Westinghouse

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Our ref: LTR-NRC-03-62

Attn: J. S. Wermiel, Chief
Reactor Systems Branch
Division of Systems Safety and Analysis

October 13, 2003

Subject: **NRC Update Meeting on "15 X 15 WH-177 Fuel Assembly Design," October 15, 2003**

Dear Mr. Wermiel:

Enclosed is a copy of the proprietary version of the presentation material for the NRC/Westinghouse meeting to be held at the NRC in Rockville, Maryland on October 15, 2003.

Expected attendees include: Mark Goldenfield – WH
Greg Settle – WH
Julia Leonelli - WH
Rob Sisk – WH
Ron Gribble – Duke
Bob St. Clair – Duke
Carl Fago – Duke

Also enclosed is:

1. One (1) copy of the Application for Withholding, AW-03-1721 (Non-Proprietary) with Proprietary Information Notice.
2. One (1) copy of Affidavit (Non-Proprietary).

This information is being submitted by Westinghouse Electric Company LLC to support a proprietary meeting between Westinghouse and the NRC on 15 X 15 WH-177 Fuel Assembly Design.

This submittal contains proprietary information of Westinghouse Electric Company LLC. In conformance with the requirements of 10 CFR Section 2.790, as amended, of the Commission's regulations, we are enclosing with this submittal an Application for Withholding from Public Disclosure and an affidavit. The affidavit sets forth the basis on which the information identified as proprietary may be withheld from public disclosure by the Commission.

This material is for your internal use only and may be used solely for the purpose for which it is submitted. It should not be otherwise used, disclosed, duplicated, or disseminated, in whole or in part, to any other person or organization outside the Office of Nuclear Reactor Regulation without the expressed prior written approval of Westinghouse.

Correspondence with respect to this affidavit or Application for Withholding should reference AW-03-1721 and should be addressed to Hank Sepp.

Very truly yours,

J. S. Galembush, Acting Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: F. Akstulewicz/NRR
D. Holland/NRR
B. Benney/NRR
U. Shoop/NRR
S. L. Wu/NRR

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Our ref: AW-03-1721

October 13, 2003

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: **NRC Update Meeting on "15 X 15 WH-177 Fuel Assembly Design," October 15, 2003 (Proprietary)**

Reference: Letter from H. A. Sepp to J. S. Wermiel, LTR-NRC-03-62, dated October 15, 2003

The Application for Withholding is submitted by Westinghouse Electric Company LLC ("Westinghouse"), pursuant to the provisions of Paragraph (b) (1) of Section 2.790 of the Commission's regulations. It contains commercial strategic information proprietary to Westinghouse and customarily held in confidence.

The proprietary material for which withholding is being requested is identified in the proprietary version of the subject report. In conformance with 10 CFR Section 2.790, Affidavit AW-03-1721 accompanies this Application for Withholding, setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectfully requested that the subject information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.790 of the Commission's regulations.

Correspondence with respect to this Application for Withholding or the accompanying affidavit should reference AW-03-1721 and should be addressed to Hank Sepp.

Very truly yours,

J. S. Galembush, Acting Manager
Regulatory Compliance and Plant Licensing

Enclosures

AW-03-1721

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. S. Galembush, who, being by me duly sworn according to law, deposes and says that he is 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 his knowledge, information, and belief:

J. S. Galembush, Acting Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 13th day
of October, 2003

Sharon L. Fiori
Notary Public

SHARON L. FIORI
COMMONWEALTH OF PENNSYLVANIA
NOTARY PUBLIC

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
Member, Pennsylvania Association Of Notaries

(1) I am Acting Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, 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 the Westinghouse Electric Company LLC.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse application for withholding accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by the Westinghouse Electric Company LLC 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 2.790 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 constitutes Westinghouse policy and provides 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.

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.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) 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.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked as "NRC Update Meeting on 15 X 15 WH-177 Fuel Assembly Design," dated October 15, 2003 for presentation to the Commission, being transmitted by Westinghouse Electric Company (LTR-NRC-03-62) letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk, Attention Mr. J. S. Wermiel. The proprietary information as submitted by Westinghouse Electric Company LLC is that associated with Westinghouse's request for a meeting with the NRC on October 15, 2003.

This information is part of that which will enable Westinghouse to:

(a) Present Proprietary Information on Westinghouse's 15 X 15 WH-177 Fuel Assembly Design.

Further this information has substantial commercial value as follows:

(a) The information requested to be withheld reveals the distinguishing aspects of a design 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 manufacturing processes 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.

AW-03-1721

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.790 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 2.790(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 2.790 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.

A BNFL Group company

NRC WH-177 LTA Update Meeting

October 15 , 2003

Meeting Agenda

8:30 - 8:40	Introductions
8:40 - 8:50	Program Background (Goldenfield)
8:50 – 9:00	PIE Exam Results (Goldenfield)
9:00 - 9:10	Work Scope and Schedule (Goldenfield)
9:10 - 9:25	Design Comparisons (Settle)
9:25 - 9:45	Testing Program (Settle)
9:45 - 10:00	Compatibility Evaluation (Goldenfield)
10:15 - 10:30	Duke NRC Licensed Methodology (Goldenfield)
10:30 - 10:40	Licensing (Sisk)
10:40 - 10:50	Summary
10:50 - 11:30	Questions & Answers

Background

Westinghouse Experience with B&W Plants

- 4 LFAs for [ ] a,c in early '90 (cycle 9 operation)

[ ] a,c

- 4 LFAs for TMI in mid '90s (cycles 11 and 12)

[ ] a,c

Background (Con't)

- Significant effort to understand grid-to-rod fretting since [ ] a,c failures
  - –Focused team for 3 years

[ ] a,c

  - –New testing tools and methodologies developed

[ ] a,c

Background (Con't)

- Significant focus on improved 177-plant performance

[ ] a,c

WH-177 Program Scope

Program Schedule

MILESTONE	SCHEDULE	STATUS
a,c		

Program Work Scope

Design Scope

- Design Scope

[ ]^{a,c} PIE Exam Results

[ ]a,c Lead Test Assembly Post-Irradiation Examination Results

Objectives

- [ ]a,c
- Gather performance data on the LTAs

[ ]a,c Lead Test Assembly
Post-Irradiation Examination Results

Completed Scope

[a,c]

[ ]a,c Lead Test Assembly Post-Irradiation Examination Results

Completed Scope (continued)

- Fuel assembly LM10GA
  - [ ]a,c
- Fuel Assembly LM10G7

[a,c]

[ ]a,c Lead Test Assembly
Post-Irradiation Examination Results

Visual Results

- Fuel assembly LM10GA, Rod G4

[a,c]

[ ]a,c Lead Test Assembly
Post-Irradiation Examination Results

Visual Results (continued)

- Fuel assembly LM10GA, Rod G2

[a,c]

[ ]a,c Lead Test Assembly Post-Irradiation Examination Results

Visual Results (continued)

- Fuel assembly LM10G7, Non-Leaking rods E4, H3 and C8
  - [ ]a,c

[ ]a,c Lead Test Assembly
Post-Irradiation Examination Results

Root Cause

- Fuel assembly LM10GA, Rods G4 and G2
  - [ ]a,c
- Fuel Assembly LM10G7, Rods G4 and B9
  - [

    ]a,c

WH-177 Design Features

Reference Design

a,c

Hardware Comparison

a,c

Key Features of WH-177 LTA

a,c

I-Spring Design

a,c

Intermediate Support Grid (ISG)

a,c

Confirmatory Test Program

Testing Program

- Fuel Assembly Testing Program

[a,c]

Testing Program(Con't)

- Component Testing - Mid-grid and ISG

a,c

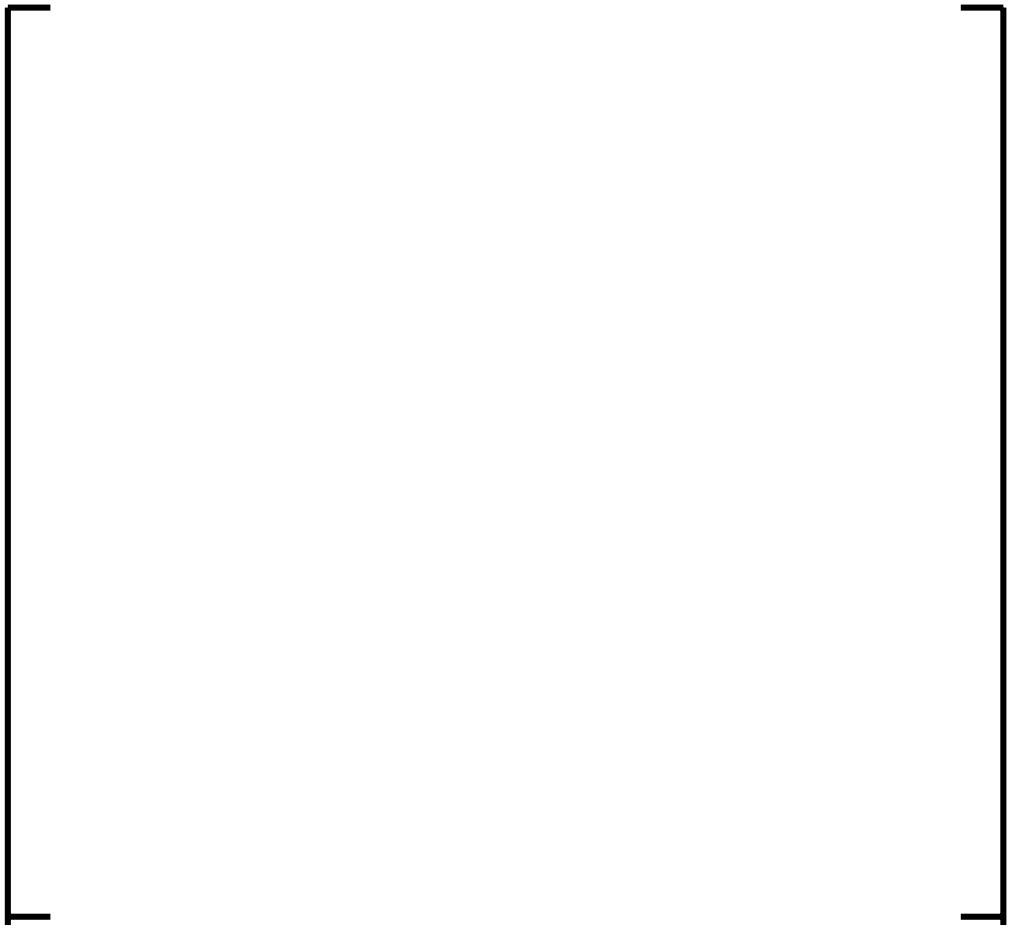
Testing Program(Con't)

- Component Testing - Other Components

[a,c]

Testing Program(Con't)

- Oconee PIE Exam Plan



a,c

Compatibility Evaluation

- Mechanical/Plant Compatibility
  - [ ]^{a,c}-LTA designed and evaluated for [ ]^{a,c} plant and fuel (MkB9 &10)
  - No Mechanical / Plant compatibility issues at [ ]^{a,c}
  - New LTA - no significant changes except mid-grid, ISG and top nozzle
  - Handling tool design compatibility completed, handling tool compatibility evaluation with modified nozzle to be performed on-site
  - New fuel handling tool needed - same issue as at [ ]^{a,c}
  - Shipping container compatibility completed - no on-site issues
- Thermal Hydraulic Compatibility
  - [ ]^{a,c}
  - [ ]^{a,c}
  - FACTS test will determine exact pressure drop

Compatibility Evaluation (Cont'd)

- Hydraulic compatibility
  - –Duke analysis of transition core cross velocities
    - –Significantly less than IFM/non-IFM successful transitions
  - –Duke analysis of transition core DNBR penalties
    - –Transition core LTA DNBR penalties applied in Duke TH analysis

Irradiation Plan

a,c

Duke NRC Licensed Methodology

Report Number	Title
NFS-1001A, Revision 5	Duke Power Company, Oconee Nuclear Station, Reload Design Methodology (Not in T.S. yet)
DPC-NE-1004A, Revision 0	Duke Power Company, Nuclear Design Methodology Using CASMO-3/SIMULATE-3P, SER dated
DPC-2003P-A, Revision 1	Duke Power Company, Oconee Nuclear Station, Core Thermal-Hydraulic Methodology Using VIPRE-01 0
DPC-2005P-A, Revision 2	Duke Power Company Thermal-Hydraulic Statistical Core Design Methodology (Appendix D)
DPC-3000P-A, Revision 2	Duke Power Company, ONS/MNS/CNS, Thermal-Hydraulic Transient Analysis Methodology
DPC-3005P-A, Revision 1	Duke Power Company, UFSAR Chapter 15 Transient Analysis Methodology
WCAP-15063P-A	Westinghouse Improved Performance Analysis and Design Model (PAD 4.0).
WCAP-8762P-A	New Westinghouse Correlation WRB-1 for Predicting Critical Heat Flux in Rod Bundles with Mixing Vane Grids

Licensing

[a,c]

Summary

A BNFL Group company