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Your ref: Project Number 740
Our ref: DCP/NRC2042

November 16, 2007

Subject: AP1000 COL Responses to Requests for Additional Information (TR 52)

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 52, APP-GW-GLR-010, Revision 2, "Main Control Room Staff Roles and Responsibilities". 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-TR52-COLP-08 Rev.1 and RAI-TR52-COLP-12, as sent in an email from Dave Jaffe to Sam Adams, dated September 12, 2007. These responses complete all requests received to date for Technical Report 52. Revision 0 of RAI-TR52-COLP-08 was submitted under Westinghouse letter DCP/NRC1975, dated August 21, 2007.

Pursuant to 10 CFR 50.30(b), the responses to the requests for additional information on Technical Report 52, 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'.

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

D063
D079
MRO

/Attachment

1. "Oath of Affirmation," dated November 16, 2007

/Enclosure

1. Responses to Requests for Additional Information on Technical Report No. 52

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
	J. Wilkinson	- Florida Power & Light	1E	1A
	C. Pierce	- Southern Company	1E	1A
	E. Schmiech	- Westinghouse	1E	1A
	G. Zinke	- NuStart/Entergy	1E	1A
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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)

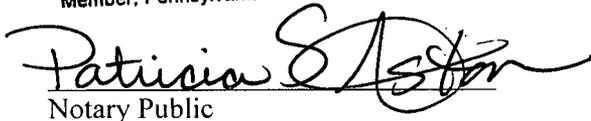
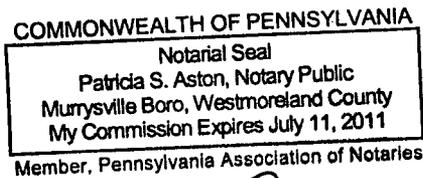
APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

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 *16th* day
of November 2007.



Notary Public

ENCLOSURE 1

Responses to Requests for Additional Information on Technical Report No. 52

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-TR52-COLP-08
Revision: 1

Question:

- A. Section 4.2.2, Main Control Area RO responsibilities, (3) under "Normal Operations" states that the RO identifies less than one hour Technical Specification (TS) action statements when they occur. Why doesn't this responsibility include all TS action statements?
- B. Section 4.2.2, Main Control Area Supervisor responsibilities, (9) under "All Operations" states that the Supervisor tracks inoperable alarms. Why doesn't this also include all active alarms?
- C. Section 4.2.2, Main Control Area Supervisor responsibilities, (1) under "Normal Operations" states that the Supervisor tracks TS LCOs. Why doesn't this also include TS action statements?
- D. Section 4.2.2, Shift Technical Advisor (STA) lists responsibilities for Normal Operations. This does not include the general duty of the STA to be cognizant of plant and equipment status, as noted in NUREG-0737, App. C. Please update.
- E. Section 4.2.2, also lists STA duties and responsibilities for Plant Transients and Emergencies. Item (1) states that the STA reports to the MCA Supervisor. TMI Item I.A.1.1, STA, in NUREG-0737 states that the STA is the on-shift technical advisor to the shift supervisor. Please discuss the decision to have the STA report to a lower level of shift management for AP1000, namely the MCA supervisor.
- F. Section 4.4, MCR Maximum Staffing, Staff Duties and Responsibilities, paragraph 3, states that the NRC and plant management observers will not require HSI devices. These observers will most likely use the existing HSI devices in the MCR. Please clarify this statement (e. g., by inserting "additional" before HSI devices).

Westinghouse Response:

- A. That responsibility of the MCA RO will be moved to Section 4.2.1 (i.e., RO responsibilities applicable for "All Operations") and revised to read:

Maintains plant conditions within limitations of plant license (LCOs). The RO is responsible for recognizing plant conditions that require entry into technical specification action statements. He is also responsible to have knowledge of less than/equal to one hour technical specification action statements. For all action statements, the RO coordinates with plant supervision and written procedures to determine the appropriate course of action.

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Response to Request For Additional Information (RAI)

B. Please note that in Rev. 2 of TR-52, this task is identified as part of the role of the Main Control Room Supervisor.

The intent is that responding to active alarms is the responsibility of the Reactor Operator in the Main Control Area. (see RO-1: Operates equipment controlled from the MCA including: (d) performing operator actions required by Alarm Response Procedures).

Tracking of inoperable alarms is assigned to the MCR Supervisor as part of his role in monitoring the overall plant condition, including maintaining an awareness of conditions that may occur for which the normal alarms would not provide indication.

C. Please note that in Rev. 2 of TR-52, this task is identified as part of the role of the Main Control Room Supervisor.

As stated above, for RAI 8A, identification of Action Statements associated with the LCO's is identified as part of the role of the Reactor Operator in the Main Control Area.

The intent is that the MCR Supervisor, as part of his role in monitoring the overall plant condition, is responsible for being aware of any LCO applicable for the current plant operating condition, but is not tasked with tracking the associated action statements.

D. The following item will be added to Section 4.5.1 (i.e., STA responsibilities applicable during "All Operations"):

Maintains cognizance of plant and equipment status.

E. The intent is not to specify the staff reporting hierarchy, but rather to represent the close communication between the STA and the control room operating staff, consistent with the STA function identified in Appendix C to NUREG-0737: "Provide advanced technical assistance to the operating shift complement during normal and abnormal operating conditions." Also, direct communication between the STA and the control room supervisor is specified in the administrative procedures for some utilities, where the SRO responsible for control room command may be identified as the Shift Supervisor-Nuclear. The subject item was written with consideration that for a minimal staff complement, a Shift Manager qualified as an STA could provide the STA support to the operating shift complement, i.e., the MCR Supervisor. Westinghouse agrees to revise the two affected STA responsibilities as follows (new text is underlined):

In Section 4.5.1 (i.e., STA responsibilities applicable for "All Operations"):

Assesses possible significant plant abnormalities (e.g., RCS abnormalities) observed during normal operations at the request of the MCR Supervisor or Shift Manager.

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Response to Request For Additional Information (RAI)

In Section 4.5.2 (i.e., STA responsibilities applicable for "Plant Transients and Emergencies"):

Communicates to the MCR Supervisor and/or the Shift Manager in a technical advisory capacity during emergencies, but has no control or command functions.

- Note that the term "Communicates" replaced the term "Reports" in the last item.

F. Please note that the subject statement is not present in Rev. 2 of TR-52. It had been deleted because it was not considered to be within the scope of the document, i.e., "MCR Staff Roles and Responsibilities."

The subject Section was also revised to address the presence of "a large staff compliment" rather than "maximum staffing."

The intent is that the main control room be designed to accommodate sufficient additional staff members and observers. It is understood that the observers are present to observe the overall status of the plant, and that the operating staff are acting accordingly. The means by which the observers determine this is not within the scope of this document.

Reference:

1. APP-GW-GLR-010, Rev. 2: AP1000 Main Control Room Staff Roles and Responsibilities

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

As stated above.

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-TR52-COLP-12
Revision: 0

Question:

Please clarify the duties and responsibilities presented in TR 52 in the following areas.

- A. The RO roles do not include communication with AOs.
- B. The RO roles do not include coordination with other MCR personnel, including the MCR supervisor and the Shift Manager.
- C. Many of the risk important operator actions for AP1000 (per TR 59) are of the type, failure to recognize..., failure to diagnose..., and failure to detect... However, the RO roles do not include diagnosis during transients or accidents.
- D. The STA roles do not address all of the responsibilities of NUREG-0737, Item I.A.1.1 and of the referenced Appendix C, STA Position Description.
- E. The RO and EO roles do not include fire brigade activities. Will either be used for this function?

Westinghouse Response:

- A. The following responsibility will be added to Section 4.2.1 (i.e., MCA RO responsibilities applicable for "All Operations"):

Communicates with the MCR Supervisor and local equipment operators to ensure coordination of local unit evolutions with plant operations. May direct equipment operators performing local system control actions.

Also, the response to RAI 12C identifies an additional responsibility added to Section 4.2.1 that includes several items involving RO communication with the equipment operators.

The following responsibilities will be added to Section 4.3.1 (i.e., MCR Supervisor responsibilities applicable for "All Operations"):

Maintains awareness of directions provided to the equipment operators from the MCR. May direct equipment operators performing local system control actions.

Evaluates any abnormal conditions or operating concerns reported by the reactor operator or the equipment operators.

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

B. Please note in the responses to RAI's 12A, 12C, and 12E, that each identifies RO responsibilities that now include communications to other operations staff. In addition, the following responsibility will be added to Section 4.2.1 (i.e., the MCA RO responsibilities applicable for "All Operations"):

If a surveillance test or check fails to meet criteria, then notifies MCR Supervisor and initiates corrective actions.

C. The following responsibility will be added to Section 4.2.1 (i.e., the MCA RO responsibilities applicable for "All Operations"):

Identifies, diagnoses, and addresses abnormal plant behavior, including:

- a. Monitors plant indications to detect unexpected or abnormal plant behavior.
- b. Communicates with EO's to discover local indications of abnormal conditions.
- c. Communicates observations of unexpected plant behavior with MCR Supervisor and other MCR staff.
- d. Monitors and investigates plant indications and communicates with the MCR Supervisor and other MCR and plant staff as needed to diagnose the cause and implications of the abnormal behavior.
- e. Communicates with the MCR Supervisor and other MCR staff as needed to determine an appropriate course of action, and obtains MCR Supervisor approval to proceed if needed.
- f. Implements actions in the MCR and/or communicates to EO's to implement local actions.
- g. Monitors and investigates plant indications and/or communicates with the EO(s) to confirm successful resolution of or response to the abnormal condition.
- h. Prepares appropriate reports and log entries.

The following responsibility will be added to Section 4.3.1 (i.e., the MCR Supervisor responsibilities applicable for "All Operations"):

Ensures that any abnormal plant behavior is appropriately identified, diagnosed and addressed:

- a. Evaluates any abnormal conditions or operating concerns reported by the reactor operator or the equipment operators.
- b. Requests STA support if appropriate.
- c. Reports the abnormal condition or operating concern to plant management if appropriate.
- d. Communicates with the RO and EO(s), and as needed with the STA and other MCR and plant staff to assure correct diagnosis of the abnormal behavior, and correct determination of the appropriate course of action.
- e. Directs the RO and EO(s) accordingly.

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Response to Request For Additional Information (RAI)

- f. Observes and communicates with the RO and EO(s) to confirm successful implementation of the course of action.
- g. Prepares appropriate report and log entries.

The following responsibility will be added to Section 4.4.1 (i.e., the Shift Manager responsibilities applicable for "All Operations"):

Ensures that any abnormal plant behavior is appropriately addressed, logged and reported.

The following responsibility will be added to Section 4.5.1 (i.e., the STA responsibilities applicable for "All Operations"):

Supports operating staff requests for assistance in diagnosis and resolution of abnormal conditions or operability concerns:

- a. Communicates with MCR Supervisor, RO or EO(s) or other MCR and plant staff, and investigates and monitors plant indications to support diagnosis of the abnormal condition and determination of an appropriate course of action.
- b. Monitors successful implementation of the chosen course of action.
- c. Prepares appropriate report and log entries.
- d. Prepares a special report if requested by plant management.

The following responsibility will be added to Section 4.6.1 (i.e., the Equipment Operator responsibilities applicable for "All Operations"):

Supports identification, diagnosis and resolution of abnormal conditions:

- a. Communicates any locally observed abnormal conditions or operability concerns to the MCR.
- b. Supports MCR requests for local observations or actions.

D. Please consider, the current list of STA responsibilities closely follows the responsibilities specified for On-Shift Operations Personnel at an operating utility. They appear to reasonably address the list provided in Appendix C to NUREG-0737. A brief assessment of how TR-52 addresses each of the 12 items from App. C is provided here:

(1) During transients and accidents, compare existing critical parameters with those predicted in the Plant Transient and Accident Analysis.

Assessment Addressed by STA- 7, 9, & 10 in Rev. 3 of the document (STA-4, 6, & 7 in Rev 2), as follows:

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Response to Request For Additional Information (RAI)

STA-7 Independently performs investigation of causes of abnormal events and classifies emergency conditions.

STA-9. Independently monitors and validates Critical Safety Function Status Trees and recommends transition to Functional Restoration Procedures.

STA-10. Independently assesses plant parameters to ascertain whether core damage has occurred or is imminent.

(2) Make a qualitative assessment of plant parameters during and following an accident in order to ascertain whether core damage has occurred.

Assessment: Addressed by STA-9 and STA-10 in Rev. 3 of the document (STA-6 and STA-7 in Rev. 2).

(3) ... observe critical parameters, ascertain adequate core cooling including availability of a heat sink for the cooling system,

Assessment: Addressed by STA-9 and STA-10 in Rev. 3 of the document (STA-6 and STA-7 in Rev. 2). Note that STA-10 in Rev. 3 includes "... ascertain whether core damage has occurred or is imminent"

(4) Investigate the cause of abnormal or unusual events and assess any adverse affects therefrom. Recommend changes ...

Assessment: Addressed by STA-7 in Rev. 3 of the document (STA-4 in Rev. 2).

(5) Evaluate effectiveness of plant procedures in terms of terminating or mitigating accidents

Assessment: Addressed by STA-8 in Rev. 3 of the document (STA-5 in Rev. 2).

(6) Assist the operations staff in interpreting and applying the requirements of Tech. Specs.

Assessment: Addressed by STA-6 in Rev. 3 of the document (STA-3 in Rev 2).

(7) Perform an early review of the planned activities for the upcoming shift and make recommendations to the shift supervisor.

Assessment: An administrative rather than operations type activity. Outside of the scope of TR-52.

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Response to Request For Additional Information (RAI)

(8) Evaluate effectiveness of plant instructions and recommend changes

Assessment: Addressed by STA-5, i.e., "Independently evaluates effectiveness of AOPs and EOPs to terminate or mitigate events."

(9) Evaluate core power distribution during and following load changes. Perform hot channel factor and/or rod program analyses as required.

Assessment: Not addressed in TR-52. Utilities have determined that this is a normal evolution monitored by the MCR staff for expected responses. The STA would assess any abnormal parameters as addressed by STA-3 in Rev. 3 of the document (STA-1 in Rev. 2).

(10) Review abnormal and emergency procedures.

Assessment: Administrative rather than operations activity. Outside of the scope of TR-52.

(11) Prepare special reports when requested by the Operations Superintendent.

Assessment: Administrative rather than operations activity. Outside the scope of TR-52.

(12) Provide engineering evaluation of Licensee Event Reports for other plants

Assessment: Administrative rather than operations activity. Outside the scope of TR-52.

E. The following responsibilities will be added to Section 4.2.1 (i.e., the MCA RO responsibilities applicable for "All Operations"):

Communicates with MCR Supervisor and local EO(s) to support determination of the need for Fire Brigade assistance.

May be delegated by the MCR Supervisor to perform the following:

- a. Sound fire alarm.
- b. Notify MCR Supervisor and fire brigade leader of type, size and location of fire.
- c. Communicate with fire brigade to coordinate control room actions and provide associated authorizations.

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Response to Request For Additional Information (RAI)

May be delegated by the MCR Supervisor to direct implementation of the appropriate AOP(s).

The following responsibilities will be added to Section 4.3.1 (i.e., the MCR Supervisor responsibilities applicable for "All Operations"):

Determines if Fire Brigade assistance is needed upon receipt of a fire report or an alarm in the MCR.

Communicates with RO and fire brigade and Shift Manager to provide approval regarding any recommended evolution that affects core reactivity or reactor operation.

Performs or delegates (to the RO) the following actions:

- a. Announces location of fire over the PA system.
- b. Sounds fire alarm.
- c. Notifies Shift Manager and the fire brigade leader of type, size and location of fire.
- d. Communicates with fire brigade to coordinate control room actions and provide associated authorizations.

Ensures implementation of the appropriate AOP(s), and directs or delegates direction of the associated procedures.

The following responsibility will be added to Section 4.4.1 (i.e., the Shift Manager responsibilities applicable for "All Operations"):

Ensures that MCR staff, local EO's and Fire Brigade perform their respective fire protection roles.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

As stated above.