

November 1, 2001

MEMORANDUM TO: Christopher I. Grimes, Chief
License Renewal & Standardization Branch
Division of Regulatory Improvement Programs

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON SECTIONS
3.5.1 THROUGH 3.5.4 OF THE NORTH ANNA AND SURRY
LICENSE RENEWAL APPLICATIONS

The Mechanical and Civil Engineering Branch of the Division of Engineering has completed the review, through its contractor Brookhaven National Laboratory (BNL), of Aging Management of Structures and Component Supports in Sections 3.5.1 - 3.5.4 of the North Anna and Surry license renewal applications. The staff has identified areas from Sections 3.5.1 through 3.5.4 for which additional information is needed to complete the review. Attached is the request for additional information that should be transmitted to the licensee.

Docket Nos. 50-338
50-339
50-280
50-281

Attachment: As stated

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REQUEST FOR ADDITIONAL INFORMATION FOR SECTIONS 3.5.1 - 3.5.4 OF
AGING MANAGEMENT OF STRUCTURES AND COMPONENT SUPPORTS
NORTH ANNA AND SURRY LICENSE RENEWAL APPLICATIONS

- 3.5-1 In both LRAs, Section 3.5.1, the applicant does not include an aging management review of a de-watering system for control of hydrostatic pressure to the containment liner plate. If a de-watering system is relied upon for control of hydrostatic pressure to the containment liner plate, then the de-watering system needs to be included within the scope of license renewal and subject to an aging management review, as applicable. Therefore, the applicant needs to demonstrate that the buildup of hydrostatic pressure cannot affect the intended function of the containment liner plate, or needs to provide an aging management program for the SCs of the containment de-watering system.
- 3.5-2 Both LRAs, Section 3.5.1, contain a statement that the structures and structural members located below the local groundwater elevation are not exposed to aggressive chemicals on the basis of recent chemical analyses of the groundwater described in Appendix C. The results of the recent groundwater analyses, presented in Appendix C were reviewed by the staff. The pH level, chloride content, and sulfate content demonstrate that the groundwater is not aggressive. Consequently, the staff agrees that loss of material, cracking, and change in material properties caused by aggressive chemical attack are not significant for below grade exterior concrete regions for structures and structural components that are within the scope of license renewal and subject to an aging management review. In addition, loss of material due to corrosion of embedded steel and cracking due to corrosion of embedded steel for below grade exterior regions are not significant. However, there is no discussion on future sampling to ensure that groundwater conditions do not change. Identify if the associated aging management activities include period sampling of groundwater to ensure non-aggressive conditions throughout the period of extended operation, or provide a technical basis for not requiring periodic sampling.
- 3.5-3 In both LRAs, Section 3.5.1 and Table 3.5.1-1, the information provided indicates that no aging effects of containment concrete require aging management. However, for the containment concrete (dome, walls, and basemat) there has been sufficient operating experience that demonstrate the need for aging management of containment structures (e.g., NRC Secy-96-080, April 16, 1996, "...nearly one-half of the concrete containments have reported degradation related to the concrete or the post-tensioning system.") Consequently, 10 CFR 50.55a requires inservice inspection of containment concrete in accordance with ASME Section XI, Subsection IWL (Examination Category L-A) and also specifies additional provisions beyond those required in Subsection IWL. It was noted that the implementation of the ASME Code, Section XI, Subsection IWL, Examination Category L-A, inservice examination is a current requirement and, therefore, the same program could be credited for the period of extended operation. On the basis of the above discussion, the applicant is asked to either credit its ASME Code, Section XI, Subsection IWL, Examination Category L-A, inservice examination or a similar program as its AMA for containment concrete, or provide a more detailed technical justification for not managing potential aging of containment concrete.

- 3.5-4 In both LRAs, Section B2.2.12, the applicant does not identify ISI, Subsection IWE, Category E-D (seals, gaskets, and moisture barriers) inspection activities as being within the scope of the ISI aging management activities. Therefore, the staff requests that the applicant identify the aging management activities for seals, gaskets, and moisture barriers, as applicable, or provide a technical justification for not managing any of these components that are within the scope of license renewal and subject to an AMR.
- 3.5-5 In both LRAs, Appendix B, the information provided states that the ISI Program - Containment Inspection includes Category E-P (all pressure retaining components), which refers to 10 CFR 50, Appendix J, Option B. However, there is no description of the 10 CFR 50, Appendix J leak rate testing activity as an aging management program. In a conference call with the applicant, dated August 8, 2001, the applicant stated that Option B is one means of fulfilling the requirements of 10 CFR Part 50, Appendix J. The applicant verified that they use Option B as approved by the staff for both NAS and SPS. However, in previous discussions with the industry, the staff justified the need for an applicant to credit an integrated leak-rate program that is described in more detail in the LRA. Although the staff has determined that an integrated leak rate test performed in accordance with Appendix J, Option B, and consistent with the requirements in TS is one means of managing the applicable aging of the Containment structure, simple reference to the ISI Program - Containment Inspection includes Category E-P, which in turn references Appendix J, Option B, is in itself not sufficient for the staff to make its determination. The applicant needs to more clearly document that the testing will be performed in accordance with Appendix J, Option B, and consistent with the associated requirements in TS.
- 3.5-6 In both LRAs, Section 3.5.1 (under the heading "Environment"), the information provided indicates that the general air temperature in containment is not greater than 150° F, and hot pipe penetrations are exposed to elevated localized temperature of less than 200° F. Elevated temperatures in the auxiliary building structures, other Class I structures (except the main steam valve house), and fuel buildings are not addressed in the LRAs, Sections 3.5.2 through 3.5.4. In a telecommunication dated August 8, 2001, the applicant stated that with the one exception noted above, the air temperature for both plant containments are maintained below 150°F, and that there are no known areas of localized air temperatures greater than 200°F. The applicant needs to more clearly document this information for the staff to perform its evaluation.
- 3.5-7 In both LRAs, Sections 3.5.2, 3.5.3, and 3.5.4, the information provided does not include a discussion regarding operating experience associated with structural concrete members. In a telecommunication dated August 8, 2001, the applicant indicated that they are unaware (with the exception of the SPS intake structure) of any ongoing aging at North Anna and Surry that can adversely effect the intended function of any on-site concrete structures for the period of extended operation. The staff is concerned, however, that there has been sufficient industry operating experience that demonstrates the need for aging management of concrete nuclear structures. In addition, it is questionable whether an extrapolation for the period of extended operation can be made based on the past performance. ACI 349.3R was specifically developed to provide guidance for inspection of concrete nuclear structures other than containment. Based on the above discussion, the staff requests the applicant to either implement an aging management program for the potential aging of the concrete nuclear structures (other

than containment) that are within the scope of license renewal, or provide a technical justification for not managing the associated aging, such that there is reasonable assurance that the intended function(s) will be maintained consistent with the CLB throughout the period of extended operation.