UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

January 22, 2004

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 05000390/2003005 AND 05000391/2003005

Dear Mr. Scalice:

On December 27, 2003, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Watts Bar Nuclear Plant, Units 1 and 2. The enclosed integrated inspection report documents the inspection results which were discussed on December 30, 2003, 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.

This report documents two NRC-identified findings and one self-revealing finding of very low safety significance (Green). The three issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they are entered into your corrective program, the NRC is treating these three findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, a licensee identified violation which was determined to be of very low safety significance is listed in this report. If you contest any NCV 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.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Stephen J. Cahill, 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 05000390/2003005, 05000391/2003005
w/Attachment: Supplemental Information

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REGION II

Docket Nos:	50-390, 50-391
License Nos:	NPF-90 and Construction Permit CPPR-92
Report No:	05000390/2003005, 05000391/2003005
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Watts Bar Nuclear Plant, Units 1 and 2
Location:	1260 Nuclear Plant Road Spring City, TN 37381
Dates:	September 28 through December 27, 2003
Inspectors:	J. Bartley, Senior Resident Inspector J. Reece, Resident Inspector S. Shaeffer, Senior Project Engineer R. Chou, Reactor Inspector (Section 1R08) L. Mellen, Emergency Preparedness Inspector (Sections 1EP1, 1EP4, 4OA1.2) R. Baldwin, Senior Operations Engineer (Sections 1EP1, 1EP4, 4OA1.2) S. Vias, Senior Reactor Inspector (Section 1R12)
Approved by:	Stephen J. Cahill, Chief Reactor Projects Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Integrated Inspection Report 05000390/2003005, 05000391/2003005, Tennessee Valley Authority, 09/28/03-12/27/03, Watts Bar, Units 1 & 2. Fire Protection, Refueling Outage, Event Followup

The report covered approximately a three-month period of routine inspection by resident inspectors and a senior project engineer and announced inspections by regional emergency preparedness inspectors and regional engineering inspectors. Three Green non-cited violations (NCVs) were identified. The significance of issues is indicated by their color (Green, White, Yellow, Red) using the Significance Determination Process in Inspection Manual Chapter 0609, Significance Determination Process (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, Reactor Oversight Process, Revision 3, dated July 2000.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified that the Fire Protection Report Operating Requirement (OR) bases were incorrectly interpreted to allow the electric-driven fire pumps (EDFPs) to be considered operable with the automatic start circuit disabled. As a result, the licensee failed to return the EDFPs to an operable status within the time specified by the FPR.

  This finding is a more than minor non-cited violation of OR 14.2.3 because it affected the mitigating systems cornerstone by degrading fire suppression equipment capability. The EDFPs would have to be manually started by the control room operators to respond to a fire. The finding is of very low safety significance (Green) because the diesel-driven fire pump was available, the fire detection system was not degraded, and fire brigade performance has been effective. In addition, the main control room operators were aware that the automatic start feature was disabled and the EDFPs could be manually started from the main control room. The cause of the finding is related to the cross-cutting element of human performance. (Section 1R05.1)

- Green. The inspectors identified that a seal was not installed in a conduit penetrating a fire barrier in the Fifth Vital Battery Room.

  This finding is a non-cited violation of Fire Protection Report Operating Requirement 14.2.8. It is more than minor because it affected the mitigating system cornerstone by adversely impacting the capability of the wall to provide the required fire resistance. It was of very low safety significance (Green) because the Fifth Vital Battery was not continuously used, the fire detection and suppression systems were not degraded and fire brigade performance has been effective. (Section 1R05.2)

Cornerstones: Barrier Integrity and Mitigating Systems

- Green. The licensee changed plant modes from Mode 5 to Mode 1 with the 1B-B containment spray (CS) pump inoperable, contrary to Technical Specification (TS) requirements.

  This finding was a self-revealing non-cited violation for failing to comply with the requirements of Technical Specification 3.0.4. It is more than minor because it the 1B-B CS pump would not have started if called upon to fulfill it's safety functions. The finding therefore affected the mitigating system and barrier integrity cornerstones. This finding was of very low safety significance (Green) because the opposite train CS pump was available and operator action to rack in the breaker could be credited. Additionally, because the net change in core damage frequency was low, the Large Early Release of Fission Products (LERF) change was of very low safety significance. The cause of the finding is related to the cross-cutting element of human performance. (Section 4OA3.1)

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking reference are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

Unit 1 was in a refueling outage at the start of the inspection period. The unit entered Mode 1 on October 20 and operated at or near 100 percent power for the remainder of the inspection period. Unit 2 remained in a deferred construction status.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed licensee actions taken in preparation for low temperature weather conditions to limit the risk of freeze-related initiating events and to adequately protect mitigating systems from its effects. The inspectors walked down selected components associated with the essential raw cooling water system in the intake pumping structure to evaluate implementation of plant freeze protection. In addition, the material condition of selected freeze-protected components' insulation was inspected for damage. Corrective actions to items identified in relevant problem evaluation reports (PERs), work orders (WOs), and a self-assessment of freeze protection practices and procedures were assessed for effectiveness and timeliness.

On November 18, 2003, the inspectors reviewed licensee actions for a tornado watch to verify that the actions were in accordance with procedures. The inspectors toured the affected plant grounds inside the protected area to identify any loose debris which could become missiles during a tornado event. Specific documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial System Walkdowns: The inspectors conducted three 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.

- A train motor-driven auxiliary feedwater (MDAFW) and turbine-driven auxiliary feedwater (TDAFW) with B train MDAFW pump out of service (OOS)
- A train emergency gas treatment system (EGTS) with B train EGTS OOS
- B train centrifugal charging pump (CCP) with A train CCP OOS

Complete System Walkdown: The inspectors conducted a detailed review of the alignment and condition of the Unit 1 intermediate head safety injection pumps and their associated suction and discharge paths. The inspectors used the procedures and other documents listed in the Attachment, as well as applicable chapters of the UFSAR, to verify proper system alignment. The inspectors verified electrical power availability, labeling, hangers and support installation, and associated support systems status. Pumps were examined to ensure that pump packing leakage was not excessive, that the pumps were properly ventilated, and that the cooling water supply to the pump room coolers was aligned. In-service test data was reviewed to ensure that vibration was not excessive and that flow and developed head met acceptance criteria. The inspectors reviewed system history, trending of system health, and completed maintenance to verify there were no adverse performance trends. A review of outstanding maintenance WOs was performed to verify that the deficiencies did not significantly affect the system function. In addition, the inspectors reviewed all PERs for the safety injection system generated since January 2000 to verify that equipment and system problems were being identified and appropriately resolved. The inspectors performed detailed reviews of selected PERs to verify corrective actions were adequate. 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 9 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, 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. In addition, the inspectors reviewed the licensee's actions and subsequent compliance with the Fire Protection Report when the auto start for the electric-driven fire pumps was disabled. Specific documents reviewed are listed in the attachment.

- Cable spreading room
- 125v Vital Battery Rooms I, II, III, IV
- 480v Reactor MOV Board Rooms 1A, 1B, 2A, 2B

b. Findings

The inspectors identified two findings that were violations of regulatory requirements

.1 Electric-Driven Fire Pump Automatic Start Inhibited

Introduction: A Green non-cited violation (NCV) was identified by the NRC concerning the failure of the licensee to enter the appropriate Fire Protection Report (FPR) Operating Requirement (OR) for having the automatic start circuit of the electric-driven fire pumps (EDFPs) defeated. As a result, the licensee failed to return the EDFPs to an operable status within the time specified by the FPR.

Description: On November 17, 2003, the inspectors identified that the auto start feature of all four EDFPs was disabled. The auto start was disabled on October 8, 2003, due to a failure of the fire protection system pressure control valve. The licensee had isolated the failed valve and disabled the auto start to protect the fire protection system because system pressure control would be controlled by the pump relief valves.

The water-based fire suppression system is supplied by four EDFPs and a diesel engine-driven fire pump. The EDFPs are designed to automatically start by activation of the fire detection system and can be manually started from the main control room. The diesel-driven fire pump automatically starts on a system low pressure signal. The FPR requires only two of the EDFPs to be operable if the diesel-driven fire pump is operable. The inspectors determined that the FPR testing and inspection requirements, which specify the testing to verify equipment operability, required testing of the automatic start feature for EDFPs. License fire protection personnel had justified not entering the OR because the OR Bases allows an exception for entering during fire pump testing. However, inspectors raised the lack of any testing to licensee management and the licensee concluded that they had misinterpreted the OR Bases. The licensee initiated PER 03-020146-000 and entered OR 14.2.3 which required restoration of one EDFP to operable status within 7 days and the second within the next 30 days. The licensee exited OR 14.2.3 on November 22 after completing the pressure control valve repairs and restoring the EDFPs automatic start feature.

Analysis: This issue affected the Mitigating Systems Cornerstone and was considered more than minor because it adversely affected fire suppression equipment capability. In addition, operator action would be required to manually start the EDFPs to respond to a fire if the diesel-driven fire pump failed to auto start. An analysis using Manual Chapter (MC) 0609, Appendix F, Phase 2, determined that the finding was of very low safety significance (Green) because the diesel-driven fire pump was available, the fire detection system was not degraded, and fire brigade performance has been effective. In addition, the main control room operators were aware that the automatic start feature was disabled and the EDFPs could be manually started from the main control room. The

cause of the finding was a human performance error in that an inadequate operability evaluation was performed due a misinterpretation of the FPR OR bases.

Enforcement: Facility Operating License NPF-90 for Watts Bar Nuclear Plant Unit 1, Condition 2.F, requires that TVA shall implement and maintain in effect all provisions of the approved fire protection program as described in the FPR. OR 14.2.3 requires, in part, that with no EDFPs operable and the diesel-driven fire pump operable, restore one EDFP to operable status within 7 days and enter OR 14.2.2. Contrary to this, on October 15, 2003, the licensee failed to restore one EDFP to an operable status within 7 days and enter OR 14.2.2. The failure to implement the actions of the FPR was a result of an inadequate operability evaluation due to a misinterpretation of the OR bases. Because the finding is of very low safety significance and because it has been entered into the corrective action program as PER 03-020146-000, this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-390/2003-05-01, Inadequate Operability Evaluation Results in Exceeding the OR Time Limit for Returning Electric Driven Fire Pumps to Operable Status.

.2 Fire Penetration Seal Not Installed

Introduction: A Green NCV was identified by the NRC for a seal not installed in a cable conduit located in a fire barrier.

Description: On November 6, 2003, the inspectors identified missing cera-fiber from the end of a two inch cable conduit at penetration A13173F located in a wall in the 1A 480V board room and adjacent to the 5th vital battery room. The conduit was connected to the 5th vital battery panel board and terminated at a cable tray in the adjacent 1A 480V board room. Based on a review of dates associated with installation of the modification to install the 5th vital battery and associate components, the inspectors determined that the conduit was without an adequate seal since 1995. Fire Protection Report, Figure II-32, Power House Aux & Reactor Buildings Units 1 and 2 Fire Protection Compartmentation - Fire Cells Plan El 772.0, 782.0, & 786.0, identified that the wall noted above is a 2 hour regulatory fire barrier. The licensee declared the seal inoperable on the day of discovery. Work Order 03-019915-000 was initiated and a seal was installed in the conduit on November 13, 2003.

Analysis: The licensee periodically uses the 5th vital battery in place of an A or B train normal vital battery when removed from service for maintenance. Therefore, the potential for a fire barrier breach existed for cross-train safety-related equipment. The inspectors referred to MC 0612 and determined that the finding is more than minor in that it affected the protection against external factors (fire) attribute of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors performed an analysis using MC 0609, Appendix F, Phase 2, and determined that the finding was of very low safety significance (Green) because the 5th vital battery was not continuously used, the fire detection and suppression systems have not been degraded, and fire brigade performance has been effective during the period of the problem.

Enforcement: Facility Operating License NPF-90 for Watts Bar Nuclear Plant Unit 1, Condition 2.F, requires that TVA shall implement and maintain in effect all provisions of the approved fire protection program as described in the FPR. FPR, Fire Protection Systems and Features OR 14.8, Fire-Rated Assemblies, states in part, that fire-rated assemblies as depicted on fire compartmentation drawings shall be operable whenever the safety-related equipment on either side of the assembly is required to be operable. Figure II-32, Power House Aux & Reactor Buildings Units 1 and 2 Fire Protection Compartmentation - Fire Cells Plan El 772.0, 782.0, & 786.0, specified a 2 hour fire barrier between the 5th vital battery room and the 1A 480V board room. Contrary to this, from November 1995 until November 13, 2003, the wall between the 5th vital battery room and 1A 480V board room, a 2 hour rated fire assembly was not operable because a cable conduit located at penetration A13173F in this wall did not have the required fire barrier seal installed. Because the finding is of very low safety significance and because it has been entered into the corrective action program as PER 03-019920-000, this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-390/2003-05-02, Seal Not Installed in a Cable Conduit Penetrating a Fire Barrier.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed internal flood protection barriers associated with a component cooling water or ERCW pipe break in the auxiliary building to verify that the flood protection barriers and equipment were being maintained consistent with the UFSAR. The licensee's corrective action documents were reviewed to verify that flood-related items identified in PERs were adequately addressed. The inspectors walked down the auxiliary building 676' elevation, which contains risk-important equipment located below design flood levels, to evaluate the adequacy of flood barriers, doors, floor drains, sump level switches, and sump pumps to protect the equipment, as well as their overall material condition. Specific documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's program for maintenance and testing of risk-important heat exchangers in the essential raw cooling water (ERCW) system. Specifically, the review included the program for testing and analysis of the 'C' component cooling system (CCS) heat exchanger which was cleaned, inspected, and evaluated by WO 02-013209-000 during the Cycle 5 refueling outage. The inspectors observed the physical condition of the heat exchanger during the cleaning activities and

verified that the frequency of inspection was sufficient to detect degradation prior to loss of heat removal capabilities below design requirements, that the inspection results were appropriately categorized against pre-established engineering acceptance criteria including the impact of tubes plugged on the heat exchanger performance, and that the licensee had developed adequate acceptance criteria for bio-fouling controls.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities

a. Inspection Scope

The inspectors reviewed the NRC Event Notification submitted by the licensee for defective tubes greater than one percent in all four steam generators (SGs). The inspectors reviewed the implementation of the licensee's inservice inspection program for monitoring the Unit 1 SGs. The inspectors reviewed the Watts Bar Unit 1 Cycle 5 Fall 2003 SG Degradation Assessment. The inspectors observed data analyses and reviewed selected inspection records for SG tube eddy current examinations (ET). The inspectors observed the data analyses which included primary, secondary, resolution, and comparison analyses to previous records. The inspectors reviewed activities to determine that the ET consistently detected previously identified tube imperfections such as dents, pitting, cold leg tube thinning, tube wear, and manufactured burnish marks at the expected locations. The inspectors reviewed new indications of axial cracks found in the sludge pile and freespan regions of the SGs. The inspectors observed the preparation, marking, plugging, sleeving, and removal of tube samples. The inspectors also observed in situ pressure testing to three times normal differential pressure and reviewed an in situ pressure test calculation. The inspectors also reviewed qualification and certification records for examiners.

The above examinations and records were compared to the TS, licensee amendments, and applicable industry-established performance criteria to verify compliance.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On November 20, 2003, the inspectors observed operators in the plant's simulator during licensed operator annual requalification examinations to verify operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with procedures TRN-1, Administering

Training, and TRN-11.4, Continuing Training for Licensed Personnel. The inspectors observed a shift crew's response to the two scenarios listed below:

- 3-OT-SRE0030, CCS Break/ATWS/LOCA
- 3-OT-SRE0026A, Loss of Condenser Vacuum/Feedwater Break

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed a performance-based problem relating to the spurious actuation of relief valves on the discharge piping of the safety injection pumps. In addition, the inspectors selected the residual heat removal (RHR) system for a performance history review. The focus of the reviews were to assess the effectiveness of maintenance efforts that apply to scoped structures, systems, or components (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) appropriate work practices; (2) identification and resolution of common cause failures; (3) scoping in accordance with 10 CFR 50.65; (4) characterization of reliability issues; (5) charging unavailability time; (6) trending key parameters; (7) 10 CFR 50.65 (a)(1) or (a)(2) classification and reclassification; and (8) the appropriateness of performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1). Specific documents reviewed are listed in the Attachment.

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 three work activities 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 unforseen 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 verified that the licensee was complying with 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. Additional documents reviewed are listed in the attachment.

- WO 02-015269 -001, Perform TI-79.704, Component Cooling Heat Exchanger A ERCW Side - Flow and Differential Pressure Monitoring
- Emergent work to replace 1B emergency diesel generator (EDG) lube oil circulating pump coupling (WO 03-020935-000) with the 2A 480V boardroom chiller out of service for preventative maintenance (WO 02-018021-000)
- Scheduled maintenance on the 2B 480V shutdown boardroom chiller and B main control room chiller with cooling water isolated to the standby main feed pump.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions

a. Inspection Scope

The inspectors reviewed, as described below, personnel performance during the two selected non-routine events below which required more than routine expected operator responses. The inspectors reviewed operator logs, reactor coolant system (RCS) sample results, RCS leakage calculations, and plant computer data to determine if operator responses were in accordance with the response required by procedures and training. Additional documents reviewed are listed in the attachment.

- PER 03-018998-000, Indications of increasing reactor coolant system (RCS) leakage
- PER 03-018970-000, Indications of a fuel leak

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed two 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 verified that the operability evaluations were performed in accordance with SPP-3.1, Corrective Action Program.

- PER 03-019998-000, ERCW high differential pressure on A train CCS HX
- PER 03-014042-000, Auxiliary control room cabinet door left open

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of operator workarounds to assess (1) the effect on the reliability, availability, and potential for misoperation of a system; (2) the potential for increasing an initiating event frequency or affecting multiple mitigating systems; and (3) the cumulative effects on the ability of the operators to respond in a correct and timely manner to plant transients and accidents. The inspectors reviewed the current operator workarounds as defined by Operations Department Procedure (OPDP)-1, Conduct of Operations, and interviewed operators to determine if there were other conditions which would require actions to compensate for equipment problems or deficiencies. The operator workarounds reviewed were:

- "A" condensate storage tank level must be manually maintained
- Rod control will be kept in manual unless rods are at the full out position
- EDG 1B2-B air receivers must be manually blown down once a day
- Electric-driven fire pumps must be manually started

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed one permanent plant modification accomplished by the design change notices (DCNs) listed below. The modification installed emergency core cooling system (ECCS) vents and related piping at various system high or mid points which did not previously have vents and at existing system vents to facilitate venting during power operation for compliance with TS Surveillance Requirement 3.5.2.3, Verify ECCS piping is full of water, with a frequency of 31 days. The inspectors verified that installed materials and components met the required design requirements, that affected operational procedures were identified and revised accordingly, that installation schedules did not impact outage shutdown risk, and that post-maintenance testing was adequate. Additional documents reviewed are listed in the attachment.

- DCN 51482, Elimination of tee connection in vent piping downstream of 1-VTV-63-661 and 1-VTV-63-720

- DCN 51486, Addition of new vents upstream of 1-FCV-63-8-A and downstream of 1-FCV-63-11-B
- DCN 51522, Addition of 5 new vents to high points in ECCS piping inside of containment
- DCN 51525, Addition of piping to existing high point vents to facilitate venting during power operation
- DCN 51526, Addition of 2 new vents upstream of 1-FCV-63-172

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed three post-maintenance test (PMT) procedures and/or test activities, as appropriate, for selected risk-significant mitigating systems to assess whether (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 verified that these activities were performed in accordance with SPP-8.0, Testing Programs; SPP-6.3, Pre-/Post-Maintenance Testing; and SPP-7.1, Work Control Process. Additional documents reviewed are listed in the attachment.

- WO 02-013209-000, Clean and inspect ‘C’ CCS heat exchanger
- WO 03-018084-000, Investigate snubber for lock up condition
- WO 03-017997-000, 1-FCV-62-89 appears by radiograph to not have a cage installed

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors observed the startup activities associated with completion of the Unit 1 Cycle 5 refueling outage. Other inspection activities associated with the Unit 1 Cycle 5 outage were documented in Inspection Report 50-390,391/2003004. 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. Specific documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed four surveillance tests and/or reviewed test data of selected risk-significant SSCs, listed below, to assess, as appropriate, whether 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 determined whether the testing effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. Additional documents reviewed are listed in the attachment.

- WO 02-015085-000, Perform 1-SI-304-2, 18 month ECCS Containment Sump Inspection
- WO 03-008163-000, Perform 1-SI-68-35, Pressurizer Heater Capacity
- WO-03-007678-000, Perform 1-SI-268-1-B, 92-day Permanent Hydrogen Mitigation System B-train Igniter Availability Test
- WO 03-013605-000, Perform 1-SI-63-10-A, ECCS Pumps and Discharge Pipes Venting - Train A

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed one temporary plant modification against the requirements of SPP-9.5, Temporary Alterations, and SPP-9.4, 10 CFR 50.59 Evaluation of Changes, Test, and Experiments, and verified that the modification did not affect system operability or availability as described by the TS and UFSAR. In addition, the inspectors verified that the installation of the temporary modification was in accordance with the work package, that adequate configuration control was in place, procedures and drawings were updated, and post-installation tests verified operability of the affected systems. Additional documents reviewed are listed in the attachment.

- TACF 1-03-019-81, Provide alternate source of demineralized water to the primary water system.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation

a. Inspection Scope

The inspectors reviewed the emergency exercise and scenario for the biennial, full participation 2003 emergency response exercise for Watts Bar Nuclear Plant. The review covered whether the licensee created a scenario suitable to test the major elements of their emergency plan in accordance with 10 CFR 50, Appendix E.

Licensee activities inspected during the exercise include observations in the Control Room Simulator, Central Emergency Control Center, Technical Support Center, and Operational Support Center. The exercise was conducted on November 5, 2003. The ingestion pathway exercise was conducted on the morning of November 6, 2003. The inspectors reviewed a sample of corrective actions identified in the past and developed a list of areas to be observed in this exercise. The inspectors' evaluation focused on the risk-significant activities of event classification, notification of governmental authorities, onsite protective actions, offsite protective action recommendations, and accident mitigation. The inspectors also evaluated command and control, the transfer of emergency responsibilities between facilities, communications, adherence to procedures, and the overall implementation of the emergency plan. The inspectors attended the post-exercise critique to evaluate the licensee's self-assessment process, as well as the presentation of critique results to plant management.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspector reviewed changes to the Radiological Emergency Plan (REP) as contained in Revision 69, against the requirements of 10 CFR 50.54(q) to determine whether any of the changes decreased REP effectiveness.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed licensed operator annual requalification examination scenarios on November 30, 2004, to verify that the emergency response organization was properly classifying the event 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; EIPIP-4, Site Area Emergency; EPIP-5, General Emergency; and the Radiological Emergency Plan. In addition, the inspectors verified that licensee evaluators 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

4OA1 Performance Indicator Verifications

.1 Initiating Events Cornerstone

a. Inspection Scope

The inspectors reviewed operating logs and monthly operating reports for the period of October 1, 2002, through September 31, 2003, to verify the accuracy and completeness of the Unplanned Scrams Per 7000 Critical Hours and Scrams With Loss of Normal Heat Removal PIs. The inspectors also independently calculated the reported values to verify

their accuracy. Performance indicator definitions and guidance contained in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2, were used to verify the basis in reporting for each data element.

- Unplanned scrams
- Scrams w/loss of normal heat removal

b. Findings

No findings of significance were identified.

.2 Emergency Preparedness Cornerstone

a. Inspection Scope

On November 3 - 7, 2003, licensee records were reviewed to determine whether the submitted PI values through the third quarter of 2003 were calculated in accordance with the guidance contained in Section 2.4 (Emergency Preparedness Cornerstone) of NEI 99-02, Revision 2, "Regulatory Assessment Performance Indicator Guideline."

- Emergency Response Organization (ERO) Drill/Exercise Performance
- ERO Drill Participation
- Alert and Notification System Reliability

The inspector assessed the accuracy of the PI for ERO drill and exercise performance (DEP) over the past eight quarters through review of a sample of drill and event records. The inspector reviewed training records to assess the accuracy of the PI for ERO drill participation during the previous eight quarters for personnel assigned to key positions in the ERO. The inspectors assessed the licensee's ability to notify members of the public within the 10 mile EPZ.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems", and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing daily PER summary reports and attending daily PER review meetings.

Annual Sample Review

The inspectors selected two PERs, 03-005692-000 and 03-008749-000, which were associated with erratic operation of air start pressure control valves (PCV) on emergency diesel generators and relocation of differential pressure taps on the 'C' CCS heat exchanger to eliminate false indications during testing. The reports were reviewed to ensure that the full extent of the issues as identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the reports against the requirements of the licensee's corrective action program as specified in SPP-3.1, Corrective Action Program, and 10 CFR 50, Appendix B. Additional documents reviewed are listed in the attachment.

b. Findings and Observations

There were no findings of significance identified. PER 03-005692-000 included other related PERs associated with PCV failures which occurred following modifications involving replacement of valve internals in response to a 10 CFR Part 21 report. Subsequent efforts to identify the root cause of the failure of the new internals by the licensee were unsuccessful and the vendor was requested to evaluate the affected PCVs. Initial attempts to recreate a failure were unsuccessful; however, the vendor eventually concluded that the root cause involved foreign material inhibiting air flow across a screen at a connection of the PCV with a pilot valve. The inspectors noted that the root cause determined by the vendor was not verified by the licensee through independent testing. The final corrective action taken by the licensee involved replacing all of the affected PCVs with new re-designed valves.

PER 03-008749-000 tracked completion of a modification to install new pressure taps on the 'C' CCS heat exchanger due to previous erroneous differential pressure data thought to be from blocked drain lines. The new pressure taps were installed during the Cycle 5 refueling outage. Subsequent differential pressure testing performed after the unit returned to service, using the new pressure taps and old drain lines, indicated that differential pressure was above design specifications and above the previous data obtained from the drain lines. The pressure from the new taps and drain lines were consistent, which indicated the drain lines were not blocked. The licensee has not determined the cause of the high differential pressures (e.g. potential debris from supply piping after the heat exchanger was returned to service following tube cleaning). However, the licensee did perform an evaluation that determined the 'C' CCS heat exchanger was operable but degraded.

4OA3 Event Followup

.1 (Closed) LER 50-390/2003-006, Containment Spray Pump Inoperable Due to Open Breaker

a. Inspection Scope

The inspectors reviewed the LER and PER 03-018343-000, which documented this event in the corrective action program, to verify that the cause of leaving the 1B-B containment

spray (CS) pump breaker racked out was identified and corrective actions were reasonable. The cause of this event was the failure to ensure the containment spray pump was returned to service and inadequate verification that a caution order was removed. Both of these actions were required by procedures.

b. Findings

Introduction: A self-revealing Green NCV for failure to meet TS 3.0.4 requirements was identified.

Discussion: The Unit 1 Cycle 5 refueling outage shutdown process involved the removal of the 1B-B CS pump from service which consisted in part of the rack-down of the associated motor breaker in accordance with instruction, General Operations (GO)-6, Unit Shutdown from Hot Standby to Cold Shutdown, Appendix C, Mode 4-to-Mode 5 Activities. During the subsequent unit startup process, Unit 1 entered Mode 4 at 11:48 p.m. on October 17, 2003, entered Mode 1 at 1:30 p.m. on October 20, 2003, and was placed on line the same day at 7:13 p.m. At 9:20 a.m. on October 21, while following up on a plant computer alarm, the licensee determined that the 1B-B CS pump motor breaker was in the racked out position rendering the 1B-B CS pump inoperable. The breaker was racked in, the required position, to return 1B-B CS system to an operable status at 9:35 a.m.

Analysis: The finding adversely impacted the CS system design requirement to provide containment atmosphere cooling to limit containment post-accident pressure and temperature. Additionally, it impacted the capability of the CS system to perform it's mitigating system function for long term core decay heat removal (refueling water storage tank (RWST) refill from the containment sump). The inspectors determined the finding was more than minor because it affected the mitigating system and barrier integrity cornerstones.

The inspectors performed a phase 1 SDP using MC 0609 Appendix A. Because the finding affected mitigating systems and the containment barrier, a SDP phase 2 analysis using the Risk-Informed Inspection Notebook for Watts Bar Nuclear Power Plant, Unit 1 (Revision 1) for the mitigating system loss of function and Appendix H for the containment integrity loss of function were performed. For the phase 2 analysis, the inspectors used an exposure time of 4 days, 16 hours based on the time from when the pump was required to be operable (Mode 4) until the breaker was racked in. The 1A-A CS pump was operable during this period.

Mitigating System Function SDP Analysis

The containment spray system performs the RWST refill function (Safety Function RWSTCS) in the following sequences: small break loss of coolant accident (SLOCA), stuck open power operated relief valve (SORV), loss of offsite power (LOOP), loss of essential raw cooling water train A (LERCWA), and loss of component cooling system train A (LCCSA). For LOOP, SORV, and SLOCA sequences, full credit was given for the RWSTCS function because it only required 1 of 2 containment spray trains and the 1A-A CS pump was available. For LERCWA and LCCSA, no credit was given for the RWSTCS

function. The 1A-A CS pump would not be available due to the initiating event and the performance deficiency made the 1B-B CS pump unavailable. Operator recovery action was credited because adequate time was available and the breaker is easily accessible in a non-radiological part of the control building. Based on this, the inspectors determined the finding was of very low safety significance (Green) because it caused a change in core damage frequency (CDF) of less than 1E-7.

Containment Barrier Function SDP Analysis (MC 0609 Appendix H)

The inspectors determined the finding was an Appendix H Type A finding because it affected CDF. Using Table 1, a factor of 1.0 from Table 2 (PWR ice condenser and associated with SLOCA sequence) and a change in CDF of < 1E-7, the inspectors determined that the Appendix H SDP results confirmed the finding was of very low safety significance (Green).

The cause of the finding was a human performance error in that operators failed to adequately implement procedural steps.

Enforcement: Technical Specification 3.6.6, Containment Spray System, is applicable for Modes 1 through 4 and requires the operability of two trains, 1A-A and 1B-B. Technical Specification 3.0.4 states that when a limiting condition for operation (e.g., one train inoperable) is not met, entry into a mode identified in the applicability requirements is not allowed except when the associated actions to be entered permit continued operation for an unlimited period of time. Contrary to the above, Unit 1 entered Modes 4, 3, 2, and 1 during the period of October 17 to October 21, 2003, with the 1B-B CS pump inoperable and failed to meet the required action statements of TS 3.6.6. Because this violation is of very low safety significance and has been entered in the licensee's corrective action program under PER 03-018343-000, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-390/2003-05-03, Failure to Meet TS 3.0.4 Requirements for an Inoperable 1B-B Containment Spray System.

.2 (Closed) LER 50-390/2003-003, Automatic Reactor Trip Due to Bumping of Main Transformer Sudden Pressure Relay

This LER addressed an event that resulted in automatic actuation of engineered safety features including reactor protection and auxiliary feedwater systems. The cause of the event was due to the actuation of sudden pressure relays for main transformer bank 1C due to inadvertent contact by a plant worker with a junction box housing the relays. The inspectors reviewed this event in Watts Bar NRC Integrated Inspection Report 05000390/2003004, 0500391/2003004, Section 4OA3, to verify that the cause of the reactor trip event was identified and that corrective actions were reasonable. There were no findings of significance and no violations of regulatory requirements. This LER is closed.

.3 (Closed) LER 50-390/2003-005, Accident Mitigation System Degraded due to Both Trains of ABGTS Inoperable

On October 3, 2003, the licensee identified that the B train of the Auxiliary Building Gas Treatment System (ABGTS) was inoperable due to preparations for a test while the A train of ABGTS was inoperable due to the unavailability of its emergency power supply. Both trains were inoperable for approximately 2 hours, and the required action statement per TS 3.7.12 to immediately suspend fuel handling activities was not initiated. The licensee determined the cause of the event was associated with human error by a test director who did not realize the opposite train of ABGTS was inoperable during the preparations for the B train test. This finding is more than minor in that the resulting safety system functional failure adversely impacted the barrier integrity safety cornerstone. The finding was determined to be of very low safety significance because it represented a brief degradation of only the radiological barrier function provided for the auxiliary building. This licensee identified finding involved a violation of TS 3.7.12, Auxiliary Building Gas Treatment System (ABGTS). The enforcement aspects of the violation are discussed in section 4OA7. This LER is closed.

4OA4 Cross-cutting Issues

Section 1R05.1 describes a human performance error where the licensee incorrectly interpreted a FPR OR bases when the automatic start feature of all four electric-driven fire pumps was inhibited. Consequently, the required OR actions were not performed.

Section 4OA3.1 describes a human performance error where the licensee failed to adequately implement procedural steps during plant startup operations. As a result, the 1B-B containment spray pump was not returned to service and the licensee failed to comply with Technical Specification requirements for mode changes.

4OA5 Other Activities

Unit 2 Layup Inspection (IP 92050)

a. Inspection Scope

The inspectors observed the condition of Unit 2 equipment, both installed and in storage, in layup, inspected preservation and foreign material exclusion practices, and observed the general condition of the steel containment and concrete shield building as well as Unit 2 areas inside the auxiliary building. The inspectors reviewed work control, maintenance, housekeeping and preservation procedures; reviewed identification and status lists of equipment maintained in layup; and reviewed records of maintenance performed on several components. The inspectors reviewed the most recent construction permit activity and also reviewed component deficiency and non-conformance records. The specific documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. William Lagergren and other members of licensee management at the conclusion of the inspection on December 30, 2003. 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 violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a non-cited violation (NCV):

- (Green) TS 3.7.12, Auxiliary Building Gas Treatment System (ABGTS), requires that ABGTS is operable during movement of irradiated fuel assemblies in the fuel handling area. Contrary to this, on October 3, 2003, both trains of ABGTS were inoperable from 1324 hours to 1521 hours with movement of irradiated fuel assemblies in progress. This issue is in the documented in the licensee's corrective action program as PER 03-016948-000. This finding is of very low safety significance because it only affects the barrier integrity cornerstone and all other mitigating systems were functional.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION
PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Boone, Radiological Control Superintendent
L. Bryant, Plant Manager
S. Casteel, Human Performance Manager
J. Cox, Training Manager
G. Wallace, Chemistry Superintendent
G. Laughlin, Assistant Plant Manager
W. Lagergren, Site Vice President
N. Moon, Engineering and Site Support Manager
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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

50-390/2003-05-01	NCV	Inadequate Operability Evaluation Results in Exceeding the OR Time Limit for Returning Electric Driven Fire Pumps to Operable Status (Section 1R05.1)
50-390/2003-05-02	NCV	Seal Not Installed in a Cable Conduit Penetrating a Fire Barrier (Section 1R05.2)
50-390/2003-05-03	NCV	Failure to Meet TS 3.0.4 Requirements for an Inoperable 1B-B Containment Spray System (Section 4OA3.1)

Closed

50-390/2003-006	LER	Containment Spray Pump Inoperable Due to Open Breaker (Section 4OA3.1)
50-390/2003-003	LER	Automatic Reactor Trip Due to Bumping of Main Transformer Sudden Pressure Relay (Section 4OA3.2)
50-390/2003-005	LER	Accident Mitigation System Degraded due to Both Trains of ABGTS Inoperable (Section 4OA3.3)

Attachment

LIST OF DOCUMENTS REVIEWED

Section 1R01

- 1-PI-OPS-1-FP, Freeze Protection
- AOI-8, Tornado Watch or Warning

Section 1R04

Partial Walkdown:
- SOI-65.02, Emergency Gas Treatment System
- TS 3.6.9, Emergency Gas Treatment System
- SOI-3.02, Auxiliary Feedwater System
- SOI-62.01, CVCS - Charging & Letdown

Complete walkdown: Intermediate Head SI system
- SOI-63.01, Safety Injection System
- GO-1, Unit Startup from Cold Shutdown to Hot Standby
- N-63-4001, Safety Injection System Description
- List of all open WO's for System 063 relating to the intermediate head safety injection pumps including suction and injection paths
- List of all PER's (01/01/2000 - 11/3/2003) for System 063 relating to the intermediate head safety injection pumps including suction and injection paths
- UFSAR Section 6.3, Emergency Core Cooling System
- TS 3.5.2, ECCS Operating
- PER 02-003697-000, AOV and MOV packing nuts tightened under minor maintenance
- PER 02-005781-000, Failed stroke time of 1-FCV-73-71
- PER 02-007685-000, SIS Pump 1B-B feeder breaker PM's not performed within their allowed frequency
- PER 03-003814-000, Repeat efforts to fix borated water leakage at the SI pump seal flush line fittings
- PER 03-015648-000, Tables 20 and 21 of the SI System Description (N-63-4001) contain discrepancies in response time limits for several valves
- SI System (system number 067) Quarterly Health Reports
- 1-47W811-1, Flow Diagram Safety Injection System
- WO 03-007636-000, Perform 1-SI-63-901A, Safety Injection Pump 1A-A Quarterly Performance Test
- WO 03-007816-000, Perform 1-SI-63-901B, Safety Injection Pump 1B-B Quarterly Performance Test
- WO 02-012859-000, SIS pump B-B discharge to RWST valve Limitorque operator maintenance
- WO 03-018040-000, SIS pump A-A casing vent leaks by keeping flange pressurized
- WO 03-004107-000, Repack and replace pressure regulator on WBN-1-FCV-063-0023
- WO 03-000005-000, 1-RFV-063-0534A is leaking by
- WO 03-012805-000, 1-ISIV-063-0309B has packing leak

Section 1R05

- Fire Protection Report, various applicable sections.
- 1-47W832, Flow Diagram Raw Service Water & Fire Protection System

Section 1R06

Auxiliary Building, 676 Elevation (Internal flooding)

- USFAR Section 2.4, Hydrologic Engineering
- USFAR Section 3.4, Water Level (Flood) Design
- USFAR Section 3.8.4, Other Category I Structures
- Drawing 1-47W852-1, Mechanical Flow Diagram Floor and Equipment Drains
- WO 02-010195-000, 0-SI-77-1, 18 Month Channel Calibration Auxiliary Building Passive Sump Loop 0-LPL-77-134
- WO 02-010121-000, 0-SI-77-2, 18 Month Channel Calibration Auxiliary Building Passive Sump Loop 0-LPL-77-135

Section 1R07

- TI-79.000, Generic Letter 89-13 Heat Exchanger Test Program
- SPP-9.7, Corrosion Control Program
- PER 03-016430-000, Licensee-identified issue regarding discovery of 50 to 100 clam shells (no live clams) in the inlet side of 'C' CCS heat exchanger.
- SPP-9.7-5, Corrosion Monitoring Visual Inspection and Evaluation Form for clams and microbiologically induced corrosion nodules in 'C' CCS heat exchanger

Section 1R12

Spurious relief valve lifts

- WO 03-003067-000, Replace WBN-1-RFV-063-0534-A with a new relief valve
- WO 03-003069-000, Replace WBN-1-RFV-063-0536-B with a new relief valve
- Maintenance Rule safety injection pump A and B availability data for JUN01 - OCT03
- WBN Safety Injection System Health Report 3RD quarter FY03
- Listing of all PERs (1/1/02-11/1/03) containing "relief valve"
- PER 03-000006-000, During performance of 1-SI-63-901-A one of the SI system relief valves leaked by

RHR system review

- Unit 1 operating log entries containing RHR or shutdown cooling from 1/1/2003 - 11/1/2003
- Listing of PERs for the RHR system generated between 1/1/2003 - 11/1/2003
- Listing of all RHR system corrective maintenance work orders generated between 1/1/2003 - 11/1/2003
- System Health reports for October 2002 - September 2003
- PER 03-006523-000, Brown colored boron deposits found in bowl of RHR A pump
- PER 02-002407-000, RHR Pump A seal leakage
- PER 03-011145-000, 1-FCV-74-2 and 1-FCV-74-8 cannot be qualified per DS-M18.2.21 requirements in their associated MOV calculations when determining long term age degradation

- PER 03-012748-000, 1-TI-74-38C was found failed upscale high
- PER 03-014603-000, Flow through RHR pump 1B room cooler less than required limit
- PER 03-015894-000, Cooling to the 'B' RHR heat exchanger was terminated by 0-SI-82-3 when the CCS pump was loadshed during blackout testing

Section 1R13

- PER 03-019998-000, Licensee-identified problem of acceptance criteria not met during test.

Section 1R14

- AOI-6, Small Reactor Coolant System Leak
- AOI-28, High Activity in Reactor Coolant
- 1-SI-68-32, RCS Water Inventory Balance

Section 1R17

- 1-SI-63-10-A, ECCS Pumps and Discharge Pipes Venting - Train A
- SOI-74.01, Residual Heat Removal System
- SOI-63.01, Safety Injection System

Section 1R19

- TI-79.705, Component Cooling Heat Exchanger C ERCW Side - Flow and Differential Pressure Monitoring
- MI-70.002, Component Cooling Heat Exchanger Maintenance and Testing
- TI-27, Cleaning and Cleanness of Fluid Systems and Components
- SPP-6.3, Pre-/Post-Maintenance Testing
- WBN-VTD-P029-0080, Maintenance and Overhaul Instructions with Ilustrated Parts Breakdown for Pacific Scientific PSA-35 and PSA-100 Mechanical Shock Arrestors
- MI-0.044, Removal and Reinstallation of Mechanical Snubbers
- PER 03-019006-000, NRC-identified problem with PMT step documented as not applicable
- PER 03-020692-000, NRC-identified problem with calculation and documentation problems associated with WO 03-017997-000

Section 1R20

- GO-7, Refueling Operations
- PET-105, Refueling and Core Alterations
- GO-10, RCS Drain and Fill Operations
- GO-1, Unit Startup from Cold Shutdown to Hot Standby
- GO-2, Reactor Startup
- 1-SI-0-11, Estimated Critical Postion
- 1-SI-0-27, Mode 2 Physics Test Exceptions RCS Critical Boron Concentration and RCS Temperature
- FHI-2, Spent Fuel Pit Bridge and spent Fuel Pit Handling Tool
- PER 03-018270-000, NRC-identified problem regarding rod in motion green light not lit during rod inward motion

Section 1R22

- PER 03-018982-000, NRC-identified problem with acceptance criteria documentation
- PER 03-019603-000, NRC-identified problem with PM program not meeting licensee QA requirements
- PER 03-019598-000, NRC-identified problem with incomplete surveillance documentation

Section 1R23

- 1-47W809, Flow Diagram Chemical and Volume Control System
- 1-47W819, Flow Diagram Primary Water
- SOI-81.01, Primary Water Makeup System
- SOI-68.01, Reactor Coolant System Pressurizer Relief Tank Operations
- SOI-77.01, Liquid Waste Disposal
- SOI-78.01, Spent Fuel Pool Cooling and Cleaning System
- GO-1, Unit Startup from Cold Shutdown to Hot Standby
- UFSAR 9.2.3, Demineralized Water Makeup System
- UFSAR 9.3.4, Chemical and Volume Control System
- TS 3.6.3, Containment Isolation Valves
- TS 3.9.2, Unborated Water Source Isolation Valves
- TS 3.9.4, Containment Penetrations
- N3-81-4001, Primary Makeup Water System Description
- N3-62-4001. Chemical and Volume Control System Description

Section 4OA3

- WO 03-001636-000, Perform 1-SI-79-1, Refueling Surveillance Log
- TS 3.7.12, ABGTS
- TS 3.9.4, Containment Pentrations
- Control Room log for 10/03/03, Dayshift

Section 4OA5

- TVA-NQA-PLN89-A, Nuclear Quality Assurance Plan
- Site-Specific Engineering Specification, N3M-935, Plant Layup/Equipment Preservation
- Construction Administrative Instruction (CAI)-1.01, Work Control for Non-Transferred Features (Unit 2)
- CAI-1.02, Preventive Maintenance for Non-Transferred Features
- CAI-1.03, Non-Transferred Temporary Features (Unit 2)
- Technical Instruction (TI)-216, Preservation and Maintenance of Plant Equipment
- TI-12.12, Temporary Tagging of Plant Equipment
- Maintenance Requirements Code Book, Unit 2
- Recent PM's on the following components identified in TI-273: AUX. FW MTR DRVN PMP 2A-A, CNTMT SPRAY PMP 2A-A, RHR PMP 2A-A, CENT CHG PMP 2A-A, RECIP. CHARGING PUMP, ADD DIESEL ERCW PPG
- Hygrometer/temperature charts for Level B warehouse storage area (week of 11/18/03)