



March 1, 2002  
RC-02-0032

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

Attention: Mr. Gordon E. Edison

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50/395  
OPERATING LICENSE NO. NPF-12  
CYCLE 14 LEAD TEST ASSEMBLY PROGRAM PARTICIPATION - LETTER  
OF INTENT TO IRRADIATE

- References:
1. Westinghouse Owner's Group Letter, OG-01-070, "Transmittal of WCAP-15604-NP, Rev.1 (Non-Proprietary), 'Limited Scope High Burnup Lead Test Assemblies'," November 29, 2001.
  2. Westinghouse Owner's Group Letter, OG-02-005, "Conditions for Acceptance of WCAP-15604-NP, Rev.1 (Non-Proprietary), 'Limited Scope High Burnup Lead Test Assemblies (MUHP-1046)'," February 1, 2002.

South Carolina Electric and Gas Company (SCE&G), acting for itself and as agent for South Carolina Public Service Authority, submits the following information to document our participation in the Limited Scope Lead Test Assembly (LTA) Program during Cycle 14. SCE&G has been an industry leader in the use of LTAs and follow-on Post Irradiation Examinations to verify acceptable fuel performance. Recent examples of SCE&G's contribution includes the delivery of fuel rods to a hot cell to support fission gas release investigations, delivery of a fuel assembly skeleton to a hot cell to support the Incomplete Rod Insertion investigation, and numerous poolside examinations of high burnup fuel assemblies.

The industry and the NRC have recognized the need for fuel performance data at all burnup levels above the current licensed limits to justify acceptability of a fuel design. The industry has responded to this need and has submitted a Topical Report (Reference 1) to justify the use of Limited Scope High Burnup LTAs. This Topical Report provides the basis for the operation of a limited number of fuel assemblies to rod burnups greater than the current licensed lead rod average burnup limit and up to 75 GWD/MTU. The basis for the operation of these Limited Scope Lead Test Assemblies (LTAs) is that the fuel will be evaluated against, and must meet all current design criteria except the burnup limits. Current or modified fuel performance methods and codes will be used even though they may not be licensed to these burnups. This is based on the need to obtain higher burnup data to substantiate the fundamental fuel performance characteristics, and to develop modified fuel performance models (developmental models) to more accurately model the behavior of high burnup fuel.

APOI

The review and approval of this Topical Report will provide the means for both PWR and BWR utilities to justify the operation of Limited Scope LTAs on a 10 CFR 50.59 basis.

Even though WCAP-15604-NP, Revision 1, has not received NRC approval, the NRC staff has agreed that they have accepted all the conditions specified in the topical. These Conditions for Acceptance are provided in Reference 2. Per a discussion between VCSNS and the staff on January 24, 2002, the recommendation from the staff is to submit a Letter of Intent to Irradiate in accordance with the topical. If the Safety Evaluation from the NRC is completed commensurate with SCE&G's needs, then the letter of Intent to Irradiate will serve as a notification letter to the staff. Should the Safety Evaluation not be completed commensurate with SCE&G's needs, then the letter of Intent to Irradiate would serve as a request for approval to irradiate the LTA to burnups in excess of the current licensed limit and the NRC staff would issue a Safety Evaluation letter to SCE&G granting approval.

Each of the Conditions for Acceptance are addressed below:

- The number of fuel assemblies with the fuel rods exceeding the current licensed lead rod average burnup shall be limited to a total of nine in PWRs. No fuel rods shall exceed peak rod burnups greater 75 GWD/MTU.

Discussion - Only one fuel assembly (N34) will be a Limited Scope LTA in the Cycle 14 core. The peak rod burnup is projected to be less than 71 GWD/MTU.

- The fuel shall be typical production fuel with pre-characterization before operation above the current licensed lead rod average burnup limit. The fuel may also be an LTA, which was characterized during fabrication and was designed to test aspects of the fuel assembly, but was not initially identified as a high burnup LTA. The latter fuel shall be pre-characterized before operation above the current licensed lead rod average burnup limit.

Discussion - Fuel assembly N34 was a typical production fuel assembly. Pre-characterization was performed at discharge after two cycles of irradiation in April 2001.

- The pre-characterization of the fuel shall consist of at least the following minimum set of examinations: cladding oxidation, rod/assembly growth and visual examinations.

Discussion - Pre-characterization of N34 included measurements of peripheral fuel rod and spacer grid oxide, fuel assembly and fuel rod growth, overall visual, and RCCA drag testing. Additionally, the top nozzle has been replaced due to the holddown spring screw cracking issue.

- The post-irradiation examinations of the fuel shall consist of at least the following minimum set of examinations: cladding oxidation, rod/assembly growth and visual examinations.

Discussion - The post irradiation examinations will be performed in accordance with the requirements, and should commence in January 2004.

- The fuel shall be evaluated against and must meet all current design criteria except burnup limits. Current or modified fuel performance methods and codes shall be used even though they may not be licensed to the higher burnups.

Discussion - Fuel assembly N34 meets all current design criteria except burnup. Current and/or modified fuel performance methods and codes were used. In addition, data from the pre-characterization examinations were used where appropriate.

- For all fuel rods in the LTA, the predicted oxidation shall be less than 100 microns on a best estimate basis with prediction of no blistering or spallation based on current data.

Discussion - The maximum predicted oxidation is ~80 microns. No blistering or spallation is predicted.

- The utility shall submit a notification of intent to irradiate LTAs above the current burnup limit. It shall consist of at least the following information:
  - Utility Name - South Carolina Electric & Gas Company
  - Plant Name - Virgil C. Summer Nuclear Station
  - Cycle and date when the LTA shall be inserted - Cycle 14 with expected startup of May 2002
  - Number of LTAs - one (N34)
  - Location of the LTAs - Core center assembly
  - Anticipated pre- and post- cycle burnup for the LTA -
    - Pre - 53.5 GWD/MTU (lead rod)
    - Post - 70.6 GWD/MTU (lead rod)
  - Purpose of LTA - Evaluate fuel rod and fuel assembly performance at a projected lead rod burnup of less than 71 GWD/MTU
  - Data from the pre-irradiation characterization - Provided in Attachment 1.
  - Estimated date for post irradiation characterization - January 2004
  - Estimation of date of the Post Irradiation Characterization report - May 2004

The LTA meets all current licensed fuel rod design criteria even when accounting for lead rod burnups of approximately 71 GWD/MTU and a plant rated power level of 2,900 MWt.

Enclosed is a copy of pre-characterization data provided in Attachment 1, "The Extended Burnup Operation Assessment for the Vantage + Design at the V. C. Summer Nuclear Station." This pre-characterization data is being transmitted to the NRC for information only.

Westinghouse has classified the entire attachment as proprietary; therefore a non-proprietary version is not being submitted.

Also enclosed are a Westinghouse authorization letter, CAW-02-1514 containing affidavit, Proprietary Information Notice, and a copyright notice.

As the above item contains information proprietary to Westinghouse Electric Company LLC, a Delaware limited liability company ("Westinghouse"), it is supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information maybe withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.790 of the Commission's regulations.

Accordingly, it is respectively requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10CFR Section 2.790. Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse affidavit should reference CAW-02-1514 and should be addressed to H. A. Sepp, Manager of Regulatory and Licensing Engineering, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pa. 15230-0355.

We respectfully request that the NRC either provide prior approval of our Intent to Irradiate letter submitted under 10CFR50.59, or issue the Safety Evaluation Report for WCAP-15604 by March 29, 2002.

I declare (or certify, verify, or state) under penalty of perjury that the foregoing is true and correct.

Should you have further questions, please call Mr. Philip Rose at (803) 345-4052.

Very truly yours,

  
Stephen A. Byrne

PAR/SAB/dr  
Attachments - Proprietary - as noted below

c: N. O. Lorick  
N. S. Carns  
T. G. Eppink  
R. J. White  
U. Shoop (w/Attachment)  
M. S. Chatterton (w/Attachment)  
R. Caruso (w/Attachment)

L. A. Reyes  
NRC Resident Inspector  
K. M. Sutton  
T. P. O'Kelley  
RTS (0-L-02-0xxxx)  
File (810.32)  
DMS (RC-02-00xx)

STATE OF SOUTH CAROLINA :  
:   
COUNTY OF FAIRFIELD :

TO WIT :

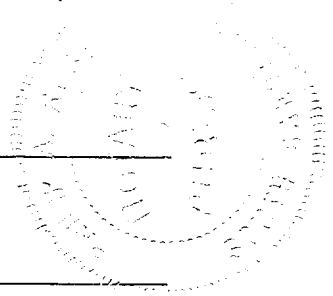
I hereby certify that on the 1<sup>st</sup> day of MARCH 2002, before me, the subscriber, a Notary Public of the State of South Carolina personally appeared Stephen A. Byrne, being duly sworn, and states that he is Senior Vice President, Nuclear Operations of the South Carolina Electric & Gas Company, a corporation of the State of South Carolina, that he provides the foregoing response for the purposes therein set forth, that the statements made are true and correct to the best of his knowledge, information, and belief, and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal

  
Notary Public

My Commission Expires

July 13, 2005  
Date



**Attachment 2**

**Application for Withholding Proprietary  
Information from Public Disclosure**



Westinghouse Electric Company LLC

Box 355  
Pittsburgh Pennsylvania 15230-0355

February 26, 2002

CAW-02-1514

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

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

APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE

Subject: "Appendix B - Pre-Characterization Data from the Extended Burnup Operation Assessment  
For The Vantage + Design in V.C. Summer Nuclear Station Report"

Dear Mr. Wermiel:

The proprietary information for which withholding is being requested in the above-referenced document is further identified in Affidavit CAW-02-1514 signed by the owner of the proprietary information, Westinghouse Electric Company LLC, a Delaware limited liability company ("Westinghouse"). 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 2.790 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying Affidavit by South Carolina Electric & Gas.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-02-1514 addressed to the undersigned.

Very truly yours,

Hank A. Sepp, Manager  
Regulatory and Licensing Engineering

Enclosures

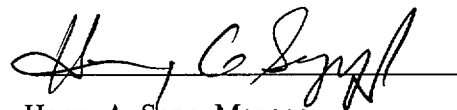
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Henry A. Sepp, 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:



Henry A. Sepp, Manager  
Regulatory and Licensing Engineering

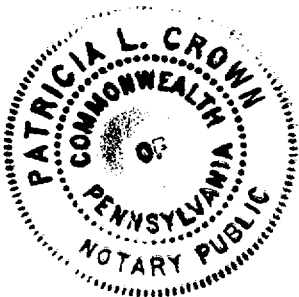
Sworn to and subscribed

before me this 26<sup>th</sup> day

of February, 2002

Patricia L. Crown

Notary Public



Notarial Seal  
Patricia L. Crown, Notary Public  
Monroeville Boro, Allegheny County  
My Commission Expires Feb. 7, 2005

Member, Pennsylvania Association of Notaries



- (1) I am Manager, Regulatory and Licensing Engineering, in Nuclear Services, of the Westinghouse Electric Company LLC, a Delaware limited liability company ("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 rulemaking proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Electric Company.
- (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 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 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 in " Appendix B Pre-Characterization Data " (Proprietary) being transmitted by South Carolina Electric and Gas (SCE&G ) letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk, Attention Mr. Wermiel. The proprietary information as submitted for use by SCE&G is expected to be

applicable in other licensee submittals in response to certain NRC requirements for Extended Burnup Operation Assessment for the Vantage + design.

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

- (a) Provide documentation of the VC Summer Grid Oxide and Peripheral Rod Oxide Data Summary, which were used for the Extended Burnup Operation Assessment for the Vantage + Design.
- (b) Assist the customer to obtain NRC approval.

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 licensing documentation.
- (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 calculation, evaluation 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 knowledge 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 performing tests.

Further the deponent sayeth not.

## **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) contained within parentheses 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.