



Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

June 26, 2008

10 CFR 52.79

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

In the Matter of )  
Tennessee Valley Authority )

Docket No. 52-014 and 52-015

BELLEFONTE NUCLEAR PLANT (BLN) COMBINED LICENSE APPLICATION-  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) - INITIAL PLANT  
TEST PROGRAM

- References:
- 1) Letter from Brian C. Anderson, (NRC) to Andrea L. Sterdis (TVA), Request for Additional Information Letter No. 021 Related to SRP Section 14.02 for the Bellefonte Units 3 and 4 Combined License Application, dated May 15, 2008.
  - 2) Letter from Robert Sisk (Westinghouse) to the NRC, AP1000 Standard COL Technical Report Submittal of APP-GW-GLR-038, Rev. 2 (TR 71B), dated June 19, 2008

This letter provides the Tennessee Valley Authority's (TVA) response to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) items included in the reference letter.

A response to each NRC request in the subject letter is addressed in the enclosure which also identifies any associated changes that will be made in a future revision of the BLN application.

If you should have any questions, please contact Phillip Ray at 1101 market Street, LP5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7030, or via email at pmray@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 26<sup>th</sup> day of June, 2008.

Andrea L. Sterdis  
Manager, New Nuclear Licensing and Industry Affairs  
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Enclosure  
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DOSS  
NRC

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cc: (Enclosure)

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Enclosure  
TVA letter dated June 26, 2008  
RAI Responses

Responses to NRC Request for Additional Information Letter No. 021 dated May 13, 2008  
(11 pages including this list)

Subject: Initial Plant Test Program

<u>RAI Number</u>	<u>Date of TVA Response</u>
14.02-04	This letter – see following pages
14.02-05	This letter – see following pages
14.02-06	This letter – see following pages
14.02-07	This letter – see following pages
14.02-08	This letter – see following pages

Attachments / Enclosures

None

Pages Included

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**NRC Letter Dated: May 15, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 14.02-04**

Startup Administrative Manual (SAM)

In a letter sent to Westinghouse on February 28, 2008, the NRC staff requested additional information regarding Technical Report (TR) APP-GW-GLR-038, Revision 1, "AP1000 Conduct of Test Programs," (hereafter TR-71B), currently used by Westinghouse to address combined license (COL) information item 14.4.3, "Conduct of the Test Program." The NRC staff stated in this letter that COL information item 14.4.3 requires applicants referencing the Westinghouse's AP1000 Design Certification Document (DCD) to provide administrative controls for the conduct of the initial test program. It specifically states: "The Combined License application 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."

Consistent with COL information item 14.4.3, the NRC staff concluded that the Westinghouse AP1000 SAM should establish a minimum set of requirements for the implementation of the facility's initial test program. Further, the staff expects that each COL applicant will tailor its initial test program by using the Westinghouse AP1000 SAM as the basis to establish site-specific procedures or instructions for implementation. To address COL information item 14.4.3, and to provide an increased level of standardization in the design certification material that will be referenced by COL applicants, the NRC staff requested that Westinghouse provide complete, detailed information, in the form of an AP1000 SAM, describing the methodology that will be implemented by applicants referencing the AP1000 DCD in the following areas:

- (1) organizational and staffing responsibilities,
- (2) test procedure development, issuance, review, approval, distribution, control, and modifications,
- (3) conduct of the initial test program,
- (4) initial test program planning and scheduling,
- (5) review, evaluation, and approval of test results,
- (6) conformance with Regulatory Guides,
- (7) utilization of reactor operating and testing experiences in test program development, and
- (8) trial use of plant operating and emergency procedures.

This approach would subsume COL information item 14.4.1, "Organization and Staffing," and COL information item 14.4.4, "Review and Evaluation of Test Results," into the AP1000 SAM. The NRC staff also recognizes that, although Westinghouse can address the majority of these items on a generic basis, there are certain items that require site-specific or licensee-specific details. In those areas involving site-specific information, the COL applicant must provide this information in the site-specific SAM. On this basis, the NRC staff requests that TVA:

- Provide a description of the administrative controls that will be implemented during the conduct of the initial test program, consistent with Section 14.2 of the SRP, or
- Update Section 14.2 of the Bellefonte COL application to incorporate the information that will be provided by Westinghouse in the revised TR-71B as well as all relevant Bellefonte-specific details.

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**BLN RAI ID: 0362**

**BLN RESPONSE:**

The FSAR Section 14.4 incorporates by reference DCD Subsection 14.4.3 "Conduct of Test Program." DCD Subsection 14.4.3 incorporates Westinghouse APP-GW-GLR-038 (TR-71B) including the Site Administrative Manual (SAM). As stated earlier by Westinghouse response to the DCD Chapter 14 RAIs, TR-71B has been revised (Reference 2) and includes the latest Site Administrative Manual. As such, TR-71B and SAM are incorporated by reference into the DCD and no further changes to FSAR Section 14.2 would be needed.

The site specific details are currently provided in FSAR Section 14.2.

In addition, in order to update FSAR References, Subsection 14.2.11 will be revised as shown in the Application Revisions section below.

This response is expected to be STANDARD for the S-COLAs.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

COLA Part 2, FSAR, Subsection 14.2.11, "References" will be revised from:

201. Westinghouse Electric Company (WEC), "AP1000 Conduct of Test Program," Document Number APP-GW-GLR-038, Revision 1, May 2007.

To read:

201. Westinghouse Electric Company (WEC), "AP1000 Conduct of Test Program," Document Number APP-GW-GLR-038, Revision 2, June 2008.

**ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: May 15, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 14.02-05**

#### Organizational and Staffing Responsibilities

SRP Section 14.2, paragraph II.3.A, "Management Organizations," states that the COL applicant should provide organizational descriptions of the principal management positions responsible for the 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. Section 14.2.2.1 of the Bellefonte COL application contains information regarding the organizational structure of the Plant Test and Operations (PT&O), which will be the organization responsible for the initial test program. Subsections 14.2.2.1.1 through 14.2.2.1.5 describe the functions of the Manager in charge of the PT&O, the Functional Manager in charge of PT&O support, the PT&O Engineers, the Functional Manager in charge of Startup, and the Startup Engineers, respectively. Additionally, subsection 14.2.2.1.4 includes a reference to TR-71B, which is currently under review by the NRC staff.

In a letter sent to Westinghouse on February 28, 2008, the NRC staff requested additional information regarding the organizational structure described in Section 3.0 of Appendix A to TR-71B. Specifically, the NRC staff requested that Westinghouse provide a general description of the responsibilities, authorities, and interfaces of the organizations responsible for the overall administration and technical direction of the initial test program, in addition to the organizations described in Section 3.0 of Appendix A to TR-71B. The request stated that the description should include, but not be limited to:

- 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
- Westinghouse Site Engineering Group
- Westinghouse Engineering Leads
- Preoperational and Startup Test Teams (including Startup Managers/Plant Managers/Startup Engineers, as applicable)

The staff further requested that this description include considerations of staffing effects that could result from overlapping initial test programs at multi-unit sites. Consistent with Section 14.2 of the SRP, the NRC staff requests that TVA:

- Provide a description of the responsibilities, authorities, and interfaces of the organizations responsible for the overall administration and technical direction of the initial test program, in addition to the organizations described in Subsections 14.2.2.1.1 through 14.2.2.1.5 of the Bellefonte COL application, or

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- Update Section 14.2 of the Bellefonte COL application to incorporate the information to be provided by Westinghouse in the revised TR-71B, including site-specific organizational responsibilities, authorities, and interfaces applicable to Bellefonte Units 3 & 4.

**BLN RAI ID: 0363**

**BLN RESPONSE:**

As stated by Westinghouse in response to the DCD revision 16, Chapter 14 RAIs, the requested information has been included in the revised Technical Report 71B (Reference 2). TR-71B (APP-GW-GLR-038 Rev. 2) is referenced in DCD Chapter 14. TR-71B subsection 5.1.5.7 addresses staffing levels for each site to support the test schedule for one and two unit sites. The DCD is incorporated by reference in FSAR Section 14.4. As such, no further changes to the COL Application are needed.

This response is expected to be STANDARD for the S-COLAs.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: May 15, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 14.02-06**

**Staff Responsibilities, Authorities, and Qualifications**

SRP Section 14.2, paragraph II.3.D, "Staff Responsibilities, Authorities, and Qualifications," states that the COL applicant should describe the education, training, and experience requirements established for each management and operating staff member—including the NSSS vendor, architect-engineer, and other major contractors, subcontractors, and vendors, as appropriate—who will conduct preoperational and startup tests and will develop testing, operating, and emergency procedures. In addition, the SRP states that the applicant should develop a training program for each functional group of employees in the organization relative to the schedule for preoperational testing and initial startup testing to ensure that the necessary plant staff is ready to begin the test program. Subsection 14.2.2.2 of the Bellefonte COL application contains information regarding personnel training and qualification requirements. This subsection states that personnel in the PT&O organization are qualified and trained in accordance with the "AP1000 Startup Site Administrative Manual – Program Management Description," which is part of TR-71B and currently under review by the NRC staff.

In a letter sent to Westinghouse on February 28, 2008, the NRC staff requested additional information regarding the education, training, qualification, and experience requirements for organizations responsible for the conduct of preoperational and startup tests, and for organizations that will develop testing, operating, and emergency procedures. Consistent with Section 14.2 of the SRP, the NRC staff requests that TVA:

- Describe the education, training, qualification, and experience requirements for organizations responsible for the conduct of preoperational and startup tests, and for organizations that will develop testing, operating, and emergency procedures; include a general description regarding the development of a training program for each functional group of employees in the organization relative to the schedule for preoperational testing and initial startup testing to ensure that the necessary plant staff is ready to begin the test program; include provisions for the development of a training program that will serve as supplemental training to plant operators, consistent with Three Mile Island (TMI) Action Plan Item I.G.1 of NUREG-0660, NUREG-0694, and NUREG-0737, or
- Update Section 14.2 of the Bellefonte COL application to incorporate the information to be provided by Westinghouse in the revised TR-71B, including site-specific information applicable to Bellefonte Units 3 & 4.

**BLN RAI ID: 0364**

**BLN RESPONSE:**

As stated by Westinghouse in the response to DCD revision 16, Chapter 14 RAIs, the requested information has been included in the revised Technical Report 71B (Reference 2). TR-71B (APP-GW-GLR-038) is referenced in DCD Chapter 14. The DCD is incorporated by reference in FSAR Section 14.4. As such, no further changes to the COL Application are needed.

Relative to supplemental training program, as stated by Westinghouse response to RAIs, these details are addressed by Sections 13.2 and 18.8 of the AP1000 DCD and their associated Technical Reports.

This response is expected to be STANDARD for the S-COLAs.



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**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None

**ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: May 15, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 14.02-07**

Review of Test Results

SRP Section 14.2, paragraph II.3.F, "Review, Evaluation, and Approval of Test Results," states that

"i. the COL applicant should develop procedures to control the review, evaluation, and approval of test results for each phase of the test program. Specific procedures should be implemented to ensure notification of responsible organizations, such as design organizations, when test acceptance criteria are not met and specific controls have been established to resolve such problems;  
ii. Before proceeding with testing, the applicant should provide controls relating to (1) the methods and schedules for approval of test data for each major phase, and (2) the methods used for initial review of individual parts of multiple tests (e.g., hot functional testing);  
iii. The controls that will govern the review, evaluation, and approval of test results should provide 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;  
iv. The applicant should include provisions to allow design organizations to participate in the resolution of design-related problems that result in, or contribute to, a failure to meet test acceptance criteria;  
v. Provisions should be in place to retain test reports, including test procedures and results, as part of the plant historical records."

Related to item v. in the SRP section, startup test reports should be prepared in accordance with RG 1.16, or the applicant should provide adequate justification for any exception(s). Subsection 14.2.3.2 of the Bellefonte COL application contains information regarding the review of test results. This subsection incorporates by reference subsection 14.2.3.2 of the Westinghouse DCD and includes additional supplemental information. Consistent with Section 14.2 of the SRP, please clarify what provisions in the application ensure the involvement of design organizations in the resolution of design-related problems that result in, or contribute to, a failure to meet test acceptance criteria, and please revise Subsection 14.2.3.2 accordingly.

**BLN RAI ID: 0365**

**BLN RESPONSE:**

Related to item v., startup test reports will be prepared in accordance with Regulatory Guide 1.16 as stated in FSAR Subsection 14.2.3.

Related to involvement of design organizations in the resolution of design-related problems, FSAR Subsection 14.2.3.2 states "Test exceptions which do not meet acceptance criteria are identified to the affected and responsible design organizations and entered into the corrective action program. Implementation of corrective actions and retests are performed as required." The corrective action program ensures involvement of the design organization. In addition, as indicated by TR 71B (Reference 2), section 3.1.5, Licensees Engineering and Westinghouse Site Engineering groups are members of the Joint Test Working Group (JTWG). The JTWG responsibilities include review of test results.

This response is expected to be STANDARD for the S-COLAs.

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**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: May 15, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 14.02-08**

**Test Specifications and Test Procedures**

Standard Review Plan (SRP) Section 14.2, paragraph II.3.E, "Development, Review, and Approval of Test Procedures," states that the COL applicant should provide a description of the methodology used for the generation, review, and approval of preoperational and startup test procedures, and that 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.

In a letter sent to Westinghouse on August 26, 2007, the NRC staff rejected APP-GW-GLR-037, Revision 0, "AP1000 Test Specifications and Test Procedures," (TR-71A), used by Westinghouse to address combined license (COL) information item 14.4.2, "Test Specifications and Test Procedures." The NRC staff stated in this letter that COL information item 14.4.2 calls for the actual submittal of test specifications and test procedures by a COL holder to NRC onsite inspectors for review and approval before as-built systems and plant features are tested in the field. Further, the NRC staff stated in the letter that a COL applicant could propose to subsume COL information item 14.4-2 under the license condition that will be in place to authorize low-power and power ascension testing. Section 14.4 of the Bellefonte COL application incorporates by reference the requirements of Westinghouse's DCD subsection 14.2.3, "Test Specifications and Test Procedures." In addition, Part 10 of the Bellefonte COL application contains information regarding COL information item 14.4-2, and further refers to proposed License Condition #6. Consistent with Section 14.2 of the SRP, please explain what provisions in the application ensure the availability of approved test procedures for review by NRC inspectors at least 60 days before their intended use and ensure timely notification to NRC of changes in approved test procedures that have been made available for NRC review. If appropriate, please modify proposed License Condition #6 accordingly.

**BLN RAI ID: 0366**

**BLN RESPONSE:**

DCD Subsection 14.2.3 states "Copies of the test specifications and test procedures for the startup tests are provided to NRC inspection personnel not less than 60 days prior to the scheduled fuel loading date.

Copies of the test specifications and test procedures are available to NRC inspection personnel approximately 60 days prior to the scheduled performance of the following preoperational tests:

- Tests of systems/components that perform safety-related functions
- Tests of systems/components that are nonsafety-related but perform defense in-depth functions."

DCD Subsection 14.2.3 is incorporated by reference in FSAR Subsection 14.2.3. The incorporation by reference ensures the approved test procedures are provided to the NRC as specified. In addition, License Condition #6 will be expanded to include preoperational and startup test procedures in the operational programs schedule.

This response is expected to be STANDARD for the S-COLAs.

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**ASSOCIATED BLN COL APPLICATION REVISIONS:**

COLA Part 10, Proposed License Condition, item 6 will be revised to include an additional specific item such that it reads (the "x" will be replaced with appropriate next letter):

**6. OPERATIONAL PROGRAM READINESS:**

The NRC inspection of operational programs will be the subject of the following license condition in accordance with SECY-05-0197:

**PROPOSED LICENSE CONDITION:** The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

- x. This schedule shall include a submittal schedule for approved preoperational and startup test procedures in accordance with FSAR Section 14.2.3.

**ATTACHMENTS/ENCLOSURES:**

None