ARC/NRC-PM-008
Docket No. 99902103

January 29, 2025

US Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: ARC Clean Technology Inc (ARC)
Transmittal of Revised White Paper on Alternative Shutdown Systems

Prior to the meeting held on November 13, 2024, ARC had submitted the White Paper on Alternative Shutdown Systems intended to demonstrate that a system not relying on rods should not be necessary for a reactor with inherent characteristics of the ARC-100. During the meeting it was pointed out that the proposed identical configuration of the control and safety rod elements would not be acceptable. Consequently, ARC committed to revising the white paper with modified configurations so the control and safety rod elements would be diverse.

The revised paper is hereby transmitted together with an accompanying redacted version. Also transmitted is a revision of the slides used during the presentation. While a few of the slides are different from what we presented, we think it may be helpful for the slides to summarize what is in the revised paper.

The purpose of the white paper to elicit the NRC views on whether the ARC's shutdown system, solely based on rods with diverse absorber element configurations, diverse actuation, diverse drive mechanism and very low probability of common mode failure is sufficient, without an alternative non-rod based shutdown system to support an eventual license application, which of course will require more complete information on the drive mechanism and reactor protection system rod actuation.

Therefore, the requested review is limited to:

1. The completeness of the elements (absorbers, actuation, drive mechanism and deformation prevention/detection) of the proposed shutdown system i.e., is there additional information that ARC should provide at this stage?
2. Have we provided sufficient information regarding the very low likelihood that core or assembly deformations could impede the insertion of the rods?
3. Have we provided a reasonably complete assessment of the high reliability of the system to shut down the reactor?

ARC does not have direct experience with how extensive a review might be required to answer those questions. Nevertheless, based on assuming concurrent separate reviews of the material summarized in the white paper: (1) controls and safety rod actuation by the reactor protection system and diversity of its parts; (2) a review conducted of the PRA establishing the probability of failure , including common failure, of the rod to shut down the reactor (a document already provided to the NRC); (3) a review of the drive mechanisms, their operational history and their ability to force insertion, and (4) a review of the approach taken to prevent and detect deformation that could affect the insertion of the rods, ARC thinks the requested limited review by the NRC could be done in approximately 120 hours.

If you have any questions or need any additional information, please contact me at riotti@arc-cleantech.com or (732) 890-3602; or Raymond Burski, ARC 100 Licensing Director at rburski@arc-cleantech.com or (504) 909-6436.

Robert Iotti

ARC 20 Project Manager
ARC Clean Technology

cc (w/enclosure)

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ARC Clean Technology (ARC)

Affidavit and Request for Withholding from Public Disclosure (10 CFR 2.390)

1. I, Robert Iotti, Project Manager at ARC Clean Technology (ARC), have been authorized by ARC to review information sought to be withheld from public disclosure in connection with the development, testing, licensing, and deployment of the ARC-100 reactor and its associated structures, systems, and components, and to apply for its withholding from public disclosure on behalf of ARC.

2. The information sought to be withheld, in its entirety, is contained in ARC's enclosure to this letter. The enclosure is titled, "CSRS-004_Rev 1.0 - Alternate Shutdown Systems".

3. I am making this request for withholding, and executing this affidavit in support thereof, pursuant to the provisions of 10 CFR 2.390(b)(1).

4. I have personal knowledge of the criteria and procedures utilized by ARC in designating information as a trade secret, privileged, confidential commercial or financial, or as Export Controlled. Some examples of information ARC considers eligible for withholding under §2.390(a)(4) include:

    a. Information which discloses process, method, or apparatus, including supporting data and analyses, where prevention of its use by ARC competitors without license or contract from ARC constitutes a competitive economic advantage over other companies in the industry;

    b. Information, which if used by a competitor, would reduce its expenditure of resources or improve its competitive position in design, manufacture, shipment, installation, assurance of quality;

    c. Information which reveals cost or price, production capacities, budget levels, or commercial strategies of ARC Clean Technology, its customers, its partners, or its suppliers;

    d. Information which reveals aspects of past, present, or future ARC-100 or customer funded development plans or programs, of potential commercial value to ARC;

    e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection; and/or

    f. Information obtained through ARC-20 project actions which could reveal additional insights into reactor system development, testing, qualification processes, and/or regulatory proceedings, and which are not otherwise readily obtainable by a competitor.

    g. Information that is clearly marked as "Export Controlled" by ARC and/or its partners supplying such information to ARC under an appropriate Non-Disclosure Agreement (NDA).

5 ARC information contained in the enclosure to this letter contains details of design elements, and safety approach, for an ARC sodium-cooled, metal-fueled fast reactor. These details could provide a competitor with a commercial advantage if the information were to be revealed publicly.

6. Pursuant to the provisions of §2.390(b)(4), the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld:

   a. The information sought to be withheld from public disclosure is owned and has been held in confidence by ARC.

   b. The information is of a type customarily held in confidence by ARC and not customarily disclosed to the public. ARC has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitute ARC policy and provide the rational basis required.

   c. The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR 2.390, it is to be received in confidence by the Commission.

   d. This information is not readily available in public sources.

   e. Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of ARC Clean Technology, because it would enhance the ability of competitors to provide similar products and services by reducing their expenditure of resources using similar project methods, equipment, testing approach, contractors, or licensing approaches. This information is the result of considerable expense to ARC Clean Technology and has great value in that it will assist ARC Clean Technology in providing products and services to new, expanding markets not currently served by the company.

   f. The information could reveal or could be used to infer price information, cost information, budget levels, or commercial strategies of ARC.

   g. Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving ARC of a competitive advantage.

   h. Unrestricted disclosure would jeopardize the position of ARC in the world market, and thereby give a market advantage to the competition in those countries.

   i. Any unauthorized disclosure of Export Controlled information would be in direct violation of U.S. Department of Energy (DOE) 10 CFR Part 810.

7. A redacted version of the enclosure, for public distribution, is also being submitted at this time.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 29, 2025.

Robert Iotti

Robert Iotti,
Project Manager
ARDP/ARC-20 Project Manager
ARC Clean Technology, Inc.