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

June 3, 2026

MEMORANDUM TO: Mahmoud Jardaneh, Chief
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

FROM: Getachew Tesfaye, Senior Project Manager
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

Signed by Tesfaye, Geta
on 06/03/26

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF PUBLIC MEETING WITH ROLLS-ROYCE SMR LIMITED TO DISCUSS PRE-APPLICATION ACTIVITIES – MAY 14, 2026

The United States (U.S.) Nuclear Regulatory Commission (NRC) conducted an observation public meeting on May 14, 2026, with Rolls-Royce Small Modular Reactor (SMR) Limited. The purpose of the meeting was for Rolls-Royce SMR Limited (Rolls-Royce) to present a project overview, including ongoing work in the United Kingdom (UK) and the Czech Republic, and provide an update on the outcome of the UK regulatory justification process. The primary focus of the meeting was to discuss the novel features of the Rolls-Royce SMR design described in a white paper submitted for NRC staff review and feedback (NRC Agencywide Documents Access and Management System (ADAMS) Accession No. ML26147A207).

Meeting Overview

The meeting began with introductions from both NRC staff and Rolls-Royce SMR Limited personnel. NRC staff clarified ground rules for participation, including procedures for in-person and remote attendees, and encouraged public engagement through questions and feedback.

Rolls-Royce presented an overview of company progress and international deployment activities. They highlighted that contracts had been signed for the initial three-unit deployment at Wylfa in the UK and that the technology had also been selected for deployment in Czech Republic. In addition, Rolls-Royce SMR had been selected as one of the final two SMR technologies under consideration in Sweden, with three units envisioned in the first phase of deployment.

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UK Generic Design Assessment (GDA) Update:

Rolls-Royce stated that the design is currently in the detailed design stage and that the GDA is progressing through final Step 3 activities. Rolls-Royce anticipates completing substantive GDA submissions by the end of 2026 and plans to integrate GDA activities with nuclear site licensing and environmental permitting activities for the Wylfa project. The presenters noted that more than 3,000 documents had been submitted to regulators to date, approximately 600 regulatory queries had been addressed, and eighteen regulatory observations had been received, with four already closed. They also explained that Environment, Safety, Security, and Safeguards (E3S) Case Version 4 is currently in production and scheduled for issuance in late 2026.

The E3S case integrates environment, safety, security, and safeguards in a hierarchical structure with Tier 1 chapters and supporting Tier 2 and 3 documentation; version 3 is currently under acceptance review, version 4 will include more analysis and be delivered in Q3/Q4 2026, and version 5 will capture final evidence in Q1 2027, with a potential version 6 for tidying up post-public consultation. Rolls-Royce confirmed that substantive changes are expected in version 4, with version 5 mainly adding evidence from underpinning documents; most significant changes will occur in Tier 2 and 3 documents, while Tier 1 chapters may see additions rather than structural changes.

The NRC staff suggested providing a crosswalk or roadmap linking submitted documents and future submissions to facilitate NRC review; Rolls Royce SMR maintains a comprehensive roadmap and is willing to collaborate with NRC to make assessment easier, targeting pre-application materials for sharing. The E3S case aligns with IAEA SSG-61 and adapts to UK and US requirements, with flexibility to conform to NRC's NUREG 800 structures; distinctive chapters cover environment, security, safeguards, and safety, and Rolls-Royce is open to adapting formats for NRC review.

UK Regulatory Justification and Mapping to US Practices:

Rolls-Royce SMR next discussed the UK Regulatory Justification process under the Justification of Practices Involving Ionizing Radiation Regulations 2014. The presenters explained that the application was submitted through the Nuclear Industry Association on July 8, 2024, followed by a public consultation process. Rolls-Royce SMR noted that the application was approved by the UK Secretary of State for Department for Environment, Food & Rural Affairs on March 13, 2026, and that statutory instruments are expected to be laid before Parliament. Rolls-Royce clarified that UK regulatory justification is a one-time process for the technology and does not directly map to any US NRC practice but may provide useful background information.

Novel Features of Rolls Royce SMR Design:

Rolls-Royce presented the novel features of the SMR design, including primary water chemistry innovations, instrumentation and control systems, and modularization, addressing feedback and technical questions from NRC staff and providing detailed explanations. They described the structure of its integrated E3S case, which addresses reactor systems, safety analysis, human factors engineering, emergency preparedness, decommissioning, safeguards, environmental protection, and other licensing areas. The presenters explained that the plant will utilize integrated Technical Specifications compliant with Title 10 of the *Code of Regulations* (10 CFR) 50.36 and informed by Regulatory Guides 1.177 and 4.8. A digital thread is planned to connect the E3S case, technical specification bases, technical specifications, and plant operating procedures.

NRC staff asked whether Rolls-Royce SMR is incorporating lessons learned and improvements that have been made over time to Technical Specifications, including changes to usage rules

and the Standard Technical Specifications framework. Rolls-Royce SMR responded that it is actively incorporating industry best practices, operating experience, and regulatory lessons learned to support a plant design that is both easy to regulate and operate. Rolls-Royce further explained that its approach includes developing an integrated set of technical specifications that address not only nuclear safety, but also environmental, safeguards, and compliance obligations, thereby supporting a comprehensive and integrated licensing and operational framework.

Primary Water Chemistry Innovations: Rolls-Royce SMR explained that the plant design does not rely on boron during normal power operations and instead uses potassium hydroxide (KOH) to maintain coolant chemistry. Hydrogen injections are used for redox control, while depleted zinc is introduced during hot functional testing and operation. The design also incorporates an Alternative Shutdown Function capable of injecting enriched boron-10 potassium tetraborate during an anticipated transient without scram (ATWS). The presenters stated that the elimination of traditional boron and lithium operational chemistry routes is expected to significantly reduce tritium generation relative to existing reactor technologies.

During the discussion, an NRC staff member asked Rolls-Royce about the use of KOH chemistry and whether the company had evaluated the potential generation of unique radio nuclides and their impact on effluent releases and public dose. Rolls-Royce confirmed that these considerations are being evaluated as part of the source term determination process and are tracked through analyses of discharges and radiological dose assessments. Another staff member enquired about qualification KOH chemistry for use with nickel-based alloys in pressurized water reactors (PWRs). Rolls-Royce explained that it has collaborated with EPRI to leverage existing testing data and operating experience while also conducting its own confirmatory materials testing program. The company stated that the combined data and use of proven PWR materials support confidence in the safety case and long-term performance of the selected chemistry and materials.

Instrumentation and Control Systems: Rolls-Royce SMR described a digital Reactor Protection System (RPS) that utilizes two-out-of-three voting logic, together with a non-programmable Diverse Protection System (DPS) intended to provide enhanced resilience against cyber-attacks and common-cause failures. The presenters discussed the separation of programmable and non-programmable protection systems, defense-in-depth principles, and the use of Auxiliary Reactor Protection Systems (ARPS). The non-programmable system uses Curtis Wright Guard Line technology, while the programmable system supplier is under selection. They also described the distributed plant control architecture based on Yokogawa (Centum VP) platforms and discussed the integration of reactor systems, turbine controls, cooling water systems, chemistry systems, and radioactive waste management controls into the plant control structure.

NRC staff noted that although their instrumentation and control (I&C) specialists were unable to attend the meeting due to scheduling conflicts, the presentation effectively addressed the questions they had prepared in advance, particularly the information presented on the I&C architecture. The discussion then turned to the status of the Rolls-Royce SMR GDA, with Rolls-Royce explaining that additional Chapter 7 (Instrumentation and Control) submittals remain in progress for Step 3. NRC staff indicated that the unique I&C features of the design could be a strong candidate for future pre-application engagement once the relevant Step 3 submittals are completed and available for formal staff review.

Modularization and Construction Philosophy: Rolls-Royce explained that the approach emphasizes maximizing off-site fabrication and assembly, simplifying on-site logistics and interfaces, standardizing module configurations, reducing human interaction during construction and operation, and increasing robustness to construction variability. The plant design utilizes standardized structural, piping, electrical, shielding, and control modules assembled into larger module clusters and building structures. Rolls-Royce SMR further discussed factory fabrication and pre-commissioning activities, including testing of modules prior to shipment to the site. The presenters noted that risk-reduction and testing activities are already underway at the "Factory 2050" facility at the University of Sheffield.

Public Participation:

Members of the public were invited to comment and ask questions. There were no comments or questions from the public.

Conclusion:

The NRC staff thanked the Rolls-Royce SMR team for the presentation, noting that it provided a clear and informative overview of the design's novel features and effectively addressed NRC staff questions.

The public meeting notice dated May 14, 2026, was posted on the NRC public website, and can be found in the NRC's ADAMS Accession No. ML26100A000. Information related to Rolls Royce presentations can be found under ML26135A000.

Project No. 99902143

Enclosure:
List of Attendees

cc w/enclosure: GovDelivery

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U.S. NUCLEAR REGULATORY COMMISSION PUBLIC MEETING WITH ROLLS-ROYCE SMR LIMITED TO DISCUSS PRE-APPLICATION ACTIVITIES – May 14, 2026

MEETING ATTENDEES

Name	Organization
Getachew Tesfaye	U.S. Nuclear Regulatory Commission (NRC)
Ravi Penmetsa	NRC
Mahmoud -MJ- Jardaneh	NRC
Donna Williams	NRC
Edward Stutzcage	NRC
Matthew Hamm	NRC
Megan Gangewere	NRC
Scott Krepel	NRC
Adam Rau	NRC
Jenise Thompson	NRC
Catherine Iwanowski	NRC
Frankie Vega	NRC
Alina Schiller	NRC
Mark Salisbury	Rolls-Royce (RR)
Robbin Shirtcliffe	RR
Matt MacVicar	RR
Josh Fitzgerald	RR
Heather Cox	RR
Carl Pearson	RR
Ufuoma Bakpa	RR
Fred Pollard	RR
Kate Hughes-Gill	UK (ONR)
Ewa Muzikova	Public
Stephen P O'Hearn	Public
Sari Alkhatib	Public
Oliver Adelman	Public
William Deric Tilson	Public
Ingrid Nordby	Public
Christopher Boyd	Public

Enclosure