



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

Your ref: Project Number 740
Our ref: DCP/NRC2007

September 28, 2007

Subject: AP1000 COL Response to Requests for Additional Information (TR 45)

In support of Combined License application pre-application activities, Westinghouse is submitting responses to the NRC requests for additional information (RAIs) on AP1000 Standard Combined License Technical Report 45, APP-GW-GLR-027, Operator Actions Minimizing Spurious ADS Actuations. These RAI responses are submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in the responses is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

Responses are provided for RAI-TR45-SFPT-01 through RAI-TR45-SFPT-03, transmitted in an email from Dave Jaffe to Sam Adams dated August 21, 2007. These responses complete all requests received to date for Technical Report 45.

Pursuant to 10 CFR 50.30(b), the responses to the requests for additional information on Technical Report 45 are submitted as Enclosure 1 under the attached Oath of Affirmation.

Questions or requests for additional information related to the content and preparation of these responses 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 'A. Sterdis', with a horizontal line extending to the right.

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

/Attachment

1. "Oath of Affirmation," dated September 28, 2007

/Enclosure

1. Responses to Requests for Additional Information on Technical Report No. 45

cc:	D. Jaffe	- U.S. NRC	1E	1A
	E. McKenna	- U.S. NRC	1E	1A
	G. Curtis	- TVA	1E	1A
	P. Hastings	- Duke Power	1E	1A
	C. Ionescu	- Progress Energy	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
	C. Watson	- Westinghouse	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)

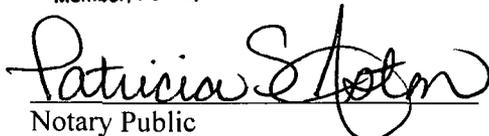
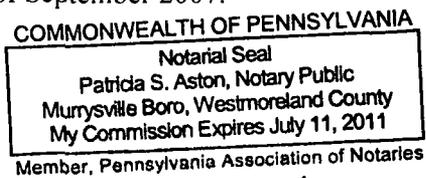
APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

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 28th day
of September 2007.



Notary Public

ENCLOSURE 1

Responses to Requests for Additional Information on Technical Report No. 45

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-TR45-SFPT-01
Revision: 0

Question:

The Westinghouse response to RAI-TR45-002 includes the following statement: "While not desirable, if ADS were to actuate as the result of a fire, the plant would still achieve and maintain safe shutdown through the use of passive system feed/bleed cooling." This is an important design commitment for the AP1000 that does not appear to be included in either this technical report or in the certified design description for the AP1000 fire protection program. One, or both, of these documents should include this statement.

Westinghouse Response:

Technical Report 45 (APP-GW-GLR-027) will be revised to include the above comment.

Reference:

1. APP-GW-GLR-027, Operator Actions Minimizing Spurious ADS Actuation.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

TECHNICAL BACKGROUND:

Following detection of a fire in one of the dc equipment rooms, the operators will remove cabinet power from this division using the input power switches on the instrumentation and control cabinets. This operator action will prevent spurious smoke-induced actuation of motor operated valves and squib valves resulting smoke-related integrated circuit failures in the instrumentation and control room.

It should be noted that, while not desirable, if ADS were to actuate as the result of a fire, the plant would still achieve and maintain safe shutdown through the use of passive system feed/bleed cooling.

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-TR45-SFPT-02

Revision: 0

Question:

The Westinghouse response to RAI-TR45-009 includes the following statement: "For AP1000, achieving safe shutdown requires no operator actions even if an entire fire area is destroyed by a fire." While this statement is consistent with the concept of enhanced fire protection for new reactors and consistent with the certified design description of the fire protection program, recent developments with respect to multiple spurious actuations make it important for applicants to clarify design bases and assumptions regarding multiple spurious actuations when performing post-fire safe-shutdown circuit analyses. Please confirm that the conclusion of "no operator actions" has considered multiple spurious actuations caused by fire-induced damage to circuits located within the area affected by the fire.

In addition, although the certified design states that multiple spurious actuations will be assumed to occur one-at-a-time, cable fire tests performed by both the industry and the NRC have demonstrated that this is not necessarily an appropriate assumption. Any applications of the one-at-a-time assumption to support a conclusion of post-fire safe shutdown, should be identified by applicants and demonstrated to be valid for each specific application based on the current industry knowledge of the potential for multiple spurious actuations to occur in rapid succession for certain configurations and cable materials. Please identify where this assumption has been applied in the AP1000 standard design and provide the appropriate justification based on current industry knowledge.

Westinghouse Response:

The existing Design Certification Rule as documented in 10CFR52 Appendix D successfully resolved the fire protection circuit analysis for the AP1000 design. Specifically, the AP1000 FSER (NUREG 1793) states that "The staff concludes, based on the above review, that the safe-shutdown capability and the alternative dedicated shutdown capabilities are acceptable." The FSER discusses the safe shutdown analyses, including the circuit analyses performed for the AP1000 and successfully reviewed by NRC staff. Specifically the FSER states that "The spurious actuation of the ADS does not result in an unrecoverable plant configuration or prevent safe shutdown." TR 45 addresses COL Information Item 9.5.-5, which is limited to addressing operator actions to minimizing spurious ADS actuation. The changes incorporated in DCD Revision 16 provide additional design information to address the COL Information Item, and do not alter the design or the fire analysis assumptions, nor the NRC staff conclusions reached during Design Certification Review and documented in the FSER. This request for additional information does not appear to meet the NRC requirements documented in 10CFR52.63 for requiring additional information beyond that included in the original Design Certification Rule. Specifically, this issue is protected by the Design Certification Finality considerations included in 10CFR52. Westinghouse believes that the additional information requested by the staff does

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

not meet the requirements of 10CFR52.63(a), and therefore is not applicable to the AP1000 design certification or the request for design certification amendment.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-TR45-SFPT-03
Revision: 0

Question:

The Westinghouse response to RAI-TR45-009 also includes the following statement: "No vital access doors need to be bypassed by security for an operator to perform any safe shutdown operations regardless of the location of the fire." This statement is made as an assumption in TR-45. Please confirm that this is a design basis for the plant, or identify specific instances where it does not apply to the standard design and provide justification. If this is a design basis, it should be included in the design description.

Westinghouse Response:

The assumption in TR 45 makes no reference to safe-shutdown actions required. With the exception of the Reactor Operator (RO) tripping the reactor, in case the fire did not cause a scram, no operator action is required to achieve safe-shutdown. This action does not require access to any door, vital or otherwise.

The statement within Technical Report 45, APP-GW-GLR-027, "The analysis assumes that there are no vital access doors that need to be bypassed by security due to the fire," is incorrect. Technical Report 45 will be revised to remove the assumption regarding vital access doors.

In the case that any vital access doors were closed during a fire, a Security Officer could disable the vital access door locks from the Central Alarm Station or the Secondary Alarm Station to allow unimpeded access to all areas by the plant operators.

In the event a vital access door is closed a conservative assumption of 1 min bypass time is used. This assumed time is deemed adequate to bypass any necessary doors in the plant. Given this assumed bypass time, the operator is still able to achieve the required actions to prevent a spurious ADS actuation in under 30 minutes.

Reference:

1. APP-GW-GLR-027, Operator Actions Minimizing Spurious ADS Actuation.

Design Control Document (DCD) Revision:

None

PRA Revision:

None



AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

Technical Report (TR) Revision:

ASSUMPTIONS:

For any fire in these areas, input power to the entire fire area will be secured. It is highly unlikely that non-Class 1E cables would be the source of hot shorts resulting spurious ADS actuation; however, these actions also remove the non-Class 1E power to the fire areas. These areas include batteries. The operator actions listed in this analysis will minimize the probability of hot shorts from the batteries causing spurious ADS actuation.

This analysis assumes that the reactor operator (RO) performs the actions in the MCR and that an equipment operator (EO) is sent to perform the control actions outside the MCR. The analysis also assumes that the EO begins his tasks from the MCR. This analysis demonstrates that all external power can be removed from the fire areas within 30 minutes. The Class 1E batteries are located within these fire areas and are a potential source of power for spurious ADS actuation. The actions analyzed are those that are reasonable and will minimize the probability of the potential for spurious ADS actuation.

The analysis assumes the operator travels at a speed of at least 200 ft/min (61 m/min).

The analysis assumes that any vital access doors that need to be bypassed due to the fire require 1 minute.

The analysis assumes the operator will have unimpeded access to these areas without smoke or heat. The assumed starting state for these rooms has the door initially closed, containing the heat and smoke.