



Westinghouse Electric Corporation

Power Systems

PWR Systems Division

Box 355
Pittsburgh Pennsylvania 15230

October 24, 1980

NS-TMA-2322

Mr. James R. Miller, Chief
Special Projects Branch
Division of Project Management
U.S. Nuclear Regulatory Commission
Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland 20014

Subject: "Properties of Fuel and Core Component Materials"
WCAP-9179, Revision 1 (Proprietary) and WCAP-9224
(Non-Proprietary)

Dear Mr. Miller:

Enclosed are:

Forty (40) copies of Appendix A, "Hafnium" and Appendix B, "Aluminum Oxide/
Boron Carbide Pellets" to WCAP-9179, Revision 1 (Proprietary).

Thirty-five (35) copies of Appendix A, "Hafnium" and Appendix B, "Aluminum
Oxide/Boron Carbide Pellets" to WCAP-9224 (Non-Proprietary).

Also enclosed are:

One (1) copy of Application for Withholding (Non-Proprietary)

One (1) copy of original Affidavit (Non-Proprietary)

These appendices, which will ultimately be incorporated into the approved
version of the subject topical report, are intended to document the material
properties of two materials not currently documented in the above reports
and to be employed in two new Westinghouse core component designs; (1) the
hafnium rod cluster control assembly (RCCA) design and (2) the aluminum
oxide/boron carbide improved burnable poison design, consistent with the
requirements of Regulatory Guide 1.70, revision 3.

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The primary objective in the design of the hafnium RCCA has been to minimize design changes with respect to the already proven Ag-In-Cd RCCA design. This objective is accomplished by exactly replacing the current Ag-In-Cd absorber material with hafnium, while essentially matching the dimensions and design features of the current design.

Implementation of this new RCCA design will occur for plants with scheduled operating license approvals beginning in 1981. Safety Analysis Report revisions are currently in progress for several of these plants.

Evaluations have been performed which conclude that the substitution of hafnium RCCAs for their current Ag-In-Cd counterparts will not alter any safety conclusions for plants previously analyzed with a full core of Ag-In-Cd RCCAs.

The improved burnable poison design consists of annular pellets of aluminum oxide-boron carbide ($Al_2O_3-B_4C$) burnable poison material contained within two concentric Zircaloy tubings. These Zircaloy tubings, which form the inner and outer clad for the annular burnable poison rod are plugged and seal welded at the ends to encapsulate the annular stack of poison material. An annular plenum is provided within the rod to accommodate the helium gas released from the poison material during boron depletion. The reactor coolant flows inside the inner tubing and outside the outer tubing of the annular rod.

The improved burnable poison design will provide significantly enhanced nuclear characteristics when compared to the present stainless steel clad borosilicate glass design. The new burnable poison rod reduces the fuel cycle cost due to the reduced parasitic neutron absorption of Zircaloy compared to stainless steel, increased water fraction in the burnable poison cell, and a reduced boron penalty at the end of each cycle.

Production quantities of the improved burnable poison design will be available in 1981.

This submittal contains proprietary information of Westinghouse Electric Corporation. In conformance with the requirements of 10CFR2.790, 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 may be withheld from public disclosure by the Commission.

Correspondence with respect to the affidavit or application for withholding should reference AW-80-63 and should be addressed to R. A. Wiesemann, Manager of Regulatory and Legislative Affairs, Westinghouse Electric Corporation P. O. Box 355, Pittsburgh, PA 15230.

Very truly yours,



T. M. Anderson, Manager
Nuclear Safety Department



Westinghouse
Electric Corporation

Water Reactor
Divisions

Nuclear Technology Division

Box 355
Pittsburgh Pennsylvania 15230

October 24, 1980
AW-80-63

Mr. James R. Miller, Chief
Special Projects Branch
Division of Project Management
U. S. Nuclear Regulatory Commission
Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland 20014

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

SUBJECT: "Properties of Fuel and Core Component Materials" WCAP-9179,
Revision 1 (Proprietary)/WCAP-9224 (Non-Proprietary)

REF: Westinghouse Letter No. NS-TMA-2322, Anderson to Miller dated
October 24, 1980

Dear Mr. Miller:

The proprietary material transmitted by the reference letter supplements the proprietary material previously submitted concerning the material properties of Westinghouse core components (reference: NS-TMA-2218, dated March 31, 1980). Further, the affidavit submitted to justify the material previously submitted, AW-77-47, October 25, 1977, is equally applicable to this material.

Accordingly, withholding the subject information from public disclosure is requested in accordance with the previously submitted affidavit and application for withholding, AW-77-47 dated October 25, 1977, a copy of which is attached.

Correspondence with respect to this application for withholding or the accompanying affidavit should reference AW-80-63, and should be addressed to the undersigned.

Very truly yours,


Robert A. Wiesemann, Manager
Regulatory & Legislative Affairs

cc: E. C. Shomaker
Office of the Executive Legal Director, NRC

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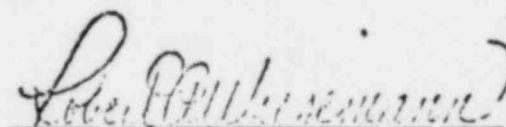
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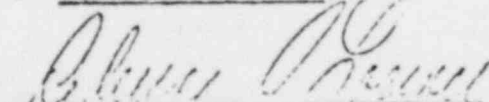
SS

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Robert A. Wieseemann, who being 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:


Robert A. Wieseemann, Manager
Licensing Programs

Sworn to and subscribed
before me this 25 day
of October, 1977.


Notary Public

THE NATURE OF THE COMPETITION IN THE NUCLEAR BUSINESS

Westinghouse's principal competitors in the nuclear steam supply business are Babcock & Wilcox, Combustion Engineering, and General Electric. The principal U. S. competitors in the nuclear fuel fabrication business are Babcock & Wilcox, Combustion Engineering, Exxon, and General Electric. With the exception of General Electric, these competitors are new entries in the business with substantially smaller investments in technology. Westinghouse also has competition from foreign fabricators. This competition can drastically affect our ability to obtain contracts in the international market. Specific competitors include ASEA-ATOM (Sweden), Kraftwerk AEG (Germany), Framatome (France), BNFL (Great Britain), Enusa (Spain), Mitsubishi (Japan), and Fabricazione Nucleari (Italy).

Both the nuclear steam supply and the nuclear fuel fabrication businesses involve high technology, and competition is on the basis of that high technology rather than on price. Only if competition continues based on technology will Westinghouse be able to recover its substantial investments in technology and product development.

EFFECT OF RELEASE OF INFORMATION ON WESTINGHOUSE COMPETITIVE POSITION

If, as a matter of general practice, cost or price information or information about the basis on which Westinghouse makes its business judgments were made publicly available, it would have the general effect of altering the nature of competition from a technology base to a price base. This would change the entire complexion of the business and drive it toward a low investment-low technology development business. Under such circumstances, those in the business with heavy unrecovered investments in technology such as Westinghouse would have difficulty competing successfully with those who have made relatively small investments since

business would tend to go to the lowest qualified bidder. The general public would also suffer in that they would be deprived of the benefits of technological developments that would most likely far exceed any short-term benefits derived from lower prices. Likewise, a general practice of making publicly available information obtained from investments in technology would enable competitors to benefit without having to make commensurate investments. This would stifle the incentive for further investments in technology and drive the business to price-based competition instead of competition on the basis of technology with the same end results as in the case of disclosure of cost or price information.

WHAT WESTINGHOUSE SEEKS TO PROTECT

Westinghouse seeks to protect its ability to recover its investments in:

- (1) Basic data resulting from research and development.
- (2) Analytical methods and models.
- (3) Details of our designs including margins, tolerances, etc.
- (4) The knowledge of what data to present and how to present the data to satisfy NRC licensing requirements. NOTE: In the current licensing environment, the capability to obtain licensing approval has become very important in the marketplace.

The above identified information is of considerable commercial advantage to the competitors of Westinghouse to the extent that it eliminates the need for similar investments in technology.

RELATIONSHIP OF INFORMATION SOUGHT TO BE WITHHELD FROM PUBLIC
DISCLOSURE TO WHAT IS SOUGHT TO BE PROTECTED

INFORMATION SOUGHT TO BE WITHHELD

The information sought to be withheld in this report includes conclusions regarding thermal, physical, chemical and mechanical properties of fuel and core component materials based upon Westinghouse experimental data and an extensive literature survey and data reduction program. The report also contains Westinghouse material specifications. The release of this information would result in the following competitor benefits:

POTENTIAL ADVANTAGES TO COMPETITORS

1. It would allow competitors to verify their material property design values by mere reference to the Westinghouse Report without having to expend the time, resources and funding otherwise necessary.
2. For the materials listed in the report, the data presented would enable competitors to determine to a close approximation some of the final heat treatments, processes, densities, etc., used by Westinghouse.
3. Knowledge of the materials properties presented, or the implied specifications may permit competitors to either relax their material specifications or reduce design margins, either of which circumstances could lead to sales advantages detrimental to the Westinghouse marketing position.

INVESTMENT BY WESTINGHOUSE IN WHAT IS SOUGHT TO BE PROTECTED

It is estimated that four to five man-years of engineering and one man-year of technician effort, amounting to approximately \$500,000 was expended to perform the literature survey, obtain Westinghouse experimental data, perform detailed analysis of selected data and to derive acceptable design equations and values.

Competitors could obtain the equivalent information, with difficulty, by investing a similar sum of money and provided they had the appropriate resources available and the requisite experience.

POTENTIAL HARM TO WESTINGHOUSE

We believe there is a likelihood of substantial harm to the competitive position of Westinghouse if the information sought to be withheld is publicly disclosed, which could result in a loss of revenue to Westinghouse of approximately \$10,000,000 in potential first-core and \$7,000,000 in potential reload fuel business.

Further the deponent sayeth not.

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