TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

November 24, 1980

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - NRC-OIE LETTER RII:JAM
50-390/80-23, 50-391/80-17

The subject inspection report dated October 1, 1980, cited TVA with seven items of noncompliance. Enclosed are TVA's responses. TVA is continuing to evaluate its corrective actions and expects to provide further information by December 16, 1980.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Director (Enclosure)
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
RESPONSE TO NRC INSPECTION REPORT 390/80-23 AND 391/80-17

INFRACTION 80-23-01/80-17-01

As required by 10CFR, Appendix B, Criterion V, activities affecting quality must be accomplished in accordance with instructions. The accepted QA program, FSAR Section 17.1A.5, states that assurance is provided that activities are accomplished in accordinace with instructions. Section 6.2 of Appendix E to WBNP-QCP-4.10 designates the cleanliness classification of systems containing fluids which have direct contact with the nuclear reactor core as Class B. Section 6.7 of the appendix requires either the sealing of openings or the complete enclosure of materials to preserve required surface cleanliness.

1. Section 6.3.6.3.5 of Appendix E to WBNP-QCP-4.10 stated that if it becomes necessary to leave an opening temporarily unattended, the protective cover or seal shall be reinstalled.

   Contrary to the above, as of July 25, 1980, activities affecting quality were not accomplished in accordance with WBNP-QCP-4.10 in that over 35 examples of pipes, flanges, and fittings of systems including the Reactor Coolant System and Chemical and Volume Control System were found in the unit 1 containment to be unprotected and unattended.

2. Section 5.2.2 of WBNP-QCP-1.6 required that the responsible engineer assign proper storage to permanent materials.

   Contrary to the above, as of July 31, 1980, activities affecting quality were not accomplished in accordance with WBNP-QCP-1.6 in that adequate storage requirements were not assigned for over 1,000 stainless steel quality valves, flanges, tees, caps, couplings, and reducers in warehouses 9 and 21 which were available for use in cleanliness Class B systems and were stored with internal surfaces unprotected from contamination.

3. Section 6.3.4 of Appendix E to WBNP-QCP-4.10 required periodic inspection of seal intergrity for cleanliness Class B materials and the repair or replacement of seals where required.

   Contrary to the above, as of July 31, 1980, activities affecting quality were not accomplished in accordance with WBNP-QCP-4.10 in that seals had not been repaired or replaced for over 1,000 pieces of quality stainless steel tubing and pipe available for use in cleanliness Class B systems which were stored in yard sheds 11 and 12 with deteriorated seals which had allowed internal contamination.

Corrective Action Taken or to be Taken and Results Achieved

1. Responsible engineering and craft personnel have inspected the cited and other systems for openings. Shortly after inspection, all openings were covered. All safety-related piping systems will be flushed to the Division of Engineering Design (EN DES) specified cleanliness levels before tentative transfer of the systems to the Division of Nuclear Power (NUC PR).

2,3. Pipe fittings, valves, and tubing, as cited in these two examples, have been reinspected by engineering and warehouse personnel; and the seals have been replaced or installed as required. The tubing stored in yard sheds 11 and 12 was not inspected for cleanliness at this time. TVA plans to remove the end caps from a sample of tubing and inspect for actual internal conditions to determine if any cleaning is required. In addition, any pipe fittings, tubing, and valves utilized in Class B cleanliness safety-related systems will have internal cleanliness inspected at the time of installation and will be flushed to EN DES requirements before tentative transfer to NUC PR.

Action to Prevent Recurrence

1. The procedural requirements to keep openings in pipe and equipment covered when not attended has been emphasized onsite by the following:

   (a) Engineering and craft personnel will again be instructed to follow procedures, with emphasis on pipe openings. Previous instructions on this matter were given as lectures to large groups. In order to increase the effectiveness of the reinstruction, the instructions will be conducted by first- and second-line supervisors dealing directly with personnel under their supervision.

   (b) Crafts have increased the frequency of walkthrough inspections, specifically looking for this problem. Results of these walkthroughs are reported to the Construction Superintendent's office.

   (c) A housekeeping procedure has been implemented onsite which requires an engineering supervisor to make a monthly surveillance of all plant areas.

   (d) Plant area teams of management personnel have been assigned. These teams are responsible for all work within a given plant area and will make inspections on a frequent basis.

   (e) A review of WBNP-QCP-4.10, Appendix E, is in progress to ensure that it implements the current EN DES requirements.

2,3. We are undertaking a review of our receipt inspection and storage procedures to ensure that adequate storage instructions are given to warehouse personnel upon receipt of material and that current EN DES requirements for storage of valves, pipe fittings, and tubing are covered in our procedures. Any inadequacies found in procedures will be corrected. We have also begun to replace the caps on stainless steel tubing with plugs which should not be as susceptible to cracking caused by the rays of the sun. The necessity of checking these items and taking any corrective action required during inspections performed by warehouse personnel have been emphasized to warehouse supervision.

Date of Full Compliance

1. We are now in full compliance for the specific items cited. Flushing activities will be completed by August 1, 1981, for unit 1 and by May 1, 1982, for unit 2. Instructions to craft and engineering personnel and procedure reviews should be complete by January 1, 1981.

2,3. We now have all openings covered. Inspection of the sample of tubing and a determination of cleaning requirements should be complete by December 15, 1980. Flushing of piping systems will be complete by fuel loading of the appropriate unit. Procedure reviews and any necessary revisions should be complete by January 1, 1981.

Corrective Action Taken and Results Achieved

1. As a result of the inspection held on July 31, 1980, NCR 2501R was issued to follow the generic deficiencies in Kerotest valves. As described in the first two interim reports on NCR 2501R, TVA is pursuing a resolution to this problem with Kerotest. An evaluation of the safety implications of these deficiencies is being conducted by EN DES to identify those valves that require maintenance before fuel loading and to justify those valves that will be corrected during normal plant maintenance.

   The results of this evaluation and our final corrective action to this problem will be described in subsequent reports on NCR 2501R.

2. (a) The new type valve packing referenced in item B2(a) is Grafoil packing. The decision to use Grafoil for selected valves in the Reactor Coolant System at Watts Bar was made in order to improve valve reliability and decrease maintenance costs. Use of the material originally specified by the manufacturer does not represent a safety concern and would not have compromised the safe operation of the plant. The instructions to use Grafoil in lieu of the originally specified packing was communicated to the Division of Construction (CONST) by memorandum from EN DES, but the vendor's drawings were not revised. In order to avoid future confusion, TVA will assume revision responsibility of the applicable vendor drawings and the drawings will be revised by TVA to indicate the use of Grafoil instead of the originally specified packing.

   (b) Design Information Request (DIR) M35 has been cancelled and superseded by DIR M89, which gives instructions to remove all sleeves specified by DIR M35.

Action Taken to Prevent Further Noncompliance

Memorandums and the DIR were never intended to initiate design changes without the issuance of a controlled change document such as an engineering change notice (ECN) or a field change request (FCR). An internal TVA memorandum will be issued to all affected organizations to emphasize the purpose and limitations of a DIR and to reemphasize the importance of following the appropriate procedures when design changes are involved.

Date When Full Compliance Will Be Achieved

We expect to complete the drawing revisions indicating the use of Grafoil packing by March 31, 1981. The memorandum pertaining to DIR's will be issued by December 1, 1980.

INFRACTION 390/80-23-02 AND 391/80-17-02

As required by 10CFR50, Appendix B, Criterion V, activities affecting quality must be accomplished in accordance with instructions. The accepted Quality Assurance (QA) program, FSAR Section 17.1A.5, states that assurance is provided that activities are accomplished in accordance with instructions.

1. Section 6.3.2 of WBNP-QCP-1.2, Control of Nonconforming Items, required generic or repetitive Nonconforming Conditions Reports (NCR's) to be resolved with corrective action to preclude repetition of condition.

   Contrary to the above, as of July 31, 1980, NCR 2272R identified a generic nonconformance not dispositioned to require corrective action to preclude repetition. NCR 2272R addressed a significant condition adverse to quality in Kerotest globe valves (seal leakage, bearing damage, and diaphragm damage). Corrective action was not specified for hundreds of these valves available for installation in quality assured activities or for hundreds of these valves previously installed in the plant and suspected of being similarly deteriorated.

2. Engineering Design Engineering Procedure (EN DES-EP) 4.02, Engineering Change Notices (ECN) - Handling, prescribed controls for processing design changes which affect nuclear plant drawings, including the updating of affected drawings.

   Contrary to the above, on July 31, 1980, activities affecting quality were not accomplished in accordance with EP-4.02, in that design changes were implemented without drawing revision as follows:

   (a) An Engineering Design memorandum dated April 10, 1974, which directed a change in design specifications to replace original type valve packing with a different type in high pressure valves in borated water systems was currently being implemented by the Division of Construction. As a result, the Division of Nuclear Power had procured incorrect gasket replacement materials for subsequent use in these valves, using the outdated drawings.

   (b) Engineering Design disposition of Engineering Design Information Request (DIR) M35 specified a change in anchor bolt installation requirements for the refueling water storage tank (RWST), yet did not provide specific instruction as required by ECN processing. As a result, the unit 1 RWST polyethylene bolt sleeves installed did not cover the area where the bolts penetrate the lower lip of the RWST anchor ring, and aluminum shims not addressed in the DIR were added above the upper lip of the anchor ring.

INFRACTION 390/80-23-06 AND 391/80-17-04

As required by 10CFR50, Appendix B, Criterion XI, testing is performed with written procedures incorporating requirements in applicable design documents.

1. The accepted QA program, FSAR Section 17.1A.11, states that the test program includes those tests necessary to verify the adequacy of field erection and installation. FSAR Section 8.1.5.3 commits to full conformance with Regulatory Guide 1.30 which endorses ANSI N45.2.4-1972. Section 2.3 of ANSI N45.2.4-1972 requires that test procedures be prepared and revised to assure tests are performed in accordance with the latest information. Section 2.2.(5) of the Standard specifies the availability of the manufacturer's instructions as prerequisite to all activities, including testing, addressed by the Standard.

   Contrary to the above, as of July 31, 1980, Westinghouse Instruction Book, Motor Operated Gate Valves, was not considered when preparing General Construction Specification G-50, Torque and Limit Switch Settings for Motor-Operated Gate Valves. As a result, torque switches and geared limit switches on certain level and flow control valves were not set in accordance with the manufacturer's instructions. These valves are required to reposition in response to an engineered safety features actuation.

2. The accepted QA program, FSAR Section 17.1A.11.3, requires that final detailed procedures for preliminary tests are to be reviewed by the proper divisions of the Office of Engineering Design and Construction, Power, and the NSSS vendor. This section further requires that the NSSS vendor evaluate preliminary test results at the time of the test.

   Contrary to the above, as of July 31, 1980, preliminary test procedures and their results did not receive required reviews in that:

   (a) Of four preliminary tests inspected, none were reviewed by the NSSS vendor and the Office of Power had reviewed only the system flushing test.

   (b) The NSSS vendor had not evaluated any preliminary test results.

Corrective Action and Results Achieved

1. TVA has requested that Westinghouse review and approve Construction Specification G-50 or indicate to TVA that torque and limit switches set using G-50 must be reset in accordance with the Westinghouse instruction book. TVA will reset all torque and limit switches if advised by Westinghouse to do so.

2. It has been TVA policy that preliminary test procedures need not be reviewed by any division other than the Division of Construction. The tests results are reviewed by other TVA divisions and the NSSS vendor where appropriate. To avoid any future misunderstanding, the last two paragraphs of FSAR Section 17.1A.11.3 will be revised as follows:

   Various electrical and mechanical tests are performed in accordance with written procedures for preliminary tests. These tests are normally performed before the preoperational tests. Final detailed procedures for preliminary tests are reviewed and approved by CONST.

   Preliminary tests are performed under direction of TVA CONST with operators and test assistance provided by TVA Office of Power. The NSSS vendor provides instructions and directions as required by TVA for systems within the NSSS vendor's scope of supply. The Division of Engineering Design (EN DES) provides technical assistance as required. Test objectives are defined by the test procedures. Approved construction procedures prescribe the conduct and documentation of installation inspection activities to assure system and/or subsystem completeness before the formal preoperational tests. The preliminary test results are evaluated onsite at the time of test by CONST with assistance as required from the NSSS vendor. EN DES engineers are available to assist with evaluation as needed.

Action Taken to Prevent Further Noncompliance

1. Construction Specification G-50 is being revised to state that for systems for which the design is done under contract (such as NSSS or STRIDE) and where definitive quantitative adjustment criteria is furnished by a contractor, that criteria shall take precedence over and be used in lieu of G-50, except where the contractor endorses G-50 in writing. Similar changes will be made to a NUC PR procedure DPM N75-M-1.

   In addition, TVA will review all schematic diagrams for Watts Bar Nuclear Plant and ensure that the diagrams either show the adjustment criteria or reference the document which defines the adjustment criteria.

2. TVA will make similar changes to the appropriate paragraphs in Chapter 17 of the FSAR for each TVA nuclear plant.

Date When Full Compliance Will be Achieved

1. We expect to complete the revisions to G-50 by January 1, 1981, and DPM N75-M-1 by February 2, 1981. The review and any revisions to the schematic drawings will be completed by April 1, 1981. Any required change in limit switch settings will be completed before fuel loading.

2. The changes to the Wats Bar FSAR will be made in the next FSAR amendment scheduled for February 1981.

INFRACTION 390/80-23-13

As required by 10CFR50, Appendix B, Criterion XIII, measures shall be established to control the storage of equipment in accordance with work and inspection instructions to prevent damage or deterioration. The accepted QA program, FSAR Section 17.1A.13, states that measures to provide control at the construction site are prescribed by construction procedures for handling, storage, and maintenance of permanent equipment.

Contrary to the above, as of July 31, 1980, measures were not established to preclude damage or deterioration associated with the Refueling Water Storage Tank (RWST) as follows:

(a) The four RWST level transmitter circuits were housed in electrical panels which were open; the contacts were rusted; and the panels contained an accumulation of water and debris.

(b) Rusted carbon steel wire used to join insulation banding was in contact with one RWST stainless steel manway.

This is an infraction applicable to unit 1.

Corrective Action Taken and Results Achieved

(a) Effective October 23, 1980, all water and debris have been removed from the panels housing the refueling water storage tank low level transmitters and a temporary cover has been installed to prevent further accumulation of water and debris until the panels are redesigned and reconstructed to permanently provide adequate protection for the transmitters. Terminal strips having rusted contacts in these panels are being replaced.

Action was begun on October 23, 1980, to reconstruct these panels to put them in conformance with TVA EN DES-approved drawings.

On October 23, 1980, the affected transmitters were removed for retesting and recalibration by NUC PR. No transmitters were found to be defective. The transmitters will be stored until the panels are reconstructed or replaced.

(b) The carbon steel wire was removed from the manway. The contact area was cleaned using flapper wheels and acetone. All visible signs of contamination were removed.

Corrective Action Taken to Prevent Recurrence

(a) The Instrumentation Engineering Unit (IEU) will review the existing Quality Control Procedures (QCP) governing receiving, installation, storage, and maintenance of permanent plant instrumentation equipment to determine the adequacy of the existing program with respect to the cited infraction. If additional procedures are required, they will be added to the existing program.

IEU personnel will be retrained in the procedures governing receiving, installation, storage, and maintenance of permanent plant instrumentation equipment.

(b) These tanks will receive inspection on a periodic basis, and the inspection will be documented on inspection sheets in accordance with attachment A to QCP 4.5.

Date When Full Compliance Will be Achieved

(a) All actions will be complete, and full compliance will be achieved by December 15, 1980.

(b) We are now in full compliance.

INFRACTION 390/80-23-04

As required by 10CFR50, Appendix B, Criterion V, activities affecting quality must be accomplished in accordance with instructions. The accepted QA program, FSAR Section 17.1A.5, states that assurance is provided that activities are accomplished in accordance with instructions. Section 6.2 of QCP-1.30, Attachment E of QCP-1.30, and Attachment D of WBNP Administrative Instruction 8B, required that work plans be prepared, reviewed and approved for work on systems that have been tentatively transferred from CONST to NUC PR. Section 6.3.10 of QCP-1.30 requires distribution of the work plan cover sheet to the shift engineer. Section 6.4.7 requires the responsible engineer to coordinate with the shift engineer to place equipment back in service. Section 6.5.2 requires copies of any required operations sheets to be included in the work plan.

Contrary to the above, during an audit of five work plans (0174, 0181, 0190, 0201, and 0212), several examples were found that indicated proper preparation, review and approval of safety-related work plans had not occurred.

1. Work plans 0181, 0190, and 0201 did not receive the required management review because of incorrect or inconsistent form completion.

2. Two sections of work plans 0181 and 0201 were not filled out as required.

3. A bolting operations sheet was not included on completed work plan 0174.

4. The shift engineer's office at NUC PR did not have a copy of work plan 0212 that was being accomplished. The responsible engineer did not coordinate with the shift engineer to put equipment back in service after completion of work.

This is an infraction applicable to unit 1.

Corrective Action Taken and Results Achieved

a. Work Plan 190

ECN's 1852, 2162, and 2184 have been deleted from work plan 190. Work plan 190 was properly approved as a punch list work plan. However, ECN's 1852, 2162, and 2184 were added to the scope of the work plan by CONST without resubmittal to NUC PR for approval. The deficiencies are (1) not having a review by the Plant Operations Review Committee (PORC), and (2) not having the appropriate ECN references in the control form. The cause of the deficiencies was the unauthorized changes by CONST to the scope of the work plan after it had been approved.

b. Work Plan 201

FCR-M-5413 has been deleted from the scope of work plan 201. Work plan 201 was properly approved as a punch list work plan. However, FCR-M-5413 was added to the scope of the work plan by CONST without the prior review and approval of NUC PR. Thus, the cause of the deficiencies of not having PORC review and the appropriate section of the control form correctly marked was unauthorized changes by CONST to the scope of the work plan after it was initially approved. The prerequisites and precautions sections were not identified as N/A because of an oversight.

c. Work Plan 181

The Administrative Instruction, AI-8B, control form has been revised to address NUC PR review and approval. The QCI-1.30 control form was revised to address CONST review and approval. Both forms are required for work plans. Work plan 181 was properly approved. However, NUC PR and CONST control forms were not cross-referenced for approval signature. The cause of this deficiency was utilization of two separate control forms for the work plan. This was the practice when there were inconsistencies in the NUC PR AI-8B and CONST QCI-1.30 procedures.

d. Work Plan 174

Bolting operations sheets were not included in work plan 174 because it was not required by the revision of the procedure that was in affect at the time the work plan was issued. The work plan did reference QCP-4.10 for performance and documentation of the work. Deletion of the operations sheet was not a violation of the revision of QCI-1.30 that was in affect at the time the work plan was signed complete.

Action Taken to Prevent Recurrence

WBNP-QCI-1.30 is being reviewed and an extensive rewrite will be required. Training in the requirements of the new revision will be provided to all engineering personnel involved in preparation review and approval of work plans.

CONST will review all work plans initiated before issuance of the revised QCI-1.30 for compliance with the requirements that existed.

Date When Full Compliance Will be Achieved

The procedure revision and training will be complete by December 15, 1980.

The work plan review will be complete by January 15, 1981.

INFRACTION 50-390/80-23-05

As required by 10 CFR 50 Appendix B Criterion XIII, measures must be established to control the storage of equipment to prevent damage or deterioration. The accepted QA program FSAR section 17.1A.13 states that measures to provide control at the construction site are prescribed by construction procedure Handling, Storage, and Maintenance of Permanent Equipment.

Contrary to the above, as of July 7, 1980, measures were not established to control the storage of Residual Heat Removal (RHR) system flood mode spool pieces, which are employed to provide core cooling during abnormal flood conditions. The unit 1 spool piece had been tentatively transferred to the Division of Nuclear Power and was unprotected in the RHR and Containment Spray heat exchanger room.

This is an infraction applicable to unit 1.

Corrective Action Taken and Results Achieved

The RHR spool pieces have been cleaned and placed in boxes with each box identified as to the spool's use. Tools and gaskets were placed with the spool pieces for installation. These boxes will be temporarily stored in hut 20. This item has been placed on the Open Items Log to ensure maintenance activity and equipment necessary for flood protection will have been completed or put in place before fuel loading.

Action Taken to Prevent Recurrence

A plant standard practice describing tentative transfer of systems will be issued to better define what each plant section is responsible for during each step of the transfer process. Specific guidance will be included on what each plant section looks for during a system walkdown, including items which are not permanently installed.

All spool pieces required for flood mode protection have been identified. A list of these spool pieces has been given to the plant supervisor responsible for conducting system walkdowns as well as the supervisor responsible for the storage of spool pieces.

The supervisor responsible for walkdowns will use the list to verify that the spool pieces are included in the appropriate system transfers. The supervisor responsible for storage will ensure that, at time of transfer, appropriate storage measures will be put into effect.

The plant will issue an instruction to detail storage and handling requirements for equipment used for flood mode protection. It will provide requirements for periodic inspections of this equipment. It will be written for generic application to ensure that additional items of other system which are not permanently installed will be properly stored.

Date When Full Compliance Will Be Achieved

The described plant instructions will be issued and in effect by December 23, 1980.

INFRACTIONS 50-390/80-23-03, 50-391/80-17-03

As required by 10 CFR 50 Appendix B Criterion XVI, measures must be established to assure that deficiencies and deviations are promptly corrected. The accepted QA plan, FSAR section 17.1A.17, Corrective Action, states that corrective action measures are prescribed by procedures which provide for the correction of adverse conditions.

Contrary to the above, as of July 25, 1980, measures had not been established to assure the prompt correction of deficiencies and deviations which were identified by Office of Power quality assurance audits and classified as Category B findings under OP-QAP-18.1. Section 4.2 of OP-QAP-18.1 states that a Category B finding is a violation of established requirements; however, there are no requirements to assure prompt correction of Category B findings. Audit finding B-6 of audit OP-QAA-WB-80-02 identified on February 29, 1980 that required programs had not been generated for protection of equipment in the Power Stores warehouse including: periodic insulation tests and rotation of electrical equipment, pressurization of items with inert gases, use of dessicant and humidity indicators, and use of space heaters in electrical components. However, corrective action for this finding was not prompt in that the required programs were not written or implemented.

Corrected Action Taken and Results Achieved

Instructions for handling and storage are being written and will be implemented as they are approved.

Existing equipment and spare parts are being evaluated for deterioration and damage.

Means Taken to Prevent Recurrence

Although Category "B" items are tracked and followed up by the Office of Power QA Staff in the same fashion as Category "A" items, as required by Revision 4 of our QA Topical Report TVA-TR75-1, TVA is in the process of revising our audit program to eliminate Category "B" items. All items will require a written response from the audited organization and will be tracked and followed up by the QA and Audit Staff.

Paragraph 6.3.2 of Office of Power QA Procedure OP-QAP-16.1, "Corrective Action" states:

> Each organization shall prepare and maintain procedures and/or instructions which define responsibilities for evaluation of adverse conditions and for review and approval of proposed corrective actions. These procedures and/or instructions shall also assign the responsibility for followup of conditions adverse to quality to ensure their timely correction and shall impose requirements that these conditions are flagged (e.g., by entry in open file or tag on the item) until their correction.

Watts Bar Standard Practice No. WB 1.2 (September 1980 revision) describes in considerable detail Watts Bar's program for corrective actions and specifically includes resolution of audit findings in a prompt maneuver.

With the deletion of Category B items from the audit program and revision of OP-QAP 18.1 and 16.1 to define "prompt" in quantitative terms, TVA believes that our program for Corrective Action will ensure prompt correction of deficiencies and deviations identified by Audit Reports.

Date When Full Compliance Will Be Achieved

The program for writing of procedures for handling and storage and evaluation of all existing equipent will be complete by June 1, 1981.

The revisions to QA Topical Report TVA-TR75-1 will be completed by January 1, 1981.