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JUN 18 1987

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

Gentlemen:

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

Enclosed is our response to G. G. Zech's letter dated May 15, 1987 to S. A. White, which transmitted Inspection Report Nos. 50-390/87-05 and 50-391/87-05, citing activities at Watts Bar Nuclear Plant which appeared to be in violation of NRC regulations. Enclosed is our response to violation 390, 391/87-05-01.

The transmittal letter for this inspection report requested TVA to address vendor recommendations and American National Standards Institute (ANSI) standards in the violation response. These items are addressed in an attachment to the violation response.

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

J. A. Domer

J. A. Domer, Assistant Director
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Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
RESPONSE TO NRC REGION II LETTER
FROM GARY G. ZECH TO S. A. WHITE DATED MAY 15, 1987
REFERENCE: REPORT NO. 50-390/87-05 and 50-391/87-05

This report responds to the Violation 01, parts 1 and 2, described in Enclosure 1 of the NRC Region II inspection report referenced above. This is our final report on these items of noncompliance.

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.

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

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

Part 1 - Critical Installation Requirements

1. Admission or Denial of Alleged Violation

TVA admits that slope (including vertical height) was not appropriately considered in the routing of the hydrogen analyzer sample lines.

2. Reason for Violation

Two factors contributed to this violation.

1. The installation instructions in the vendor manual were not clear, and the slope requirement was not identified on the vendor-supplied installation drawing.

The vendor manual for the hydrogen analyzer contains one page of installation instructions which states in part: ". . . the sample lines should be run in such a way that condensation will not be trapped, and the return line should not be run vertically a total of more than thirty feet." Vendor drawing 041020, "Piping and instrumentation diagram," was included in the instruction manual and approved by TVA. This drawing shows incoming sample lines as insulated but did not provide any guidance on line routing.

2. A general note on drawing 47W625-1, note 10, stated that slope was not required on sampling lines.

A note was added to drawing 47W625-1, revision 17, in October 1983, which states that slope is not required on sampling system lines. This note is valid on sample lines which transport liquids. Although liquid samples constitute the vast majority of system samples covered by this note, it was inappropriate to apply this requirement to gaseous sample lines. The note did not indicate that applicability is restricted to liquid sample lines only.

3. Corrective Action Taken and Results Achieved

Significant Condition Reports (SCRs) WBN EEB 8702 (unit 1) and 8703 (unit 2) were written January 21, 1987, to document this deficiency. TVA evaluated the hydrogen sample line slope (including vertical height) for acceptability. As a result, parts of train B of the hydrogen sample lines for unit 1 will be corrected to alleviate unacceptable sample line slope. The engineering report on SCR 8702 concluded that the slope on train A sample lines is acceptable. The disposition of the SCR will make the final determination of acceptability.

The unit 2 hydrogen analyzer sample lines have been installed but not inspected by Quality Control (QC) personnel since Engineering Change Notice (ECN) 4695, which relocates the unit 2 hydrogen analyzers, will cause the lines to be rerouted.

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

TVA had previously created a temporary instrumentation project (IP) group to identify, categorize, and determine the resolution of the sense line slope issue along with other instrumentation problems.

Based on their review, an action item was created for Watts Bar Engineering Project (WBEP) to substantiate slope requirements for Watts Bar units 1 and 2 gaseous radiation process lines which include the hydrogen analyzer sampling lines. Slope requirements for instrumentation process lines (such as gaseous sample lines) will be addressed in future revisions of the engineering requirement specification, ER-WBN-EEB-001.

Finally, note 10 on drawing 47W625-1, which stated that slope was not required, will be deleted as a result of revision 2 of ER-WBN-EEB-001.

5. Date When Full Compliance Will Be Achieved

TVA will be in full compliance by fuel load of each respective unit.

Part 2 - Classes of Cleanness

1. Admission or Denial of Alleged Violation

TVA admits a violation for not maintaining the proper cleanness of the unit 2 reactor vessel.

A meeting was held on May 22, 1987 (after this violation was cited), between the NRC senior resident inspector and representatives from TVA Engineering and Compliance to describe how the construction specifications address ANSI N45.2.1. Construction cleanness is addressed in G-39, "Cleaning During Fabrication of Fluid Holding Systems." In addition, specification G-29 also addresses cleanness in 4.M.1.1, "Material Fabrication and Handling Requirements-Austenitic Stainless Steel," 4.M.4.1, "Cleaning and Cleanliness Requirements for Austenitic Stainless Steel Piping, Tubing and Components," and 4.M.4.2, "Control of Microbiologically Induced Corrosion in Nuclear Power Plants." Watts Bar project specification N3M890, "Chemical Cleaning Instructions for Watts Bar Plant," already specifies a final cleanness level for each system to be achieved by cleaning before releasing the system. The NRC Senior Resident had not been made aware of these specifications which meet the requirements of ANSI N45.2.1 for cleanness classes before this meeting.

An example of not maintaining cleanness class was the reactor vessel as discussed in our violation response to NRC Inspection Report 391/87-03.

2. Reasons For the Violation

Reference our violation response to NRC Inspection Report 391/87-03.

In order to dewater the reactor vessel during flushing operations, the cover was removed and the vessel was equipped with temporary pumps. During the spring and summer of 1985, system 74, RHR, system 63, SIS, and system 62, CVCS, were flushed into the vessel. The construction schedule at that time called for the transfer of systems 74 and 63 in preparation for preoperational testing. The preop tests required, as a prerequisite, a means to dewater the vessel. Upon completion of system 62 flushing, the vessel was completely dewatered and all trash was removed.

At this time WBN became the subject of investigation into employee concerns which resulted in stopwork orders in various areas with the result that the construction/testing schedule became indeterminant. Because no firm schedule or schedule slip was established the vessel was left open and fitted with temporary pumps in anticipation of resuming flushing operations.

Preventive Maintenance (PM) Deficiency Report (DR) No. 52Q1085-53 was written on October 23, 1985, documenting dirty water in the Reactor Pressure Vessel (RPV). The deficiency report was dispositioned on October 25, 1985 to the effect that the vessel would be cleaned upon completion of flushing activities. The deficiency remained open until the week of March 2, 1987. The vessel was not included in the preventive maintenance program.

3. Corrective Steps Which Have Been Taken and Results Achieved

Reference our violation response to NRC Inspection Report 391/87-03.

NCR 7207 was initiated and dispositioned to remove debris and water from the vessel and to wash residual silt from the vessel walls. Upon completion of cleaning, the Division of Nuclear Engineering (DNE) performed an evaluation to determine any detrimental effect on the vessel. Based on evaluation of swipe tests and NDE examination, TVA has determined that the debris and water were not detrimental to the RPV.

On February 21, 1987, upon completion of cleaning and examination activities, the vessel was covered and placed in the construction PM program.

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

The condition of the vessel will be monitored as part of the Construction PM program. The vessel will be inspected monthly for water and debris.

We believe that the requirements of ANSI N45.2.1, section 3.1 have been met. However, due to the extended construction status the Site Director and Project Manager had directed a task force, by memorandum, to upgrade project cleanness control and recommend procedural changes and/or additions in methodology to assure cleanness controls are consistent with ANSI N45.2.1. This has been completed by the Construction Group and CAQR WBP 870266 R1 has been initiated to request additional levels of cleanness and system layup requirements.

5. Date When Full Compliance Will Be Achieved

TVA is in compliance with ANSI N45.2.1, section 3.1 in that cleanness classes are prescribed in specifications.

Attachment

Specific requests for information in the May 15, 1987 transmittal letter for inspection report 390, 391/87-05 are addressed below:

1. "The violation consists of two examples that describe different conditions. In reference to the first example, dealing with the failure to consider vendor requirements in the design of the hydrogen analyzer system, it is requested that you specifically address in your response your plans to assure that vendor recommendations are considered on other safety-related, vendor-supplied equipment."

2. "The second example references failure to specify classes of cleanness for in-place storage of equipment as required by American National Standards Institute (ANSI) N45.2.1. It is requested that you provide a description of your program for compliance with all the ANSI Standards committed to in the Final Safety Analysis Report (FSAR) or Quality Assurance Topical Report."

Part 1

TVA recognizes that program revisions are required at Watts Bar to assure that vendor design and installation requirements are adequately addressed. TVA is in the process of developing corporate and division level guidance on the programatic changes necessary to better control vendor documents and requirements.

The Watts Bar Engineering Project (WBEP) is following the development of corporate level requirements on vendor documents. Details on the WBN vendor requirements program should be available for the NRC resident inspector's review by December 30, 1987.

Part 2

ANSI requirements committed to in the Quality Assurance Topical Report are incorporated in site instructions for Operations and Construction. This program functions as follows:

The Topical Report states in sections 17.1.2.2 (applicable to Design and Construction) and 17.2.2.2 (applicable to Station Operation) that TVA will follow the guidance of NRC regulatory guides as described in table 17D-1 and 17D-2.

Those regulatory guides and endorsed ANSI standards are incorporated in the Nuclear Quality Assurance Manual (NQAM) as stated in NQAM Part I, Section 1.2:

> "The quality assurance program requirements contained in the Nuclear Quality Assurance Manual (NQAM) apply to the design, construction, operation, and support activities, performed by or for TVA's Office of Nuclear Power that affect the quality of safety-related and other important structures, systems, and components of TVA's nuclear power plants.
>
> These requirements are designed to comply with the requirements of various codes and standards such as . . . 10 CFR 50, Appendix B, quality assurance criteria for nuclear power plants as implemented by the Regulatory Guides and ANSI Standards listed in the Topical Report for Quality Assurance (TVA-TR75-1A)."

All Office of Nuclear Power organizations are required to implement these NQAM requirements as stated in the NQAM, Part I, Section 1.4:

> "The Nuclear Quality Assurance Manual requirements are mandatory and shall be appropriately implemented by responsible organizations.
>
> Office of Nuclear Power (ONP) organizations shall develop implementing instructions or procedures as required to comply with the requirements and responsibilities established in this manual. Such instructions shall be prepared and controlled in accordance with the requirements of this manual.
>
> The NQAM specifies quality assurance program requirements for organizations outside ONP performing activities in support of TVA's nuclear plants. Those organizations shall prepare and maintain quality assurance programs which implement the quality assurance requirements specified for their support activities. These QA manuals and subsequent revisions shall be submitted for review and concurrence of DNQA.
>
> The procedures in this manual and subsequent revisions shall be implemented by affected organizations within 90 days of receipt unless other written implementing direction is provided within the procedures."

This requirement is implemented in Administration Instruction (AI) - 3.1, "Site Procedures and Instructions - Preparation, Review, and Approval," Section 6.1 for Site Director activities, and Quality Control Instruction (QCI) - 1.10, "Preparation, Review, and Control of Quality Control Instructions, Procedures, and Tests," Section 6.1 for construction activities.

Additionally, to ensure that all ANSI requirements have been included in site instructions/procedures, matrices have been developed for applicable ANSIs listed in Table 17D-1 (Design & Construction) and Table 17D-2 (Operations). The matrices contain line by line requirements from the ANSIs rolled down into site implementing procedures.

Twenty matrices are in the internal Quality Engineering (QE) review, and seven are ready for external (procedure owner) review. Four of these seven have been sent to the Division of Nuclear Construction (DNC) with accompanying punchlists of items of potential concern.

After resolving responses to potential concerns by owner organizations, QE will determine if CAQRs need to be initiated. The condition adverse to quality report (CAQR) program provides the mechanism for assuring that corrective actions are implemented.

The Final Safety Analysis Report (FSAR) contains numerous commitments to ANSI Standards. However, the FSAR reflects the programs used to design, construct, and operate Watts Bar units 1 and 2 (i.e., the programs described in the FSAR already exist and may be functioning prior to their descriptions appearing in the FSAR).

A comprehensive list of FSAR commitments to ANSI standards affecting design will be developed through the licensing verification area of the Watts Bar DBVP. The highest level design document which implements each commitment will be located and reviewed to determine if the commitment has been correctly captured.

Any failure to properly capture and specify each commitment will be evaluated for its impact on plant design and corrected as appropriate. Furthermore, a cross-referencing matrix will be developed between each ANSI commitment and the highest level design document which implements the commitment. This matrix will be used during the design change process to lead the designer to any affected licensing commitments.