TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

May 11, 1981

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 - CONFIRMATION OF ACTION LETTER - THIRD INTERIM REPORT

By letter dated February 10, 1981 from J. P. O'Reilly to H. G. Parris, TVA was requested to address the Quality Assurance Program for the HVAC system of Watts Bar Nuclear Plant. Interim reports were provided on February 27 and April 3, 1981. Enclosed is our third interim report. TVA will submit a comprehensive final report describing the results of all evaluations and remaining corrective actions by January 1, 1982.

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)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
CONFIRMATION OF ACTION LETTER
THIRD INTERIM REPORT

As a result of the NRC Confirmation of Action Letter dated February 10, 1981, TVA undertook a sample program for safety-related HVAC systems at Watts Bar Nuclear Plant designed to ensure the adequacy of the QA program, the effectiveness of its implementation, and the acceptability of installed HVAC systems. Most of the results of the sample program were provided in the TVA response dated April 3, 1981. The remainder of the sample program results, information summarizing other TVA actions taken since the April 3 submittal and additional information requested by NRC in a telephone conference call (telecon) on April 23, 1981, are presented below.

Supplemental Response to TVA's First Interim Response dated April 3, 1981

(I.1.a) Verification of Design, Procurement, and Preoperational Testing for Safety Related HVAC Systems

The TVA response dated April 3, 1981 noted that the Engineering Design (EN DES) Quality Assurance Branch audit of all activities performed as part of Action Item I.1.a would be addressed in a later report. The report for this EN DES audit, issued April 22, 1981, identified five findings: two in the area of document control (2 nonsignificant); one on the EN DES Quality Assurance Program (significant); one on audits (nonsignificant); and one in the area of design control (significant). These deficiencies are being processed by established procedures and have been evaluated for safety significance in accordance with Action Item 2 of the NRC Confirmation of Action Letter dated February 10, 1981.

(I.2) Evaluation of Safety Significance of Deficiencies

An evaluation of safety significance of deficiencies has been completed. Each significant deficiency was separately evaluated. In addition, these plus other nonconformances and audit deficiencies deemed associated with the Confirmation of Action Letter were evaluated collectively for possible generic safety implications. The principal conclusions drawn from these evaluations are as follows.

Most deficiencies involved the adequacy of documentation, inspection, and similar quality assuring activities. A few deficiencies identified conditions that would in themselves prevent components from performing their safety-related functions. However, the deficiencies, taken in whole, lead to an unacceptable degree of confidence in the ability of the affected safety-related systems to perform their essential functions. Mechanical aspects of HVAC and Seismic Category I(L) piping at WBN appear to be the primary areas affected.

Review of nonconformances in other selected areas (and plants) has not identified similiar generic deficiencies; however, based upon the nature of the HVAC and piping deficiencies, the adequacy of program implementation for similiar systems (i.e., supporting systems and systems of medium to low safety importance, compared to the reactor coolant systems, and ECCS systems) at WBN is suspect. Most deficiencies appear to be unique to WBN. A small but important number of deficiencies involved actual design or construction defects, many of which were, or probably would be, caught in the existing inspection, testing, and auditing process.

All identified discrepancies related to documentation, inspection, and procedures are being corrected, and action is being taken to prevent recurrence of those determined to be generic or identified as repetitive. Each identified discrepancy related to the design or construction of the HVAC systems is being corrected.

TVA Actions Taken in Addition to Those Reported In the TVA Response Dated April 3, 1981

Based on further evaluation of the results of the sample program submitted in the TVA response of April 3, 1981, the Quality Assurance Program for Watts Bar safety-related HVAC systems was found to be inadequate. The following conclusions supported this finding.

a. The EN DES implementation of the Quality Assurance Program was deficient in that it did not sufficiently identify and document quality assurance requirements for the safety-related HVAC systems.

b. The definition of responsibilities and requirements for quality assurance during erection and construction has not been adequate to clearly determine where EN DES responsibility ends and Construction (CONST) responsibility begins. A better means of defining and communicating the interfaces is needed.

c. The large number of deficiencies identified by the sample program raises questions as to whether the overall quality of installed safety-related HVAC systems at Watts Bar is acceptable.

d. An overall evaluation of the Watts Bar safety-related HVAC systems raises questions about the adequacy of the HVAC systems at other TVA plants and about the adequacy of certain aspects of the Quality Assurance Program for other safety-related systems at all plants.

Based on the above conclusions, the following corrective actions are being implemented.

a. A blanket Stop Work Order is now in effect at Watts Bar concerning fabrication, erection, inspection, and testing of safety-related HVAC systems. The blanket Stop Work Order will not be lifted until the OEDC Quality Assurance organization approves resumption of work based on the identified corrective action.

Selected areas covered by the blanket Stop Work Order have been or will be released before lifting the blanket Stop Work Order. Before each selected area is released the procedures and controls covering particular facets will be reviewed, approved, and implemented.

b. Each identified deficiency will be independently processed using existing procedures with appropriate corrective action and followup.

c. EN DES will review selected construction quality assurance procedures covering safety-related HVAC systems to determine their adequacy with respect to controlling implementation of design requirements.

d. Future OEDC management audits of EN DES and CONST will concentrate on determining how well commitments are being implemented and on the effectiveness of our system for identifying the structures, systems, and components covered by the nuclear Quality Assurance Program.

e. The Quality Assurance organizations will do further evaluations of the adequacy of the overall quality of installed HVAC systems at Watts Bar and will identify necessary corrective action to provide assurance that the installed systems are of adequate quality.

f. EN DES has initiated a program to evaluate the adequacy of the OEDC commitment control program.

g. The Quality Assurance organizations will audit other plants and other systems to determine if the deficiencies apply to other systems and to other plants. Deficiencies will be identified and corrected.

h. Watts Bar construction organization will verify by inspection and/or testing that both already installed HVAC systems and those installed in the future will meet requirements established by the design organization.

i. On April 6, 1981, the Manager of Quality Assurance directed the EN DES and CONST QA organizations to schedule and conduct a review of the entire QA Program for Watts Bar HVAC systems to assure that the entire program and not just a "sample of the program" is adequate and being effectively implemented.

The above program of actions is very extensive and will require several months to complete. Identified deficiencies, corrective action and followup will be processed by established procedures. Significant deficiencies will be reviewed for reportability under 10CFR50.55(e) and processed by established TVA procedures, and TVA will also keep the Watts Bar NRC Resident Inspector informed as the corrective action progresses.

Additional Information Requested by NRC-OIE In a Telecon April 23, 1981

In a telecon on April 23, 1981, NRC requested that TVA provide in its next submittal further information and status on the specific items addressed by the Confirmation of Action Letter and, in addition, supply the following information.

1. Discuss the status related to the Stop Work Order in effect at Watts Bar.

2. Discuss the actions taken to prevent recurrence of deficiencies similar to those identified in the sample program for Watts Bar safety-related HVAC systems.

3. Provide justification for any "reduced QA Program" requirements applied to already installed HVAC systems.

On April 1, 1981, the Manager of Quality Assurance, with the concurrence of both the EN DES and CONST QA Branch Chiefs, issued a Stop Work Order concerning fabrication, erection, and testing of safety-related HVAC systems at Watts Bar.

The Stop Work Order was based on the concerns relative to the investigation of the QA Program on safety-related HVAC systems and as a result of the review of the sample program deficiencies and nonconformances identified in responding to the Confirmation of Action Letter. Early in 1980, Watts Bar site audits had revealed there was no QA program covering duct work for HVAC systems. Procedures were issued covering this area, and work was resumed based on no further evidence indicating a more widespread problem. However, results of the sample program made it imperative that the entire situation surrounding the HVAC systems be controlled more directly by the QA organization until such time as the indeterminateness regarding the adequacy of the QA program or the quality of the hardware is removed. On this basis, the Stop Work Order was imposed to allow TVA to determine the extent and location of specific problem areas within the entire HVAC program. While this was going on, work determined to have adequate controls could be released on a case-by-case basis. The Stop Work Order was further clarified on April 3, 1981 to state that it did not apply to the following features which are already covered under an acceptable program: hangers and supports; the electrical and instrumentation portions of the HVAC systems; and maintenance and operation of installed HVAC equipment and systems.

Work which has been released from the Stop Work Order to date is as follows.

- o Verification and installation of uninsulated ducts and dampers being processed under QCP-4.27, as amended to cover sealant

- o Installation and verificaton of Seismic Category I HVAC non-ASME Code piping covered by QCP-4.24

- o Installation of Seismic Category I(L) HVAC non-ASME Code piping

- o Preliminary testing not a part of the formal construction testing or preoperational testing programs

The basis for releasing each was that specific approved procedures were in place and were being properly implemented to control these activities. Other work under the Stop Work Order will be released on a case-by-case basis as controls are demonstrated to be adequate. TVA will keep the NRC Resident Inspector informed on the release of work under the Stop Work Order.

In addition to correcting identified program and hardware deficiencies, TVA will take the following remedial action to prevent recurrence of similar such deficiencies.

- o Increased attention and involvement by line and QA management will be devoted to monitoring the effectiveness of program adjustments made as a result of corrective action taken based on the sample program for Watts Bar.

- o Audits will be conducted with increased frequency and emphasis to focus on HVAC systems at Watts Bar and at other TVA plants.

- o Interface controls will be improved to ensure more effective communication between the design and construction organizations responsible for the HVAC systems for Watts Bar.

- o Watts Bar construction procedures will be revised or added to eliminate the causes of the types of construction-related deficiencies identified by the sample program.

- o Design documents will be revised to eliminate the causes of the types of design-related deficiencies identified by the sample program.

- o The design organization will review and approve the construction procedures critical to controlling implementation of design requirements for HVAC systems.

On April 27, 1981, the Manager of Quality Assurance requested that the EN DES and CONST organizations review the acceptance criteria incorporated in construction procedures for inspection and testing of HVAC systems and identify and justify any differences between those applied to already installed systems versus systems presently being installed or to be installed in the future. For inaccessible welds, insulated duct and any other such areas where acceptance criteria for already installed systems necessarily differ from those that can be applied to new work, the design organizations will provide a basis for acceptance and confirm and document that such acceptance criteria are adequate for determining that installed systems meet established design requirements.