



Westinghouse  
Electric Corporation

Energy Systems

Box 355  
Pittsburgh Pennsylvania 15230-0355  
AW-95-873

August 17, 1995

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

ATTENTION: MR. T. R. QUAY

APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE

SUBJECT: **PRESENTATION MATERIAL FROM THE AUGUST 17, 1995 MEETING IN  
AP600 REACTOR VESSEL INSULATION**

Dear Mr. Quay:

The application for withholding is submitted by Westinghouse Electric Corporation ("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 10CFR Section 2.790, Affidavit AW-95-873 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 10CFR Section 2.790 of the Commission's regulations.

Correspondence with respect to this application for withholding or the accompanying affidavit should reference AW-95-873 and should be addressed to the undersigned.

Very truly yours,

N. J. Liparulo, Manager  
Nuclear Safety Regulatory And Licensing Activities

/nja

cc: Kevin Bohrer NRC 12H5

2545A

9508240159 950817  
PDR ADDCK 05200003  
A PDR

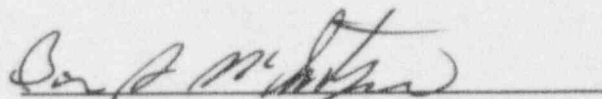
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

§§

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Brian A. McIntyre, 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 Corporation ("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:



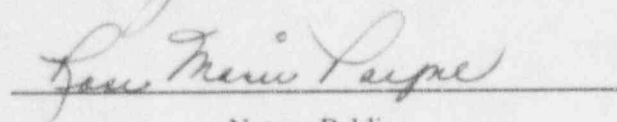
Brian A. McIntyre, Manager

Advanced Plant Safety and Licensing

Sworn to and subscribed

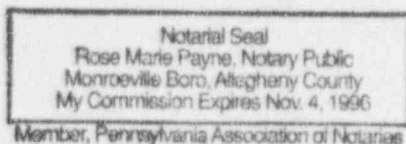
before me this 16 day

of August, 1995



Notary Public

2546A



- (1) I am Manager, Advanced Plant Safety And Licensing, in the Advanced Technology Business Area, of the Westinghouse Electric Corporation 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 rulemaking proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Energy Systems Business Unit.
- (2) I am making this Affidavit in conformance with the provisions of 10CFR 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 Energy Systems Business Unit 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 which 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 10CFR 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) Enclosed is Letter NTD-NRC-95-4531, August 17, 1995 being transmitted by Westinghouse Electric Corporation (W) letter and Application for Withholding Proprietary Information from Public Disclosure, N. J. Liparulo (W), to Mr. T. R. Quay, Office of NRR. The proprietary information as submitted for use by Westinghouse Electric Corporation is in response to questions concerning the AP600 plant and the associated design certification application and is expected to be



applicable in other licensee submittals in response to certain NRC requirements for justification of licensing advanced nuclear power plant designs.

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

- (a) Demonstrate the design and safety of the AP600 Passive Safety Systems.
- (b) Establish applicable verification testing methods.
- (c) Design Advanced Nuclear Power Plants that meet NRC requirements.
- (d) Establish technical and licensing approaches for the AP600 that will ultimately result in a certified design.
- (e) Assist customers in obtaining NRC approval for future plants.

Further this information has substantial commercial value as follows:

- (a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for advanced plant licenses.
- (b) Westinghouse can sell support and defense of the technology to its customers in the licensing process.

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 advanced nuclear power designs 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 for developing analytical methods and receiving NRC approval for those methods.

Further the deponent sayeth not.

Enclosure 2 to Westinghouse  
Letter NTD-NRC-95-4531

August 17, 1995



**WESTINGHOUSE/NRC MEETING**  
**ON**  
**AP600 REACTOR CAVITY AND INSULATION**

**Roger Schreiber**

**August 17, 1995**

## **REVIEW OF REACTOR CAVITY DESIGN**

### Agenda/Objectives

- Review overall cavity design
- Summarize major design requirements
- Present/discuss conceptual design
- Review design against IVR requirements
- Agree on scope for Design Certification

## **DESIGN CONSIDERATIONS**

Insulation/In-Vessel Retention

Shielding

Ventilation

Access Requirements

## **INSULATION/IN-VESSEL RETENTION**

### Insulation Needs

- Provide 4" reflective or equivalent

### IVR Considerations

- Water ingress and steam egress
- Loads/movement of panels
- Symmetry
- Applicability of ULPU

## **VENTILATION**

- Concrete/Vessel Supports
- Excore Detectors
- Shield Material



## SHIELDING

### Neutron Streaming Paths

- Up through cavity seal
- Loop piping penetrations
- Penetrations at bottom of cavity

## **ACCESS REQUIREMENTS**

### To Vessel Surface

- For NDE
- For post-ADS inspection/cleaning

### To Excores

- Insertion & removal from bottom

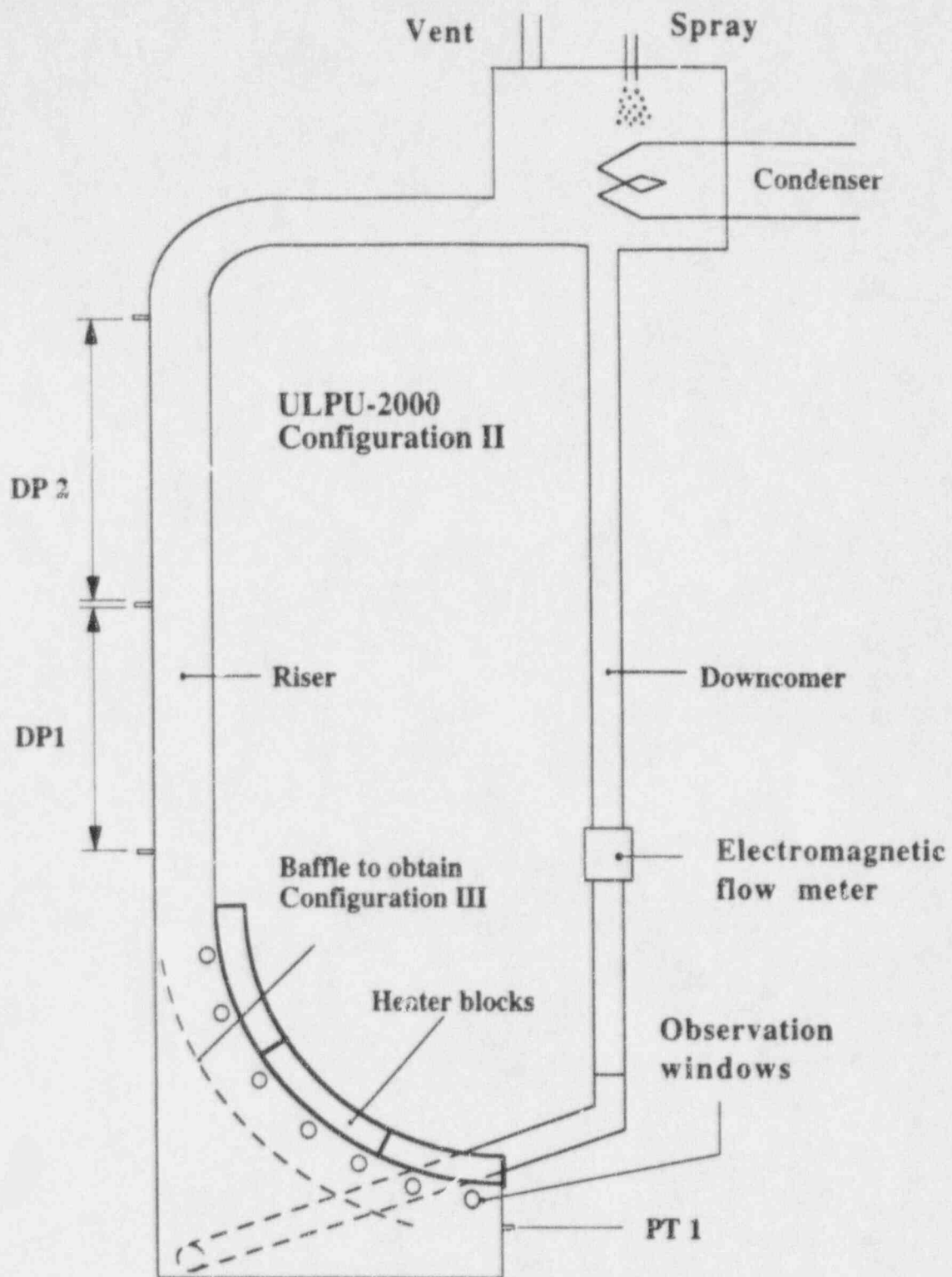
## **APPLICABILITY OF ULPU TEST**

### Phase II Testing

- Established upper limit for design flow rate
- Gave pressure loads due to boiling

### Phase III Testing

- Planned for summer 1995
- AP600 specific



## ULPU PHASE II TESTING

### Design Flow

- Scaling Factor:  $\frac{(\text{AP600 circumference})}{\text{ULPU Width}}$
- $Q = 120 \text{ gpm} \times 83.75 = 10,050 \text{ gpm}$
- Represents upper limit (no flow restriction)



## **IN-VESSEL RETENTION REQUIREMENTS**

### Loads/Movement of Insulation

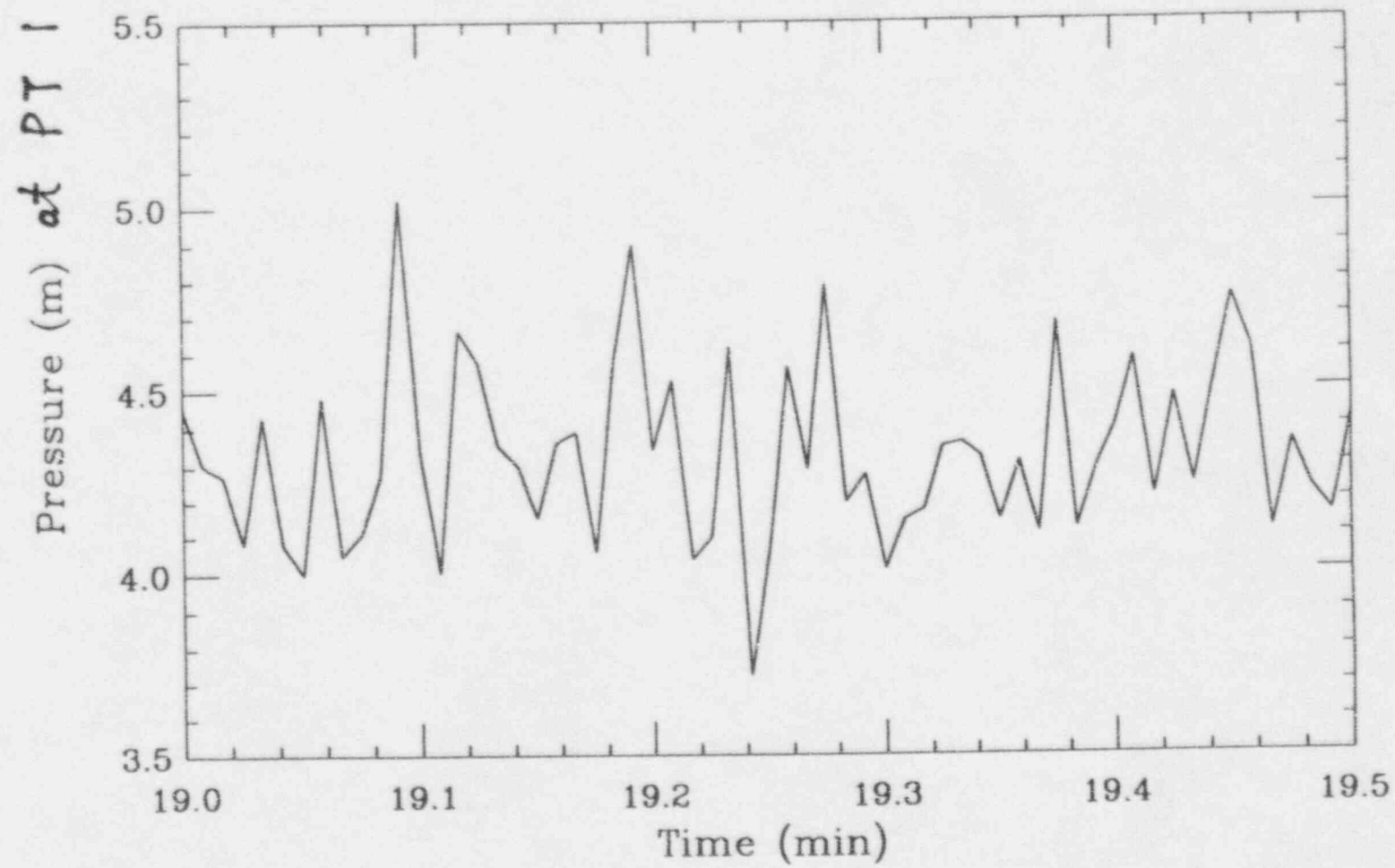
- Steady loads due to elevation head and flow losses
- Unsteady loads due to bubble formation and collapse

## STEADY LOADS

### Conclusions

- With proper sizing,  
inlet losses negligible
- Resulting load on insulation  
is outward at all times
- Magnitude  $\leq 9$  psid
- Outward deflection is benign

Test:z19c-1



## IN-VESSEL RETENTION REQUIREMENTS

### Unsteady Loads

- Magnitude  $\leq 2$  psid peak-to-peak, based on ULPU data at 2 Hz
- Maximum inward load  $\leq 1$  psid
- Frame of 3 x 3 x 1/4 angle shapes can easily withstand
- Currently taking measurements at higher frequencies (10 Hz)

## **IN-VESSEL RETENTION REQUIREMENTS**

### ULPU Phase III Testing

- Exit flow restriction to simulate vent dampers and vessel supports
- Baffle to represent insulation at lower head
- Sealed inlet flow area and representative geometry



## SUMMARY/CONCLUSIONS

Feasible Design Concept Established

IVR Concerns Incorporated

- Water ingress/steam egress
- Loads/movement of insulation
- Symmetry
- Applicability of ULPU data

Design Certification should include  
at most:

- Functional specs
- Conceptual design