

July 10, 2018

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Enclosure 2 to this letter contains Proprietary Information to be withheld from public disclosure under 10 CFR 2.390. When separated from Enclosure 2, this transmittal document and the other Enclosures are decontrolled.

Docket Nos.: 50-424
50-425

NL-18-0915

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant – Units 1 & 2
Supplemental Response to NRC Generic Letter 2004-02

Ladies and Gentlemen:

By letter dated April 21, 2017 (Agencywide Documents Access and Management System Accession No. ML 17116A098) as supplemented by letters dated July 11, 2017, November 9, 2017; January 2, 2018, January 9, 2018, February 6, 2018, February 12, 2018, February 21, 2018, and May 23, 2018, Southern Nuclear Operating Company, Inc. (SNC) submitted a plant-specific technical report, which includes the SNC response to GL 2004-02, for Vogtle Electric Generating Plant (VEGP), Units 1 and 2 and requested U.S. Nuclear Regulatory Commission (NRC) approval of the methods and inputs described in the technical report. The plant-specific technical report describes a risk-informed methodology to evaluate debris effects with the exception of in-vessel fiber limits. During the NRC audit and review process, SNC identified clarifications which were needed to the original submittal. This letter provides those clarifications. For consistency, all SNC responses to NRC requests for additional information were also incorporated in the new Enclosures.

This report is organized as described below:

- A list of changes made to the letter dated April 21, 2017 is provided. Each Enclosure of this letter, also contains revision bars which mark the changes.
- Westinghouse, ALION and General Electric Affidavits for withholding proprietary portions of Enclosure 2 are provided.
- Enclosure 1 provides a high-level summary of Enclosures 2 through 4, and is organized with the same layout as draft Regulatory Guide (RG) 1.229 Section C.
- Enclosure 2 provides a detailed description of the plant-specific conditions and models related to generic safety issue (GSI)-191 (including proprietary information). This enclosure is organized in accordance with the content guideline for GL 2004-02 responses. This enclosure also includes a response to each of the previous requests for additional information (RAIs) that VEGP had received on earlier GL 2004-02 submittals.

Accordingly, the responses provided in this enclosure supersedes those provided in previous SNC responses.

- Enclosure 3 provides a description of the risk quantification using the NARWHAL computer code and the VEGP probabilistic risk assessment (PRA) model. This enclosure is organized with the same layout as draft RG 1.229 Appendix A. The enclosure explains how all the individual parts are combined to quantify risk. It also provides discussion on uncertainty quantification.
- Enclosure 4 provides a summary of defense-in-depth and safety margin. This enclosure shows that the health and safety of the public are not adversely affected by debris-related failures of the strainers, pumps, downstream components, or core.
- Enclosure 5 is a duplicate of Enclosure 2 with the proprietary information redacted.

The determination of in-vessel debris limits is necessary to support the final VEGP risk-informed resolution to GL 2004-02 (including a corresponding license amendment request). Please note that the methodology SNC intends to use to determine in-vessel debris limits is currently under NRC review. By letter dated February 14, 2017, the NRC stated that it would not be appropriate for the staff to accept for review a requested licensing action (RLA) that relied upon an unapproved methodology. However, in this letter, the NRC stated their support for an SNC technical report that does not rely on an unapproved methodology. The intent of this technical report is that it will be used to prepare an NRC staff evaluation to support a subsequent RLA submittal after the in-vessel debris limits methodology is approved. Accordingly, the purpose of this report is to receive NRC review and approval of the SNC supplemental GL 2004-02 response which uses a risk-informed methodology to evaluate debris effects, except in-vessel fiber limits, which will be provided with the RLA.

This letter contains no NRC commitments. If you have any questions, please contact Jamie Coleman at 205.992.6611.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 10 day of July 2018.

Respectfully submitted,



Cheryl A. Gayheart
Director, Regulatory Affairs
Southern Nuclear Operating Company

CAG/PDB/SCM

U. S. Nuclear Regulatory Commission

NL-18-0915

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Enclosures: 1. Introduction and Overall Summary
2. Supplemental Response to NRC Generic Letter 2004-02 (Proprietary)
3. Risk Quantification
4. Defense-in-Depth and Safety Margin
5. Supplemental Response to NRC Generic Letter 2004-02 (Non-Proprietary)

cc: Regional Administrator, Region II
NRR Project Manager – Vogtle 1 & 2
Senior Resident Inspector – Vogtle 1 & 2
State of Georgia Environmental Protection Division
RType: CVC7000

List of Changes

Body of the Report

- Section 1 – added a summary of the changes made in the new revision to the report.
- Section 3 – added new references that were used for the RAI responses.
- Section 4 – reworded Assumption 4.3 regarding throttled needle valves opening position.
- Section 6 – made a minor editorial change.
- Section 7 – updated the version of NARWHAL used in the latest evaluation.

Enclosure 1: Introduction and Overall Summary

- Section 2.1 – added Responses to RAIs 38.a, 39.a and 39.b (see SNC Letter NL-18-0611) related to determination of hazards, initiating events and operating modes.
- Section 3.2 – added Response to RAI 18 (see SNC Letter NL-18-0086) with the justification of only analyzing breaks at welds.
- Section 5.2 – added new model uncertainty cases for chemical product generation and NARWHAL time step size.
- Section 5.3 – added Response to RAI 19 (see SNC Letter NL-18-0086) with discussion on breaks beyond first isolation valves.
- Section 7.0 – stated that the NARWHAL and BADGER software packages were both developed under ENERCON's QA program (see Response to RAI 11.a in SNC Letter NL-17-2045).
- Added new Attachment 4 with the response to NRC's request for additional information (RAI) on PRA peer review, as documented in SNC Letter NL-17-1201.

Enclosure 2: Supplemental Response to NRC Generic Letter 2004-02 (Proprietary)

- Section 2 – added discussion on the latest GL 2004-02 submittal for VEGP and related RAI responses in the "Correspondence Background" subsection.
- Section 3.a.2 – added discussion on the evaluation of debris loads for the secondary side breaks.
- Section 3.a.3 – added coatings debris loads in volumes and explained that the plant coatings debris loads were compared with the tested quantities in volumes.
- Section 3.a.3 – updated debris generation quantities in Tables 3.a.3-2 and 3.a.3-3, and Figures 3.a.3-1 through 3.a.3-8. The quantities changed due to the reclassification of welds inside and outside of the first isolation valve.
- Section 3.d.3 – added the latent particulate debris quantity in volume.
- Section 3.e.1 – added Response to RAI 22.a (see SNC Letter NL-18-0086) with discussion on inertial capture.

- Section 3.e.1 – clarified that all debris that transports to lower containment following blowdown and/or washdown is assumed to be in the pool.
- Section 3.e.1 – clarified that the steady-state conditions from the CFD models were used to determine the recirculation debris transport fractions (see Response to RAI 26.c in SNC Letter NL-18-0086).
- Section 3.e.1 – added a table to summarize key inputs for the CFD models used to determine recirculation transport fractions (see Response to RAI 26.d in SNC Letter NL-18-0086).
- Section 3.e.1 – added Response to RAI 26.a (see SNC Letter NL-18-0086) with discussion of debris distribution at start of recirculation and a summary table showing how the results of the 7 CFD cases were applied to different breaks.
- Section 3.e.1 – added a summary statement regarding treatment of erosion (see Responses to RAIs 20.b and 20.c in SNC Letter NL-18-0086).
- Section 3.e.6 – clarified the washdown transport fractions for the fine debris and small- and large-piece debris in Table 3.e.6-2.
- Section 3.e.6 – explained the cause of differences in the recirculation transport fractions for small- and large-piece debris (see Responses to RAIs 20 in SNC Letter NL-18-0086).
- Section 3.e.6 – explained that credit was taken for the initial distribution of unqualified coatings in the upper and lower containment when analyzing transport fractions of unqualified coatings debris (see Response to RAI 24 in SNC Letter NL-18-0086).
- Section 3.e.6 – discussed how the transport fractions of latent debris were calculated (see Response to RAI 25 in SNC Letter NL-18-0086) and updated the values in Tables 3.e.6-7 through 3.e.6-14.
- Section 3.e.6 – changed the coatings debris loads to volumes and updated fire barrier debris loads in Tables 3.e.6-15 and 3.e.6-16.
- Section 3.f.3 – clarified treatment of vortexing evaluation for breaks with debris loads exceeding those tested (see Response to RAI 34 in SNC Letter NL-18-0086).
- Section 3.f.4 – added density of green silicon carbide.
- Section 3.f.4 – corrected the test silicon carbide quantity in Table 3.f.4-3.
- Section 3.f.5 – changed the debris limit for coatings and latent particulate debris from mass to volume.
- Section 3.f.6 – added the theoretical uniform bed thickness that corresponds to the fiber load used during the thin bed test.
- Section 3.f.9 – clarified that the calculated CSHL was rounded up before being used in NARWHAL (see Response to RAI 28 in SNC Letter NL-18-0086).
- Section 3.f.10 – added information on how the head loss extrapolation constant was applied (see Response to RAI 4 in SNC Letter NL-17-2044).
- Section 3.f.10 – added the CSHL value used in NARWHAL.

- Section 3.f.10 – added the theoretical uniform bed thickness that corresponds to the fiber load used during the thin bed test.
- Section 3.f.10 – explained why the conventional debris head loss of the full-load test was used in NARWHAL (see Response to RAI 5 in SNC Letter NL-17-2044).
- Section 3.f.10 – explained why the chemical debris head loss increase of the full-load test was used in NARWHAL (see Response to RAI 5 in SNC Letter NL-17-2044).
- Section 3.f.14 – updated the amount of accident pressure credited for evaluating flashing.
- Section 3.g.1 – added a comparison between water levels calculated by NARWHAL and in the hand calculation (see Response to RAI 29 in SNC Letter NL-18-0086).
- Section 3.g.14 – updated the amount of accident pressure credited for evaluating degasification.
- Section 3.g.16 – updated the pump NPSH margin values.
- Section 3.g.16 – explained further why the CS pump NPSH margins are higher than the RHR pumps (see Response to RAI 36 in SNC Letter NL-18-0086).
- Section 3.h.2 – stated that distribution of unqualified coatings in the upper and lower containment is now credited in the NARWHAL analysis (see Response to RAI 35 in SNC Letter NL-18-0086).
- Section 3.h.5 – updated the coatings debris loads from mass to volumes in Tables 3.h.5-1 and 3.h.5-2 (see Response to RAI 24 in SNC Letter NL-18-0086).
- Section 3.i.3 – added discussions on the control of aluminum and calcium sources in the containment (see Response to RAI 31 in SNC Letter NL-18-0086).
- Section 3.k.2 – added justification for increased strainer crush pressure (see Response to RAI 37 in SNC Letter NL-18-0611).
- Section 3.l.4 – added discussion on breaks inside the pressurizer compartment (see Response to RAI 32 in SNC Letter NL-18-0086).
- Section 3.n.1 – clarified the prepared fiber for penetration testing is mostly class 2 fiber (see Response to RAI 21.a in SNC Letter NL-18-0086).
- Section 3.n.1 – explained why the increasing batch size had no impact on testing results (see Response to RAI 33 in SNC Letter NL-18-0086).
- Section 3.n.1 – added a figure to compare the fiber penetration model with test data (see Response to RAI 21.b in SNC Letter NL-18-0086).
- Section 3.n.1 – clarified that the penetration fraction was calculated based on the quantity of fine fiber on the strainer and added the methodology for calculating fiber penetration quantity for one time step (see Response to RAI 21.a in SNC Letter NL-18-0086).
- Section 3.o.2-9 – revised to include additional “out-of-bag” autoclave tests to the justification of the VEGP chemical model. A list of conservatisms was also added to address uncertainty of the chemical model (see Response to RAI 8 in SNC Letter NL-17-2044).

- Section 4.0 – added references to SNC’s responses to the RAIs from the NRC’s review of the latest GL 2004-02 submittal.

Enclosure 3: Risk Quantification

- Section 6.1 – Updated Figure 3-2 to incorporate the latest configuration used in the NARWHAL runs.
- Section 6.3 – expanded the discussion on the identification of high-likelihood equipment configurations and treatment of low-likelihood configurations (see Response to RAI 38.b in SNC Letter NL-18-0611).
- Section 6.7 – updated the discussion on the accident pressure credited for degasification and flashing evaluation.
- Section 7.0 – updated quantities of coatings debris from mass to volumes.
- Section 9.0 – added justification for the assumed symmetric transport to the two strainers (see Response to RAI 13 in SNC Letter NL-17-2045).
- Section 10.1 – reorganized the discussion to be more in line with that shown in the Response to RAI 16 in SNC Letter NL-18-0086.
- Sections 10.2 and 13.2 – updated the discussion on the accident pressure credited for degasification and flashing evaluation.
- Section 13.2 – updated Assumption 19 regarding use of containment spray when evaluating secondary side breaks.
- Section 13.3 – added this new section to discuss time step sensitivity for NARWHAL (see Response to RAI 12 in SNC Letter NL-17-2045).
- Section 14.1 – updated information in Table 3-9 to reflect the results of the new NARWHAL runs.
- Section 14.1 – added a footnote to Table 3-9 regarding PWSCC degradation (see Response to RAI 1 in SNC Letter NL-17-1848).
- Section 14.1 – added a footnote to Table 3-9 regarding failure of the 12.814-inch break at weld 11201-053-1-RB (see Response to RAI 17 in SNC Letter NL-18-0086).
- Section 14.2.2 – updated the inputs and results of the sensitivity analysis cases in Table 3-11, Table 3-12 and Figure 3-9.
- Section 14.2.3 – updated the results of parametric uncertainty quantification in Table 3-15 and Figure 3-10.
- Section 14.2.3 – updated model uncertainty quantification results and added new model uncertainty quantification for chemical product generation and NARWHAL time step size.

Enclosure 4: Defense-in-Depth and Safety Margin

- Section 2.3.2 – added discussion on mitigation of PWSCC (see Responses to RAIs 1 and 2 in SNC Letter NL-17-1848).
- Section 2.3.2 – clarified that no changes to the RCS leakage detection system have been made since 2015.

- Section 3.0 – Updated the values in Table 4-2 for the coatings from mass to volumes.

Enclosure 5: Supplemental Response to NRC Generic Letter 2004-02 (Non-Proprietary)

- Same changes made to Enclosure 2 (except for the proprietary information) are reflected in the revised Enclosure 5.



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CAW-18-4770

July 3, 2018

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: Vogtle Units 1 & 2 GSI-191 License Amendment Request, Enclosure 2, "Supplemental Response to NRC Generic Letter 2004-02 (Proprietary)"

The Application for Withholding Proprietary Information from Public Disclosure is submitted by Westinghouse Electric Company LLC ("Westinghouse"), pursuant to the provisions of paragraph (b)(1) of Section 2.390 of the Nuclear Regulatory Commission's ("Commission's") regulations. It contains commercial strategic information proprietary to Westinghouse and customarily held in confidence.

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-18-4770 signed by the owner of the proprietary information, 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 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying Affidavit by Southern Nuclear Operating Company.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-18-4770, and should be addressed to Edmond J. Mercier, Manager, Fuels Licensing and Regulatory Support, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 2 Suite 256, Cranberry Township, Pennsylvania 16066.

A handwritten signature in black ink, appearing to read "Edmond J. Mercier".

Edmond J. Mercier, Manager
Fuels Licensing and Regulatory Support

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

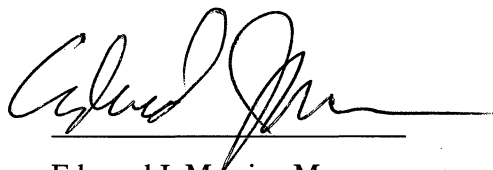
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COUNTY OF BUTLER:

I, Edmond J. Mercier, am authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (“Westinghouse”) and declare that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief.

Executed on:

7/3/2018



Edmond J. Mercier, Manager
Fuels Licensing and Regulatory Support

- (1) I am Manager, Fuels Licensing and Regulatory Support, 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 Nuclear Regulatory Commission’s (“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, 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 "Vogtle Units 1 & 2 GSI-191 License Amendment Request, Enclosure 2, 'Supplemental Response to NRC Generic Letter 2004-02 (Proprietary),' " for submittal to the Commission, being transmitted by Southern Nuclear Operating Company letter. The proprietary information as submitted by Westinghouse is that associated with resolution of and response to NRC Generic Letter 2004-02 and may be used only for that purpose.
- (a) This information is part of that which will enable Westinghouse to provide commercial support for resolution of and response to NRC Generic Letter 2004-02.

- (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 providing support for resolution of and response to NRC Generic Letter 2004-02.
 - (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 evaluation justifications and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

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

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

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and non-proprietary versions of a document, 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).

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 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.



AFFIDAVIT

We, Andy Roudenko, Project Manager and Martin Rozboril, Jr. Assistant Vice President Division Manager (AVPDM) state as follows:

- (1) We, Andy Roudenko, Project Manager, and Martin Rozboril, Jr. AVPDM, Nuclear Services, ALION Science & Technology ("Alion") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in all revisions of ALION Science & Technology report "Erosion Testing of Small Pieces of Low Density Fiberglass Debris-Test Report," ALION-REP-ALION-I006-04, with the latest revision to date, Rev. 1, dated November 17, 20011. Information from this report was used to support analysis of post-LOCA debris transport in work designed to address GSI-191, Assessment of Debris Accumulation on PWR Sump Performance, issues at Southern Nuclear Operating Company, Vogtle Units 1 and 2. Specifically, the following Sections and Figures are to be withheld, on that basis that these unique attribute of the testing approach, test results and conclusions:
 - Background
 - Figure 1.1.1
 - Figure 2.1.2
 - Figure 2.1.3
 - Figure 2.1.5
 - Figure 2.1.6
 - Figure 2.1.9
 - Test Results, including Figures and Tables
 - Data Analysis, including Figures and Tables
 - Conclusions
 - Appendices
- (3) In making this application for withholding of proprietary information of which it is the owner, Alion relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

;



- (4) Some examples of categories of information which fit into the definition of proprietary information are:
- a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by Alion's competitors without license from Alion constitutes a competitive economic advantage over other companies
 - b. Information which, if used 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 of a similar product;
 - c. Information which reveals aspects of past, present, or future Alion customer-funded development plans and programs, resulting in potential products to Alion;
 - d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4) a, and (4) b, above.

- (5) To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by Alion, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by Alion, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within Alion is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or their delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside Alion are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The document identified in paragraph (2), above, is classified as proprietary because it contains "know-how" and "unique data" developed by Alion within our research and



development programs. The development of this document, supporting methods and data constitutes a major Alion asset in this current market.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to Alion's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of Alion's comprehensive BWR/PWR GSI-191 analysis base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and experimental methodology and includes development of the expertise to determine and apply the appropriate evaluation process.

The research, development, engineering, analytical and experimental costs comprise a substantial investment of time and money by Alion.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

Alion's competitive advantage will be lost if its competitors are able to use the results of the Alion experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to Alion would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive Alion of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 20th day of April 2017.

AV Roudenko
Digitally signed by Andy Roudenko
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Global Nuclear Fuel – Americas

AFFIDAVIT

I, **Peter M. Yandow**, state as follows:

- (1) I am the Vice President, NPP/Services Licensing, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas, LLC (GEH), and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in Enclosure 1 of GEH's letter, 0006-7789-010, Jack Noonan (GEH) to Jim A. Wade (Southern Nuclear Company), entitled "GEH Proprietary Information in SNC Supplemental Response to NRC Generic Letter 2004-02," March 29, 2017. GEH proprietary information in Enclosure 1, which is entitled "Excerpt of SNC Supplemental Response to NRC Generic Letter 2004-02 – GEH Proprietary Information – Class II (Internal)," is identified by a dotted underline inside double square brackets. [[This sentence is an example.^{3}]] In each case, the superscript notation ^{3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GEH relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).
- (4) Some examples of categories of information which fit into the definition of proprietary information are:
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GEH's competitors without license from GEH constitutes a competitive economic advantage over other companies;
 - b. Information which, if used 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 of a similar product;
 - c. Information which reveals aspects of past, present, or future GEH customer-funded development plans and programs, resulting in potential products to GEH;
 - d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. above.

- (5) To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GEH, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GEH, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to GEH.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GEH are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) is classified as proprietary because it contains detailed results of analytical model and methods of emergency core cooling system and containment spray strainers in Boiling Water Reactors and Pressurized Water Reactors. The development and approval of these models and methods were achieved at a significant cost to GEH.

The development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GEH asset.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GEH's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GEH's comprehensive safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply

the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GEH.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GEH's competitive advantage will be lost if its competitors are able to use the results of the GEH experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GEH would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GEH of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

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

Executed on this 29th day of March 2017.



Peter M. Yandow
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