

Westinghouse Non-Proprietary Class 3



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LTR-NRC-22-20
May 19, 2022

Subject: Submittal of Executive Summary for Supplement 1 of Westinghouse Topical Report CENPD-289-P/NP, "Use of Inert Replacement Rods in CE 16x16 Next Generation Fuel" (Proprietary/Non-Proprietary)

Enclosed are proprietary and non-proprietary versions of the executive summary for Supplement 1 of Westinghouse Electric Company LLC ("Westinghouse") Topical Report CENPD-289-P/NP, "Use of Inert Replacement Rods in CE 16x16 Next Generation Fuel." Westinghouse is also requesting a topical report pre-submittal meeting to discuss this summary with the NRC staff during the week of June 20th, 2022.

This submittal contains proprietary information belonging to Westinghouse. In conformance with the requirements of 10 CFR Section 2.390, as amended, of the Nuclear Regulatory Commission's ("Commission's") regulations, we are enclosing with this submittal an Affidavit. The Affidavit sets forth the basis on which the information identified as proprietary may be withheld from public disclosure by the Commission.

Correspondence with respect to the proprietary aspects of this submittal or the Westinghouse Affidavit should reference AW-22-022 and should be addressed to Zachary S. Harper, Manager, Licensing Engineering, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 1, Cranberry Township, PA 16066.

A handwritten signature in black ink, appearing to read 'Zachary S. Harper'.

Zachary S. Harper, Manager
Licensing Engineering

cc: Ekaterina Lenning
Richard Chang

Enclosures:

- (1) Affidavit, AW-22-022
- (2) Executive Summary for Supplement 1 of Westinghouse Topical Report CENPD-289-P/NP, "Use of Inert Replacement Rods in CE 16x16 Next Generation Fuel" (Proprietary)
- (3) Executive Summary for Supplement 1 of Westinghouse Topical Report CENPD-289-P/NP, "Use of Inert Replacement Rods in CE 16x16 Next Generation Fuel" (Non-Proprietary)

Commonwealth of Pennsylvania:

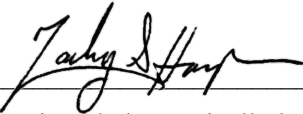
County of Butler:

- (1) I, Zachary Harper, Manager, Licensing Engineering, have been specifically delegated and authorized to apply for withholding and execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse).
- (2) I am requesting the proprietary portions of LTR-NRC-22-20 be withheld from public disclosure under 10 CFR 2.390.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged, or as confidential commercial or financial information.
- (4) Pursuant to 10 CFR 2.390, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
 - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse and is not customarily disclosed to the public.
 - (ii) The information sought to be withheld is being transmitted to the Commission in confidence and, to Westinghouse's knowledge, is not available in public sources.
 - (iii) Westinghouse notes that a showing of substantial harm is no longer an applicable criterion for analyzing whether a document should be withheld from public disclosure. Nevertheless, public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar technical evaluation justifications and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

- (5) Westinghouse has policies in place to identify proprietary information. Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:
- (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.
 - (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage (e.g., by optimization or improved marketability).
 - (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
 - (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
 - (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
 - (f) It contains patentable ideas, for which patent protection may be desirable.
- (6) The attached documents are bracketed and marked to indicate the bases for withholding. The justification for withholding is indicated in both versions by means of lower-case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower-case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (5)(a) through (f) of this Affidavit.

I declare that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief. I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 5/19/2022

A handwritten signature in black ink, appearing to read "Zachary Harper", is written over a horizontal line.

Signed electronically by

Zachary Harper

Enclosure 3

Executive Summary for Supplement 1 of Westinghouse Topical Report CENPD-289-P/NP, “Use of Inert Replacement Rods in CE 16x16 Next Generation Fuel”

(Non-Proprietary)

May 2022

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Executive Summary

The purpose of Westinghouse Topical Report CENPD-289-P/NP Supplement 1 is to provide additional justification for the applicability of currently approved Westinghouse methodology (CENPD-289-P/NP-A, “Use of Inert Replacement Rods in ABB CENF Fuel Assemblies”) to the analysis of Combustion Engineering 16x16 Next Generation Fuel (**CE16NGF**TM) configurations containing inert stainless steel replacement rods. The supplement justifies application of the methodology for inert rod configurations beyond the following “Class A” configuration limitations (listed in CENPD-289-P/NP-A, Revision 0):

[] a,c

Non-Class A configurations are defined as all configurations that do not satisfy Class A definitions.

During the NRC review of CENPD-289-P/NP-A, unresolved Requests for Additional Information (RAIs) related to the application of Critical Heat Flux (CHF) test data to configurations involving large numbers of inert rods resulted in the NRC Safety Evaluation Report (SER) approving the methodology for only the Class A configurations listed in the topical report. However, since the initial approval of CENPD-289-P/NP-A in 1999 the following changes have been implemented:

- A newer NRC-approved fuel assembly design, **CE16NGF** (WCAP-16500-P-A) has been inserted in multiple reloads for Combustion Engineering Nuclear Steam Supply System (CE-NSSS) type plants. The **CE16NGF** fuel design with the Mixing Vanes (MV) and Intermediate Flow Mixer (IFM) grids provides significant CHF margin improvements over the original CE16STD fuel design. Based on newer data, the CHF correlations WSSV and WSSV-T (WCAP-16523-P-A) have also been developed and implemented for the **CE16NGF** design.
- The implementation of the **CE16NGF** design has eliminated the primary cause of fuel failure []^{a,c} to meet the SER conditions and limitations of CENPD-289-P/NP-A. With the **CE16NGF** design the current impetus for use of inert replacement rods is to prevent fuel failure []^{a,c}
- An improved CHF correlation, ABB-NV, has been developed and implemented for non-vented CE16x16 fuel, which has been approved for use in the non-vented axial region of the **CE16NGF** design (WCAP-16500-P-A). The database contains special CHF tests with inert rods not available in the original CE-1 database.

CE16NGF is a trademark or registered trademark of Westinghouse Electric Company LLC, its affiliates and/or its subsidiaries in the United States of America and may be registered in other countries throughout the world. All rights reserved. Unauthorized use is strictly prohibited. Other names may be trademarks of their respective owners.

- The acquisition of ABB Nuclear by Westinghouse has enabled integration of Westinghouse NRC-approved methodologies applicable to CE-NSSS plants (e.g., VIPRE-W thermal-hydraulic (TH) code, WLOP CHF correlation, Westinghouse Thermal Design Procedure, etc.). The **CE16NGF** fuel design is similar to the Westinghouse-NSSS fuel assembly designs containing mixing vane grid spacers and IFM grids described in the Westinghouse Fuel Reconstitution Topical Report (WCAP-13060-P-A) which is applicable to inert rod configurations beyond the Class A type configurations.

The changes listed above justify the basis for relaxing the SER conditions and limitations on the original methodology in CENPD-289-P/NP-A as they apply to the **CE16NGF** design. The appropriate SER conditions and limitations would have direct benefits on plant operations, safety, and fuel cost.

[] a,c

The additional evaluations presented in the supplement conclude that the currently approved CHF correlations and evaluation methods are applicable for analysis of inert rod configurations in **CE16NGF** design assemblies subject to the following limitations:

[] a,c

This supplement to CENPD-289-P/NP-A justifies the application of methodology previously approved for the **CE16NGF** fuel design in WCAP-16500-P-A as applicable for the cycle specific analysis of all **CE16NGF** non-Class A inert rod configurations within the above limitations [

] a,c

The planned submittal date for CENPD-289-P/NP, Revision 0, Supplement 1 is [

] a,c