UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-390/84-73

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

Docket No.: 50-390 License No.: CPPR-91

Facility Name: Watts Bar 1

Inspection Conducted: September 10-14, 1984

Inspector: C. Julian 10/23/84
C. A. Julian, Inspection Team Leader Date Signed

Team Members: D. Myers
C. Hehl
R. Brewer
W. Orders

Approved by: A F Gibson 10/23/84
A. F. Gibson, Branch Chief Date Signed
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 169 inspector-hours onsite in the areas of onsite review of Administrative Instructions, Emergency and Abnormal Operating Instructions, General and System Operating Instructions, Surveillance Instructions, and Maintenance Instructions.

Results: Of the five areas inspected, no violations or deviations were identified. In these areas, some important deficiencies were identified that need correction prior to issuance of an operating license for Watts Bar. These items are identified as Inspector Followup Items.

REPORT DETAILS

1. Licensee Employees Contacted

*W. T. Cottle, Site Superintendent
*E. R. Ennis, Plant Manager
*M. K. Jones, Engineering Supervisor
*R. Norman, Operations Supervisor
*L. E. Ottinger, Instrumentation and Control Superintendent
*J. S. Woods, Instrumentation and Control Supervisor
*R. A. Beck, Health Physics Supervisor
*R. C. Manley, Planning and Scheduling Supervisor
*R. C. Sauer, Compliance Supervisor
*R. D. Greer, Electrical Supervisor
*R. T. McCollom, Compliance Engineer
*B. J. Willis, Plant Staff

Other licensee employees contacted included numerous technicians, operators, mechanics, security force members, and office personnel.

NRC Resident Inspectors

*M. B. Shymlock, Senior Resident Inspector
*W. E. Holland, Resident Inspector
C. Caldwell, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 14, 1984, with those persons indicated in paragraph 1 above. The inspectors described the major areas where procedure work remains to be done and stated that these areas need management attention and correction prior to issuance of a NRC license for Watts Bar. Licensee representatives acknowledged their understanding of these items.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items*

Unresolved items were not identified during this inspection.

5. Administrative Instructions

The following Administrative Instructions (AI) were reviewed to verify that the licensee has clearly established and disseminated the intended manner for conduct of plant activities.

AI-2.1 Authorities and Responsibilities for Safe Operation and Shutdown, Rev. 10, 7/11/84

AI-2.16 Shift Technical Advisor, Rev. 4, 8/3/84

AI-3.1 Plant Instructions - Control and Use, Rev. 5, 6/15/84

AI-2.19 Independent Verification, Rev. 1, 7/13/84

AI-3.4 Plant Operating Instruction, Rev. 5, 5/9/84

AI-1.1 Plant Operations Review Committee, Rev. 1, 3/22/83

AI-2.10 Shift and Relief Turnover, Rev. 7, 6/8/84

AI-2.11 Log Entries and Review, Rev. 5, 6/12/84

AI-2.12 Clearance Procedure, Rev. 9, 7/26/84

Specific comments on these procedures are as follows:

AI-2.19 sets forth the policy for independent verification (IV) and appears to be a good description of an acceptable IV program. It does not appear, however, that AI-2.19 is yet fully implemented at Watts Bar. The punchlist to AI-2.19 states that personnel will be trained and administrative controls for IV will be in effect by July 27, 1984. The inspectors did not attempt to verify these items as this inspection focused on procedures. The punchlist also states that applicable plant instructions addressed in this AI are to be revised to include IV provisions by Unit 1 fuel load. This punchlist item is not complete at Watts Bar.

*An Unresolved Item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

It appears that the task of revising the various instructions to incorporate IV has been delegated to the individual section leaders with no uniform guidance from management as to how this is to be done and no comprehensive tracking program to measure the progress of the task or to verify when it is complete. The inspectors informed licensee management that the present condition is unacceptable for license issuance. Specific examples of the lack of IV are included in the following paragraphs, but general areas that require work are the Surveillance Instructions (SI) and the General Operating Instructions (GOI). Most of the SIs have yet to be revised to incorporate IV, especially in the instrumentation and control (I&C) area. GOIs generally require IV for valve alignments but not for electrical power lineups when placing equipment in service. The completion of the implementation of IV will be verified during a future inspection and will be identified as Inspector Followup Item (IFI 390/84-73-01).

AI-3.4 contains a commitment for the Plant Operations Review Committee (PORC) to perform a review of the operating manual, i.e., the operating instructions, not less than 90 days before fuel load to ensure their adequacy. The inspectors attempted to find the origin and basis for this commitment by interviewing numerous management personnel including Quality Assurance. No one could provide a response as to the source of this item. The inspectors stated that such an audit by the PORC is an excellent practice. This matter will be reviewed during a future inspection (IFI 390/84-73-02).

AI-2.1, paragraph 3.2.3 implements the proposed Technical Specification (TS) requirement that a memorandum be reissued annually to plant personnel describing the Shift Engineer's control room command authority. The inspector noted that the words of the current AI-2.1 do not match the proof and review TS. Paragraph 3.8 of AI-2.1 references paragraph 3.23 for guidance on actions which depart from a license condition or TS. This reference apparently should be to paragraph 3.21. Resolution of these comments will be reviewed during a future inspection (IFI 390/84-73-03).

AI-3.1 specifies the methods to accomplish temporary changes to instructions. The Shift Engineer is responsible for issuing a sequential number for temporary changes (TC) and once the TC is approved, copies are routed to several places. The inspector reviewed the status of approximately 100 TCs to verify implementation. There are recurring problems with TCs on the fire protection surveillance instructions not having the date submitted filled in. Approximately 15 examples of this type of problem were observed as being initiated by the same individuals.

One TC, 84-212 submitted 8/1/84, dealt with connecting vent hoses to the reactor coolant system during filling and venting. This TC was apparently not properly completed in that the approvals by two individuals, one being an SRO, were dated 8/14/84, and the TC was not marked 'yes' or 'no' as to the intent of the TC. Apparently the original copy was also unsigned for the two required approvals.

Planning and Scheduling (P&S) is responsible for forwarding to the control room blank, up-to-date copies of instructions for use, including any TCs in effect. The inspector observed that 14 TCs were not in the P&C reference books. Thus, there is a potential that blank instructions would be issued for use that would not include the current TCs.

Since a license has not been issued for fuel load and operation of Watts Bar, these discrepancies were not identified as a violation. However, prior to license issuance, management attention should be directed toward ensuring faithful compliance with AI-3.1 to properly control TCs. (IFI 390/84-73-04)

6. Emergency and Abnormal Operating Instructions (42452)

The review of Emergency Operating Instructions (EOI) and Abnormal Operating Instructions (AOI) included a detailed review of a selected sample of these procedures, observation of EOI and AOI use during an emergency preparedness exercise, "walk-throughs" of several EOIs with facility reactor operators, and observation of AOI use during a preoperational test of the auxiliary control room.

The detailed review of a selected sample of EOIs and AOIs utilized the following reference material:

- Regulatory Guide 1.33, Revision 2, February 1978
- ANSI N18.7 - 1976/ANS 3.2

This review determined that the facility had in place, properly reviewed and approved procedures covering those topics identified in paragraph 6 of Appendix A to Regulatory Guide 1.33, Procedures for Combating Emergencies and Other Significant Events.

General comments regarding these procedures are as follows:

- Most EOI's do not include "Symptoms" to aid the operator in identification of the emergency.
- Except for EOI-2, Loss of Secondary Coolant, "Pressurized Thermal Shock" considerations have not been addressed in safety injection termination criteria.
- EOI and AOI often lacked adequate detail (either explicit or by reference to some other document) with regard to methods for operating systems locally, methods for accomplishing removal of control power/air to accomplish manual operation, and system valve alignment changes which must be made during an emergency.
- EOIs which attempted a symptoms-oriented branching technique included a few notes and no discussion to aid the operator. This made these procedures difficult to use, even by experienced operators trained in their use.

Some specific examples representative of deficiencies identified during this review are as follows:

- EOI-0, Safety Injection, establishes criteria for resetting/terminating safety injection (SI) but does not consider an inadvertent SI occurring with the plant in cold shutdown. If an SI were to occur with the plant in this condition, specified reset criteria could not be met.

- EOI-1A, Loss of Coolant Accident (LOCA).

  Page 2: "Caution" regarding LOCA when on RHR cooling requires operator action but contains no sign-off. Additionally, this "Caution" appears to require closure of one of two sets of valves, when in fact, both sets of valves must be closed.

  Page 3: Step D states: If any S/G level increases in an unexplained manner, then go to EOI-3 "S/G Tube Rupture". This step requires qualification of the statement "S/G level increases in an unexplained manner" in that events other than S/G tube rupture may result in unexplained S/G level increases.

  Page 3: Step E requires manual switchover of condensate storage tank level if auto switchover does not occur. Valves required to be manipulated to perform this switchover are not specified in the procedure nor is a ready reference given to the location of the information.

  Page 6: Step 16 requires manual initiation of SI if 50°F subcooling is not maintained. Page 4, Step H identifies a 40°F subcooling as part of the SI termination criteria. These two steps appear to be inconsistent.

  Page 10: Step DD states: "When necessary, implement Appendix E to change-over to CL Recirc." This step should identify specific criteria.

  Pages 10 & 11: Step numbering is inconsistent or a step has been deleted as Step II appears to be missing.

- EOI-3, Steam Generator Tube Rupture

  Page 6: Step P: Notes and Cautions regarding RCS depressurization occur after depressurization is initiated.

- EOI-13, Anticipated Transient Without Scram (ATWS)

  Page 1: Step IV.A.2,3 and 4: Steps to not specify valve numbers of valves to be manipulated.

Page 4: Step IV F,1: Step specifies local operation of steam driven AFW pump, yet no procedure exists to accomplish this manual operation.

Page 4: Step IV F,2: Requires isolation of control air or removal of control power from certain valves. Method (valve and location) used to isolate control air needs to be specified; fuse and location need to be identified.

- AOI-6, Small Reactor Coolant System Leak

Page 2: Step V.C: This step needs to identify the specific actions the operator is to perform to determine the source of leakage.

The inspector observed implementation of several emergency procedures during an emergency preparedness exercise and conducted walk-through implementation of several additional procedures with licensed operators. These observations and walk-throughs determined that a trained operator could utilize these procedures to perform their accident mitigation function, although several operators experienced some difficulty going through the procedures on a step-by-step basis. Operators knew what actions needed to be taken but could not explain how the procedure is accomplishing the desired actions.

It is the inspector's conclusion, based on the above observations and detailed procedures review, that further revision of the EOIs is necessary and that this revision process should include operator input. Following this revision process, these procedures should be validated by licensed operator line-by-line walk-throughs. (IFI 390/84-73-05)

7. General Operating Instructions and System Operating Instructions

A selected number of the Watts Bar General Operating Instructions (GOIs) were reviewed in order to determine if they are consistent with regulatory requirements and the guidance afforded in ANSI N18.7-1976 as well as Regulatory Guide 1.33-1978.

The review revealed a number of examples which collectively indicate a defeciency in procedure content, accuracy, and specificity. The examples have been categorized as detailed below:

a. Inadequate implementation of Independent Verification
b. Inclusion of Action Requirements in Precautions or Prerequisites
c. Many Action Requirements in One Step With One or No Sign-Off
d. Procedural Errors
e. Lack of Specificity

Specific examples of the above categories are detailed below:

a. Independent Verification

The administrative framework implementing the independent verification requirements is entailed in Administrative Instruction AI-2.19, which is discussed in detail elsewhere in this report.

A review of selected GOIs and SOIs revealed that the implementation of the requirements specified in the AI and as intended by the requirements has not been fully accomplished.

Listed below are examples of action statements without: 1) designated spaces for documenting performance of the action; and/or 2) designated spaces for the documentation of independent verification. In short, the procedures have not been revised to incorporate independent verification.

Procedure	Section/Step
SOI 3.2	V.B.1
SOI 3.2	V.B.2
SOI 3.2	V.B.5
SOI 3.2	V.C
SOI 3.2	V.D
SOI 3.2	V.E.3.b
SOI 57.2	V
SOI 57.3	V
SOI 63.1	Valve Checklist 63.1A
SOI 63.1	V.J.1-4
SOI 63.1	V.K.1-4
SOI 63.1	V.L.1-4
SOI 63.1	V.M.1-4
SOI 63.1B	V
SOI 63.1C	V.A.1
SOI 63.1D	V.A.1
SOI 63.1D	V C.1
SOI 65.1A	IV.B
SOI 65.1A	IV.C
SOI 65.1B	V.B
SOI 65.1B	V.C
SOI 65.1	Power Checklist 65.1A-1
SOI 65.1	Power Checklist 65.1A-2,3
SOI 67.1	Power Checklist 67.1-0A
SOI 67.1	Power Checklist 67.1-0B
SOI 67.1	Power Checklist 67.1-0C
SOI 67.1	Power Checklist 67.1-1A
SOI 67.1	Power Checklist 67.1-1B
SOI 67.1	Power Checklist 67.1-2A
SOI 67.1	Power Checklist 67.1-2B

This review was of narrow scope and very limited. The licensee should perform a comprehensive review of these procedures to implement independent verification. The statement being made by this review is that independent verification has not been fully implemented in the GOIs nor SOIs.

b. Inclusion of Action Requirements in Precaution or Prerequisites Statements

The review revealed a number of apparent action requirements, meaning a statement with an action verb, embodied within a precaution or prerequisite statement. Precaution/prerequisite statements should not entail action requirements; not only because they are often overlooked there, but also, there is no way to document their performance with initials or a signoff.

Listed below are a number of examples:

Procedure	Section/Step
GOI-2	III.E.9
GOI-2	III.E.13.a
GOI-2	III.E.13.d
GOI-1	II.G
GOI-1	II.I
GOI-1	II.J
GOI-1	II.N
GOI-1	II.O.7
SOI 3.2	IV.A
SOI 57.2A	III.A
SOI 57.2A	III.B
SOI 57.2A	III.C
SOI 65.1A	III.A
SOI 65.1A	III.B
SOI 65.1A	III.C
SOI 67.1	IV.A

c. Many Action Requirements in One Step With One or No Sign-Off

The review revealed a number of examples of procedure steps entailing multiple actions with one or no sign-off. Good operating practice would dictate sign-offs for all action statements and multiple actions should not be included in a single step.

Listed below are a number of examples:

Procedure	Section/Step
GOI-1	IV.B.14.e
GOI-2	IV.C
GOI-2	IV.N.1

GOI-2	IV.N.2
GOI-2	IV.N.3
GOI-2	IV.Q.1
GOI-2	IV.Q.2
GOI-2	IV.Q.3
GOI-2	IV.U.6.a
GOI-2	IV.U.6.c
GOI-2	IV.U.6.e
GOI-3A	IV.I.3
GOI-3A	IV.J
GOI-3A	IV.R
GOI-3B	IV.B.22.a
GOI-3B	IV.B.22.b
GOI-3B	IV.B.22.c
GOI-3B	IV.B.22.d
GOI-3B	IV.B.22.e
GOI-3B	IV.B.34.b
GOI-3C	IV.B.18
GOI-3C	IV.B.22.a
GOI-3C	IV.B.22.b
GOI-3C	IV.B.22.c
GOI-3C	IV.B.22.d
GOI-3C	IV.B.22.e
SOI 63.1A	V.A.1
SOI 63.1A	V.A.4
SOI 63.1A	V.A.20
SOI 63.1A	V.B.1
SOI 63.1A	V.B.4
SOI 63.1A	V.B.20
SOI 63.1A	V.C.1
SOI 63.1A	V.C.4
SOI 63.1A	V.C.20
SOI 63.1A	V.D.1
SOI 63.1A	V.D.4
SOI 63.1A	V.D.20

d. Procedural Errors

The review revealed a number of examples of apparent procedural errors/deficiencies. The steps and the inadequacies are detailed below:

Procedure/Section/Step	Problem
SOI 65.1B, Valve Checklist 65-1B-1, page 2 of 2	The footnote refers to PCO-65-81 and PCO-65-83. The checklist details PCV-65-81 and PCV-65-83.

GOI-1, Checklist E	The checklist requires the performance of Surveillance Instructions (SIs) 6.11, 6.39 and 8.18. At the time of the review, it appeared that SI-6.11 had not been issued; nor did there appear to exist neither SI 6.39 nor 8.18.
GOI-1, B-10	Step B-10 requires that before exceeding 310°F (RCS temperature) to ensure two centrifigual charging pumps (CCP) are operable. This would violate Technical Specification 3.5.3 which requires that only one CCP and/or SI pump be operable at less than 310°F.
SOI 63.1 A.V.A.2	This step requires that all valves on checklist 63.1A be closed. Valves 63-601 and 63-666 on checklist 63.1A have required positions of open.

Here again, the review was quite limited; however, the errors found are simple in concept and the type of problem found during procedure validation processes by walk throughs. These errors, although few in number, are believed to be representative of those procedures in general.

e. Lack of Specificity

The review revealed a number of examples of what appears to be procedure steps entailing insufficient guidance and/or confusing content.

Procedure/Section/Step	Problem
SOI 67.I.V.A.3	Step A.1 opens the discharge valves for the ERCW pumps, but Step A.3 closes them.
SOI 67.I.V.A.4	Step A.4 opens "applicable" ERCW valves. What valves; what sign-off; independent verification?
GOI-1 IV.A.14.b	Energizes pressurizer (PZR) heaters to begin increasing PZR temperature. A note requires the heatup rate to be within the PZR heatup limit, yet there is no limit listed or referred to.

GOI-1 IV.A.14.c	Initiates SI 4.11 "RCS Temperature/ Pressure Limits". Step 14.b initiated PZR heatup; there is no parameter nor timing requirement between the steps. At what point does SI 4.11 initiate; does SI 4.11 function adequately control RCS temperature and pressure?
GOI-1 IV.A.24	Ensures wet layup piping is aligned, yet refers to no SOI for valve alignment.
GOI-1 IV.A.25.a	Makes operable 'Containment Spray and RHR Valves'. What valves, where in checkoff list, independent verification?
GOI-1 IV.A.25.b	Refers to Checklist B, ECCS Master, Section F for CS system. Steps 1 and 5 require the completion of valve checklists SOI 72.1A&B "if required by SRO". What is the criteria? Why would the checklists not be run or verified each time?
GOI-1 IV.A.27	Employs Auxiliary Feed Water (AFW); there is no SOI referred to for the operation of the AFW; nor did there appear to be a prerequisite for having the AFW system operable.

Summary

The prime objective of this review was to determine if the GOIs and SOIs are adequate to support safe, efficient plant operation. The types of problems found indicate that both the GOIs and SOIs should be again reviewed and revalidated prior to plant startup. (IFI 390/84-73-06)

8. Surveillance Instructions

A review was made of the surveillance instruction program which examined program adequacy in the following areas:

a. compliance with applicable administrative instructions;
b. extent of program implementation;
c. accuracy of selected surveillance instructions; and
d. ease of procedure use.

A review was made of Administrative Instruction (AI) 6.1, "Surveillance Test Program", which establishes guidelines and specifies responsibilities and administrative requirements for the surveillance test program. This instruction defines the surveillance program in sufficient detail to permit effective implementation. However, two requirements recently added to AI 6.1 are not generally reflected in the individual surveillance instructions. These requirements are: 1) to independently verify the removal and return of components to service; and 2) to have each surveillance package reflect acceptance criteria for data measurements. No program currently exists to incorporate these requirements as part of a general surveillance update. Consequently, surveillance instructions must be modified via temporary change immediately prior to performance. This is a time consuming process which greatly diminishes the ability to complete scheduled surveillance instructions. For example, 58 surveillance instructions were scheduled to be performed in association with the mini hot functional tests. Only about 20 of these were actually performed. A review of several of these surveillance instructions revealed that they had undergone large scale revision immediately prior to this, their initial performance. Revision consisted of incorporating independent verification, adding acceptance criteria, adding scaling and setpoint data, and changing bistable setpoint data. In numerous cases, scaling and setpoint data must be added to surveillance instructions because it had not been developed when the procedures were approved by the Plant Operations Review Committee (PORC). Bistable setpoints must be altered because they were selected to meet the requirements of Revision 2 of the Technical Specification dated January 23, 1980. Only a small percentage of all surveillance instructions have been revised to reference the current proof and review version of the Technical Specifications.

The insepctors observed that for efficient completion of the SIs a program should be developed to revise surveillance instructions well before the initial surveillance performance date. Such a program would eliminate the use of handwritten corrections and insertions in the margins of typed procedures and would make the surveillance instruction easier for technicians to understand and perform. Additionally, it would remove the need to make last minute major changes and would allow time for technicians to be come familiar with and train on the final version of the surveillance prior to its initial performance.

During the surveillance program review, it was determined that 444 of a projected 547 surveillance instructions had been reviewed by the PORC. This review, in a majority of the cases, does not certify that the instructions are ready to use without further modifications. Most of the PORC approvals occurred in 1982 and certify only that the surveillance meets the requirements of Draft 2 of the Technical Specifications dated January 23, 1980. A general update to reflect the current proof and review Technical Specifications has not yet taken place. Watts Bar administrative instructions allow for this preliminary approval by PORC.

Many PORC approved surveillance instructions do not contain essential test acceptance criteria. For example, the maximum and minimum millivolt input signals required to trip numerous safety related bistables has not generally been incorporated into these surveillance instructions. These surveillances indicate only that this information will be supplied "later". The data will eventually come from scaling and setpoint documents, Technical Instruction (TI) 56 series. The TI-56 series will eventually be a massive document which lists scaling and setpoint data for every instrument in each safety related system. However, to date, the scaling and setpoint data has been PORC approved for only two systems, essential raw cooling water (TI-56.67) and residual heat removal (TI-56.74). Scaling and setpoint data has been developed for many more systems but it has not been submitted to the PORC for approval. No program or schedule exists governing a timetable for review and approval of this data.

Discussions with supervisory personnel indicate that much of the scaling and setpoint data may have been developed without detailed independent review and verification. Currently, an additional review occurs when the PORC re-approves the surveillance instructions being modified in preparation for initial performance. However, the type of review is not detailed enough to determine if the data is correct. For example, the then current version of SI 3.1.12, "Pressurizer Pressure Protection Sets I, II, III, IV Channel Calibration" was PORC approved on December 14, 1982. The SI was not performed until August 1984. Review just prior to this initial performance revealed that modifications were needed and on August 1, 1984, a significant revision was made. The revision changed, in part, the allowable maximum and minimum trip voltages of some bistables. The revised SI was approved for use that same day. On August 8, 1984, the SI was again heavily modified. This time the change revised numerous bistable trip setpoints because they did not agree with the latest scaling sheets. Apparently, the revision of August 1, did not incorporate the latest available bistable trip data and the PORC failed to recognize the discrepancy. Based on this occurrence, it is doubtful that the PORC is the appropriate body to provide detailed verification of the hundreds of scaling documents requiring independent review. Consequently, an engineering group should be established which has the time and expertise to examine scaling data to independently determine that it is correct prior to inclusion in any surveillance instruction and prior to final approval by the PORC.

The inspector, accompanied by an instrument technician, walked through surveillance instruction (SI)-3.1.18, "Steam Generator Level-Channel Calibration" to determine the accuracy and ease of use of a typical surveillance instruction. This SI had recently been performed and like most other SIs, it had undergone a major revision prior to initial performance. Numerous discrepancies were noted during the walk-through.

The procedure was approved for use by the PORC in November 1982 but it had to be revised in August 1984 to add missing test data. The revision was made using handwritten insertions, lineouts, and comments in the margin which were so numerous that the format was hard to follow. Many of the

discrepancies which were corrected had been identified in 1982 but were not then addressed. They remained unaddressed until just prior to initial surveillance performance. The surveillance instruction did not contain a list of effective pages. A review of other surveillance formats indicates that most SIs lack a list of effective pages.

Independent verification was not adequately addressed in the surveillance instruction. Some handdrawn sign-off steps for verification had been added. However, independent verification was not employed to document proper installation and removal of test equipment at mechanical test connections. Similarly, independent verification was not used to document proper removal of the steam generator level transmitters from service. The return to proper alignment of water hammer protection bistables was not independently verified.

The desired method of installation and removal of test equipment at the level transmitter was not identified. Appropriate test equipment connection points (test Ts) are not identified. Instrument valves downstream of the root valves were not identified with tag numbers and consequently instrument removal from and return to service was difficult to perform and verify.

Part of the surveillance required the technician to verify the tripping and resetting of water hammer protection bistables. No method of verification was specified. The location of the bistables was not identified.

Additional surveillance instruction walkdowns were planned for SI-3.1.19, "Steam Generator Level Channel Functional Test (Monthly)" and SI-3.1.13, "Pressurizer Pressure Protection Sets I, II, III, IV Channel Functional Test (Monthly)". However, instrument maintenance supervisors indicated that major revisions were known to be needed to these instructions prior to their initial use. Consequently, they could not be walked through in a meaningful manner. Numerous other surveillance instructions required similar revision.

Based on direct observation of the plant surveillance instruction program status, the inspector concludes that surveillance instructions, as they presently exist, are incapable of fulfilling the surveillance requirements of the proof and review Technical Specifications. The inspectors stated at the exit interview that the magnitude of the problem is so great as to demand the immediate attention of facility management. The goal of the effort must be to create ready to use surveillance instructions which are complete, accurate, easy to follow, and in accordance with the current revision of the Technical Specifications. All safety related surveillance instructions should be successfully performed, where possible, at least once prior to initial fuel load. Licensee representatives stated they were well aware of the problem and that it will be addressed (IFI 390/84-73-07).

9. Maintenance Instructions (42451)

Reference the following standards as acceptance criteria.

- ANSI 18.7 1976
- Regulatory Guide 1.33, Rev. 2

PM Program

The Preventive Maintenance (PM) Program required by ANSI 18.7, is implemented by Administrative Instruction (AI) 9.2, Maintenance Program, Attachment 11 "Preventive Maintenance" (PORC approved).

WB 3.1.5, a station "Standard Practice", calls for the use of "Section Instruction Letters" (SIL), which are provided by each major division of departments on site and give detailed instructions on the methods to be used to satisfy the standard practice directive or AI. SILs are locally approved by first line supervisors, reviewed by QA, and are QA controlled documents. A Mechanical SIL, gives instructions on developing preventive maintenance (PM) tasks labeled "folders". This appears to be a very low level of approval for instructions affecting safety related equipment and could keep the managers from routinely reviewing group activities. SILs do not receive a cross-disciplinary review and, therefore, a significant amount of overlap exists between groups and contributes to a poor interaction between instructions. This interaction is illustrated by MI 68.13, Removal, Repair and Replacement of Pressurizer Safety Valve, not referencing MSIL No. 17 on rigging. Many instructions do not reference other applicable instructions. In addition, the SILs do not always comply to the ANSI recommended format for sign-offs.

A Mechanical Section Instruction Letter describes how mechanical maintenance will perform PMs. This program was reviewed and found satisfactory. Scheduling of PMs, described in a Planning and Scheduling (P&S) SIL No. 8, was considered satisfactory. Numerous PM folders, i.e., specific mechanical instructions or directives to be used to perform work, were reviewed. These folders, developed by each group's cognizant engineer and reviewed by QA, were specified on each P&S computer printout along with the associated component, date of completion, due date, etc., and in many cases, the major evolutions involved. This completed computer printout with sign-offs, is considered the QA document, not the folder. PMs do not do corrective maintenance. If problems are discovered during PMs, a maintenance work request is issued.

PM interface with operations could have been better defined. Although each PM requires notification of the Shift Engineer, no specific information was given to ease the burden of evaluation of the effect the PM would have on system operability. Specific instructions are not given as to what equipment indicators would receive the "orange dot" sticker signifying it was

out of service or who is required to place it. There are very few sign-offs in the folders. QA is required to sign-off for any required torques or materials used in safety related systems. Sign-offs are required on the printout. Cleanliness and independent verification were absent except in PMs on lifted leads, as described in ANSI 18.7.

Mechanical and electrical PM programs appeared to be generally fully implemented or on schedule. I&C PM programs appeared well behind other groups. This was attributed by management to that group's support of hot functional testing. The PMs were not being routinely performed and specific instructions (similar to MM and EM folders) were not supplied. The P&S computer printout appeared to provide less detail than the mechanical and electrical sections in that there did not appear to be significant item checkoffs or instrument valve numbers that were contained on other PM forms.

The PM folders and the more complex Maintenance Instructions do not adequately address system cleanliness. The inspector found no administrative procedure or Section Instruction Letter that gave detailed information on how to maintain foreign material exclusion from primary systems. Details were not provided on setup of cleanliness area access points and tool accountability logs. MI 68.13 and 68.14 were examples of where cleanliness criteria should be addressed.

The inspector found that maintenance instructions and section instruction letters did not contain adequate levels of independent verification on return to service. The licensee has stated that a program upgrade is in process to add independent verification to all plant procedures.

The inspector reviewed the licensee's program for ensuring that maintenance procedures that referenced vendor manuals were maintained up-to-date to the latest revision of the respective manual. The licensee's program consisted of a computer program that listed source documents, i.e., vendor manuals cross-referenced to plant procedures which used them. As manual revisions are received at document control, the focal point for all manual revisions, a tracking item is established for each group with an affected procedure. Each group is then notified by memo. The item remains open until notification of a change or a no action required response is received. The program was well conceived, but appeared to be informal, i.e., not detailed in an Administrative Instruction. Due to direct Technical Specification reference to procedures which must utilize vendor manuals, such as TS 4.8.4.1.b, the process for maintaining affected procedures should be formalized (IFI 390/84-73-08).

The maintenance instructions reviewed were found to contain adequate post-maintenance checkouts to verify operability, documentation of test equipment, specification of preparation material, and control of heavy loads instructions.

No violations or deviations were identified.

10. Independent Inspection

The inspector selected several areas of interest to ascertain this plant's handling of problems identified at other sites. The results follow.

Review of SI-1, the Technical Specification cross-reference to plant implementing procedures, revealed several problems. TS 4.8.3.3.a and b, indicate that SI 8.15 and 8.16 are the implementing procedures. The inspector determined that although drafts of the procedures were prepared, the approved finals were not in place. These procedures will need to be in place and performed prior to fuel load.

SI-1 indicates that SI-6.2 fulfills the surveillance requirements of TS 4.7.7.e.(2). The inspector reviewed the procedure and found that it was inadequate in that not all of the ESF initiation signals were tested during the calibration. TS 4.7.7.e.(2) requires testing of the control building emergency ventilation system ability to go into the recirculation mode on receipt of any of four signals. Procedure SI-6.2 verified the system started on only one signal (safety injection). Follow-up inspection revealed that TVA-10, the startup test procedure, did test all four initiation signals. However, the need to test the signals was not noted in the plant surveillance procedures. A detailed review or other verification that all technical specification surveillance requirements have procedures and that the procedures technically satisfy all aspects of the requirements appears necessary to insure future compliance prior to plant licensing. (IFI 390/84-73-09)

The inspector also noted that transition to mode 6 (refueling) from mode 5, was controlled in an maintenance instruction, not a GOP. Although FHI-6, Preparation for Refueling, orchestrates the approach to mode 6, MI 68.1 controls the detensioning of the vessel head, the point at which mode 6 is technically reached. It is the responsibility of the cognizant maintenance engineer to coordinate with operations personnel to ensure that all pre-requisites are met prior to changing modes. This transition point may better be controlled by a positive action such as a key operations sign-off to prevent premature entry into mode 6 or expansion of the GOP to control entry in refueling. Mode change problems have been noted at other sites.

While reviewing MI 68.1, the inspector also noted that no preventive maintenance was specified on the cavity seal prior to installation. In light of problems documented in IEB 84-03, Refueling Cavity Water Seal, a PM may be warranted to ensure seal integrity prior to flooding of the refueling cavity.

No violations or deviations were identified.