



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

April 10, 2026

MEMORANDUM TO: Josh Borrromeo, Chief
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Deion Atkinson, Project Manager /RA/
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE FEBRUARY 5, 2026, PARTIALLY CLOSED
MEETING WITH ARC CLEAN TECHNOLOGY (EPID L-2023-
LRM-0022)

Meeting Information:

Applicant: ARC Clean Technology (ARC)

Project No.: 99902103

Public Meeting Notice Agencywide Documents Access and Management System (ADAMS)
Accession No.: ML26033A420

Presentation Slides Accession Nos.: ML26023A157, ML26034C030, ML26040A303

Meeting Attendees: See Enclosure 1 for a list of meeting attendees

CONTACT: Deion Atkinson, NRR/DANU
(301) 287-0555

Meeting Summary:

The U.S. Nuclear Regulatory Commission (NRC) staff conducted the meeting in accordance with NRC Management Directive 3.5, "Attendance at NRC Staff-Sponsored Meetings" (ML21180A271). The NRC staff discussed with ARC its conceptual design for the ARC-100 sodium-cooled fast reactor.

ARC requested a meeting with NRC staff to present information related to the licensing basis event selection, structure, systems, and components classification, and fuel qualification in support of its preapplication activities and design. The meeting was partially closed to the public due to the discussion of export controlled and proprietary information specific to the ARC-100 design.

The meeting began with introductory remarks by the associate project manager, followed by participant introductions. It then proceeded directly to technical discussions. Key discussion points are summarized in Enclosure 2 of this letter.

No regulatory decisions were made as a result of this meeting.

Enclosures:

1. List of Attendees
2. Meeting overview

cc: ARC Clean Technology ARC-100
via GovDelivery

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ARC CLEAN TECHNOLOGY (EPID L-2023-LRM-0022) DATED: APRIL 10, 2026

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LIST OF MEETING ATTENDEES

FEBRUARY 5, 2026, PARTIALLY CLOSED MEETING WITH ARC CLEAN TECHNOLOGY

(EPID L-2023-LRM-0022)

Name	Organization
Reed Anzalone	U.S. Nuclear Regulatory Commission (NRC)
Deion Atkinson	NRC
Josh Borromeo	NRC
Stephanie Devlin-Gill	NRC
Candace de Messieres	NRC
Alec Neller	NRC
Hakan Ozaltun	NRC
Hanh Phan	NRC
Alex Siwy	NRC
Irfan Ali	ARC Clean Technology (ARC)
Raymond Burski	ARC
William Cross	ARC
Robert Iotti	ARC
Steve Maschke	ARC
Pavel Medvedev	Idaho National Laboratory
Kaattrin Abbott	Department of Energy
Crystal Bowers	Public
French Ross	Public
Joy Jiang	Public
Edwin Lyman	Public
Ryan Macrum	Public
Tristan Norrgard	Public
Paul Ouellette	Public

MEETING OVERVIEW

FEBRUARY 5, 2026, PARTIALLY CLOSED MEETING WITH ARC CLEAN TECHNOLOGY

(EPID L-2023-LRM-0022)

On February 5, 2026, ARC Clean Technology (ARC) presented slides entitled “Licensing Basis Event (LBE) Selection Report” (ML26023A157). The following bullets describe the main points of discussion during this presentation:

- On slide 1, ARC stated that Title 10 of the Code of Federal Regulations (10 CFR) Part 53, “Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors,” is ARC’s intended regulatory path going forward. The U.S. Nuclear Regulatory Commission staff (NRC or the staff) stated that it recently published a schedule for 10 CFR Part 53¹.
- On slide 2, the staff asked for clarification on what containment cell means. ARC clarified that containment cell means containment of primary sodium leakage, and that the purpose of the guard vessel is to ensure that the primary sodium level remains above the level of the heat exchanger. ARC also clarified that the guard vessel provides a layer of containment for radionuclides.
- On slide 3, the staff asked for clarification on the review process ARC conducted to identify the initiating events (IEs). ARC responded that the failure modes and effects analysis (FMEA) is the methodology that will be employed. ARC considered the FMEA results from the Experimental Breeder Reactor (EBR-II) and Fast Flux Test Facility (FFTF) because of the similarities in their technology and supplemented them as appropriate. The staff commented that, while it is possible that ARC’s probabilistic risk assessment (PRA) is in the early stages, normally applicants would have a complete set of initiating events to the extent practicable. The staff noted that quality assurance should also be considered to ensure the methodology to identify IEs closely interfaces with quality control. The staff stated that the identified IEs appear to include internal and external events, but it is not clear whether they appropriately cover all operational conditions, including at-power, low-power, and shutdown states. ARC clarified that it focused on at-power events because they were expected to dominate in terms of consequence compared to low power events. The staff commented that previous licensing experience is that facility risk for plants similar to ARC’s are dominated by fuel handling events, and that would be of interest to staff during its review of future licensing submittals. The staff further commented that, while the NEI 18-04, “Risk-Informed Performance-Based Technology-Inclusive Guidance for Non-Light Water Reactors,” (ML19241A472) screening approach is one acceptable method, ARC would need to provide justification and basis for applying the screening. ARC stated it has written a report that discusses its screening process, but that the report has not been submitted to the NRC for review. ARC also stated it did not currently have a site identified.
- The staff clarified that the 10 CFR Part 53 final rule has not yet been published and, therefore, the final requirements and exact language are not yet available for consideration. ARC acknowledged that it is aware and will have to review the final rule when published.

¹ <https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/ruledetails?id=1108>

- On slide 5, the staff asked how ARC considered and evaluated cliff edge effects. ARC stated that it evaluated consequences for 2 hours at different atmospheric conditions. ARC also stated that a 10% uncertainty on reactivity feedback was assumed, and it will document the basis for this and communicate it to the NRC staff later. The staff also commented that uncertainty should also consider modeling uncertainty. ARC responded that it initiated a program to specifically evaluate uncertainties and fundamental data for neutronics.
- On slide 6, the staff commented that, if ARC intends to use functional containment, that ARC will need to develop functional containment performance criteria.
- On slide 7, the staff asked why there was no mention of heat exchanger tube ruptures in the list of events analyzed. ARC responded that the intermediate heat exchanger breaks were analyzed and clarified that there is no steam generator connected to the intermediate system because the secondary system uses supercritical carbon dioxide. The intermediate-to-secondary system heat exchanger is planned to be a printed circuit heat exchanger. For the leaks considered in the analysis, ARC stated that a break at the top was specially selected because it is not stopped. The staff commented that typically a detailed analysis is done mechanistically. The staff also noted that the list of events does not include any human-induced LBE.
- On slide 12, the staff asked for clarification related to structures, systems, and components (SSC) safety classification. ARC responded that SSC safety classification will be evaluated and it has currently determined that the primary electromagnetic (EM) pumps are not safety related.
- On slide 13, the staff asked how meteorology affects the frequency results. ARC responded that it used 0–2-hour atmospheric dispersion factor (X/Q) and the 50th percentile.
- On slide 14, the staff asked if ARC is using the described thresholds. ARC responded that it is not.

ARC's second presentation was entitled "Structures, Systems, and Components (SSCs) Classification Report," (ML26023A121). The following bullets describe the main points of discussion during this presentation:

- On slide 1, the staff stated that, in the absence of sufficient design information and detailed modeling, the agency has no position on the material presented. ARC clarified that it only expects feedback on the approach.
- On slide 6, the staff asked how ARC plans to go about evaluating defense in depth adequacy in the future. ARC stated it will provide examples later on. The staff also asked for the 5 traditional levels of safety and what guidance ARC adopted. ARC stated it adopted the International Atomic Energy Agency guidance. The staff commented that the language on slide 7 is inconsistent with that in the referenced NEI 18-04.
- On slide 9, the staff asked how the []

]].

- On slide 11, the staff asked how information will be submitted. ARC responded that an addendum to the white paper will be submitted. The staff clarified that no regulatory findings will be made on the white paper. ARC commented that they can have it submitted in two weeks. The staff advised ARC to be clear about the scope of the white paper. Subsequently, the staff asked about the basis for determining risk significance. ARC responded that risk significance is determined by the combination of consequences and their associated frequencies.
- On slide 13, [[
- On slide 14, the staff asked about the safety significance of the [[]].
- At the end of its second presentation, ARC showed one additional slide entitled “SSCs Classification Report –Classification Changes: Conceptual to Preliminary Design,” (ML26040A303).

ARC’s third presentation was entitled “Additional Information on ARC100 Fuel Qualification,” (ML26034C030). The following bullets describe the main points of discussion during this presentation:

- On slide 5, the staff asked for clarification on the figure to the lower right of the slide. ARC responded that the yellow line represents the overall porosity and is the sum of the other lines.
- On slide 8, the staff asked why the [[
- On slide 9, the staff commented that we need to interpret this new finding, and that [[

]].

During the public portion of the meeting, the NRC staff received the following comments from members of the public:

- A member of the public asked for clarification regarding 10 CFR 53, specifically what is under review with the Commission and what was available to the public. The staff confirmed that they normal rulemaking process
- A member of the public asked for clarification regarding the PRA levels to be performed by ARC. The staff responded that, because ARC indicated it would implement the LMP methodology described in NEI 18-04, the staff expects the PRA to be a full-scope Level 3 PRA.
- A member of the public asked for clarification regarding ARC's statement that the primary sodium pump should be considered non-safety-related and whether the staff have any initial response to this statement. The staff responded that because ARC intends to use a performance-based risk-informed methodology, ARC would need to demonstrate to the staff that primary sodium pump should be considered non-safety related. The staff noted that it has found them to be appropriately categorized as safety-related for other designs.
- A member of the public asked for clarification regarding the discussion of submittal timeline. The staff responded that no submittals timeline was discussed and the staff shared ARC's most recently submitted regulatory engagement plan (ML25356A476).

At the close of the meeting, the staff thanked ARC for the detailed information presented and indicated that it will continue to consider the information, as requested, to support future engagements and licensing submittals.

The meeting on February 5, 2026, was adjourned at 3:36 PM eastern time.