June 24, 2011

Dr. Said Abdel-Khalik, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: RESPONSE TO THE CONCERNS OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS ON REGULATORY GUIDE 1.44

Dear Dr. Abdel-Khalik:

By letter dated May 19, 2011 (Ref. 1), the Advisory Committee on Reactor Safeguards (ACRS) replied to the Executive Director for Operation's (EDO's) response letter dated April 5, 2011 (Ref. 2), on the U.S. Nuclear Regulatory Commission's (NRC's) issuance in March 2011 of Draft Final Revision 1 to Regulatory Guide (RG) 1.34, "Control of Electroslag Weld Properties"; RG 1.43, "Control of Stainless Steel Weld Cladding of Low-Alloy Steel Components"; RG 1.44, "Control of the Processing and Use of Stainless Steel"; and RG 1.50, "Control of the Preheat Temperature for Welding of Low-Alloy Steel." This memorandum responds to the ACRS concerns raised in its letter dated May 19, 2011.

ACRS CONCERNS

ACRS identified the following concerns in its letter dated May 19, 2011:

(1) ACRS received the April 5, 2011, response letter four days after the NRC issued RG 1.44. This sequence of events precluded the opportunity for additional ACRS review and comment on a revised version of the guide.

(2) Although the staff cannot yet provide guidance for acceptable methods to prevent irradiation-assisted stress-corrosion cracking (IASCC), RG 1.44 should recognize NUREG/CR-7027, "Degradation of LWR Core Internal Materials Due to Neutron Irradiation," issued December 2010, as a useful source of information.

Concern No. 1

The process for issuing changes to RGs in Management Directive 6.6 calls for ACRS review prior to issuance, although it is silent on the process to address comments by the ACRS. The staff believed that it had satisfactorily addressed the ACRS comments obviating the need for another ACRS review of the current revision. Nonetheless, the staff agrees with the ACRS that a better process would have been to allow the ACRS the opportunity to review the proposed resolutions to its comments before issuing the final RG. We will modify the RG review process and train appropriate staff to reflect this change for the RGs that the ACRS indicates it would like to review again.

Concern No. 2

By letter dated February 24, 2011 (Ref. 3), ACRS commented on RG 1.44 as follows:

> The guide does not address the phenomenon of IASCC. Although the IASCC mechanism is not as well understood as IGSCC [intergranular stress-corrosion cracking], there is ample evidence that the IASCC susceptibility of core internals is enhanced by sensitization and cold work and that this susceptibility can be reduced by the choice of materials and fabrication controls similar to those used to reduce the risk of IGSCC. This should be noted in future revisions.

The NRC staff agreed with the ACRS comment in its response letter to ACRS dated April 5, 2011. The NRC staff also agreed with the ACRS statement that it would address IASCC in future revisions to the RG. Therefore, the staff believed it was in full agreement with the ACRS comment.

Furthermore, the staff acknowledges the Committee's concern that IASCC is an important degradation mechanism that should be subject to NRC guidance. The NRC staff recognizes the value of the research documented in NUREG/CR-7027; however, the staff does not believe that it has the sufficient technical foundation necessary to support a regulatory position on IASCC at this time. The NRC will primarily use results from the NUREG as the basis to direct further research efforts in this area. Ongoing work in this area includes NRC-approved inspection plans under the industry's Materials Reliability Program. Data from these activities will provide valuable operating experience on stainless steel reactor internals in U.S. nuclear plants.

Therefore, in recognition of the ACRS comments on IASCC, the staff will address IASCC when sufficient data, research, and operational experience become available.

Thank you for your review, input, and interest in the revision to these important RGs.

Sincerely,

/RA by Martin J. Virgilio/

R. W. Borchardt
Executive Director
for Operations

cc: Chairman Jaczko
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff
SECY

References:

1. Letter to R. W. Borchardt, EDO, from Dr. Said Abdel-Khalik, Chairman, ACRS, “Response to the April 5, 2011, EDO Letter Regarding Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50,” May 19, 2011.

2. Letter to Dr. Said Abdel-Khalik, Chairman, ACRS, from R. W. Borchardt, EDO, “Response to ACRS Recommendations on Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50,” April 5, 2011.

3. Letter to R. W. Borchardt, EDO, from Dr. Said Abdel-Khalik, Chairman, ACRS, “Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50,” February 24, 2011.

References:

1. Letter to R. W. Borchardt, EDO, from Dr. Said Abdel-Khalik, Chairman, ACRS, "Response to the April 5, 2011, EDO Letter Regarding Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50," May 19, 2011.

2. Letter to Dr. Said Abdel-Khalik, Chairman, ACRS, from R. W. Borchardt, EDO, "Response to ACRS Recommendations on Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50," April 5, 2011.

3. Letter to R. W. Borchardt, EDO, from Dr. Said Abdel-Khalik, Chairman, ACRS, "Draft Final Regulatory Guides 1.34, 1.43, 1.44, and 1.50," February 24, 2011.

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