June 4, 2003

Mr. W. E. Cummins, Director
AP600 & AP1000 Projects
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, PA 15230-0355

Dear Mr. Cummins:

As you are aware, the U. S. Nuclear Regulatory Commission (NRC) staff is preparing the draft safety evaluation report (DSER) for the AP1000 design certification application submitted by Westinghouse Electric Company (Westinghouse) on March 28, 2002. The staff expects to issue the DSER in June, 2003. As of this date, the staff has identified three potential open items for DSER Chapter 13, "Conduct of Operations," which are enclosed for your information. Please note that the staff's review of the application will continue during preparation of the DSER, which may result in changes to the potential open items identified in the enclosure, or the addition of other open items.

The three potential open items in the enclosure have the original request for additional information (RAI) number included for reference. If the staff cannot resolve the potential open items before the issuance of the DSER, these items will be issued as DSER open items and be tracked with a corresponding open item number.

Previously, Westinghouse committed to provide responses to all identified open items within 9 weeks after the issuance of the DSER. The staff will be prepared to review your responses to the open items and have conference calls and meetings with your staff, as appropriate, after the DSER is issued. If Westinghouse chooses to address some or all of these open items before the issuance of the DSER, the staff may not have sufficient time to evaluate every response to the potential open items that Westinghouse submits to the NRC and make changes to the DSER before the scheduled DSER issuance in June, 2003.

Please contact one of the following members of the AP1000 project management team if you have any questions or comments concerning this matter: Mr. John Segala (Lead Project Manager) at (301) 415-1858 or jps1@nrc.gov, Mr. Joseph Colaccino at (301) 415-2752 or jxc1@nrc.gov, or Ms. Joelle Starefos at (301) 415-8488 or jls1@nrc.gov.

Sincerely,

/RA/

James E. Lyons, Director
New Reactor Licensing Project Office
Office of Nuclear Reactor Regulation

Docket No. 52-006

Enclosure: As stated

cc: See next page

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DATE	05/28/03	05/28/03	06/03/03

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Westinghouse AP1000
Draft Safety Evaluation Report
Potential Open Items
Chapter 13
Conduct of Operations

Open Item Number: 13.3-1

Original RAI(s): 472.003

Summary of Issue: Part A:

According to Section 2.6 of NUREG-0696, the intent of the TSC is to provide direct management and technical support to the control room during an accident. Section II.B.2 of NUREG-0737 states that any area which will or may require occupancy to permit an operator to aid in the mitigation of, or recovery from, an accident is designated as a "vital area;" and that the control room and TSC must be included among those areas where access is considered vital after an accident. Further, the design dose rate for personnel in a vital area should be such that the guidelines of GDC 19 will not be exceeded during the course of the accident. GDC 19 requires that adequate radiation protection be provided, such that dose to personnel should not be in excess of 0.05SV (5 rem) whole body, or its equivalent to any part of the body, for the duration of the accident. In addition, Subsection 8.2.1.f of Supplement 1 to NUREG-0737 states that the TSC will be provided with radiological protection and monitoring equipment necessary to assure that radiation exposure to any person working in the TSC would not exceed 0.05SV (5 rem) whole body, or its equivalent to any part of the body, for the duration of the accident. These guidelines form the basic radiological habitability requirements for the TSC.

Section H.1 of NUREG-0654/FEMA-REP-1, Rev. 1, calls for establishment of a TSC in accordance with NUREG-0696. Section 2.6 of NUREG-0696 states that since the TSC is to provide direct management and technical support to the control room during an accident, it shall have the same radiological habitability as the control room under accident conditions, and the TSC ventilation system shall function in a manner comparable to the control room ventilation system. If the TSC becomes uninhabitable, the TSC plant management function shall be transferred to the control room.

As discussed above, the applicant states in DCD Tier 2 Section 18.8.3.5 that the TSC has no emergency habitability requirements, and that this is consistent with NUREG-0737. Given NUREG-0737's designation of the TSC in Section II.B.2 as a vital area, having related radiation protection

criteria of GDC 19 during the course of an accident, the statement that the TSC "has no emergency habitability requirements" is not consistent with NUREG-0737. In the applicant's additional response to RAI 472.003, the apparent inconsistency is acknowledged as "confusing". The statement was removed from DCD Tier 2 Section 18.8.3.5.

Despite the removal of the statement that the TSC has no emergency habitability requirements in DCD Tier 2 Section 18.8.3.5, the design of the ventilation systems for the TSC and MCR does not provide the TSC with the same radiological habitability as the MCR under all accident conditions. Section 2.1 of NUREG-0696 provides that "[l]icensees who cannot meet the criteria for location, size, and habitability for the TSC must submit to NRC a request for an exception. This request must include justification for the exception and an alternate proposal. The NRC will review requests for exceptions on a case-by-case basis." The AP1000 DCD does not request an exception to the habitability criteria for the TSC. In addition, the use of criteria different from those set forth in NUREG-0696, NUREG-0737, and Supplement 1 of NUREG-0737, will be accepted only if the substitute criteria provides a basis for determining that the applicable regulatory requirements are met.

The applicant further states in its additional response to RAI 472.003, that "[i]n practical terms, the TSC does have emergency habitability capabilities comparable to those of operating plants as long as electrical power is available either from offsite power or from the onsite diesel generators." This does not comport with the emergency habitability requirements of NUREG-0696, NUREG-0737, and Supplement 1 to NUREG-0737. The staff has identified the inability of the TSC to provide emergency habitability under accident conditions as Open Item 13.3-1.a.

Part B

DCD Tier 2 Section 18.8.3.5 further states that "[t]he TSC complies with the habitability requirements of Reference 27 [i.e., Supplement 1 to NUREG-0737] when electrical power is available." The reference to "when electrical power is available" is but one, of two, triggering events that would automatically isolate the MCR from the TSC. The second triggering event is "High-high particulate or iodine radioactivity in MCR air supply" (see DCD Section 6.4.4). In addition, the second triggering event is not reflected in DCD Tier 2 Section 3.1.2, "Protection by Multiple Fission Product Barriers," which states in Criterion 19 "Control Room" that "if the normal main control room ventilation system is inoperable or if no ac power sources are available, the emergency control room habitability system automatically isolates the main control room and provides operator habitability requirements." If, for example, electrical power was available, while at the same time there was high-high particulate or iodine radioactivity in the MCR air supply, the MCR would automatically isolate from the TSC. As such, the TSC would no longer be able to ensure compliance with the radiological protection requirements

of GDC 19, and therefore, the TSC would be unable to comply with the radiological habitability requirements of Supplement 1 to NUREG-0737 (i.e., Reference 27). Hence, the statement that the TSC complies with the habitability requirements of Supplement 1 to NUREG-0737 when electrical power is available, is incomplete.

Addressing this concern, Westinghouse stated the following in their additional response to RAI 472.003.

> Should a "high-high" radiation signal or if a station blackout of more than 10 minutes occur, the VBS stops, isolates the MCR envelop and the VES begins operation to protect the MCR operators. If the system has power and is operating, it will prevent a "high-high" radiation signal. This is the reason DCD [Tier 2] 18.8.3.5 states, "The TSC complies with the habitability requirements of Reference 27 [i.e., Supplement 1 to NUREG-0737] when electrical power is available."

This response is somewhat confusing. The isolation of the MCR envelop can occur with either a high-high radiation signal or loss of power. That means that isolation can occur on a high-high radiation signal only, without loss of power. The statement that "[i]f the system has power and is operating, it will prevent a "high-high" radiation signal" implies that a high-high radiation signal will never occur, except upon loss of power. The need for the high-high radiation signal as a trigger to automatically isolate the MCR is, therefore, not needed, since the isolation already occurs upon loss of power. Subsequent high-high radioactivity would be inconsequential, as the MCR would have already been isolated from the TSC upon loss of power, with potential loss of TSC habitability. These habitability concerns should be resolved. This is identified as Open Item 13.3-1.b.

Open Item Number: 13.3-2

Original RAI(s): 472.003

Summary of Issue: Because of the unique design of the AP1000, the habitability system for the TSC is not the same as for the MCR. As such, the applicant states in DCD Tier 2 Section 18.8.3.5 that should habitability be challenged within the TSC, TSC personnel and functions are transferred to the EOF. This proposed arrangement is supported in DCD Tier 2 Section 13.3.1 with the COL information item proposing activation of the EOF when both onsite and offsite ac power is lost. In regard to TSC communications, DCD Tier 2 Section 1.8 states that communications systems and equipment outside the annex building (which includes the TSC) are site-specific elements and are outside the scope of the AP1000 standard plant, and that the DCD is based upon the COL applicant providing adequate external communications. The staff disagrees with this approach, in that the physical location of the EOF is not addressed, as it relates to the EOF

serving as an alternate TSC; and explaining the distinction between transferring the TSC plant management function to the EOF upon loss of TSC habitability, rather than to the MCR (per section 2.6 of NUREG-0696). Further, as addressed above, the condition of loss of both offsite power and onsite ac power to initiate EOF activation does not account for the second triggering event, in which high-high particulate or iodine radioactivity in the MCR air supply would also isolate the MCR from the TSC.

In the applicant's additional response to RAI 472.003, the use of the EOF as an alternate TSC is justified by the capabilities of the EOF, as well as when it is activated. In addition, the applicant states that the EOF design, including location, emergency planning and communications is the COL applicant's responsibility. TSC design requirements cannot be ignored based on unknown compensatory measures. If the EOF is the alternate TSC, its location will need to be evaluated against the following guidance criteria from Section 2.2 of NUREG-0696.

> The onsite TSC is to provide facilities near the control room for detailed analyses of plant conditions during abnormal conditions or emergencies by trained and competent technical staff. During recent events at nuclear power plants, telephone communications between the facilities were ineffective in providing all of the necessary management interaction and technical information exchange. This demonstrates the need for face-to-face communications between TSC and control room personnel. To accomplish this, the TSC shall be as close as possible to the control room, preferably located within the same building. The walking time from the TSC to the control room shall not exceed 2 minutes. This close location will facilitate face-to-face interaction between control room personnel and the senior plant manager working in the TSC. This proximity also will provide access to information in the control room that is not available in the TSC data system.

The above discussion pertain to the TSC habitability and utilization of the EOF as an alternate TSC should be resolved. This is Open Item 13.3-2.

Open Item Number: 13.6-1

Original RAI(s): n/a

Summary of Issue: The applicant states the following in DCD Tier 2 Section 13.6.1:

> Objectives and functional requirements of the AP1000 physical protection system and description of security features are provided in the AP600 Security Design Report, submitted under separate cover in accordance with 10 CFR 2.790(d), Rules of Practice. The use of this AP600 report is justified because the

> AP1000 plant footprint and access controls is similar to that for AP600. The additional height of the AP1000 containment and shield building and the additional length of its turbine building does not require change from the information provided in the report for AP600. The report also includes the security boundary drawings and the listing of the vital equipment and components. A vulnerability analysis, which demonstrates that the AP600 certified security design is adequate to protect the AP600 from radiological sabotage, is also submitted under separate cover. This vulnerability report for AP600 is applicable to AP1000.
>
> As demonstrated by the AP600 Security Design Vulnerability Analysis Report, reducing the protected area and eliminating the isolation zones results in a reduced requirement for security staffing for AP1000 when compared to current plants. Personnel screening, selection, performance evaluations, and training aspects of the physical security program will be addressed by the Combined License Applicant.

DCD Tier 2 Section 13.6.1, was changed in Revision 5 of the DCD to state, in part, the following:

> Subsequent to the issuance of AP600 Design Certification, and as a result of the events of September 11, 2001, the NRC issued orders to power reactor licensees titled “Interim Compensatory Measures for High Threat Environment” (Reference 4) . On April 29, 2003, the NRC also issued a revised “Design Basis Threat for Radiological Sabotage for Operating Reactors” (Reference 5). An assessment of the impact of References 4 and 5 is provided in the AP1000 Security Assessment (Reference 6) that has been submitted under separate cover in accordance with 10 CFR 2.790(d), Rules of Practice. The AP1000 Security Assessment describes how References 4 and 5 are addressed in the AP1000 design, and identifies the applicable requirements in References 4 and 5 that are addressed by the Combined License applicant for an AP1000.
>
> The use of the AP600 security reports (References 2 and 3) as a foundation for the AP1000 approach to the security design is acceptable because the AP1000 plant footprint and access controls are similar to that for AP600. The design changes incorporated in the AP600, such as the additional height of the AP1000 containment and shield building and the additional length of the turbine building does not affect the approach to security design that is described in these references.

The applicant has only recently been authorized, by the Commission, access to the Interim Compensatory Measures for High Threat Environment (power reactor ICMs) and the revised “Design Basis Threat

for Radiological Sabotage for Operating Reactors" (DBT). On May 9, 2003, the NRC met with the applicant to discuss the AP1000 security plan as proposed and in consideration of the power reactor ICMs and the revised DBT. Subsequent to the meeting, the applicant provided the staff with Revision 5 to DCD Tier 2 Section 13.6. In this revision, the applicant defers the development of the security plan to the COL applicant. The information contained in the Security Design Report and Security Design Vulnerability Analysis Report are now considered to be a foundation for the AP1000 approach to the security design.

The staff has not had sufficient time to review the applicants change to the security plan. The staff will address the AP1000 security plan, including the COL action items and any additional ITAAC, in the final safety evaluation report. This is Open Item 13.6-1.

AP 1000

cc:

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