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John P. Jarrell  
Manager, Regulatory Assurance  
Waterford 3

W3F1-2015-0027

May 21, 2015

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

SUBJECT: Response to Request for Additional Information Regarding the 180 Day Steam Generator Tube Inspection Report for the 19<sup>th</sup> Refueling Outage  
Waterford Steam Electric Station, Unit 3  
Docket No. 50-382  
License No. NPF-38

REFERENCE: 1. W3F1-2014-0041, "180 Day Steam Generator Tube Inspection Report for the 19<sup>TH</sup> Refueling Outage," dated November 6, 2014. (ADAMS Accession No. ML14314A032)  
2. NRC Letter, "Request for Additional Information Regarding the Spring 2014 Steam Generator Tube Inspections," dated April 3, 2015. (TAC No. MF5174) (ADAMS Accession No. ML15082A297)

Dear Sir or Madam:

By letter dated November 6, 2014 (Reference 1), Entergy Operations, Inc., submitted information summarizing the results of the spring 2014 steam generator tube inspections performed at Waterford Steam Electric Station, Unit 3. These inspections were performed during refueling outage 19. By letter dated April 3, 2015 (Reference 2), the NRC requested additional information to complete their review. This letter satisfies that request.

Attached to this letter are:

1. One copy of LTR-SGMP-15-33 P-Attachment, "Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators" (Proprietary)

**Attachment 1 to the letter contains proprietary information – Attachment 1 is withheld from public disclosure per 10 CFR 2.390.**

2. One copy of LTR-SGMP-15-33 NP-Attachment, "Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators" (Non-Proprietary)

Also attached is the Westinghouse Application for Withholding Proprietary Information from Public Disclosure CAW-15-4189, accompanying Affidavit, Proprietary Information Notice, and Copyright Notice.

As Item 1 contains information proprietary to Westinghouse Electric Company LLC, it is supported by an Affidavit signed by Westinghouse, the owner of the information. The Affidavit 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 Section 2.390 of the Commission's regulations.

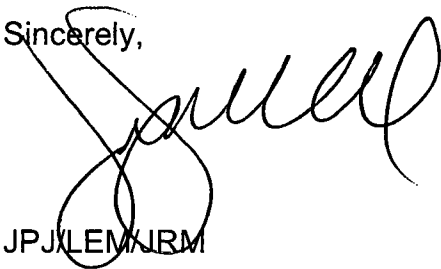
Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse Affidavit should reference CAW -15-4189 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.

There are no new commitments contained in this letter.

Please contact John Jarrell, Regulatory Assurance Manager, at (504) 739-6685 if you have questions regarding this information.

Sincerely,



JPJ/LEM/IRM

Attachments

1. LTR-SGMP-15-33 P-Attachment, "Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators" (Proprietary)

**Attachment 1 to the letter contains proprietary information – Attachment 1 is withheld from public disclosure per 10 CFR 2.390.**

2. LTR-SGMP-15-33 NP-Attachment, "Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators" (Non-Proprietary)
3. Affidavit

**Attachment 1 to the letter contains proprietary information – Attachment 1 is withheld from public disclosure per 10 CFR 2.390.**

|                                                                                                                                                                 |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| cc: Marc L. Dapas<br>Regional Administrator<br>U. S. Nuclear Regulatory Commission<br>Region IV<br>1600 East Lamar Blvd<br>Arlington, TX 76011-4511             | RidsRgn4MailCenter@nrc.gov                     |
| NRC Senior Resident Inspector<br>Waterford Steam Electric Station Unit 3<br>Killona, LA 70066-0751                                                              | Frances.Ramirez@nrc.gov<br>Chris.Speer@nrc.gov |
| U. S. Nuclear Regulatory Commission<br>Attn: Mr. M. Orenak<br>Washington, DC 20555-0001                                                                         | Michael.Orenak@nrc.gov                         |
| Louisiana Department of Environmental<br>Quality<br>Office of Environmental Compliance<br>Surveillance Division<br>P. O. Box 4312<br>Baton Rouge, LA 70821-4312 | Ji.Wiley@LA.gov                                |
| American Nuclear Insurers<br>Attn: Library<br>Town Center Suite 300S<br>29 <sup>th</sup> S. Main Street<br>West Hartford, CT 06107-2445                         |                                                |

**Attachment 2  
to  
W3F1-2015-0027**

LTR-SGMP-15-33 NP-Attachment, "Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators" (Non-Proprietary)

**NON-PROPRIETARY**

Westinghouse Electric Company

## **Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators**

**May 19, 2015**

**Author:**

**Electronically Approved\***

Thomas C. Watson  
Nuclear Components Engineering II

**Verifier:**

**Electronically Approved\***

Jesse S. Baron  
Steam Generator Management Programs

**Approved:**

**Electronically Approved\***

Nicole D. Vitale, Manager  
Steam Generator Design & Analysis

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***\*Electronically Approved Records are Authenticated in the Electronic Document Management System.***

By letter dated November 6, 2014 [Agencywide Documents Access and Management System (ADAMS) Accession No. ML14314A032], Entergy Operations, Inc., (the licensee) submitted information summarizing the results of the spring 2014 steam generator tube inspections performed at Waterford Steam Electric Station, Unit 3. These inspections were performed during refueling outage 19 (RFO 19). By letter dated October 7, 2014 (ADAMS Accession No. ML14150A100), the U.S. Nuclear Regulatory Commission staff summarized a conference call held with the licensee regarding the spring 2014 steam generator tube inspections.

In order to complete its review, the NRC staff requests the following additional information:

1. General information concerning the design of your replacement steam generators (SGs) was provided in the submittal. In order for the staff to better understand the design of your replacement SGs, please provide the following information:
  - a. Tube manufacturer
  - b. Tube pitch (e.g., 1.00-inch center-to-center)
  - c. Expansion method (e.g., hydraulic expansion)
  - d. Flow distribution baffle design and shape of openings, if applicable
  - e. Whether tubes were stress relieved after bending, and if so, the rows that were stress relieved
  - f. The smallest U-bend radius
  - g. Tubesheet thickness with and without clad
2. With regards to the secondary side inspections performed during RFO 19 (i.e., visual inspections of the upper steam drum, feed ring, spray nozzles, and support structures), please confirm no degradation was observed.

**Question 1a:**

Provide the tube manufacturer.

**Response 1a:**

The tube manufacturer is Sumitomo.

**Question 1b:**

Provide the tube pitch.

**Response 1b:**

The tube pitch is triangular, with center-to-center distance of [ ]<sup>a,c,e</sup> inches. See Figure 1b below.

Figure 1b – Waterford Unit 3 Replacement Steam Generator Tube Pitch

a,c,e



**Question 1c:**

Provide the expansion method (e.g., hydraulic expansion).

**Response 1c:**

The tubing was fully hydraulically expanded in the tubesheet.

**Question 1d:**

Provide the flow distribution baffle design and shape of openings, if applicable.

**Response 1d:**

The Waterford Unit 3 replacement steam generators do not have a flow distribution baffle.



**Question 1e:**

Provide whether tubes were stress relieved after bending, and if so, the rows that were stress relieved.

**Response 1e:**

Certain tubes were stress relieved after bending. The tubes that were stress relieved are tube row numbers [ ]<sup>a,c,e</sup> inclusive.

**Question 1f:**

Provide the smallest U-bend radius.

**Response 1f:**

The smallest U-bend radius is [ ]<sup>a,c,e</sup> inches (centerline).

**Question 1g:**

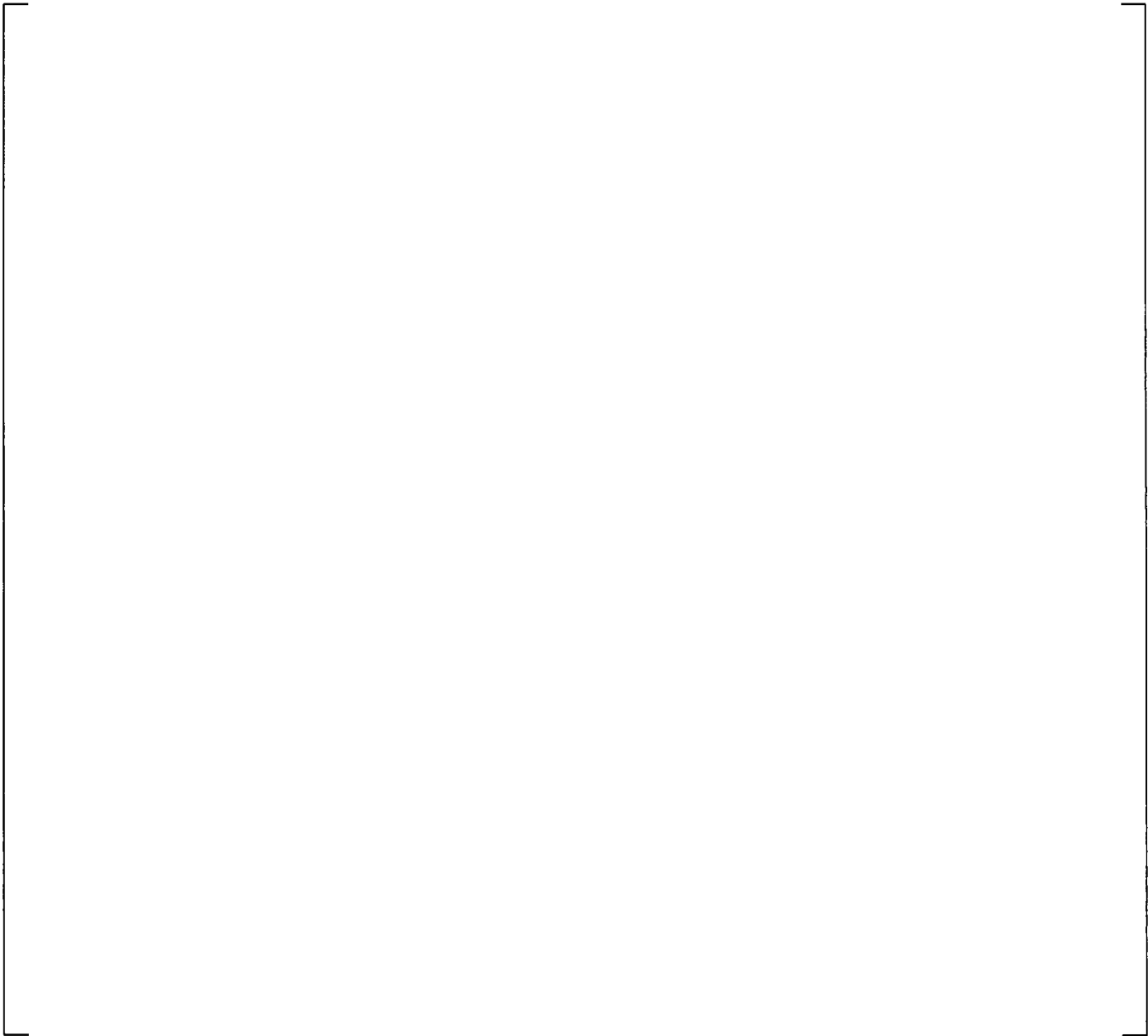
Provide the tubesheet thickness with and without clad.

**Response 1g:**

The tubesheet is [ ]<sup>a,c,e</sup> inches thick without cladding (minimum base metal). The tubesheet is [ ]<sup>a,c,e</sup> inches thick with cladding. The cladding is [ ]<sup>a,c,e</sup> inches thick. See Figure 1g below.

Figure 1g – Waterford Unit 3 Replacement Steam Generator Tubesheet

a,c,e



**Question 2:**

With regards to the secondary side inspections performed during RFO 19 (i.e., visual inspections of the upper steam drum, feed ring, spray nozzles, and support structures), please confirm no degradation was observed.

**Response 2:**

There was no degradation observed on the secondary side inspections.

**Attachment 3  
to  
W3F1-2015-0027**

Affidavit

May 20, 2015

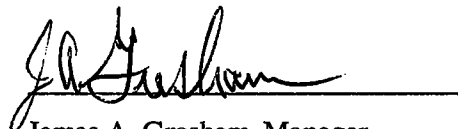
AFFIDAVIT

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 black ink, appearing to read "JA Gresham", is written over a solid 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 LTR-SGMP-15-33 P-Attachment, "Response to NRC Request for Additional Information on the Design Features of the Waterford Unit 3 Replacement Steam Generators" (Proprietary), for submittal to the Commission, being transmitted by Entergy Operations, Inc. letter 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 providing a response to an NRC staff request for additional information concerning the Waterford Unit 3 replacement steam generator design features, and may be used only for that purpose.

- (a) This information is part of that which will enable Westinghouse to:
  - (i) Provide the information (e.g., component dimensions, material of construction, drawings, etc.) requested by the NRC staff concerning the design features of the Waterford Unit 3 replacement steam generators.
  
- (b) Further this information has substantial commercial value as follows:
  - (i) Westinghouse plans to sell the use of similar design features to its customers for Westinghouse replacement steam generators.
  
  - (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 design features 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 are proprietary and non-proprietary versions of documents associated with providing a response to an NRC staff request for additional information concerning the Waterford Unit 3 replacement steam generator design features, 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).

## **COPYRIGHT NOTICE**

The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.