

June 20, 2013

Dr. J. Sam Armijo, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: RESPONSE TO ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
REGARDING STAFF ASSESSMENT OF NEXT GENERATION NUCLEAR
PLANT KEY LICENSING ISSUES

Dear Dr. Armijo:

I am responding to your letter of May 15, 2013, that provided the views of the Advisory Committee on Reactor Safeguards (ACRS) on the U.S. Nuclear Regulatory Commission (NRC) staff's assessment of Next Generation Nuclear Plant (NGNP) key licensing issues. The NRC staff has considered the four recommendations provided in your letter and responds as follows:

- **ACRS Recommendation 1:** The staff assessment of the NGNP white papers on key technical issues is appropriate, given the unavailability of many plant-specific design details, such as the selected fuel form (pebble or prismatic) and a complete plant design. The final assessments should be published after the issues raised in Recommendations 2, 3, and 4 are addressed.

NRC Staff Response: The staff confirms its intent to publish the final assessments after addressing the issues raised in Recommendations 2, 3, and 4, as indicated below.

- **ACRS Recommendation 2:** The assessment documents should be revised to provide clear links to the numerous requests for additional information (RAIs) and responses that were developed during their assessment because the white papers have not been revised to incorporate those agreements.

NRC Staff Response: The staff agrees that the RAIs and responses provide valuable observations and clarifications that should be considered in future NGNP licensing activities. To that end, the staff's white paper assessment reports already include references to topic-specific RAIs and responses. The staff notes that agreed revisions and refinements to the approaches described in the white paper submittals resulted less from the RAI process, which was completed during the initial assessment phase, than from the series of public meeting discussions that were conducted during the follow-on assessment phase. The follow-on assessment activities were further supported by the review of additional technical submittals, which are referenced in the staff's assessment documents. Therefore, the staff believes that revising the documents to provide more extensive references to RAIs and responses, would do little to address the underlying concern that the submitted white papers have not been revised to reflect the results of the assessment interactions. The staff will instead address the intent of the recommendation by revising its assessment documents

where needed to ensure that the documents clearly identify how the assessed approaches contrast with or surpass those described in the white papers. Before publishing the final documents, the staff will also confirm that the documents provide appropriate references to relevant RAIs and responses, associated meeting materials and summaries, and supporting technical submittals.

- **ACRS Recommendation 3:** The licensing basis event selection assessment should point out the need to clarify the definition of event sequences and event sequence families to ensure consistency in developing licensing basis events and design basis accidents (DBAs). Incoherent logic in the event trees should be addressed.

NRC Staff Response: The staff agrees with the recommendation and will revise the assessment documents accordingly. To that end, the staff appreciates the requested clarification that Dr. Dennis Bley and Dr. John Stetkar provided on May 24, 2013, in an informal discussion to help the NRC staff and NGNP project better understand the event tree logic issue that Dr. Stetkar raised during the subcommittee meeting of April 9, 2013, and again during the full committee meeting of May 9, 2013.

- **ACRS Recommendation 4:** The staff's suggestion that the final selection of DBAs include postulated deterministic event sequences is inconsistent with a risk-informed framework proposed by the NGNP project and with other on-going NRC activities encouraged by the Commission. Although engineering judgment may be invoked to include postulated deterministic event sequences in the final selection of DBAs, if such sequences are not in the probabilistic risk assessment (PRA), the PRA is incomplete and should be revised to include them. They then can be fully evaluated and considered for inclusion as DBAs.

NRC Staff Response: The staff agrees with the recommendation and will revise the assessment documents accordingly. As discussed with the subcommittee and full committee, the staff believes that the consideration of postulated deterministic DBAs is consistent with the Option 2 licensing approach that the NRC and the U.S. Department of Energy jointly selected in the 2008 document, "Next Generation Nuclear Plant Licensing Strategy: A Report to Congress." Option 2 is described in that report as a risk-informed and performance-based approach that uses deterministic engineering judgment and analysis, complemented by NGNP design-specific PRA information, to establish the licensing basis and licensing technical requirements. The Committee's recommendation to ensure that such postulated events are included in the PRA likewise aligns with the Option 2 approach. These postulated events would be treated as realistically as possible in the PRA in order to gain an appropriate risk perspective but, for design purposes, may be treated in the plant safety analyses in a conservative and bounding fashion to account for uncertainties associated with the PRA.

J. Armijo

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The NRC staff appreciates the Committee's comments and recommendations and looks forward to further interactions on these and other topics related to advanced reactors.

Sincerely,

/RA/

R. W. Borchardt
Executive Director
for Operations

Docket No.: PROJ0748

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

J. Armijo

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