Program Management Office
102 Addison Road
Windsor, CT 06095

Draft WCAP-17100-P, Revision 1
Project Number 694

January 27, 2010

OG-10-20

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Subject: PWR Owners Group
Responses to the NRC Request for Additional Information (RAI) on Topical Report (TR) WCAP-17100-P/NP, Revision 0, "PRA Model for the Westinghouse Shut Down Seal" (PA-RMSC-0499)

References:

1. "PWR Owners Group Submittal of WCAP-17100-P/NP, Revision 0, "PRA Model for the Westinghouse Shut Down Seal," PA-RMSC-0499," OG-09-282, dated July 17, 2009.

2. NRC Letter, Jonathan Rowley of NRR to Anthony Nowinowski of the PWR Owners Group Program Management Office, "Request for additional information Re: Pressurized Water Reactor Owners Group Topical Report WCAP-17100-P/NP, Revision 0, "PRA Model for the Westinghouse Shut Down Seal" (TAC NO. ME1785), November 30, 2008

In July 2009, the Pressurized Water Reactor Owners Group (PWROG) submitted WCAP-17100-P/NP, Revision 0, "PRA Model for the Westinghouse Shut Down Seal," for review and acceptance for referencing in regulatory actions (Reference 1). In November 2009, NRC staff provided a formal Request for Additional Information (RAI) (Reference 2) for WCAP-17100-P/NP, Revision 0. Enclosure 1 to this letter provides the RAI responses to the questions received in Reference 2. This letter also includes the proprietary WCAP-17100-P, Revision 1 DRAFT and related presentations materials discussed at a January 13, 2010 meeting with the NRC.

D048
NRR

Designated as Original
Jonathan Rowley
1/10/10 PWROG PM

ML103160275

Enclosures include:

- WCAP-17100-P, Revision 0 RAI Responses Final (Non-Proprietary Enclosure 1)
- WCAP-17100-P, Revision 1 DRAFT, "PRA Model for the Westinghouse Shut Down Seal" dated January 2010 (Proprietary) [Enclosure 2]
- "Reactor Coolant Pump Shut Down Seal PRA Model, WCAP-17100-P/NP Post-Submittal Presentation to NRC" dated January 13, 2010 (Proprietary) [Enclosure 3]
- "Reactor Coolant Pump Shut Down Seal PRA Model, WCAP-17100-P/NP Post-Submittal Non-Proprietary Presentation to NRC" dated January 13, 2010 (Non-proprietary) [Enclosure 4]
- Application for Withholding, CAW-10-2730 (Non-proprietary) with accompanying affidavit, Proprietary Information Notice and Copyright Notice for Draft WCAP-17100-P, Revision 1 [Enclosure 5]
- Application for Withholding, CAW-10-2739 (Non-proprietary) with accompanying affidavit, Proprietary Information Notice and Copyright Notice for "Reactor Coolant Pump Shut Down Seal PRA Model, WCAP-17100-P/NP Post-Submittal Presentation to NRC" dated January 13, 2010 [Enclosure 6]

This submittal contains information proprietary to Westinghouse Electric Company LLC; it is supported by affidavits signed by Westinghouse, owner of the information. The affidavits set 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 this 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 information listed above or supporting Westinghouse affidavit should reference CAW-10-2730 and CAW-10-2739 and should be addressed to Mr. J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Correspondence related to this transmittal should be addressed to:

Mr. W. Anthony Nowinowski, Program Manager
PWR Owners Group, Program Management Office
Westinghouse Electric Company
Mail Stop ECE 5-16
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355

If you have any questions, please do not hesitate to contact me at (254) 897-5851 or Mr. W. Anthony Nowinowski, Program Manager of the PWR Owners Group, Program Management Office at (412) 374-6855.

Sincerely yours,

B. Grimmel for

Dennis E. Buschbaum, Chairman
PWR Owners Group

DEB:BSG

cc: PWROG Management Committee
PWROG Risk Management Subcommittee
PWROG Licensing Subcommittee
PWROG Steering Committee
PWROG PMO
J. Rowley, US NRC
J. Gresham, Westinghouse
J. Hodgson, Westinghouse
B. Howard, Westinghouse
B. Kunkel, Westinghouse
M. Lucci, Westinghouse
R. Lutz, Westinghouse
D. Olinski, Westinghouse

PWROG Responses to NRC's Request for Additional information Related to NRC Review of WCAP-17100-P/NP

1. **The highest temperature that the Shut Down Seal (SDS) is exposed to is 570°F. Please provide the basis for that temperature.**

   The basis for the 570°F temperature is provided in Section 3.1.2.2 of WCAP-17100-P/NP, Revision 1.

2. **Please explain why the material of each component in the SDS was selected.**

   The basis for the material selection for the SDS is described in Section 3.1.2.8 of WCAP-17100-P/NP, Revision 1

3. **The amount of particulate that will gather on the SDS is a major concern to the NRC. Several questions arise for the SDS on this issue.**

   a. **Please describe the level of filtering of the seal injection water.**

      The seal injection is provided by the charging pumps that are used to maintain RCS inventory during plant operation. The portion of the normal charging flow that becomes seal injection is filtered prior to entering the reactor coolant pump. The seal injection flow passes through a filter with a minimum capability of 5 microns. There are two filters in parallel to ensure that filtered seal injection can always be maintained to the reactor coolant pumps during filter changes during normal operation.

   b. **As stated on Table 3-2, the particulate found on the seal after crud testing was of a greasy consistency. Please provide more information about this particulate.**

      RCS crud has been analyzed and consists of nickel ferrites and nickel-iron hydroxides. The nickel oxides have a characteristic 'greasy" consistency as distinguished from 'gritty' particulates that are associated with component wear. This 'greasy' crud is not a threat to the proper actuation or sealing of the SDS.

   c. **Please describe the levels of particulate that are expected to be found inside of the Reactor Coolant Pump (RCP) seal packages when the RCP seal package is opened for maintenance in a current operating plant.**

      The particulates that are found inside the RCP seal package when the seals are inspected and / or replaced are in the micron level and smaller than the capability of the seal injection filter. The particulates would typically be Teflon shavings and metal oxides contained in a small grease ring on the No. 1 seal insert. Fine powder particulates can be found downstream of the No. 2 seals. No significant larger particulates are typically found in the RCP seal. Based on the particulate materials found during maintenance and inspection of RCP seals by Westinghouse, there is no reason to believe that particulate material would interfere with proper operation of the SDS.

d. **In Table 3-2, what does "Sample testing of iron plating out shows micro thin" mean?**

"Micro-thin" was a non-technical term used to describe the iron deposits that are found on the No. 1 seal face plates when inspected or replaced after several cycles of operation. These iron 'deposits' have been measured in the laboratory after the No. 1 seal face plates are removed from service and are typically at a micron thickness.

4. **Please provide the temperature at which the RCP seal package o-rings fail. If they fail at less than 570°F, describe any material changes that occur.**

The survivability of critical O-rings for the SDS is discussed in Section 3.2.4 of WCAP-17100-P/NP, Revision 1.

5. **The primary sealing ring has a melt temperature of 600°F. The maximum reactor coolant system temperature exposure of the primary sealing ring will be 570°F. Please explain why a 30°F margin is acceptable.**

The 'melt' temperature of a polymer is defined as the temperature at which the material under pressure flows at a specified rate through an orifice. The use of a 'melt' temperature is not appropriate for this application (it is intended as a guide for injection molding). Section 3.1.1.2 of WCAP-17100-P/NP, Revision 1 includes a discussion of the temperatures of interest and margins for the SDS.

6. **In section 3.2.3.3.1, it is stated that the piston ring has a preload (closing force when ring is closed, without a spaces) of 2 pounds. Please explain how a closed piston ring can achieve a "pre-load".**

The basis for the pre-load is discussed in Section 3.2.3.3.1 of WCAP-17100-P/NP, Revision 1.

7. **Is it possible that the compression force provided by the wave spring would cause the primary sealing ring to conform to the surface of the piston ring, resulting in the piston ring "sticking" to the primary sealing ring and preventing in the piston ring from snapping shut upon SDS actuation?**

A discussion of the potential for imprinting of the piston ring into the polymer ring is provided in Section 3.1.1.5 of WCAP-17100-P/NP, Revision 1.

8. **In section 3.2.3.12.2, please explain why a duration of 2-4 hours was chosen for the scratch tests and why the tests were run at 400°F, not 570°F. Additionally, it was determined that no material had eroded from the rings during the scratch tests. Please describe the inspection methods for this determination.**

Additional tests have been completed after the publication of WCAP-17100-P/NP in July of 2009. These are included in Section 3.1.3.12.2 of WCAP-17100-P/NP,

Revision 1 and included the results of tests at higher temperatures and durations than the original tests.

9. **There is very little description as to how the crud test machine operates and/or performs the crud tests. Please provide a more thorough explanation about the crud test machine operation and the simulated crud that is used in the tests.**

   Section 3.2.2.4 of WCAP-17100-P/NP, Revision 1 provides a complete description of the crud tester and the conduct of the crud tests. The composition of the crud is discussed in Section 3.2.3.16 in WCAP-17100-P/NP, Revision 1.

10. **Section 3.2.3.10 states, "in any case, any leakage would only serve to heat the polymer [ring] which would then allow it to seal leak-tight" with respect to a leak during lateral movement tests. Section 3.2.3.12.2 states "inspection of the polymer rings that were subjected to a scratched sleeve show neither a removal of material from steam cutting nor a raised area implying the material flowed". Please explain the inconsistency of the assumed primary sealing ring (polymer ring) leak response compared to the test result.**

    The comparison between the polymer behavior for the lateral displacement tests and the scratch tests is not valid. In the lateral displacement tests the polymer is sealing against the lack of perpendicularity between the sealing surfaces. In this case, the polymer is already sealing and the sealing surfaces are moving due to thermal growth of the components. In this case the polymer would be 'squeezed' to maintain the seal as the shaft moves. In the scratch tests, the polymer is sealing against defects in the shaft / sleeve. In this case, a leak-tight seal is not initially established and plastic flow would be required to fill the scratch and reduce the leak rate. For the larger scratches, such flow was observed. In both cases, an elevated temperature would result in a reduced leakage rate.

11. **In section 3.2.3.12.2, it is stated that "A scratch of this magnitude [1/8 inch] would not escape detection." Please explain proposed RCP shaft scratch detection inspection methods for normal outages/maintenance.**

    Westinghouse has developed an inspection method and tools for inspection of scratches in RCP shafts and sleeves. The inspection consists of a thorough visual inspection of the sealing surfaces and subsequent quantitative measurement of any defects using a combination of digital camera with macro setting, scales with 1/64th inch graduations, calipers and optical comparator (for depth identification). Acceptance criteria have also been developed for determining the acceptability of the sealing surface to ensure that any leakage would be limited to less than the design value for the SDS when it is actuated.

12. **Explain the effects on the RCP seal package and/or any other consequences of an SDS inadvertent actuation. Since each set of components making up a shutdown seal in each reactor coolant pump is subject to the same manufacture, design, and internal operating environment, the potential for common cause failure exists. However, it was not accounted for in the report. Please provide a discussion of how the contribution of common cause failure was considered, or the rationale of why it was not considered, for components of the shutdown seal. The common cause groupings should include those within each reactor coolant pump and between shutdown seal assembly components in other reactor coolant pumps in the plant. Failure modes to address should include, but not be limited to, failing to seal below Westinghouse Owners Group (WOG) 2000 leakage range levels and inadvertent actuation on a fully rotating shaft.**

    The potential for inadvertent actuation and subsequent diagnosis and consequences was considered in detail and is discussed in Sections 3.2.3.11.4 through 3.2.3.11.6 of Revision 1 to WCAP-17100-P/NP. This discussion applies to single failure events as well as events resulting from common causes.

    The potential for failure of the SDS relative to the WOG2000 model was considered as discussed in Section 3.3.1 and 3.3.2. If the SDS actuates against a rotating shaft, the analyses and tests provide evidence that the other components of the RCP seal would not be affected and the resulting RCP seal leak rate would be less than that predicted by the WOG2000 model. For postulated cases where all seal cooling is lost, the resulting RCP seal leak rate would be bounded by the WOG 2000 model for cases where the SDS fails to actuate or the polymer ring fails to seal and maintain a leak-tight seal.

    Based on pre-installation inspection processes developed by Westinghouse that are performed on 100% of components, as identified in the FMEA in WCAP-17100-P/NP, the potential for common cause failures is considered to be highly unlikely and does not need to be considered in the PRA or deterministic modeling of the SDS.

13. **In section 3.3.4, Discussion of Uncertainties, it was stated that tests of the shutdown seal under a rotating shaft are planned. The NRC staff is concerned that inadvertent actuation of the shutdown seal has not been addressed with regard to the potential for further pump damage and excessive seal leakage past WOG 2000 range levels. Please provide a timeframe for those planned tests along with their details.**

    The tests and their results are described in detail in Section 3.2.3.11 of Revision 1 to WCAP-17100-P/NP.

14. In section 3.2.3.1.2, Statistical Analysis, the 8-hour coping test for leakage found that leakage could not be detected by the instrumentation. Thus, the behavior of the instrumentation itself was used as a surrogate to develop a statistical model and probability distribution. The NRC staff feels that this may not accurately reflect conditions of flow from a failed seal that would behave independent of test instrument precision. Please provide a further statistical evaluation using an appropriate approach.

A statistical analysis using Jeffreys noninformative prior methodology is discussed in Section 3.2.3.1.2.1 of Revision 1 to WCAP-17100-P/NP. The results of this statistical analysis are used to support the PRA model of the SDS in Section 3.3.2 of Revision 1 to WCAP-17100-P/NP.

Reactor Coolant Pump Shut Down Seal PRA Model

WCAP-17100-P/NP

Post-Submittal Presentation to NRC

January 13, 2010

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AGENDA

1300	Introduction and Purpose	Jeff Stone/PWROG
1310	Topical Report Overview	Bob Lutz/WEC
1330	End of Non-Proprietary Part of Meeting	
1330	Testing	Bruce Howard/WEC
		Judy Hodgson/ WEC
1430	Break	
1445	Impact on Analytical Models	Bob Lutz
1500	RAI Responses	Judy Hodgson
1600	Summary	All
1615	Adjourn	

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Introduction and Purpose

Jeff Stone

Constellation

&

Chairman, PWROG Risk Management Subcommittee

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Background

- Westinghouse developed a passive thermally actuated device (Shut Down Seal) to limit Westinghouse RCP seal leakage to very low rates during loss of all seal cooling event
- PWROG is sponsoring development of PRA model crediting this device in risk-informed applications, including submittal of a topical report to NRC for review and approval
- WCAP-17100-P/NP was submitted to NRC in July 2009 and included commitments to share the results of ongoing testing with NRC at a later date.
- Draft NRC RAIs were discussed via telephone conferences in September and October of 2009
- Formal RAIs were received in December 2009

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Requested Review and Approval

- PRA Model for the Westinghouse Shut Down Seal that describes its behavior under a loss of all seal cooling event
- Deterministic model for the Westinghouse Shut Down Seal that describes its behavior under a loss of all seal cooling event

Meeting Purpose

- The purpose of this meeting is
  - Discuss additional testing completed since July 2009 submittal of WCAP-17100-P/NP and the impact on the PRA and deterministic models
  - Discuss Draft responses to NRC RAIs

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Overview of Topical Report

Bob Lutz

Risk Applications and Methods

Westinghouse

Proprietary vs. Non-Proprietary

- WCAP-17100-P is the Westinghouse Proprietary Class 2 version of the Topical Report
  - Contains detailed performance information and PRA models that, as detailed in affidavit accompanying the report:
    - Would create value for a competitor
    - Contains testing results and interpretations
    - Is funded by only certain PWROG members with Westinghouse RCP seals
- WCAP-17100-NP is the Westinghouse Non-Proprietary version of the Topical Report
  - Identical page format with Proprietary information deleted

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Schedule

Complete Prototype / Beta Testing	April 2009
Intermediate Design Review	June 2009
Topical Report Submittal	July 2009
Complete Final Design Testing	Fall 2009
Final Design Review	Fall 2009
Topical Report Supplement for Final Testing	Jan 2010
First Plant Installation	Spring 2010

Documentation of Additional Testing

- Originally Westinghouse proposed that additional testing of the Shut Down Seal designated as 'planned' or 'in-progress' in WCAP-1700-P/NP be provided as a Supplement to the topical report.
- In order to make the original report technically and editorially accurate and to reference to the Supplement as applicable, significant changes would be necessary
- Westinghouse now proposes to revise the original topical report to include the additional testing and provide the additional information requested in the NRC RAIs
  - A single document that includes all information to support the proposed PRA and deterministic models for the Shut Down Seal would be most useful for future reference by industry and NRC

Documentation of Additional Testing

- Changes to the WCAP-17100-P/NP Revision 0 include:
  - Addition of descriptions and results of testing completed since July 2009
  - Editorial changes to delete 'planned' or 'in-progress' and refer to the additional tests and test results
  - Changes to discussions of O-rings based on a design change since July 2009
  - Changes to the PRA model as a result of the additional testing
  - Editorial changes for accuracy (e.g., psi to psia or psig) or clarification

Documentation Provided

- The following information is being provided to NRC at this meeting:
  - Draft Revision 1 to WCAP-17100-P (along with a Proprietary Affidavit) in two formats:
    - 3 hardcopy versions with all changes noted using WORD 'Track Changes' feature
    - 3 hardcopy versions with all 'changes accepted'
  - Draft PWROG response to RAIs (Non-Proprietary)
- The PWROG proposes to formally submit WCAP-17100-P and NP in early February reflecting any additional NRC input from today or that provided by NRC before January 20

Overview of Topical Report

Judy Hodgson

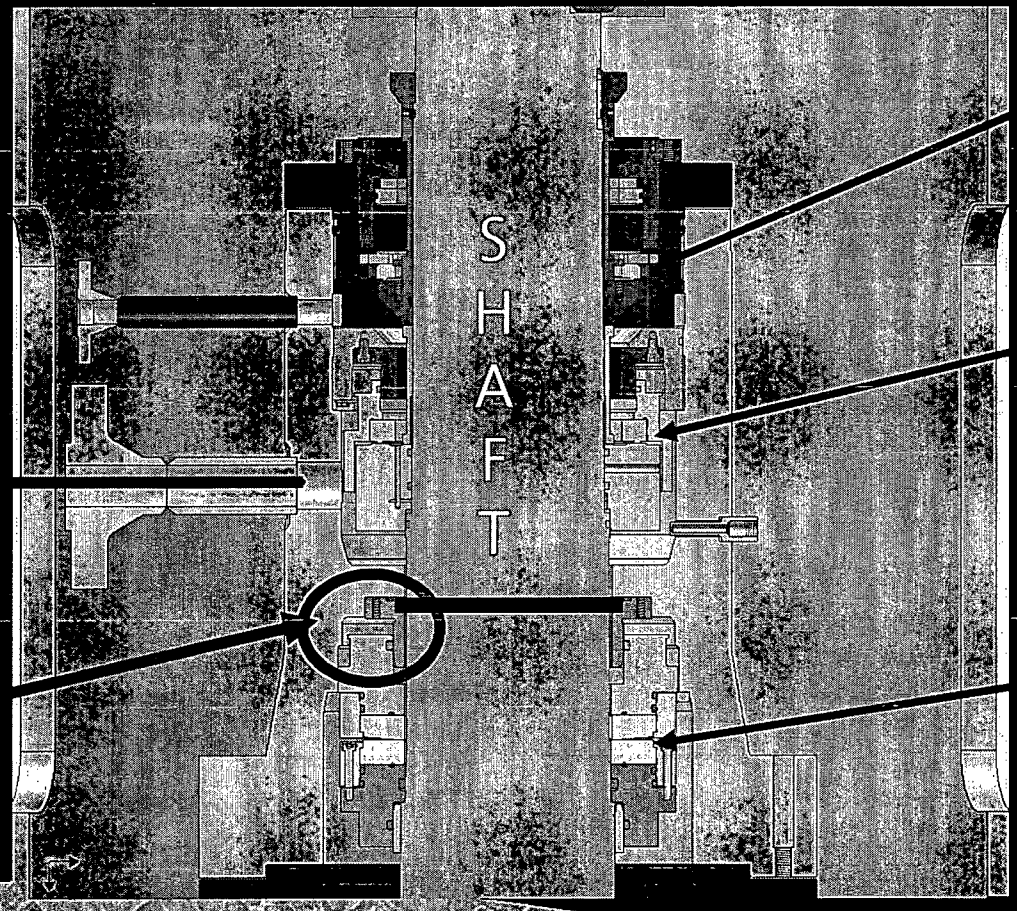
Rotating Equipment Services

Westinghouse

(for information if requested)

Westinghouse

Reminder:
How Shut Down Seal Works



#3 Seal

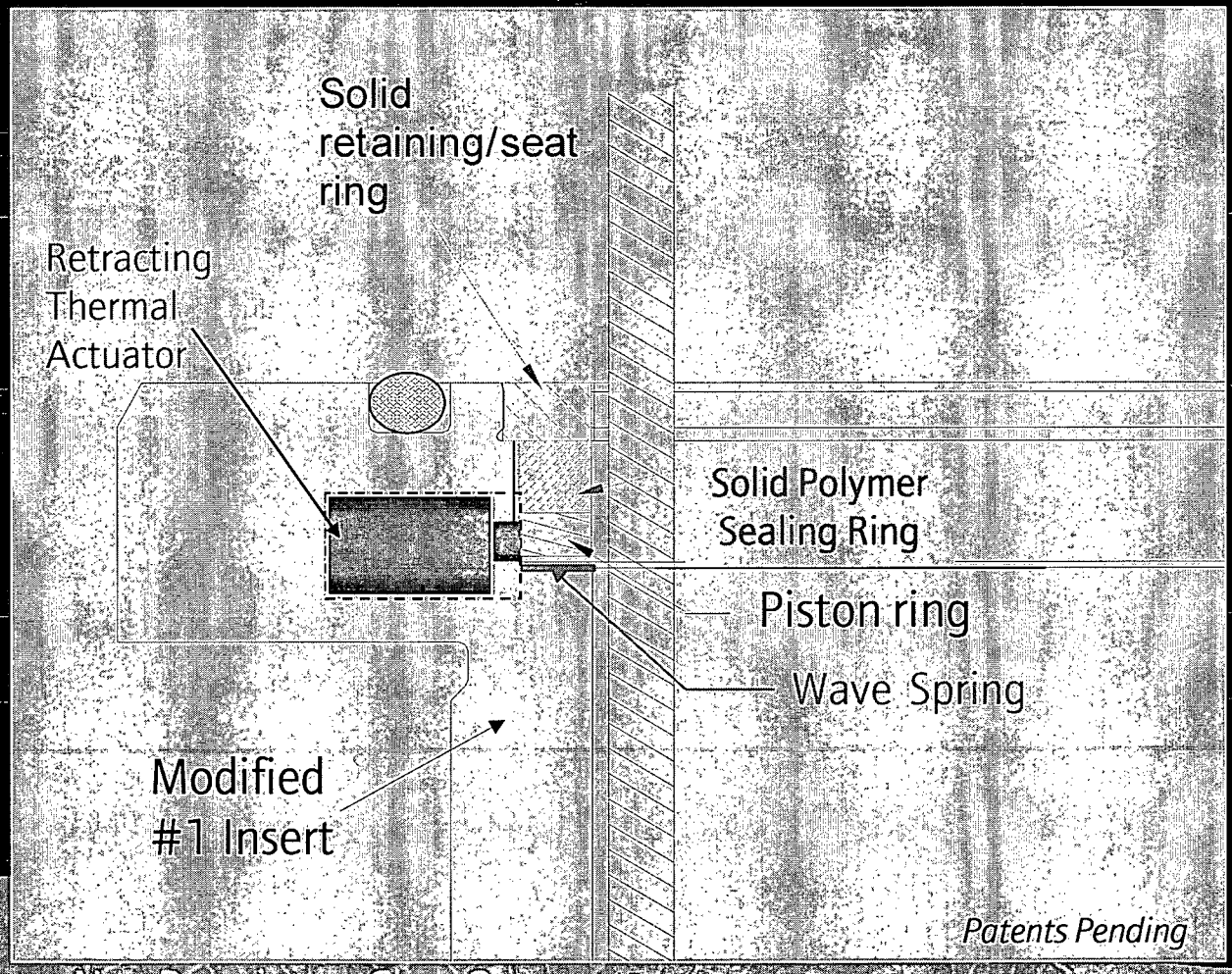
#2 Seal

#1 Leak Off

Location of Shut Down Seal

#1 Seal

Shut Down Seal



Functional Specification

- <1 gpm
- 28 hr SBO conditions 570°F/2350 psia
- 44 hr RHR conditions 350°F/375 psia
  - Drop T within 1.5 hour
- 72 hr protection of Core
- Actuate between 250°F - 290°F

Basis for Analysis and Testing

- Detailed, comprehensive Failure Modes and Effects Analysis (FMEA) guided development program
- Key Failure modes addressed:
  - **Inadvertent actuation for at-power condition**
  - **Failure to actuate**
  - Failure to **seal tight when actuated**
  - Failure to **maintain tight seal once initially sealed**
    - Failure to **withstand long-term exposure to hot RCS fluid**
    - Failure to **withstand RCS cooldown**
    - Failure to **withstand pump shaft rotation**

Testing Philosophy

- Testing is expen$ive, but is needed to support reliability targets and PRA model
- Westinghouse solution: test key SDS components to establish a statistical basis for PRA model
  - Thermal piston
  - Retracting Actuator
  - Piston ring / Polymer ring / Retaining ring
- Limited testing of complete SDS installed in overall seal package

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QUESTIONS

END OF NON-PROPRIETARY SESSION

Westinghouse

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CAW-10-2730

January 11, 2010

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: WCAP-17100-P, Revision 1 DRAFT, "PRA Model for the Westinghouse Shut Down Seal" dated January 2010 (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-10-2730 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. 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 2.390 of the Commission's regulations.

The subject document was prepared and classified as Westinghouse Proprietary Class 2. Westinghouse is providing the document as a draft for use by the NRC and a non-proprietary version will not be issued.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Pressurized Water Reactor Owners Group (PWROG).

Correspondence with respect to this application for withholding or the accompanying affidavit should reference CAW-10-2730, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: George Bacuta (NRC OWFN 12E-1)

CAW-10-2730

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, 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. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed before me
this 11th day of January 2010

Renee Giampole
Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Renee Giampole, Notary Public
Penn Township, Westmoreland County
My Commission Expires September 25, 2013

(1) I am 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 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 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 2.390; 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 in WCAP-17100-P, Revision 1 DRAFT, "PRA Model for the Westinghouse Shut Down Seal" (Proprietary) dated January 2010, being transmitted by PWROG letter OG-10-20 and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is expected to be applicable to all plants installing the Westinghouse Reactor Coolant Pump Shut Down Seal for other licensee submittals in response to certain NRC requirements for justification of Reactor Vessel Head Inspection Relief Requests, and may be used only for that purpose.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes crediting the Westinghouse Shut Down Seal in deterministic and probabilistic regulatory applications.

(b) The information requested to be withheld reveals the distinguishing aspects of a design and 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 information 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 address NRC requirements 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/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 2.390 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).

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File Ref: WCAP-17100-P Rev 1 Draft NRC Presentation Part 2

CAW-10-2739

January 27, 2010

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: "Reactor Coolant Pump Shut Down Seal PRA Model, WCAP-17100-P/NP Post-Submittal Presentation to NRC" dated January 13, 2010" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-10-2739 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. 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 2.390 of the Commission's regulations.

The subject document was prepared and classified as Westinghouse Proprietary Class 2, and as such, a non-proprietary version will not be issued.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Pressurized Water Reactor Owners Group (PWROG).

Correspondence with respect to this application for withholding or the accompanying affidavit should reference CAW-10-2739, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

R. M. Span / FOR

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

CAW-10-2739

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared R. M. Span, 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:

R. M. Span

R. M. Span, Principal Engineer
Regulatory Compliance and Plant Licensing

Sworn to and subscribed before me
this 27th day of January 2010

Joyce A Szepessy

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Joyce A. Szepessy, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires April 16, 2013
Member, Pennsylvania Association of Notaries

(1) I am Principal Engineer, 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 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 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 2.390; 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 in "Reactor Coolant Pump Shut Down Seal PRA Model, WCAP-17100-P/NP Post-Submittal Presentation to NRC" dated January 13, 2010, being transmitted by PWROG letter OG-10-20 and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is expected to be applicable to all plants installing the Westinghouse Reactor Coolant Pump Shut Down, and may be used only for that purpose.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes crediting the Westinghouse Shut Down Seal in deterministic and probabilistic regulatory applications.

(b) The information requested to be withheld reveals the distinguishing aspects of a design and 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 information 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 address NRC requirements 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/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

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