



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

Report Nos. 50-390/80-23 and 50-391/80-17

Licensee: Tennessee Valley Authority  
500A Chestnut Street  
Chattanooga, TN 37401

Facility Name: Watts Bar Nuclear Plant

License Nos. CPPR-91 and CPPR-92

Docket Nos. 50-390 and 50-391

Inspector: C. Julian for  
J. A. McDonald

10/6/80  
Date Signed

Approved by: H. C. Dance  
H. C. Dance, Section Chief

10/7/80  
Date Signed

## SUMMARY

Inspection on July 1-31, 1980

### Areas Inspected

This routine announced inspection involved 207 inspector-hours on site in the areas of Preoperational Test Program Implementation, Preoperational Testing Quality Assurance, Preoperational Test Procedure Review, Independent Inspection Effort, and Licensee Action on Previous Inspection Findings.

### Results

Of the five areas inspected, seven apparent items of noncompliance were found in four areas (Infraction - failure to follow system and component cleanliness procedures - paragraphs 3 and 7.b; Infraction - failure to follow procedures for corrective action and design changes - paragraphs 5.a, and 6.b; Infraction - failure to establish corrective action measures - paragraph 5.b; Infraction - failure to follow work plan procedures - paragraph 6.a; Infraction - failure to establish storage controls - paragraph 6.c; Infraction - failure to establish storage controls - paragraph 7.a; and, Infraction - failure to control testing - paragraphs 6.d and 8.a.).

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## DETAILS

### 1. Persons Contacted

#### -- Licensee Employees

- \*R. D. Anderson, Electrical Engineer
- \*E. Austin, Electrical Engineer
  - B. Barnes, Mechanical Engineer Unit B
- \*R. W. Cantrell, Design Project Manager
  - J. Chattin, Mechanical Engineer Unit B
- \*R. D. Eidson, Startup and Test Coordinator Supervisor
- \*J. E. Gibbs, Outage Director - NUC PR
  - B. Elzroth, Westinghouse Engineer
- \*E. R. Gray, Jr., Mechanical Engineer - NUC PR
  - L. Harris, Mechanical Engineer Unit B
- \*T. W. Hayes, Instrumentation Engineer Unit Supervisor
  - A. Hogarth, Westinghouse Project Manager
- \*L. T. Johnson, Mechanical Engineer Unit B Supervisor
- \*S. Johnson, Assistant Construction Engineer - Mechanical
- \*M. K. Jones, Preoperational Test Supervisor - NUC PR
- \*T. Kirkpatrick, Mechanical Engineer - Outage
- \*V. L. Patuzzi, Quality Assurance Engineer - NUC PR
- \*H. C. Richardson, Construction Engineer
- \*A. W. Rogers, Quality Assurance Supervisor - Construction
  - J. Smalley, Mechanical Engineer Unit B
- \*J. E. Treadway, Construction Superintendent
  - G. Vest, Mechanical Engineer Unit B
- \*S. Walker, Quality Control and Records Unit Supervisor
  - R. Washington, Mechanical Engineer Unit B
- \*C. H. Wittemore, Office of Power Quality Assurance
- \*J. E. Wilkins, Project Manager
  - G. Williams, Instrumentation Supervisor - NUC PR
- \*B. Willis, Nuclear Power Quality Assurance Supervisor

#### Other Organizations

- \*T. D. Gibbons, USNRC Electrical Engineer - Construction
- \*E. Intrator, USNRC Escorted Foreign National - Brazil

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on July 31, 1980 with those persons indicated in Paragraph 1 above. The licensee acknowledged the findings. No commitments for resolution of the unresolved or open items discussed in the report were made by the licensee. The inspector will make a separate request for such commitments.

3. Licensee Action on Previous Inspection Findings

(Closed) Infraction (50-390/80-08-01): Failure to maintain system cleanliness protection. The effectiveness of licensee corrective action for this finding was not satisfactory, as discussed in Paragraph 3 of IE Inspection Report 50-390/80-21, 50-391/80-15. The supplemental response to this finding provided July 23, 1980 stated the licensee was in full compliance as of July 14, 1980. Inspection of the Unit 1 Reactor Building on July 25, 1980, revealed the following repetitious violations of the system cleanliness requirements detailed in WBNP-QCP-4.10, Appendix E, Section 6.3.5. These examples were found in safety-related systems, including the Reactor Coolant System and the Chemical and Volume Control System.

- a. Twenty-five safety-related open ended pipes and flanges were found below Elevation 757.
- b. Ten different areas at or above Elevation 757 contained safety-related fittings and piping that were left uncontrolled and uncapped.

This example of failure to follow procedures for maintenance of system cleanliness constitutes an item of noncompliance (50-390/80-23-01, 50-391/80-17-01). Another example is described in paragraph 7.b.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. A new unresolved item identified during this inspection is discussed in paragraph 6.e.

5. Preoperational Testing Quality Assurance

- References:
- a. Watts Bar Nuclear Plant Quality Control Procedure (WBNP-QCP)  
1.2, Control of Nonconforming Items, Revision 9, dated 2/2/80
  - b. Office of Power Quality Assurance Procedure (OP-QAP)  
18.1, Audits, Revision 2

The inspector reviewed the licensee's corrective actions taken with respect to three types of deficiencies: an NRC Office of Inspection and Enforcement finding (see paragraph 3), a Division of Construction Nonconforming Condition Report (NCR), and an Office of Power Quality Assurance Audit Finding. Findings were unacceptable as noted below:

- a. The review of Nonconforming Condition Report (NCR) 2272R revealed several deficiencies with Kerotest globe valves used in Class one and two safety-related systems. On July 31, 1980, at inspector request, four valves were procured from warehouse storage and disassembled for

inspection. Generic deficiencies on all four valves inspected were as follows:

(1) Valve, Serial No. KZ 18-21, 3/4"

- (a) The valve contained seven concave diaphragms as required by the manufacturer's instruction manual; however, all diaphragms were dented in the center.
- (b) The ball bearings and the adjacent race were corroding and did not exhibit proper freedom of movement.
- (c) All valve internals above the seat and extending to the top of the yoke were wet.
- (d) Water soaked packing had apparently caused pitting of the adjacent stem.
- (e) The yoke internals were beginning to corrode. The valve internals were dirty and excess antiseize compound was noted on the internals. Vendor-applied neolube on the internal bonnet threads was flaking and peeling away. Most threads were bare.
- (f) The diaphragm seating surface was slightly pitted.

(2) Valve, Serial No. KZ 15-19, 1"

All deficiencies noted in example a.(1) were found to a lesser degree.

(3) Valve, Serial No. KZ 15-10, 1"

Seven diaphragms were dented, but dents were larger than the two previous examples (KZ 18-21, KZ 15-19). Deficiencies a.(1)(c)(d) and (f) were noted on this valve.

(4) Valve, Serial No. KZ 18-16

- (a) All deficiencies shown in example a.(1) were found on this valve.

Discussions with Mechanical Engineering Unit (MEU) personnel revealed that numerous problems existed with the design, installation, and testing of Kerotest globe valves. The handwheels promoted overtorquing with subsequent diaphragm denting and ball bearing breakage. Water left in the yoke above the diaphragm after factory hydrostatic testing promoted corrosion of bearings, races, and the yoke. Valve seat pitting had caused subsequent seat leakage. The licensee had identified corroded internals, seat leakage and overtorquing

by nonconforming condition reports (NCR). One NCR (2272R) had been designated significant by the construction site. A copy of the NCR was sent to the Office of Engineering Design (ENDES), as required, and a potential 50.55(e) report was made to the NRC Regional Office. This potential report was later considered not reportable by the licensee, and was withdrawn. The division of Engineering Design (ENDES) agreed with the site recommendation to cut out the affected valves listed on the NCR; however, the response further indicated that the site personnel should contact the vendor and keep ENDES abreast of findings.

A letter dated May 29, 1980, from the vendor to ENDES indicated that the vendor had done a construction site inspection and had uncovered several problems directly related to the valves. Each problem was followed by vendor recommendations. As of July 31, 1980, ENDES had not formally communicated any guidance on these recommendations to the site. ENDES had not evaluated the valve design problems as noted by response to NCR 2272R. No effort had been made by the licensee to correct the generic deficiencies to preclude recurrence as required by Section 6.3.2 of WBNP-QCP-1.2.

This failure to follow procedural requirements to preclude repetition constitutes an item of noncompliance (390/80-23-02, 391/80-17-02). Another example is described in paragraph 6.b.

- b. Section 4.2 of OP-QAP-18.1 defines a Category B audit finding as a violation of requirements which does not immediately impair the effectiveness of the program. Section 6.4.2 requires that the audited organization correct a Category B audit finding but does not require that these deficiencies and deviations are "prompt... corrected..." as required by Criterion XVI of Appendix B to 10 CFR 50. Audit finding B-6 of audit OP-QAA-WB-80-02 identified the generic lack of quality storage controls for some items currently in storage in the Power Stores warehouse. Since the appropriate storage procedures were not developed and the appropriate storage controls were not being conducted, the Category B finding appears inappropriate. The finding was made February 29, 1980, yet specific corrective actions had not been put in place, nor procedural requirements established by July 31, 1980. Though the staff indicated the intent was for Category B findings to be promptly corrected, no formal prompt correction requirement existed. Therefore, this finding of inadequate corrective action is attributed to failure to establish appropriate measures. This item constitutes an item of noncompliance (50-390/80-23-03, 50-391/80-17-03).

## 6. Preoperational Test Program Implementation

References: (a) Watts Bar Nuclear Plant Quality Control Instruction (WBNP-QP) 1.30, Control of Work on Transferred Systems, Equipment and Architectural Features, Revision 0, dated 3/23/79

- (b) WBNP-QCP-1.30, Attachment B, Work Plan
- (c) WBNP-QCP-1.30, Attachment E, Work Plan Control Form
- (d) Watts Bar Nuclear Plant Administrative Instruction (AI), 8B, Work Plan Control Form
- (e) Engineering Design Engineering Procedure (ENDES EP) 4.02, Engineering Change Notices (ECN) Handling Revision 9, dated 9/14/79
- (f) WBNP-QCP-1.22, Transfer of Permanent Features to the Division of Nuclear Power, Revision 0, dated 5/19/80
- (g) WBNP-QCP-1.24, Initial Calibration and Testing of Permanent Plant Instrumentation, Revision 1, dated 9/14/77
- (h) Abnormal Operating Instruction (AOI) 7, Flood Mode, Draft

The inspector reviewed: The control of maintenance during preoperational testing under work plans 0174, 0181, 0190, 0201, and 0212, the implementation of design changes; the protection and preservation of equipment; the approval of preliminary tests/test results; and the control of system turnover. Findings were acceptable with the exception of the following:

- a. Work plans for conducting work on safety-related systems were not prepared, reviewed and approved per references a through d as follows:

Three work plans did not receive proper review.

Reference c, Section V, required PORC review if Section III.b indicated the work plan was initiated by an Engineering Change Notice. Work Plan 0190 included a punch list containing Engineering Change Notices (ECN) 1852, 2162, 2184. However, Reference d, Section 1, indicated that the work plan reference document was punch list only, with no referenced ECN's. Additionally, Reference d, Section III.b, indicated that an ECN did not initiate the work plan even though three ECN's appeared on the punch list. The work plan did not receive PORC review as required.

Reference d, Section V, required Plant Operations Review Committee (PORC) review if Section III.b of Reference d indicated the work plan was initiated by an FCR. Section III.b of Work Plan 0201 was marked "no"; however, Work Plan 0201 did include an FCR that required review, and it was not reviewed by PORC.

Reference c, Section III, for Work Plan 0181, stated that the Power Production Coordinator can approve the work plan if Section III.b was answered "no". Section III.b was answered no; however, neither the Power Production Coordinator's signature nor other approved signature appeared on Reference c.

- (1) Reference c, Section I, required that reference documents including Field Change Request (FCR) be noted by check mark. Work Plan 0201 contained numerous punch list items to be worked, one of which was FCRM-5413. However, the FCR blank was not checked as required. Also, references c and d, Section III, did not indicate that the work plan was initiated by an FCR. Finally, reference c, Section I, did not indicate that the work plan would complete the FCR. Section V of reference d required PORC review for work plans authorizing an FCR. This PORC review was not done.
- (2) Reference a, Section 6.2.3.4 and 6.2.3.5 required that the "Prerequisites" and "Precautions" Sections of reference 2 be filled in. Those sections of work plans 0181 and 0201 were left blank.
- (3) Reference a, Section 6.5.2, required that copies of any required Operations Sheets be included in the work plan by responsible engineers when they were completed. Complete work Plan 0174 did not include the Bolting Operations Sheet that was used in the work process.
- (4) Reference a, Section 6.3.10 required distribution of work plan cover sheets to the NUC PR Shift Engineer. Section 6.4.7 required that the responsible engineer coordinate with the NUC PR Shift Engineer to put the equipment back in service. Under Work Plan 0212, which was issued to modify instrument piping in the Residual Heat Removal System, valve 74-111A was tagged shut with Tag No. 8295.

As of July 14, 1980, the NUC PR Shift Engineer did not have a copy of the work plan cover sheet even though the tagout was in effect for Work Plan 0212. Furthermore, the responsible engineer had not coordinated with the Shift Engineer to insure system status was returned to normal and the hold tag removed when work Plan 0212 was completed on April 15, 1980.

These examples of failure to follow procedures, collectively constitute an item of noncompliance (50-390/80-23-04).

- b. The inspection of design changes in progress revealed two changes to the plant which are within the scope of engineering drawings that did not result in changes to the drawings. Both changes were required to be conducted as Engineering Change Notices (ECN's) per reference e.
  - (1) A memo dated April 10, 1974, directed a change in design specifications to replace original John Crane 187-I type packing with Grafoil packing. The new packing was to be added to stainless steel valves subjected to borated water and high pressure. Another memo (MEB 780519 379) dated May 18, 1978, provided catalogue numbers and sizes for valves that were to be repacked; however, ENDES did not fulfill the ECN process requirements to update the affected drawings and as a result the Division of Power had procured John Crane 187-I packing instead of Grafoil packing.

- (2) A design Information Request (DIR), M-35, dated August 14, 1979, was sent from Watts Bar Construction site to ENDES to request clarification of a Process Specification (G-29M). The DIR requested approval to use A320 GRL43 steel anchor bolts that contacted a stainless steel anchor ring. The ENDES disposition stated that the use of the bolts was acceptable; however, polyethylene sleeves were to be used on the bolts. An inspection on July 30, 1980, revealed that the polyethylene sleeves were in place on the bolts between the anchor ring upper lip and the adjacent bolt surface; however, no polyethylene was installed on the anchor ring lower lip and the adjacent bolt surface. An aluminum shim had been placed between the anchor ring lip top surface and the bolt washer. The DIR had not directed the use of this shim. As of July 31, 1980, ENDES had not issued an ECN for either one of these design changes.

These examples of failure to follow procedures for the issuance of ECN's to document design changes collectively constitutes an item of noncompliance (50-390/80-23-02, 50-391/80-17-02). Another example is described in paragraph 5.a.

- c. The Unit 1 Residual Heat Removal (RHR) system had been tentatively transferred to the Division of Nuclear Power. Operating, maintenance and chemistry control procedures were in place to prevent deterioration of internal surfaces of the normal piping boundaries. However, no administrative control prescribed necessary care of the temporary flood mode spool pieces which must be compatible with the cleanliness of grade B systems. The Unit 1 spool piece was stored, unprotected, near the location of system connection and was being used to support one end of a temporary bench. This example of failure to establish storage controls as required by Criterion XIII constitutes an item of noncompliance (50-390/80-23-05). The immediate corrective action of cleaning, inspecting, protecting and storage of these items was completed during the course of this inspection. Therefore, the licensee's response need only address action taken to prevent recurrence.
- d. The Watts FSAR, Section 17.1A.11.3, required that final detailed procedures for preliminary tests be reviewed by the proper divisions of the Engineering Office of Design and Construction, Power, and the NSSS vendor. Also, the preliminary test results were to be evaluated at the time of the test by the NSSS vendor. Of the following sample of four types of preliminary tests, examples 1 and 2 were not reviewed by the Office of Power. The NSSS vendor approved none. None of the preliminary test results were evaluated on site at the time by the NSSS vendor. No procedures existed to require the reviews which were not performed on these preliminary tests:
  - (1) Mechanical Hydrostatic Tests, Standard Test No. 87, Appendix D, of Watts Bar Quality Control Procedure 4.10, Standard Inspection and Test Instructions for Mechanical Piping Systems, Revision 23, dated 2/26/80.



- (2) Motor Rotational Check and Initial Run, Standard Test No. 6-85, Appendix A, of Watts Bar Quality Control Procedure 3.6, Electrical and Instrumentation Equipment Installation, Standard Tests, Inspections, and Documentation, Revision 11, dated 8/10/79.
- (3) Performance of Initial Calibration and Testing of Permanent Plant Instrumentation, Instrument Section, Instruction Letter No. 6.1, dated 8/10/79.
- (4) Preoperational Flushing Instruction for Residual Heat Removal System, Watts Bar Field Instruction M-32, Revision 2, dated 5/29/79.

This failure to appropriately control testing as required by Criterion XI constitutes an item of noncompliance (50-390/80-23-06 and 50-391/80-17-04). Another example is described in paragraph 8.a.

- e. Watts Bar FSAR, Section 5.5.7.3.4 and Engineering Design Drawing 47W601-68-23, R7, Electrical Instrument Tabulations, differ in the requirements for settings of pressure switches used to operate Residual Heat Removal System suction valves in line from No. 4 Reactor Coolant System Hot Leg. The pressure switches have been calibrated per the requirements of the drawing; however, the FSAR requires the valves to operate at different pressures. Until the licensee determines the cause for the disparity between the FSAR and the instrument tab, revises the conflicting documentation, and implements any revised requirements, this item is unresolved (50-390/80-23-07, 50-391/80-17-05).
- f. Review of QCP's and discussion with Engineers indicated that procedures for tentative transfer and work plans were not always clear and were not always followed. Examples are as follows:
  - (1) No procedure exists that insures all items required to be completed on a safety-related system after tentative transfer are attached to the system transfer package. Punch lists are attached and periodically updated by engineers and STC; however, punch lists are not required by procedure to contain all outstanding work.
  - (2) Outstanding Work Item Lists (OWIL) do contain more information than punch lists; however, they are not totally indicative of remaining work and are not required to be attached to work packages.
  - (3) No formal procedure exists to add items to punch lists and no procedure insures that copies of punch lists are updated.
  - (4) The Construction Work Plan Control form and the NUC PR Work Plan Control form differ in approval requirements for work plans.

- (5) Procedures state that maximum number of items possible should be cleared from the punch list and OWIL prior to transfer; however, it does not appear that this procedure is followed. ST&C is issued a date by management and the system is transferred regardless of outstanding items that could easily be cleared.

Until the licensee reviews tentative transfer and work plan procedures to better control system turnover and subsequent work, this item is open (50-390/80-23-08.).

- g. Section 6.1.2 of WBNP-QCP-1.24 states that Construction has the responsibility for the installation of permanent plant equipment. Section 6.3.17.1 of WBNP-QCI-1.22 states that the transmittal of the computer test data card for instrument calibration constitutes tentative transfer of the equipment. No formal requirements exist to ensure verification of the completion of prerequisite construction activities such as wiring checks prior to this tentative transfer. Currently an informal listing of wiring completion is provided to the Division of Nuclear Power with the transferred equipment.

Until the licensee revises his procedures to ensure that prerequisite construction activities support instrumentation tentative transfer, this item is open (50-390/80-23-09, 50-391/80-17-06).

- h. TVA Memo 78 0519 379 dated May 18, 1978, provided direction for repacking valves in safety-related systems with Grafoil packing. The direction given in that memo did not address the use of extrusion rings even though extrusion rings were being added to the packing at Watts Bar. The attachment to the memo called for 189 valves to be repacked. Conversation with Watts Bar employees by the inspectors, indicated that Sequoyah Nuclear Plant had approximately 900 valves repacked with Grafoil packing. Until the licensee provides instruction in the use of extrusion rings in valves which are being repacked with Grafoil packing and explains the reduction in the number of valves to be repacked at Watts Bar Nuclear Plant, this item is open (50-390/80-23-10, 50-391/80-17-07).
- i. AOI-7 contained various appendices which control the installation of spool pieces in preparation for flood mode operation. These appendices did not specify:

- (1) spool piece storage location
- (2) type wrench(es) required for installation
- (3) bolt torque requirements
- (4) type gasket(s) required
- (5) gasket storage location

In the event that this procedure is required to be implemented, prior planning of the above items and incorporation into the procedure should prevent an ineffective/inefficient operation. Until the licensee reviews the control of spool piece installation and revises procedures accordingly, this item is open (50-390/80-23-11, 50-391/80-17-08).

- j. Memo 363 M110, dated April 8, 1974, to TVA Director of Power Production from TVA Director of Engineering Design, stated that the Division of Engineering Design had taken the position that TVA shall specify, subject to NSSS vendors' concurrence, Grafoil packing for all valves in high pressure systems that are subjected to borated water in the Watts Bar Plant. As of July 23, 1980, 96 valves had been repacked at Watts Bar; however, correspondence stated NSSS vendor concurrence was unavailable onsite. Until the licensee demonstrates vendor concurrence or the basis for waiving it, this item is open (50-390/80-23-12, 50-391/80-17-09).

## 7. Independent Inspection Effort

- References:
- (a) Watts Bar Nuclear Plant Quality Control Procedure (WBNP-QCP) 1.2, Control of Nonconforming Items, Revision 9, dated 2/20/80
  - (b) WBNP-QCP-1.6, Receipt, Inspection, Storage, Withdrawal, and Transfer of Permanent Material, Revision 8, dated 12/6/78

The inspector toured the area of the Unit 1 Refueling Water Storage Tank to ascertain the status of its construction. During the procurement of Kerotest valves from Warehouse No. 9, the inspector expanded the inspection to include cleanliness controls implemented in Warehouses 9 and 21 and the nearby yard storage. A plant tour raised questions about RHR valve nameplate data as discussed in Paragraphs 7.c and 7.d. Findings were acceptable with the exception of the following:

- a. On July 28, 1980, an inspection of Unit 1, Refueling Water Storage Tank (RWST) revealed several deficiencies involving deterioration of materials and equipment. Further investigation by the inspector and subsequent communication with licensee engineers indicated that periodic inspection on systems by the engineers, crafts or both was not required during construction. Periodic preventative maintenance of certain equipment was required for items in warehouse or "in place" storage but periodic system walkdown was not required until tentative transfer. Watts Bar Quality Control Procedure (QCP) 1.4, Conditions Adverse to Quality, had previously been in effect and had assigned responsibilities for reporting deficiencies, but this responsibility was deleted when the body of the procedure was incorporated into QCP-1.2, Control of Nonconforming Items.

QCP-1.2 provided guidance for documenting nonconforming items but did not give instructions for promptly identifying nonconformances. Engineers indicated that Nonconforming Condition Reports (NCR's) were normally written as a result of receipt inspections or as a result of work being done in the field by crafts and witnessed by the engineer for documentation purposes.

Given the apparent lack of formal requirements to inspect for nonconforming conditions, especially those caused by damage or deterioration subsequent to initial construction, the inspector checked to see if the deficiencies noted around the Unit 1 RWST were addressed as NCR's. The following conditions existed and had not been identified in the licensee's system for handling nonconformances, WBNP-QCP-1.2:

- (1) Four electrical panels, housing Refueling Water Storage Tank (RWST) Level Transmitters, were opened, contained rusted contacts, and were filled with debris.
- (2) Standing water was noted inside electrical panels and in conduit lines that had missing conduit body covers.
- (3) Rusted carbon steel wire used to join insulation banding was in contact with one RWST manway.

This failure to establish storage controls as required by Criterion XIII constitutes an item of noncompliance (50-390/80-23-13).

- b. Section 5.2.2 of WBNP-QCP-1.6 requires that the Responsible Engineer assign adequate storage requirements to materials and Section 6.3.4 of Appendix E to WBNP-QCP-4.10 requires periodic storage inspections. The assignment of storage requirements and the ineffectiveness of inspection resulted in the following conditions. Warehouse 9 and 21 contained over one thousand stainless steel QA valves, flanges, tees, cups, couplings, and reducers which were available for use in cleanliness class B systems, yet were stored with internal surfaces unprotected from contamination. Well over one hundred Kerotest brand valves apparently had had their vendor-supplied protective packaging discarded because it was not flame retardant. Yard sheds 11 and 12 contained QA Level I stainless steel tubes (over one thousand 1/2", schedule 80, ASME SA 376 and two 4", schedule 40, ASME SA 376) available for use in cleanliness Class B systems with deteriorated protective caps that have allowed internal contamination. These examples of failure to follow storage procedures constitutes an item of noncompliance (50-390/80-23-01, 50-391/80-17-01). Another example is described in paragraph 3.
- c. Relief valve RLV-74-505, the Residual Heat Removal (RHR) Inlet Line Relief Valve, is set to relieve at 450 psi. Name plate data on the valve indicates 10% blowdown. Setpoint variance percentage is plus or minus 3 percent. Watts Bar General Operating Instruction (GOI) No. 1, Section II.E states RCS pressure shall not exceed 450 psi. when the RHR system is in operation. Section N, Solid Water, states that the RHR system will remain in operation during solid water when RCS is at low pressure (less than 500 psi and solid water). Section III, No. 42, requires the operator to initial for placing the RHR in the ECCS mode prior to reaching an RCS temperature of 350F or 450 psig. Until the licensee revises procedures to prevent inadvertent or premature lifting of RLV-74-505, this item is open (50-390/80-23-14, 50-391/80-17-10).

- d. Residual Heat Removal and Containment Spray piping that penetrates the Refueling Water Storage Tank (RWT) cavity floor is sleeved. The installed sleeves are flush with the cavity floor which causes drainage water to wet the stainless steel piping while draining to the sump. Until the licensee reviews the adequacy of piping protection afforded by this design this item is open (50-390/80-23-15).

8. Preoperational Test Procedure Review

- References:
- (a) Construction Specification G-50, Torque and Limit Switch Settings for Motor Operated Valves, Revision 0, dated 2/23/79.
  - (b) Watts Bar Nuclear Plant Quality Control Procedure (WBNP-QCP) 3.6, Electrical and Instrumentation Equipment Installation, Standard Tests, Inspections, and Documentation, Attachment A, Torque and Limit Switch Adjustment for Motor Operated Valves, Revision 11, dated 8/10/79.
  - (c) Division Procedures Manual N75M1, Torque and Limit Switch Settings for Motor Operated Valves, DPM No. N75M1, revised 8/2/79.
  - (d) Watts Bar Nuclear Plant Standard Practice (WB) 7.2.13, Torque and Limit Switch Settings for Motor Operated Valves, revised 12/17/79.
  - (e) Watts Bar Nuclear Plant Maintenance Instruction (MI) 0.3, Limitorque Motor Operator Adjustment Guideline, Revision 2, dated 5/19/80.
  - (f) Westinghouse Instruction Book, Motor Operated Gate Valves, Instruction Book 5710-99-H003, Revision 0.

The inspector reviewed Revision 0 of the test procedure W-10.8, Upper Head Injection, for conformance with the requirements of Regulatory Guides 1.68, 1.79 and commitments contained in FSAR Table 14.2-1. The following problems were identified:

- a. Reference (f) provided manufacturer requirements for motor operated valve torque switch setting which were required to assure that the below listed valves met their design leakage specification when they are closed by a safety injection signal. These torque switches were factory set at their design settings. References (a) through (e) collectively allowed/prescribed this torque setting to be reduced below design during initial set up of these valves, yet never required returning to the design setting for operation.

	Design Torque Setting	Actual Torque Setting
1-FCV-62-90	*Unknown	1
1-FCV-62-91	2	1
1-FCV-62-98	2-1/4	1

	Design Torque Setting (Continued)	Actual Torque Setting
1-FCV-62-99	2-1/4	1-1/4
1-LCV-62-133	1-3/4	1-3/4

\*Not available on site.

Additionally, reference (f) provided manufacturer requirements for the setting of geared limit switches, which were required to assure proper operation and indication of 1-FCV-63-25, -26, -39, -40 and 1-LCV-62-135, -136 as they are opened by a safety injection signal. References (a) through (e) required open travel limit switches on these valves to be set nonconservatively closer to the valve backseat than specified by the manufacturer. These settings of 97 to 98 percent of full stem travel were issued without instruction that they were intended to prevent settings of closer to 100 percent and were not to supersede manufacturer specifications which were less than 97% of stem travel.

Valve Number	Manufacturer Requirement	Actual Setting
1-FCV-63-25	approx. 91%	approx. 98%
1-FCV-63-26	approx. 91%	approx. 97%
1-FCV-63-39	approx. 91%	approx. 98%
1-FCV-63-40	approx. 91%	approx. 98%
1-LCV-62-135	approx. 95%	approx. 98%
1-LCV-62-136	approx. 95%	approx. 97%

These examples of failure to use manufacturers instructions, as required by ANSI N45.2.4, to control testing constitutes an item of noncompliance (50-390/80-23-06). Another example is described in paragraph 6.d.

b. Procedural Development was inadequate in the following areas:

- (1) Procedural steps inspecific in Steps 5.1.4.1, 5.1.7, 5.3.1, 5.3.2.3., 5.5.10
- (2) Torque switch/limit switch operation not rigorously tested in Steps 5.1.8, 5.1.11, 5.1.13, 5.1.14.6, 5.1.14.7, 5.2.8, 5.2.10, 5.2.17.6, 5.2.17.9.
- (3) Thorough testing of Hand switch operation not documented for FCV-87-17 and UHI hydraulic pump.
- (4) Motor heaters untested for FCV-87-17 and the gags FCV-87-21B, -22B, -23B and -24B
- (5) Red running light not tested for FCV-87-17 and the gags FCV-87-21B, -22B, -23B and -24B

- (6) Drawings 45W760-87-2 and 45W600-57-27 identify the FCV-87-21 through 24 stem mounted limit switches as 33/STEM and do not show that they must be installed and tested as type "ac" contacts.

Until the licensee revises procedures for testing of the Upper Head Injection system for Unit 2 and accomplishes necessary documentation or retesting to satisfy these concerns for Unit 1, this item is open (50-390/80-23-16, 50-391/80-17-11).