



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

November 28, 2012

The Honorable Allison M. Macfarlane  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**SUBJECT: SUMMARY REPORT – 599<sup>th</sup> MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, NOVEMBER 1-3, 2012**

Dear Chairman Macfarlane:

During its 599<sup>th</sup> meeting, November 1-3, 2012, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports:

**REPORTS**

Reports to Allison M. Macfarlane, Chairman, NRC, from J. Sam Armijo, Chairman, ACRS:

- Long-Term Core Cooling for the South Texas Project Advanced Boiling Water Reactor Combined License Application, dated November 7, 2012
- Response to the August 15, 2012 EDO Letter Regarding ACRS Recommendations in Letter dated July 17, 2012 on the Draft Interim Staff Guidance Documents in Support of Tier 1 Orders, dated November 7, 2012
- ACRS Review of Staff's Draft SECY Paper on Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors (BWRs) with Mark I and Mark II Containment Designs, dated November 8, 2012
- Report on SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," dated November 13, 2012

**HIGHLIGHTS OF KEY ISSUES**

1. Consideration of Economic Consequences / Land Contamination within the NRC Regulatory Framework (SECY-12-0110)

The Committee met with representatives of the NRC staff to review SECY-12-0110, "*Consideration of Economic Consequences within the NRC's Regulatory Framework.*" SECY-12-0110 provides to the Commission the staff's proposed options and recommendations

to consider updates to the inclusion of economic consequences within the NRC's current regulations and guidance. Staff provided background information on the legal authorities of the NRC to consider damage to offsite property in the Atomic Energy Act and the current ways that offsite property damage is considered in NRC guidance. The staff explained its analysis and conclusions from staff review of the issues and explained its options and recommendations to the Committee.

### Committee Action

The Committee issued a report to the NRC Chairman on this matter dated November 13, 2012, recommending that Option 3, "Exploring the Merits of Potential Changes to the Regulatory Framework," of the SECY Paper, be undertaken. The report also recommends that the guidance and methods for consideration of the economic consequences from severe accidents should be developed in the context of decisions on Fukushima Near-Term Task Force Recommendation 1, and the Risk Management Task Force recommendations in NUREG-2150, "A Proposed Risk Management Regulatory Framework." The report recommends that these decisions need to be made on how broad categories of severe accident consequences will be treated within the NRC's risk-informed regulatory framework. The report also recommends that the methodology used for evaluations of the economic consequences from severe accidents be improved, even if no changes are made in the regulatory framework. Three members of the Committee included additional comments to the Letter Report in support of Option 2 in the SECY Paper.

#### 2. South Texas Project Units 3 and 4 Combined License Application Review for Adequacy of Long Term Core Cooling under Design Basis Conditions

The Committee met with representatives of the NRC staff and the applicant Nuclear Innovation North America (NINA) to discuss the subject. The combined license application by NINA involved two units of the Advanced Boiling Water Reactor (ABWR) design. This review was required by a May 8, 2008, Commission issued Staff Requirements Memorandum (SRM) stating "The ACRS should advise the staff and Commission on the adequacy of the design basis long-term core cooling approach for each new reactor design based, as appropriate, on either its review of the design certification or the first license application referencing the reactor design." As the SRM was written after the ABWR design was certified by the NRC in 1997, the Committee responded to the Commission request during its review of the subject combined license application, which was the first one submitted. In addition to the Committee's review on November 1, 2012, the ABWR Subcommittee reviewed the subject during several meetings in the past two years.

The main focus of the Committee's review was the adequacy of the safety systems in South Texas Projects Units 3 and 4 (STP 3 and 4) to provide adequate core cooling over extended time periods when the Emergency Core Cooling System (ECCS) recirculation mode is activated during design basis accident (DBA) conditions. Generation of debris during a design basis

accident, ECCS strainer performance, and effects of the debris on the performance of downstream components including the reactor fuel were reviewed. The applicant committed to maintain low levels of fibrous materials and other deleterious materials in the containment, and perform testing of the fuel design consistent with the fuel to be loaded in the first core for downstream effects of the debris. In addition, the applicant committed to use test procedures and protocols consistent with current industry practice at the time of the tests.

#### Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated November 7, 2012. The Committee concluded that the long-term core cooling for design basis conditions for STP 3 and 4 will be adequately met pending successful resolution of the downstream effects test program. The Committee concluded that any future relaxation of the cleanliness requirements mentioned above would have to be addressed by additional test data and associated analysis. The Committee wants to review the STP downstream fuel effects test procedure prior to testing.

#### 3. Role of Filtered Venting Systems When Installed in BWR Mark I and Mark II Containments

The Committee met with representatives of the NRC's staff to discuss the development of a position paper addressing the value of filtered vents. A SECY notation vote paper on the advantages of using filtered vents for Mark I and Mark II reactors is due to the Commission by the end of November. This SECY paper will provide the Commission with information, recommendations, and options regarding the consideration of new requirements related to containment venting systems for boiling water reactors (BWRs) with Mark I and Mark II containments. Specifically, the options presented will include requiring containment venting systems capable of operation under severe accident conditions, containment venting systems that include filters within the controlled release pathways, and a performance-based approach to containment filtration strategies. Members of the public (Mary Lampert, from Pilgrim Watch, Jim Riccio, from Greenpeace, and Paul Gunter, from Beyond Nuclear, addressed the ACRS members to state their support for the installation of filtered vents in US reactors, especially BWRs with Mark I and Mark II containments. Mr. Bob Leyse called the ACRS members attention to the inability of vents to handle fast-moving accidents unless the vent sizes are increased considerably.

#### Committee Action

On November 8, 2012, the Committee issued a letter to the NRC Chairman with observations on the staff's proposed paper. The ACRS members support Option 4, use of a performance-based approach for developing filtering strategies. Nevertheless, the ACRS members recognize that Option 3, installation of filtered vents, may be a possible outcome of Option 4. At the same time, the ACRS members recognize that severe accident capable vents (Option 2) are an essential part of any controlled venting strategy and for this reason they support the issuing an Order (or revising existing Order EA-12-050) so that the soon to be installed reliable hardened vents can perform under more extreme conditions. Two members of the Committee provided additional comments to the letter report. The additional comments were focused on use of the MELCOR and MAACS codes in assessing the impacts of filtration.

## RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

The Committee considered the EDO's response of October 15, 2012, to comments and recommendations included in the September 18, 2012 ACRS letter on the NRC staff's Safety Evaluation Report with open items associated with the Comanche Peak Nuclear Plant, Units 3 and 4, US-APWR Reference Combined License Application. In its letter, the Committee concluded that:

1. They did not identify any issues in SER Chapters 5, 8, 10, 11, and 12 with potentially significant safety implications beyond those addressed in the current open items.
2. SER Chapter 10 does not contain any site-specific open items. They plan to review the staff's resolution of the open items in SER Chapters 5, 8, 11, and 12 during future meetings.
3. Systems described in these chapters interact with other systems that are discussed in the SER chapters and have not yet been reviewed. They will comment on potential safety implications of any system interactions in future interim letters and in a final report.

## SCHEDULED TOPICS FOR THE 600<sup>th</sup> ACRS MEETING

The following topics are scheduled for the 600<sup>th</sup> ACRS meeting, to be held on December 6-8, 2012:

- Discussion of topics for meeting with the Commission
- Meeting with the Commission
- Design Specific Review Standard for Instrumentation and Control of the Babcock & Wilcox mPower Reactor design
- Spent Fuel Transportation Risk Assessment
- Draft Final Regulatory Guide 4.22, "Decommissioning Planning During Operations"
- Guidance on Treatment of Probabilistic Risk Assessment Uncertainties

Sincerely,

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J. Sam Armijo  
Chairman

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J. Sam Armijo  
Chairman

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