



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

September 16, 2015

Mr. Scott Batson  
Site Vice President  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
7800 Rochester Highway  
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1 AND 2 – REQUEST FOR  
ADDITIONAL INFORMATION RE: RELIEF REQUEST 15-ON-001 REPAIR OF  
LOW PRESSURE SERVICE WATER SYSTEM PIPING (TAC NOS. MF6374  
AND MF6375)

Dear Mr. Batson:

By letter dated June 12, 2015, Duke Energy Carolinas, LLC (the licensee) requested the U.S. Nuclear Regulatory Commission (NRC) to authorize relief from Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for the specific repair/replacement activity identified in Relief Request No. 15-ON-001, for the Oconee Nuclear Station, Units 1 and 2.

The relief request addresses the need to encapsulate a section of degrading moderate energy Class 3 piping in the low pressure service water system (LPSWS) with new pressure boundary material, without removing the degraded piping. As discussed with your staff on August 13 and 27, 2015, the NRC staff needs additional information to support the completion of its review of the subject relief request. Therefore, we request your response to the questions in the attached request for additional information within 30 days of the date of this letter.

If you have any questions, please contact me at (301) 415-4032 or via e-mail at [Randy.Hall@nrc.gov](mailto:Randy.Hall@nrc.gov).

Sincerely,

A handwritten signature in cursive script that reads "James R. Hall".

James R. Hall, Senior Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-269 and 50-270

Enclosure: Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

RELIEF REQUEST 15-ON-001

ALTERNATE REPAIR OF LOW PRESSURE SERVICE WATER PIPING

PENETRATION NOZZLES

OCONEE NUCLEAR STATION, UNITS 1 AND 2

DUKE ENERGY CAROLINAS, LLC

DOCKET NOS. 50-269 AND 50-270

By letter dated June 12, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15169A860), Duke Energy Carolinas, LLC requested the U.S. Nuclear Regulatory Commission (NRC) to authorize relief from Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for the specific repair/replacement activity identified in Relief Request No. 15-ON-001. The contingency Relief Request addresses the need to encapsulate a degrading moderate energy Class 3 piping in the low pressure service water system (LPSWS) with new pressure boundary material, without removing the degraded piping. To complete its review, the NRC staff requests the following additional information.

1. Section 5.1, Item 1 of the relief request states, "Replacement pressure retaining parts shall comply with the Construction Code (ASME B31.1-2007) and Owner's requirements.... The modification has been designed such that the piping system no longer relies on the encapsulated parts for structural integrity or leak tightness."
  - (1) Discuss the design pressure and temperature of the outer pipe.
  - (2) Clarify how the outer pipe is analyzed to satisfy the allowable stresses in ASME B31.1. Discuss how the applied loads (i.e., forces and moments) on the outer pipe are calculated or obtained.
  - (3) Identify any supports located at or in the vicinity of the existing pipe and the outer pipe.
2. Section 5.1, Item 2 of the relief request states, "Ultrasonic thickness measurements shall also be performed where the encapsulation is to be welded to the 36-inch pipe header... to confirm that material thickness is adequate for the encapsulation design." Discuss the allowable minimum pipe wall thickness of the 36-inch header to which the encapsulation will be welded.
3. Section 5.1, Item 3 of the relief request states, "The locations where the encapsulation is to be welded to the system pressure boundary are located sufficiently far from locations of identified wall thinning to preclude the growth of identified corrosion from challenging the integrity of the encapsulation for the remaining life of the component to which the

Enclosure

encapsulation is welded.” Discuss the minimum acceptable distance between the location where the encapsulation will be welded and the location where wall thinning occurs, presumably, on the 36-inch piping.

4. Section 5.1, Item 5 of the relief request states, “A hydrostatic pressure test shall be performed in accordance with ASME Section XI, 2007 edition with 2008 addenda, IWA-4540, IWA-5000 and IWD-5230 using an external pressurization source upon completion of the repair/replacement activity to confirm the leak-tight integrity of the modification and its connecting welds to the component pressure boundary.”
  - (1) Confirm that only the outer pipe, not the existing pipe, will be hydrostatically tested.
  - (2) Discuss how the hydro test will be conducted, including hold time, and the hydrostatic pressure and temperature of the fluid.
  - (3) Discuss whether the hydro test of the outer pipe would damage the existing (inner) pipe if the existing pipe has wall thinning or a pinhole leak.
  - (4) Discuss the minimum wall thickness in the existing pipe that would support a hydro test of the outer pipe.
  - (5) What is the total length of the existing pipe that will be encapsulated?
5. Section 5.1, Item 6 of the relief request states, “Following pressure testing, sealant shall be installed into the encapsulation to inhibit corrosion that could result from any future through-wall defects in the encapsulated piping...”
  - (1) During the sealant injection, discuss whether the sealant pressing against a wall thinning location on the existing pipe would cause the wall to collapse. What would be the minimum wall thickness to prevent sealant crushing the wall of the existing pipe?
  - (2) Describe briefly the sealant (e.g., commercial name, main ingredients, and compatibility with the materials of construction of both pipes and the environment).
  - (3) Does sealant prevent leakage from a hole on the existing pipe? Describe the size of a hole in the existing pipe beyond which the sealant will not be able to prevent leakage.
6. It appears that the sealant can only inhibit corrosion on the outside surface, not inside surface, of the existing pipe and the outer pipe.
  - (1) Discuss the consequence of the existing pipe having through-wall holes and discuss whether the sealant could fall into the existing pipe and block the coolant flow.
  - (2) Provide any operating experience of this type of encapsulation in the nuclear or non-nuclear industry.
7. Discuss the inservice examinations of the outer pipe (examination method and how often). Confirm that the existing pipe will not be examined in the future because it is inaccessible.
8. Discuss the welding of the encapsulation, e.g., weld material, welding process, pre-heat requirement, post-weld heat treatment, and the ASME Code requirements applicable to that welding.

9. Section 5.1, Item 1 of the relief request states that the construction code is ASME B31.1-2007 edition. Item 4 in Section 5.1 states that a visual examination is performed based on ASME B31.1-2004. Section 1.1 states that the pipe was constructed to USAS B31.1-1967. Discuss why three different editions of B31.1 are referenced and to which edition of B31.1 should the design, repair, and examination of the encapsulation adhere.
  
10. Describe how the flow of LPSWS water inside the encapsulated pipe will be sufficient to achieve the system's safety function for the most limiting failure of the 3-inch inner pipe. Discuss how the control room operator will be alerted if the 3-inch pipe fails and the required coolant flow is reduced from the 36-inch header to valve LPSW-30. Also describe any corrective actions that operators may take to address low flow conditions in the affected section of LPSWS piping.

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Sincerely,

*/RA/*

James R. Hall, Senior Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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J. Tsao, NRR

**ADAMS Accession No. ML15252A474**

**\*via email**

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