



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: 412-374-6306  
Direct fax: 412-374-5005  
e-mail: [sterdia@westinghouse.com](mailto:sterdia@westinghouse.com)

Your ref: Project Number 740  
Our ref: DCP/NRC1846

March 20, 2007

Subject: AP1000 COL Standard Technical Report Submittal of APP-GW-GLR-091, Rev. 0

In support of Combined License application pre-application activities, Westinghouse is submitting Revision 0 of AP1000 Standard Combined License Technical Report Number 91. Section 11.4.2.3.2 of NUREG-0711 states that when an applicant has developed a design-specific HFE guideline document (or "style guide") to be used in the design verification activity, that document's acceptability should be reviewed by the NRC staff. For this reason, Westinghouse is submitting this technical report and requesting the NRC to review Reference 1 (available at the Westinghouse Monroeville Offices) and issue a Safety Evaluation Report (SER). This report is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in this report is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

The purpose for submittal of this report was explained in a March 8, 2006 letter from NuStart to the U.S. Nuclear Regulatory Commission.

Pursuant to 10 CFR 50.30(b), APP-GW-GLR-091, Revision 0, "Human System Interface Design Guidelines," Technical Report Number 91, is submitted as Enclosure 1 under the attached Oath of Affirmation.

It is expected that when the NRC review of Technical Report Number 91 is complete, the NRC will issue an SER. In an effort to facilitate NRC review of the AP1000 HSI Design Guidelines, Westinghouse would like to conduct a brief seminar on the HSI Design Guidelines for NRC staff personnel. The seminar would present the methods by which the HSI Design Guidelines were formulated, and would provide a "walk-through" of the guidelines to illustrate how the guidelines are organized. Considering the large volume of the AP1000 HSI Design Guidelines, Westinghouse feels that such a seminar would be valuable and would save calendar time in the review process. Please provide an acceptable date for this seminar within 2 weeks of receipt of this letter.

Questions or requests for additional information related to the content and preparation of this report 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,



A. Sterdis, Manager  
Licensing and Customer Interface  
Regulatory Affairs and Standardization

/Attachment

1. "Oath of Affirmation," dated March 20, 2007

/Enclosure

1. APP-GW-GLR-091, Revision 0, "Human System Interface Design Guidelines," Technical Report Number 91, dated March 2007.

cc:	S. Bloom	- U.S. NRC	1E	1A
	S. Coffin	- U.S. NRC	1E	1A
	G. Curtis	- TVA	1E	1A
	P. Grendys	- Westinghouse	1E	1A
	P. Hastings	- Duke Power	1E	1A
	C. Ionescu	- Progress Energy	1E	1A
	D. Lindgren	- Westinghouse	1E	1A
	A. Monroe	- SCANA	1E	1A
	M. Moran	- Florida Power & Light	1E	1A
	C. Pierce	- Southern Company	1E	1A
	E. Schmiech	- Westinghouse	1E	1A
	G. Zinke	- NuStart/Entergy	1E	1A

ATTACHMENT 1

“Oath of Affirmation”

ATTACHMENT 1

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of: )  
NuStart Bellefonte COL Project )  
NRC Project Number 740 )

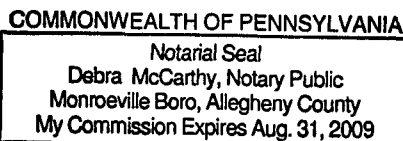
APPLICATION FOR REVIEW OF  
"AP1000 GENERAL COMBINED LICENSE INFORMATION"  
FOR COL APPLICATION PRE-APPLICATION REVIEW

W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.

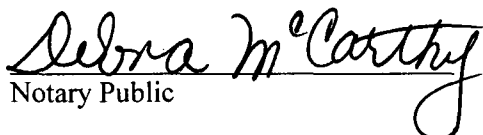


W. E. Cummins  
Vice President  
Regulatory Affairs & Standardization

Subscribed and sworn to  
before me this 20<sup>th</sup> day  
of March 2007.



Member, Pennsylvania Association of Notaries



Debra McCarthy  
Notary Public

ENCLOSURE 1

APP-GW-GLR-091, Revision 0

Human System Interface Design Guidelines

Technical Report Number 91

# AP1000 DOCUMENT COVER SHEET

TDC: \_\_\_\_\_ Permanent File: \_\_\_\_\_ APY: \_\_\_\_\_

RFS#: \_\_\_\_\_ RFS ITEM #: \_\_\_\_\_

AP1000 DOCUMENT NO. <b>APP-GW-GLR-091</b>	REVISION NO. <b>0</b>	Page 1 of 4	ASSIGNED TO W-KOLB
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ALTERNATE DOCUMENT NUMBER:

WORK BREAKDOWN #: GW

ORIGINATING ORGANIZATION: Westinghouse

**TITLE: AP1000 Standard Combined License Technical Report on Human System Interface Design Guidelines**

ATTACHMENTS: None	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION: None
CALCULATION/ANALYSIS REFERENCE: None	

ELECTRONIC FILENAME APP-GW-GLR-091.doc	ELECTRONIC FILE FORMAT Microsoft Word	ELECTRONIC FILE DESCRIPTION Body of document
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Class 3 Documents being transmitted to the NRC require the following two review signatures in lieu of a Form 36.

LEGAL REVIEW <i>J.C. VALENTINE</i>	SIGNATURE/DATE <i>J.C. Valentine</i> 3-16-2007
PATENT REVIEW M. M. Corletti	SIGNATURE/DATE <i>M. M. Corletti</i> 3-13-07

WESTINGHOUSE PROPRIETARY CLASS 2

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ORIGINATOR W. C. Kolb	SIGNATURE/DATE <i>W.C. Kolb</i> 13-MAR-2007
REVIEWERS Julie I. Reed	SIGNATURE/DATE <i>J. Reed</i> 3/13/07
VERIFIER P. J. Hunton	SIGNATURE/DATE <i>P. J. Hunton</i> 03/13/07
AP1000 RESPONSIBLE MANAGER J. W. Winters	SIGNATURE/DATE <i>J. W. Winters</i> 03/16/07
	VERIFICATION METHOD Page by page review
	APPROVAL DATE 03/16/07

\* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

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APP-GW-GLR-091  
Revision 0

March 2007

# AP1000 Standard Combined License Technical Report

## Human System Interface Design Guidelines

Revision 0

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Westinghouse Electric Company LLC  
Nuclear Power Plants  
Post Office Box 355  
Pittsburgh, PA 15230-0355

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## **INTRODUCTION**

This document (APP-GW-GLR-091, also known as Technical Report 91) is written to inform the NRC regarding the AP1000 Human System Interface Design Guidelines (Reference 1) and to request NRC review of Reference 1. Westinghouse committed to submit this document (APP-GW-GLR-091, Technical Report 91) in meetings with the NRC in November, 2007, and this commitment was further documented in Reference 5.

As part of the AP1000 Human Factors Engineering Program (Reference 4), AP1000 Human System Interface (HSI) Design Guidelines have been established. The primary goals of the HSI Design Guidelines are as follows:

- Provide assurance that the AP1000 HSI designs comply with the applicable human factors design principles.
- Provide assurance that the AP1000 Project will provide a safe, readily operable and maintainable facility

In addition to the above, the HSI Design Guidelines function to:

- Guide the HSI resource designers in the adoption of the applicable human factors design principles.
- Prevent conflicts between the design and operation of the different HSI resources that may lead to user error.
- Integrate the HSI resources into a cohesive design.
- Present the user with a consistent, easy to use interface that provides monitoring and control functionality under all plant conditions
- Assist in avoiding costly re-design via the incorporation of human factors into the design process in a timely manner.
- Facilitate the design verification process.

The last bullet above discusses the use of the HSI Design Guidelines in the design verification process. Westinghouse plans to use the AP1000 HSI Design Guidelines in the AP1000 HFE Design Verification activity. Section 11.4.2.3.2 of NUREG-0711 (Reference 2) states that when an applicant has developed a design-specific HFE guideline document (or “style guide”) to be used in the design verification activity, that document’s acceptability should be reviewed by the NRC staff. For this reason, Westinghouse is submitting this technical report and requesting the NRC to review Reference 1 and issue a Safety Evaluation Report (SER).

Westinghouse has a substantial investment in the AP1000 HSI Design Guidelines, and therefore this document is Westinghouse Proprietary. Westinghouse will make Reference 1 available for NRC review and inspection in the Westinghouse Rockville office.

## **TECHNICAL BACKGROUND**

Reference 1 was initially issued as Revision A and included guidelines for the design of visual display unit based (VDU-based) human system interfaces (HSIs). The guidelines included in Revision A were (and continue to be) used in the design of many of the AP1000 HSIs. The VDU-based guidelines constitute the bulk of Reference 1. Revision B added HSI design guidelines for the physical workspaces associated with the HSIs, fixed/dedicated controls and displays, communication facilities, and the working environment.



Note that, as part of the overall AP1000 Human Factors Engineering Program Plan (Reference 4), the HSI Design Guidelines will continue to be refined, resulting in future revisions to Reference 1. The NRC staff is requested to review the currently available revision of the HSI Design Guidelines. This will allow the NRC staff to understand the following aspects of the AP1000 HSI Design Guidelines:

- the scope of the guidelines
- the structure of the guidelines
- the format of the guidelines
- the specificity and ease of use of the guidelines by HSI implementing personnel

Although relatively minor adjustments to specific HSI design guidelines will occur as a normal, planned HFE activity, the NRC staff's review of the current revision of Reference 1 will be valuable, timely, and applicable to future work on the AP1000. In other words, NRC staff review of the current revision of Reference 1 will not need to be superseded by additional detailed reviews of future revisions of the AP1000 HSI Design Guidelines.

### **REGULATORY IMPACT**

There are no changes to the AP1000 DCD (Design Control Document, Reference 3) associated with information in this document.

This report does not include any change to:

- a System, Structure, or Component (SSC)
- a procedure
- a DCD-described evaluation methodology
- a test or experiment not described in the DCD where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the DCD

The NRC is requested to review this document and Reference 1. Following the review, the NRC is further requested to issue an SER regarding the AP1000 HSI Design Guidelines.

### **REFERENCES**

1. APP-OCS-J1-002, Revision B (Proprietary), "AP1000 Human System Interface Design Guidelines," Westinghouse Electric Company LLC.
2. NUREG-0711, Revision 2, "Human Factors Engineering Program Review Model," U.S. Nuclear Regulatory Commission.
3. APP-GW-GL-700, Revision 15 (Non-Proprietary), "AP1000 Design Control Document," Westinghouse Electric Company LLC.
4. APP-OCS-GBH-001, Revision A (Proprietary), "AP1000 Human Factors Engineering Program Plan," Westinghouse Electric Company LLC.
5. APP-GW-GLR-090 (WCAP-16696), Revision 0 (Proprietary), "Strategy for the Closure of the AP1000 Design Control Document Chapter 18 Human Factors Engineering Combined Operating License Information Items," (Technical Report 90), Westinghouse Electric Company LLC.

### **DCD MARK-UP**

None