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Your ref: Docket No. 52-006  
Our ref: DCP\_NRC\_003012

August 18, 2010

Subject: AP1000 Response to Request for Additional Information (SRP18)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 18. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in this response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Enclosure 1 provides the response for the following RAI(s):

RAI-SRP18-COLP-54

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,

A handwritten signature in black ink, appearing to read 'R. Sisk' followed by a stylized flourish.

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

/Enclosure

1. Response to Request for Additional Information on SRP Section 18

DO63  
UR

cc:	D. Jaffe	-	U.S. NRC	1E
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ENCLOSURE 1

Response to Request for Additional Information on SRP Section18

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP18-COLP-54  
Revision: 0

### **Question:**

In response to RAI-SRP18-COLP-23 R3, Westinghouse added five documents to the DCD as Tier 2\* references. As agreed upon at the December 9, 2009 public meeting, all human factors engineering Tier 2\* references should expire when the COL holder first achieves 100% power operation. Please update the DCD Introduction Table 1-1 to include the updated Tier 2\* references and to properly note that all human factors engineering related references are to expire as Tier 2\* at first full power operation.

### **Westinghouse Response:**

In response to RAI-SRP18-COLP-23 R3, Westinghouse added five documents to the DCD as Tier 2\* references. As agreed upon at the December 9, 2009 public meeting, Westinghouse is adding the same documents (listed below) to Table 1-1 of the Design Control Document Introduction.

- APP-OCS-GEH-120, "AP1000 Human Factors Engineering Design Verification Plan," Revision B, Westinghouse Electric Company LLC.
- APP-OCS-GEH-220, "AP1000 Human Factors Engineering Task Support Verification Plan," Revision B, Westinghouse Electric Company LLC.
- APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," Revision D, Westinghouse Electric Company LLC.
- APP-OCS-GEH-420, "AP1000 Human Factors Engineering Discrepancy Resolution Process," Revision B, Westinghouse Electric Company LLC
- APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Verification Plan," Revision B, Westinghouse Electric Company LLC.

The Tier 2\* designation will expire at first full power.

### **Question from NRC email received August 16/17, 2010:**

The NRC position is that all Chapter 18 related Tier 2\* documents should expire at first full power operation. The basis for declaring material as Tier 2\* is that the material contains the

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

procedures and acceptance criteria for evaluating the final design. Once the final design is accepted (ITAAC closed), normal change processes should be used (50.59).

#### Westinghouse Response:

In response to the NRC emails received August 16/17 2010, the Design Control Document (DCD) is being revised to identify all Chapter 18 documents referenced in DCD Introduction Table 1-1 as Tier 2\* status expiring at first full power. The DCD changes are identified in the DCD Revision section of this RAI response.

#### References:

None.

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

#### Design Control Document Introduction

Table 1-1  
Index of AP1000 Tier 2 Information Requiring NRC Approval for Change

Item	Expiration at First Full Power	Tier 2 Reference
Basis for Human Factors Engineering Program	YesNe	18.1
NUREG-0711, "Human Factors Engineering Program Review Model," July 1994	YesNe	18.1.1
WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNe	
WCAP-15860, "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Rev 2	YesNe	
NUREG-0711, "Human Factors Engineering Program Review Model," July 1994	YesNe	18.2.1.2
Applicable Facilities	YesNe	18.2.1.3
Applicable Human Systems Interfaces	YesNe	18.2.1.4
Applicable Plant Personnel	YesNe	18.2.1.5
Technical Basis	YesNe	18.2.1.6

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Item	Expiration at First Full Power	Tier 2 Reference
NUREG-0711, "Human Factors Engineering Program Review Model," July 1994		
Responsibility of Human System Interface Design Team	YesNo	18.2.2.1
Composition of HFE Design Team	YesNo	18.2.2.3
Action Item Tracking	YesNo	18.2.3.1
Subcontractor Efforts WCAP-15847, "AP1000 Quality Assurance Procedures Supporting NRC review of AP1000 SSAR Sections 18.2 and 18.8," Rev 1	YesNo	18.2.3.5
General Process and Procedures for Design Review of HFE Products	YesNo	18.2.4
HFE Technical Program and Milestones NUREG-0711, "Human Factors Engineering Program Review Model," July 1994 NUREG-0711, "Human Factors Engineering Program Review Model," Rev 1	YesNo	18.2.5
NUREG-0711, "Human Factors Engineering Program Review Model," July 1994 WCAP-15847, "AP1000 Quality Assurance Procedures Supporting NRC review of AP1000 SSAR Sections 18.2 and 18.8," Rev 1 NUREG-0711, "Human Factors Engineering Program Review Model," Rev 1	YesNo	18.2.7
Human System Interface Design Team Process	YesNo	Figure 18.2-1
AP600 Task Analysis Implementation Plan NUREG-0711, "Human Factors Engineering Program Review Model," July 1994	YesNo	18.5
Task Analysis Scope WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNo	18.5.1
Task Analysis Implementation Plan	YesNo	18.5.2



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Item	Expiration at First Full Power	Tier 2 Reference
Function-Based Task Analysis WCAP-14695, "Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology," Rev 0	YesNo	18.5.2.1
NUREG-0711, "Human Factors Engineering Program Review Model," July 1994 WCAP-14695, "Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology," Rev 0 WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNo	18.5.5
Integration of Human Reliability Analysis with HFE WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNo	18.7
WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNo	18.7.2
Human System Interface Design WCAP-14695, "Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology," Rev 0 WCAP-15860, "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Rev 2	YesNo	18.8
Design Guidelines WCAP-15860, "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Rev 2	YesNo	18.8.1.2
Man-in-the-Loop Test Plan to Obtain Feedback from Prototype Design Products WCAP-14396, "Man-in-the-Loop Test Plan Description," Rev 3	YesNo	18.8.1.4

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Item	Expiration at First Full Power	Tier 2 Reference
HSI Design Provides Necessary Alarms, Displays, and Controls WCAP-15860, "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Rev 2	YesNo	18.8.1.7
Operator Decision-Making Model Used by Task Analysis Activities WCAP-14695, "Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology," Rev 0	YesNo	18.8.1.8
Critical Human Actions and Risk-Important Tasks WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNo	18.8.1.9
Safety Parameter Display System 10 CFR 50.34(f)(2)(iv) NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability"	YesNo	18.8.2
Implementation Plan for Integrating Human Reliability Analysis with HFE WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	YesNo	18.8.2.1
Display of Safety Parameters WCAP-14695, "Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology," Rev 0	YesNo	18.8.2.2
Safety Parameter Display System HFE NUREG-0711, "Human Factors Engineering Program Review Model," July 1994	YesNo	18.8.2.5



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Item	Expiration at First Full Power	Tier 2 Reference
Minimum Information, Safety Parameter Display System Design NUREG-1342, "A Status Report Regarding Industry Implementation of Safety Parameter Display Systems"	YesNo	18.8.2.6
Main Control Area Mission and Major Tasks Regulatory Guide 1.97	YesNo	18.8.3.2
Remote Shutdown Workstation Mission and Major Tasks	YesNo	18.8.3.4
Technical Support Center Mission and Major Tasks Technical Support Center Location NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability"	YesNo	18.8.3.5
WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2 WCAP-15860, "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Rev 2 WCAP-14695, "Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology," Rev 0 10 CFR 50.34(f)(2)(iv) NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability" NUREG-0711, "Human Factors Engineering Program Review Model," July 1994 NUREG-1342, "A Status Report Regarding Industry Implementation of Safety Parameter Display Systems" WCAP-14396, "Man-in-the-Loop Test Plan Description," Rev 3	YesNo	18.8.6

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Human Performance Issues to be Addressed by HSI Design	Yes <del>No</del>	Table 18.8-1
Human Factors Engineering Verification and Validation WCAP-15860, "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Rev 2	Yes <del>No</del>	18.11.2
APP-OCS-GEH-120, "AP1000 Human Factors Engineering Design Verification Plan", Revision B	Yes	18.11.2
APP-OCS-GEH-220, "AP1000 Human Factors Engineering Task Support Verification Plan", Revision B	Yes	18.11.2
APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan", Revision D	Yes	18.11.2
APP-OCS-GEH-420, "AP1000 Human Factors Engineering Discrepancy Resolution Process", Revision B	Yes	18.11.2
APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Verification Plan", Revision B	Yes	18.11.2
Inventory of Displays, Alarms, and Controls	Yes <del>No</del>	18.12.1
Implementation Process for Identification of Critical PRA Operator Actions	Yes <del>No</del>	18.12.2
WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	Yes <del>No</del>	
Remote Shutdown Workstation Displays, Alarms, and Controls	Yes <del>No</del>	18.12.3
WCAP-14651, "Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan," Rev 2	Yes <del>No</del>	18.12.5
Critical Piping Design Methods and Criteria (Piping Design Criteria)	No	Table 3.9-19

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### PRA Revision:

None.

### Technical Report (TR) Revision:

None.