



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

December 4, 2012

Mr. Christopher Burton, Vice President  
Shearon Harris Nuclear Power Plant  
Duke Energy  
Post Office Box 165, Mail Code: Zone 1  
New Hill, North Carolina 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1 – REQUEST  
FOR ADDITIONAL INFORMATION FOR REVIEW REGARDING RELIEF  
REQUEST I3R-10 SPENT FUEL POOL COOLING PIPING INSERVICE  
INSPECTION PROGRAM (TAC NO. ME9892)

Dear Mr. Burton:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated November 8, 2012 (Agencywide Documents Access and Management System Accession No. ML12313A442), Carolina Power & Light Company (the licensee) submitted a relief request for Shearon Harris Nuclear Power Plant, Unit 1 (Harris). The licensee requested relief from the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code for the third 10-year Inservice Inspection Program at Harris. Relief Request I3R-10 provides an alternative for the repair of a leaking pipe in the spent fuel pool cooling system.

The NRC staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with your staff on November 20, 2012, it was agreed that you would provide a response 15 days from the date of this letter.

The NRC considers that timely responses to requests for additional information help ensure sufficient time is available for the NRC staff review and contribute toward the NRC's goal of efficient and effective use of staff resources.

Please contact me at (301) 415-3302, if you have any questions.

Sincerely,

*Araceli T. Billoch Colón*

Araceli Billoch Colón, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-400  
Enclosure: Request for Additional Information  
cc w/encl: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING RELIEF REQUEST NUMBER I3R-10  
ALTERNATIVE TO THE REPAIR OF SPENT FUEL POOL COOLING PIPING  
SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1  
CAROLINA POWER AND LIGHT COMPANY  
DOCKET NO. 50-400

By letter dated November 8, 2012 (Agencywide Documents Access and Management System Accession Number ML12313A442), Carolina Power & Light Company (the licensee) requested relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) for the third 10-year Inservice Inspection Program at Shearon Harris Nuclear Power Plant, Unit 1. Relief Request I3R-10 provides an alternative for the repair of a leaking pipe in the spent fuel pool cooling system. To complete its review, the U.S. Nuclear Regulatory Commission (NRC) staff requests the following additional information.

1. The licensee submitted the relief request based on the impracticality argument pursuant to Title 10, *Code of Federal Regulations* (10 CFR), Part 50, paragraph 50.55a(g)(5)(iii). The NRC staff understands that it would be more appropriate if the relief request were submitted based on hardship and unusual difficulties pursuant to 10 CFR 50.55a(a)(3)(ii). Discuss why the relief request was submitted under 10 CFR 50.55a(g)(5)(iii) and not 10 CFR 50.55a(a)(3)(ii).
2. Section 4 of the relief request, *Impracticality of Compliance*, states that volumetric inspections per ASME Code Case N-513-3 are impractical and the code case will not be invoked. However, Section 6, *Proposed Alternative and Basis for Use*, requires that the flaw evaluation be performed in accordance with ASME Code Case N-513-3, Section 3. Clarify whether the relief request follows ASME Code Case N-513-3. If the relief request follows the code case, discuss the deviations and exceptions from the code case. If the relief request is not based on the code case, discuss the technical basis of the relief request.
3. Section 6(a) of the relief request states that "...[t]he subsurface length of the flaw will be assumed to be four times the surface length for characterization purposes...." (1) Discuss the technical basis for the factor of 4 and how the factor of 4 is adequate to characterize the subsurface flaw length. (2) Discuss the degradation mechanism of the flaws in the subject pipe.
4. Section 6(d) of the relief request requires a flaw evaluation to be performed. Discuss the flaw evaluation in detail or submit the flaw evaluation. The flaw evaluation should include the information on the flaw size at the time of discovery, the predicted flaw size on the last date on which the licensee must repair the pipe (i.e., November 30, 2013), and the allowable flaw size.

Enclosure

5. Section 6(d) of the relief request states that "...[f]law acceptance criteria shall assume that the length of the flaw is four times the surface length to account for the lack of information associated with subsurface characterization of the flaws...." Section 6(e) states that "...[t]he allowable size limit will assume that the length of the flaw is four times the surface length to account for the lack of information associated with volumetric characterization of the flaws...." Section 8, *Regulatory Commitment*, states that "...[t]he allowable size limit will assume that the length of the flaw is four times the surface length to account for the lack of information associated with volumetric characterization of the flaws...." Clarify the terminology "flaw acceptance criteria" and "the allowable size limit" in the above statements. The allowable flaw size or flaw acceptance criteria should be based on calculations using materials properties and applied loading of the pipe, not based on an assumption. It appears that the above statements are related to how to size the detected flaw, rather than the allowable flaw size.
6. Section 6(e) of the relief request states that "...[f]requent periodic surface inspections of no more than 30 day intervals shall be used to determine if flaws are growing and to establish the time,  $t_{allow}$ , at which the detected flaw will reach the allowable size...." Section 6(1) states that "...[u]se of physical measurement of surface flaw length in lieu of volumetric inspection is satisfactory based upon the proposal to use four times the surface length of the flaw for flaw characterization, evaluation, and monitoring of flaw growth rate...."

Based on the above two statements, confirm the following: (1) The licensee will measure the flaw length on the outside surface of the degraded pipe at least once every 30 days. The licensee will multiply the flaw length on the pipe outside surface by 4 and record it as the detected flaw length. If the detected flaw length exceeds the allowable flaw length, the licensee will repair the pipe immediately per the ASME Code. (2) In addition to the allowable flaw length, discuss whether there is a need to implement an administrative flaw size (which would be less than the allowable flaw size) beyond which more frequent inspections and monitoring will be taken. (3) Discuss why an allowable leak rate is not specified.

7. Although Section 6(f) requires a daily walkdown, Section 8, *Regulatory Commitment*, does not specify the daily walkdown. In addition, Section 6(g)(3) states that ultrasonic thickness examinations were performed in the areas directly adjacent to the flawed welds. However, Section 8, *Regulatory Commitment*, does not mention ultrasonic examinations of pipe wall thickness. The licensee must either include in the Regulatory Commitment, the performance of periodic pipe wall thickness measurements using ultrasonic technique and the performance of daily walkdowns or justify their absence.
8. ASME Code Case N-513-3, paragraph 2(g) states that if examinations reveal the flaw growth rate to be unacceptable, a repair or replacement shall be performed. Paragraph 2(h) states that repair or replacement shall be performed no later than when the predicted flaw size from either periodic inspection or by the flaw growth analysis exceeds the acceptance criteria of [section] 4 or the next scheduled outage, whichever occurs first. (1) Discuss the unacceptable (i.e., allowable) flaw growth rate and/or flaw size. (2) Section 8, *Regulatory Commitment*, should

state that "If the measured flaw growth rate or detected flaw size exceeds the unacceptable flaw growth rate or unacceptable flaw size prior to the next refueling outage in the fall of 2013, the degraded pipe will be repaired or replaced...." If the degraded pipe will not be repaired or replaced in this scenario, provide justification.

December 4, 2012

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*/RA/*

Araceli Billoch Colón, Project Manager  
Plant Licensing Branch II-2  
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ADAMS Accession No.: ML12321A099

\*By memorandum, as revised by an email dated 11/30/2012

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