



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

October 13, 2022

MEMORANDUM TO: Richard Chang, 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 22, 2022, CLOSED HYBRID  
FRAMATOME INC. FUEL PERFORMANCE UPDATE MEETING

On September 22, 2022, a closed hybrid meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Framatome Inc. (Framatome) to discuss proprietary information regarding Framatome fuel performance and future plans. Framatome provided the NRC staff with an update on both the pressurized water reactor (PWR) and boiling water reactor (BWR) fuel performances. The meeting notice can be found in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML22251A378.

Framatome's presentations on their fuel activities, facilities, products, operating experience, advanced fuel management (AFM), and advanced codes and methods development provided valuable information and facilitated the discussions with the NRC staff. At the beginning of the meeting the NRC staff participated in tours of both the manufacturing and test facilities, at the Richland, Washington site.

On the presentation for the AFM project, Framatome representatives provided the NRC staff with information on the background, motivation, scope, and overall objectives. An update on PWR licensing topical report (TR) progress, BWR licensing TR vision, fresh fuel transport, AFM project timeline, and summary was also provided. In addition, planned updates for the Richland fuel fabrication facility to support the AFM project Framatome was also provided. The updates included information on the overall scope of modifications, key industry decisions that affect the scope, types of equipment modifications expected, process impacts, system evaluations, timeline, and progress to date.

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

Regarding PWR fuel operating experience, Framatome representatives provided a status of product implementation and fuel reliability statistics. For the status of PWR fuel failures and investigations, information, and discussions focused on the cause of failures based on examinations. In addition, Framatome representatives provided information on the Enhanced Accident Tolerant Fuel (EATF) fuel rods. For poolside surveillance results and plans, the discussions focused on recent and planned PWR poolside surveillance campaigns and Framatome representatives addressed the NRC staff questions. In the PWR fuel performance summary Framatome representatives concluded that

- HTP and GAIA continue to demonstrate improved performance over predecessor designs
- All US PWR customers have transitioned to advanced cladding (M<sub>5</sub> Framatome) with low oxidation, growth, and hydrogen pickup
- Framatome is successfully implementing next-generation PWR products (via Lead Fuel Assembly programs) incorporating proven and effective design features
- Framatome is committed to resolving conditions adverse to fuel reliability,
- Framatome's active Post Irradiation Examination (PIE) program continues to validate the successful performance of Framatome PWR fuel products

Regarding BWR fuel operating experience, Framatome representatives provided a fuel performance summary, and status of product implementation regarding advanced debris filters, ATRIUM 11, and Z4B BQ channels. For the status of BWR fuel failures and investigations, information and discussions focused on fuel reliability statistics, and status of recent fuel failures. For poolside surveillance results and plans, the discussions focused on recent BWR poolside surveillance and hot cell campaigns, and upcoming BWR poolside inspection campaigns, and Framatome representatives addressed the NRC staff questions. In the BWR fuel performance summary Framatome representatives concluded that

- Framatome BWR fuel continues to perform well, recent failures notwithstanding,
- Framatome BWR customers are actively transitioning to advanced debris filter technology which are more effective solutions for in-reactor debris mitigation,
- Framatome is committed to proactively monitor for and resolve conditions adverse to fuel reliability consistent with customer support,
- Framatome is successfully implementing next generation products incorporating proven and effective design features,
- Framatome's active PIE program continues to validate fuel performance

A list of the attendees is enclosed. The Framatome presentation materials can be found in ADAMS at Package Accession No. ML22262A190 and this meeting summary at ADAMS Accession No. ML22269A506.

Docket No. 99902041

Enclosure:  
As stated

## **List of Attendees**

Closed Hybrid Fuel Performance Update Meeting with  
the U.S. Nuclear Regulatory Commission and Framatome Inc.  
September 22, 2022  
8:30 am – 5:00 pm Pacific Time

<b><u>NAME</u></b>	<b><u>ORGANIZATION</u></b>
George Borum	Framatome Inc (Framatome)
Morris Byram	Framatome - remote
Paul Clifford	Framatome
Steve Cole	Framatome
Kelly Duggan	Framatome
Steven Fink	Framatome
Norm Garner	Framatome
Ernie Hockens	Framatome
Gannon Johnson	Framatome
Brian Lockanum	Framatome
Stephen Mazurkiewicz	Framatome
Alan Meginnis	Framatome
John Budzyniski	Nuclear Regulatory Commission (NRC) - remote
Richard Chang	NRC – remote
James Corson	NRC - remote
Alice Chung	NRC - remote
Joseph Donoghue	NRC - remote
Syed Haider	NRC
Kevin Heller	NRC – remote
Andrea Kock	NRC

<b><u>NAME</u></b>	<b><u>ORGANIZATION</u></b>
Scott Krepel	NRC – remote
Lucas Kyriazidis	NRC - remote
John Lehning	NRC – remote
Joseph Messina	NRC
Joshua Miller	NRC
Ryan Nolan	NRC
Ngola Otto	NRC
Mathew Panicker	NRC - remote
Mary-Jane Ross-Lee	NRC - remote
Ashley Smith	NRC - remote
Brandon Wise	NRC - remote
Kent Wood	NRC - remote
Sandra McClure	Interpreter - remote
Jennifer Wagner	Interpreter - remote

SUBJECT: SUMMARY OF SEPTEMBER 22, 2022, CLOSED HYBRID FRAMATOME INC. FUEL PERFORMANCE UPDATE MEETING DATED OCTOBER 13, 2022

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MPanicker, NRR

KWood, NRR

ASmith, NRR

MRoss-Lee, NRR

AChung, RES

**EXTERNAL DISTRIBUTION:**

Alan.Meginnis@framatome.com

**ADAMS Accession Nos.:**

**ML22262A190 (Package)**

**ML22269A506 (Summary)**

**ML22262A186 (Affidavit)**

**ML22262A189 (Presentation - Proprietary)**

**ML22262A187 (Presentation - Non-Proprietary)**

**\*via email**

OFFICE	NRR/DORL/LLPB/PM*	NRR/DORL/LLPB/LA*	NRR/DORL/LLPB/BC*	NRR/DORL/LLPB/PM*
NAME	NOtto	DHarrison	RChang	NOtto
DATE	9/29/2022	9/30/2022	10/1/2022	10/13/2022

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