

December 11, 2012

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

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS LETTER DATED NOVEMBER 8, 2012, ON SECY-12-0157, "CONSIDERATION OF ADDITIONAL REQUIREMENTS FOR CONTAINMENT VENTING SYSTEMS FOR BOILING WATER REACTORS WITH MARK I AND MARK II CONTAINMENTS"

Dear Dr. Armijo:

Thank you for your November 8, 2012, letter regarding your review of the U.S. Nuclear Regulatory Commission's (NRC's) paper entitled, "Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors [BWR] with Mark I and Mark II Containments." The NRC staff has considered the recommendations provided in your letter and developed the following responses.

ACRS Recommendation 1:

Additional measures for accident source-term mitigation in Mark I and Mark II containments are not justified by risk-informed cost-benefit analyses that rely on the generic PRA [probabilistic risk assessment] models, risk metrics, estimates of averted costs, and uncertainties that were examined by the staff. Nevertheless, we agree with the staff that additional defense-in-depth measures should be considered to compensate for uncertainties in quantitative techniques to evaluate accident progression in reactors with small containments.

NRC Response:

The NRC staff thanks the Committee for its comments and observations related to the technical and regulatory analyses performed to support decision-makers on the subject paper. As your letter states, both quantitative and qualitative factors need to be considered in identifying options and recommendations. The staff agrees that the primary factor is defense-in-depth for reactor facility designs with higher conditional probabilities of containment failures during severe accidents.

ACRS Recommendation 2:

We recommend the implementation of Option 4, Performance-Based Approach, to reduce radioactive material releases as a needed defense-in-depth measure for BWR Mark I and Mark II containments.

NRC Response:

The NRC staff appreciates your recommendation even though it differs from what the staff is forwarding to the Commission. Although all of the options have both positive and negative attributes, the staff continues to believe that the best overall approach involves installing engineered filtered venting systems for reactors with the Mark I and Mark II containments. Please note that the Committee reviewed a draft of this Commission paper in which Option 4 was entitled "Performance-Based Approach." The NRC staff's internal review and concurrence process led to revisions of the paper, including clarifying the title and descriptions of Option 4 as developing a severe accident confinement strategy for Mark I and Mark II containments. The general proposal and most of the discussions related to Option 4 remain the same as those that the Committee reviewed and commented upon.

ACRS Recommendation 3:

Installation of external filtered vents (Option 3) may be one outcome of Option 4 to minimize the release of radioactive material to the environment.

NRC Response:

The NRC staff agrees that installing engineered filtered venting systems may be an outcome if the Commission selects Option 4.

ACRS Recommendation 4:

Severe accident capable vents (Option 2) are an essential part of any controlled venting strategy.

NRC Response:

The NRC staff agrees that the reliable hardened vents that Order EA-12-050, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents," requires should be upgraded or replaced with a containment venting system designed and installed to remain functional during severe accident conditions. The staff provided an alternative within Option 4 to proceed with an order requiring severe accident capable vents as a more immediate step in developing a severe accident confinement strategy.

J. Armijo

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The NRC staff appreciates the Committee's prompt and very thorough review of this paper and the related technical and regulatory analyses. The staff looks forward to working with the Committee as the staff implements whichever option the Commission selects.

Sincerely,

/RA by Michael R. Johnson for/

R. W. Borchardt
Executive Director
for Operations

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

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