



Westinghouse Electric Company
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U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
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Your ref: Docket No. 52-006
Our ref: DCP/NRC1691

March 31, 2004

SUBJECT: Transmittal of Revised Responses to AP1000 DSER Open Items

This letter transmits Westinghouse revised responses for Open Items in the AP1000 Design Safety Evaluation Report (DSER). A list of the revised DSER Open Item responses transmitted with this letter is Attachment 1. The non-proprietary responses are transmitted as Attachment 2.

Please contact me at 412-374-4728 if you have any questions concerning this submittal.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'R. P. Vijuk'.

R. P. Vijuk, Manager
Passive Plant Engineering
AP600 & AP1000 Projects

/Attachments

1. List of the AP1000 Design Certification Review, Draft Safety Evaluation Report Open Item Responses transmitted with letter DCP/NRC1691
2. Non-Proprietary AP1000 Design Certification Review, Draft Safety Evaluation Report Open Item Responses dated March 31, 2004

Doc 3



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March 31, 2004

Attachment 1
List of
Non-Proprietary Responses

Table 1 “List of Westinghouse’s Responses to DSER Open Items Transmitted in DCP/NRC1691”	
1.9 – USI/GSI Item, Revision 0 14.3.2-6, Revision 1	

Westinghouse Non-Proprietary Class 3

**DCP/NRC1691
Docket No. 52-006**

March 31, 2004

Attachment 2

**AP1000 Design Certification Review
Draft Safety Evaluation Report Open Item Non-Proprietary Responses**

AP1000 DESIGN CERTIFICATION REVIEW

Draft Safety Evaluation Report Open Item Response

DSER Open Item Number: 1.9 – USI/GSI Item (Response Revision 0)

Original RAI Number(s): None

Summary of Issue:

The NUREG-0933 Supplement referenced in AP1000 DCD Section 1.9.4.1 was not current on the date six months prior to the AP1000 design certification application.

Westinghouse Response:

NUREG-0933 Supplement 25 was used in the AP1000 DCD preparation. AP1000 DCD Section 1.9.4.1 will be corrected as shown below.

Design Control Document (DCD) Revision:

1.9.4.1 Review of NRC List of Unresolved Safety Issues and Generic Safety Issues

Applicants for design certification are required by 10 CFR 52.47(a)(1)(iv) to identify: "Proposed technical resolutions of those Unresolved Safety Issues and medium- and high-priority Generic Safety Issues which are identified in the version of NUREG-0933 current on the date six months prior to application and which are technically relevant to the design."

NUREG-0933, "A Prioritization of Generic Safety Issues," through Supplement 14-25 identifies hundreds of issues. The issues tabulated in Supplement 14-25 were reviewed to determine which issues are technically relevant to the AP1000 design. ~~The review updated the status of the items to the status in Supplement 17 of NUREG-0933. Items added between Supplement 14 and 17 are not included.~~ In this review process, the following screening criteria were applied:

- a. Issue has been prioritized as **Low, Drop**, or has not been prioritized.
- b. Issue is not an AP1000 design issue. Issue is applicable to GE, B&W, or CE designs only.
- c. Issue resolved with no new requirements.
- d. Issue is not a design issue (Environmental Issue, Licensing Issue, Regulatory Impact Issue, or covered in an existing NRC program).
- e. Issue superseded by one or more issues.
- f. Issue is not an AP1000 design certification issue. Issue is applicable to NTOL plants only, responsibility of combined license applicant, or issue is limited to current generation operating plants.

AP1000 DESIGN CERTIFICATION REVIEW

Draft Safety Evaluation Report Open Item Response

Issues meeting one or more of the preceding screening criteria were screened out of the review process as issues that are not applicable to the AP1000 design. The remaining issues fall into one of the following two categories:

- g. Issue is resolved by establishment of new regulatory requirements and/or guidance.
- h. Issue is unresolved pending generic resolution (e.g., prioritized as **High, Medium**, or possible resolution identified).

Table 1.9-2 identifies the results of the screening review. For those issues identified as relevant to the AP1000 design (i.e., issues screened as g or h), Table 1.9-2 identifies the DCD subsection that addresses the issue.

PRA Revision:

None

AP1000 DESIGN CERTIFICATION REVIEW

Draft Safety Evaluation Report Open Item Response

DSER Open Item Number: 14.3.2-6 (Response Revision 1)

Original RAI Number(s): None

Summary of Issue:

Section 2.3.9, "Containment Hydrogen Control System," must remain open because hydrogen control is an open item in this report (See Section 6.2.5 of this report and Open Item 6.1.1-1 of this report for details). Briefly, this is because the AP1000 Tier 2 information is written in anticipation of a rule change to 10 CFR 50.44 that would relax requirements, but has not been finalized. This is Open Item 14.3.2-6.

Westinghouse Response:

The AP1000 DCD contains the information consistent with the proposed NRC draft rule 10 CFR 50.44. DCD Tier 1 Section 2.3.9, Containment Hydrogen Control System, is consistent with the comparable AP600 Tier 1 ITAAC. It has been modified to reflect the AP1000 design configuration.

NRC Additional Comments:

NRC comment from teleconference on March 3, 2004

Westinghouse should add to the DCD that the hydrogen monitors receive power from the Non-Class 1E DC and UPS System.

NRC comment from e-mail dated March 26, 2004

As part of the review of DCE Tier 2, Section 6.2.5, Westinghouse agreed to provide a new statement in the next revision of section 6.2.5, to the effect that the containment hydrogen monitors are powered by the non-Class 1E dc and UPS (uninterruptible power supply) system. They are doing this to show compliance with the revised 50.44 and draft RG 1.7, Rev.3.

We believe that this resolution should be reflected in Tier 1, in particular, Table 2.3.9-3, "Inspections, Tests, Analyses, and Acceptance Criteria" for the containment hydrogen control system.

As we discussed, please add an ITAAC provision for the hydrogen monitors power supply. If they were to do this, it would resolve Open Item 14.3.2-6.

AP1000 DESIGN CERTIFICATION REVIEW

Draft Safety Evaluation Report Open Item Response

Westinghouse Response: (Revision 1)

Westinghouse agrees to revise DCD Tier 1 section 2.3.9 and Tier 2 Section 6.2.4.1 as shown below:

Design Control Document (DCD) Revision: (Response Revision 1)

The following change to the first sentence of the third paragraph of DCD section 6.2.4.2.1 will be made:

6.2.4.2.1 Hydrogen Concentration Monitoring Subsystem

The hydrogen concentration monitoring subsystem consists of three hydrogen sensors. The sensors are placed in the upper dome where bulk hydrogen concentration can be monitored.

The system contains a total of three sensors designated as non-Class 1E serving to provide a post accident monitoring function. See Section 7.5 for additional information.

The hydrogen sensors are powered by ~~a non-Class 1E power source~~ the non-Class 1E dc and UPS system. Sensor parameters are provided in Table 6.2.4-1. Hydrogen concentration is continuously indicated in the main control room. Additionally, high hydrogen concentration alarms are provided in the main control room.

The sensors are designed to provide a rapid response detection of changes in the bulk containment hydrogen concentration.

The following changes to DCD Tier 1 section 2.3.9 will be made:

2.3.9 Containment Hydrogen Control System

Design Description

The containment hydrogen control system (VLS) limits hydrogen gas concentration in containment during accidents.

The VLS has catalytic hydrogen recombiners (VLS-MY-E01A and VLS-MY-E01B) that are located inside containment. The VLS has hydrogen igniters located as shown on Table 2.3.9-2.

1. The functional arrangement of the VLS is as described in the Design Description of this Section 2.3.9.
2. a) The hydrogen monitors identified in Table 2.3.9-1 are powered by the non-Class 1E dc and UPS system.
b) The components identified in Table 2.3.9-2 are powered from their respective non-Class 1E power group.

AP1000 DESIGN CERTIFICATION REVIEW

Draft Safety Evaluation Report Open Item Response

Table 2.3.9-3 Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The functional arrangement of the VLS is as described in the Design Description of this Section 2.3.9.	Inspection of the as-built system will be performed.	The as-built VLS conforms with the functional arrangement as described in the Design Description of this Section 2.3.9.
2.a) <u>The hydrogen monitors identified in Table 2.3.9-1 are powered by the non-Class 1E dc and UPS system.</u>	<u>Testing will be performed by providing a simulated test signal in each power group of the non-Class 1E dc and UPS system.</u>	<u>A simulated test signal exists at the hydrogen monitors identified in Table 2.3.9-1 when the non-Class 1E dc and UPS system is provided the test signal.</u>
2.b) The components identified in Table 2.3.9-2 are powered from their respective non-Class 1E power group.	Testing will be performed by providing a simulated test signal in each non-Class 1E power group.	A simulated test signal exists at the equipment identified in Table 2.3.9-2 when the assigned non-Class 1E power group is provided the test signal.

PRA Revision:

None

DCP/NRC1691

March 31, 2004

Attachments

bcc:	Document Control - US NRC, Rockville, MD	1 (original)
	C. B. Brinkman* - Westinghouse, Rockville, MD	
	W. E. Cummins* - Westinghouse, Pittsburgh, PA, EC E3	
	J. A. Gresham* - Westinghouse, Pittsburgh, PA, EC E4-07A	
	J. P. Segala - US NRC, Rockville, MD	6
	R. P. Vijuk - Westinghouse, Pittsburgh, PA, EC E3-05	2
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* Letter only