

WITHHOLD FROM PUBLIC DISCLOSURE UNDER 10 CFR 2.390.
UPON REMOVAL OF ATTACHMENT 1, THIS LETTER CAN BE PUBLICLY DISCLOSED.



FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
P.O. Box 4
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Site Vice President

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November 6, 2015
L-15-303

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:

Beaver Valley Power Station, Unit Nos. 1 and 2
Docket No. 50-334, License No. DPR-66
Docket No. 50-412, License No. NPF-73

Response to Request for Additional Information Regarding Submittal of Reactor Vessel Internals Aging Management Program (TAC Nos. MF3416 and MF3417)

By letters dated January 27, 2014 and August 26, 2015 (Agencywide Documents Access and Management System [ADAMS] Accession Nos. ML14030A131 and ML15239A710, respectively), FirstEnergy Nuclear Operating Company (FENOC) submitted two reports and a response to a request for additional information for the license renewal reactor vessel internals aging management program plan for Beaver Valley Power Station, Unit Nos. 1 and 2. The Nuclear Regulatory Commission (NRC) requested additional information by electronic mail dated September 10, 2015 to complete its review of the program plan.

In response to the September 10, 2015 information request, Attachment 1 provides a proprietary version of the FENOC response to the requested information and is requested to be withheld from public disclosure. The proprietary information was obtained from the report listed in the enclosed Westinghouse Electric Company LLC affidavit. Attachment 2 provides a nonproprietary version of the FENOC response to the requested information. Once Attachment 1 has been separated from this letter, the letter can be publicly disclosed.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager - Fleet Licensing, at (330) 315-6810.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on
November 6, 2015.

Sincerely,



Eric A. Larson

Attachments:

- 1 Response to September 10, 2015 Request for Additional Information
(Proprietary Version)
- 2 Response to September 10, 2015 Request for Additional Information
(Nonproprietary Version)

Enclosure: Application for Withholding Proprietary Information From Public Disclosure

cc: NRC Region I Regional Administrator
NRC Resident Inspector
NRC Project Manager
Director BRP/DEP
Site BRP/DEP Representative

Attachment 2
L-15-303

Response to September 10, 2015 Request for Additional Information
(Nonproprietary Version)
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The Nuclear Regulatory Commission (NRC) staff requested additional information (RAI) from FirstEnergy Nuclear Operating Company (FENOC) by electronic mail dated September 10, 2015. The NRC requested information to complete its review of the FENOC license renewal reactor vessel internals (RVI) aging management program (AMP) plan for Beaver Valley Power Station (BVPS), Unit No. 1 (BVPS-1) and Unit No. 2 (BVPS-2). The NRC staff's RAI questions are provided below in bold text followed by the corresponding FENOC response.

RAI 1(a) follow-up:

Provide the basis for the answer to RAI 1(a).

Response:

The RVI components for BVPS-1 and BVPS-2 were evaluated according to *MRP-227-A Applicability Template Guideline (MRP 2013-025)*, *Materials Reliability Program: Screening, Categorization, and Ranking of Reactor Internals Components for Westinghouse and Combustion Engineering PWR Design (MRP-191)*, 2006, and industry generic component listings and screening criteria (including consideration of cold work as defined in *Materials Reliability Program: PWR Internals Material Aging Degradation Mechanism Screening and Threshold Values (MRP-175)*, 2005). In addition to consideration of the material fabrication, forming, and finishing process, a general screening definition of "severe cold work" was applied as a 20 percent reduction in wall thickness or material stock thickness evaluation limit. RVI materials were identified based on material call-outs and notes in the original plant construction component drawings. The evaluation included a review of all plant modifications affecting reactor internals. Therefore, the RVI components were screened and binned based exclusively on material specifications. Field fit-up and auxiliary processes that could introduce cold work are expected to provide only minor increases of cold work.

Based on the specifications used in the BVPS-1 and BVPS-2 plant component drawings, it was possible to bin the RVI components into the five MRP 2013-025 categories according to their materials used in component fabrication:

- Category 1: Cast-austenitic stainless steel (CASS)
- Category 2: Hot-formed austenitic stainless steel
- Category 3: Annealed austenitic stainless steel

- Category 4: Fasteners austenitic stainless steel
- Category 5: Cold-formed austenitic stainless steel without subsequent solution annealing

The evaluation for BVPS-1 and BVPS-2, performed consistent with MRP 2013-025, concluded that the RVI components in categories 1, 2, 3, and 5 did not contain cold work greater than 20 percent. Although category 4 components (fasteners) are assumed to have the potential for cold work in the MRP-191 generic assessments, they were excluded from consideration in the response as the RAI specified non-weld or non-bolting components. Therefore, neither BVPS-1 nor BVPS-2 have non-weld or non-bolting austenitic stainless steel RVI components with 20 percent or greater cold work.

RAI 1(b) follow-up:

Provide the values for heat generation figure of merit, core power density and distance between the top of the active fuel and the upper core plate that was used to determine that neither unit has utilized atypical fuel designs nor fuel management that could invalidate the assumptions of MRP-227-A.

Response:

The applicability guidelines from MRP 2013-025 were used for comparison with the BVPS-1 and BVPS-2 core geometries and operating characteristics. Neither unit has utilized atypical fuel designs nor fuel management that could invalidate the assumptions of MRP-227-A regarding core loading and core design, including power changes and uprates, over their operating lifetimes.

The nuclear heat generation rate figure of merit (HGR-FOM) as defined in MRP 2013-025 shall not exceed 68 watts per cubic centimeter (W/cm^3). For the last five operating fuel cycles at BVPS-1 with a rated power level of 2900 megawatts thermal (MWt), the HGR-FOM at key baffle locations has ranged between []^{a,c} and has not exceeded $68 W/cm^3$. For the last five operating fuel cycles at BVPS-2, the HGR-FOM at key baffle locations has ranged between []^{a,c} and has not exceeded $68 W/cm^3$. The range of HGR-FOM for each unit is representative of anticipated future operation.

For components located beyond the outer radius of the reactor core, the average core power density as defined in MRP 2013-025 shall be less than $124 W/cm^3$. For the last five operating fuel cycles for BVPS-1 and the last four operating fuel cycles for BVPS-2 at the rated power levels of 2900 MWt, the core power density has been $109.2 W/cm^3$. This core power density is representative of anticipated future operation.

a,c: Identifies the type of information from Section (4)(ii) of the Westinghouse Electric Company LLC affidavit in the Enclosure to L-15-303 sought to be withheld from public disclosure.

Considering the entire operating lifetime of the reactor, the average core power density as defined in MRP 2013-025 shall not be greater than or equal to 124 W/cm^3 for a period of more than two years for components located above the reactor core. The rated core power level over the operating lifetime of both BVPS-1 and BVPS-2 has varied between 2652 and 2900 MWt. This corresponds to a core power density range of 99.9 to 109.2 W/cm^3 .

Finally, for BVPS-1, the nominal distance between the top of the active fuel and the bottom of the upper core plate averaged over the first 23 fuel cycles of operation was []^{a,c}. During that period of time, the nominal distance was not less than or equal to 12.2 inches for an operating period of more than two years. For BVPS-2, the nominal distance between the top of the active fuel and the bottom of the upper core plate averaged over the first 17 fuel cycles of operation was []^{a,c}. During that period of time, the nominal distance was not less than or equal to 12.2 inches.

a,c: Identifies the type of information from Section (4)(ii) of the Westinghouse Electric Company LLC affidavit in the Enclosure to L-15-303 sought to be withheld from public disclosure.

Enclosure
L-15-303

Application for Withholding Proprietary Information From Public Disclosure
(7 Pages Follow)



Westinghouse Electric Company
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CAW-15-4244

August 7, 2015

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: PWROG-15059-P, Revision 0, "Beaver Valley Units 1 and 2 Summary Report for the Fuel Design / Fuel Management Assessments to Demonstrate MRP-227-A Applicability"
(Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-15-4244 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The Affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying Affidavit by Pressurized Water Reactor Owners Group (PWROG).

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-15-4244 and should be addressed to James A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 3 Suite 310, Cranberry Township, Pennsylvania 16066.

A handwritten signature in black ink, appearing to read "James A. Gresham".

James A. Gresham, Manager
Regulatory Compliance

CAW-15-4244

August 7, 2015


AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF BUTLER:

I, James A. Gresham, am authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief.



A handwritten signature in cursive script, appearing to read 'J. Gresham', is written over a horizontal line.

James A. Gresham, Manager

Regulatory Compliance

- (1) I am Manager, Regulatory Compliance, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse Application for Withholding Proprietary Information from Public Disclosure accompanying this Affidavit.
- (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 the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, 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.
 - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse 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 Westinghouse policy and provide the rational basis required.

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.
- (iii) There are sound policy reasons behind the Westinghouse system which include the following:
- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
 - (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
 - (c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

- (d) 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 Westinghouse of a competitive advantage.
 - (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
 - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iv) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.
- (v) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (vi) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in PWROG-15059-P, Revision 0, "Beaver Valley Units 1 and 2 Summary Report for the Fuel Design / Fuel Management Assessments to Demonstrate MRP-227-A Applicability" (Proprietary), for submittal to the Commission, being transmitted by PWROG letter OG-15-319 and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is that associated with the NRC Letter, "Beaver Valley Power Station, Units 1 and 2 - Request for Additional Information Re: Submittal of Reactor Vessel Internals Aging Management Program (TAC Nos. MF3416 and MF3417)," ML14213A360 August 20, 2014 and may be used only for that purpose.

- (a) This information is part of that which will enable Westinghouse to:
 - (i) Support reactor vessel internals aging management.
- (b) Further this information has substantial commercial value as follows:
 - (i) Westinghouse plans to sell the use of similar information to its customers for the purpose of supporting reactor internals aging management
 - (ii) Westinghouse can sell support and defense of industry guidelines and acceptance criteria for plant-specific applications.
 - (iii) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

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.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith is the proprietary and non-proprietary version of a document furnished to the NRC associated with the NRC Letter, "Beaver Valley Power Station, Units 1 and 2 - Request for Additional Information Re: Submittal of Reactor Vessel Internals Aging Management Program (TAC Nos. MF3416 and MF3417)," ML14213A360 August 20, 2014 and may be used only for that purpose.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary 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 (4)(ii)(a) through (4)(ii)(f) of the Affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

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