



52-003

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 26, 1996

Mr. Nicholas J. Liparulo
Nuclear Safety and Regulatory Activities
Westinghouse Electric Corporation
P.O. Box 355
Pittsburgh, Pennsylvania 15230

SUBJECT: INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (ITAAC) FOR
THE AP600

Dear Mr. Liparulo:

The Nuclear Regulatory Commission staff is currently in the process of reviewing the ITAAC for the AP600 design that was submitted by a November 7, 1996, Westinghouse letter. A meeting was held on November 13, 1996, with Westinghouse to discuss this submittal.

Based on that meeting and on the staff's preliminary review of the submitted ITAAC, there are three major areas Westinghouse needs to focus on. First, the staff has identified areas in which the ITAAC do not appear to meet the regulations. 10 CFR 52.97 states that ITAAC "... are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations." There is no ITAAC for the primary sampling system and this system is required by regulations as discussed in the enclosure. Another example is deferring ITAAC to combined license applicants which does not appear to meet 10 CFR 52.47. In a second area, Westinghouse's approach to Human Factors ITAAC provides less detail than what the staff determined to be the minimum acceptable for the evolutionary designs.

Finally, the approach used by Westinghouse to develop the ITAAC departs significantly from that used for the evolutionary designs. This is particularly important because it does not allow the staff to use the experience gained in the formulation and review of the ITAAC for the evolutionary plants and consequently may significantly extend our review schedule and consume additional staff resources.

Therefore, we request that Westinghouse revise and supplement the ITAAC to ensure it meets the regulations and strongly recommend that Westinghouse reconsider their approach to ITAAC to minimize schedule and staff resource impacts.

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Mr. Nicholas J. Liparulo

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November 26, 1996

If you have any questions regarding this matter, you can contact Joe Sebrosky at (301) 415-1132.

Sincerely,

original signed by: David B. Matthews

Thomas T. Martin, Director
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Docket No. 52-003

Enclosure: As stated

cc w/enclosure:
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*MR WILSON BELIEVES
THIS LETTER TONE
IS NOT STRONG
ENOUGH -- THAT IT WILL
BE INTERPRETED BY W
AS MR BACHING AWAY
FROM PREVIOUS POSITIONS*

Mr. Nicholas J. Liparulo
Westinghouse Electric Corporation

Docket No. 52-003
AP600

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AP600 Inspections, Tests, Analyses, and Acceptance Criteria

The staff finds the ITAAC submittal does not appear to meet the regulations in the following areas:

- 1) In a June 27, 1996 letter from the NRC to Westinghouse the staff stated in part that "Westinghouse must provide ITAAC that address all structures and systems within the scope of the AP600 design, as required by 10 CFR 52.97. The level of detail for the Tier 1 information and ITAAC should be proportional to its safety significance." Whereas, in the November 7, 1996 submittal from Westinghouse ITAAC were provided for only 29 of the 98 AP600 systems. The screening criteria that Westinghouse applied to determine the 29 systems were: equipment that performs a safety function, equipment that performs a defense in depth function, non safety related equipment that performs a function for which credit is taken in the design basis safety analysis, and equipment needed for in-vessel retention or hydrogen mitigation after postulated severe accidents.

This approach does not appear to meet the regulations because there are systems that are required by NRC regulations that would not be identified by the Westinghouse approach. This is contrary to the requirement in 10 CFR part 52.97(b)(1) that ITAAC are identified that "...provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations."

A specific example is the primary sampling system that is identified in chapter 9.3.3.1.2.2 of the AP600 standard safety analysis report (SSAR) as the system needed to comply with the requirements of 10 50.34(f)(2)(viii), (xxvi), and (xxvii). However, this system is identified as not needing to have an ITAAC in table 14.3-1 of the AP600 SSAR.

- 2) In the meeting on November 13, 1996 on AP600 ITAAC, Westinghouse representatives stated that some ITAAC were deferred to an applicant for a combined operating license (COL) that referenced the AP600 design. Use of COL action items in lieu of ITAAC may not meet the requirement of 52.47(b). The ITAAC for the complete scope of the AP600 design must be completed for design certification.

The following staff positions are also provided:

- 1) In a teleconference on October 3, 1996 Westinghouse proposed a different approach to the Human Factors ITAAC than was used for the evolutionary plants' ITAAC. Prior to the teleconference the staff expected ITAAC from Westinghouse that addressed NUREG-0711 elements that the staff has not evaluated at a complete (product) level. These elements are as follows: Task Analysis (Element 4); Human Reliability Analysis (Element 6); Human System Interface Design (Element 7); Human Factors Verification and Validation (Element 10). In addition, the staff expected ITAAC on Minimum Inventory of Controls, Displays, and Alarms, Main Control Room (MCR), and Remote Shutdown Room (RSR) configurations.

Enclosure

Westinghouse proposed in the teleconference, and in the subsequent submittal, ITAAC for Minimum Inventory of Controls, Displays, and Alarms, MCR, RSR and Emergency Response Facilities. Westinghouse indicated that only these items should be Tier 1; the NUREG-0711 elements that are identified above Westinghouse maintains are "too subjective" to warrant ITAAC and are being proposed as COL action items rather than ITAAC. During the teleconference the staff informed Westinghouse that this approach was unacceptable. In addition, the staff still finds Westinghouse's approach to addressing ITAAC for Human Factors Engineering unacceptable because it:

- a. relegates to Tier 2 several elements of the AP600 Human Factors Engineering (HFE) Program that are important for the staff to make a safety determination on the overall HFE Program (in lieu of a complete design) and eliminates these elements from being certified by the design certification rule;
 - b. allows the COL to make changes to important elements of the HFE Program without prior NRC approval;
 - c. is inconsistent with the intent of NUREG-0711 and 10 CFR Part 52 i.e., "COL action items deal with programmatic or site-specific issues that are out of the scope of the standard design review" (Draft SRP Chapter 14, Rev.0, April, 1996). The NUREG-0711 elements that Westinghouse has identified as CCL action items are within the "scope of the standard design review" and are, as such, Tier 1; and
 - d. is inconsistent with the approach used in the ABWR and System 80+ and the guidance provided in the draft SRP 14.3.
- 2) In the meeting on November 13, 1996 on AP600 ITAAC, Westinghouse representatives stated that certain features of the AP600 design were not verified because Westinghouse believed that the acceptance criteria would be subjective. While objective acceptance criteria is a worthwhile goal, it is not a requirement. The significant design features must be verified regardless of the subjectivity of the acceptance criteria.
 - 3) Providing ITAAC for only 29 of 98 systems may not allow the staff to reach the conclusion required by 10CFR 52.97(b)(1) for the "facility". The "facility" consists of all structures and systems in the AP600 scope.

The staff finds the IIAAC submittal deficient in the following area:

There is no information in the submittal that cross references the important design information and parameters of the standard safety analysis report to their treatment in Tier 1. As stated in the draft SRP "...[t]he staff is particularly interested in ensuring that the assumptions and insights from key safety and integrated plant safety analyses in Tier 2, where plant performance is dependent on contributions from multiple systems of the design, are adequately considered in Tier 1. Addressing these assumptions and insights in Tier 1 ensures that the integrity of the fundamental analyses for the design are preserved in an as-built facility referencing the certified design. These analyses include flooding analyses, overpressure protection, containment analyses, core cooling analyses, fire protection, transient analyses, anticipated transient without scram analyses, steam generator tube rupture analyses (PWRs only), radiological analyses, USIs/GSIs and TMI items, or other key analyses as specified by the staff. Therefore, applicants should provide information, in tabular form, in Section 14.3 that cross references the important design information and parameters of these analyses to their treatment in Tier 1."