



Westinghouse Electric Company  
 Nuclear Power Plants  
 P.O. Box 355  
 Pittsburgh, Pennsylvania 15230-0355  
 USA

U.S. Nuclear Regulatory Commission  
 ATTENTION: Document Control Desk  
 Washington, D.C. 20555

Direct tel: 412-374-6206  
 Direct fax: 724-940-8505  
 e-mail: sisk1rb@westinghouse.com

Your ref: Docket No. 52-006  
 Our ref: DCP\_NRC\_002893

May 28, 2010

Subject: AP1000 Response to Request for Additional Information (SRP7)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 7. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in the response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

A proprietary and non-proprietary response is provided herein for each of the following:

RAI-SRP7.0-ICE-01 P & NP	RAI-SRP7.0-ICE-06 P & NP	RAI-SRP7.0-ICE-11 NP only
RAI-SRP7.0-ICE-02 P & NP	RAI-SRP7.0-ICE-07 P & NP	RAI-SRP7.0-ICE-12 P & NP
RAI-SRP7.0-ICE-03 P & NP	RAI-SRP7.0-ICE-08 P & NP	RAI-SRP7.0-ICE-13 P & NP
RAI-SRP7.0-ICE-04 P & NP	RAI-SRP7.0-ICE-09 P & NP	RAI-SRP7.0-ICE-14 NP only
RAI-SRP7.0-ICE-05 P & NP	RAI-SRP7.0-ICE-10 NP only	RAI-SRP7.0-ICE-15 NP only

Pursuant to 10 CFR 50.30(b), proprietary and non-proprietary versions of the response to the request for additional information on SRP Section 7 are submitted as Enclosures 3 and 4. Also enclosed is one copy of the Application for Withholding, AW-10-2825 (non-proprietary) with Proprietary Information Notice, and one copy of the associated Affidavit (non-proprietary).

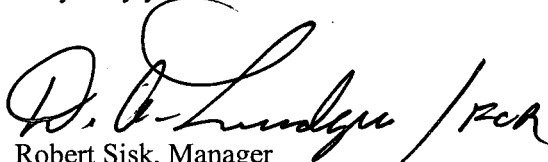
This submittal contains proprietary information of Westinghouse Electric Company, LLC. In conformance with the requirements of 10 CFR Section 2.390, as amended, of the Commission's regulations, we are enclosing with this submittal an Application for Withholding from Public Disclosure and an affidavit. 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 affidavit or Application for Withholding should reference AW-10-2825 and should be addressed to James A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, LLC, P. O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

DD63  
 NRC

Questions or requests for additional information related to the content and preparation of this response should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,



Robert Sisk, Manager  
Licensing and Customer Interface  
Regulatory Affairs and Standardization

/Enclosures

1. AW-10-2825 "Application for Withholding Proprietary Information from Disclosure," dated May 28, 2010
2. AW-10-2825, Affidavit, Proprietary Information Notice, Copyright Notice dated May 28, 2010
3. Responses to Request for Additional Information on SRP Section 7, RAI-SRP7.0-ICE-01 through ICE-09, ICE-12 and ICE-13 (Proprietary)
4. Responses to Request for Additional Information on SRP Section 7, RAI-SRP7.0-ICE-01 through ICE-15 (Non-Proprietary)

cc:	D. Jaffe	- U.S. NRC	4E
	E. McKenna	- U.S. NRC	4E
	S. K. Mitra	- U.S. NRC	4E
	T. Spink	- TVA	4E
	P. Hastings	- Duke Power	4E
	R. Kitchen	- Progress Energy	4E
	A. Monroe	- SCANA	4E
	P. Jacobs	- Florida Power & Light	4E
	C. Pierce	- Southern Company	4E
	E. Schmiech	- Westinghouse	4E
	G. Zinke	- NuStart/Entergy	4E
	R. Grumbir	- NuStart	4E
	B. Seelman	- Westinghouse	4E

ENCLOSURE 1

AW-10-2825

APPLICATION FOR WITHHOLDING  
PROPRIETARY INFORMATION FROM DISCLOSURE



Westinghouse Electric Company  
Nuclear Services  
P.O. Box 355  
Pittsburgh, Pennsylvania 15230-0355  
USA

U.S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, D.C. 20555

Direct tel: 412-374-6206  
Direct fax: 412-374-5005  
e-mail: sisk1rb@westinghouse.com

Your ref: Docket Number 52-006  
Our ref: AW-10-2825

May 28, 2010

APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE

Subject: AP1000 Response to Request for Additional Information (SRP7)

The Application for Withholding 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 material for which withholding is being requested is identified in the proprietary version of the subject RAI response. In conformance with 10 CFR Section 2.390, Affidavit AW-10-2825 accompanies this Application for Withholding, 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 this Application for Withholding or the accompanying affidavit should reference AW-10-2825 and should be addressed to James A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, LLC, P.O. Box 355, Pittsburgh, Pennsylvania, 15230-0355.

Very truly yours,

A handwritten signature in black ink, appearing to read 'James W. Winters'.

James W. Winters, Manager  
Passive Plant Technology

AW-10-2825  
May 28, 2010

ENCLOSURE 2

Affidavit

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

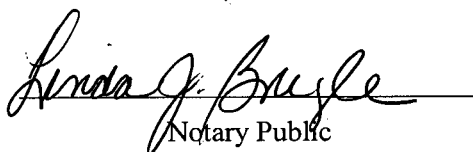
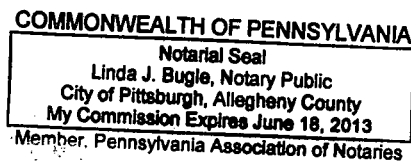
COUNTY OF BUTLER:

Before me, the undersigned authority, personally appeared James W. Winters, 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:



James W. Winters, Manager  
Passive Plant Technology

Sworn to and subscribed  
before me this 28<sup>th</sup> day  
of May 2010.



Notary Public

- (1) I am Manager, Passive Plant Technology, 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" 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 AP1000 Response to Request for Additional Information (SRP7), in support of the AP1000 Design Certification Amendment Application, being transmitted by Westinghouse letter (DCP\_NRC\_002893) and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse for the AP1000 Design Certification Amendment application is expected to be applicable in all licensee submittals referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application in response to certain NRC requirements for justification of compliance of the safety system to regulations.

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

- (a) Manufacture and deliver products to utilities based on proprietary designs.

- (b) Advance the AP1000 Design and reduce the licensing risk for the application of the AP1000 Design Certification
- (c) Determine compliance with regulations and standards
- (d) Establish design requirements and specifications for the system.

Further this information has substantial commercial value as follows:

- (a) Westinghouse plans to sell the use of similar information to its customers for purposes of plant construction and operation.
- (b) Westinghouse can sell support and defense of safety systems based on the technology in the reports.
- (c) The information requested to be withheld reveals the distinguishing aspects of an approach and schedule 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 digital technology safety systems 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.

ENCLOSURE 4

Response to Request for Additional Information on SRP Section 7

(Non-Proprietary)

RAI-SRP7.0-ICE-01  
RAI-SRP7.0-ICE-02  
RAI-SRP7.0-ICE-03  
RAI-SRP7.0-ICE-04  
RAI-SRP7.0-ICE-05  
RAI-SRP7.0-ICE-06  
RAI-SRP7.0-ICE-07  
RAI-SRP7.0-ICE-08  
RAI-SRP7.0-ICE-09  
RAI-SRP7.0-ICE-10  
RAI-SRP7.0-ICE-11  
RAI-SRP7.0-ICE-12  
RAI-SRP7.0-ICE-13  
RAI-SRP7.0-ICE-14  
RAI-SRP7.0-ICE-15

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-01  
Revision: 0

**Question:**

WCAP-17179-P describes the Z ports as having the highest priority, but they are not utilized. The report needs to describe how the Z ports are disabled or how it is highly unlikely the Z ports would be utilized due to inadvertent use.

**Westinghouse Response:**

The following information will be added to the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1 Section 2.3.1.1.4.

The Z port inputs are not used in the AP1000 application. [

]<sup>a,c</sup> The design of the Z port terminal connections are dissimilar to the connections used for the X and Y ports. The Z port terminal block connections are designed to mitigate a short circuit condition across the terminal connectors. Normal maintenance activities do not utilize the Z port input connections, thus precluding a maintenance error.

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
WCAP-17179, Revision 1

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-02  
Revision: 0

**Question:**

Within the PMS's sub-system requirements and functional design documents, there is no requirement that the communication between the Common Q and CIM must be deterministic in order to address real-time performance and provide for system integrity and reliability.

**Westinghouse Response:**

[

] <sup>a.c</sup>

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
None

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## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-03

Revision: 0

**Question:**

WCAP-17179-P does not describe how the system responds if the X-bus fails and if, or when, the Y-bus will override a failed X-bus.

**Westinghouse Response:**

The X bus failures are described in "Component Interface Module Hardware Requirements Specification," WNA-DS-01271-GEN, Revision 7, Section 7 and "Safety System Remote Node Controller Requirements Specification," WNA-DS-01272-GEN, Revision 5, Section 7, which have been provided to the NRC for audit.

[

]a,c

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

None

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AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-04  
Revision: 0

**Question:**

WCAP-17179-P does not adequately explain all conditions under which a thermal override function operates.

**Westinghouse Response:**

The following information will be added to the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1 Section 2.3.1.2.4.

[

] <sup>a,c</sup>

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
WCAP-17179, Revision 1



## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-05  
Revision: 0

**Question:**

WCAP-17179-P does not adequately describe the system response (e.g. Is the signal output locked-in?) when a CIM or SRNC goes from an operational state to an inadvertently non-operational state, such as during a momentary loss of power. Additionally, the terms "initialization," "reset," and "default state" associated with CIM and SRNC start-up and operational modes should be defined.

**Westinghouse Response:**

The following text will be reworded in sections 2.3.1.2.8 and 2.3.2.2.6 in the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1.

[

]a,c

The following definitions will be added to the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1.

Default State

The state of the CIM output devices and the CIM data passed from the SRNC to the CIM, when the CIM and SRNC are not in operational mode.

The default state of the CIM output devices is described in R004.50, "Component Interface Module Hardware Requirements Specification," WNA-DS-01271-GEN, Revision 7.

The default state of the CIM data passed from the SRNC to the CIM is described in R004.2, "Safety System Remote Node Controller Requirements," WNA-DS-01272-GEN, Revision 5.

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**AP1000 TECHNICAL REPORT REVIEW**

**Response to Request For Additional Information (RAI)**

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Reset Mode

[

]a,c

Operational Mode

A mode of operation where the power supplied to the FPGA is within the predetermined acceptable range. In this mode, the CIM and SRNC are fully functional and operational.

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

WCAP-17179, Revision 1

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-06  
Revision: 0

**Question:**

WCAP-17179-P does not adequately describe how the Common Q portion of the PMS handles the CIM feedback signal.

**Westinghouse Response:**

The following information will be added to the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1 Section 2.1.

The CIM feedback and status signals are transmitted to the SRNC via the X bus. The CIM and SRNC status and feedback signals are transmitted to Common Q via the HSL. [

] <sup>a,c</sup>

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
WCAP-17179, Revision 1

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-07  
Revision: 0

**Question:**

WCAP-17179-P does not adequately describe where in the CIM system the communication translation occurs within the CIM device.

**Westinghouse Response:**

[

]a,c

Figure 2-3 of the AP1000 Component Interface Module Technical Report, WCAP-17179, Revision 1, has been updated to the following figure:

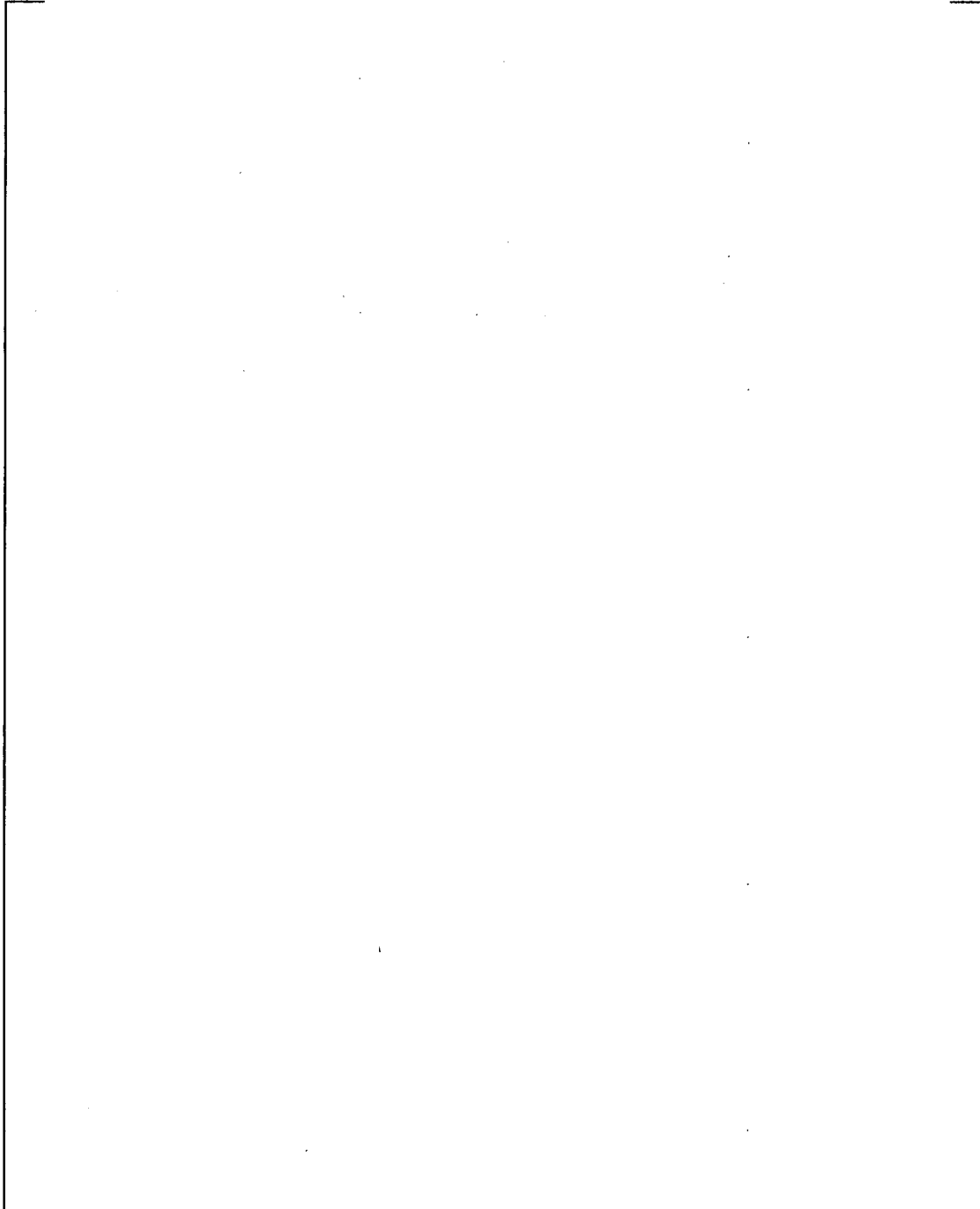
WESTINGHOUSE NON-PROPRIETARY CLASS 3

## AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

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a,c



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## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

WCAP-17179, Revision 1.

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-08  
Revision: 0

**Question:**

WCAP-17179-P should clearly state there are no "application specific" CIMs and the CIM addressing function is carried out by the physical location of the CIM backplane.

**Westinghouse Response:**

The following information will be added to the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1 Section 2.3.1.1.5.

[

]a,c

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
WCAP-17179, Revision 1

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-09  
Revision: 0

**Question:**

WCAP-17179-P should explain more clearly if the solid-state output devices on the CIM are normally energized or normally de-energized during typical (non-PMS activated) plant operation and during PMS activation.

**Westinghouse Response:**

[

]a,c

The CIM outputs are solid state devices that can take two states, energized (closed contact) or de-energized (open contact). Depending on the component control requirement passed from the M3C series of calculations, the CIM solid state output devices can be either normally energized or normally de-energized.

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

None



# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-10  
Revision: 0

**Question:**

WCAP-17179-P does not describe how many time domains exist within CIM system and, as a result, if any potential failure mitigation strategies are required as a result of the response.

**Westinghouse Response:**

The detailed design documents will describe the CIM and SRNC FPGA implementation, including the FPGA time domains. The detailed design documents will be produced during the design phase of the CIM and SRNC life cycle.

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
None

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-11  
Revision: 0

**Question:**

WCAP-17179-P should state that the CIM and SRNC are programmable technology devices and not imply they are hardware devices and therefore be treated as discrete or analog technology. The report should describe the high quality lifecycle development process for the devices.

**Westinghouse Response:**

The following wording will be updated throughout the AP1000 Component Interface Module Technical Report, WCAP-17179 Revision 1.

The CIM and SRNC are logic based modules that do not use microprocessors or software for operation, but instead utilize architecture based on programmable technology. The logic is implemented using field programmable gate array (FPGA) technology.

Section 2.7 of "AP1000 Component Interface Module Technical Report," WCAP-17179, Revision 1, will be updated to more thoroughly describe the high quality development process for the CIM and SRNC modules.

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
WCAP-17179, Revision 1

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-12  
Revision: 0

**Question:**

WCAP-17184-P should relate the DAS utilizes programmable technology devices and not imply it is a hardware-based device and therefore be treated as discrete or analog technology. The report should describe the quality lifecycle development process for the DAS.

**Westinghouse Response:**

WCAP-17184-P, Section 6.1.1.2 currently states the following:

[

] <sup>a,c</sup>

The following statement will be added to Section 10.2.1 to provide additional clarification.

10.2.1 ISG-2 Overview

DI&C-ISG-02, "Task Working Group #2: Diversity and Defense-in-Depth Issues" provides acceptable methods for implementing diversity and defense-in-depth (D3) in digital I&C system designs. The ISG also clarifies the criteria the NRC staff would use to evaluate whether a digital system design is consistent with D3 guidelines.

[

] <sup>a,c</sup>

Section 1 "AP1000 DAS Design Process" describes the development life cycle that will be followed by Westinghouse and CS Innovations.

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

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**AP1000 TECHNICAL REPORT REVIEW**

**Response to Request For Additional Information (RAI)**

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**Technical Report (TR) Revision:**  
WCAP-17184-P, Rev. 1

## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

---

RAI Response Number: RAI-SRP7.0-ICE-13  
Revision: 0

**Question:**

WCAP-17184-P should describe how a sufficient measure of human diversity exists between the CIM and DAS development processes.

**Westinghouse Response:**

The following information will be added to WCAP-17184-P in section 9.4 "Human Diversity:

The design, verification, and validation programs for I&C systems, as described in  
[

] <sup>a,c</sup> The AP1000 CIM Technical Report, Reference 21, identifies [ <sup>a,c</sup>

The CIM Technical Report WCAP-17179-P, section 2.11 "Diversity", contains information regarding the diversity between the DAS and CIM. Section 2.11.4 "Human Diversity" contains the following information:

The purpose of human diversity is to reduce the chance of common errors in similar designs. [

] <sup>a,c</sup>

The diversity discussion between DAS and CIM will be maintained in the CIM Technical Report only.

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## AP1000 TECHNICAL REPORT REVIEW

### Response to Request For Additional Information (RAI)

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**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

WCAP-17184-P, Rev. 1

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-14  
Revision: 0

**Question:**

WCAP-15775, "AP1000 Instrumentation and Control Defense and Depth and Diversity Report," Revision 3, makes several references to obsolete document titles or references that must be updated.

**Westinghouse Response:**

An NRC audit of the AP1000 I&C Systems Requirements, Design Specification, and Sub-system Requirements located an instance in which requirements are inconsistent with the design commitments made within the AP1000 DCD. These inconsistencies were discovered in document APP-GW-J1R-004 / WCAP-15775. A revised document APP-GW-J1R-004 / WCAP-15775 is being prepared for submittal on the docket. The tracking number for this Corrective Action is IR#10-141-M033.

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

APP-GW-J1R-004 / WCAP-15775 Revision 4

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP7.0-ICE-15  
Revision: 0

**Question:**

WCAP-15775, makes reference to multiplexers which were removed from the I&C design in Revision 16 of the AP1000 DCD.

**Westinghouse Response:**

An NRC audit of the AP1000 I&C Systems Requirements, Design Specification, and Sub-system Requirements discovered that WCAP-15775 (APP-GW-J1R-004) makes reference to multiplexers, a term that was removed from the I&C design in Revision 16 of the AP1000 DCD. Document APP-GW-J1R-004 / WCAP-15775 is being revised to remove all references to multiplexers. The revised document will be submitted on the docket. The tracking number for this Corrective Action is IR#10-141-M033.

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

APP-GW-J1R-004 / WCAP-15775 Revision 4