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LTR-NRC-12-13

February 9, 2012

Subject: Submittal of RT-LTR-12-10-P, Revision 0 and RT-LTR-12-10-NP, Revision 0, "Response to NRC Regulatory Issue Summary 2011-02, Revision 1, 'Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs'" (Proprietary/Non-Proprietary)

Enclosed are the proprietary and non-proprietary versions of RT-LTR-12-10, Revision 0, "Response to NRC Regulatory Issue Summary 2011-02, Revision 1, 'Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs,'" February 9, 2012, submitted in response to the NRC's request for information.

Also enclosed is:

1. One (1) copy of the Application for Withholding Proprietary Information from Public Disclosure, AW-12-3387 (Non-Proprietary) with Proprietary Information Notice and Copyright Notice.
2. One (1) copy of Affidavit (Non-Proprietary).

This submittal contains proprietary information of Westinghouse Electric Company LLC. In conformance with the requirements of 10 CFR Section 2.390, as amended, of the Commission's regulations, we are enclosing with this submittal an Application for Withholding Proprietary Information from Public Disclosure and an affidavit. The affidavit sets forth the basis on which the information identified as proprietary may be withheld from public disclosure by the Commission.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference AW-12-3387, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, Suite 428, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.

Very truly yours,


J. A. Gresham, Manager
Regulatory Compliance

Enclosures

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AW-12-3387
February 9, 2012

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: RT-LTR-12-10-P, Revision 0, "Response to NRC Regulatory Issue Summary 2011-02, Revision 1, 'Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs'" (Proprietary)

Reference: Letter from J. A. Gresham to Document Control Desk, LTR-NRC-12-13, dated February 9, 2012

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 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 is identified in the proprietary version of the subject report. In conformance with 10 CFR Section 2.390, Affidavit AW-12-3387 accompanies this Application for Withholding Proprietary Information from Public Disclosure, setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectfully requested that the subject 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 proprietary aspects of this application for withholding or the accompanying affidavit should reference AW-12-3387 and should be addressed to J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, Suite 428, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.

Very truly yours,

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

J. A. Gresham, Manager
Regulatory Compliance

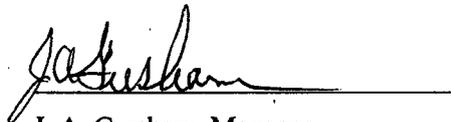
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF BUTLER:

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:

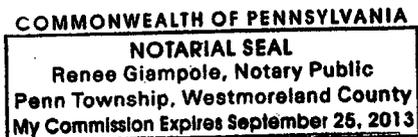


J. A. Gresham, Manager
Regulatory Compliance

Sworn to and subscribed before me
this 9th day of February 2012



Notary Public



- (1) I am Manager, Regulatory Compliance, 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 appropriately marked in RT-LTR-12-10-P, Revision 0, "Response to NRC Regulatory Issue Summary 2011-02, Revision 1, 'Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs,'" (Proprietary), dated February 9, 2012, for submittal to the Commission, being transmitted by Westinghouse letter, LTR-NRC-12-13, 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 Westinghouse's letter RT-LTR-12-10-P, Revision 0, and may be used only for that purpose.

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

- (a) Respond fully to NRC's request for information as described in "Regulatory Issue Summary 2011-02, Revision 1, 'Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs.'"

Further this information has substantial commercial value as follows:

- (a) The information requested to be withheld could impact Westinghouse's competitive position in the Small Modular Reactor market.

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 services for commercial power reactors without commensurate expenses.

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 information related to 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.



Westinghouse Non-Proprietary Class 3

Kathryn J. Jackson, Ph.D.
Sr. Vice President &
Chief Technology Officer
Research & Technology

Westinghouse Electric Company
1000 Westinghouse Drive, Suite 102
Cranberry Township, PA 16066
U.S.A.

February 9, 2012

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852

Your ref: ML112930188
Our ref: RT-LTR-12-10-NP

ATTN: Document Control Desk

**Response to NRC Regulatory Issue Summary 2011-02, Revision 1, "Licensing Submittal
Information and Design Development Activities for Small Modular Reactor Designs"**

Attached please find the Westinghouse Electric Company LLC (Westinghouse) response to the subject NRC Regulatory Issue Summary (RIS) 2011-02, Revision 1, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated December 27, 2011.

Westinghouse is currently in dialogue with prospective clients as to the development and deployment of an integral pressurized water reactor. We view the Small Modular Reactor (SMR) market opportunity as a natural extension to our larger LWR market opportunities and as an important way to stimulate future global economic growth. The responses to the subject RIS present our preliminary view of the prospective design, engineering and licensing needs that inform the essential foundation of our SMR design effort. As additional information becomes available, we will update the NRC on the status of our activities and the regulatory planning needs that are the subject of this RIS.

If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'K. Jackson', written over a white background.

Enc. 6

cc: S. L. Magruder - NRC
M. E. Mayfield - NRC
A. Costa - NRC

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Enclosure

Response to RIS 2011-02, Revision 1, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs"

Design and Licensing Submittal Information

- When (month and year) are applications planned for design-related applications and what NRC action will be requested (i.e., a DC, DA, ML, or a COL that does not reference a DC or DA)?

Response: Westinghouse is undertaking the development work for a small reactor design having a nominal power output of 800 MWt. It is our intent to submit an application for design certification under 10 CFR Part 52 []^{c,d}.

- Will the applicants be organized into DCWGs? If known, what is the membership of the DCWG and which party is the primary point-of-contact designated for each DCWG? Have protocols been developed to provide coordinated responses for requests for additional information with generic applicability to a design center?

Response: Westinghouse will be responsible for the overall design and design certification of its SMR nuclear power plant. It is our intent that a design center review approach be organized that will allow for efficiencies in the review of the applications and for coordinated responses for RAIs having generic applicability. The organizational structure and membership of a DCWG centered around a Westinghouse SMR has yet to be established.

- Which applicant that references the design will be designated as the reference COL applicant or, alternatively, how will various applications (e.g., CP, DC, COL) be coordinated to achieve the desired design-centered licensing review approach?

Response: During discussion with potential clients, the lead applicant will be identified. Similarly, coordination of the various applications will be undertaken to achieve the desired DCWG approach.

- When (month and year) will CP, COL, or ESP applications be submitted for review? In addition, what are the design, site location, and number of units at each site?

Response: It is anticipated that one or more CP, COL, or ESP applications will be made in conjunction with NRC's review of a Westinghouse SMR DC application. The design, site location, and numbers of units at each site will be determined as part of the dialogue that Westinghouse is having with potential clients. Specific decisions as to the timing of CP and OL applications, whether separate under 10 CFR Part 50 or combined under 10 CFR Part 52, will be determined by the clients, and will be factored into the overall objective of achieving NRC certification of a standard Westinghouse SMR design.

- Are vendors or consultants assisting in the preparation of the application(s)? If so, please describe their roles and responsibilities for the design and licensing activities.

Response: Westinghouse accepts the complete responsibility for the plant design aspects of the license. As with previous plant licensing activities, Westinghouse may involve vendors or consultants who will perform work in support of our design certification effort. These vendors and consultants will work under the approved Westinghouse Appendix B quality program as qualified suppliers and will not have a direct interface with the NRC staff.

Design, Testing, and Application Preparation

- What is the current status of the development of the plant design (i.e., conceptual, preliminary, or finalizing)? Has the applicant established a schedule for completing the design? If so, please describe the schedule.

Response: The Westinghouse SMR design will rely extensively on the certified passive technology of the AP600™/AP1000® design, thereby making it difficult to describe a status of the SMR design. Many of the design features of the AP1000® reactor in the areas of fuel, I&C, human factors, and passive safety system design will be applied directly or adapted to the SMR design. The Westinghouse SMR design is currently at the preliminary design stage. A schedule for completion of the design sufficient to support a design certification application is being developed.

- What is the applicant's current status (i.e., planning, in progress, or complete) for the qualification of fuel and other major systems and components? Has the applicant established a schedule for completing the qualification testing? If so, please describe the schedule.

Response: The fuel design for the Westinghouse SMR is a partial height version of the 17 x 17 RFA fuel assembly used in the AP1000® reactor. This fuel design is an adaptation of the most proven and widely-used design in the industry. Westinghouse has developed a Phenomena Identification and Ranking Table (PIRT) to help inform us of any potential testing needs. Our design philosophy is to use proven components in our design when available.

- What is the applicant's status (i.e., planning, in progress, or complete) in developing computer codes and models to perform design and licensing analyses? Has the applicant defined principal design criteria, licensing-basis events, and other fundamental design/licensing relationships? Has the applicant established a schedule for completing the design and licensing analyses? If so, please describe the schedule.

Response: The Westinghouse SMR is an advanced passive PWR that draws significantly from prior designs. Westinghouse intends to use our existing set of computer codes and models to perform the design and licensing analyses, modified, as necessary, to address any new design features or operating ranges. These modifications will be based on the PIRT results and will be submitted to the NRC in time to allow review and approval prior to the submittal of the DC application. Since the Westinghouse SMR is an

advanced PWR, the principal design criteria, licensing-basis events, and other fundamental design/licensing relationships will be based predominantly on existing regulatory requirements and guidance. Westinghouse is also participating in industry initiatives (e.g., the development of NEI position papers on SMR issues) to help establish a common understanding for the use of risk-informed and performance-based methods that can help to inform and streamline the licensing process. The schedule for completion of the design and licensing analysis will be compatible with the schedule for submittal of the DC application.

Westinghouse is currently using the following computer codes: WCOBRA/TRAC-TF2, RETRAN, MAAP, VIPRE, ANC, and GOTHIC. Due to the extensive qualification basis for use on the AP600™ and AP1000® passive safety systems, Westinghouse feels confident that the codes are applicable to the Westinghouse SMR. Westinghouse has used the safety analysis codes to establish key system parameters such as pipe line sizes, tank and pressure vessel volumes, and safety system actuation set points. The safety analysis will be completed on a schedule to support the DCD submittal.

- What is the applicant's status in designing, constructing, and using thermal-fluidic testing facilities and in using such tests to validate computer models? Has the applicant established a schedule for the construction of testing facilities? If so, please describe the schedule. Has the applicant established a schedule for completing the thermal-fluidic testing? If so, please describe the schedule.

Response: The SMR PIRT has been completed, and testing needs and plans will be based on the insights from the PIRT. [

]c,d.

- What is the applicant's status in defining system and component suppliers (including fuel), manufacturing processes, and other major factors that could influence design decisions? Has the applicant established a schedule for identifying suppliers and key contractors? If so, please describe the schedule.

Response: Westinghouse is in the process of identifying potential suppliers for the SMR plant systems and equipment. This supplier identification effort is based largely on our extensive organizational experience in supply chain solutions as proven in the successful AP1000® design and implementation effort. Certain critical components, such as fuel, control rod drive mechanisms, reactor internals, core control components and refueling equipment will be manufactured by Westinghouse. For systems and components beyond the SMR integral reactor and containment, use of similar AP1000® equipment and suppliers is being considered for the SMR design.

Manufacturing processes and other factors that could influence design decisions are being systematically evaluated. Examples of such factors include the need to design for modularization, for maximum factory manufacture, and for cost effective and safe transportation.

Westinghouse is developing an integrated project schedule that depends heavily on the licensing schedule and securing of customers for the SMR. The schedule is based on our extensive AP1000[®] organizational experience and will include events for identifying suppliers and key contractors.

- What is the applicant's status in the development and implementation of a quality assurance program?

Response: The NRC approved the latest version of the Westinghouse Electric Company Quality Management System (Rev. 6) on February 24, 2011.

- What is the applicant's status in the development of probabilistic risk assessment models needed to support applications (e.g., needed for Chapter 19 of safety analysis reports or needed to support risk-informed licensing approaches)? What are the applicants' plans for using the PRA models in the development of the design? At what level will the PRA be prepared and when will it be submitted in the application process?

Response: The Westinghouse PRA is currently being developed. Westinghouse is using methodology to develop probabilistic risk assessment models consistent with US and international standards such as IAEA. Westinghouse intends to periodically update the PRA throughout the design process to help identify and reduce the impact of dominant risk factors. Westinghouse will provide the NRC with periodic reports on the progress and impact of the PRA on the SMR design process. As required by 10 CFR § 52.47(a), a description of the PRA and its results will be submitted as part of the DC application.

- What is the applicant's status in the development, construction, and use of a control room simulator?

Response: The Westinghouse SMR design effort will utilize to a significant extent the existing infrastructure and training capabilities of the AP1000[®] control room simulator, customized for the SMR system design. The Human Factors program will also leverage the AP1000[®] Human Factors design.

- What are the applicant's current staffing levels (e.g., full-time equivalent staff) for the design and testing of the reactor design? Does the applicant have plans to increase staffing? If so, please describe future staffing plans.

Response: The Westinghouse SMR design effort draws from the extensive design and engineering resources that were successfully developed the AP1000[®] reactor design. Consistent with the progression from conceptual to preliminary design, and the increase in licensing activities, the level of staffing has been increased and will continue to increase in order to meet future programmatic needs.

- What are the applicant's current and future plans for using contractors to support plant design and testing (e.g., how many part-time and full-time contractors does or will the applicant employ)?

Response: Westinghouse may involve vendors or consultants with specific expertise to support the plant design and testing efforts. As part of our staffing review we are evaluating the need for any staff

augmentation support. These vendors and consultants will work under the approved Westinghouse quality program as qualified suppliers and will not have a direct interface with the NRC staff.

- What are the applicant's plans on the submittal of white papers or technical/topical reports related to the features of their design or the resolution of policy or technical issues? Has the applicant established a schedule for submitting such reports? If so, please describe the schedule.

Response: Technical reports describing the PIRT, test facility design and test plan are anticipated to be submitted in []^{c,d}. We are also evaluating the possibility of submitting a seismic structural design assessment at []^{c,d}. Westinghouse is also participating in NEI's SMR Task Force in the preparation and submittal of a series of generic position papers related to the resolution of policy issues that impact the commercial development of SMRs.

- Will ESP applicants seek approval of either "proposed major features of the emergency plans" in accordance with 10 CFR 52.17(b)(2)(i) or "proposed complete and integrated emergency plans" in accordance with 10 CFR 52.17(b)(2)(ii)?

Response: No response.

- Describe possible interest in the use of the provisions in Subpart F, "Manufacturing Licenses," of 10 CFR Part 52 instead of, or in combination with, other licensing approaches (e.g., DC or DA).

Response: Westinghouse intends to pursue the certification of an integral PWR design and does not intend to make use of the provisions in Subpart F, "Manufacturing Licenses," of 10 CFR Part 52.

- Describe the desired scope of a possible ML and what design or licensing process would address the remainder of the proposed nuclear power plant. For example, would the ML address an essentially complete plant or would it be limited to the primary coolant system that basically comprises the integral reactor vessel and internals?

Response: No response.

- Describe the expected combination of manufacturing, fabrication, and site construction that results in a completed operational nuclear power plant. For example, what systems, structures, and components are being fabricated and delivered? Which of these are being assembled on site? Which of these are being constructed on site?

Response: The Westinghouse SMR design, manufacturing, fabrication, and site construction techniques are expected to be a further enhancement over those employed in the AP1000[®] program that also employs considerable modular fabrication and construction methods. A significant portion of the systems and components are anticipated to be fabricated in a controlled factory setting, thereby minimizing the amount of on-site fabrication and construction. Westinghouse intends to maximize the use of factory

modularization of systems and structures that can be rail or truck shipped to the site. Large modules would then be assembled at the site from sub modules delivered from the factory. Westinghouse intends to leverage the modularization lessons learned from the AP1000[®] design and, thereby, support a significant improvement in site construction processes and schedule from previous reactor projects.