

November 21, 2011

Dr. Said Abdel-Khalik, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20055

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS LETTER, DATED OCTOBER 17, 2011, ON THE DRAFT FINAL REGULATORY GUIDE 1.82, "WATER SOURCES FOR LONG-TERM RECIRCULATION COOLING FOLLOWING A LOSS-OF-COOLANT-ACCIDENT," REVISION 4

Dear Dr. Abdel-Khalik:

I am responding to your letter dated October 17, 2011, regarding the Advisory Committee on Reactor Safeguards (ACRS or Committee) meeting on October 6-8, 2011.

During the Committee meeting, the staff discussed the proposed Revision 4 of Regulatory Guide (RG) 1.82, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Cooling-Accident." This RG is undergoing a major revision to consolidate and incorporate the latest NRC staff positions related to qualification and design of emergency core cooling system suction strainers that were developed during resolution of Generic Safety Issue – 191 in areas such as chemical effects, head loss testing, and protective coatings. The Committee also recognized that a later revision will handle any changes needed to this RG in the area of credit for containment accident pressure increasing available net positive suction head, downstream effects of debris in the reactor vessel, or additional alternatives developed in response to the staff requirement memorandum for SECY-10-0113, "Closure Options for Generic Safety Issue – 191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance." The staff agrees with the ACRS assessment that the staff should issue the RG after its comments are addressed.

With respect to the comments, the ACRS suggested the following improvements:

- Ensure that clear signposts are established to help the user locate specific RG information.
- Provide clearer indication of resolutions to some multifaceted issues.
- Ensure that regulatory expectations are stated in an achievable way.
- Provide more detailed guidance on debris passage through strainers and zone of influence.

We agree with the Committee's suggestions and will make changes to the RG as detailed in the enclosure. In addition, we will address the ACRS consultant comments in this revision.

We appreciate the recommendation and comments provided by the ACRS and especially its willingness to accelerate its review to accommodate the Commission-directed schedule.

S. Abdel-Khalik

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We plan to issue the revised RG with the discussed changes by the end of 2011. We look forward to future interactions to resolve the remaining issues affecting the guidance document. The enclosure to this letter includes the staff's responses to your recommendations and comments.

Sincerely,

R. W. Borchardt
Executive Director
for Operations

Enclosure:
Staff Response to ACRS Comments

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

S. Abdel-Khalik

- 2 -

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Staff Response to ACRS Comments

- 1) *“...the guidance would be more useful if a clearer roadmap, perhaps based on Fig 2 ... could be produced”*

The staff agrees with the recommendation. Figure 2 will be enhanced, and moved forward in the RG to Section B., “Discussion,” to provide a better roadmap for the staff positions on the various steps in designing ECCS suction strainers and ensuring long-term core cooling during sump recirculation.

- 2) *“Discussion of several important issues is brief and at high level, without suggesting approaches to resolution...”*

Cross-references to staff accepted approaches have been added to several areas to improve usability. For example, a reference to NUREG/CR-6369 and to Section 3.6 of the SE to NEI-0407 will be added to Regulatory Position 1.3.4. on debris transport.

- 3) *“Taken literally, some expectations in the guide would be difficult or impossible to meet....”*

The regulatory positions in the area of head loss testing are based primarily on the staff letter to NEI dated March 2008, which is Reference 8 in the draft RG. This guidance letter was developed after observing several head loss tests at vendor test facilities

The staff will review the use of phrases such as “worst case” or “bounding quantities” in the RG and revise as appropriate. However, as is noted in 10 CFR 50.46 (a)(1)(i): “...ECCS cooling performance must be calculated in accordance with an acceptable evaluation model and must be calculated for a number of postulated loss-of-coolant accidents of different sizes, locations, and other properties sufficient to provide assurance that the most severe postulated loss-of-coolant accidents are calculated...”, the analyses must be sufficiently conservative.

- 4) *“Certain other important matters are only cursorily touched on, such as.....acceptable approaches to measure the passage of debris through strainers...”*

Regulatory Position 1.3.12(g), related to debris bypassing the strainer, covers the methods the staff has frequently observed during strainer testing. However, the staff has not published final guidance for performing tests that determine the amount of bypass through a strainer. The staff is currently working with industry to develop an acceptable generic methodology. When that effort is completed, then the RG can be updated to include the appropriate information and references.

- 5) *“Another area where the guidance should be clearer is with regard to the zone of influence (ZOI)....”*

Regulatory Positions 1.3.3.1(d) and 1.3.3.1(e) will be reviewed and revised as appropriate. It is noted that there is no current specific staff guidance in this area. ZOI

Enclosure

tests have been evaluated individually to ensure that they are representative of expected plant conditions.

- 6) The consultant's report has been reviewed. The comments are largely editorial and are for the most part summarized in the ACRS Committee letter as discussed in items 1 through 5 above. A separate document is being prepared to address each of the comments and will be submitted to the ACRS under a separate transmittal.
- 7) The RG is being revised to address all the comments received and will be sent back to the ACRS for their review when that work is complete. This is expected to be complete by December 9, 2011.