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

December 7, 1981 10 AM 8:59

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 REGION II INSPECTION REPORT 50-390/81-14, 50-391/81-14 - RESPONSE TO VIOLATIONS

The subject inspection report dated November 5, 1981 cited TVA with three Severity Level V violations and two Severity Level IV violations in accordance with 10 CFR 2.201. Enclosed is our response to these violations.

Also, as discussed in the inspection report, TVA's Nuclear Safety Review Staff has initiated a comprehensive review of the Watts Bar Nuclear Plant Quality Assurance Program. TVA will discuss the findings of this review and any planned corrective actions during a meeting with NRC Region II scheduled for December 15, 1981 at 1 p.m. in the Region II office in Atlanta, Georgia.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

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

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

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 1
RESPONSE TO VIOLATIONS

Violation 50-390/81-14-04

10CFR50, Appendix B, Criterion II, Quality Assurance Program, requires establishment and execution of a quality assurance program, documented by written policies, procedures, or instructions, which complies with the requirements of Appendix B. Section 17.1A of Watts Bar FSAR, the accepted QA program, commits to safety guide 28 which endorses ANSI N45.2-1971. Section 2 of the Standard requires that activities affecting quality shall be accomplished under suitably controlled conditions.

Contrary to the above, as evidenced by the violations presented below, activities affecting quality were not accomplished under suitably controlled conditions.

This is a Severity Level IV Violation (Supplement II.D).

Admission or Denial of Alleged Violation

TVA admits the violation occurred as stated.

Reason for Violation

The elements of this deficiency related to the damage of centrifugal charging pump 1A-A occurred because verifying the various requirements for pump operability was not the activity in progress on June 15. The operation of the pump was in support of the construction cleaning of piping. The cleanliness acceptability is based on evaluation of particulate samples. TVA agrees that the damage to the pump should have been prevented by operator actions and adequate procedural controls. This pump was subsequently repaired and successfully tested.

The situation described in violations 81-14-01, -02, and -03, occurred at least in part due to assumptions made by construction as to the responsibilities and operating procedures of the operating section and to the lack of necessary familiarity on the part of the operations section with regard to the requirements of the construction quality assurance program.

Corrective Steps Taken and Results Achieved

TVA has taken the following actions.

Construction test procedures now specify operating limitations for safety-related equipment used in construction testing and cleaning. Operations personnel are now indoctrinated in the requirements of construction test procedures, and an Administrative Instruction has been implemented controlling documents (drawings, manuals, procedures, etc.) transmitted from construction. These and other measures described under violations 81-14-01, -02, and -03 have prevented recurrence of the events cited or similar events.

Further evidence of the results of the corrective action taken by TVA management is NRC Inspection Report 390/81-23 which describes the review of a subsequent construction test activity, cold hydrostatic testing of the unit 1 reactor coolant system. This report states that an approved procedure was available and in use by all test personnel, test prerequisites were met, test equipment was calibrated and in service, the test procedure was followed, changes were documented and approved, communications were established as required, operator actions were timely and correct, test personnel were briefed during shift changes, QA personnel monitored the test, and that personnel were knowledgeable of test requirements and status. In addition, the inspectors noted the participation of power operations personnel, including supervisory personnel.

Corrective Steps to Avoid Further Violations

In addition to the specific actions taken to address elements of these violations, TVA has assigned the responsibility for overall corrective action, including overall interface activities with the operations division, to the OEDC Project Manager. This will ensure enhanced communications and interface activities between construction and operations in areas of a joint responsibility and will preclude incidents of this type in the future. Operations and construction have implemented coordinated corrective action to these deficiencies and are committed to continuing management emphasis on ensuring a comprehensive, cohesive Quality Assurance Program in these areas. Additionally, design, construction, and operations managers have initiated Startup Task Force Meetings which are held monthly to take action on any matter involving the project. The OEDC Project Manager currently serves as chairman of the Startup Task Force.

Other measures implemented to address the construction/operations interface include, as appropriate, operations attendance and participation in construction morning and afternoon management meetings, weekly scheduling meetings, system logic meetings, and special called meetings to address problems which may have implications generic to construction and operations. Operations personnel also actively participate in the review and provide input to construction test procedures.

Date of Full Compliance

TVA is now in full compliance.

Violation 50-390/81-14-01

10CFR50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, requires activities affecting quality to be accomplished in accordance with instructions. Also, activities affecting quality must be prescribed by instructions which include appropriate quantitative acceptance criteria. The accepted QA program, FSAR section 17.1A commits to safety guide 28 which endorses ANSI N45.2-1971. Section 6 of the Standard contains the same requirements as does Criterion V of Appendix B.

1. Contrary to the above, on or before June 15, 1981, activities affecting quality were not accomplished in accordance with the licensee's prescribed instructions, in that:

   a. Section 10.1 of WBNP-QCT-4.36-9, a licensee prescribed instruction, requires monitoring of centrifugal charging pump suction and discharge pressure during pump operation; however, on June 15, 1981, during three steady-state operations of centrifugal charging pump 1A-A CCP, discharge pressure was not monitored. Suction pressure was not monitored on two of the three operations. In consequence, blockage of the startup strainer was undetected and the centrifugal charging pump was extensively damaged.

   b. On June 15, 1981, system flushing operations were not coordinated, directed, and accomplished by a Construction Test Director as required by section 5.1.1 of WBNP-QCT-4.36, a licensee prescribed instruction.

   c. On June 15, 1981, personnel who participated in the system flush operation had not all been briefed regarding the operation in a meeting conducted by a Construction Test Director as required by section 5.1.10 of WBNP-QCT-4.36.

2. Contrary to the above, on June 15, 1981, WBNP-QCT-4.36-9, a prescribed instruction, did not include appropriate quantitative acceptance criteria. The instruction required that suction pressure, and startup strainer differential pressure, be maintained with operating limits; but no limits were provided.

This is a Severity Level V Violation (Supplement II.E).

Admission or Denial of Alleged Violation

TVA admits the violation occurred as stated.

Reasons for the Violation

1.a. The reason that the suction and discharge pressure gauges were not monitored was that before the flushing took place the assistant unit operator assigned to monitor these parameters was not given adequate briefing of his responsibilities during the flush. The pump was started on one occasion without instrumentation because the instrument lines were valved-off to repair a leak. At least one pump start was for the purpose of trouble-shooting (venting) rather than for steady-state operation.

1.b. The test director did not fully recognize his responsibility for coordinating and directing operations functions. The test director is not a trained operator and believed that the operation of equipment would be better handled by trained operators.

1.c. TVA's Division of Nuclear Power (NUC PR) operations personnel were not aware of the requirements of the test procedure. NUC PR personnel were not present at the test briefing and were not briefed later. The test director assumed he had fulfilled his obligation by holding the meeting.

2. The construction test procedure did not contain operating limits because the test director who wrote the procedure relied on an operating instruction which he had not researched. The operating instruction did not contain operating limitations which were applicable to the system conditions established for the flushing activity.

Corrective Steps Taken and Results Achieved

The following TVA action and controls have been implemented.

1.a. It has been reaffirmed to all shift engineers in a meeting conducted for this purpose, that it is their responsibility to stop the operation of any equipment whose operating parameters cannot be verified to be within prescribed limitations. Additionally, in September, the operations section issued Operating Section Letters (Administrative) 27 and 28 implementing a program for 'Certification of Assistant Unit Operators.' This program will aid in assuring that AUO's specifically monitor operating parameters on safety-related equipment used in testing.

1.b. All construction test directors have been formally retrained in the requirements for preparing and implementing QCTs (Quality Control Test Procedures) with special emphasis on prescribing and monitoring operating limitations and for conducting test briefings. Further emphasis in this area consists of a Section Instruction Letter dated August 3, 1981, to all Startup, Test and Coordination personnel reaffirming these requirements. As a part of these requirements, any personnel absent from the test briefing are briefed individually before their involvement in test operations.

1.c. The responsibilities of test directors have been reemphasized by means of formal training sessions and memoranda stating policy in this area and stressing the importance of the mandatory briefing for personnel involved in testing. In addition a prerequisite sign-off has been added to the test procedure to document participation in the briefing.

2. Test procedures are required to contain specific operating limitations for safety-related equipment. The monitoring of equipment parameters to ensure that limitations are maintained has been included in the acceptance criteria for these tests. The test procedure, including the operating limitations, is reviewed and approved by operations before issue.

The above corrective actions have effectively prevented recurrence in subsequent construction testing.

Corrective Steps to Avoid Further Violations

TVA has implemented the following steps.

To avoid further problems in this area, shift engineers will be provided with a short synopsis or outline of the test briefing both to supplement the briefing and to ensure continuity through shift changes. This synopsis will be provided to all operators participating in a test. Additionally, TVA will continue to enforce the requirement that operating limitations are specified in test procedures, that briefings are held and attended, and that test status is passed on at shift changes. The Operations Section has developed and implemented a program of 'Certification of Assistant Unit Operators' by means of Operating Section Letters 27 and 28 which stresses the importance of monitoring and evaluating operating parameters to ensure safe operation of equipment.

Date of Full Compliance

TVA is now in full compliance.

Violation 50-390/81-14-02

10CFR50, Appendix B, Criterion XI, Test Control, requires that test procedures include provisions for assuring that adequate test instrumentation is available and used. The accepted QA program, FSAR section 17.1A, commits to safety guide 28, which endorses ANSI N45.2-1971. Section 12 of the Standard contains the same requirements as does Criterion XI of Appendix B.

Contrary to the above, a licensee prescribed test procedure, WBNP-QCT-4.36-9, applicable to the June 15 flushing operation, did not include provisions for assuring the availability of test instrumentation described in the procedure.

This is a Severity Level V Violation (Supplement II.E).

Admission or Denial of Alleged Violation

TVA admits the violation occurred as stated.

Reasons for the Violation

TVA test procedures required that instrumentation be installed, ready for calibration, and released for operation before utilizing permanent plant equipment in conjunction with test evolutions. Test procedures also specified that equipment used in testing be operated in accordance with Standard Operating Instructions (SOI). It was assumed that if the SOI required monitoring equipment parameters, then the operating division would calibrate and utilize the necessary instrumentation.

Corrective Steps Taken and Results Achieved

TVA has implemented the following corrective actions.

All construction test procedures now specify operating limitations for safety-related equipment used in the test. Test procedures also require that operating limitations be maintained by monitoring equipment parameters by means of test instrumentation. These requirements ensure that required test instrumentation is available not only before, but throughout, the test.

Corrective Steps to Avoid Further Violations

The following management controls will be taken to assure that test requirements are met. Equipment parameters will be monitored by means of test instrumentation and equipment operation will be suspended in the event that parameters cannot be verified. This will preclude recurrence of this deficiency.

Date of Full Compliance

TVA is now in full compliance.

Violation 50-390/81-14-03

10CFR50, Appendix B, Criterion II, Quality Assurance Program, requires that the indoctrination and training of personnel assure that suitable proficiency is achieved and maintained. The acceptable QA program, FSAR section 17.1A, commits to safety guide 28, which endorses ANSI N45.2-1971. Section 2 of the Standard contains the same requirements as does Criterion II of Appendix B.

Contrary to the above, on or before June 15, 1981, personnel engaged in the June 15 flushing operation were not indoctrinated and trained to assure suitable proficiency, in that:

1. One Shift Engineer incorrectly evaluated the cause of 1A-A CCP vibration, roaring, and overheating to be a lack of design capacity of the miniflow recirculation line. He did not have information from pump suction and discharge pressure gauges to support this conclusion. He also recommended further pump starting without investigating the possibility of pump damage having occurred during the second run.

2. One Shift Engineer directed a third pump start, while suspecting an inadequate flow condition had previously existed, without assuring the availability of net positive suction head (NPSH) indication or investigating the possibility of prior pump damage. He then directed a fourth pump start after having observed abnormal motor current fluctuations during the third run, and without investigating the possibility of pump damage.

3. An uncontrolled folder of pump performance curves was provided in the control room with no management requirements for operator use in achieving or maintaining proficiency in pump operating limitations. The Nuclear Power operators did not consult this folder, nor the available procedure, nor did they have knowledge of 1A-A CCP NPSH requirements.

4. One Unit Operator did not know the connection point of the 1A-A CCP discharge pressure gauge. He incorrectly assumed it was not within the flow path boundary, and hence did not consider it to be of utility for the operation of 1A-A CCP.

This is a Severity Level IV Violation (Supplement II.D.1).

Admission or Denial of Alleged Violation

TVA admits the violation occurred as stated.

Reasons for the Violation

Inadequate indoctrination and training program in the requirements for support of construction testing activities was the cause of this violation.

Corrective Steps Taken and Results Achieved

TVA has taken the following corrective action.

1 & 2. It has been reaffirmed to all shift engineers that it is their responsibility to hold-up or stop any test evolution or operation if they cannot ensure that equipment can be operated within specified operating limitations. This was done in a Shift Engineer's meeting called for this purpose.

3. Construction test procedures are now required by a Startup Section Instruction Letter dated August 3, 1981, to include under 'Precautions' a requirement to observe and maintain equipment operating parameters and to verify by signature that all construction and operations personnel participating in the test have received a list of equipment operating parameters. This precludes the need for pump performance curves.

4. The Operations Section has developed and implemented a program for 'Certification of Assistant Unit Operators' by means of Operating Section Letters 27 and 28 in September of 1981. All AUO's assigned to the Auxiliary Building and Reactor Building were certified as AUO's before Cold Hydrostatic Testing of Unit 1 Reactor Coolant System in October 1981.

The above corrective steps have effectively prevented recurrence of the deficiencies cited in this report in subsequent construction tests.

Corrective Steps to Avoid Further Violations

TVA will continue to enforce requirements that operating limitations be contained in test procedures, that equipment parameters be continuously monitored, that personnel be briefed before commencing testing and at shift changes, and that shift engineers exercise their responsibilities for equipment safety. Continuing emphasis will be maintained through formal training and indoctrination and by enforcing the requirements of the Startup Section Letter dated August 3, 1981, and Operations Section Letters 27 and 28 implemented in September 1981.

Date of Full Compliance

TVA is now in full compliance.

Violation 50-390/81-14-08

10CFR50, Appendix B, Criterion VI, Document Control, requires that measures be established to assure that documents are distributed to and used at the location where activities affecting quality are performed. The accepted QA program, FSAR section 17.1A commits to safety guide 28 which endorses ANSI N45.2-1971. Section 7 of the Standard contains the same requirements as does Criterion VI of Appendix B and further requires that document control measures provide for ascertaining that proper documents are being used.

Contrary to the above, as of July 15, 1981, measures were not established to assure that proper documents were being used and 45 of approximately 200 safety-related drawings reviewed in the control room were out of date and drawings were supplied by at least one unauthorized source.

This is a Severity Level V Violation (Supplement II.E).

Admission or Denial of Alleged Violation

TVA admits the violation occurred as stated.

Reasons for the Violation

Inadequate procedures to control the distribution and availability of drawings in the main control room was the reason for this violation.

Corrective Steps Taken and Results Achieved

TVA's Division of Nuclear Power (NUC PR) has superseded Standard Practice WB3-29 with the requirements of Administrative Instruction 4.3, Drawing Control for Unlicensed Units, which provides for controlled distribution of System Configuration Control Drawings. AI-4.3 has been approved, implemented by the plant staff, and formally issued by the NUC PR Central Office. AI-4.3 together with WBNP-QCI-1.25, Control of As-Constructed Drawings, provide that configuration control drawings are promptly issued upon system transfer and promptly updated upon completion of modifications to transferred features. These drawings are distributed through the Drawing Control Center which is under the joint control of Construction and Nuclear Power. From the Document Control Center drawings are transmitted to the NUC PR Preoperational Test Group and to the Document Control Group for distribution to authorized folders including the folder in the main control room. AI-4.3 requires that superseded drawings be mutilated and discarded. Implementation of the requirements of AI-4.3 is effectively controlling the distribution of System Configuration Control Drawings.

Corrective Steps to Avoid Further Violations

Continued adherence to the requirements of AI-4.3 and WBNP-QCI-1.25 will preclude recurrence of this condition. Additionally, AI-4.3 requires periodic audits of drawing folders.

Date of Full Compliance

TVA is now in full compliance.