

ENCLOSURE 4

Westinghouse Non-Proprietary

WCAP-16796-NP, Rev. 0

“AP1000 Human Factors Engineering Verification and Validation”

May 2007

Westinghouse Non-Proprietary Class 3

WCAP-16796-NP
APP-GW-GLR-084
Revision 0

May 2007

AP1000 Human Factors Engineering Verification and Validation



WCAP-16796-NP
APP-GW-GLR-084
Revision 0

AP1000 Human Factors Engineering Verification and Validation

M. C. Shaffer*, Sr. Engineer
Control Room and Human Factors Design I, RRAS

May 2007

Reviewers: P. J. Hunton*, Project Manager
Control Room and Human Factors Design I, RRAS

J. I. Reed*, Principal Engineer
Control Room and Human Factors Design I, RRAS

W. C. Kolb*, Manager
Computer Aided Engineering, Nuclear Power Plants

Approved: A. P. Drake*, Program Manager
NuStart/DOE Design Finalization

*Electronically approved records are authenticated in the electronic document management system.

Westinghouse Electric Company LLC
P.O. Box 355
Pittsburgh, PA 15230-0355

© 2007 Westinghouse Electric Company LLC
All Rights Reserved

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS iv

1 PURPOSE 1-1

2 HFE VERIFICATION AND VALIDATION, AP1000 DCD 18.11 2-1

 2.1 COMBINED LICENSE INFORMATION 2-1

 2.2 BACKGROUND INFORMATION 2-1

 2.3 CURRENT STATUS 2-1

 2.4 WAY FORWARD 2-1

 2.5 DCD TIER 2 MARKUPS 2-2

 2.5.1 Combined License Information Items 2-2

 2.5.2 Tier 2 Editorial Change 2-3

3 REFERENCES 3-1

LIST OF ACRONYMS AND ABBREVIATIONS

The following abbreviations and acronyms are defined to allow an understanding of their use within this document.

COL	Combined Operating License
DCD	Design Control Document
HFE	Human Factors Engineering
HSI	Human System Interface
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria
V&V	Verification and Validation

1 PURPOSE

Chapter 18 of APP-GW-GL-700, “AP1000 Design Control Document” (Reference 1), describes the human factors engineering (HFE) program. Section 18.11 of Reference 1 describes the verification and validation (V&V) element of the AP1000 HFE program. The purpose of this document (APP-GW-GLR-084) is to address Combined Operating License (COL) Information Item 18.11-1, “Human Factors Engineering Verification and Validation.” This document also describes an editorial change to Section 18.11.

2 HFE VERIFICATION AND VALIDATION, AP1000 DCD 18.11

2.1 COMBINED LICENSE INFORMATION

Section 18.11.1 of Chapter 18 in Reference 1, the AP1000 Design Control Document (DCD), lists one COL Information Item.

(18.11-1) “Combined License applicants referencing the AP1000 certified design will address the development, execution and documentation of an implementation plan for the verification and validation of the AP1000 human factors engineering program. The programmatic level description of the AP1000 verification and validation program, presented and referenced by Section 18.11, will be used by the Combined License applicant to develop the implementation plan.”

2.2 BACKGROUND INFORMATION

The AP1000 HFE V&V program is certified at a programmatic level. Section 18.11 of Chapter 18 in the DCD states that the description of the HFE V&V program and an outline of the V&V activities are documented in WCAP-15860, “Programmatic Level Description of the AP1000 Human Factors Verification Validation Plan” (Reference 2). This reference will be used to develop the implementation plans.

2.3 CURRENT STATUS

[

] ^{d,c}

2.4 WAY FORWARD

[

] ^{d,c}

[

]d,e

2.5 DCD TIER 2 MARKUPS

2.5.1 Combined License Information Items

The following DCD markups are intended for Revision 16 of the DCD:

18.11.1 Combined License Information

The Combined License information requested in this subsection has been fully addressed in Reference 2 (APP-GW-GLR-084). No additional work is required by the Combined Operating License applicant to address the Combined License information requested in this subsection.

The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above.

Combined License applicants referencing the AP1000 certified design will address the development, execution and documentation of an implementation plan for the verification and validation of the AP1000 human factors engineering program. The programmatic level description of the AP1000 verification and validation program, presented and referenced by Section 18.11, will be used by the Combined License applicant to develop the implementation plan.

18.11.2 References

Add Reference 2 to Section 18.11 as follows:

2. APP-GW-GLR-084, "AP1000 Human Factors Engineering Verification and Validation."

2.5.2 Tier 2 Editorial Change

The following section is changed for editorial reasons as discussed in Reference 3.

18.11 Human Factors Engineering Verification and Validation

A programmatic level description of the AP1000 human factors engineering verification and validation program is provided by Reference 1. Figure 18.11-1 shows the verification and validation activities conducted as part of AP1000 human factors engineering program. Using the programmatic level description, it is the responsibility of the Combined License applicant to develop the development of an implementation plan for the AP1000 human factors engineering verification and validation is executed and documented as discussed in Reference 2. The Combined License applicant is responsible for the execution and documentation of the plan.

3 REFERENCES

1. APP-GW-GL-700, Revision 15, (Non-Proprietary), "AP1000 Design Control Document," Westinghouse Electric Company LLC.
2. APP-OCS-GEH-020 (WCAP-15860), Revision 2, (Non-Proprietary), "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Westinghouse Electric Company LLC.
3. APP-GW-GLR-130, (Non-Proprietary), "Editorial Format Change to 'COL Applicant' Items," Westinghouse Electric Company LLC.