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March 31, 2011

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC (Duke Energy)  
McGuire Nuclear Station, Unit 1  
Docket No. 50-369  
Relief Request Serial #10-MN-002, Response to Request for Additional  
Information

By letter dated August 30, 2010, Duke Energy submitted a request for relief regarding the extension of the volumetric inspection of steam generator primary manway studs for one operating cycle beyond the third 10-year inservice inspection interval end date for McGuire Nuclear Station Unit 1.

On March 2, 2011, the NRC Staff electronically requested additional information regarding this relief request. The enclosure to this letter provides specific responses to this request for additional information. The format of the response is to restate each question, followed by our response.

If you have any questions or require additional information, please contact P.T. Vu at (980) 875-4302.

Sincerely,

Regis T. Repko

Enclosure

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ENCLOSURE

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

OFFICE OF NUCLEAR REACTOR REGULATION  
REQUEST FOR ADDITIONAL INFORMATION  
EXTENSION OF VOLUMETRIC INSPECTION OF STEAM GENERATOR  
PRIMARY MANWAY STUDS FOR ONE OPERATING CYCLE  
BEYOND THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL END DATE  
DUKE ENERGY CAROLINAS, LLC  
MCGUIRE NUCLEAR STATION, UNIT 1  
DOCKET NO: 50-369

By letter dated August 30, 2010, Duke Energy Carolina, LLC (the licensee) submitted Relief Request Serial # 10-MN-002, "Extension of Volumetric Inspection of Steam Generator Primary Manway Studs for One Operating Cycle Beyond the Third 10-Year Inservice Inspection Interval End Date" (Agencywide Documents Access and Management System Accession No. ML102510185). The Nuclear Regulatory Commission staff needs the following further information in order to complete its review:

1. What is the stud material of construction?

**Duke Energy Response:**

**The McGuire Unit 1 Steam Generator (SG) primary manway stud material of construction is SA 193, Grade B7.**

2. What is the gasket material of construction?

**Duke Energy Response:**

**The McGuire Unit 1 SG primary manway uses a Flexitalic spiral wound gasket with stainless steel ASTM A240 (Type 316L) windings with flexicarb or asbestos filler material.**

3. What is the current stud fatigue cumulative usage factor?

**Duke Energy Response:**

**The SG primary manway studs have a design fatigue cumulative usage factor (CUF) of 0.913, which is based on 200 postulated transients due to heatup/cooldown and stud preload. The Unit 1 steam generators were replaced in 1997 and the manway studs on these steam generators are estimated to have experienced fewer than 20 heatup/cooldown cycles. Because the total number of allowable heatup/cooldown cycles far exceeds the number experienced to date for these studs, Duke Energy does not document the actual CUF for the manway studs. The actual number of heatup/cooldown cycles is monitored to ensure that the CUF for these studs will always remain within the design allowable limit of 1.0.**

4. If one stud were to fail during full power operation:

- a. What is the expected leak rate?

**Duke Energy Response:**

**Leakage is not expected to occur if a single stud were to fail during full power operation because the 19 remaining studs would continue to provide sufficient preload to maintain joint leak-tightness.**

- b. Would the leak rate be sufficient to be detectable by the Surveillance Test "Reactor Coolant Leakage Calculation," containment airborne radiation monitors and changing Ventilation Unit Drain Tank level measurements?

**Duke Energy Response:**

Although leakage would not be expected upon failure of one SG primary manway stud, leakage (if it were to occur) at a rate of 1 gpm or greater would be detected by performing Surveillance Test "Reactor Coolant Leakage Calculation." Leakage at a rate of 1 gpm or greater would also be detected by containment airborne radiation monitors and containment sump level monitoring. Leakage from the Reactor Coolant System that results in a 1 gpm or greater input to the Ventilation Unit Drain Tank would be detected by the tank's level instrumentation.