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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002596

August 24, 2009

Subject: AP1000 Response to Request for Additional Information (SRP 3)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 15. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in this response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Enclosure 1 provides the response for the following RAI(s):

RAI-SRP-3.8.3-SEB1-08

Questions or requests for additional information related to the content and preparation of this response 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,

Robert Sisk, Manager
Licensing and Customer Interface
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/Enclosure

1. Response to Request for Additional Information on SRP Section 3

D063
NRO

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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 3

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP-3.8.3-SEB1-08
Revision: 0

Question:

The NRC staff has reviewed the frame work for the structural modules as it relates to Section 3.8 of the DCD. Particularly, in Subsection 3.8.3.6, "Materials, Quality Control, and Special Construction Techniques," the applicant listed documents applicable to the design, materials, fabrication, construction, and inspection or testing of seismic Category 1 structures, including structural modules.

1A. To ensure that the applicable requirements of GDC 2 have been adequately address, the staff requests that Westinghouse develop ITAAC to verify that the structural modular construction techniques for the steel concrete walls adequately address the as-built configuration of the structural modules.

1B. In addition, Westinghouse should provide a summary of the information in the supplement to the DCD that describes the structural modular construction techniques. This summary should include descriptions of special requirements placed on the fabrication, shipping, handling, and installation of the SC modules, which are necessary to avoid overstressing, excessive distortion, and/or any other degradation mechanism of the steel faceplates during these operations.

These explanations should be detailed enough to allow staff evaluation of the SC modules. As an example, in describing transportation issues, the discussion should address things such as maximum size and weight of the modules, how the modules are packaged and secured during transportation (i.e., rail car, truck bed). This information should address how the modules are supported to minimize vibrations and impact loading; how they are protected from the elements during transportation and storage; and how loading and unloading is to be accomplished to avoid overstressing the steel plate assemblies. Similar types of information should be provided for the other steps in the construction process.

Westinghouse Response:

1A. GDC 2 requires that "Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without the loss of the capability to perform their safety functions." DCD Section 3.8 describes the design and design requirements for seismic Category I structures. DCD Section 3.7 describes the analysis methods used to analyze these structures. The information in Tier 2 of the DCD particularly Section 3.7 and 3.8 provide sufficient information to demonstrate that the safety related structures, including those constructed using structural modules, are designed to withstand the effects of natural phenomena.

ITAAC are included in Tier 1 of the DCD to assure that the as-built plant is constructed to satisfy the requirements and commitments of the certified design. ITAAC are not provided to verify that the design information in the DCD is acceptable and complete. The requirement in 10 CFR 52.47(b)(1) for ITAAC states that

> "The proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations;"

The certified design includes ITAAC in Section 3.3 of Tier 1 that verify that important structures, including structures constructed using structural modules, have been constructed in conformance with the design certification. The design commitment for Item 2. a) in Table 3.3-6 states

> "2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions."

One of the entries for Inspection, Tests, and Analyses for this design commitment is as follows:

> "i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads."

The ITAAC represented by Items 2. a) of Table 3.3-6 was certified as part of the certified design. The Design Commitment and Inspections, Tests, Analyses entries are not changed from the Revision15 of the DCD. The Acceptance Criteria has not been changed except for an administrative change splitting the Acceptance Criteria into four entries based on structure location to facilitate ITAAC closure and review. The ITAAC represented by Item 2. a) of Table 3.3-6 is sufficient to demonstrate that the important structures, including structures constructed using structural modules, are constructed in conformity with the design certification. The design and construction of structural modules has not changed from the certified design such that it would warrant a new ITAAC.

The request that Westinghouse verify that the structural modular construction techniques with a new ITAAC is not an appropriate application of ITAAC. Verification and monitoring of construction techniques would require review of procedures and other quality assurance activities. This would constitute an ITAAC on the program. Programmatic ITAACs are not

included in Tier 1 of the AP1000 DCD. ITAAC are written to be completed based on measurable attributes of as-built structures systems and components.

1B. Information on quality control, fabrication, erection, construction, nondestructive examination, and construction inspection are provided in DCD Subsections 3.8.3.6 and 3.8.3.8. In Section 3.8.3.6 of the FSER for the AP1000 (NUREG-1793) the NRC staff evaluated construction techniques for structural modules. This evaluation found these techniques are consistent with SRP Section 3.8.3.II.6 and acceptable. The design of the structural modules and the construction methods for structural modules has not been revised in support of the Design Certification amendment such that the information in the DCD Subsections 3.8.3.6 and 3.8.3.8 on construction of modules is required to be changed. Since the design and construction of the structural modules has previously been evaluated as part of the Design Certification there is no need to provide additional information for a new staff evaluation of the SC modules for the Design Certification amendment.

The information in the DCD on the construction of structural modules provides an appropriate level of detail for a description in the DCD. Including details on the procedures and restrictions for fabrication, shipping, handling, and installation details on transportation is an excessive level of detail for inclusion in the DCD. The detailed requirements for quality assurance, fabrication, handling, and shipping for structural modules are included in AP1000 design documents. These documents can be made available for audit to demonstrate that the design and fabrication requirements outlined in the DCD are being implemented appropriately.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None