

## **RULEMAKING ISSUE (Notation Vote)**

November 16, 2016

SECY-16-0131

FOR: The Commissioners

FROM: Victor M. McCree  
Executive Director for Operations

SUBJECT: DENIAL OF PETITION FOR RULEMAKING ON UNINTERRUPTIBLE  
MONITORING OF COOLANT AND FUEL IN REACTORS AND SPENT  
FUEL POOLS (PRM-50-113; NRC-2015-0230)

### PURPOSE:

To obtain Commission approval to publish the enclosed *Federal Register* notice (FRN) (Enclosure 1) denying a petition for rulemaking (PRM) PRM-50-113, submitted by Dr. Alexander DeVolpi (the petitioner). This paper does not address any new commitments or resource implications.

### BACKGROUND:

Dr. Alexander DeVolpi filed the petition with the U.S. Nuclear Regulatory Commission (NRC) on September 10, 2015 (Agencywide Document Access and Management System (ADAMS) Accession No. ML15264A857), requesting that the NRC amend Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Domestic licensing of production and utilization facilities," to require "installation of ex-vessel instrumentation for uninterrupted monitoring of coolant and fuel in reactors and spent-fuel pools."

The NRC assigned docket number PRM-50-113 to this petition and published a notice of docketing in the *Federal Register* on December 1, 2015 (80 FR 75009). The staff did not request public comment on the petition because staff had sufficient information to review the issues raised by the petitioner.

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DISCUSSION:

The petitioner asserts that the National Academy of Sciences Recommendation 5.1A should be mandated (as an NRC regulation) to require installation of ex-vessel instrumentation for uninterrupted monitoring of coolant and fuel in reactors and spent fuel pools.

The NRC staff responded to the National Academy of Sciences report and its recommendations in SECY-15-0059, "Seventh 6-Month Status Update on Response to Lessons Learned from Japan's March 11, 2011, Great Tōhoku Earthquake and Subsequent Tsunami," dated April 9, 2015 (ADAMS Accession No. ML15069A444). The NRC staff's discussion of Recommendation 5.1A in Enclosure 6 to SECY-15-0059 addresses the installation of ex-vessel instrumentation for uninterrupted monitoring of coolant and fuel in reactors and spent fuel pools. The NRC staff found that this recommendation was addressed by existing requirements and other ongoing activities taken in response to the Fukushima nuclear accident, as summarized below.

Specifically, SECY-16-0041, "Closure of Fukushima Tier 3 Recommendations Related to Containment Vents, Hydrogen Control, and Enhanced Instrumentation," dated March 31, 2016 (ADAMS Accession No. ML16049A079), and its Enclosure 2 provide the staff's complete evaluation on the subject of enhanced reactor and containment instrumentation for beyond-design-basis conditions. These documents describe the lessons learned from the Fukushima nuclear accident that caused the NRC to issue two Orders requiring additional instrumentation: Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (Mitigating Strategies Order, ADAMS Accession No. ML12054A735), and Order EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (Spent Fuel Instrumentation Order, ADAMS Accession No. ML12056A044).

The instrumentation requirements in Orders EA-12-049 and EA-12-051 provide additional capabilities to aid licensees in responding to design basis events, before fuel in the core or spent fuel pool is damaged. If appropriate, Severe Accident Management Guidelines (SAMGs) are entered when plant conditions indicate that cooling of the spent fuel pool or core cannot be maintained, and the fuel in the spent fuel pool or reactor is on a trajectory towards damage. The SAMGs then invoke technical guidance that is based on an engineering evaluation of the scenario. This would include an assessment of the available parameter indications, their functional consistency, and their trends as the plant transitions to severe accident conditions, which may be more severe than the conditions assumed in instrument design and environmental qualification. The severe accident response strategies are then based on fundamental principles that do not rely on precise indications of parameter values, but rather on an integrated technical assessment of the evolving event scenario, and the conditions that preceded the onset of fuel damage in the spent fuel pool or core.

These conclusions in SECY-16-0041 were consistent with the discussion in Enclosure 5 of SECY-15-0137, "Proposed Plans for Resolving Open Fukushima Tier 2 and 3 Recommendations," dated October 29, 2015 (ADAMS Accession No. ML15254A006), which dealt specifically with instrumentation for beyond-design-basis conditions. The staff recommended that the Commission not pursue additional regulatory action beyond the current requirements, including those imposed by Orders EA-12-049 and EA-12-051. The staff

concluded that further studies are unlikely to support additional regulatory requirements related to enhanced reactor and containment instrumentation for beyond-design-basis conditions when evaluated against the criteria for operating reactors in 10 CFR 50.109, "Backfitting," or the issue finality provisions of 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." In its SRM dated February 8, 2016 (ADAMS Accession No. ML16039A175), the Commission approved the staff's closure plan for this Group 2 item and directed the staff to document the final results, which was completed in SECY-16-0041 as discussed above.

In addition to the bases presented in these Commission papers, the staff notes that, depending on an accident's progression, licensees will use available indicators and technical assessments of the evolving scenario to implement adequate measures to protect public health and safety in accordance with the NRC's emergency preparedness requirements. If an accident progresses to fuel damage, specific actions would be required, including initiating predetermined protective actions for the public.

Additionally, the staff will continue to participate in codes and standards activities, and the staff will update the regulatory guidance documents on instrumentation, as warranted. For example, the staff plans to update the guidance in Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" (ADAMS Accession No. ML061580448). This would allow licensees to use the revised guidance, on a voluntary basis, to enhance their reactor and containment instrumentation.

Based on the discussion provided above, the staff has determined that new regulations requiring installation of additional ex-vessel instrumentation for uninterruptable monitoring of coolant and fuel in reactors and spent-fuel pools beyond those required by Orders EA-12-049 and EA-12-051 are not needed to provide reasonable assurance of public health and safety.

#### RECOMMENDATION:

The staff recommends that the Commission deny PRM-50-113 because the issues raised by the petitioner have already been addressed by the actions that were taken in response to the Fukushima nuclear accident. The enclosed FRN provides a detailed response to the requests made in the PRM.

The staff requests the Commission's approval to publish the FRN denying PRM-50-113 (Enclosure 1). The enclosed letter for signature by the Secretary of the Commission (Enclosure 2) informs the petitioner of the Commission's decision to deny the petition. The staff will also inform the appropriate Congressional committees of the Commission's decision.

The Commissioners

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COORDINATION:

The Office of the General Counsel has reviewed this package and has no legal objection to the denial of the petition. The Office of Administration has reviewed and concurred on this paper.

***/RA/***

Victor M. McCree  
Executive Director  
for Operations

Enclosures:

1. *Federal Register* notice
2. Letter to the Petitioner

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**ADAMS Accession Nos:** ML16027A007 (Pkg.); ML16027A006 (SECY Paper); ML16027A004 (FRN); ML16027A005 (Letter to Petitioner) \* concurrence via email

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| <b>DATE</b>   | 1/29/2016       | 8/11/2016        | 7/7/2016        | 8/16/2016          | 9/22/2016            |
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