TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5N 157B Lookout Place

OCT 06 1987

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

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) - UNITS 1 AND 2 - REGION II INSPECTION REPORT NOS. 50-390/87-05 AND 50-391/87-05 - REVISED RESPONSE

Enclosed is our response to G. G. Zech's letter dated August 10, 1987 to S. A. White, which requested further information to complete NRC's staff review. Enclosed is our revised response to Violation Nos. 390, 391/87-05-01. Also as requested, the attachment to the revised violation response addresses the additional aspects of our American National Standards Institute (ANSI) program in the attachment.

If there are any questions, please telephone R. D. Schulz at (615) 365-8527.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley, Director
Nuclear Licensing and
Regulatory Affairs

Enclosure
cc: See page 2

IE61
1/1

U.S. Nuclear Regulatory Commission

OCT 06 1987

cc (Enclosure):
Mr. Gary G. Zech, Assistant Director
Regional Inspections
Office of Special Projects
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. J. A. Zwolinski, Assistant Director
for Projects
Office of Special Projects
U.S. Nuclear Regulatory Commission
4350 East-West Highway
EWW 322
Bethesda, Maryland 20814

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

U.S. Nuclear Regulatory Commission
Watts Bar Resident Inspector
P.O. Box 700
Spring City, Tennessee 37381

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5N 157B Lookout Place

OCT 06 1987

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

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) - UNITS 1 AND 2 - REGION II INSPECTION REPORT NOS. 50-390/87-05 AND 50-391/87-05 - REVISED RESPONSE

Enclosed is our response to G. G. Zech's letter dated August 10, 1987 to S. A. White, which requested further information to complete NRC's staff review. Enclosed is our revised response to Violation Nos. 390, 391/87-05-01. Also as requested, the attachment to the revised violation response addresses the additional aspects of our American National Standards Institute (ANSI) program in the attachment.

If there are any questions, please telephone R. D. Schulz at (615) 365-8527.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley, Director
Nuclear Licensing and
Regulatory Affairs

Enclosure
cc: See page 2

U.S. Nuclear Regulatory Commission

OCT 06 1987

cc (Enclosure):
Mr. Gary G. Zech, Assistant Director
Regional Inspections
Office of Special Projects
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. J. A. Zwolinski, Assistant Director
for Projects
Office of Special Projects
U.S. Nuclear Regulatory Commission
4350 East-West Highway
EWW 322
Bethesda, Maryland 20814

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

U.S. Nuclear Regulatory Commission
Watts Bar Resident Inspector
P.O. Box 700
Spring City, Tennessee 37381

ENCLOSURE

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2
REVISED RESPONSE TO NRC'S REGION II LETTERS
FROM G. G. ZECH TO S. A. WHITE DATED MAY 15, 1987 AND AUGUST 10, 1987
REPORT NOS. 50-390/87-05 AND 50-391/87-05

This revised report responds to the Violation 01, parts 1 and 2, described in enclosure 1 of NRC's Region II inspection report referenced above.

Violation 390, 391/87-05-01

10 CFR 50, Appendix B, Criterion III, as implemented by the Quality Assurance (QA) Topical Report, Rev. 8, Paragraph 17.1.3, "Design Control," requires that control measures for the selection of suitable materials, parts, equipment, and processes are provided through the licensee's design guides, standards, and specifications, and industry standards and specifications.

Table 17D-2 of the QA Topical Report endorses American National Standards Institute (ANSI) Standard N45.2.1-1973, which requires that the class of cleanness required for any given application be specified in design drawings or specifications as referenced in section 3.1 of the standard.

Contrary to the above, applicable regulatory requirements and design bases were not correctly translated into specifications, drawings, procedures, and instructions as follows:

1. Critical installation requirements, i.e., vendor requirements for the hydrogen analyzer sample lines, were not considered or included by specifications, drawings, procedures, or instructions.

From NRC's August 10, 1987 letter:

> The basis for the violation appears to be that inadequate design control existed when the drawing was issued which allowed design errors to exist on the drawing, subsequently resulting in hardware deficiencies. We request you address this concern regarding design controls relating to drawings and specifications.
>
> For Part 1, we requested you specifically address your plans to ensure that vendor recommendations are considered in the design of other safety-related, vendor supplied equipment. Your response admits to needed revisions, but is mute concerning interim measures. You have significant contract engineering resources reporting at this time; however, measures to ensure consideration of vendor recommendations are not evident. Please provide additional information. Also, please describe your interim programs which will ensure that any planned walkdown inspection and/or contract engineering efforts are adequately controlled regarding vendor requirements.

2. Classes of cleanness were not prescribed in specifications or drawings for equipment in an "in-place" storage status.

From NRC's August 10, 1987 letter:

> The onsite governing document specified in your Preventive Maintenance Program is WBN-QCP-1.52, "Preventive Maintenance." As discussed in Inspection Report 87-03 (Unresolved Item 87-03-02), procedure QCP 1.52 does not specify cleanness classes as required by American National Standard (ANSI) N45.2.1. Additionally, our inspectors reviewed numerous Preventive Maintenance Assignment Sheets for components (other than the reactor pressure vessel) and found cleanness classes were not specified. Therefore, except for G-39, which is a design output document, your staff could not produce an onsite specification or drawing that specifies the cleanness classes required by ANSI N45.2.1. We request you respond to this violation in the context discussed above.

This is a Severity Level IV Violation (Supplement II) and applies to units 1 and 2.

Violation 390, 391/87-05-01, Part 1 - Inadequate Design Control/Vendor Information

1. Admission or Denial of Alleged Violation

   TVA admits the violation. The corrective action for the cited example of hydrogen analyzer design is as described in our June 18, 1987 letter.

2. Reason for Violation

   Inadequate review and implementation of vendor information into design documents.

3. Corrective Action Taken and Results Achieved

   Condition adverse to quality report (CAQR) WBP 870701 was written to address control of vendor information for safety-related components. The corrective action plan for previous work and permanent recurrence control include the following activities:

   - Identification of vendor documents which transmit safety-related engineering requirements.
   - Identification of safety-related design output documents which reference vendor documents.
   - Identification of safety-related design basis level documents which reference vendor documents.
   - Review of referenced vendor documents to ensure that reference is appropriate.
   - Review of vendor documents to identify safety-related requirements and to ensure that these requirements appear in design input/output. A matrix will be produced cross referencing the vendor document to the appropriate input/output document.

- Verification that design output documents are properly reflected in plant configuration and that construction, plant maintenance, and operations have satisfied these vendor requirements. Evaluation of and correction for any potential adverse impacts of previous activities.

- Establish which, if any, additional vendor manuals/documents (based on the respective system's importance to safety) are needed to support construction, maintenance, and operation. Baseline and control of these documents to support plant activities.

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

As an interim measure the present design change process, defined by WBEP 43.02, "Engineering Change Notices," will be revised by October 15, 1987, to specifically require that appropriate vendor information be reviewed by the designer(s), including contractors, to identify vendor information that must be captured as requirements within design documents. Any information that TVA determines to be design requirements will be captured by either direct inclusion or specific reference within TVA documents.

5. Date When Full Compliance Will Be Achieved

Any deficiencies identified during our CAQR reviews will be evaluated for their effect on past and ongoing activities. All necessary programmatic revisions and determination of hardware acceptability will be accomplished prior to fuel load of the respective units. A status of the vendor information program along with any other design control findings or design control program changes will be provided to NRC by January 15, 1988.

Violation 390, 391/87-05-01, Part 2 - Classes of Cleanness

1. Admission or Denial of Alleged Violation

TVA admits the violation. Classes of cleanness were inadequately specified at the working level document and were not adequately implemented for the in-place storage phase of construction activities.

Cleanness classes as required by the current WBN Construction Specification N3M-890 were not addressed in the preventive maintenance program, QCP-1.52 and AI-9.1.

2. Reasons for the Violation

TVA established cleanness levels for all construction phases equivalent to the final cleanness levels defined in ANSI N45.2.1. ANSI N45.2.1, section 5, does not require final cleanness levels for equipment in the installation phase.

The cleanness level requirements of N3M-890 and General Construction Specification G-39, which are above the installation ANSI requirements, established a level of cleanness which was impractical to fully meet for the entire construction timeframe from in-place storage/installation activities through plant operations. In addition to being impractical, these construction specifications did not provide enough detail on how to maintain the required levels of cleanness during in-place storage and guidance on what to do if the specified level of cleanness could not be met.

Cleanness levels during erection were maintained in accordance with QCI-1.06 "Receiving and Storage" and QCP-1.36 "Housekeeping and Storage." The levels of cleanness specified in these procedures are appropriately based on ANSI N45.2.2 and were implemented from warehouse storage through the installation process.

Therefore, the violation appears to be limited to the in-place storage phase of construction activities.

3. Corrective Steps Which Have Been Taken and Results Achieved

CAQR WBN 87867 has been issued to address the failure to meet N3M-890. Its resolution will require evaluation to determine whether equipment in in-place storage has been affected by the failure to meet N3M-890.

4. Corrective Steps Which Will be Taken to Avoid Further Violation

CAQR WBP 870266 was initiated to address the failure to include sufficient details for achieving and maintaining levels of cleanness and system layup requirements. Additional information on the layup program was provided verbally to NRC during the timeframe of NRC's Inspection Report No. 390, 391/87-12, conducted June 22-26, 1987.

To ensure cleanness controls are consistent with ANSI N45.2.1, TVA is establishing a program to enhance the level of detail in the requirement specification and provide additional guidance on in-place storage and cleanness. The layup requirements for both carbon steel and stainless steel systems described in G-39 and N3M-890 have already been expanded. A summary of TVA's program to enhance the cleanness requirements at WBN is described below:

A master specification on cleanness is being developed for all TVA projects. The cleanness master specification is intended to include cleanness requirements for systems in in-place storage.

Project construction specification N3M-890 will be clarified regarding cleanness requirements for equipment in in-place storage. Based on the cleanness master specification, a WBN engineering requirement (ER) specification on cleanness will be developed. The ER specification on cleanness is intended to replace the cleanness requirements provided by N3M-890.

An ER specification on layup is also being developed. This will provide engineering requirements necessary to ensure proper plant layup/equipment preservation for permanent plant systems and components. The scope of the ER specification on layup will include systems that have been installed but never tested or cleaned to final cleanness levels, as well as final cleaned/tested systems. It will require covers over system openings for components temporarily stored or installed but not part of a completed system, and will require periodic monitoring to ensure that there is no system degradation. The ER specification will give criteria for layup preventive maintenance if there are no approved vendor recommendations and will address monitoring requirements for systems in layup.

Based on this specification and vendor recommendations, detailed layup preventive maintenance procedures will be developed for components. When the master specification on cleanness and the engineering requirement (ER) specification are completed, the site procedures will be revised to include these requirements.

5. Date When Full Compliance Will be Achieved

Any deficiencies identified during our CAQR reviews (paragraphs 3 and 4) will be evaluated for their effect on past and ongoing activities. All necessary programmatic revisions and determination of hardware acceptability will be accomplished prior to fuel load of the respective units. Periodic reports on our progress will be provided. The next status update of the cleanness program will be provided to NRC by January 15, 1988.

Supplemental Information

In addition, TVA would like to clarify several statements made in NRC's August 10, 1987 follow-up letter addressing cleanness classes, item B. The follow-up letter stated that "except for G-39, which is a design output document, your staff could not produce an onsite specification or drawing that specifies the cleanness classes required by ANSI N45.2.1." The August 10, 1987 letter also stated, "Further, in your response to Violation 86-14-03, you clearly indicated that General Construction Specifications (such as G-39) are design output documents and are applicable only when specifically referenced in a design drawing or other design output document."

TVA's response to Violation No. 390/84-14-03 states, "General construction specifications are not mandatory requirements in the form of design input documents but general design output documents that are incorporated by reference in specific design output documents when needed." General specifications are not requirements unless referenced on drawings or specifications; however, "site specific" construction specifications are requirements. WBN Project specification N3M-890 is the WBN "site specific" design output document which specifies cleanness requirements.

Since N3M-890 references G-39, the cleanness aspects of this general construction specification is also a WBN requirement. In regard to your statement that our staff was unaware of the existence of these specifications, TVA personnel were aware of the specifications, and we regret not informing NRC of the cleanness specifications prior to the exit meeting. We regret any inconvenience this ineffective communication may have caused your staff. We have stressed and continue to stress that WBN employees, involved with NRC identified concerns, respond in a timely manner, thoroughly discussing all relevant issues with NRC personnel.

ANSI Standards

From NRC's August 10, 1987 letter:

> For Part 2 of the cover letter, we requested that you provide a description of your program for compliance with all the ANSI Standards committed to in the Final Safety Analysis Report or Quality Assurance Topical Report. We have reviewed your responses and note you are presently performing reviews, establishing rolldown matrices and will issue Conditions Adverse to Quality Reports (CAQRs) where noncompliance with specific ANSI Standards is identified. Therefore, we request you specifically identify and address areas where deficiencies are identified, discuss the effect on installed hardware, and provide the date when full compliance with ANSI Standards will be achieved.

Response

The WBN program for compliance with all the ANSI standards committed to in the Final Safety Analysis Report (FSAR) and the Quality Assurance Topical Report is presented in two parts.

A. FSAR

An activity to verify that licensing commitments are captured within the highest level implementing TVA document is described in the Design Baseline Verification Program (DBVP). TVA will utilize the results of the DBVP from the identification of commitments to ANSI standards to verify their incorporation into the working level procedures (i.e., a rolldown of all ANSI commitments). A status of this program will be provided to NRC by January 15, 1988.

In addition Nonconformance Report (NCR) 7229 has been written to address the incomplete incorporation of ANSI requirements.

B. TOPICAL REPORT (Revision 9)

The following is a description of the Topical Report ANSI Rolldown Task:

1. Development of the Matrices

A total of 28 matrices were developed by Site Quality Assurance for the ANSI standards listed in Tables 17D-1 and 17D-2 of the Topical Report. The method used to develop these matrices was a line-by-line, item-by-item approach and included 3618 line items. This approach is described in the Office of Nuclear Power - Standard 4.4.10, "Identifying Nuclear Procedure System Requirement" (Draft).

2. Transmittal of the Matrices to the Implementing Procedure Owners

The matrices have been completed and transmitted to the implementing organizations. These matrices included identification of 1,160 potential concerns where the site procedures may not have adequately implemented the ANSI requirements. Procedure owners will address the potential concerns and also concur with the areas shown to be implemented adequately. The operations phase responses are being coordinated by the Nuclear Site Director (NSD) Site Procedure Staff. The construction phase responses are being coordinated by the Division of Nuclear Construction Procedures Unit.

3. Resolution and Tracking

The matrix preparers and the procedure owners will resolve the potential deficiencies that were identified. A potential deficiency may be resolved by:

a. Citing an implementing procedure paragraph where it is now implemented.

b. Justification that the requirement did not apply to the cited procedure.

c. Initiation of a formal revision request and submission of a tracking number.

d. Initiation of a Condition Adverse to Quality Report (CAQR).

All open items will be tracked to closure by the WBN SQA Quality Engineering Section.

Status

Construction - Phase Procedures

The review which compared ANSI standards to 225 site procedures identified 621 potential concerns. These are documented on fifteen matrices. As stated previously, these concerns are being addressed by the Division of Nuclear Construction (DNC) under NCR 7229. This NCR is a blanket type NCR and all construction identified concerns will be placed under it. As of August 31, 1987, the initial DNC review has been completed, and 68 of the 621 original concerns have been dispositioned. The matrix preparers and DNC are now resolving the remaining deficiencies. The matrices, potential concerns, and resolutions are available for NRC review.

Operations - Phase Procedures

The review compared the ANSI standards to 193 site procedures and identified 539 potential concerns. These were documented on thirteen matrices. These concerns are being addressed by the NSD Procedure Staff. A CAQR WBP 870855

has been issued to identify and resolve these concerns. As of August 31, 1987, the NSD review has resulted in 20 of the 539 original concerns being dispositioned. The NSD review of the potential concerns is scheduled to be completed by November 30, 1987. The matrices, potential concerns, and resolutions are available for NRC review.

Categories of Concern

The following is a percentage breakdown of the performance areas affected by the 1160 potential concerns identified from our ANSI rolldown against site procedures:

Area	Construction Phase (621 Concerns)	Operation Phase (539 Concerns)
1. Testing	26%	39%
2. Cleaning, Storage and Housekeeping	16%	26%
3. Concrete and Structures	16%	10%
4. Protective Coating	12%	-
5. Cranes	12%	13%
6. Records	6%	1%
7. Others (e.g., material control, procurement, etc.)	12%	11%

Date When Full Compliance Will Be Achieved

The deficiencies identified during our reviews will be evaluated for their effect on past and ongoing activities. All necessary programmatic revisions and determination of hardware acceptability will be accomplished prior to fuel load of the respective units. Periodic reports on our progress will be provided. The next status update will be provided to NRC by January 15, 1988.