UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 1, 2021

MEMORANDUM TO: Dennis C. Morey, Chief
Licensing Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Ngola Otto, Project Manager
Licensing Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Signed by Otto, Ngola on 06/01/21

SUBJECT: JUNE 3, 2021, AUDIT PLAN FOR FRAMATOME INC. TOPICAL REPORT BAW-10227P, REVISION 2, EVALUATION OF ADVANCED CLADDING AND STRUCTURAL MATERIAL (M5) IN PRESSURIZED WATER REACTOR FUEL (EPID L-2019-TOP-0054)

By letter dated December 31, 2019, Framatome Inc. (Framatome) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review Topical Report (TR) BAW-10227P, Revision 2, "Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel" (Agencywide Documents Access and Management System Accession No. ML20003E125). The NRC staff technical review of this licensing topical report is ongoing. In order to facilitate the review, the staff will perform a virtual regulatory audit on June 3, 2021. The staff's audit plan is enclosed.

Project No. 728
Docket No. 99902041

Enclosure:
As stated

CONTACT: John Lehning, Technical Reviewer (NRR/DSS/SFNB)
Joshua Whitman, Technical Reviewer (NRR/DSS/SFNB)
Paul Clifford (NRR/DSS)

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June 1, 2021

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PUBLIC (Audit Plan)
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JWhitman, NRR
JLehning, NRR

ADAMS Accession No.: ML21145A099 **NRR-106**

OFFICE	NRR/DORL/LLPB/PM	NRR/DORL/LLPB/LA	NRR/DSS/SFNB/BC	NRR/DORL/LLPB/BC
NAME	NOtto	DHarrison	RLukes	DMorey
DATE	5/24/2021	5/25/2021	5/28/2021	6/1/2021

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AUDIT PLAN FOR FRAMATOME INC. TOPICAL REPORT BAW-10227P, REVISION 2, EVALUATION OF ADVANCED CLADDING AND STRUCTURAL MATERIAL (M5) IN PRESSURIZED WATER REACTOR FUEL

PROJECT NO. 728

(EPID L-2019-TOP-0054)

1.0 BACKGROUND

By letter dated December 31, 2019, Framatome Inc. (Framatome) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review Topical Report (TR) BAW-10227P, Revision (Rev.) 2, "Evaluation of Advanced Cladding and Structural Material (M5) in PWR [Pressurized Water Reactor] Reactor Fuel" (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML20003E125). This TR provides an update of the material properties for M5 cladding and structural material and expands the range of applicability of those properties.

The planned audit is intended to clarify the NRC staff's understanding of Framatome's intended technical approach for addressing the technical issues raised in request for additional information (RAI) questions 8-10, which were issued on August 21, 2020. The subject of RAI questions 8-10 concerns the swelling and rupture of M5 cladding during a postulated loss-of-coolant accident (LOCA) event. Framatome provided responses to RAI questions 8-10 in a submittal dated December 18, 2020 (ADAMS Accession No. ML20366A127), and these RAI responses remain under NRC staff review.

The proposed audit will be held in accordance with NRR procedure as described in Office Instruction LIC-111, "Regulatory Audits."

2.0 REGULATORY AUDIT BASES

Regulatory guidance for the review of fuel system materials and designs and adherence to Title 10 of the *Code of Federal Regulations* (10 CFR), Appendix A to Part 50, General Design Criteria (GDC)-10, "Reactor Design," GDC-27, "Combined Reactivity Control Systems Capability," and GDC-35, "Emergency Core Cooling," is provided in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (SRP), Section 4.2, "Fuel System Design." In accordance with SRP Section 4.2, the objectives of the fuel system safety review are to provide reasonable assurance that: (1) the fuel system is not damaged as a result of normal operation and anticipated operational occurrences (AOOs), (2) fuel system damage is never so severe as to prevent control rod insertion when it is required, (3) the number of fuel rod failures is not underestimated for postulated accidents, and (4) coolability is always maintained.

3.0 REGULATORY AUDIT SCOPE

The audit will focus upon the material described in RAI questions 8-10 and the associated RAI responses, as well as supporting references. As necessary, the audit may also touch upon relevant material in TR BAW-10227P, Revision 2, its references, its previous revisions.

4.0 INFORMATION NEEDS

The NRC staff requests that Framatome make available personnel familiar with the swelling and rupture behavior of M5 cladding under LOCA conditions, which is at issue in RAI questions 8-10.

Framatome should be prepared to allow the NRC staff to access (e.g., screenshare via Microsoft Teams, BOX) any relevant supporting documentation, calculations, and references, as appropriate, that may aid in the discussion.

5.0 TEAM ASSIGNMENTS

John Lehning, Technical Reviewer (NRR/DSS/SFNB)
Joshua Whitman, Technical Reviewer (NRR/DSS/SFNB)
Paul Clifford, Technical Reviewer (NRR/DSS)
Leslie Fields, Project Manager (NRR/DORL/LLPB)

6.0 LOGISTICS

- Audit will be held virtually via Microsoft Teams
- Audit Dates: Thursday, June 3, 2021
- Time: 1:00pm – 5:00pm

7.0 DELIVERABLES

An audit report summarizing the staff's audit findings will be prepared within 90 days of the completion of the audit.