

**South Carolina Electric & Gas Company**

**Virgil C. Summer Nuclear Station Units 2 & 3**

**NND-16-0007**

**Enclosure 2**

**SCE&G Response to**

**NRC Request for Additional Information**

**Letter No. 05 (eRAI 7801)**

**Regarding Mitigation Strategies**

**for Beyond Design Basis External Events**

**(Publicly Available Version)**

**(This enclosure contains 15 pages, including this cover page)**

**NRC RAI 05**

On December 4, 2014, the licensee of Vogtle Units 3 and 4 submitted its response to Request for Additional Information (RAI) 04-1 on the use of the automatic depressurization system (ADS) as part of the mitigation strategies for beyond design basis external events (BDBEEs). In RAI 04-1, the NRC staff requested the licensee to specify (a) the method of core cooling credited when entering the final phase for mitigating BDBEEs, and (b) whether the applicable Equipment Qualifications cover de-energizing, re-energizing, and firing of the ADS. In its response to RAI 04-1(a), the licensee indicated that the long-term core cooling safety function is provided by the passive residual heat removal heat exchanger while ADS actuation and in-containment refueling water storage tank injection provide a backup means of long-term core cooling. In its response to RAI 04-1(b), the licensee indicated that the environmental conditions for qualification of the ADS motor-operated valves (MOVs) and squib valves are shown in AP1000 Design Control Document (DCD) and Vogtle Units 3 and 4 Final Safety Analysis Report (FSAR) Table 3D.5-3, "Abnormal Operating Environments Inside Containment." The licensee also indicated that the Class 1E dc and uninterruptible power supply system (IDS) batteries are not qualified for de-energizing, re-energizing, and firing of the ADS system at a later time, but that the availability of ADS is assured by several specific aspects listed in the RAI response. On December 18, 2014, the NRC staff conducted a public telephone conference with the licensee to discuss its response to RAI 04-1. As a follow-up to RAI 04-1, the staff requests that the licensee:

- (1) Provide the spectra over time of the abnormal operating environments inside containment for temperature, pressure, humidity, radiation, chemistry, and submergence based on Table 3D.5-3, and the spectra over time for those environmental conditions determined for the BDBEEs that are the subject of RAI 04-1 (i.e., post-Fukushima lessons learned scenarios), to allow a comparison of the environmental qualification of the ADS established through the AP1000 DCD to the environment conditions that might occur during a post-Fukushima lessons learned scenario.
- (2) Make available (directly or by reference) the analysis supporting the licensee's determination that operation of the ADS Stage 4 squib valves during a post-Fukushima lessons learned scenario will be bounded by the structural analysis performed as part of probabilistic risk assessment (PRA) evaluations to demonstrate that the ADS Stage 4 squib valves may be operated without degradation of the AP1000 piping systems at a reactor coolant system (RCS) pressure above the RCS pressure specified in the original DCD analysis.
- (3) Expand the discussions of the justification for the availability of the IDS batteries to perform their intended function during a post-Fukushima lessons learned scenario, and for the capability of the diverse actuation system (DAS) power independent actuation

device located at the secondary DAS station to actuate the ADS squib valves without the availability of the battery supplies.

### **SCE&G Response to RAI 05-1**

The expected performance of the containment has been calculated for AP1000 using best estimate assumptions of Beyond Design Basis External Events (BDBEEs) that are the subject of RAI 04-1. Based on results of this analysis, Figures 3 and 4 (containment temperature vs time) and Figures 6 and 7 (containment pressure vs time) have been provided below.

Figures 3 and 4 show the expected containment temperature that will exist in the well mixed portion of the containment during a long-term (less than 30 days) Passive Residual Heat Removal (PRHR) Heat Exchanger (HX) operation. Note that the ADS valves are located in the well mixed portion of the containment. The IRWST injection and the containment recirculation squib valves are located in the PXS valve rooms which have small opening located in the ceilings of these rooms. During actual long-term PRHR HX operation it is expected that these rooms will experience lower temperatures since there is no mechanism to mix the atmospheres of these rooms with the containment.

The mission time for the ADS stage 4 valves is specified to be 72 hours, post-accident. This means that the ADS stage 4 valve qualification profile includes the first 72 hours of the generic AP1000 post-accident temperature and pressure profile from established environmental conditions. Figure 1 shows the bounding Containment Temperature design Envelope for Equipment Qualification for Design Basis Accidents (consistent with Figure 3D.5-8 of the DCD). As mentioned earlier, only the first 72 hours in that profile are applicable to ADS Stage 4. In addition to this post accident qualification, the ADS stage 4 valves are qualified to operate after several abnormal events, categorized into Group 1 and Group 2 events. The Group 1 event profile is established at 150°F for 52 hours, and the Group 2 event profile varies between 250°F and 150°F over the course of 30 days. Figure 2 captures the Temperature profile for Group 1 and Group 2 events (consistent with Table 3D.5-3 of the DCD). Both accident and abnormal environmental conditions for equipment qualification are described in Appendix 3D of the AP1000 DCD.

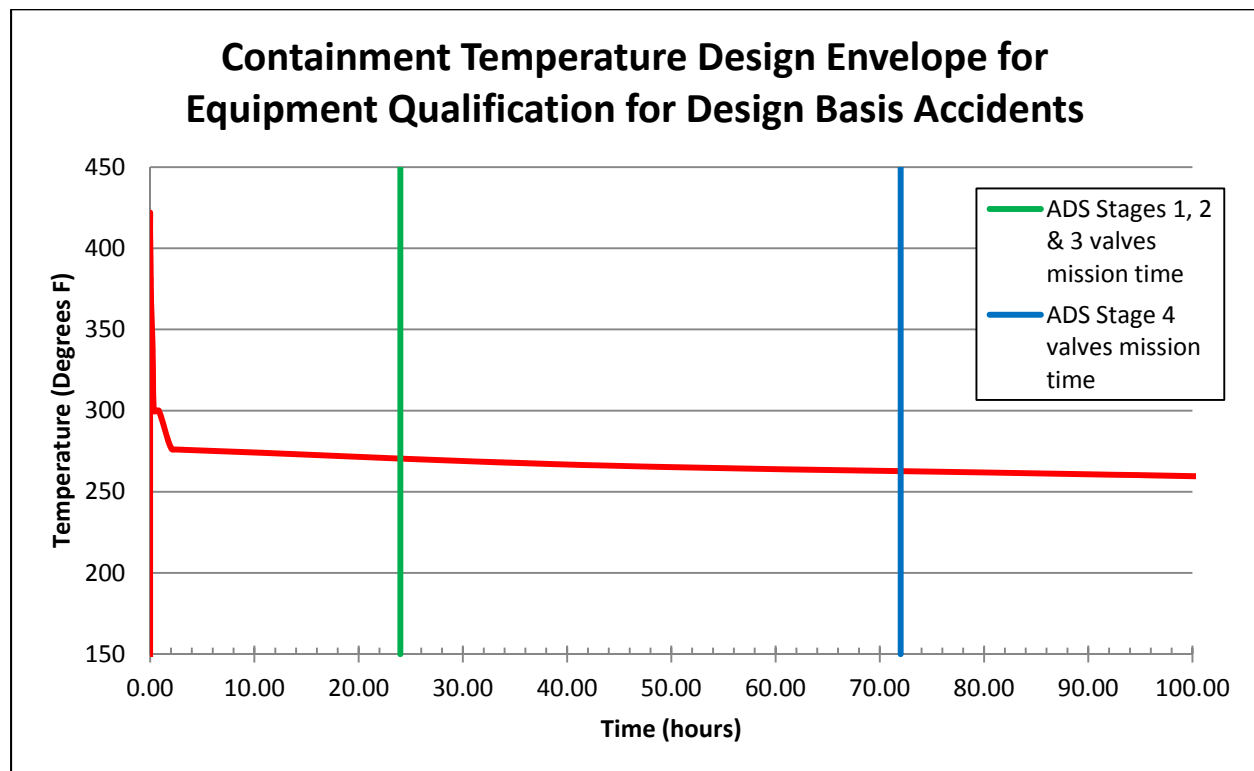
So, the compiled profile for ADS stage 4 valves in Figure 3 reflects a qualification covering 3 days (72 hours) of accident conditions, 30 days of abnormal group 2 conditions, and slightly more than 2 days (52 hours) of abnormal group 1 conditions. This combined profile serves as the basis for the qualification of the ADS Stage 4 valves when considering a long-term PRHR event.

The ADS stages 1, 2 and 3 valves are specified with a mission time of 24 hours, post-accident. As a result, the valve qualification profile includes the first 24 hours of the generic AP1000 post-accident temperature and pressure profile from established

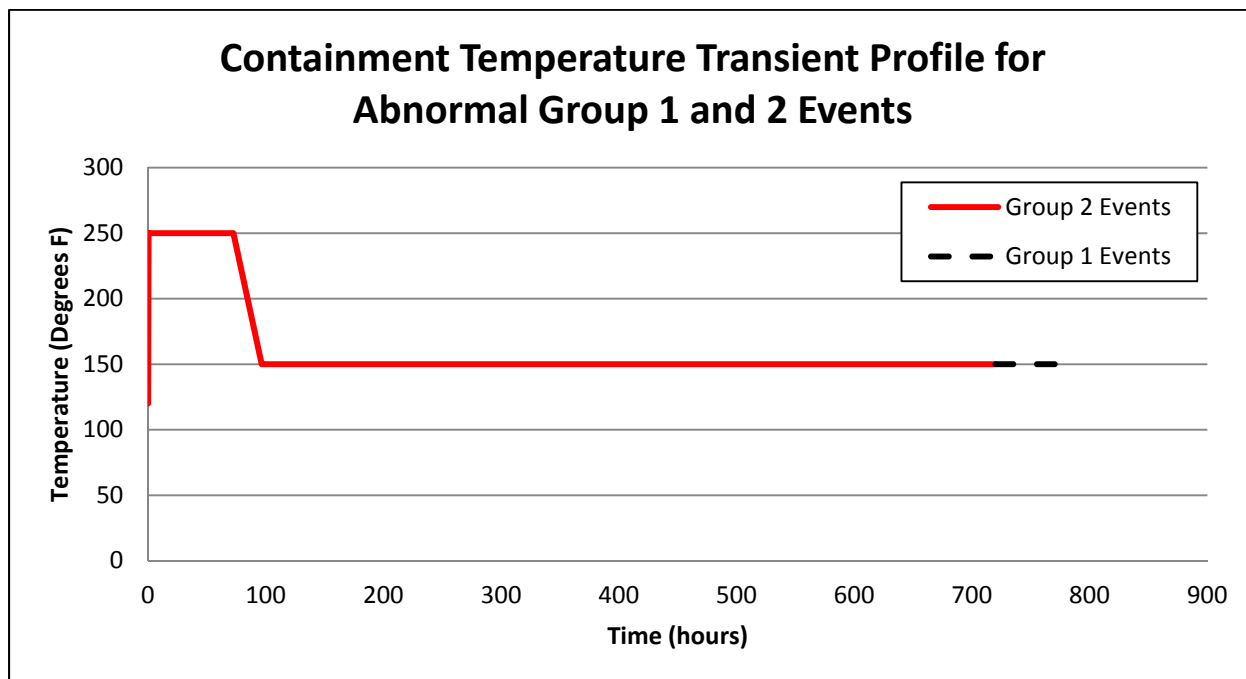
environmental conditions. Similar to ADS stage 4, ADS stages 1, 2 and 3 valves are qualified to operate after several abnormal events, categorized into Group 1 and Group 2 events. The Group 1 event profile is established at 150°F for 52 hours, and the Group 2 event profile varies between 250°F and 150°F over the course of 30 days.

So, the compiled profile for ADS stages 1, 2 & 3 valves in Figure 4 reflects a qualification covering 1 day (24 hours) of accident conditions, 30 days of abnormal group 2 conditions, and slightly more than 2 days (52 hours) of abnormal group 1 conditions. This combined profile serves as the basis for the qualification of the ADS stages 1, 2 & 3 when considering a long-term PRHR event.

As a baseline, temperatures used in the evaluation were converted to an equivalent unit durations at 150°F using the Arrhenius model. After using the Arrhenius model to establish a ratio of times for a given temperature, the two profiles shown in Figure 1 were evaluated to determine a single value for each profile. The single value represents the integrated time spent at 150°F to replicate the thermal effects of that particular profile. Results were achieved using trapezoidal methods of numerical integration for equivalent 150°F data and are summarized in Table 1.



**Figure 1**  
**Bounding Containment Temperature Design Envelope for Equipment Qualification for Design Basis Accidents**



**Figure 2**  
**Containment Temperature Transient Profile for Abnormal Group 1 and 2 Events**

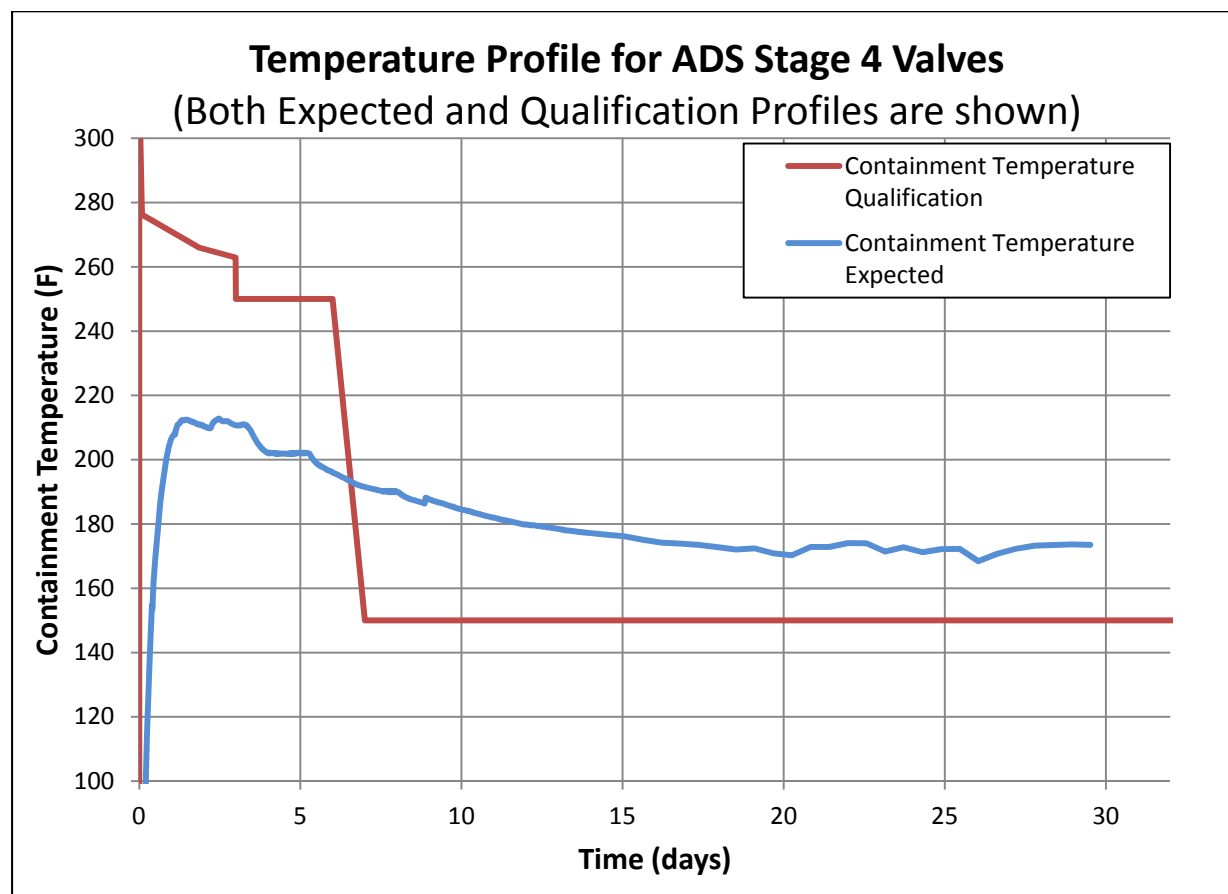
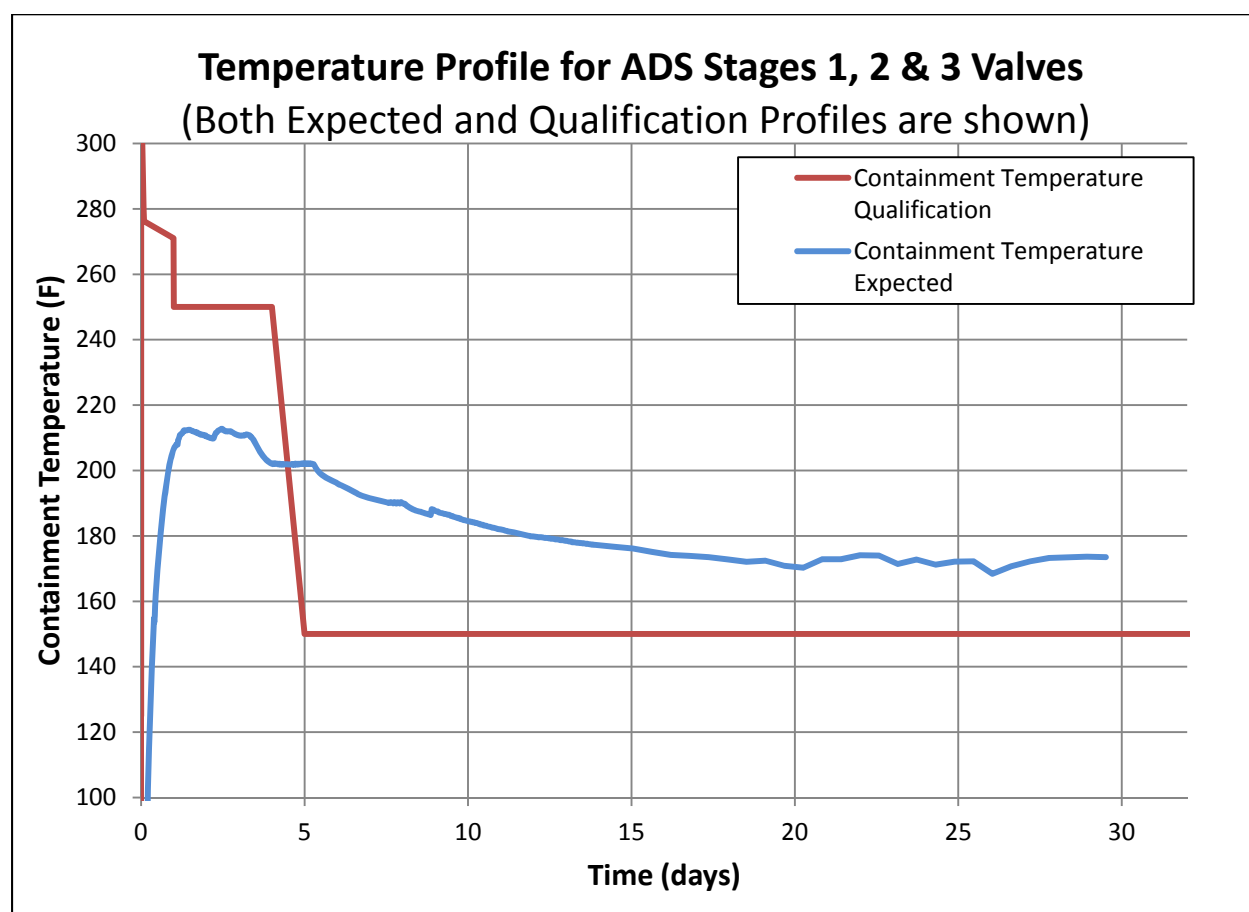


Figure 3

Comparison of the Temperature Profiles for the Qualification Envelope of the ADS Stage 4 Valves and the Expected Containment Conditions Considering Long-Term PRHR Operation<sup>1</sup>



**Figure 4**

**Comparison of the Temperature Profiles for the Qualification Envelope of the ADS Stages 1, 2 & 3 Valves and the Expected Containment Conditions Considering Long-Term PRHR Operation<sup>1</sup>**

<b>Table 1. Results of an Evaluation Determining the Equivalent Time at 150°F Simulating Effects from Two Different Thermal Profiles</b>	
<b>ADS Stage 4 Valves</b>	
<b>Profile</b>	<b>Integrated Equivalent Time at 150°F(days)</b>
30 Day PRHR Operation – Expected	73
RCS-PL-V – Qualification	110
<b>ADS Stages 1, 2 &amp; 3 Valves</b>	
<b>Profile</b>	<b>Integrated Equivalent Time at 150°F(days)</b>
30 Day PRHR Operation – Expected	73
RCS-PL-V – Qualification	87

These results demonstrate that the qualification envelope for ADS Stages 1 through 4 valves is sufficiently robust to provide assurance, that the equipment would survive a long term event requiring PRHR operation and still be able to perform their function considering temperature alone.

Figures 6 & 7 show the expected containment pressure that will exist in the well mixed portion of the containment during a long-term PRHR HX operation (blue trend line). The red curve captures the Containment Pressure Qualification profile for the ADS valves.

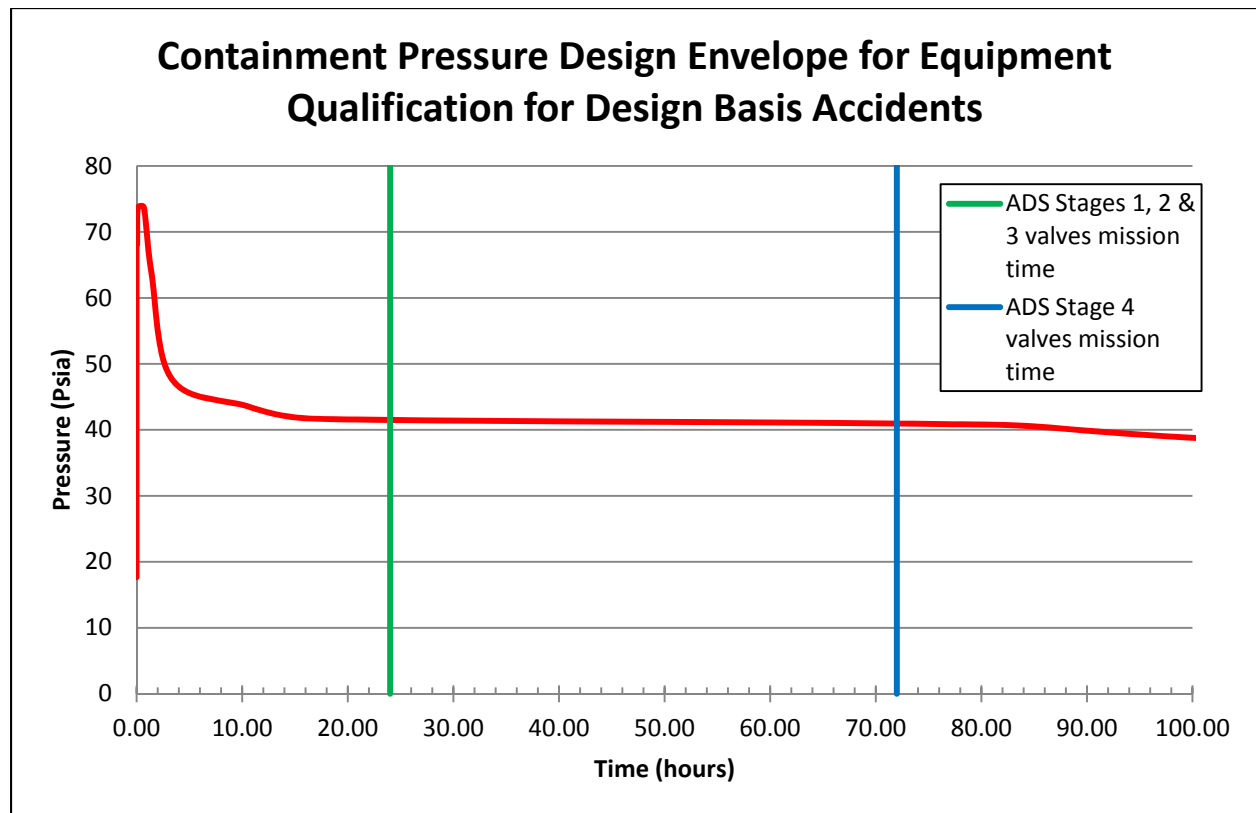
Similar to the temperature qualification criterion, the mission time of the ADS stage 4 valves is specified to be 72 hours, post-accident. This means that the valve qualification profile includes the first 72 hours of the generic AP1000 post-accident pressure profile from established environmental conditions. Figure 5 captures the bounding Containment Pressure design Envelope for Equipment Qualification for Design Basis Accidents (consistent with Figure 3D.5-8 of the DCD). As mentioned earlier, only the first 72 hours in that profile are applicable to ADS Stage 4. In addition to this post accident qualification, the ADS stage 4 valves are qualified to operate after several abnormal events.

So, the compiled profile for ADS stage 4 valves in Figure 6 reflects a qualification covering 3 days (72 hours) of accident conditions, 30 days of abnormal event conditions. This combined profile serves as the basis for the qualification of the ADS Stage 4 valves when considering a long-term PRHR event.

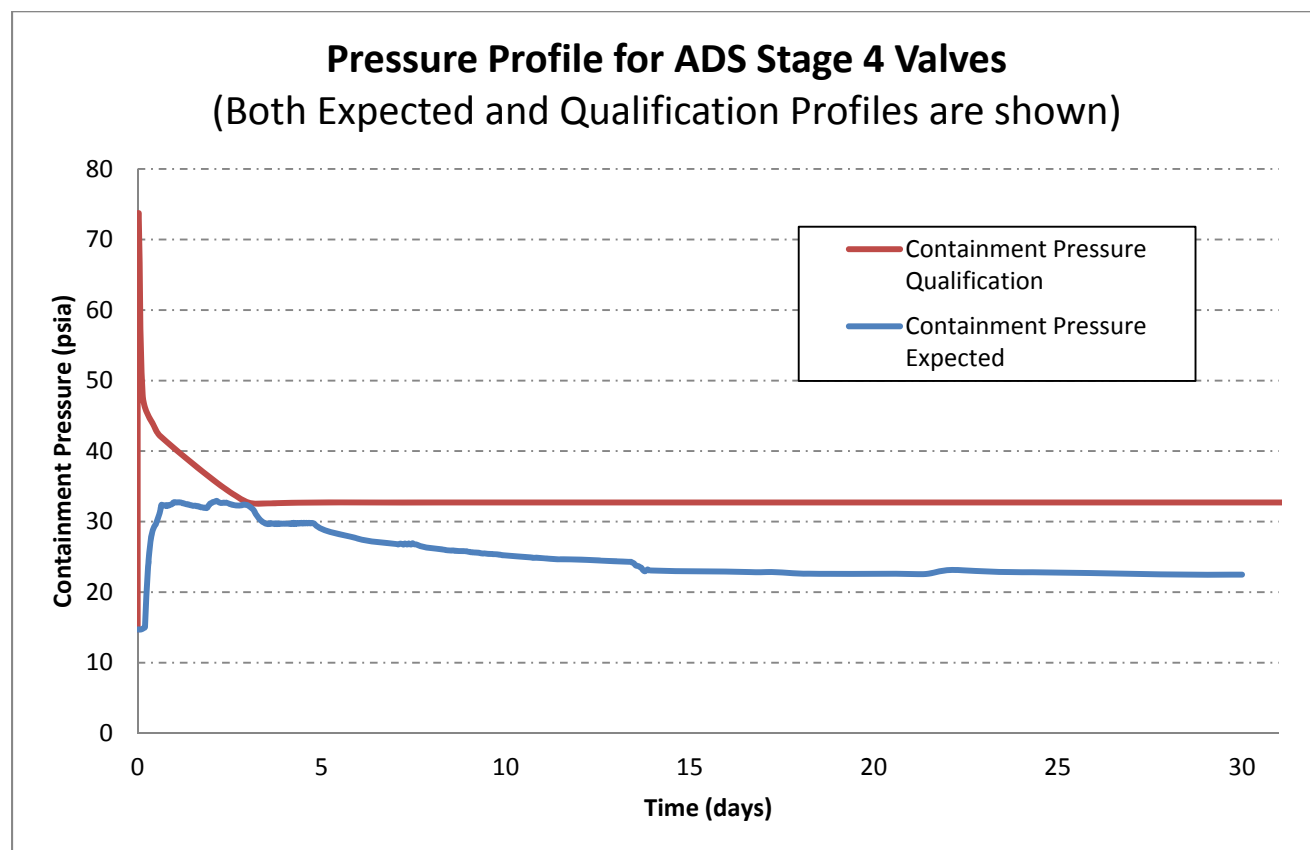


Similar to the temperature profile, the ADS stages 1, 2 and 3 valves are specified with a mission time of 24 hours, post-accident. This means that the valve qualification profile includes the first 24 hours of the generic AP1000 post-accident pressure profile from established environmental conditions.

So, the compiled profile for ADS stages 1, 2 & 3 valves in Figure 7 reflects a qualification covering 1 day (24 hours) of accident conditions, 30 days of abnormal event conditions. This combined profile will serve as the basis for the qualification of the ADS stages 1, 2 & 3 when considering a long-term PRHR event.



**Figure 5**  
**Bounding Containment Pressure Design Envelope for Equipment Qualification for Design Basis  
Accidents**



**Figure 6**  
Comparison of the Pressure Profiles for the Qualification Envelope of the ADS Stage 4 Valves and the Expected Containment Conditions Considering Long-Term PRHR Operation<sup>1,2</sup>

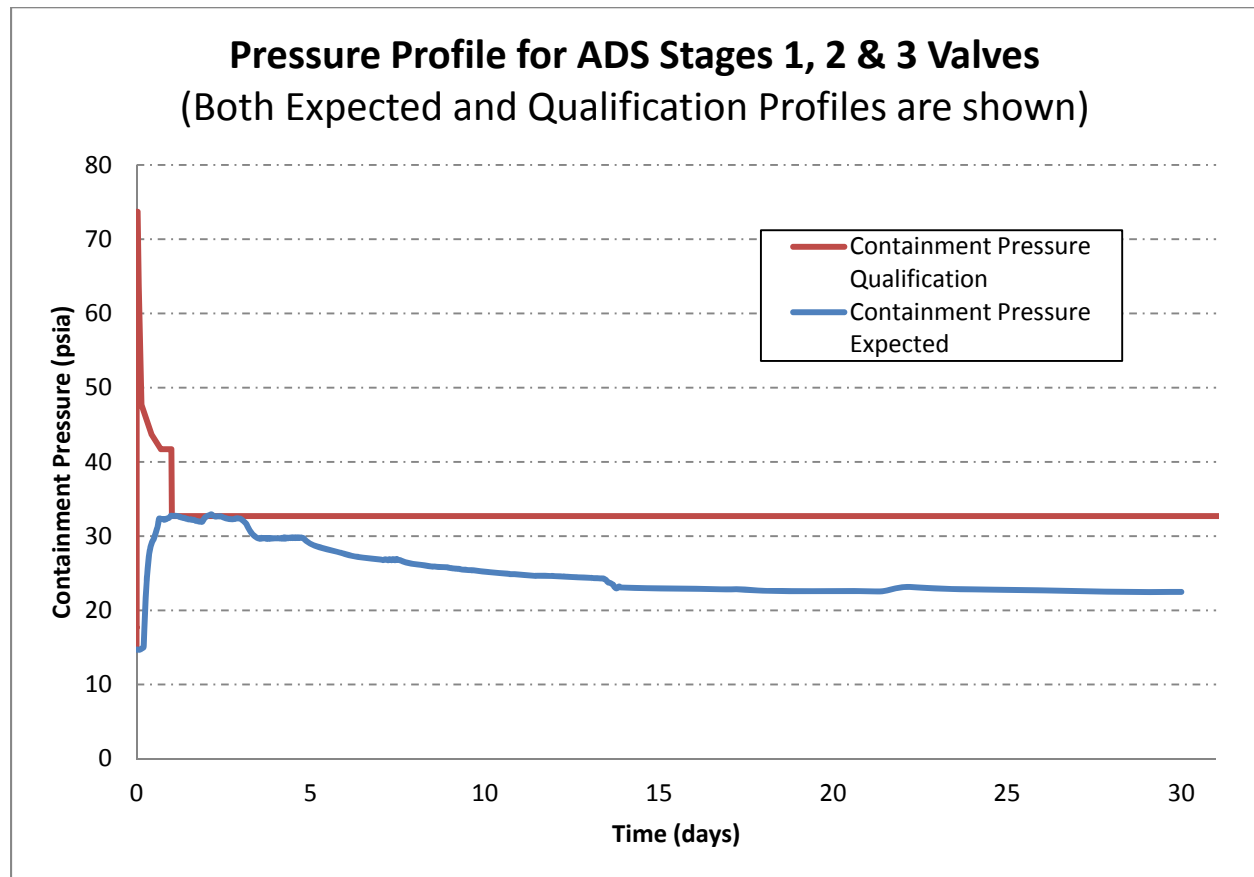


Figure 7

**Comparison of the Pressure Profiles for the Qualification Envelope of the ADS Stages 1, 2 & 3 Valves and the Expected Containment Conditions Considering Long-Term PRHR Operation<sup>1,2</sup>**

Figures 6 & 7 illustrate that the qualification profile bounds the expected containment pressure during a long-term PRHR HX operation. These results demonstrate that the qualification envelope for the ADS stages 1 through 4 valves provides assurance, that the equipment would survive a long term event requiring PRHR operation and still be able to perform their function. The basis for this statement includes:

- The ADS valves are specified and qualified to function considering radiation from normal operating conditions as well as abnormal and accident conditions, considering the mission time of the equipment.
- From the established AP1000 environmental conditions, these valves will be qualified to function after receiving nearly 100 Mrads of radiation, which represents the theoretical post-accident contribution from a design basis LOCA (with core melt). The case considered in this response is much less significant from a radiological standpoint. The valves would be expected to receive much less than 100 Mrads over the course of nearly 30 days considering long-term PRHR operation. This conclusion was reached considering that, with PRHR

operation, there would be no fuel damage or release of reactor coolant to the containment which would influence Total Integrated Dose values for the ADS valves.

- The ADS valves are never submerged in DBA or BDBEEs. The IRWST injection and containment recirculation squib valves can be submerged during a DVI line break but will not be submerged during long-term PRHR HX operation for BDBEEs. This adds additional margin.
- There will be no chemistry effects for the long-term PRHR HX case, since there will be no pipe break splash or submergence.
- There will be no significant difference between the qualification conditions (post-accident + abnormal) for humidity and the expected containment conditions for humidity.

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<sup>1</sup> In defining qualification parameters, the actual AP1000 equipment qualification program incorporates an additional margin as described in Table 3D.4-3 in the DCD. This margin is applied at the time of testing to cover known safety-related applications of the equipment. However, as a conservative measure, this margin was not included in the discussion and plots presented in this response.

<sup>2</sup> The pressure value for the environmental conditions during abnormal operating conditions is currently 15 psig according to Table 3D.5-3 of the DCD Revision 19. However this value has been updated to 18 psig by Westinghouse via Design Change Package APP-GW-GEE-4742, which is a component of licensing departure NL-0921. This licensing departure will be incorporated into the VCSNS 2&3 current licensing basis in accordance with the change process in 10 CFR 52 Appendix D Section VIII, and station procedures.

**SCE&G Response to RAI 05-2**

Opening ADS stage 4 without first opening ADS stages 1, 2 & 3 valves is beyond the AP1000 design basis. An analysis was performed using Modular Accident Analysis Program (MAAP) to determine the plant response after long-term (less than 30 days) PRHR HX operation (APP-PXS-M3C-079). In the MAAP analysis, seven non-LOCA scenarios were investigated to identify the limiting case for long-term PRHR HX operation. For all scenarios, the PRHR HX was operated in closed-loop mode. In all scenarios, RCS pressure decreases over the course of the transient and reaches a steady state value well below 600 psia, the pressure at which ADS-4 is assumed to be opened in the structural analysis. Therefore, the RCS pressure assumed in the ADS-4 PRA structural analysis bounds calculated RCS pressure during long-term PRHR HX operation.

**SCE&G Response to RAI 05-3**

During the Loss of AC Power design basis event, the AP1000 design includes a timer set at 22 hours following loss of all AC power that initiates an automatic actuation of the ADS stages 1 through 4. This action initiates the transition from closed loop PRHR HX based core cooling to open loop passive feed and bleed core cooling. The stated purpose of this design feature is to ensure that even without operator action the 24 hour IDS actuation batteries retain adequate capacity to operate the equipment associated with ADS and long term open loop core cooling. Note that according to the current Design Licensing Basis, section 7.4.1.1, the AP1000 emergency procedures instruct the operators to monitor plant conditions and if the plant is in a stable condition and ADS is not required in the near future to power down the PMS cabinets and the associated IDS batteries prior to the actuation of the 22 hour timer.

During BDBEEs, RCS leak rates could require the need to actuate ADS over a wide range of time after 22 hours. In addition, recent best estimate plant analyses have been performed to better quantify how long the PRHR HX can operate before loss of IRWST inventory would uncover the PRHR HX tubes to the point where reactor core decay heat exceeded heat removal capability. This time frame is greater than 14 days, currently calculated to be approximately 20 days. In order for ADS to be actuated two to three weeks following a design basis event, the IDS batteries would have to retain enough energy to actuate the required valves and other supporting I&C equipment after being isolated to that point. Equipment located inside containment would be exposed to elevated containment temperatures and equipment outside of containment could be exposed to various environmental conditions.

The two main issues with the IDS batteries retaining sufficient capacity after being de-energized for this length of time is that their environmental temperature could decrease and they could lose capacity through self-discharge.

According to the technical specification bases, the minimum temperature for the IDS batteries (electrolyte) is 60°F. Due to location on the 66'6" elevation, a bounding ground temperature of 50°F was used to project battery capacity. The IDS 24 hour batteries will approach below ground (Earth) temperature in a long station blackout. According to IEEE-485, the temperature de-rating factor is 11% for 60°F, while a bounding 50°F site ground temperature has a 19% de-rating factor. The impact of this lower bounding temperature is an 8% reduction in battery capacity. In addition, when isolated, the batteries are expected to experience some self-discharge over extended times. The rate of discharge is expected to be slow – less than 1% per month. This value is very conservative based on common industry practice.

This adds up to a total of 9% loss in the batteries retained capacity during the BDBEE.

There are two areas where the IDS batteries have significant capacity margin sufficient to provide adequate power to perform their intended function during a BDBEE.

In the scenario in question, only two batteries are needed to perform the intended functions listed below (one for division A and another for division B). With both division A and division B batteries available, the following valves functions can be actuated:

- Both ADS stage 1 lines
- Both ADS stage 3 lines - although these valves would not be needed for passive feed/bleed after 72 hr PRHR HX operation due to the reduced RCS temperature and decay heat
- All four ADS stage 4 lines - train A powers two ADS 4 squibs and B powers the other two. Note that in this BDBEE, the ADS stage 4 MOVs are assumed to be open as is required and monitored by Tech Spec
- Both IRWST injection lines - with one squib in each line
- Both Containment Recirculation lines – with one squib valve in each line

The IDS batteries are sized in accordance with IEEE-485. Currently the design calculation(s) of record and supporting valve operation timing calculations of record model 2 (limiting) scenarios for each 24 hour (shutdown) battery; A large break LOCA and loss of AC power with ADS timer actuation. Since the AP1000 design has the exact same cell size for all seven IDS batteries (4x24 and 2x72 hour banks plus one spare), these battery banks are inherently identical and qualified for 72 hours. The size of these batteries is based on Division D actuation loads since it has the highest load. According to the PMS calculation for power consumption and heat dissipation for the AP1000 PMS system, the maximum power consumption for Division D exceeds that for Divisions A, B & C by more than 11%. This translates to an adequate margin available in Divisions A, B & C batteries to offset the 9% loss in the batteries retained energy due to de-energizing the batteries for 14 days. This provides assurance that the batteries will perform their intended function during a BDBEE.

In addition, the battery sizing includes a 10% design margin to account for future growth for the station battery, in accordance with the recommendation of Section 6.2.2 of IEEE 485. This margin is applicable to all batteries including Division D. This margin provides an added level of margin (independent of the previous discussion) that could be utilized if needed and available during a BDBEE.

a,c

- (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.
- (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.

**South Carolina Electric & Gas Company**

**Virgil C. Summer Nuclear Station Units 2 & 3**

**NND-16-0007**

**Enclosure 3**

**Westinghouse Authorization Letter**

**CAW-15-4092**

**and Affidavit**

**(This enclosure contains 7 pages, including this cover page)**





# Westinghouse

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Proj letter: APC\_APG\_000218

CAW-15-4092

24 February 2015

APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE

Subject: DCP\_APG\_000026, "Transmittal of Westinghouse Input to NRC RAIs Docket Nos. 52-025 and 52-026, eRAI Tracking No. 7801(Proprietary)"

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-15-4092 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.

Accordingly, this letter authorizes the utilization of the accompanying Affidavit by APOG.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-15-4092, and should be addressed to James A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 3 Suite 310, Cranberry Township, Pennsylvania 16066.

Very truly yours,

Richard A. DeLong, Director

International Licensing and Regulatory Affairs

CAW-15-4092  
24 February 2015

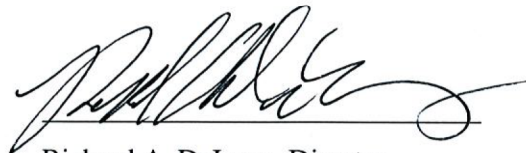
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF BUTLER:

I, Richard A. DeLong, am 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 my knowledge, information, and belief.

A handwritten signature in black ink, appearing to read 'Richard A. DeLong', written over a horizontal line.

Richard A. DeLong, Director

International Licensing and Regulatory Affairs

- (1) I am Director, International Licensing and Regulatory Affairs, 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 constitute Westinghouse policy and provide 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.
- (iii) 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.
- 
- (iv) 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.
  - (v) 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.
  - (vi) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in DCP\_APG\_000026, "Transmittal of Westinghouse Input to NRC RAIs Docket Nos. 52-025 and 52-026, eRAI Tracking No. 7801(Proprietary)", for submittal to the Commission, being transmitted by APOG letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is that associated with Post-Fukushima information as applicable to AP1000® plant, and may be used only for that purpose.

- (a) This information is part of that which will enable Westinghouse to:
  - (i) Provided detailed responses to the NRCs requests for additional information with regard to AP1000 and Post-Fukushima design concerns.
- (b) Further this information has substantial commercial value as follows:
  - (i) Westinghouse plans to sell the use of similar information to its customers for the purpose of demonstrating AP1000 plant has programs to mitigate any concerns for a Fukushima-like incident.
  - (ii) Westinghouse can sell support and defense of industry guidelines and acceptance criteria for plant-specific applications.
  - (iii) The information requested to be withheld reveals the distinguishing aspects of a 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 technical information and justification as well as licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

**South Carolina Electric & Gas Company**

**Virgil C. Summer Nuclear Station Units 2 & 3**

**NND-16-0007**

**Enclosure 4**

**Westinghouse Proprietary**

**Information Notice and**

**Copyright Notice**

**(This enclosure contains 2 pages, including this cover page)**



## **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 has been deleted in the non-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).

## **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 2.390 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 appropriated 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.



**South Carolina Electric & Gas Company**

**Virgil C. Summer Nuclear Station Units 2 & 3**

**NND-16-0007**

**Enclosure 5**

**Affidavit of April R. Rice**

**(Enclosure 5 contains 4 pages, including this cover sheet)**

**Affidavit of April R. Rice**

1. My name is April R. Rice. I am the Manager, Nuclear Licensing, for Virgil C. Summer Nuclear Station Units 2 & 3, of South Carolina Electric & Gas Company (SCE&G). I have been delegated the function of reviewing proprietary information sought to be withheld from public disclosure and am authorized to apply for its withholding on behalf of SCE&G.
2. I am making this affidavit on personal knowledge, in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations, and in conjunction with SCE&G's filings on dockets 52-027 and 52-028, correspondence letter number NND-16-0007 VCSNS Units 2&3 Response to Request for Additional Information Letter No. 5 (eRAI 7801) Related to Fukushima Near-Term Task Force Recommendation 4.2, "Mitigation Strategies for Beyond Design Basis External Events". I have personal knowledge of the criteria and procedures used by SCE&G to designate information as a trade secret, privileged or as confidential commercial or financial information.
3. Based on the reason(s) at 10 CFR 2.390(a)(4), this affidavit seeks to withhold from public disclosure Enclosure 1 of correspondence letter number NND-16-0007, VCSNS Units 2&3 Response to Request for Additional Information Letter No. 5 (eRAI 7801) Related to Fukushima Near-Term Task Force Recommendation 4.2, "Mitigation Strategies for Beyond Design Basis External Events".
4. The following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
  - a. The information sought to be withheld from public disclosure has been held in confidence by SCE&G and Westinghouse Electric Company.
  - b. The information is of a type customarily held in confidence by SCE&G and Westinghouse and not customarily disclosed to the public.
  - c. The release of the information might result in the loss of an existing or potential competitive advantage to SCE&G and/or Westinghouse.
  - d. Release of the information may harm SCE&G because SCE&G has a contractual relationship with the Westinghouse Electric Company regarding proprietary information. SCE&G is contractually obligated to seek confidential and proprietary treatment of the information.

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5. To satisfy the requirements of 10 CFR 2.390(b)(1)(i)(B) and (b)(1)(ii)(E), a non-proprietary version of Enclosure 1 can be found in Enclosure 2 of SCE&G's correspondence letter number NND-16-0007, VCSNS Units 2&3 Response to Request for Additional Information Letter No. 5 (eRAI 7801) Related to Fukushima Near-Term Task Force Recommendation 4.2, "Mitigation Strategies for Beyond Design Basis External Events". Withheld information is bracketed with superscripts of [a, b, and/or c], to indicate the following reasons for withholding:

(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.

6. 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.
7. To the best of my knowledge and belief, 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.

I declare under penalty of perjury that the foregoing is true and correct.

  
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April R. Rice

Executed on March 31, 2016  
Date

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SCE&G Response to RAI Letter No. 05: Affidavit of April R. Rice

SWORN and SUBSCRIBED to before me on this 31<sup>st</sup> day of March,  
2016 in

Fairfield county, South Carolina

Tamela D Cohen

Notary Public

My Commission Expires:

