

## Davis-BesseNPEm Resource

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**From:** CuadradoDeJesus, Samuel  
**Sent:** Tuesday, August 02, 2011 12:34 PM  
**To:** 'custer@firstenergycorp.com'; dorts@firstenergycorp.com  
**Subject:** DB Teleconference Draft RAI  
**Attachments:** DRAFT Follow-up RAIs Reactor Head Closure Studs.docx

**Importance:** High

Cliff

Attached is the Draft RAI we'll be discussing in today's teleconference (I just received it). Please forward it to your team.

Regards

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## **Draft follow-up RAI B.2.34-2**

### Background

In its response to RAI B.2.34-1, the applicant stated that according to the certificate of material test report (CMTR) for the reactor head closure studs, the actual measured yield strength varied from 151 to 159 ksi, and the tensile strength varied from 166 to 171 ksi. The applicant also stated that its reactor head stud material is SA-540, Grade B-23 and that as provided in Regulatory Guide (RG) 1.65, "Materials and Inspections for Reactor Vessel Closure Studs," this material when tempered to a maximum tensile strength of 170 ksi, is relatively immune to stress corrosion cracking (SCC). The Reactor Head Closure Studs Program was amended to include an enhancement to preclude the future use of replacement closure stud bolting fabricated from material with actual measured yield strength greater than or equal to 150 ksi, except for use of the existing spare reactor head closure stud bolting.

The "preventive actions" program element of GALL AMP XI.M3, "Reactor Head Closure Stud Bolting," references the guidance in RG 1.65 and NUREG-1339, "Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants." GALL AMP XI.M3 states that one of the preventive measures that can reduce the potential for SCC includes using bolting material for closure studs that has an actual measured yield strength less than 150 ksi.

### Issue

LRA Section B.2.34 states that the Reactor Head Closure Program is an existing program that with enhancements will be consistent with the 10 elements of an effective aging management program as described in GALL AMP XI.M3. All of the applicant's reactor head closure studs were fabricated from material with measured yield strength above 150 ksi and some of the furnished materials have a measured tensile strength above 170 ksi. The staff noted that this is an exception to the "preventive actions" program element of GALL AMP XI.M3.

### Request

- 1) Revise the appropriate sections of the LRA to reflect the use of reactor head closure studs with measured yield strength above 150 ksi as an exception to GALL AMP XI.M3.
- 2) In view of the greater susceptibility to SCC of the studs, justify the adequacy of the Reactor Head Closure Program to manage cracking due to SCC of high-strength bolting material. As part of the justification, describe how the program manages the potential exposure of closure bolting to borated water and other potential contaminants that may initiate SCC of the reactor head closure bolting studs and components.