



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

May 19, 2011

Mr. R.W. Borchardt
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**SUBJECT: RESPONSE TO THE APRIL 5, 2011, EDO LETTER REGARDING DRAFT
FINAL REGULATORY GUIDES 1.34, 1.43, 1.44, AND 1.50**

Dear Mr. Borchardt:

In our February 24, 2011, letter we recommended that Draft Final Revision 1 to Regulatory Guides (RGs) 1.34, 1.43, and 1.50 be issued, and that Draft Final Revision 1 to RG 1.44 not be issued until the following changes were made:

- a. The language proposed by the staff during our February 10-12, 2011, meeting should be incorporated into the Guide to address our concerns on the use of standard grade stainless steels and the description of Pressurized Water Reactor (PWR) water chemistry.
- b. Guidance should be added to address the deleterious effects of cold work and post weld grinding in Intergranular Stress Corrosion Cracking (IGSCC) and Irradiation Assisted Stress Corrosion Cracking (IASCC) susceptibility of welded AISI Type 300 stainless steel components.

Our letter also stated that we looked forward to reviewing a revised version of Draft Final Revision 1 to RG 1.44. Unfortunately, we were not afforded the opportunity to review the final version of this Guide prior to its issuance.

In your April 5, 2011, response, you stated that RGs 1.34, 1.43, and 1.50 were issued on March 14, 2011. You also stated that the staff had addressed our concerns on the use of standard grade stainless steels and the description of PWR water chemistry in RG 1.44, and that additional guidance had been added to this Guide to address the deleterious effects of cold work and post-weld grinding. These changes were consistent with our recommendations.

However, your response indicated that no additional guidance would be added at this time to RG 1.44 to address the IASCC materials degradation mechanism. As stated in your letter "as more information is obtained, the NRC staff will reassess this topic and consider whether information concerning IASCC susceptibility should be addressed in future revisions of the RG."

We find the response relating to IASCC unsatisfactory. While there is general agreement that the IASCC degradation mechanism is not as well understood as IGSCC, there is ample evidence that the IASCC susceptibility of core internals can be reduced by careful selection of materials, fabrication controls, and environmental controls similar to those used to reduce the

risk of IGSCC. We note that the information on the IASCC phenomenon provided in the December 2010 Office of Nuclear Regulatory Research document entitled, "Degradation of LWR Core Internal Materials due to Neutron Irradiation," NUREG/CR-7027 was not referenced in RG 1.44. This report provides a wealth of qualitative and quantitative information on the influence of materials composition, fabrication practices, environmental effects, and mechanical loading on IASCC susceptibility of austenitic stainless steels. Although the staff cannot provide guidance yet for acceptable methods to prevent IASCC, NUREG/CR-7027 should be recognized in RG 1.44 as a useful source of information. This Guide was last revised in the 1970s, and it is unlikely that it will be revised again in less than 3-5 years.

Our letter was issued on February 24, 2011. Your response letter informing us of the staff's decisions was issued to us two months later on April 5, 2011, and four days after RG 1.44 was issued. This delay has precluded our ability to review and comment on the staff's decisions prior to issuance of this Guide.

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

References:

1. Letter to Mr. R.W. Borchardt, Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50, 02/24/2011, (ML110450579)
2. Letter to Dr. Said Abdel-Khalik, Response to ACRS Recommendations on Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50, 04/05/2011, (ML110800325)
3. Draft Final Regulatory Guide 1.34, "Control of Electroslag Weld Properties," Revision 1, dated September 2010 (ML101670357)
4. Draft Final Regulatory Guide 1.43, "Control of Stainless Steel Weld Cladding of Low-Alloy Steel Components," Revision 1, dated September 2010 (ML101670458)
5. Draft Final Regulatory Guide 1.44, "Control of the Processing and Use of Stainless Steel," Revision 1, dated September 2010 (ML101680225)
6. Draft Final Regulatory Guide 1.50, "Control of Preheat Temperature for Welding of Low-Alloy Steel," Revision 1, dated September 2010 (ML101870612)
7. "Degradation of LWR Core Internal Materials due to Neutron Irradiation," NUREG/CR – 7027, December 10, 2010 (ML102790482)

risk of IGSCC. We note that the information on the IASCC phenomenon provided in the December 2010 Office of Nuclear Regulatory Research document entitled, "Degradation of LWR Core Internal Materials due to Neutron Irradiation," NUREG/CR-7027 was not referenced in RG 1.44. This report provides a wealth of qualitative and quantitative information on the influence of materials composition, fabrication practices, environmental effects, and mechanical loading on IASCC susceptibility of austenitic stainless steels. Although the staff cannot provide guidance yet for acceptable methods to prevent IASCC, NUREG/CR-7027 should be recognized in RG 1.44 as a useful source of information. This Guide was last revised in the 1970s, and it is unlikely that it will be revised again in less than 3-5 years.

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/RA/
 Said Abdel-Khalik
 Chairman

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Letter to R.W. Borchardt, EDO, NRC, from Said Abdel-Khalik, Chairman, ACRS, dated May 19, 2011

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