PROPRIETARY

Nuclear Innovation
North America LLC
122 West Way, Suite 405
Lake Jackson, Texas 77566

July 23, 2013
U7-C-NINA-NRC-130041
10 CFR 2.390

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Units 3 and 4
Docket No. PROJ0772
Response to Request for Additional Information

Reference: Letter from Michael Eudy to Scott Head, Request For Additional Information RE: South Texas Project Nuclear Operating Company Topical Report WCAP-17202-P, "Supplement 4 to BISON Topical Report 90-90-A" (TAC No. RG0028), June 3, 2013 (ML13142A082)

Attached are the responses to the following NRC staff questions included the reference:

RAI 15.00.02-3S01
RAI 15.00.02-8S01
RAI 15.00.02-10S01
RAI 15.00.02-12S01
RAI 15.00.02-15S01
RAI 15.00.02-28S01

The response to RAI 15.00.02-12S01 contains information proprietary to Westinghouse Electric Corporation. Since this letter contains information proprietary to Westinghouse Electric Company LLC, it is supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit 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 Section 2.390 of the Commission's regulations.

Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

STI 33727057

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Attachments 1 through 6 contain the responses to the RAI questions. Attachment 7 contains the non-proprietary version of the proprietary response. Attachment 8 contains the request for withholding of proprietary information, the affidavit, the proprietary information notice, and the copyright notice.

Correspondence with respect to the copyright or proprietary aspects of this information or the supporting Westinghouse Affidavit should reference CAW-13-3758 and should be addressed to: J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company LLC, Suite 310, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania, 16066.

If this letter becomes separated from the proprietary material it is no longer proprietary.

There are no commitments in this letter.

If you have any questions, please contact Scott Head at (979) 316-3011, or Bill Mookhoek at (979) 316-3014.

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

Executed on 7/23/2013

MA McBurnett

Mark McBurnett
Chief Executive Officer and Chief Nuclear Officer
Nuclear Innovation North America LLC

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Attachments:

1. RAI 15.00.02-3S01
2. RAI 15.00.02-8S01
3. RAI 15.00.02-10S01
4. RAI 15.00.02-12S01 (Proprietary)
5. RAI 15.00.02-15S01
6. RAI 15.00.02-28S01
7. RAI 15.00.02-12S01 (Non-Proprietary)
8. Request for Withholding Proprietary Information

cc: w/o attachment except*
(paper copy)

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Richard Peña
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CPS Energy

RAI 15.00.02-3S01

a) According to Section 2.2.2.1 of the LTR, the pump head on the left hand side of Equation 2-2 is in units of Pa. The flow rate on the right hand side has units of m3/s. According to the response to RAI 15.00.02-3 the loss coefficient for wind-milling pump does not have units. As a result, the units on two sides (right and left) of Equations 2-2, 2-3 do not appear to be consistent. In addition the symbols dP and Wp used in Equations 2-2 and 2-3 are not present in the nomenclature. Please update the nomenclature accordingly.

b) Based on the response to RAI 15.00.02-3 a similar inconsistency is also found for Equations 3-49 and 3-50. The left hand side of Equation 3-49 has units of kg/(sK) and kg/(sK-m2) for Equation 3-50. The right hand sides of these equations have units of °C2. Please address these inconsistencies.

Westinghouse Response to RAI 15.00.02-3S01

a) The observation is correct; however the stated pump head in BISON is not given in SI units for pressure (Pa) but in SI units for pump head (m) which is equivalent to the pressure from a water column with that height.

The symbol dP will be added to the nomenclature and changed to *m*, Wp will be added in the nomenclature, and the units for the loss coefficients in the nomenclature will be changed to s^2/m^5. The statement in RAI 15.00.20-3 about the loss coefficient being without units was incorrect.

b) First, a few minor corrections need to be made. Equation 3-49 describes the condensation per unit area, so it needs to be corrected. The left side of the equation should be changed from C to C/A. The abbreviation CA in the nomenclature will be deleted. In Equation 3-50, CA will be replaced by C. Also, the units for C in the updated nomenclature are the same as in the previous NRO RAI 15.00.02-3 [kg/(s K)].

As for the constants in Equations 3-49 and 3-50, their units are as follows:
k_0: [kg/(s K m^2)]
k_1: [kg/(s K^2 m^2)]
k_2: [kg/(s K^3 m^2)]

The nomenclature for these constants will be updated accordingly.

RAI 15.00.02-8S01

It is not a generally acceptable practice to lump the form losses for valves (in fully open position) with that of friction losses in the connecting pipes. Please update the definition of parameter ξ3 in WCAP-17202-P to clarify that it includes the friction loss from the pipe and the form loss due to the fully open valve.

Westinghouse Response to RAI 15.00.02-8S01

The nomenclature will be updated in the approved version with the following:

ξ_3	[-]	Loss coefficient for the main line after the water tank, *including the form loss from the fully open SCRAM valve*

The text marked in italics is new compared to RAI 15.00.02-3.

RAI 15.00.02-10S1

It is not a generally acceptable practice to lump the form losses with the friction loss in the connecting pipe. Please clarify as part of the nomenclature in WCAP-17202-P that parameter $\xi 1$ also includes inlet and exit form losses.

Westinghouse Response to RAI 15.00.02-10S1

The nomenclature will be updated in the approved version of WCAP-17202-P with the following:

ξ_l	[-]	Loss coefficient for line between gas tank and water tank, *including inlet and exit form losses*

The text marked in italics is new compared to RAI 15.00.02-3.

RAI 15.00.02-15S01

The response to the RAI, explaining the last term in Equation 3-37 mentions that the term including the areas A41 and A42 represents the pressure loss due to the inlet conditions. However, area A42 is neither defined in the text nor in the nomenclature.
Please provide meaning of term A42 and include it in the nomenclature list.

Westinghouse Response to RAI 15.00.02-15S01

A42 is the additional leakage area [m^2] that is available for a fully inserted control rod. The nomenclature will be updated accordingly.
For more information on equation 3-37, see previous RAI response 15.00.02-15.

RAI 15.00.02-28S01

Please update the nomenclature and the discussion in Section 3.4 of WCAP-17202-P to clarify that Z0 (non-modified BISON level) represents the two-phase (mixture) level and the density is a mixture density.

Westinghouse Response to RAI 15.00.02-28S01

On page 3-29, the text for Z0 will be updated as follows (added text in italics):
Z0 is the non-modified BISON *two-phase mixture* level (m).
The nomenclature will be updated accordingly.
After equation 3-45, the following text will be inserted:
", where ρ is the two-phase mixture density (kg/m^3) and g is the acceleration of gravity (m/s^2)."

RAI 15.00.02-12S01

The response to RAI 15.00.02-12 clarified that the water levels in the water tank (HP3) and the RPV (HP5) are assumed constant in the control rod hydraulic insertion model. The response also provided an adequate justification for the above assumption. Please update the discussion in Section 3.1.2.7 of WCAP-17202-P in order to clarify the above assumptions related to the control rod hydraulic insertion model.

Westinghouse Response to RAI 15.00.02-12S01

The text below Equation 3-24 is updated with the following text, extracted from RAI 15.00.02-12:

"HP3 and HP5 are used as constant values during a transient to account for the elevation pressure drop between the water tank level and the reactor water level. The reactor water level may increase or decrease during the transient. However, the contribution to the overall pressure drop due to increase or decrease in reactor water level is not significant. The main reason is that the elevation difference between the nominal water tank level and the reactor water level is much larger than the change in water level during a hydraulic control rod insertion.

Furthermore, the elevation pressure drop to the total pressure drop from the gas tank [ ]^{a,c} to the control rod drive mechanism is of much smaller importance than the pressure drop in the pipes caused by frictional pressure drop and local pressure drop. Therefore, using constant values for HP3 and HP5 can be seen as adequate assumptions."

CAW-13-3758

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

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COUNTY OF BUTLER:

Before me, the undersigned authority, personally appeared Bradley F. Maurer, 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:

Bradley F. Maurer, Principal Engineer
Plant Licensing

Sworn to and subscribed before me
this 12th day of July 2013

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Anne M. Stegman, Notary Public
Unity Twp., Westmoreland County
My Commission Expires Aug. 7, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

(1) I am Principal Engineer, Plant Licensing, in Engineering, Equipment and Major Projects, 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 "Additional Responses to the NRO RAIs for WCAP-17202, 'Supplement 4 to BISON Topical Report RPA 90-90-P-A'" (Proprietary), for submittal to the Commission, being transmitted by South Texas Project Nuclear Operating Company (STPNOC) letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is in response to the NRC questions as part of the NRC's review of WCAP-17202-P and may be used only for that purpose.

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

(a) Assist the customer in obtaining NRC review of the supplement to the BISON topical report.

Further this information has substantial commercial value as follows:

(a) Its use by a competitor would improve their competitive position in the development of transient analysis methodologies.

(b) 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/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

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.