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Your ref: Docket No. 52-006
Our ref: DCP/NRC1590

May 14, 2003

SUBJECT: Transmittal of Westinghouse Responses to US NRC Requests for Additional Information on the AP1000 Application for Design Certification

This letter transmits the Westinghouse responses to NRC Requests for Additional Information (RAI) regarding our application for Design Certification of the AP1000 Standard Plant. A list of the RAI responses that are transmitted with this letter is provided in Attachment 1. Attachment 2 provides the RAI responses.

Please contact me if you have questions regarding this submittal.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'M. M. Corletti'.

M. M. Corletti
Passive Plant Projects & Development
AP600 & AP1000 Projects

/Attachments

1. Table 1, "List of Westinghouse's Responses to RAIs Transmitted in DCP/NRC1590"
2. Westinghouse Non-Proprietary Response to US Nuclear Regulatory Commission Requests for Additional Information dated May 2003

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Attachment 1

“List of Westinghouse’s Responses to RAIs Transmitted in DCP/NRC1590”

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Attachment 1

Table 1 “List of Westinghouse’s Responses to RAIs Transmitted in DCP/NRC1590”
261.014, Rev. 0 420.048 Rev. 0

DCP/NRC1590

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Attachment 2

**Westinghouse Non-Proprietary Response to US Nuclear Regulatory Commission
Requests for Additional Information dated May 2003**

AP1000 DESIGN CERTIFICATION REVIEW

Response to Request For Additional Information

RAI Number: 261.014

Question:

In the exception to RG 1.41, Westinghouse states:

The guidelines are followed for Class 1E dc power systems during the preoperational testing of the AP1000 redundant onsite electric power systems to verify proper load group assignments, except as follows. Complete preoperational testing of the startup, sequence loading, and functional performance of the load groups is performed where practical. In those cases where it is not practical to perform complete functional testing, an evaluation is used to supplement the testing.

Based on this exception to RG 1.41, the NRC staff requests the following specific information:

- a. Which Regulatory Position in RG 1.41 does this exception apply to?
- b. Which system (ac, dc, or both) does this exception apply to?
- c. Specify the "cases" where it is not practical to perform functional testing of onsite power supplies and for each case justify why an evaluation process is an adequate substitute for preoperational testing?

Westinghouse Response:

- a. The exception applies to the portion of Regulatory Position 2 that requires functional performance testing of the loads.
- b. There are no safety-related ac power systems in the AP1000. RG 1.41 is applicable to the Class 1E dc and UPS system only; therefore, the exception only applies to the Class 1E dc and UPS system.
- c. The loads on the Class 1E dc and UPS system are: I&C cabinets, switchgear control, air-operated valves, motor-operated valves, squib valves, and MCR lighting. It is not practical to functionally test (operate) a squib valve simply to demonstrate that the valve is connected to the proper electrical division. The other load types can be reasonably tested according to RG 1.41.

The "evaluation" cited in the exception would involve removing the electrical connection at the squib valve actuator and connecting the leads to a test device that would confirm the presence or absence of an actuation signal.

AP1000 DESIGN CERTIFICATION REVIEW

Response to Request For Additional Information

Design Control Document (DCD) Revision:

None

PRA Revision:

None

AP1000 DESIGN CERTIFICATION REVIEW

Response to Request For Additional Information

RAI Number: 420.048

Question:

The staff is reviewing the adequacy of the AP1000 communication system, section 9.5.2 and associated ITAAC's in the Design Control Document. The staff requests answers to the following questions in order to complete its review.

- a. 10 CFR 73.55 (e) and (f) discusses that placement of backup power supplies for certain communication systems be in vital areas. This has not been mentioned in the DCD.
- b. 10 CFR 73.55 (g) mentions testing requirements for certain communication systems. This has not been mentioned in the DCD.
- c. Section 9.5.2 of the NRC's SRP, NUREG-0800 provides reviewer guidance on the design of communication systems (i.e., inter-plant and plant to offsite). Part of that guidance follows for wireless systems:

Communications system will be protected from EMI/RFI effects of other plant equipment and there will be adequate testing and field measurements where necessary to demonstrate effective communications.

Section 9.5.2 of the NRC's SRP discusses the general requirement that addresses the need for communication equipment to provide effective communication during the "full spectrum of ...conditions ...under maximum potential noise levels."

Please discuss communication testing for plant startup and operations in sufficient detail to allow the staff to understand how effective communications will be demonstrated including EMI/RFI effects on the equipment. Please include how effective communications will be sustained for maximum potential noise levels as described above.

- d. Have ITAAC's been identified for the Communication system (EFS) as discussed in 9.5.2 beyond those given in table 2.3-19, EFS and 3.1-1 Technical Support Center/Operations Support Center (TSC/OSC). If not, how will there be assurance that the appropriate tests and confirmatory criteria have been accomplished to meet requirements of 10 CFR, and noise level considerations for worse case postulated noise levels.

AP1000 DESIGN CERTIFICATION REVIEW

Response to Request For Additional Information

Westinghouse Response:

- a. The power supply requirements of 10 CFR 73.55 (e) and (f) are met by the Security Power Supply System. The design of the Security Power Supply System is the responsibility of the Combined License applicant. See the changes to DCD Section 13.6.9 in Revision 5 resulting from the Security Review.
- b. Specific details for offsite communications interfaces, Emergency Response Facility communications, and the security communications system are the responsibility of the Combined License applicant as stated in DCD Section 9.5.2.5. Procedures for testing of the security features as required by 10 CFR 73.55 (g), as well as the conduct of the tests, are also the responsibility of the Combined License applicant. (Ref: DCD Section 13.5.1.)
- c. The operation of the communication system is tested during the preoperational test program.

EMI/RFI testing is specified by DCD Section 14.2.9.4.13 General Test Method and Acceptance Criteria item (a). The test procedures will simulate the predicted worst-case EMI/RFI environment either by operating EMI/RFI producing equipment in the area of the communication equipment being tested or by simulating the EMI/RFI environment which would result from the predicted worst-case operating configuration of this equipment.

Performance testing is specified by DCD Section 14.2.9.4.13 General Test Method and Acceptance Criteria item (d). Westinghouse agrees that the DCD does not specify that this testing includes testing under conditions that simulate conditions of maximum plant noise. The DCD will be revised as shown below to add this specification. The test procedures will simulate the predicted worst-case noise environment either by operating noise producing equipment in the area of the communication equipment being tested or by simulating the noise environment which would result from the predicted worst-case operating configuration of this equipment. Predicted additional noise resulting from personnel activity in the area will also be simulated.

- d. The ITAACs for the communication system are discussed in DCD Tier 1 Section 2.3.19 and 3.1 as stated in the RAI. No additional ITAACs have been identified. Appropriate tests to demonstrate that the requirements of 10 CFR 73.55 are met are the responsibility of the Combined License applicant, as discussed in items (a) and (b). The communications system is tested for noise level considerations as part of the preoperational test program as discussed in item (c).

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Response to Request For Additional Information

Design Control Document (DCD) Revision:

14.2.9.4.13 Plant Communications System Testing

Purpose

The purpose of the plant communications system testing is to verify that the as-installed components properly perform the functions of verifying the proper operation and adequacy of the plant communication systems used during normal and abnormal operations, as described in Section 9.5.

Prerequisites

The construction testing of the communication system has been completed. Required support systems, electrical power supplies and control circuits are operational.

General Test Method and Acceptance Criteria

Plant communications system performance is observed and recorded during a series of individual component and integrated system testing. The inplant communications system includes the following subsystems:

- Wireless telephone system
- Telephone/page system
- Private Automatic Branch Exchange (PABX) System
- Sound Powered Phone System
- Emergency Response Facility Communication System
- Security Communication System

The following testing verifies that the system functions as described in Section 9.5 and appropriate design specifications:

- a) Transmitters and receivers are verified to operate without excessive interference.
- b) Proper operation of controls, switches, and interfaces is verified.
- c) Proper operation of the public address, including the plant emergency alarms, is verified.
- d) The proper operation of equipment expected to function under abnormal conditions such as a loss of electrical power, shutdown from outside the control room, or execution of the plant emergency plan is verified. **This functional testing will be performed under conditions that simulate the maximum plant noise levels being generated during the various operating conditions, including fire and accident conditions, to demonstrate system capabilities.**

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Response to Request For Additional Information

PRA Revision:

None