



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

October 16, 2000

EA 99-115

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 NUCLEAR PLANT - NRC INSPECTION REPORT 50-390/00-04,
50-391/00-04

Dear Mr. Scalice:

On September 16, 2000, the NRC completed an inspection at your Watts Bar Units 1 and 2. The enclosed report documents the inspection findings which were discussed on September 20, 2000, with Mr. L. Bryant 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.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). One of these issues was determined to involve a violation of NRC requirements. Because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this non-cited violation, you should provide a response, with the basis for your denial, within 30 days of the date of this inspection report, 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 addition, the attached report includes the administrative documentation of the closure of two Unresolved Items involving the Watts Bar ice condenser system. These two issues were closed to a non-cited violation and a cited violation, as described in our letter to you dated July 17, 2000.

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 web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

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 w/Attachment

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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: 50-390/00-04, 50-391/00-04

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Units 1 and 2

Location: 1260 Nuclear Plant Road
Spring City TN 37381

Dates: June 18 through September 16, 2000

Inspectors: J. Bartley, Senior Resident Inspector
D. Rich, Resident Inspector
M. Sykes, License Examiner
D. Jones, Health Physics Inspector
J. Furia, Health Physics Inspector, Region I
J. Kreh, Emergency Preparedness Inspector
W. Bearden, Reactor Inspector

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

Enclosure

SUMMARY OF FINDINGS

IR 05000390-00-04, IR 05000391-00-04, on 06/18-09/16/2000, Tennessee Valley Authority, Watts Bar, Units 1 & 2. Maintenance Rule implementation, surveillance testing, other activities.

The report covers a thirteen-week period of resident inspection. In addition, it includes the results of inspections by two regional radiation specialists, a regional operations engineer, and a regional emergency preparedness inspector.

The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process (SDP) as found in NRC Inspection Manual Chapter 0609 and as discussed in the attached summary of the NRC's Reactor Oversight Process. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

Cornerstone: Mitigating Systems

- Green. A licensee review of an event involving exhaust fans for an emergency diesel generator (EDG) found out-of-service during an EDG surveillance test, resulted in not considering the failure-to-start of the exhaust fans as an EDG functional failure or as EDG unavailability time.

The risk was determined to be of very low safety significance because the EDG unavailability time was relatively short, not exceeding the Technical Specification (TS) allowed outage time (Section 1R12).

- Green. A non-cited violation of TS 5.7.1 was identified for an inadequate surveillance procedure which rendered the 1B EDG inoperable for 25 hours. The surveillance procedure failed to ensure that a fire detection system relay was reset which defeated the automatic start feature of the diesel generator room ventilation fans.

The risk was determined to be of very low safety significance because only the mitigating system cornerstone was affected and a single emergency AC train was unavailable for less than the TS allowed outage time (Section 1R22).

Other Activities

- Green. A non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, was identified for not evaluating potentially defective new ice basket screws in 1995.

The risk was determined to be of very low safety significance based on a technical significance review of the issue, as described in an NRC letter to the licensee, dated July 17, 2000 (Section 40A4.2).

- No Color. A Severity Level IV violation of 10 CFR 50, Appendix B, Criterion V was identified for not adequately monitoring corrective action implementation for a 1995 problem evaluation report, involving the ice condenser system.

Based on a technical significance review of the issue, as described in an NRC letter to the licensee, dated July 17, 2000, and because of the willful aspects of the issue, the violation was determined to be outside the NRC SDP process (Section 40A4.3).

Report Details

Unit 1 operated at or near 100 percent power until August 2 when the unit began a coastdown to the Cycle 3 refueling outage. The unit was shut down on September 10. Unit 2 remained in a suspended construction status.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R04 Equipment Alignment

.1 Partial Walkdowns

a. Inspection Scope

The inspectors conducted equipment alignment partial walkdowns to evaluate the operability of selected redundant trains or backup systems, as listed below, with the other train or system inoperable or out of service. The walkdowns included, as appropriate, consideration of plant procedures, reviews of documents to determine correct system lineups, and verification of critical components to identify any discrepancies which could affect operability of the redundant train or backup system.

- Auxiliary Feedwater (AFW) System: System Operating Instruction (SOI)-3.02, Revision 22
- Emergency Diesel Generator (EDGs) 1A and 2A, SOI-82.01, Revision 30, and SOI-82.03, Revision 39
- Safety Injection System, Train B, SOI-63.01, Revision 18

b. Issues and Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors conducted a complete system walkdown on accessible portions of the Unit 1 essential raw cooling water (ERCW) system. The walkdown emphasized material condition, correct system alignment, and verification of material required for response to flooding. The selection of the system was determined using the site specific Individual Plant Examination (IPE), plant operating mode, and observations from previous walkdowns. The walkdown included reviews of:

- Updated Final Safety Analysis Report (UFSAR) Section 9.2, Water Systems
- System Description Manual N3-67-4002, ERCW System
- SOI-67.01, Essential Raw Cooling Water System, Revision 23
- Equipment and spool pieces required by Abnormal Operating Instruction (AOI) 7.01, Maximum Probable Flood, Revision 4
- Open maintenance work requests

- Outstanding design issues including temporary modifications
- Related operator workarounds
- System health reports

b. Issues and Findings

No findings of significance were identified.

1R05 Fire Protection - Tours

a. Inspection Scope

The inspectors conducted tours of areas important to reactor safety, as listed below, to evaluate, 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.

- Shutdown Boards, A Train
- Vital Battery III
- Centrifugal Charging Pump Rooms, A and B Train
- Residual Heat Removal Pump Rooms, A and B Train
- EDGs 1A, 2A, 1B, and 2B

b. Issues and Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Resident Quarterly Review

a. Inspection Scope

The inspectors observed operators perform two scenarios in the plant's simulator during licensed operator retraining. In addition, the inspectors verified that the training program included risk-significant operator actions, emergency plan implementation, and lessons learned from previous plant experiences.

b. Issues and Findings

No findings of significance were identified.

.2 Biennial Inspection

a. Inspection Scope

The inspectors observed the annual dynamic simulator and walkthrough evaluations for one shift of operators conducted during the week of July 24, 2000, to evaluate the adequacy of licensed operator training on risk-significant operator actions. During the observations, the inspectors assessed licensee evaluator effectiveness in identifying operator performance deficiencies in accordance with licensee Training Procedure TRN-1, Administering Training, Revision 9. The inspectors evaluated the licensee's examination development methodology and use of plant and industry feedback to verify compliance with Training Procedures TRN-11.4, Continuing Training for Licensed Personnel, Revision 4 and TRN-11.10, Annual Requalification Examination Development and Implementation, Revision 5.

The inspectors evaluated remedial training program documentation for all requalification examination failures since October 1999 and interviewed licensee staff involved with developing remediation training plans. Documentation reviewed included the failed examinations, Training Review Board Meeting minutes which discussed the failures, and retake examinations. The inspectors also reviewed a sample of training attendance records for the previous requalification cycle and on-shift licensed operator qualification records to ensure compliance with the requirements of 10 CFR 55.59, Requalification, and 10 CFR 55.53, Conditions of License, respectively.

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. 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). The inspectors also reviewed Standard Programs and Processes (SPP) Instruction 6.6, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10CFR50.65, Revision 3, and Technical Instruction (TI) 119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10CFR50.65, Revision 9.

- EDG 1B-B exhaust fans failure to start
- Failure of Eagle 21 Channel III
- Failure of valve 1-FCV-32-80 time stroke test

b. Issues and Findings

The inspectors identified that a licensee review of an event involving exhaust fans for an EDG found out-of-service during an EDG surveillance test, resulted in not considering the failure-to-start of the exhaust fans as an EDG functional failure or as EDG unavailability time. This finding had very low safety significance. Refer to Section 1R22 for the technical details.

The inspectors reviewed the licensee's Maintenance Rule Expert Panel meeting minutes for Meeting 00-09, dated August 3, 2000. The inspectors identified that the June 29, 2000, condition for the 1B EDG exhaust fans was not counted as a functional failure nor were the 1B EDG unavailability hours counted. The inspectors discussed the issue with the EDG system engineer and the maintenance rule coordinator to determine why the licensee had determined the failure-to-start of the exhaust fans to not be a functional failure nor had considered the EDG to be unavailable. The inspectors determined that the licensee staff was relying on operator recognition, diagnosis, and corrective actions to substitute for the automatic start of the exhaust fans.

Not considering the failure-to-start of the exhaust fans as an EDG functional failure or as EDG unavailability time could result in a more significant safety concern, if left uncorrected. The primary impact is that failure to properly characterize functional failures or availability time can affect availability and reliability of a system or train. However, since the EDG unavailability time was relatively short, not exceeding the Technical Specifications (TS) allowed outage time, this finding is considered to be of very low safety significance (Green). The issue is in the licensee's corrective action program as Watts Bar Problem Evaluation Report (WBPER) 00-12449-00.

1R13 Maintenance Work Prioritization and Control

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.

- Clean out silt in ERCW line to motor driven AFW pumps (WO 00-008224-000)
- Failure of Eagle 21 Channel III (WO 00-009318-000)
- Turbine-driven AFW pump (WO 00-006721-000)
- Clean out silt in ERCW line to turbine-driven AFW pump (WO 00-012512-000)

b. Issues and Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events

a. Inspection Scope

The inspectors reviewed, as described below: (1) personnel performance during selected non-routine events and/or transient operations; (2) licensee event reports focusing on those events involving personnel response to non-routine conditions; and (3) operator response after reactor trips which required more than routine expected operator responses, or which involved operator errors. As appropriate, the inspectors: (1) reviewed operator logs, plant computer data, or strip charts to determine what occurred and how the operators responded; (2) determined if operator responses were in accordance with the response required by procedures and training; (3) evaluated the occurrence and subsequent personnel response using the Significance Determination Process (SDP); and (4) confirmed that personnel performance deficiencies were captured in the licensee's corrective action program.

- Inadvertent boration during makeup to the refueling water storage tank, WBPER 00-009785-000
- Deboration using mixed bed demineralizer, SOI-62.04, CVCS Purification System, Revision 21
- Loss of 161-Kv line to shutdown boards due to logging activities, WBPER 00-009957-000

b. Observations and Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. 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) where compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified, the impact on the TS limiting conditions of operation (LCOs) and the risk significance in accordance with the SDP.

- Water in the 1B-B EDG 7-day tank, WBPER 00-008387-000
- 1B-B EDG exhaust fans failed to start, WBPER 00-009248-000
- Hi-chillwater flow to shutdown board room coolers, WBPER 00-009810-000
- Debris in containment, WBPER 00-007996-000
- EDG 1B-B motor control center exhaust fan damper stuck open, WBPER 00-011107-000

b. Issues and Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance test 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) that equipment was returned to the status required to perform its safety function.

- Turbine-Driven Auxiliary Feedwater (TDAFW) corrective maintenance for silt in ERCW supply line (WO 00-000822-000)
- TDAFW outage (WOs 99-005470-000, 99-015778-000, 99-015770-000, 99-011977-000, 99-014667-015, 99-012294-000, and 00-002576-000)

b. Issues and Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors observed numerous activities associated with the Unit 1 Cycle 3 refueling outage. These activities are listed below.

Review of Outage Plan - Reviewed the licensee's outage risk control plan and verified that the licensee appropriately considered risk, industry experience, and previous site problems. Confirmed that the licensee had mitigation/response strategies for loss of key safety functions.

Monitoring of Shutdown Activities - Observed portions of the cooldown and reviewed cooldown data to verify that TS cooldown restrictions were followed.

Decay Heat Removal (DHR) System Monitoring - Observed DHR parameters to assess proper system function and that the steam generators, when relied upon, were a viable means of backup DHR.

b. Issues and 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 assess, as appropriate, whether the SSCs met the TS, the UFSAR, and the licensee procedure requirements, and to determine if the testing effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions.

- Surveillance Instruction 1-SI-3-903, Valve Full Stroke Exercising During Plant Operation-AFW Train A, Revision 5
- Surveillance Instruction 0-SI-67-901-A, Essential Raw Cooling Water Pump A-A Performance Test, Revision 10
- Surveillance Instruction 1-SI-30-143, 92 Day Channel Operational Test, Containment Pressure Channel III Loop 1-LPP-30-43, Revision 9
- Surveillance Instruction 1-SI-43-201, 31 Day Channel Operational Test LOCA Containment Hydrogen Analyzer Loop 1-H2AN-43-200, Revision 9
- Surveillance Instruction 1-SI-99-10-B, 31 Day Functional Test of SPPS Train B and Reactor Trip Breaker B, Revision 7

In addition to the above-planned surveillance observations, the inspectors reviewed Fire Operating Requirement Instruction 0-FOR-13-619, 6 Month Fire Detection Test Panel L619, Revision 6. This review was part of the followup for the fire detection relay issue discussed in Section 1R12.

b. Issues and Findings

The inspectors identified that Instruction 0-FOR-13-619 did not contain adequate guidance to ensure certain fire detection system relays were reset following testing. This condition rendered an EDG inoperable and unavailable for 25 hours. Maintenance Rule aspects of this condition are discussed in Section 1R12 of this report.

On June 29, 2000, the exhaust fans for the 1B EDG were found to be out-of-service approximately 27 minutes into a 1B EDG surveillance test. The EDG exhaust fans are required attendant equipment for the EDGs. The condition was noticed by a non-licensed auxiliary unit operator (NAUO) who was stationed in the EDG building for the surveillance run. The NAUO noted the exhaust fans were not running due to increasing temperatures and smoke in the EDG room. There were no annunciators, locally or in the control room, to indicate that the exhaust fans were not running. The NAUO called the control room to report the problem. The shift manager directed the NAUO to bypass the carbon dioxide relay using a bypass switch in the EDG electrical board room. Although this action was not proceduralized, the exhaust fans did start when the carbon dioxide bypass switch was placed in bypass. The 27-minutes of EDG operation without the fans did not result in damage to the EDG, based on a subsequent successful completion of the surveillance test. With respect to operability, the licensee determined that the fans were rendered inoperable on June 28, 2000, when a carbon dioxide fire detection relay was not properly reset following performance of Instruction 0-FOR-13-619. An EDG is required to be available and respond without human action. The inspectors concluded that the dependence on operator recognition, diagnosis, and action in lieu of the automatic start of required attendant equipment was not adequate for considering the EDG operable or available. The 1B EDG was inoperable for

approximately 25 hours as a result of this condition. The TS allowed outage time of 72 hours for a single EDG being inoperable was not exceeded.

Instruction 0-FOR-13-619 provided the guidance for testing the fire detection systems in the EDG building. Part of this test was actuation of relays which prevented the automatic start signal of each EDG rooms' exhaust fans. The exhaust fans are required for cooling of the generator and electrical cabinets supporting the EDG. Instruction 0-FOR-13-619 referred the operator to Instruction SOI-39.02, DG CO2 System, Revision 4, for verifying that the latching relays were reset. Instruction SOI-39.02, Step 8.3, required a visual check of the latching relay checking for a gap of approximately 5/16 inches. Neither Instruction 0-FOR-13-619 nor Instruction SOI-39.02 contained adequate guidance to ensure that latching relays were reset. This finding had an actual impact on safety because it rendered an EDG unavailable to perform its design function. However, because only the mitigating system cornerstone was affected and a single emergency AC train was unavailable for less than the TS allowed outage time, this finding is considered to be of very low safety significance (Green).

Instruction SPP-6.2, Surveillance Test Program, Revision 0, contained the licensee's administrative requirements for surveillance testing. Step 3.6.B.17 required procedures to contain restoration steps, which included return of affected structures, systems, or equipment to the configuration required to perform their design function. Instruction 0-FOR-13-619, did not contain adequate restoration steps to return the 1B EDG exhaust fans, and thus also the 1B EDG, to a configuration required for performance of their design function. This procedure deficiency was a violation of TS 5.7.1.1, which requires written procedures to be established and maintained, covering the applicable procedures of Regulatory Guide 1.33, Revision 2, Appendix A. Appendix A, requires procedures for performance of surveillance tests including fire protection system functional tests. This violation is being treated as a non-cited violation, consistent with Section VI.A.1 of the Enforcement Policy, and is identified as NCV 50-390/00-04-01: Failure to Maintain Adequate Fire Detection Surveillance Instruction. The violation is in the licensee's corrective action program as WBPER 00-009248-000.

1EP1 Drill, Exercise, and Actual Events

a. Inspection Scope

The inspector observed the Watts Bar off-year exercise from the technical support center (TSC). The inspector reviewed the exercise plan and observed TSC activities.

b. Issues and Findings

No findings of significance were identified.

1EP2 Alert and Notification System (ANS) Testing

a. Inspection Scope

The inspector reviewed the ANS design and associated testing commitments and procedures, and evaluated the adequacy of the testing program. Reviews were conducted of the ANS (sirens) testing results and related corrective action documentation.

b. Issues and Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation

a. Inspection Scope

The inspector reviewed the design of the ERO augmentation system and the maintenance of the licensee's capability to staff emergency response facilities within stated timeliness goals. Records of ERO augmentation drills were reviewed. These were primarily unannounced, off-hour communications drills, although one conducted on August 24, 2000, involved actual travel to the plant by ERO personnel. Follow-up activities for problems identified through augmentation testing were reviewed to determine whether appropriate corrective actions had been implemented.

b. Issues and Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspector selectively reviewed changes to the Radiological Emergency Plan (REP), as promulgated in Revisions 46, 48, 51, 56, and 57, to determine whether any of the changes decreased the effectiveness of the REP. All of the listed revisions contained changes to Appendix C (site-specific for Watts Bar); in addition, Revisions 56 and 57 included modifications to the generic portion of the REP. Minor changes to the

emergency action levels were made in Revisions 46, 51, 56, and 57. The inspector reviewed the REP changes against the requirements of 10 CFR 50.54(q).

b. Issues and Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspector evaluated the efficacy of licensee programs that addressed weaknesses and deficiencies in emergency preparedness. Documents reviewed included exercise and drill critique reports, WBPERS, self-assessment reports, and audit reports NA-WB-99-009, SSA9903, and SSA0005. No emergency declarations had been made since the last NRC inspection of the emergency preparedness program (January 1999).

b. Issues and Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety and Public Radiation Safety

2OS2 As Low as Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

The plant collective exposure history for the years 1997, 1998, and 1999, based on the data available from NUREG-0713, was reviewed and discussed with the licensee. The inspectors observed pre-job ALARA briefings for the 1B-B containment spray heat exchanger lift and for the Unit 1 reactor head lift. The inspectors observed job site implementation of ALARA controls and radiation worker performance at selected job sites in the Unit 1 containment and auxiliary buildings prior to and during the Unit 1 Cycle 3 refueling outage. The inspectors observed that ALARA controls established by ALARA Planning Report (APR) 00-0001 were implemented during work performed under Radiation Work Permit (RWP) 743 for local leak rate testing and during a pre-job radiation survey under RWP 1115 for a fuel transfer system upgrade. The inspectors independently verified that the job site dose rates were consistent with the dose rates recorded on the survey maps posted at the entrances to the following work areas: the 1B containment spray/DHR heat exchanger room, the 1B-B charging pump room, upper containment, the Unit 1 pipe chase room, and the area around the number 2 and 3 steam generator hot legs and manways. The inspectors discussed with licensee personnel and reviewed records associated with source-term reduction, radiological work planning records (APRs 00-9, 00-16, 00-19, 00-21, and 00-23) for the current outage exposure estimates, and exposure records for declared pregnant workers year-to-date (YTD) 2000. The inspectors reviewed records of potential exposures incurred during the two previous refueling outages, which were documented as personnel

contamination events (PCE numbers 99-008 through 99-0152, 00-039, 00-040, 00-046, 00-048, and 00-053). Training and qualification records of personnel involved in surveying and documenting those events were also reviewed. The effectiveness of problem identification and resolution for selected radiation protection-related issues identified during calendar year 2000 (YTD) was evaluated by the inspectors. Through the above reviews and observations, the licensee's ALARA program implementation and practices were evaluated by the inspectors for consistency with TS and 10 CFR Part 20 requirements.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Shipping

a. Inspection Scope

The inspector reviewed the licensee's facilities, processes and programs for the collection, processing, treatment, shipping, storage, and disposal of radioactive materials and radwaste. The inspector conducted reviews of the following: in-plant liquid and solid waste systems: waste processing and sampling program; shipment activities and records; assurance of quality, including corrective action reports; and training.

Systems reviews, which included system descriptions, control panel review, facilities tours, and a review of system changes in accordance with 10 CFR 50.59, was conducted for the following systems/subsystems: chemistry and volume control; spent fuel pool clean-up; floor drains; equipment drains (tritiated waste system); miscellaneous wastes; and, solid waste processing. The inspector also toured abandoned in-place radwaste equipment and facilities, and interim storage locations use for processed radwaste.

The inspector reviewed the licensee's Process Control Program (PCP), including: PCP Procedure PAI-13.01, Revision 0; process documentation; scaling factors (derivation, sampling type, sampling frequency, and effect of changing plant conditions); and, determination of waste characteristics and waste classification.

The inspector selected five solid radwaste shipping records for detailed review against the requirements contained in 10 CFR Parts 20, 61 and 71, and 49 CFR Parts 100-177. The shipments selected included processed resins, dry active waste and laundry shipments. The shipments were Nos. WB-00-17, WB-00-18, WB-00-19, WB-00-22 and WB-00-26.

The inspector reviewed the licensee's program for assurance of quality in the radwaste processing and radioactive materials transportation program by reviewing: quality assurance audits (TVA Audit 99N-50); quality surveillances; departmental self-assessments (WBN-ENV-00-001 and WBN-ENV-00-003); and, seven WBPERS involving the radwaste and transportation program in 2000 (00-003193-000, 00-007771-

000, 00-007798-000, 00-009271-000, 00-009272-000, 00-009273-000, and 00-009839-000).

The inspector reviewed the licensee's program of training for personnel involved in the radwaste and radioactive materials transportation program with regard to the requirements contained in NRC IE Bulletin 79-19 and DOT 49 CFR, Subpart H. Records reviewed included training requirements, course outlines/training modules, test questions, examinations and examination scores. Reviewed records were for licensee personnel in materials handling, radiation protection, and radwaste.

b. Issues and Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verifications

Licensee records were reviewed to determine whether the submitted PI statistics were calculated in accordance with the guidance contained in NEI 99-02, Revision 0, "Regulatory Assessment Performance Indicator Guideline."

Mitigating Systems Cornerstone

.1 Safety System Unavailability

a. Inspection Scope

The inspector verified the accuracy of the PI for Safety System Unavailability for the EDG and AFW systems. The inspectors reviewed data applicable to April, May, and June of the year 2000. The inspector reviewed narrative logs, work plans, and TS LCO tracking logs to identify unavailability periods and verified the accuracy of the licensee's calculations.

b. Issues and Findings

No findings of significance were identified.

Emergency Preparedness Cornerstone.2 ERO Drill/Exercise Performance (DEP) PIa. Inspection Scope

The inspector assessed the accuracy of the PI for ERO DEP over the past eight quarters through review of a sample of drill records. Documentation was reviewed for drills conducted in May and June 2000 and for shift manager simulator examinations conducted in the fourth quarter of 1999 to verify the licensee's reported data regarding successes in emergency classifications, notifications, and protective action recommendations.

b. Issues and Findings

No findings of significance were identified.

.3 ERO Drill Participation PIa. Inspection Scope

The inspector assessed the accuracy of the PI for ERO drill participation during the previous eight quarters by selective review of the training records for the 48 personnel currently assigned to key positions in the ERO. Drill participation was verified by reviewing training attendance records for six key ERO personnel against the drill/event participation matrix for specific drill dates.

b. Issues and Findings

No findings of significance were identified.

.4 ANS Reliability PIa. Inspection Scope

The inspector assessed the accuracy of the PI for ANS reliability through review of the licensee's records of the siren tests for the previous 12 months. A sample of records for the biweekly silent tests, annual growl tests, and monthly full-cycle tests was reviewed.

b. Issues and Findings

No findings of significance were identified.

40A4 Other.1 Unit 2 Layup Inspection (IP 92050)a. Inspection Scope

The inspector observed the condition of Unit 2 equipment in layup, both installed and in storage, 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 inspector 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 inspector reviewed the most recent construction permit activity and Plant Lay-Up Program audit and also reviewed component deficiency and non-conformance records.

The following documents and procedures were reviewed:

- TVA Nuclear Quality Assurance Plan, TVA-NQA-PLN-89-A, Revision 9
- Construction Administration Instruction (CAI) 1.01, Work Control for Non-Transferred Features, Revision 12
- CAI-1.02, Preventive Maintenance for Non-Transferred Features, Revision 11
- The Site-Specific Engineering Specification for Plant Layup/Equipment Preservation, N3M-935, Revision 1
- SPP-2.2, Administration of Site Technical Procedures, Revision 4
- SPP-10.7, Housekeeping/Temporary Equipment Control, Revision 0
- Nuclear Engineering Department Procedure, NEDP-10, Design Output, Revision 4
- Nuclear Assurance Department Procedure, NADP-2, AUDITS, Revision 4
- WBN Business Practice, BP-380, Requests for Installed Unit 2 Non-Transferred Components, Revision 5
- Nuclear Assurance Audit Report Number SSA0004, July 25, 2000
- Preventive Maintenance Records for the following components: 2-FCV-062-089 (1/12/00); 2-PNL-276-L176 (/131/00); 2-PMP-003-118 (7/07/00); 2-SGEN-0068-SG3 (6/16/00); 2-TANK-063-046 (6/25/00)

b. Findings and Observations

No findings of significance were identified.

.2 (Closed) Unresolved Item (URI) 390/99-06-05, Documentation of Nonconforming Materials Associated with New IC Screws

This URI was evaluated and determined to be a violation of 10 CFR 50, Appendix B, Criterion XVI. The basis for this determination was described in NRC's letter to the licensee, dated July 17, 2000. Based on an evaluation also presented in this letter, this finding was determined to be of very low safety significance (Green). In accordance with Section VI.A.1 of the Enforcement Policy, the violation was dispositioned as a non-cited violation and is identified as NCV 50-390/00-04-02: Failure to Evaluate Potential Defective Ice Basket Screws in 1995.

.3 (Closed) Unresolved Item 390/99-06-06, Submission of IC Central Lab Report to Westinghouse

This URI was evaluated and determined to be a violation of 10 CFR 50, Appendix B, Criterion V. The basis for this determination was described in NRC's letter to the licensee, dated July 17, 2000. Based on an evaluation also presented in this letter and the willful aspects of this issue, this finding was not evaluated under the NRC SDP (No Color). In accordance with Section VI.A.1 of the Enforcement Policy, the violation was dispositioned as a Severity IV violation and is identified as VIO 50-390/00-04-03: Failure to Adequately Monitor Corrective Action Implementation for WBPER950246.

.4 (Closed) Violation 390/00-04-03, Failure to Adequately Monitor Corrective Action Implementation for PER WBPER950246

The July 17, 2000 letter, discussed in Section 40A4.3, stated that the NRC had completed reviewing issues related to defective Watts Bar ice condenser ice basket screws and that no response to the violation was required. Sufficient information had been documented in previous correspondence and in this letter to fully describe the issue and the corrective actions. Based on the July 17, 2000, correspondence with the licensee, this violation is closed.

40A5 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on September 20, 2000. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Beecken, Maintenance and Modifications Manager
 D. Boone, Radiological Control Manager
 L. Bryant, Plant Manager
 S. Casteel, Radiological and Chemistry Control Manager
 J. Chenkus, Emergency Preparedness Systems Manager (corporate)
 J. Cox, Training Manager
 L. Hartley, Maintenance Rule Coordinator
 M. King, Acting Chemistry Manager
 D. Kulisek, Operations Manager
 W. Lagergren, Site Vice President
 B. Marks, Supervisor, Emergency Preparedness Programs and Implementation (corporate)
 D. Nelson, Business and Work Performance Manager

P. Pace, Licensing and Industry Affairs Manager
 F. Pavlechko, Emergency Preparedness Manager
 J. Roden, Operations Superintendent
 J. West, Site Quality Manager

ITEMS OPENED AND CLOSED

Closed

50-390/99-06-05	URI	Documentation of Nonconforming Materials Associated with New IC Screws (4OA4).
50-390/99-06-06	URI	Submission of IC Central Lab Report to Westinghouse (4OA4).

Opened and Closed

50-390/00-004-01	NCV	Failure to Maintain Adequate Fire Detection Surveillance Instruction (Section IR22).
50-390/00-04-02	NCV	Failure to Evaluate Potential Defective Ice Basket Screws in 1995 (4OA4).
50-390/00-04-03	VIO	Failure to Adequately Monitor Corrective Action Implementation for PER WBPER950246 (4OA4).

Attachment

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent little effect on safety. WHITE findings indicate issues with some increased importance to safety, which may require additional NRC inspections. YELLOW findings are more serious issues with an even higher potential to effect safety and would require the NRC to take additional actions. RED findings represent an unacceptable loss of safety margin and would result in the NRC taking significant actions that could include ordering the plant shut down.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. The color for an indicator corresponds to levels of performance that may result in increased NRC oversight (WHITE), performance that results in definitive, required action by the NRC (YELLOW), and performance that is unacceptable but still provides adequate protection to public health and safety (RED). GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, as described in the matrix. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings.