



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 6, 2017

Mr. Daniel G. Stoddard
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Blvd.
Glenn Allen, VA 23060-6711

SUBJECT: SURRY, UNIT NOS. 1 AND 2 – SUPPLEMENTAL INFORMATION NEEDED FOR ACCEPTANCE OF REQUESTED LICENSING ACTION RE: PROPOSED ALTERNATIVE TO ASME SECTION XI REQUIREMENTS FOR REPAIR/REPLACEMENT OF CIRCULATING AND SERVICE WATER CLASS 3 BURIED PIPING IN ACCORDANCE WITH 10CFR 50.55a(z)(1) (CAC NOS. MF8987 AND MF8988)

Dear Stoddard:

By letter dated December 14, 2016 Agencywide Documents Access and Management System (ADAMS) Accession Number ML16355A337), Virginia Electric and Power Company (Dominion), submitted a relief request (RR) for Surry Units 1 and 2. The relief request proposes an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, IWA-4000. The RR proposes to apply a carbon fiber reinforced polymer system for the internal repair of buried circulating water and service water piping at Surry Power Station Units 1 and 2. The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this relief request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Pursuant to Sections 50.55a(z)(1) and 50.55a(z)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR), the applicant shall demonstrate that the proposed alternatives would provide an acceptable level of quality and safety, or that compliance with the specified requirements of Section 50.55a would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

The NRC staff has reviewed your application and concluded that it did not provide the technical information in sufficient detail to enable the NRC staff to complete its detailed review and make an independent assessment regarding the acceptability of the proposed amendment/relief request in terms of regulatory requirements and the protection of public health and safety and the environment.

In order to make the application complete, the NRC staff requests that Dominion supplement the application to address the information requested in the enclosure by February 27, 2017. This will enable the NRC staff to begin its detailed technical review. If the information responsive to the NRC staff's request is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the staff's detailed technical review by separate correspondence.

The information requested and associated time frame in this letter were discussed with Gary Miller of your staff on Monday, February 6, 2017.

If you have any questions, please contact the Surry Project Manager, Karen Cotton Gross, at (301) 415-1438 or be e-mail at Karen.Cotton@nrc.gov.

Sincerely,



Karen Cotton Gross, Project Manager
Plant Licensing Branch 2-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos: 50-280 and 50-281

Enclosure:
As stated

cc w/encl: Distribution via Listserv

SUPPLEMENTAL INFORMATION NEEDED
PROPOSED ALTERNATIVE TO ASME SECTION XI REQUIREMENTS FOR
REPAIR/REPLACEMENT OF CIRCULATING AND SERVICE WATER CLASS 3
BURIED PIPING IN ACCORDANCE WITH 10 CFR 50.55a(z)(1)
VIRGINIA ELECTRIC AND POWER COMPANY.
SURRY POWER STATION UNITS 1 AND 2

LIST OF INSUFFICIENCIES

1. American Society of Mechanical Engineers (ASME) Section XI, IWA-4221 (b) requires repair/replacement piping to meet the original Construction Code requirements for the Circulating Water (CW) and Service Water (SW) piping. However, the applicable Construction Code for Surry does not provide the requirements for the design, fabrication, installation, examination and testing of Carbon Fiber Reinforced Polymer (CFRP) in buried piping.

The application identifies 15 separate repairs using CFRP. The submittal lacks sufficient analyses or technical evaluations to demonstrate structural integrity for these 15 separate repairs using CFRP. Attachment 5C, in Enclosure 5, of the application provides a typical calculation.

- a. Please provide a summary of design inputs to include loads, pressures, temperatures, geometrical inputs, CFRP layers, thicknesses, and bonding length used for the analysis and evaluations of these 15 repairs.
 - b. Please provide a summary of the results of all analysis and evaluations to include circumferential design analysis, buckling evaluations, longitudinal design analysis, bond integrity at terminations for the applicable load combinations, corresponding allowable limits, and margins for each of 15 of the repairs using CFRP.
2. Analytical methodology Change: ASME Codes and Standards for piping analysis are discussed in Title 10 of the *Code of Federal Regulations*, Part 50.55a. Piping analysis for safety related class 3 piping in ASME Subsection ND does not utilize the Load and Resistance Factor Design (LRFD) method. The application describes using a LRFD methodology that has never been used for analysis of safety related class 3 piping.
 - a. Please provide a justification and rationale for applying this LRFD methodology for safety related ASME Class 3 piping.
 - b. Please provide a discussion of the analysis method used in the original design for class 3 circulating water and service water piping and any variances from applying both methods to include at the terminal ends where CFRP overlaps with the intact steel pipe.

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Date: February 6, 2017

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