July 25, 2011

Dr. Said Abdel-Khalik, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT SECY PAPER "OPTIONS FOR PROCEEDING WITH FUTURE LEVEL 3 PROBABILISTIC RISK ASSESSMENT ACTIVITIES"

Dear Dr. Abdel-Khalik:

In your recent letter to Chairman Jaczko, dated June 22, 2011, you provided the conclusions and recommendations of the Advisory Committee on Reactor Safeguards (ACRS) on the U.S. Nuclear Regulatory Commission (NRC) staff's draft SECY paper titled, "Options for Proceeding with Future Level 3 Probabilistic Risk Assessment Activities," which was reviewed and discussed during the 584th meeting of the ACRS held June 8–10, 2011. The agency published this draft paper as SECY-11-0089 on July 7, 2011 (Agencywide Documents Access and Management System Accession No. ML11090A039).

The staff agrees with ACRS's conclusion that a full-scope comprehensive Level 3 probabilistic risk assessment (PRA) for an operating nuclear power plant site will improve our understanding of the risks from nuclear power plant accidents. The staff also agrees that knowledge and experience gained from the performance of such a study will also enhance our capabilities to address emerging issues, to support emergency planning, and to evaluate the integrated risks from proposed new plant designs and siting configurations. The staff has articulated these positions in SECY-11-0089.

The staff also agrees that performance of a Level 3 PRA should not rely on the use of excessively conservative assumptions or analytical simplifications that inappropriately characterize risk contributions, and that uncertainties should be explicitly identified, documented, and quantified. Indeed, this rationale motivated the staff to identify, as part of Option 2 in SECY-11-0089, the proposed research needed to address gaps in existing PRA technology; this research would also be performed in parallel with a new full-scope comprehensive site Level 3 PRA as part of Option 3. However, it is worth noting that assumptions and analytical simplifications are necessary in the development of any PRA model, and that these are partially driven by the project objectives, resources, and schedule. More important is the explicit documentation of these assumptions, sensitivity and uncertainty analyses, and limitations of results and insights.

The staff also agrees that, in performing a Level 3 PRA, it should engage the participation of industry stakeholders to expeditiously select the most appropriate site and to ensure that the PRA models, assumptions, and data take maximum advantage of available plant-specific and site-specific information.

The staff and ACRS differ in the specific approach that is recommended for proceeding with future Level 3 PRA activities. In SECY-11-0089, the staff recommends that the Commission approve Option 2 to conduct focused research to address identified gaps in existing PRA technology before performing a full-scope comprehensive site Level 3 PRA; this recommendation was driven, in part, by a need to otherwise reallocate a limited number of qualified risk analysts from other priority assignments of the agency to support a full-scope comprehensive site Level 3 PRA. In your letter, the ACRS disagreed with this recommendation, and instead proposed that the Commission adopt a modified version of Option 3 (a full-scope comprehensive site Level 3 PRA for an operating nuclear power plant site). In implementing this modified version of Option 3, ACRS recommended that the staff develop a project plan and schedule that are commensurate with available supporting technical information, resources, and Commission priorities for coordinated research programs.

In your letter, ACRS expressed its concern that Option 2 does not directly integrate the proposed research with a clear plan and focused technical requirements to support completion of a Level 3 PRA. ACRS further stated that experience has shown that the most efficient process to identify key knowledge gaps is through the performance of an integrated plant-specific PRA in which accident scenario context and interim risk information can be used to more effectively define the scope and priorities for targeted research. Therefore, ACRS proposed that the staff engage with industry stakeholders to expeditiously select a site and develop a Level 3 PRA project plan to more effectively identify key technology gaps and provide a context for implementation of the research results.

While the staff understands and appreciates these concerns and agrees with the identified benefits of first selecting an appropriate site and then identifying and conducting research needed to support the development of a plant-specific Level 3 PRA, it believes that Option 2 provides important advantages over the proposed modified version of Option 3. Whereas Option 3 would require selection of a single site for participation in a resource-intensive, multi-year Level 3 PRA, Option 2 offers the flexibility of conducting shorter-term focused research involving multiple sites, depending on the research area and the availability of site-specific PRA information. For example, one site could participate in research to support modeling of multi-unit dependencies, while others could participate in research related to human reliability analysis and spent fuel PRA technology. This research would still be conducted within the context of a plant-specific PRA that can help focus the scope and priorities, as ACRS suggests. Finally, by conducting this research before selecting a specific site and performing the Level 3 PRA, the staff will be in a better position to complete a full-scope comprehensive site Level 3 PRA within a shorter time period, thereby facilitating continuity in project staff and reducing costly staff turnover.

The staff acknowledges that numerous feasible options are available for proceeding with future Level 3 PRA activities, including those proposed by the staff and the ACRS. In addition to the three primary options provided in the draft SECY paper reviewed by the ACRS, the staff later developed another section of SECY-11-0089 that discusses other possible options. In this section, the staff notes that the Commission has considerable flexibility in selecting an option for proceeding, and it identifies additional options considered by the staff (e.g., limited scope Level 3 PRAs, full-scope Level 3 PRAs for new or advanced reactor designs, and licensee-developed Level 3 PRAs). In any case, the staff articulates in SECY-11-0089 that should the Commission direct the staff to proceed with Option 3 (or any other option involving more resources than currently requested), the staff would first engage with industry to select a site and then develop a

detailed project plan that would include more detailed and refined resource estimates. In doing so, the staff would develop a project plan and schedule that are commensurate with available supporting technical information, resources, and Commission priorities; this approach would be consistent with ACRS's recommendations.

The staff also acknowledges the additional comments provided by ACRS member Dr. Dana A. Powers. In these comments, Dr. Powers stated that he declined to support the ACRS's recommendation and that Option 2 as recommended by the staff is a better alternative.

As always, the staff values ACRS's views and suggestions and looks forward to future opportunities to engage on this topic.

Sincerely,

/RA Michael F. Weber for/

R. W. Borchardt
Executive Director
for Operations

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

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