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WASHINGTON, D.C. 20555-0001

January 31, 2020

Mr. Matthew Sunseri, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: REVIEW OF ADVANCED REACTOR COMPUTER CODE EVALUATIONS

Dear Mr. Sunseri:

On behalf of the U.S. Nuclear Regulatory Commission (NRC) staff, I am responding to your letter to Chairman Svinicki dated November 4, 2019, providing your conclusions and recommendations on the staff's evaluations of computer codes to be used for analyses of advanced non-light-water reactors (non-LWRs). We greatly value the Advisory Committee on Reactor Safeguards (ACRS) review and evaluation and useful perspectives and insights on our approach to code development activities.

The staff has taken into consideration your recommendations and has revised the four draft documents referenced in your letter that support Strategy 2 of the NRC Non-LWR Near-Term Implementation Action Plans (ML17165A069). A list of the revised four documents with their Agency Document and Management System (ADAMS) Accession Numbers is provided at the end of this letter. More specifically, the revision to the first document includes a high-level strategy for conducting reactor safety analyses using the various computer codes described in the other three documents (or volumes). In addition, the staff agrees with your recommendation to perform pilot studies to illustrate how to perform safety analyses using the computer codes being developed. Pilot studies for heat-pipe-cooled reactors are currently underway, and additional studies on other non-LWR designs are being planned.

At your request, the staff is planning to brief you on two additional volumes in 2020. One (Volume 4) describes the codes the staff is developing to support dose assessments for initial licensing, National Environmental Policy Act and siting reviews, emergency response, and other health physics calculations unique to the non-LWR technologies. The other (Volume 5) will document plans to support analysis needs for the front- and back-ends of the fuel cycle (e.g., transportation of materials used to manufacture fuel, fuel fabrication operations, spent fuel storage and transportation, etc.).

The staff looks forward to continued interactions with the ACRS and its future reviews of our code development plans.

Sincerely,

**/RA/**

Raymond V. Furstenau  
Director of Nuclear Regulatory Research

cc: Chairman Svinicki  
Commissioner Baran  
Commissioner Caputo  
Commissioner Wright  
SECY

References:

1. Code Development Approach for NRC's Regulatory Oversight of Non-Light Water Reactors, ML20030A174
2. NRC Non-Light Water Reactor Vision and Strategy, Volume 1 – Computer Code Suite for Plant Systems Analysis, ML20030A176
3. NRC Non-Light Water Reactor Vision and Strategy, Volume 2 – Computer Code Development Plans for Fuel Performance Analysis, ML20030A177
4. NRC Non-Light Water Reactor Vision and Strategy, Volume 3 – Computer Code Development Plans for Severe Accident Progression, Source Term and Consequence Analysis, ML20030A178

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DATED JANUARY 31, 2020.

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