BellefonteRAIsPEm Resource

From: Manny Comar
Sent: Monday, December 08, 2008 4:52 PM
To: BellefonteRAIsPEm Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 139 RELATED TO SRP SECTION 14.02. FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
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Sent Date: 12/8/2008 4:51:37 PM
Received Date: 12/8/2008 4:52:05 PM
From: Manny Comar

Created By: Manny.Comar@nrc.gov

Recipients:
"BellefonteRAIsPEm Resource" <BellefonteRAIsPEm.Resource@nrc.gov>
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December 8, 2008

Ms. Andrea L. Sterdis
Manager, Nuclear Licensing & Industry Affairs
Nuclear Generation Development & Construction
Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 139 RELATED TO SRP SECTION 14.02. FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION

Dear Ms. Sterdis:

By letter dated October 30, 2007, as supplemented by letters dated November 2, 2007, January 8, 2008 and January 14, 2008, Tennessee Valley Authority (TVA) submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advance passive pressurized water reactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 45 days of the date of this letter. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, you may contact me at 301-415-3863 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

Manny Comar, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me at 301-415-3863 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

Manny Comar, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015
eRAI Tracking No. 1681

Enclosure:
Request for Additional Information

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NRO-002

OFFICE	CQVP/BC	NWE1/PM	OGC	NWE1/L-PM
NAME	JPeralta*	MComar*	AHodgdon*	JSebrosky*
DATE	11/20/08	11/20/08	11/25/08	12/03/08

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information No. 1681

12/8/2008

Bellefonte Units 3 and 4
TVA
Docket No. 52-014 and 52-015
SRP Section: 14.02 - Initial Plant Test Program - Design Certification and New License Applicants
Application Section: 14.2, 14.4

QUESTIONS for Quality and Vendor Branch 1 (AP1000/EPR Projects) (CQVP)

14.02-12

As stated in Section 14.4 of the Westinghouse's AP1000 Design Certification Document (DCD), combined license (COL) Information Item 14.4-3 requires applicants referencing the Westinghouse AP1000 DCD to provide administrative controls for the conduct of the initial test program in the form of a Startup Administrative Manual (SAM). It specifically states: "The Combined License applicant is responsible for a startup administration manual (procedure) which contains the administration procedures and requirements that govern the activities associated with the plant initial test program, as identified in Section 14.2.3."

In order to address COL Information Item 14.4-3, "Conduct of Test Program," the Bellefonte COL FSAR should provide a description of the administrative requirements that will be implemented during the conduct of the initial test program. This description should include, at a minimum, the following activities:

- Organizational and staffing responsibilities,
- Test specifications and test procedure development, issuance, review, approval, distribution, control, and modifications,
- Conduct of the initial test program,
- Review, evaluation, and approval of test results,
- Initial test program planning and scheduling,
- Initial fuel loading and initial criticality,
- Initial test program objectives,
- Conformance with Regulatory Guides (RGs),
- Utilization of reactor operating and testing experiences in test program development, and
- Trial use of plant operating and emergency procedures.

This approach would subsume COL Information Item 14.4.1, "Organization and Staffing," COL 14.4-2, "Test Specifications and Test Procedures," and COL Information Item 14.4.4, "Review and Evaluation of Test Results," into COL 14.4-3. Specific details related to these activities are described below.

Organization and Staffing (related to COL 14.4-1)

RG 1.206 and Section 14.2 of the SRP state, in part, that the applicant should provide organizational descriptions of the principal management positions responsible for planning, executing, and documenting preoperational and startup testing activities. Additionally, the applicant should provide organizational descriptions of any augmenting organizations or other personnel who will manage or execute any phase of the test program, and the responsibilities, interfaces, and authorities of the principal participants.

Consistent with the above guidance, the Bellefonte COL FSAR should provide a detailed description of the organization(s) that manages, supervises, or executes any phase of the test program. This description should address:

- The structure (organizational chart) of the test organization.

- The responsibilities and authorities of the organizations in charge of the overall administration, technical direction, coordination, and implementation of the major phases of the initial test program (i.e., preoperational testing, initial fuel loading and pre-critical tests, initial criticality, low-power testing, and power ascension testing). Provisions should include considerations of staffing effects that could result from overlapping initial test programs at multi-unit sites.

- The identification of the principal participants, interfaces, and the degree of participation of each organizational unit. This includes, but is not limited to:

    - Construction Testing Group
    - Preoperational Testing Group
    - Initial Startup Testing Group
    - Joint Test Working Groups
    - Major Participating Organizations
    - Design Engineering
    - Constructors
    - Nuclear Steam Supply System (NSSS)
    - Equipment/Component Suppliers
    - Plant Owner's Operations Review Committee
    - Licensee's Operations Group
    - Licensee's Maintenance Group
    - Licensee's Corrective Action Organization
    - Licensee's Health Physics/Chemistry Group
    - Licensee's Quality Assurance Group
    - Construction BOP Engineering
    - Construction Services Group
    - Construction Services Procurement Group
    - Construction Services Quality Group
    - Construction Services Training Group
    - Preoperational and Startup Test Teams (including Startup Managers/Plant Managers/Startup Engineers, as applicable)

- The participation of the plant's operating and technical staff in each major test phase. This description should include information pertaining to:

    - The education, training, experience, and qualification requirements of supervisory personnel, test personnel, and other major participating organizations that are responsible for managing, developing, or conducting each test phase, or will be responsible for the development of testing, operating, and emergency procedures.

    - The establishment of a training program for each organizational unit, with regard to the scheduled preoperational and initial startup testing. This training program should provide meaningful technical information beyond that obtained in the normal startup test program

and provide supplemental operator training. This program should also satisfy the criteria described in TMI Action Plan Item I.G.1 of NUREG-0660 and NUREG-0737.

o The implementation of measures to ensure that personnel formulating and conducting test activities are not the same personnel who designed or are responsible for satisfactory performance of the system(s) or design features(s) being tested. This provision does not preclude members of the design organization from participating in test activities. This description should also include considerations of staffing effects that could result from overlapping initial test programs at multi-unit sites.

This description should include sufficient information for the NRC staff to make a determination and reasonable conclusion about the applicant's organizations responsible for the overall administration and technical direction of the initial test program.

Test Specifications and Test Procedures (related to COL 14.4-2)

RG 1.206 and Section 14.2 state, in part, that the COL applicant should provide a description of the methodology used for the generation, review, and approval of preoperational and startup test procedures, including the organizational units or personnel that are involved in performing these activities and their respective responsibilities. The COL applicant should have controls in place to ensure that test procedures include appropriate prerequisites, objectives, safety precautions, initial test conditions, methods to direct and control test performance, and acceptance criteria by which the test will be evaluated. The applicant should also utilize system designers to provide the objectives and acceptance criteria used in developing detailed test procedures. Additionally, provisions should be in place to assure that personnel with appropriate technical backgrounds and experience develop and review test procedures. Persons filling designated management positions within the applicant's organization should perform final procedure review and approval. The COL applicant should also describe the format of individual test procedures and should include a discussion to demonstrate that the individual test procedure format is similar to, or consistent with, that contained in RG 1.68; alternatively, the COL applicant should provide justifications for any exceptions. Finally, this description should include provisions to ensure the availability of approved test procedures for review by NRC inspectors at least 60 days before their intended use, and provide timely notification to NRC of changes in approved test procedures that have been made available for NRC review.

Consistent with the guidance provided above, the Bellefonte COL FSAR should provide a detailed description of the process used to develop, review, and approve individual test specifications and test procedures. This description should include the following:

- Controls to ensure that test procedures include appropriate prerequisites, objectives, safety precautions, initial test conditions, methods to direct and control test performance, and acceptance criteria by which the test will be evaluated.

- Controls for the format of individual test procedures to ensure consistency with the guidance contained in RG 1.68; alternatively, provide justifications for any exceptions.

- Controls to ensure participation of the principal design organizations in establishing test objectives, test acceptance criteria, and related performance requirements during the development of detailed test procedures. Each test procedure should include acceptance criteria that account for the uncertainties used in transient and accident analyses. The participating system designers should include the nuclear steam supply system vendor, architect-engineer, and other major contractors, subcontractors, and vendors, as applicable.

- Controls to ensure that personnel with appropriate technical backgrounds and experience develop and review test procedures. Persons filling designated management positions within the applicant's organization should perform final procedure review and approval.

- Controls to ensure that approved test procedures for satisfying FSAR testing commitments are made available to the NRC inspectors approximately 60 days prior to their intended use. COL holder item 14.4-4 in the Bellefonte COL FSAR covers this aspect.

Conduct of test program (related to COL 14.4-3)

RG 1.206 and Section 14.2 of the SRP state, in part, that the applicant should describe the administrative controls that govern the conduct of each major phase of the test program. This description should include the administrative controls used to ensure that necessary prerequisites are satisfied for each major phase and for individual tests. The applicant should also describe the methods to be followed in initiating plant modifications or maintenance tasks that are determined to be necessary to conduct the test program. This description should include the methods used to ensure retesting following such modifications or maintenance. In addition, the description should discuss the involvement of design organizations and the applicant in reviewing and approving proposed plant modifications. For preoperational testing, the description should also include methods and identify provisions to ensure that retesting for modifications or maintenance remains in compliance with ITAAC commitments. Finally, the applicant should describe the administrative controls pertaining to adherence to approved test procedures during the conduct of the test program as well as the methods for effecting changes to approved test procedures.

Consistent with the guidance described above, the applicant should provide a general description of the administrative controls to be implemented during the conduct of the initial test program. This description should address the following activities:

· Controls to ensure that test prerequisites (such as completion of construction, construction or preliminary tests, and inspections) are satisfied for each major phase of the initial test program and individual systems and components, to ensure an orderly turnover of plant systems and components from construction forces or other preliminary checkout groups to the preoperational/startup testing groups.

· Controls for the establishment of hold points at selected milestones throughout the power ascension test phase, as appropriate.

· Controls to ensure adherence to approved test procedures during the conduct of the test program, and the methods for effecting changes to approved test procedures.

· Controls for plant modifications and repairs identified as a result of plant testing, including consideration of retesting following such modifications or repairs, and review of any proposed facility modifications by the original design organization or other designated design organizations, as appropriate. The applicant's documentation associated with such controls should be auditable to allow the NRC to verify proper implementation of those controls.

· Controls to document, process, review, and disposition test deficiencies, nonconformances, and exceptions identified during the execution of the initial test program, including identification, implementation, and report of corrective actions to appropriate levels of management.

- Controls to ensure the use of available information regarding operating experience, including reportable occurrences from other operating power reactors, to help minimize recurrence of significant problems that can be avoided by more complete testing.

- Controls to ensure that adequate test instrumentation is available and used and that testing is performed under suitable environmental conditions.

Review, evaluation, and approval of test results (related to COL 14.4-4)

RG 1.206 and Section 14.2 of the SRP state, in part, that the applicant should describe the specific controls to be established for the review, evaluation, and approval of test results for each major phase of the program by appropriate personnel and/or organizations. This description should include specific controls to be established to ensure notification of responsible organizations or personnel when test acceptance criteria are not met, as well as the controls established to resolve such matters. Additionally, the applicant should provide a description of the controls for approval of test data that will be applied for each major test phase before the licensee proceeds to the next test phase, and the controls that will ensure the approval of test data by qualified personnel at each power test plateau (e.g., during the power-ascension testing phase) before increasing the power level.

Consistent with the above guidance, the applicant should provide a description of the administrative controls to be implemented for the review, evaluation, and approval of test results. This description should address the following activities:

- Controls relating to the methodology for the approval of test data for each major phase (e.g., preoperational and initial startup testing), and the methods used for the review of individual parts of multiple tests (e.g., hot functional testing).

- Controls to ensure the notification and participation of responsible organizations in the resolution of design-related problems that result in, or contribute to, a failure to meet test acceptance criteria.

- Controls to ensure a technical evaluation of test results by qualified personnel and approval of such results by personnel in designated management positions in the applicant's organization.

- Controls to ensure retention of test reports, including test procedures and results, as part of the plant historical records. Startup test reports should be prepared in accordance with RG 1.16, or the applicant should provide adequate justification for its proposed alternative.

Initial test program schedule (related to COL 14.4-3)

RG 1.206 and Section 14.2 of the SRP state, in part, that the applicant should develop a schedule for conducting each phase of the initial test program. Provisions should be in place to ensure that overlapping test program schedules (for multi-unit sites) do not result in significant divisions of responsibilities or dilutions of the staff implementing the test program. The sequential schedule for individual startup tests should establish that testing will be completed in accordance with plant technical specification requirements for SSC operability before changing plant modes. Additionally, the schedule should establish that the safety of the plant will not depend on the performance of untested SSCs. RG 1.68, Revision 3, provides guidance regarding the general scope that the NRC staff considers acceptable for initial test programs. Specifically, the RG states, in part, that applicants should develop realistic schedules for preparing detailed testing, plant operating, and emergency procedures. Schedules should be established for conducting the major phases of the test program relative to the expected fuel loading date. Additionally, the RG states that sufficient time should be scheduled to

perform orderly and comprehensive testing. Previous applicants' schedules for conducting the preoperational and initial startup phases have typically allowed a minimum time of approximately 9 months and 3 months, respectively. Significantly shorter time periods should be justified.

Consistent with the above guidance, the applicant should provide a description of the methodology that will be used to develop a schedule, relative to the fuel loading date, for conducting each major phase of the test program, and for the development of test procedures. This description should consider the following:

- Test Procedure Development Schedule:

  - Controls to ensure the establishment of a schedule for the development of detailed testing, plant operating, and emergency procedures. These procedures should, to the extent practical, be trial-tested and corrected during the initial test program prior to fuel loading in order to establish their adequacy.

  - Controls to ensure that approved test procedures be in a form suitable for review by NRC inspectors at least 60 days prior to their intended use or at least 60 days prior to fuel loading for fuel loading and startup test procedures.

  - Controls to ensure that the COL holder provides timely notification to the NRC of changes in approved test procedures that have been made available for NRC review.

- Initial Test Program Schedule:

  - Controls to ensure the establishment of a schedule to conduct the major phases of the initial test program, relative to the expected fuel loading date. This is covered in License Conditions in Part 10 of the Bellefonte COL FSAR.

  - Controls to allow at least 9 months for conducting preoperational testing.

  - Controls to allow at least 3 months for conducting startup testing, including fuel loading, low-power tests, and power-ascension tests.

  - Controls to ensure that overlapping test program schedules (for multi-unit sites) do not result in significant divisions of responsibilities or dilutions of the staff provided to implement the test program.

  - Controls to ensure that the sequential schedule for individual startup tests establish, insofar as is practicable, that testing is completed prior to exceeding 25 percent power for all plant Structure, Systems and Components (SSCs) that are relied upon to prevent, limit, or mitigate the consequences of postulated accidents. The schedule should establish that, insofar as is practicable, testing is accomplished as early in the test program as is feasible and that the safety of the plant will not be dependent on the performance of untested SSCs.

  - Controls to provide identification and cross-reference of each test (or portions thereof) required to be completed before initial fuel loading to satisfy the requirements for completing ITAAC in accordance with 10 CFR 52.99(a).

Other sections related to the initial test program

In Section 14.2 of the Bellefonte COL FSER, the applicant incorporated by reference subsections 14.2 1, “Summary of Test Program and Objectives,” 14.2.4, “Compliance of Test Program with Regulatory Guides,” 14.2.5, “Utilization of Reactor Operating and Testing Experience in the Development of Test Program,” 14.2.6, “Use of Plant Operating and Emergency Procedures,” and 14.2 7, “Initial Fuel Loading and Initial Criticality,” of the AP1000 DCD. These sections were reviewed and found acceptable by the NRC staff, as documented in NUREG-1793. However, the initial test program description that will be provided by the applicant should describe how the test program meets the objectives contained in these sections of the AP1000 DCD.