B, the 1/4T and 3/4T RT_{NDT} values for the welds at 54 EFPY will be 192.6°F and 141.9°F, respectively. This includes application of a "Margin Term" of 44°F to the calculations. Application of the "ratio procedure" to the 1/4T and 3/4T RT_{NDT} values calculations causes the beltline weld materials to be the limiting materials at the 1/4T location of the Farley Unit 1 RV at 54 EFPY, while Lower Shell Plate 6919-1 would remain as the limiting RV beltline materials for the 3/4T location. Since the "ratio procedure" was not applied to the RT_{NDT} calculations and since 3/4T RT_{NDT} calculations were not included in the application for the Farley Unit 1 and 2 beltline materials, the staff requests that the applicant provide its calculations of the 1/4T and 3/4T RT_{NDT} values for the RV beltline materials at Farley Unit 1 and 2 through 54 EFPY. This includes proper application of the "ratio procedure" in Regulatory Position 2.1 of RG 1.99, Revision 2, if any of the 1/4T and 3/4T RT_{NDT} values for the RV weld materials are based on available surveillance data for the weld materials, as obtained through implementation of the applicant's RV Surveillance Program (i.e., 10 CFR Part 50, Appendix H, program). The staff also requests that SNC revise the description in Section 4.2.4 of the application to identify what the limiting 1/4T and 3/4T RV beltline materials are for the Farley Units 1 and RVs and to list what the RT_{NDT} values are for these limiting RV beltline materials through 54 EFPY, as calculated in conformance with the guidelines of RG 1.99, Revision 2. The impact of this omission needs to be assessed for the set of 54 EFPY P-T limit curves in the Farley PTLR.

NOTE: In addition, this omission also impacts the calculation of the 1/4T and 3/4T RT_{NDT} values for these welds at 34 EFPY (which have been calculated by the staff to be 168.5°F and 118.8°F, respectively). The impact of the omission to apply the ratio procedure to the calculations of the 1/4T and 3/4T RT_{NDT} values for Unit 1 Intermediate Shell Axial Welds 19-894 A and B (Heat No. 33A277) should be evaluated for the set of 34 EFPY P-T limit curves in the Farley PTLR.

Discussion: Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

RAI 4.2.4.2-1

The limiting 1/4T and 3/4T adjusted reference temperature values (i.e, RT_{NDT} values) for the reactor vessel (RV) beltline materials in operating reactors are used in the calculations of pressure-temperature (P-T) limits, which are calculated under the scope of the requirements of Section IV.A.2 to 10 CFR Part 50, Appendix G. The applicant did not provide the 3/4T RT_{NDT} values for the limiting 3/4T beltline materials in the RVs of Farley, Units 1 and 2. The staff requests that the applicant supplement the discussion in Section 4.2.4 of the LRA to provide the 3/4T RT_{NDT} values for the limiting 3/4T beltline materials in the reactor vessels of Farley, Units 1 and 2, through 54 EFPY of operation.

Appendix B.3.5: Borated Water Leakage Assessment and Evaluation Program

D-RAI B.3.5-1

NUREG/CR-5576, Survey of Boric Acid Corrosion of Carbon Steel Components in Nuclear Plants [January 1990], summarizes boric acid leakage and corrosion events that occurred in the industry prior to 1990. More recently, industry experience (refer to the operating events summarized in NRC Bulletins 2002-01 and 2003-02 and in NRC Executive Order EA-03-009) has demonstrated that the bi-metallic partial penetration welds (Alloy 82/182 welds) used in the fabrication of upper and lower RV head penetration nozzles may be susceptible to primary water stress corrosion cracking (PWSCC) that could induce leakage of the borated reactor coolant over time. However, the corresponding partial-penetration welds at FNP, Units 1 and 2, were not listed in the SNC's (Alabama Power Company's) GL 88-05 response, dated May 31, 1988, with locations that could be potential sources of borated water leaks.

The staff seeks additional clarification regarding the list of components that are within the scope of the Borated Leakage Assessment and Evaluation Program and the process the applicant uses to augment the list of components that were originally specified within the scope of the applicant's GL 88-05 response, dated May 31, 1988.

- Provide the list of component locations that are currently within the scope of the Borated Water Leakage Assessment and Evaluation Program, and discuss the process that is used to augment the ASME Code Class 1 and 2 components locations within the scope of the aging management program (AMP) based on industry experience that is relevant to the scope and implementation of the AMP.
- Discuss how SNC's responses to the following NRC documents have been used to update the list of component locations and types of visual inspections credited within the scope of the Borated Water Leakage Assessment and Evaluation Program or within the scope of other aging management programs (AMPs) that provide for implementation of similar or more conservative types of inspections: NRC Bulletin 2002-01, dated March 29, 2002, and May 16, 2002; NRC's RAIs on the bulletin, dated January 17, 2003; NRC Bulletin 2003-02, dated September 19, 2003; and NRC Order EA-03-009, dated March 3, 2003; April 11, 2003; and April 18, 2003. If the responses have been

used to supplement the scope of the Borated Water Leakage Assessment and Evaluation Program or other AMPs, identify which component locations have been added to the scope of the program and clarify what type of visual examinations (i.e., specify whether VT-1, VT-2 or VT-3, and whether the visual examinations are enhanced, bare-surface, qualified, etc.) will be performed on the components within the current scope of the program.

Discussion: The applicant indicated that the question the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI B.3.5-2

The applicant's FSAR Supplement summary description for the Borated Water Leakage Assessment and Evaluation Program provides a general reference to commitments made in the applicant's response to Generic Letter (GL) 88-05. However, the staff's requests that the applicant amend the FSAR Supplement summary description to provide a more specific reference to the applicant's response (i.e., Alabama Power Company's response) to GL 88-05, dated May 31, 1988, and to any additional responses to NRC generic communications (i.e., Generic Letters, Bulletins, Orders, or Circular Letters) that are germane to the scope or other program attributes for the AMP or have been used to amend the program attributes for the AMP, including those responses to NRC Bulletins 2002-01 and 2003-02, and to NRC Order EA-03-009, as appropriate.

Discussion: The applicant indicated that it understood the question. This D-RAI will be sent as a formal RAI.

**REVIEW OF LICENSE RENEWAL APPLICATION (LRA) FOR FARLEY UNITS 1 AND 2
DRAFT REQUESTS FOR ADDITIONAL INFORMATION (D-RAIs)**

March 16, 2004

Section 3.6: Aging Management of Electrical Components

D-RAI 3.6.2-2

Exposure of electrical cables to localized environments caused by heat, radiation, or moisture can result in reduced insulation resistance (IR). Reduced IR causes an increase in leakage currents between conductors and from individual conductors to ground. A reduction in IR is a concern for circuits with sensitive, low-level signals such as radiation monitoring and nuclear instrumentation since it may contribute to inaccuracies in the instrument loop. The Farley LRA stated that a representative sample of instrumentation circuit cables with sensitive, high-voltage low-level signals which are installed in adverse localized environments will be tested at least every 10 years. This sampled approach to a small population in this category of sensitive cables is not consistent with previously accepted NRC position documented in Interim Staff Guidance (ISG) 15, "Revision of Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.E2, Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits."

During the AMP audit conducted at Southern Nuclear Operating Company (SNC) during the week of November 3, 2003, and by its letter NL-03-2418, dated December 5, 2003, the applicant indicated that it would amend the AMP to include all the instrumentation cables in this population. Provide the revised AMP.

Also, provide a description of the testing program that will be relied upon to detect aging degradation in sensitive, low-level signal circuits.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 3.6.2-3

Surface oxidation of high voltage electrical switchyard bus connections are not considered significant aging mechanism at FNP. In its letter NL-03-2418, dated December 5, 2003, SNC addressed this concern by stating that, based on the operating experience at FNP, the surface oxidation did not affect the function of the conductors and cable accessories. SNC also stated that the connection surfaces were coated with an anti-oxidant compound prior to tightening the connection. Confirm that the anti-oxidant compound is stable, at a minimum, through the period of the extended operation.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 3.6.2-4

The most prevalent mechanism contributing to loss of high voltage transmission conductor strength is corrosion which includes corrosion of steel core and aluminum strand pitting. In its letter NL-03-2418, dated December 5, 2003, SNC addressed the loss of strength caused by aging by referring to an Ontario-Hydro corrosion test which demonstrated satisfactory strength in 80-year old aluminum cable-steel reinforced (ACSR) conductor. Confirm that the conductors in use at FNP are identical to those tested by Ontario-Hydro or provide an evaluation of the differences. Also, indicate the useful life of the transmission conductors and their accessories such as line terminal connectors and line splices used at FNP.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 3.6.2-5

Section 2.2, Table 2.2-1f of the LRA indicates that the non-segregated phase bus duct is included within the scope of license renewal for FNP. In its letter NL-03-2418, dated December 5, 2003, question E17, SNC stated that the term non-segregated buses listed in Table 2.2 was the same component as metal enclosed cable bus listed in Table 2.5.1. The applicant stated that its review of metal enclosed cable bus has concluded that no aging effects exist requiring an aging management program.

Draft Interim Staff Guidance (ISG) -17, "Addition of Aging Management Program XI.E4, "Periodic Inspection of Bus Ducts" for License Renewal to the Generic Aging Lesson Learn Report," documents problems associated with bus ducts. The problems are related to the insulation material deterioration due to aging, moisture/debris intrusion, and bolt loosening due to thermal cycling. The applicant is requested to describe the aging management review used to reach its conclusion.

Section 3.6 did not address the non-segregated phase bus duct. The applicant is requested to describe how it plans to manage the aging affects associated with this equipment.

Discussion: Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

RAI 3.6.2-5

Section 2.2, Table 2.2-1f of the LRA indicates that the non-segregated phase bus duct is included within the scope of license renewal for FNP. In its letter NL-03-2418, dated December 5, 2003, question E17, SNC stated that the term non-segregated buses listed in Table 2.2-1f was the same component as metal enclosed cable bus listed in Table 2.5.1. The applicant stated that its review of metal enclosed cable bus has concluded that no aging effects exist requiring an aging management program.

Industry operating experiences, as documented in Information Notices 89-64, 98-36, 2000-14, and Sandia 96-0344, indicate degradations associated with bus ducts. The degradations are related to the insulation material deterioration due to aging, moisture/debris intrusion, and bolt loosening due to thermal cycling. The applicant is requested to describe the aging management review that was used to reach its conclusion.

Section 3.6 of LRA did not address the non-segregated phase bus duct. The applicant is requested to describe how it plans to manage the aging effects associated with this equipment.

D-RAI 3.6.2-6

The FNP FSAR does not describe the electrical system grounding. Are the safety related 4160V and 480V systems solidly grounded or grounded through an impedance? Describe the cable that grounds the system. Is it a bare conductor or insulated? How is the ground connection monitored for the effects of aging, such as corrosion or mechanical wear?

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

**REVIEW OF LICENSE RENEWAL APPLICATION (LRA) FOR FARLEY UNITS 1 AND 2
DRAFT REQUESTS FOR ADDITIONAL INFORMATION (D-RAIs)**

March 17, 2004 (a.m.)

Section 3.1: Aging Management of Reactor Vessel, Internals, and Reactor Coolant Systems

D-RAI 3.1.2.4-1

LRA Table 3.1.2-4 lists the aging effects of cracking and loss of material for the Alloy 690 TT channel divider plate, primary nozzle dam rings, and steam outlet flow limiter, and credits the Water Chemistry Control Program for aging management of these components during the extended period of operation. However, Table 3.1.2-4 notes that neither the component, nor the material and environment combination is evaluated for these SG components in the GALL report. The staff notes that an inspection program capable of detecting the presence of degradation should also be credited in conjunction with an aging management program. The staff also notes that the adequacy of the Water Chemistry Control Program in managing cracking and loss of material in these components cannot be ascertained without an identification of the responsible aging mechanisms.

The staff requests that the applicant discuss the following:

- a. Which program would be used to detect cracking and loss of material in these SG components?
- b. How this program will be used to detect degradation, thereby verifying that the Water Chemistry Control Program alone can effectively manage aging of these components during the period of extended operation (e.g., the water chemistry control is augmented with an inspection to detect the aging effects, or the water chemistry control program has a one-time inspection which includes this material/environment combination)?
- c. Identify the aging mechanisms responsible for the aging effects listed for these components.

Discussion: The applicant indicated that the question is clear. Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

D-RAI 3.1.2.4-1

LRA Table 3.1.2-4 lists the aging effects of cracking and loss of material for the Alloy 690 TT channel divider plate, primary nozzle dam rings, and steam outlet flow limiter, and credits the Water Chemistry Control Program for aging management of these components during the extended period of operation. However, Table 3.1.2-4 notes that neither the component, nor the material and environment combination is evaluated for these SG components in the GALL report. The staff notes that an inspection program capable of detecting the presence of degradation should also be credited in conjunction

with an aging management program. The staff also notes that the adequacy of the Water Chemistry Control Program in managing cracking and loss of material in these components cannot be ascertained without an identification of the responsible aging mechanisms.

The staff requests that the applicant discuss:

- a. The program that will be used to detect cracking and loss of material in these SG components,
- b. How the program identified in part a. will be used to detect degradation, thereby verifying that the Water Chemistry Control Program alone can effectively manage aging of these components during the period of extended operation (e.g., the Water Chemistry Control Program is augmented with an inspection to detect the aging effects, or the water chemistry control program has a one-time inspection which includes this material/environment combination), and
- c. Identify the aging mechanisms responsible for the aging effects listed for these components.

D-RAI 3.1.2.4-2

There is no aging effect for secondary closure bolting listed on page 3.1-73 of LRA Table 3.1.2-4. In addition, Note 8 to the table states that the secondary manholes are removed to facilitate sludge removal and visual inspection; therefore, loss of bolting preload is not an aging effect requiring management. However, the staff notes that the secondary manholes bolting may still be subjected to loss of prestress. The staff also notes that GALL Section XI.M18, Bolting Integrity, is an aging management program that covers all bolting within the scope of license renewal, including safety-related bolting, bolting for nuclear steam supply system (NSSS) component supports, bolting for other pressure retaining components, and structural bolting. Comprehensive bolting integrity programs encompass all safety-related programs as delineated by NUREG-1339, "Resolution of Generic Safety Issue 29: Bolting Degradation of Failure in Nuclear Power Plants," and that comprehensive maintenance for bolting is managed in accordance with EPRI TR-104213, "Bolted Joint Maintenance and Applications Guide."

The GALL AMP for bolting integrity recommends the scope of the applicant's program cover all bolting within the scope of license renewal, including safety-related bolting, bolting for NSSS component supports, bolting for other pressure-retaining components, and structural bolting. The staff requests that the applicant clarify or confirm that the secondary closure bolting is within the scope of the bolting integrity AMP. If not, then address the following:

- a. The GALL AMP for bolting integrity recommends preventative actions, such as proper selection of bolting material, proper use of lubricants and sealants, and actions that prevent or mitigate degradation and failure of safety-related bolting. The staff requests that the applicant discuss how the applicant's secondary closure bolting is managed using procedures consistent with these recommended preventative actions.

- b. The GALL AMP for bolting integrity recommends a program to monitor parameters and perform inspections. The effects of aging on intended function are monitored for closure bolting. Bolting used for NSSS component supports is monitored for cracking. Bolting for pressure-retaining components is inspected for signs of leakage. Structural bolting is inspected for indication of potential problems such as corrosion. The staff requests that the applicant discuss how the applicant's secondary closure bolting is monitored and inspected for degradation.
- c. The GALL AMP for bolting integrity recommends a program for the detection of aging effects, such as the use of volumetric expansion determination, visual examination, or tests such as proof tests by tension or torquing, in-situ ultrasonic tests, or hammer tests. The staff requests that the applicant discuss how their procedures for detection of aging effects in the applicant's secondary closure bolting is consistent with the recommended program.
- d. The GALL AMP for bolting integrity recommends a program for monitoring and trending to ensure the timely detection of cracks and leakage. The staff requests that the applicant discuss how the applicant's procedures for monitoring and trending for the applicant's secondary closure bolting is consistent with the recommended program.
- e. The GALL AMP for bolting integrity recommends the establishment of acceptance criteria that specifies the action to take when degradation is detected. The staff requests that the applicant discuss how the applicant's acceptance criteria to take action upon the detection of degradation of secondary closure bolting is consistent with the recommended program.
- f. The GALL AMP for bolting integrity lists operating experience as a technical basis for the bolting integrity programs which have been developed and implemented in accordance with commitments made in response to NRC communications on bolting events. The staff requests that the applicant provide details of the most recent inspections of secondary closure bolting to support the assertion that the applicant's program for management of degradation has been effective.
- g. The staff requests that the applicant discuss whether the maintenance procedure used to remove and re-attach the secondary manhole bolting references GALL AMP XI.M18. This discussion should also discuss how the procedures governing the removal and re-attachment of secondary manhole bolting are equivalent to recommendations and guidelines in NUREG-1339 and EPRI TR-104213.
- h. The staff requests that the applicant specify all the bolting components included in the entry of secondary closure bolting listed on page 3.1-73 of LRA Table 3.1.2-4. In addition, the staff requests the applicant to discuss the management of these components.

Discussion: Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

D-RAI 3.1.2.4-2

There is no aging effect for secondary closure bolting listed on page 3.1-73 of LRA Table 3.1.2-4. In addition, Note 8 to the table states that the secondary handholes are removed to facilitate sludge removal and visual inspection; therefore, loss of bolting preload is not an aging effect requiring management. However, the staff notes that the secondary manholes bolting may still be subjected to loss of prestress.

The staff requests that the applicant provide details (and a technical basis) on how loss of prestress of secondary closure bolting is managed.

D-RAI 3.1.2.4-3

LRA Table 3.1.2-4 lists the aging effects of cracking and/or loss of material for the feedwater distribution assembly, primary manway covers and disc inserts, tube support plates, flow distribution baffles, and antivibration bars, and credits the Water Chemistry Control Program for aging management of these components during the period of extended operation. However, the staff notes that an inspection program capable of detecting the presence of degradation should also be credited in conjunction with this AMP.

The staff requests that the applicant discuss which program is credited for detecting cracking and loss of material in these steam generator components. And discuss how this program will verify that the Water Chemistry Control Program alone can effectively manage aging of these components during the period of extended operation.

Discussion: Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

D-RAI 3.1.2.4-3

LRA Table 3.1.2-4 lists the aging effects of cracking and/or loss of material for the feedwater distribution assembly, primary manway covers and disc inserts, tube support plates, flow distribution baffles, and antivibration bars, and credits the Water Chemistry Program for management of these components during the period of extended operation. In addition, the Steam Generator Program is also credited for the management of cracking and loss of material for the feedwater distribution assembly, tube support plates, flow distribution baffles, and antivibration bars.

The staff requests that the applicant provide details (and a technical basis) on how the program(s) credited for the management of cracking and/or loss of material in these steam generator components will detect cracking and/or loss of material.

D-RAI 3.1.2.4-4

There are no aging effects requiring management listed for the inside environment (i.e., exterior surfaces inside the containment structure) for the feedwater inlet nozzle, secondary shell penetrations, upper head with integral steam nozzles, upper shells, lower shells, and transition cones in LRA Table 3.1.2-4. GALL AMP XI.M10, "Boric Acid Corrosion," states that the program covers any carbon steel and low-alloy steel structure or component on which borated water may leak.

In light of recent events at Davis-Besse that involved the leakage of borated coolant water and subsequent corrosion of a ferrous component, the staff requests that the applicant discuss why loss of material due to borated water leakage was not listed as an aging effect requiring management, and describe the program that will detect and manage borated water leakage and corrosion of the exterior surfaces (exposed to the inside environment) for these steam generator components.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 3.1.2.4-5

The applicant's Steam Generator Program is based on NEI 97-06, and is consistent with GALL Section XI.M19 (Steam Generator Tube Integrity), which is an aging management program that is credited for managing the aging effects of the steam generator tubes and tube plugs. GALL Section XI.M19 recommends preventative measures to mitigate degradation related to corrosion phenomena, assessment of degradation mechanisms, inservice inspection of steam generator tubes to detect degradation, evaluation and plugging or repair, and leakage monitoring to maintain the structural and leakage integrity of the pressure boundary. The applicant also credits its Steam Generator Program to manage the aging effects of secondary-side internals, which are listed in LRA Table 3.1.2-4 and repeated as follows:

- Feedwater distribution assembly (cracking and loss of material)
- Primary moisture separator and sludge collector assembly (loss of material)
- Secondary moisture separator assembly (loss of material)
- Stayrod assemblies (loss of material)
- Tube bundle wrapper and support assembly (loss of material)
- Tube support plates, flow distribution baffles, and anti-vibration bars (cracking and loss of material)
- Tubesheet (loss of material)

Since GALL Section XI.M19 is specific to the aging management of tubes and tube plugs, it is not clear how the steam generator secondary-side internals are managed. Therefore, staff requests that the applicant address the following program elements for the Steam Generator Program:

- a. Scope of the program: Clarify that the scope of the Steam Generator Program credited for the management of the aging effects of the steam generator secondary-side internals includes the components listed above.

- b. Preventative actions: Discuss how the steam generator secondary-side internals are managed using preventative measures, such as materials selection and component design, so that degradation and failure are prevented or mitigated.
- c. Parameters monitored or inspected: Discuss the aspects of the Steam Generator Program that pertain to parameters monitored or inspections performed for signs of degradation of the steam generator secondary-side internals.
- d. Detection of aging effects: Discuss how the aging effects will be detected in the steam generator secondary-side internals. Include a discussion of the methods used, such as visual inspection, ultrasonic and eddy current exams, etc., and their technical basis.
- e. Monitoring and trending: Discuss how monitoring and trending will be used to detect, in a timely manner, aging effects in the applicant's steam generator secondary-side internals.
- f. Acceptance criteria: Discuss how the acceptance criteria that specifies what action that will be taken upon the detection of degradation in the applicant's steam generator secondary-side internals.
- g. Operating experience: Provide details of the most recent inspections of the steam generator secondary-side internals to support the assertion that the applicant's program for management of degradation is effective. Include in the discussion the operating experience of other plants with similar steam generator secondary-side internals.

Discussion: The applicant indicated that the question is clear. Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question will be sent as a formal RAI, and Part f of this question is revised as follows.

- f. Acceptance criteria: Discuss the acceptance criteria, against which the need for corrective actions will be evaluated, and what actions will be taken upon the detection of degradation in the steam generator secondary-side internals.

D-RAI 3.1.2.4-6

The applicant's FSAR states that the Steam Generator Program, used to perform tube surveillance, is in accordance with the Technical Specifications, and that the Steam Generator Program is based on NEI 97-06. The applicant also states that the Steam Generator Program is consistent with the ten attributes of the aging management program GALL Section XI.M19 (Steam Generator Tube Integrity).

However, the FSAR does not describe the management of the aging effects of the steam generator secondary-side internals. The staff requests that the applicant state in the FSAR that the aging effect of steam generator secondary-side internals will be managed in a manner consistent with the attributes described in RAI 3.1.2.4-5.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Appendix B.3.5: Borated Water Leakage Assessment and Evaluation Program

D-RAI B.3.5-2 (follow-up to the March 15, 2004 telephone conference)

The applicant's FSAR Supplement summary description for the Borated Water Leakage Assessment and Evaluation Program provides a general reference to commitments made in the applicant's response to Generic Letter (GL) 88-05. However, the staff's request that the applicant amend the FSAR Supplement summary description to provide a more specific reference to the applicant's response (i.e., Alabama Power Company's response) to GL 88-05, dated May 31, 1988, and to any additional responses to NRC generic communications (i.e., Generic Letters, Bulletins, Orders, or Circular Letters) that are germane to the scope or other program attributes for the AMP or have been used to amend the program attributes for the AMP, including those responses to NRC Bulletins 2002-01 and 2003-02, and to NRC Order EA-03-009, as appropriate.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

REVIEW OF LICENSE RENEWAL APPLICATION (LRA) FOR FARLEY UNITS 1 AND 2 DRAFT REQUESTS FOR ADDITIONAL INFORMATION (D-RAIs)

March 17, 2004 (p.m.)

Section 2.2: Plant Level Scoping Results

D-RAI 2.2-5

Clarify how the components listed below are addressed in the Farley LRA. These components are shown as being within the scope of license renewal on the license renewal boundary drawings. However, they are not listed in the LRA tables (e.g., Table 2.3.3.5 for open-cycle cooling water system components subject to an AMR). These components are passive and long-lived, and serve a pressure boundary intended function. Justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

- a. Flexible hoses/connections and flexible joints shown at multiple locations in the open-cycle cooling water, closed-cycle cooling water, and emergency diesel generator systems.
- b. Nitrogen cylinders and air tanks shown within the scope of license renewal on several license renewal boundary drawings. However, these components are not listed in the LRA tables for components subject to an AMR. If they are excluded because they are subject to replacement as defined in 10 CFR 54.21(a)(1)(ii), describe the schedule for periodic replacement or the monitoring program and the criteria for replacement if they are replaced on condition.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.5: Open-Cycle Cooling Water System

D-RAI 2.3.3.5-1

- a. On license renewal boundary drawing A-200475L, Sheet 47, the compressed air filter N2P16F560 is shown as being within the scope of the license renewal, however, it is not listed in Table 2.3.3.5 as being subject to an AMR. Air filters are passive and long-lived components, and serve a pressure boundary intended function. Justify the exclusion of the filter housing from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).
- b. On license renewal boundary drawings A-170059L, Sheet 146 and A-200475L, Sheet 47, there are two components with symbols, which appear to be a roto-flow meter and a pressure regulator, that are not identified in the license renewal boundary drawings for P&ID legend and symbols. These components are shown as being within the scope of license renewal. Provide additional information to identify these components and clarify whether they are included in LRA Table 2.3.3.5. If not, justify their exclusion from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.6: Closed-Cycle Cooling Water System

D-RAI 2.3.3.6-1

For the Units 1 and 2 reactor coolant drain tank heat exchangers (Q1G21H001 and Q2G21H001):

- a. LRA Table 2.3.3.6 lists the heat exchanger tubesheet as being within the scope of license renewal and subject to an AMR. However, the heat exchanger channel is shown as outside the scope of license renewal on Sheet 2, at location G-4, of license renewal boundary drawings D-175002L and D-205002L. Heat exchanger channels serve a pressure boundary intended function, and are passive and long-lived components. Justify the exclusion of the reactor coolant drain tank heat exchanger channel from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.
- b. Table 2.1-3 of NUREG-1800 lists the intended functions of the heat exchanger as heat transfer and pressure boundary. Clarify why the heat transfer intended function is not listed in LRA Table 2.3.3.6 as an intended function for the reactor coolant drain tank heat exchangers.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.6-2

The Units 1 and 2 post accident sample coolers (Q1P15H001A/B and Q2P15H001A/B) on license renewal boundary drawings D-175002L and D-205002L, Sheet 3, at locations E-10 and E-11, are depicted as outside the scope of license renewal. However, these coolers are shown as being within the scope of license renewal on the Units 1 and 2 sampling system boundary drawings (Sheet 1 of license renewal boundary drawing D-175009L at location E-7 and Sheet 1 of license renewal boundary drawing D-205009L at locations D-7 and A-6).

- a. Explain why the post accident sample coolers are considered outside the scope of license renewal as shown on license renewal boundary drawings D-175002L and D-205002L, Sheet 3.
- b. Explain whether the closed-cycle cooling water (CCW) system pipe segments and valves (e.g., globe valve NV181A) associated with these coolers should be within the scope of the license renewal and subject to an AMR. If not, justify the exclusion of these components from being within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.6-3

License renewal boundary drawings D-175002L and D-205002 have notations that are not explained in the standard P&ID symbol legend or license renewal drawing legend. For example, barriers shown on Sheet 3 of license renewal boundary drawings D-175002L and D-205002L (at locations B-6 and B-8, C6 and C8, and D6 and D8) are not defined in the CCW system drawings or the legend drawings. Define these notations and explain the significance of including these barriers in the license renewal boundary drawings.

Discussion: The staff and the applicant agreed that the D-RAI and associated response were clear. The staff informed the applicant and the applicant agreed that this D-RAI will be combined with other D-RAIs that are of CLARIFYING and/or CONFIRMATORY in nature, and will be sent under one umbrella RAI.

Section 2.3.3.7: Compressed Air System

D-RAI 2.3.3.7-1

License renewal boundary drawings D-170131L, Sheet 2, at location B13 and D-200019L, Sheet 1, at location B11 show compressed air lines, which are outside the scope of license renewal, continuing to "Air to Essential Instruments" on drawings D-170473, Sheet 1 and D-200020, Sheet 1. However, drawings D-170473, Sheet 1 and D-200020, Sheet 1 are not included in the license renewal boundary drawings provided for review. Identify the "essential instruments" and whether intended functions are performed that rely on the compressed air supplied from these air lines, or provide drawings D-170473 and D-200020, Sheet 1. This will allow the staff to determine whether the instrumentation air components on the lines to the "essential instruments" should be considered as being within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.7-2

The staff is seeking clarification and explanation as to why certain components and their associated pipe segments and valves are considered outside the scope of license renewal and not subject to an AMR, while components in parallel trains are considered to be within the scope of license renewal and subject to an AMR.

- a. License renewal boundary drawings D-170131L and 200019L (for Units 1 and 2, respectively), Sheet 1 depict that trains "A" and "B" of the air compressors (C001A/B), air receivers (T001A, T001B1, and T001B2) and their associated piping to the check valve downstream of the receivers are excluded from the scope of license renewal. However, license renewal boundary drawings D-170131L, Sheet 5 and D-200019L,

Sheet 2 show that the train “C” air compressor, air receiver and their associated piping are within the scope of the license renewal. For both units, describe how the above-mentioned components for trains “A” and “B” differ from the components for train “C.” Explain how these differences were considered in the scoping and screening process for trains “A” and “B.”

- b. For trains “A” and “B,” explain why piping and valves downstream of the check valves (shown on license renewal boundary drawings D-170131L and D-200019L, Sheet 1, at locations B6, E6 and G6) are considered to be within the scope of license renewal, if the air compressors and receivers are considered not within scope.
- c. LRA Table 2.3.3.7 lists “air dryer” as a single component rather than “air dryers” as multiple components that are subject to an AMR. Clarify if any of the instrument air dryers or service air dryers are excluded from being subject to an AMR. If so, justify the exclusion of those dryers from being subject to an AMR accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: For Part c of the question, the applicant indicated that this was an editorial error. The correct term is “air dryers.” The applicant agreed that this item will be corrected in an ERRATA letter that will be forthcoming. The applicant indicated that the question is clear. Part a and b of this D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.7-3

Clarify whether the components of the dryer and/or compressor assemblies are scoped and screened as complex assemblies. Regarding complex assemblies, Table 2.1-2 of NUREG-1800 states that “some structures and components, when combined, are considered a complex assembly... An applicant should establish the boundaries for each assembly by identifying each structure and component that makes up the complex assembly and determining whether or not each structure and component is subject to an AMR.” If the dryer and compressor assemblies are treated as complex assemblies, identify the boundaries of the dryer and air compressor assemblies so that the staff may determine whether the subcomponents are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.7-4

License renewal boundary drawing D-170131L, Sheet 5, at location G8 shows a Y-strainer, which is noted as “strainer by field,” as being within the scope of license renewal. Strainers are passive and long-lived components, and serve debris protection and pressure boundary intended functions. Justify why the Y-strainer is excluded from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.14: Diesel Fuel Oil System

D-RAI 2.3.3.14-1

License renewal boundary drawing D-170060L shows the storage tanks and day tanks as within scope of license renewal. These tanks are also listed in Tables 2.3.3.14 as being subject to an AMR. However, the details of the day tanks shown on drawings B-170058, Sheets 24 through 28, and the storage tanks shown on Sheets 32 through 36, are not included in the license renewal boundary drawings provided for review. Confirm that all internal and external subcomponents of the day tanks and storage tanks (for example, manholes and manhole covers) are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively, or provide the tank drawings B-170058, Sheets 24 through 28 and the storage tanks shown on Sheets 32 through 36 for review.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.14-2

LRA Table 2.3.3.14 lists pipe guards as components that are subject to an AMR. Also, license renewal boundary drawings D-170808L, Sheets 1 and 2, and D-200213L show pipe guards from the fuel day tanks vent line to the diesel bay wall as being within scope of license renewal. However, pipe guards on 1½" HBC-224 pipe lines from the valve boxes to the day tank containment bay are shown on the license renewal boundary drawing D-170060L as excluded from the scope of license renewal. These pipe guards provide shelter protection for the fuel oil transfer lines, and are passive and long-lived components. Justify the exclusion of these pipe guards from being within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.14-3

License renewal boundary drawing D-170060L shows that portions of the 3" HBD-443 line, at locations G3, G5, G8, G10 and G12 are within the scope of license renewal. However, the isolation valves (NSY52-V514, V513, V512, V511 and V510; at locations H3, H5, H8, H10 and H13, respectively) and the portions of the line HBD-443 downstream of the valves are shown as outside the scope of license renewal. It appears that these valves provide a pressure boundary isolation for the portions of the pipe that are within the scope of license renewal. The isolation valve bodies are passive and long-lived. Explain why these isolation valves are excluded from the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.14-4

License renewal drawings D-170808L, Sheets 1 and 2; D-170809L, Sheets 1 and 2; and D-200213L show an instrumentation symbol that is not identified on the “Standard P&ID Legend” on drawing D-175016L. Instrumentations designated as NSR43MA506 on D-170808L, Sheet 1 at location H7; N1R43MA507 on D-170808, Sheet 2 at location H6; NSR43MA508 on D-170809L, Sheet 1 at location F7; N1R43MA510 on D-170809, Sheet 2 at location F7; and N2R43MA509 on D-200213L, at location H7 are not defined in the Farley LRA, nor are they described in the UFSAR. Define these instrumentation components and clarify whether they penetrate the fuel oil supply tank pressure boundary. If so, explain why they are excluded from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.15: Emergency Diesel Generator System

D-RAI 2.3.3.15-1

The non-safety-related air dryers/after coolers in the air start systems for the emergency diesel generators (EDG) are shown as excluded from scope of license renewal on the license renewal boundary drawings. The staff is concerned that the safety-related air reservoir tank could not perform its intended function should the air dryer/after cooler fail. Since the air dryer/after cooler removes moisture and cools down air entering the reservoir, it prevents the EDG starting air system from clogging due to excessive moisture. Explain why these dryers/after coolers are excluded from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.15-2

The staff is unable to determine how sight glasses, air distributors and vacuum manometers shown at many locations on the EDG boundary drawings (D-170800L, D-170801L, D-170804L, D-170805L, D-170806L, D-170807L, D-200209L, D-200211L, D-200212L) are addressed in the LRA. These components are shown as being within the scope of license renewal on the license renewal boundary drawings, however, they are not listed in LRA Table 2.3.3.7 for EDG components subject to an AMR. These components are passive and long-lived, and serve a pressure boundary function. Clarify whether the aforementioned components are included in the component types listed in LRA Table 2.3.3.7. If not, justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.15-3

Section 2.3.3.15 of the LRA states that the EDG air intake and exhaust system is one of the EDG support systems. UFSAR Figure 9.4-2 (referred to in LRA Section 2.3.3.15), shows the air exhaust system as being located on the roof of the DG building. However, the UFSAR does not provide any description or any other drawing which identifies the mechanical components and their associated piping (ducts and fittings) of the air intake and exhaust system. LRA Table 2.3.3.15 lists "Duct & Fittings" as a component type subject to an AMR. Since the LRA does not provide any description or any license renewal boundary drawings associated with the EDG air intake and exhaust system, the staff is unable to verify that all in-scope, passive, long-lived mechanical components and their associated piping are adequately identified and evaluated for an AMR. For the staff to review the EDG air intake and exhaust system, provide a description or license renewal boundary drawing which identifies the components of the system, and that delineates which components are considered to be within the scope of license renewal and subject to an AMR. Justify the exclusion of the mechanical components of this system from being within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. Based on the discussion with the applicant, the staff indicated and the applicant agreed that this question is revised as follows and will be sent as a formal RAI.

License renewal diagram D-506446L shows the following components as within the scope of license renewal. However, these components are not listed in Table 2.3.3-15 as a component type subject to an AMR. These components are passive and long-lived components. Clarify whether these components are included with another component type. If not, explain why they are not included in Table 2.3.3-15 in accordance with the requirements of 10 CFR 54.21(a)(1), or update the corresponding tables to include these components.

- a. Intake silencers QSR43F503A-A, QSR43F503C-A, QSR43F503E-B, QSR43F503B-B, and QSR43F503D-B at locations G10, G9, G7 and G3, respectively
- b. Large and small mufflers (silencers) QSR43F502A-A, QSR43F502E-B, and QSR43F502B-B, QSR43F503C-A, and QSR43F503D-B at locations C10, C6, C4, E9, and E4, respectively
- c. Expansion joints at locations E10, E9, E7, E5, and E3

D-RAI 2.3.3.15-4

Clarify whether the components of the EDGs are scoped and screened in the LRA as complex assemblies. Regarding complex assemblies, Table 2.1-2 of NUREG-1800 states that "some structures and components, when combined, are considered a complex assembly... An

applicant should establish the boundaries for each assembly by identifying each structure and component that makes up the complex assembly and determining whether or not each structure and component is subject to an AMR.” If the EDGs are treated as complex assemblies, identify the boundaries of the EDGs so that the staff may determine whether the subcomponents (turbo chargers, turbo charger after coolers, governors, etc.) are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.15-5

UFSAR Section 9.5.7.2.1 states that, “The built-in lubricating oil sump is driven from the engine drive gear and draws oil from the oil sump through a mesh screen intake screen.” Similarly, Section 9.5.7.2.2 states that, “The built-in lubricating oil pump is driven by the engine through a flexible drive coupling and draws oil from the oil sump through a mesh intake screen.” However, these mesh intake screens are not shown on the license renewal boundary drawings for the EDG system, and nor are they listed in LRA Tables 2.3.3.15 and 3.3.2-15. The mesh screens provide the debris protection intended function for the pipelines, and are passive and long-lived components. Identify these mesh intake screens and justify the exclusion of these components from being within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.15-6

- a. The first paragraph of FNP UFSAR Section 9.5.7.3, which describes the internal oil system for the diesel engine 1C and 2C, states that “Oil flows through the lower header toward the blower end where a vertical header will not readily drain.” However, the 1C/2C EDG internal blower is not shown on the license renewal boundary drawings for the EDG system, nor is it listed in LRA Tables 2.3.3.15. Although a blower is an active component, the blower housing can be considered as being subject to an AMR. Explain how this blower housing is addressed in the LRA; if required, justify its exclusion from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.
- b. The second paragraph of UFSAR Section 9.5.7.3 adds that, “The cooling oil from each lower piston is discharged through a hole in the insert ... This oil then drains either toward the blower or the control end and down to the oil pan or subbase.” However, the 1C/2C EDG oil pan is not shown on the license renewal boundary drawings for the EDG system, nor is it listed in LRA Tables 2.3.3.15. The intended function of the oil pan/subbase is not specifically stated; typically, the oil collection pan intended function is to ensure that leaking oil will not lead to a fire that could damage safety-related equipment. Justify the exclusion of this component from the scope of license renewal and being subject to an AMR in

accordance with the requirements of 10 CFR 54.4(a)(2) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.15-7

- a. License renewal boundary drawings D-170806L, Sheets 1 and 2, show that lube oil engine driven pumps of the EDGs “1-2A” and “1B,” at location C4, and their associated piping to the shuttle valve “V810” are excluded from the scope of license renewal. However, license renewal boundary drawing D-200212L, Sheet 1, shows that the lube oil engine driven pumps of the EDGs “2B,” at location D5, and its associated piping are within the scope of the license renewal. Describe how the aforementioned components for the EDGs “1-2A” and “1B” differ from the components for EDG “2B.” Explain how these differences were considered in the scoping and screening process for EDGs “1-2A” and “1B.”
- b. License renewal boundary drawing D-170803L, Sheets 1 and 2, show air coolers for the EDGs “1C” and “2C,” at location D4-5, as being within the scope of license renewal. However, these air coolers are not listed in LRA Table 2.3.3.15 as components subject to an AMR. Air coolers are passive and long-lived components. Justify the exclusion of the air coolers from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that, for Part a to this question, it made an error on the highlighting of the boundary drawings. The applicant also stated that there are no EDG-specific differences in the scoping and screening of the subject components. The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.17: High Energy Line Break Detection System

D-RAI 2.3.3.17-1

LRA Table 2.3.3.17 list piping and valve bodies as component types subject to an AMR. However, license renewal boundary drawings D-175022L, D-175033L, D-175039L, D-175071L, D-175073L, D-205022L, D-205033L, D-205039L, D-205071L and D-205073L, which show the high energy line break (HELB) detection instruments, do not show the piping or valves associated with these instruments. Appendix 3K of the Farley UFSAR does not provide any description of the piping and valves associated with the HELB pressure and level sensors. Provide descriptive information or drawings to allow the staff to confirm that the identification of components in the HELB system, within the scope of license renewal and subject to an AMR, meet the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.23: Reactor Makeup Water Storage System

D-RAI 2.3.3.23-1

- a. License renewal boundary drawings D-175036L, Sheet 1, D-205036L, Sheet 1, D-170118L, Sheet 1 and D-200012L, Sheet 1 show the reactor makeup water storage tanks as being within the scope of license renewal. The internal and external parts of these tanks are shown on drawings B-170058, Sheet 74 and B-200219, Sheet 74, which were not included in the license renewal boundary drawings transmitted for review. Provide the tank drawings B-170058, Sheet 74 and B-200219, Sheet 74, so that the staff can verify whether the tank parts and its attachments are included within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4 (a) and 10 CFR 54.21(a)(1), respectively.
- b. UFSAR Section 9.2.7.2.1 states that the reactor makeup water storage tank contains a diaphragm membrane and the Unit 1 tank contains a 150-gal/min recirculating vacuum degasifier to exclude oxygen from the makeup water. License renewal boundary drawings D-175036L, Sheet 1; D-205036L, Sheet 1; D-170118L, Sheet 1 and D-200012L, Sheet 1 depict the diaphragm as used in the reactor water makeup and condensate storage tanks. The diaphragm is shown as being within the scope of license renewal on license renewal boundary drawing D-205036L, at location B3. However, the diaphragm is not shown as being within the scope of license renewal on license renewal boundary drawings D-175036L, at location B3; D-170118L, at locations B8 and B4 and D-200012L, at locations D6 and D10. In addition, these diaphragms are not listed in LRA Table 2.3.3.23 as being subject to an AMR. These diaphragm membranes provide a pressure boundary intended function for the reactor makeup water storage tanks, and are passive and long-lived components. Justify the exclusion of the reactor makeup water storage tank diaphragms for Unit 1 and 2 (with the exception of the one shown on license renewal boundary drawing D-205036L, Sheet 1) from being within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a). Explain why these components are not listed in LRA Table 2.3.3.23 as being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated the drawings B-170058, Sheet 74 and B-200219, Sheet 74, are the tank's detail drawings (fabrication type) which show the nozzles locations and other detailed information for the tanks and does not provide additional information for the purpose of license renewal. The staff then indicated that it does not need to review the requested drawings to Part a of this question. Therefore, Part a of the question is WITHDRAWN and will not be sent as a formal RAI. Part b of this D-RAI will be sent as a formal RAI. The applicant indicated that the question is clear.

D-RAI 2.3.3.23-2

- a. License renewal boundary drawings D-170118L, Sheet 1 and D-200012L, Sheet 1 show a 3-inch vent line (HCD-262) at locations C8 and D7 and a 3-inch nitrogen purge line (HCD-263) at locations B7 and D6 as being outside the scope of license renewal. These lines serve a pressure boundary intended function. Justify the exclusion of these lines from

the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

- b. License renewal boundary drawings D-170118L, Sheet 1 and D-200012L, Sheet 1 show a 1-inch pipeline connected to a level controller (MK274 and MK774) at locations B9 and C6, respectively. These lines serve a pressure boundary intended function. Justify the exclusion of these lines from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.3.23-3

On license renewal boundary drawings D-175036L, Sheet 1 and D-205036L, Sheet 1, the license renewal boundary for this system is shown to end at valves Q1G22V063A and Q1G22V063B, at location F11 and Q2G22V063A and Q2G22V063B at location G3. These valves appear to be normally open and a piping class change occurs at this valve. Normally open manual valves can be used as a license renewal pressure boundary if failure of the downstream piping has no short-term effects, can be quickly detected, and will be closed by the operators prior to any adverse consequences. Explain why it is acceptable to terminate the license renewal boundary at these normally open valves.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.3.24: Sampling System

D-RAI 2.3.3.24-1

Gross failed fuel detectors are shown on license renewal boundary drawing D-175009L, Sheet 1, at location F6 and license renewal boundary drawing D-205009L, Sheet 1, at location E5. These detectors are considered as being within the scope of license renewal. However, gross failed fuel detectors are not listed in LRA Table 2.3.3.24. The gross failed fuel detector housing serves a pressure boundary function and is shown as being within the scope of license renewal. Clarify if the pressure boundary retaining components of the gross failed fuel detectors are subject to an AMR. If not, justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.4.1: Main Steam System

D-RAI 2.3.4.1-1

Air reservoirs are shown as being within the scope of license renewal on license renewal boundary drawings D-175033 and D-205033, Sheet 1, at locations F7 and F8 and Sheet 2, at locations E8, D8, on both drawings. However, air reservoirs are not listed as a component type subject to an AMR in LRA Table 2.3.4.1. Air reservoirs serve a pressure boundary intended function, and are passive and long-lived components. Justify the exclusion of these air reservoirs from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.4.1-2

LRA Table 2.3.4.1 lists steam/fluid traps as being subject to an AMR. A review of the license renewal boundary drawings for the main steam system showed that the symbol for steam trap appears only on boundary drawings D-175033L and D-205033L (Sheet 1, at locations A6, C6, E6, B10, G10, on both drawings). However, these components are shown to be outside the scope of license renewal on these boundary drawings. Identify the within-scope steam traps referred to in Table 2.3.4.1. If the license renewal boundary drawings that show these components have not been provided to the staff, provide them for review.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

D-RAI 2.3.4.1-3

The component represented by a dashed line symbol (e.g., license renewal boundary drawings D-170114L and D-200007L, at locations E12 - G12) is not defined on the drawing legend. Symbols used for various lines appearing on license renewal boundary drawings are shown on drawing D-175016, Sheet 3 (Units 1 and 2 Standard P&ID Legend), at locations A2 through H2. However, this type of dashed-line symbol does not appear on the legend. Identify the components represented by these dashed lines and explain how they were considered in the scoping and screening process.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

Section 2.3.4.3: Steam Generator Blowdown System

D-RAI 2.3.4.3-1

License renewal boundary drawing D-175071, Sheet 1 shows the boundary of the in-scope portion of the steam generator blowdown (SGBD) system at the containment isolation valves.

Pipe segments and components downstream of the containment isolation valves are considered out-of-scope.

The SGBD blowdown valves, located downstream of the containment isolation valves, perform the intended function of isolating the SGBD system in the event of high radiation detected in the blowdown system or a pipe break downstream of these valves and therefore should be within the scope of license renewal. The exact location of the SGBD system blowdown isolation valves is not identified on the above license renewal boundary drawing. Provide additional information such as a text description or a revised license renewal boundary drawing which identifies the location of the blowdown isolation valves.

Also, the piping and components located between the containment isolation valves and the blowdown isolation valves perform a pressure boundary intended function. Therefore, these components should be within the scope of license renewal and subject to an AMR. Justify the exclusion of the piping and components up to and including the SGBD blowdown isolation valves from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

Discussion: The applicant indicated that the question is clear. This D-RAI will be sent as a formal RAI.

REVIEW OF LICENSE RENEWAL APPLICATION (LRA) FOR FARLEY UNITS 1 AND 2 APPLICANT'S RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION (RAI)

March 18, 2004

The NRC staff and representatives of SNC held a telephone conference on March 18, 2004, for a followup discussion on the telephone conferences held on February 5, and March 1, 2004, relating to the applicant's response, dated January 9, 2004, for RAI 2.1-1. On the basis of the discussion, the applicant plans to revise its responses. A summary of the questions discussed and the applicant's proposed actions are presented below.

RAI 2.1-1

10 CFR 54.4(a)(2), Scoping Criteria for Non-Safety Related Systems, Structures, or Components (SSCs)

20 ft. Radius

This issue was related to the staff's question on what analysis that FNP, Units 1 and 2, had in order to support the criteria that, for all low energy systems with the potential for interaction (e.g., in proximity to a SR SSC), spraying will not disperse greater than a distance of 20 ft. In addition, the staff asked that for those low energy systems evaluated at FNP, Units 1 and 2, whether the valid threat systems determined only to be at atmospheric pressure and/or temperature.

During the discussion, the applicant indicated that it will eliminate the 20 ft. radius criteria, and will use a broader space approach to manage the SSCs located in an area or room. In response to the staff's question, the applicant agreed to provide the approach, results, and the programs to be applied for managing aging. The applicant stated that it will provide a supplemental response to this question in the near future.

Electrical Target

This issue was related to the staff's question on safety-related (SR) mechanical components in low energy locations, whether the mechanical and structural components were qualified to withstand the environmental effects postulated for low energy crack or leakage as part to the CLB. The staff stated that, if these mechanical and structural components were not qualified for the postulated environment as required by the CLB, then exclusions based on the premise of short-term exposure to wetting of these components does not appear to be reasonable. The staff indicated that these components should be brought into scope, and an appropriate AMP be applied to these SCs.

During the discussion, the applicant indicated that it will expand the targets to include beyond electrical targets. The applicant agreed that it will look into other applicants' programs to identify and understand how their programs align with the respective methodologies that was used. The applicant stated that it will provide a supplemental response to this question in the near future.

NSR piping

Based on the on-site audit, the staff requested the applicant verify that a portion of the service water system (SWS) non-safety related (NSR) piping attached to silicone rubber (SR) piping was in fact in-scope based on the 54.4(a)(2) criteria. The response provided focused on the AMR aspects rather than the scoping aspects of the review and as such the staff requested additional clarification. The applicant stated that it will revise the response to this RAI for clarification.

RAI 2.1-2

The NRC staff reviewed the applicant's aging management programs described in Appendix A, "Final Safety Analysis Report (FSAR) Supplement," and Appendix B, "Aging Management Activities," of the Joseph M. Farley license renewal application. The purpose of this review was to assure that the aging management activities were consistent with the staff's guidance described in NUREG-1800, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)," regarding quality assurance attributes of aging management programs.

Based on the staff's evaluation, the quality attributes (corrective action, confirmation process, and administrative controls) described in Appendix B, Section B1.3, "Quality Assurance Program and Administrative Controls," of the LRA for all programs credited for managing aging effects were consistent with Branch Technical Position IQMB-1. However, the applicant has not sufficiently described the AMP quality attributes in Appendix A, "Final Safety Analysis Report Supplement." The staff requests that the applicant supplement the information provided in the Appendix A to include a description of the quality assurance program attributes, including references to pertinent implementing guidance as necessary, which are credited for the programs to manage aging effects described in Appendix A and Appendix B of the LRA. The description in Appendix A should provide sufficient information for the staff to determine if the quality attributes for the programs credited with managing aging effects are consistent with the review acceptance criteria contained in NUREG-1800, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)."

Discussion: The staff asked the applicant on its update to the FSAR section which will include the applicability of the FNP Quality Assurance Program. The applicant stated that it will revise the RAI response to include this action for clarification.

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