

August 31, 2023

ARC/NRC-PM-006 Project No. 99902103

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

- Subject: ARC Clean Technology, Inc. NRC Requested Information
- References: (1) ARC/NRC Clarification Call of August 23, 2023
 (2) ARC-100 Facility ARC20-NRC-FH002 Rev 0, "White Paper on Spent Fuel Storage Insider the Reactor Vessel

Attachments: (1) Figure A.2 of Reference (2) (Enclosures # 1, 2)

- (2) Reference for equation (1) of Reference (2)
- (3) R. C. lotti, "Calculation to compare Lanthanides generated layer thickness in experiments carried out at the EBR II and FFTF with predictions of reference 3 and consequences to the ARC 100 long term possible weakening of the cladding" July 2-5, 2021 (Enclosure # 3)
- (4) T.K. Kim "Decay Heat of 286 MWW ARC Core Fuel Assembly (Rev 00)", Nuclear Science and Engineering Division, Argonne National Laboratory, August 23, 2021 (Enclosures # 4, 5)

During the clarification call on August 23 [reference (1)], the NRC requested certain information related to the White Paper on Spent Fuel Storage Inside the Reactor Vessel [Reference (20)].

With the attachments to this letter ARC Clean Technology, Inc (ARC) provides the requested information and the following explanations.

Enclosure # 1 is a "legible" copy of Figure A.2 of the white paper. Since the submittal of the white paper, that figure has been superseded by two figures, included as Enclosure # 2. As work progresses a more precise layout of the thimbles housing the spent fuel, control rods and possible defective fuel is generated. The two new figures, in Enclosure # 2, lay out 120 storage locations on a different pitch to diameter. One has a P/D of 1.08 and the other P/D of 1.25. Work remains to be done on internal shielding and considerations of ease of welding before a final choice is made, but at present we think the 1.08 P/D will be selected. Enclosures # 1, 2 are restricted information.

Included in this submission is the paper by the Japanese team which developed Equation 1. This document is available publicly.

Enclosure # 3 is restricted information.



Enclosure #4 is a Word file describing the process used for the generation of information and high level results. Enclosure #5 is an Excel file with the detailed results as a function of various times after shutdown. Enclosures #4, 5 are restricted information.

Included in this submission is an affidavit from ARC, supporting a request for withholding designated information from public disclosure as per 10 CFR 2.390.

We wish to express our deep appreciation for the NRC's very prompt response to our request for a clarification call on August 23 and the openness of the dialog between us.

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

Sincerely,

Robert Iotti ARC 100 Project Manager ARC Clean Technology

cc (w/Enclosures and Attachment):

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