



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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July 15, 2002

Tennessee Valley Authority
ATTN: Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

**SUBJECT: WATTS BAR NRC INTEGRATED INSPECTION REPORT NOS. 50-390/02-02
AND 50-391/02-02**

Dear Mr. Scalice:

On June 15, 2002, the NRC completed an inspection at your Watts Bar Nuclear Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on June 24, 2002, with Mr. W. Lagergren and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. No findings of significance were identified.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). These issues were also determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny any non-cited violation in the enclosed report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Watts Bar facility.

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Sincerely,

/RA/

Paul E. Fredrickson, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos. 50-390, 50-391
License No. NPF-90 and Construction
Permit No. CPPR-92

Enclosure: NRC Inspection Report 50-390/02-02, 50-391/02-02
w/Attachment - Supplemental Information

cc w/encl: (See page 3)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-390, 50-391
License Nos: NPF-90 and Construction Permit CPPR-92

Report No: 50-390/02-02, 50-391/02-02

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Units 1 and 2

Location: 1260 Nuclear Plant Road
Spring City TN 37381

Dates: March 17 through June 15, 2002

Inspectors: J. Bartley, Senior Resident Inspector
J. Reece, Resident Inspector
R. Carrion, Project Engineer
P. Taylor, Senior Project Engineer

Approved by: P. Fredrickson, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Integrated Inspection Report 05000390-2002-02, 05000391-2002-02, on March 17, 2002 - June 15, 2002, Tennessee Valley Authority, Watts Bar, Units 1 & 2. Post-maintenance testing and fire protection.

The inspection was conducted by resident inspectors and a regional reactor inspector. The inspection identified two Green findings, both of which were non-cited violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process web site at <http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html>.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 5.7.1, for failure to follow procedure for storing drums of lubricating oil against a Thermo-lag protected conduit containing control cables necessary for establishing shutdown cooling using the residual heat removal system. A transient combustible evaluation specified that the oil was not to be placed under Thermo-lag protected cables. The cause of the finding was a human performance error in that the instructions contained in the transient combustible evaluation were not followed.

This finding was of very low safety significance because fire detection and suppression systems in the room were not degraded, fire brigade performance has been effective, and manual actions could be performed in a physically independent area to restore the shutdown cooling function. (Section 1R05)

Cornerstone: Initiating Events

- Green. The inspectors identified a non-cited violation of Technical Specification 5.7.1, for failure to perform a post-maintenance test (visual leak checks of flanged connections) at the required system conditions for a reactor coolant pump seal replacement.

This finding was of very low safety significance because all mitigation systems were available and another inspection, unrelated to the required post-maintenance test, visually checked the flanged connections at the required system conditions prior to starting up the reactor. (Section 1R19)

B. Licensee-Identified Violations

Violations of very low significance which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee appear reasonable. These violations are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

Unit 1 operated at or near 100 percent power for the entire inspection period. On May 3, Unit 1 was shut down due to increasing reactor coolant system (RCS) leakage from a pressurizer spray bypass valve. Unit 1 was returned to 100% power on May 10. Unit 2 remained in a suspended construction status.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdown

a. Inspection Scope

The inspectors conducted equipment alignment partial walkdowns to evaluate the operability of selected redundant trains or backup systems, listed below, with the other train or system inoperable or out of service. The inspectors reviewed the functional system descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system.

- B train essential raw cooling water (ERCW)
- 1B-B emergency diesel generator (EDG) with 1A-A EDG out of service
- Shutdown boardroom (SDBR) "A" air handling unit (AHU) and chiller

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a complete system walkdown of the risk-significant Unit 1 6900 volt vital AC system to verify that it was properly aligned and maintained in accordance with the System Operating Instructions (SOI) and the FSAR. The inspectors observed indications and controls in the main control room and performed in-field checks of breakers, switches, components, electrical power alignment, support equipment, and instrumentation. The Maintenance Rule Program system health report, open maintenance work orders (WO), and canceled maintenance WOs were reviewed to verify that components were being adequately maintained and to determine if there

were any overdue preventative maintenance items or surveillances that could affect operability. Outstanding design issues and operator workarounds were reviewed to determine if they were creating an unnecessary workload for plant staff. The inspectors walked down the system to verify that general area housekeeping was adequate and that material deficiencies were being identified and entered into the corrective action program. Problem Evaluation Reports (PER) were reviewed to verify that corrective actions were adequate and timely. The specific documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted tours of areas important to reactor safety, listed below, to verify the licensee's implementation of fire protection requirements as described in the Fire Protection Program, Standard Programs and Processes (SPP)-10.0, Control of Fire Protection Impairments, SPP-10.10, Control of Transient Combustibles, and SPP-10.11, Control of Ignition Sources (Hot Work). The inspectors evaluated, as appropriate, conditions related to: (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; and (3) the fire barriers used to prevent fire damage or fire propagation.

- Electric boardroom chiller room
- Electric boardroom AHU room
- Motor-driven auxiliary feedwater (MDAFW) pumps
- Component cooling water pumps
- Auxiliary building 737 ft elevation
- A and B train ERCW pump rooms
- A and B train ERCW strainer rooms

b. Findings

The inspectors identified a non-cited violation of very low safety significance (Green) for inadequate control of transient combustibles.

On March 16, 2002, with the unit in Mode 5, the inspectors identified that the licensee had staged approximately 330 gallons (six 55-gallon drums) of flammable lubricating oil (LO) in room 757.0A-10 to be used for the reactor coolant pumps (RCP). The drums of LO were placed next to Thermo-lag protected conduit housing control cables for flow control valve 1-FCV-74-2, which is one of the residual heat removal (RHR) system suction valves from the RCS hot leg. In addition, the room contains control and power cables for the redundant RHR valves required to align RHR pump suction flow path to establish shutdown cooling. Fire damage to these cables would require local operator actions to initiate shutdown cooling. The LO was placed in the room on February 22 or

23, 2002, while the unit was operating at power in Mode 1. The unit was shut down on February 24 to begin a refueling outage.

The inspectors reviewed Transient Combustible Evaluation A02-0003, dated February 12, 2002, for staging the LO in the room. The evaluation stated, in the requirements section, "Do not stage drums under thermo-lag material protected electrical raceways/conduit." In addition, the inspectors reviewed EPM-DOM-012990, Attachment 1, Combustible Loading Summary, for room 757.0A-10 which stated that the LO was expected to be staged in the room only during outages.

Improper staging of the LO drums represented an impairment of the Thermo-lag fire barrier that protects RHR system control cables, thus affecting the Mitigating System cornerstone. The fire protection features for this room are represented by NRC MC 0609, Significance Determination Process (SDP), Appendix F, Figure 4-2, Scheme 2. Storing large quantities of combustible liquids adjacent to a fire barrier could cause the fire to exceed the fire barrier's capability to perform its function if a fire occurred. A fire involving the RCP LO could also prevent the establishment of RHR shutdown cooling from the control room. An analysis using the SDP, Phase 2, determined that the finding was of very low safety significance (Green) because fire detection and suppression systems in the room were not degraded, fire brigade performance has been effective, and manual actions could be performed in a physically independent area to restore the shutdown cooling function. The cause of the finding was a human performance error in that the instructions contained in the transient combustible evaluation were not followed.

TS 5.7.1, Procedures, Programs, and Manuals, requires that written procedures be implemented for the Fire Protection Program. The Watts Bar Fire Protection Plan, Section 10.0, states, in part, that a method for controlling the use and application of combustible materials at Watts Bar is a Transient Combustible Control Program. SPP-10.10, Control of Transient Combustibles, Revision 1, Section 3.6, required that plant personnel conduct work in accordance with the requirements specified in the procedure. Transient Combustible Evaluation A02-0003 required, "Do not stage (RCP) oil drums under Thermo-lag material protected electrical raceways/conduit." Contrary to Transient Combustible Evaluation A02-0003, on or about February 22 through March 16, six 55 gallon drums of RCP LO were staged against the Thermo-lag material protected conduit for valve 1-FCV-74-2. This violation is being treated as a non-cited violation (NCV), consistent with Section VI of the NRC Enforcement Policy, and is identified as NCV 50-390/02-02-01, Failure to Control Transient Combustibles. This violation is in the licensee's corrective action program as PER 02-003922-000.

1R07 Heat Sink Performance

(Closed) URI 50-390/2001-004-01, Failure to Implement Adequate Corrective Actions for Clam Blockage

The licensee performed an extensive evaluation of the impact of the low cooling water flow to the 1B-B RHR pump room cooler and determined that the RHR pump would have performed its safety function following an accident. The inspectors interviewed licensee engineering staff involved in the evaluations and reviewed the evaluations and

supporting documentation. In addition, the inspectors reviewed PERs associated with degraded flow to safety-related room coolers. The specific documents reviewed are listed in the attachment.

The inspectors determined that the licensee evaluations were adequate and that the 1B-B RHR pump was capable of performing its safety function with the degraded cooling water flow. The inspectors identified some errors in the licensee's evaluations which did not affect the final determination. Based on the pump being available to perform its safety function, the inspectors determined that the inadequate corrective actions were of very low safety significance. This licensee identified finding also involved a violation of 10 CFR 50 Appendix B, Criterion XVI, Correction Action. The enforcement aspects of the violation are discussed in Section 40A7.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed operators in the plant's simulator during licensed operator retraining to verify that operator performance was adequate and that training was being conducted in accordance with Procedures TRN-1, Administering Training, and TRN-11.4, Continuing Training for Licensed Personnel. In addition, the inspectors reviewed the training program to verify that it included risk-significant operator actions, emergency plan implementation, and lessons learned from previous plant experiences.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors sampled portions of selected structures, systems or components (SSCs), listed below, as a result of performance-based problems, to assess the effectiveness of maintenance efforts that apply to scoped SSCs and to verify that the licensee was following the requirements of TI-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting, 10 CFR 50.65, and SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting 10 CFR 50.65. Reviews focused, as appropriate, on (1) maintenance rule scoping in accordance with 10 CFR 50.65; (2) characterization of failed SSCs; (3) safety significance classifications; (4) 10 CFR 50.65 (a)(1) or (a)(2) classifications; and (5) the appropriateness of performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1).

- PER 02-003639-000, Failure of time delay relay (1-02-070-0038-B) during DG 1B-B blackout testing
- PER 02-005858-000, Steam generator blowdown monitor (1-LPR-90-120/121) failure
- PER 02-002407-000, Adverse trend on RHR pump A seal leakage

- PER 02-002176-000, Containment spray system snubber functional failures
- PER 02-003957-000, EGTS unavailability due to incomplete surveillance test
- PER 02-005182-000, Recurrence of RCP standpipe low level alarms

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors evaluated, as appropriate, for the selected SSCs listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors reviewed the requirements of 10 CFR 50.65 (a)(4); SPP-7.0, Work Control and Outage Management; SPP-7.1, Work Control Process; and TI-124, Equipment to Plant Risk Matrix, to verify licensee compliance.

- WO 99-012898-000, Vital inverter II-2 capacitor replacement
- WO 02-005684-000, Repair Tave lo-lo status lights in solid state protection system (SSPS) A train
- WO 01-000757-000, Remove A train ERCW tornado missile shields
- WO 02-002170-000, EDG 1A-A emergent work

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions

.1 Operator Error Causes Loss of Shutdown Cooling

a. Inspection Scope

The inspectors reviewed the human performance-related aspects of a March 1, 2002, loss of shutdown cooling flow event. The inspectors reviewed selected documents, listed in the attachment, to verify that the operators responded appropriately to the event and to determine the contribution of operator performance in causing the event. In addition, the inspectors reviewed the documents listed in the attachment to verify that they provided adequate instructions to ensure that the RHR system was operated in accordance with the TS and the FSAR. The event was evaluated using NRC MC 0609, Appendix G, Shutdown Operations. The review of the License Event Report (LER) submitted for this event and an associated compliance issue are documented in Sections 4OA3.1 and 4OA7 of this report.

b. Findings

No findings of significance were identified.

.2 Reactor Shutdown Due to Reactor Coolant System Leakage

a. Inspection Scope

On May 3, 2002, Unit 1 was shut down to repair a 0.6 gpm reactor coolant leak. The inspectors reviewed control room operator performance involved with the unit shutdown and associated documentation to verify compliance with TS and plant procedures. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluationsa. Inspection Scope

The inspectors reviewed selected operability evaluations affecting risk-significant mitigating systems, listed below, to assess, as appropriate (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered as compensating measures; (4) whether the compensatory measures, if involved, were in place, would work as intended, and were appropriately controlled; (5) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation (LCOs) and the risk significance in accordance with the SDP. The inspectors also reviewed the evaluations to verify that they were performed in accordance with SPP-3.1, Corrective Action Program, and SPP-10.6, Engineering Evaluations for Operability Determinations.

- PER 02-005295-000, Cracks in 161 kv tower base
- PER 02-003388-000, TDAFWP guard pipe missing access covers
- PER 02-007178-000, 1A-A EDG noise
- PER 02-007476-000, ERCW pinhole leak

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testinga. Inspection Scope

The inspectors reviewed post-maintenance test (PMT) procedures and/or test activities, as appropriate, for selected risk-significant mitigating systems to verify that: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3)

acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The inspectors reviewed these activities against the requirements of SPP-8.0, Testing Programs; SPP-6.3, Pre-/Post-Maintenance Testing; and SPP-7.1, Work Control Process, to verify procedural compliance.

- WO 01-003940-000, Replace the RCP #2 mechanical seal
- WOs 01-006387-000 and -001, Regear power operated relief valve block valve actuators
- WO 02-003770-000, Repair nitrogen leakage on 1-LCV-003-0175
- WO 02-003849-000, Increase MSIV pressure regulator setpoint
- WO 02-005684-000, Repair Tave lo-lo status lights in SSPS A train

b. Findings

A non-cited violation of very low safety significance (Green) for an inadequate PMT was identified.

During the review, the inspectors noted that the first PMT specified in WO 01-003940-000 required a verification of no visible leaks at flange connections associated with the #1 seal bypass vent, 1-VTV-062-0585, and seal injection drain valve, 1-DRV-062-0581, with the system in service at normal operating temperature and pressure. However, the inspectors identified that the PMT was performed on March 15, 2002, with charging system pressure (approximately 500 psig) well below normal charging system operating pressure (approximately 2500 psig). Subsequent to the PMT, the affected components were inspected by another procedure with the associated system at normal operating temperature and pressure prior to starting up the reactor.

The inadequate PMT of the RCP seal bypass vent flange connection had a credible impact on safety because it affected the initiating event cornerstone by increasing the probability of a small loss of coolant accident (SLOCA). An analysis using MC 0609, Phase 2, determined that the finding was of very low safety significance (Green) because of the very low probability of a SLOCA, that adequate mitigating systems were available, and that, the components were subsequently inspected satisfactorily.

TS 5.7.1 requires that written procedures be implemented, for TS 5.7.2.11, Inservice Testing Program. SPP-6.3, Pre-/Post-Maintenance Testing, specifies the process for an adequate PMT. WO 01-003940-000 required performance of a visual inspection of identified components at normal operating pressure. Contrary to this, on March 15, 2002, the visual inspection specified in the WO was performed at a system pressure (approximately 500 psig) well below normal operating pressure (approximately 2500 psig). This violation is being treated as a non-cited violation (NCV), consistent with Section VI of the NRC Enforcement Policy, and is identified as NCV 50-390/02-02-02, Failure to Adequately Perform PMT. This issue is in the licensee's corrective action program as PER 02-004360-000.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors observed the startup activities associated with completion of the Unit 1 Cycle 4 refueling outage. Other inspection activities associated with the Unit 1 Cycle 4 outage were documented in Inspection Report 50-390, 391/2001-005. The inspectors reviewed, on a sampling basis, that TS and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations. The reactor containment was walked down prior to reactor startup to verify that debris had not been left which could affect performance of the containment sumps. The inspectors observed low power physics testing and verified that it was accomplished in accordance with PET-201, Initial Criticality and Low Power Physics Testing, and that the results were within the TS required values.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed surveillance tests and/or reviewed test data of selected risk-significant SSCs, listed below, to verify that the SSCs met the requirements of the TS; the UFSAR; SPP-8.0, Testing Programs; SPP-8.2, Surveillance Test Program; and SPP-9.1, ASME Section XI. The inspectors also reviewed the testing to verify that it effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions.

- 1-SI-74-901-B, Residual Heat Removal Pump 1B-B Quarterly Performance Test
- 1-SI-99-10-A, 31-day Functional Test of SSPS A Train and Reactor Trip Breaker A
- 1-SI-1-904, Full Stroke Exercising of MSIVs
- 0-SI-82-11-A, Monthly Diesel Generator Start and Load Test 1A-A
- 1-SI-61-2, 18-Month Ice Weighing

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed a licensee-evaluated emergency preparedness drill to verify that the emergency response organization was properly classifying events in

accordance with Emergency Plan Implementing Procedure (EPIP)-1, Emergency Plan Classification Flowchart, and making accurate and timely notifications and protective action recommendations in accordance with EPIP-2, Notification of Unusual Event; EPIP-3, Alert; EPIP-4, Site Area Emergency; EPIP-5, General Emergency; and the Radiological Emergency Plan. In addition, the inspectors observed licensee evaluators to verify that they were identifying deficiencies and properly dispositioning performance against the performance indicator criteria in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verifications

Licensee records were reviewed to verify that the submitted performance indicator (PI) statistics were calculated in accordance with the guidance contained in NEI 99-02, Regulatory Assessment Performance Indicator Guideline.

.1 Safety System Functional Failures

a. Inspection Scope

The inspectors reviewed LERs and Maintenance Rule records for the period from July 2001 through March 2002 to verify the accuracy and completeness of the PI data for safety system functional failures.

b. Findings

No findings of significance were identified.

.2 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors reviewed daily RCS chemistry sample analyses for maximum dose equivalent Iodine-131 for the period from July 2001 through March 2002 to verify that the percent of TS limit was the same or lower than the maximum value reported by the licensee for the applicable month. In addition to record reviews, inspectors observed a chemistry technician obtain and analyze a RCS sample.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant System Leak Rate

a. Inspection Scope

The inspectors reviewed operating logs of daily measurements of RCS-identified leakage for the period from July 2001 through March 2002 and compared the data reported by the PI.

b. Findings

No findings of significance were identified.

4OA3 Event Followup

.1 (Closed) LER 50-390/2002-001-00, Loss of RHR Flow Path in Mode 6 with Reduced RCS Level

a. Inspection Scope

The inspectors reviewed the LER to verify that the cause of the March 1, 2002, loss of RHR flow was identified and that corrective actions were reasonable. The event occurred during testing of the RHR system while flooding up the reactor cavity. Two valves failed to reposition when the operators attempted to swap the suction of the RHR pumps from the refueling water storage tank back to the RCS hot leg. The valves would not open because a power supply board was de-energized as part of the outage plan which activated valve interlocks. The RHR flow path was isolated twice for approximately one to two minutes each time. Local operator action was required to restore full RHR system capability. The human performance aspects of this event were reviewed in Section 1R14.1). Based on the very short time that the loss of suction sources existed, and effective operator actions to recover shutdown cooling, the inspectors determined that this failure to maintain RHR suction sources was of very low safety significance. This licensee identified finding also involved a procedure adherence violation of TS 5.7.1. The enforcement aspects of the violation are discussed in Section 4OA7.

b. Issues and Findings

No findings of significance were identified.

2 (Closed) LER 50-390/2001-003, Blocked Sense Line for Loop 4 Steam Header Pressure:

a. Inspection Scope

The inspectors reviewed the LER to verify that the cause of a September 26, 2001, malfunctioning sensing line condition was identified and that corrective actions were reasonable. The licensee determined on September 29, 2001, that the sensing line for #4 steam generator pressure transmitter supplying pressure indicator (PI) 1-PI-1-27A was blocked. Initial indications of a problem with the pressure indicator were identified

on September 26. Troubleshooting efforts were originally thought to have corrected the problem but proved to be unsuccessful. Additional efforts discovered and removed a blockage in the sense line of associated pressure transmitter (PT) 1-PT-1-27A. A violation of regulatory requirements occurred (refer to Section 4OA7).

b. Issues and Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. W. Lagergren and other members of licensee management at the conclusion of the inspection on June 24, 2002. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations: The following findings of very low significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as non-cited violations (NCV).

50-390/2002-02-03 (Green) 10CFR50, Appendix B, Criterion XVI requires, in part, that conditions adverse to quality are promptly identified and corrected. On June 12, 2000, following an investigation into the cause of degraded cooling water flow to safety-related equipment room coolers, the licensee determined that a periodic flow monitoring program was needed. In October 2001, inadequate cooling water flow to the 1B RHR pump room cooler was identified during a 1B RHR pump component outage. The licensee's corrective actions for the June 2000 investigation were not prompt in that as of December 2001 a periodic flow monitoring program had not been implemented. This finding is of very low significance because the underlying condition adverse to quality did not result in a loss of safety function of any safety-related equipment. This issue is in the licensee's corrective action program as PER 01-016011-000.

50-390/2002-02-04 (Green) Technical Specification 5.7.1, requires that written procedures shall be implemented for the procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Regulatory Guide 1.33 recommends procedures for surveillance tests. Surveillance procedure 1-SI- 63-907, RHR Hot and Cold Leg Injection Check Valve Testing, provided instructions for maintaining a suction source to the RHR pumps while re-aligning the RHR pump suction from the refueling water storage tank to the RCS hot leg. Contrary to this, on March 1, 2002,

the operators failed to adequately implement 1-SI-63-907 and isolated all suction sources to the running RHR pump two times. This finding is of very low significance because it only affected the mitigating system cornerstone, the very short time that the loss of suction sources existed, and effective operator actions to recover shutdown cooling. This issue is in the licensee's corrective action program as PER 02-002593-000.

50-390/2002-02-05

(Green) TS 3.3.2, Condition D, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, requires that with one channel inoperable, that channel must be placed in "Trip" within six hours or enter Mode 3 within 12 hours. Contrary to this, on September 28-29, 2001, a channel of the Loop 4 main steam header pressure signal was inoperable without being placed in "Trip" for a period of approximately 14 hours and 40 minutes. This finding is of very low safety significance because the remaining two channels were capable of meeting the two out of three logic requirement to initiate an ESF actuation. Thus, there was not a loss of safety function. This issue is in the licensee's corrective action program as PER 01-014825-000.

50-390, 391/2002-02-06

(Green) TS 5.7.1, Procedures, Programs, and Manuals, requires that written procedures be implemented for the Fire Protection Program. The Watts Bar Fire Protection Plan, Section 14.8.1.b, required that with a fire barrier inoperable, within one hour restore the inoperable equipment or if fire detection is designed to protect only one side of the inoperable barrier, then post a roving fire watch once per hour for the side without detection. Contrary to this, on May 20, 2002, at approximately 1900, fire doors at the intake pumping structure separating the ERCW strainer rooms (doors W-10-A and W-10-B) were found open by an auxiliary unit operator and a roving fire watch was not posted. The doors had been verified closed at approximately 0700 on May 20. This finding is of very low safety significance because of the short exposure time, insignificant combustible loading in the strainer rooms, and the fire detection system in the rooms were fully functional. This issue is in the licensee's correction action program as PER 02-007342-000.

SUPPLEMENTAL INFORMATION
PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Boone, Radiological Control Manager
L. Bryant, Plant Manager
S. Casteel, Radiological and Chemistry Control Manager
J. Cox, Training Manager
M. King, Chemistry Superintendent
D. Kulisek, Assistant Plant Manager
W. Lagergren, Site Vice President
D. Nelson, Business and Work Performance Manager
P. Pace, Licensing and Industry Affairs Manager
K. Parker, Maintenance and Modifications Manager
J. Roden, Operations Superintendent
T. Wallace, Operations Manager
J. West, Site Nuclear Assurance Manager

NRC

J. Bartley, Senior Resident Inspector
J. Reece, Resident Inspector

ITEMS OPENED AND CLOSED

Opened

None

Opened and Closed

50-390/2002-02-01	NCV	Inadequate Control of Transient Combustibles (Section 1R05).
50-390/2002-02-02	NCV	Failure to Adequately Perform PMT (Section 1R19).
50-390/2002-02-03	NCV	Failure to Implement Periodic Flow Monitoring Program Promptly (Section 40A7).

0-390/2002-02-04	NCV	Failure to Adequately Implement Surveillance Instruction Isolating All Suction Sources to Running RHR Pump (Section 40A7).
50-390/2002-02-05	NCV	Failure to Place an ESFAS Channel in Trip Within 6 Hours for an Inoperable SG Pressure instrument (Section 40A7).
50-390, 391/2002-02-06	NCV	Failure to Post a Roving Fire Watch for Open Intake Pumping Structure Doors (Section 40A7).
<u>Closed</u>		
50-390, 391/2001-04-01	URI	Failure to Implement Adequate Corrective Actions for Clam Blockage (Section 1R07).
50-390/2002-001-00	LER	Loss of RHR Flow Path in Mode 6 with Reduced RCS Level (Section 40A3.1).
50-390/2001-003-00	LER	Blocked Sense Line for Loop 4 Steam Header Pressure (Section 40A3.2).

LIST OF DOCUMENTS REVIEWED

Section 1R04

- PER 01-007615-000, White breaker disagreement light did not clear when 1-HS-57-46A was taken to the trip position
- PER 02-003359-000, Vital Instrument Power Board 1-II de-energized while on its maintenance feed when 1B2-B 480V Shutdown Board de-energized during a power transfer
- PER 02-003409-000, 1-BKR-212-B2/4B failed to transfer during testing
- SOI-211.01, 6.9KV Shutdown Board 1A-A
- SOI-211.02, 6.9KV Shutdown Board 1B-B
- SOI-200.04, CSST C & D and Supply Breakers to 6.9KV Shutdown Boards
- 0-SI-82-2, 8-hour Diesel Generator AC Power Source Operability Verification
- SOI-212.01, 480V Shutdown Board 1A1-A
- SOI-212.02, 480V Shutdown Board 1A2-A
- SOI-212.03, 480V Shutdown Board 1B1-B
- SOI-212.04, 480V Shutdown Board 1B2-B
- SOI-30.07, Shutdown Board Rooms HVAC
- WO 02-004045-000, Calibration of relay AX934 and CX934, WBN-1-BKR-211-1934/1-B
- WO 02-003982-000, 6900V circuit breaker inspection, WBN-1-BKR-074-0020-B
- WO 01-015361-000, 480V breaker inspection WBN-1-BKR-212-A001/9D-A
- WO 01-015163-000, 480V breaker inspection WBN-1-BKR-212-A001/7B-B

- WO 01-016903-000, Relay functional test 6.9KV Shutdown BD 1B-B, WBN-1-BKR-063-0015-B
- WO 00-017161-000, 6900V circuit breaker inspection, WBN-0-BKR-569-4605026-S
- WO 00-06837-000, 6900V circuit breaker inspection and Overhaul, WBN-0-BKR-569-4605016-S
- WO-00-007803-000, During performance of 1-SI-74-62-B breaker would not close in test position
- WO 01-016742-000, 480V breaker inspection, WBN-1-BKR-062-0101-B
- WO 01-004924-000, Perform MI-57.250 on 10% of the breaker types listed on Appendix E
- WO 01-011606-000, 31 day functional test of SSPS Train B and Reactor Trip Breaker B
- WO 01-015889-000, While performing 0-SI-67-901-A, 1-BKR-67-22 tripped when closing
- WO 01-017002-000, 6900V circuit breaker inspection, WBN-1-BKR-211-1718/11-A

Section 1R07

- 1-FE-67-189 and 1-FE-67-191, Accuracy Computation
- WBPE 067 8910 030, Primary Orifice Plate Calculation for Selected FE's in ERCW and CCS Systems
- PER 02-0022667-000, Resolve NRC questions regarding RHR room cooler.
- E-mails between Holtec and Watts Bar dated January 18, 2002, and March 4, 2002, documenting accuracy of the AIRCOOL software at laminar flow conditions
- WO 01-016941-000, Flow/Sound Measurements for ERCW flow to RHR Pump Room Cooler 1B-B
- PER 01-016011-000, Corrective actions to perform periodic flow monitoring of ERCW flows to identify potential adverse trends for biofouling has not been timely
- PER 01-015543-000, Degraded flow on the 1B-B RHR room cooler
- Event Critique for PERs 01-015543-000 and 01-016011-000
- TVAN Calculation M-D-Q-000-030-2001-0067, Minimum ESF Cooler ERCW Flow Rates Versus Entering ERCW Temperatures During LOCA Conditions
- Technical Operability Evaluation 1-00-030-9037, Will the RHR pump remain functional and within EQ temperature limits if the room cooler ERCW is temporarily isolated for clam removal (Mode 5 only)
- Westinghouse Electric Company Letter WAT-D-11017 dated March 21, 2002, Residual Heat Removal Room Cooler Degradation Impacts

Section 1R14.1

- FSAR Section 5.5
- TS 3.9.6, Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level
- TS B3.9.6, Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level
- 1-SI-63-907, RHR Hot and Cold Leg Injection Check Valve Testing During Refueling Outages
- TS Change 98009
- Safety Evaluation WBPLMN-98-085
- Operator logs for night shift on March 01, 2002
- Drawing 1-47W810-1, Flow Diagram Residual Heat Removal System

Section 1R14.2

- Abnormal Operating Instruction (AOI)-6, Small Reactor Coolant Leak
- General Operating Instruction (GO)-4, Normal Power Operation
- GO-5, Unit Shutdown from 30% Reactor Power to Hot Standby
- Emergency Operating Instruction E-0, Reactor Trip or Safety Injection
- Emergency Operating Instruction ES-0.1, Reactor Trip Response