



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

September 13, 2024

MEMORANDUM TO: Gerond A. George, Chief
Licensing Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Ngola A. Otto, Project Manager */RA/*
Licensing Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF SEPTEMBER 4, 2024, PRE-SUBMITTAL MEETING
WITH FRAMATOME INC. AND THE U.S. NUCLEAR REGULATORY
COMMISSION FOR SUPPLEMENT 3 TO RODEX4 TOPICAL REPORT,
BAW-10247P (EPID L-2024-LRM-0103)

On September 4, 2024, the U.S. Nuclear Regulatory Commission (NRC) staff held a closed hybrid meeting via Microsoft Teams with representatives from Framatome Inc. (Framatome). The purpose of this meeting was for the NRC staff and Framatome representatives to discuss Supplement 3 to RODEX4 topical report (TR), BAW-10247P. In Supplement 3, Framatome will be requesting expansion of the approved range of applicability of RODEX4 to include uranium enrichment and rod-average burnup beyond current licensing limits. In addition, Framatome used Pacific Northwest National Laboratory (PNNL)-29368, "Fuel Performance Considerations and Data Needs for Burnup above 62 Gigawatt-days per Metric Ton of Uranium (GWd/MTU)" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19317D098) guidance, dated November 2019, in developing Supplement 3. The NRC approvals of ANP-10247P, Revision 0, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors," and Revision 0, Supplement 2 can be found in ADAMS at Accession Nos. ML081340220 and ML18249A105, respectively. Supplement 2 allows for the use of RODEX4 methods described in BAW-10247P-A, Revision 0, for Framatome boiling water reactor (BWR) fuels. The meeting notice is available in the ADAMS at Accession No. ML24232A058.

Framatome's overall approach for Supplement 3 is to extend fuel properties and existing data from RODEX4 methods in Supplement 2 to address increased enrichments and higher burnups. Framatome noted that RODEX4 is its approved thermal-mechanical analysis methodology for BWR fuel rods. During the discussions, Framatome representatives provided details regarding the RODEX4 methodology, the basis for extension of RODEX4 Supplement 2, the need for advanced fuel management (AFM) implementation, RODEX4 thermal-mechanical extension, and validation of fuel rod bow models and development of growth correlations. In closing, Framatome representatives highlighted next steps for the planned submittal including the schedule.

CONTACT: Ngola Otto, NRR/DORL
301-415-6695

The Framatome representatives also addressed several NRC staff questions and made the NRC staff aware of the importance of the TR which supports Framatome's AFM goals. The NRC staff's questions focused on:

- Realistic versus best estimate approach used for RODEX 4, and whether RODEX4 attempts to model thermal mechanical performance of the rods
- Whether data to support increased enrichment and higher burnup was available and if so, will it be submittal in the TR?
- Cladding material and properties
- Whether justification to show that models remain valid will be provided
- How is Chromia-doped fuel being addressed in the data?
- Range of applicability for models used for local fuel pellet burnups.
- Rationale for post submittal meeting and driver for the overall schedule.

Docket No. 99902041

Enclosure:
List of Attendees

List of Attendees

Closed Meeting between Framatome Inc. and the U.S. Nuclear Regulatory Commission on
Topical Report BAW-10247P, Supplement 3 to RODEX4
September 4, 2024
1:00 pm – 4:00 pm

<u>NAME</u>	<u>ORGANIZATION</u>
Alan Meginnis	Framatome Inc. (Framatome)
Michael Anderson	Framatome
Huang Yu	Framatome
Corey Long	Framatome
Kelly Duggan	Framatome
Jacki Stevens	Framatome
Loan Arimescu	Framatome
Michael Harris	Framatome
Kausthubh Gadamsetty	Framatome
Kevin Heller	U. S. Nuclear Regulatory Commission (NRC)
Patrick Raynaud	NRC
Gerond George	NRC
Ngola Otto	NRC

SUBJECT: SUMMARY OF SEPTEMBER 4, 2024, PRE-SUBMITTAL MEETING WITH FRAMATOME INC. AND THE U.S. NUCLEAR REGULATORY COMMISSION FOR SUPPLEMENT 3 TO RODEX4 TOPICAL REPORT, BAW-10247P (EPID L-2024-LRM-0103) DATED SEPTEMBER 13, 2024

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ADAMS Accession Nos.:

ML24248A131 (Package)

ML24249A253 (Summary)

ML24254A435 (Presentation – Non-Proprietary)

ML24248A116 (Presentation – Proprietary)

ML24248A114 (Affidavit)

***via email**

OFFICE	DORL/LLPB/PM*	DORL/LLPB/LA*	DORL/LLPB/BC*	DORL/LLPB/PM*
NAME	Notto	DHarrison	GGeorge	NOtto
DATE	9/10/2024	9/11/2024	9/11/2024	9/13/2024

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