

## NRR-PMDAPEm Resource

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**From:** Barillas, Martha  
**Sent:** Tuesday, April 21, 2015 9:51 AM  
**To:** Caves, John  
**Cc:** Helton, Shana  
**Subject:** Shearon Harris RR I3R-15 RAI.docx  
**Attachments:** Shearon Harris RR I3R-15 RAI.docx

John,

By letter dated April 2, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15092A236), Duke Energy Progress, Inc. (the licensee), submitted for U.S. Nuclear Regulatory Commission (NRC) review and approval Relief Request I3R-15 for the alternate repair of reactor closure vessel head nozzle flaws that might be identified during refueling outage head inspections at Shearon Harris Nuclear Power Plant, Unit No. 1. At time of submittal, the licensee was not aware of any known flaws that required repair. By letter dated April 15, 2015 (ADAMS Accession No. ML15105A521), the licensee submitted Relief Request I3R-15 Revision and Supplement, which superseded the original Relief Request I3R-15 dated April 2, 2015. The April 15, 2015 submittal included three flaws identified during the head inspection of the current refueling outage that require repair. To complete its review, the NRC staff has the request for additional information (RAI) attached. The questions attached are specifically applicable to Relief Request I3R-15 Revision and Supplement, dated April 15, 2015.

Duke Energy requested a relief request approval by April 30, 2015. On April 20, 2015, a clarification call was held to discuss the attached RAI in draft form. The NRC staff requests you provide the RAI response by April 23, 2015, in order to support the staff's review.

If you have any questions, please email me or call me at 301-415-2760.

Respectfully,

Martha Barillas  
Project Manager  
Shearon Harris & H. B. Robinson  
NRR/DORL/Licensing Branch II-2  
US Nuclear Regulatory Commission  
[301-415-2760](tel:301-415-2760)

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**From:** Barillas, Martha

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**Recipients:**  
"Helton, Shana" <Shana.Helton@nrc.gov>  
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"Caves, John" <John.Caves@duke-energy.com>  
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REQUEST FOR ADDITIONAL INFORMATION  
RELIEF REQUEST I3R-15 REVISION AND SUPPLEMENT  
ALTERNATE REPAIR OF REACTOR VESSEL CLOSURE HEAD NOZZLES  
SHEARON HARRIS NUCLEAR POWER PLANT UNIT NO.1  
DUKE ENERGY PROGRESS INC  
DOCKET NO. 50-400

By letter dated April 2, 2015, Duke Energy Progress, Inc (the licensee) submitted for U.S. Nuclear Regulatory Commission (NRC) review and approval Relief Request I3R-15 for the alternate repair of reactor vessel closure head nozzles at Shearon Harris Nuclear Power Plant, Unit No. 1. By letter dated April 15, 2015, the licensee submitted Relief Request I3R-15 Revision and Supplement which superseded the original Relief Request I3R-15 dated April 2, 2015. To complete its review, the NRC staff requests the following additional information. The questions below are specifically applicable to Relief Request I3R-15 Revision and Supplement dated April 15, 2015.

1. Section 4 of the relief request (page 5 of 27) states that abrasive water jet machining (AWJM) remediation on the portion of the remaining nozzle will be optional as part of the repair procedure. Discuss the technical basis why the AWJM remediation is an optional step in the proposed relief request whereas it is a required step in previous repairs.

2. Section 6 of the relief request (page 13 of 27) states that the design life of the repair without the AWJM remediation is 2.2 effective full power years (EFPY). (a) Discuss the approximate calendar days associated with 2.2 EFPY. (b) Discuss the month and year of the scheduled refueling outages between now and the end of the third inservice inspection interval which ends on May 1, 2017. (c) Discuss the approximate calendar days for the reactor vessel head inspections between the refueling outages.

3. Section 6 of the relief request (page 13 of 27) states that the Harris Nuclear Plant (HNP) will examine all repaired RVCH penetration nozzles every refueling outage in accordance with ASME Code Case N-729-1 as conditioned by 10 CFR 50.55a(g)(6)(ii)(D). (a) 10 CFR 50.55a(g)(6)(ii)(D)(5) requires that all reactor vessel head penetration nozzles be examined once primary water stress corrosion cracking is found in a nozzle. Confirm that all reactor vessel head penetration nozzles at Unit 1 will be examined in all future refueling outages. (b) Discuss the examination method for the non-repaired nozzles in the future inservice inspections.

4. The licensee stated in the April 15, 2015 cover letter that "...Calculations supporting this relief request were previously docketed supporting relief request I3R-13 in Duke Energy letter dated November 25, 2013 (ADAMS Accession No. ML13330A996)..." Discuss whether all calculations in relief request I3R-13 bound all reactor vessel head penetration nozzles as proposed in relief request I3R-15 dated April 15, 2015. The affected calculations include the evaluation of a postulated flaw in the J-groove weld that propagates into the reactor vessel head, the evaluation of a postulated flaw at the triple point, and the evaluation of the potential for the J-groove weld fragments falling into the reactor vessel and becoming loose parts. The discussion should include (a) applied loading conditions, (b) existing and future flaw sizes and configurations, (c) nozzles in all reactor vessel head locations, considering the impact of the uphill and downhill side, and (d) J-groove weld configurations, considering the impact of the uphill and downhill side. The licensee needs to demonstrate that the worst-case in terms of nozzles and flaws were used in the affected calculations.