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

July 13, 2001

EA-99-234

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: NRC INTEGRATED INSPECTION REPORT NO. 50-390/01-02 AND 50-391/01-02

Dear Mr. Scalice:

On June 16, 2001, the NRC completed an inspection at your Watts Bar Nuclear Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on June 27, 2001, 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.

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 violations of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating it 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.

Also, on February 7, 2000, a Severity Level II Notice of Violation was issued to TVA. This violation involved employment discrimination contrary to the requirements of 10 CFR 50.7, "Employee Protection," in that TVA did not select a former employee to a competitive position in the corporate chemistry organization in 1996, due, at least in part, to his engagement in protected activities. The violation was directly related to your corporate office; and was thus required to be docketed against Watts Bar and your other two nuclear facilities. The enclosed report provides the NRC administrative tracking information for this violation against the Watts Bar docket numbers.

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 for 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

cc w/encl: (See page 3)

cc w/encl:
Karl W. Singer
Senior Vice President
Nuclear Operations
Tennessee Valley Authority
Electronic Mail Distribution

Jon Rupert, Vice President
Engineering and Technical Services
Tennessee Valley Authority
Electronic Mail Distribution

William R. Lagergren
Site Vice President
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

General Counsel
Tennessee Valley Authority
Electronic Mail Distribution

Robert J. Adney, General Manager
Nuclear Assurance
Tennessee Valley Authority
Electronic Mail Distribution

Mark J. Burzynski, Manager
Nuclear Licensing
Tennessee Valley Authority
Electronic Mail Distribution

Paul L. Pace, Manager
Licensing and Industry Affairs
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

Larry S. Bryant, Plant Manager
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

County Executive
Rhea County Courthouse
375 Church Street, Suite 215
Dayton, TN 37321-1300

County Executive
Meigs County Courthouse
Decatur, TN 37322

Lawrence E. Nanney, Director
TN Dept. of Environment & Conservation
Division of Radiological Health
Electronic Mail Distribution

Ann Harris
305 Pickel Road
Ten Mile, TN 37880

Distribution w/encl: (See page 4)

Distribution w/encl:
A. P. Hodgdon, OGC
B. J. Keeling, GPA/CA
R. E. Martin, NRR
H. N. Berkow, NRR
RIDSNRRDIPMLIPB
PUBLIC
OE-Mail

PUBLIC DOCUMENT (circle one): YES NO

OFFICE	DRP/RII	DRP/RII	DRP/RII	DRP/RII	DRS/RII	DRS/RII	DRS/RII
SIGNATURE	PTaylor:vyg	JBartley	DRich	RCaldwell	WBearden	DJones	ETesta
NAME	pt	pf (for)	(on leave)	pt (for)	ml (for)	dj	dj (for)
DATE	7/9/2001	7/13/2001		7/5/2001	7/9/2001	7/5/2001	7/5/2001
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\Program Files\Adobe\Acrobat 4.0\PDF Output\0102 drp.wpd

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-390, 50-391
License Nos:	NPF-90 and Construction Permit CPPR-92
Report No:	50-390/01-02, 50-391/01-02
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Watts Bar Nuclear Plant, Units 1 and 2
Location:	1260 Nuclear Plant Road Spring City, TN 37381
Dates:	March 18 through June 16, 2001
Inspectors:	J. Bartley, Senior Resident Inspector D. Rich, Resident Inspector W. Bearden, Reactor Inspector R. Caldwell, Resident Inspector, Farley Nuclear Plant D. Jones, Senior Radiation Specialist (Section 2PS1) E. Testa, Senior Radiation Specialist (Sections 2OS3 and 2PS3)
Approved by:	P. Fredrickson, Chief Reactor Projects Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Integrated Inspection Report 05000390-01-02, 05000391-01-02, on March 18, 2001 - June 16, 2001, Tennessee Valley Authority, Watts Bar, Units 1 & 2. Operability evaluation and post maintenance testing.

The inspection was conducted by resident inspectors, a regional radiation specialist, a resident inspector from Farley, and a regional reactor inspector. The inspection identified two Green findings, one of which was a non-cited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, Significance Determination Process (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process Web site at http://www.nrc.gov/NRC/ADAMS/index.html

A. Inspector Identified Findings

Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 5.7.1.1.a, (recommended procedures in Regulatory Guide 1.33 Revision 2, Appendix A, February 1978) for an inadequate maintenance instruction which resulted in failure of the 1A-A emergency diesel generator (EDG) breaker.

  The finding was of very low safety significance because, while it caused unplanned unavailability of the 1A-A EDG, only one train of mitigating equipment was affected and the Technical Specifications allowed outage time was not exceeded. (Section 1R19)

- Green. The inspectors identified a finding due to the licensee's untimely performance of two degraded-condition operability evaluations, and the lack of technical justification in two other operability evaluations.

  The finding was of very low safety significance because, while it had the potential to result in continued operation with unrecognized inoperable or unavailable risk significant equipment, it did not result in an actual loss of safety function of a system. There were no compliance issues associated with this finding since the final evaluations demonstrated that the components were operable. (Section 1R15)

Other Activities

- Violation. On February 7, 2000, a Severity Level II violation with a proposed civil penalty was issued to the licensee. The violation related to corporate activities and involved employment discrimination contrary to the requirements of 10 CFR 50.7, "Employee Protection," in that the licensee did not select a former employee to a competitive position in the corporate chemistry organization in 1996, due, at least in part, to his engagement in protected activities. On January

22, 2001, the licensee denied the violation and on May 4, an Order was issued sustaining the violation and imposing the civil penalty. On June 1, TVA requested an enforcement hearing on the Order. (Section 40A5).

B. Licensee Identified Violations

None

Report Details

Summary of Plant Status
Unit 1 operated at or near 100 percent power for the entire inspection period. Unit 2 remained in a suspended construction status.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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, listed below, with the other train or system inoperable or out-of-service. The walkdowns included, as appropriate, consideration of plant procedures and 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.

- 1B motor-driven auxiliary feedwater pump (MDAFWP)
- 2A emergency diesel generator (EDG)
- A-train component cooling water system (CCS)

b. Issues and Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors performed a complete system walkdown to verify that the risk significant Unit 1 125 VDC vital battery system was properly aligned and maintained. The inspectors verified indications and controls in the main control room and performed infield checks of breakers, switches, components, electrical power, support equipment, and instrumentation. In addition, open maintenance work orders (WOs), outstanding design issues, operator workarounds, general area housekeeping and material conditions were reviewed. The inspectors reviewed the Maintenance Rule (MR) Program system health report and interviewed the system's maintenance, system and design engineers, as well as operations and electrical maintenance personnel. The inspectors reviewed the system operating instructions (SOI), annunciator response instructions (ARI), surveillance instructions (SI) and design documents listed below.

- ARI-15-21, Control Power & Fire Protection
- SOI-236.01, 125V DC Vital Battery Board I

- SOI-236.05, 125V DC Vital Battery Board V
- Open Work Documents for the 125V DC Vital Systems
- 0-SI-0-3, Weekly Log
- 0-SI-236-61, 125 VDC Battery Charger I-D
- 0-SI-236-21, 125 VDC Vital Battery I Quarterly Inspection
- 0-SI-236-51, 125 VDC Vital Battery I 60 Month Performance Test and 125 VDC Vital Battery Charger I Test
- 0-SI-236-41, 125 VDC Vital Battery I 18 Month Service Test and 125 VDC Vital Battery Charger I Test
- Design Basis Document (DBD) WB-DC-30-27, AC and DC Control Systems
- Site Drawings: 1-45W709-9; 1-45W703-1; and 1-45W703-9
- UFSAR Chapter 8.3
- NRC Safety Evaluation Reports

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection - Tours

a. Inspection Scope

The inspectors conducted tours of areas important to reactor safety, 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. Acceptance standards for the above conditions were delineated in the licensee's Fire Protection Plan. The inspectors toured the following areas:

- Cable spreading room
- EDG engine and electrical boardrooms
- 6.9 KV and 480V shutdown boardrooms (SDBR)
- Auxiliary building elevation 713 corridor
- Auxiliary building elevation 737 chillers and auxiliary building gas treatment system
- Auxiliary building elevation 757 auxiliary air compressors and emergency gas treatment system

b. Issues and Findings

No findings of significance were identified.

.2 Fire Protection - Drill Observation

The inspectors observed a fire drill conducted in the 1A-A 480V reactor motor-operated valve (MOV) boardroom to evaluate the readiness of the plant fire brigade to fight fires. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient fire fighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Issues and Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed operators in the plant simulator during licensed operator retraining and the post-training critiques. The inspectors verified that emergency operating procedures and radiological emergency plan procedures were followed and also observed that the licensee's critique adequately addressed observed weaknesses. In addition, the inspectors verified that the training program included risk-significant operator actions, emergency plan implementation, lessons learned from previous plant experiences, and industry operating experience.

b. Issues and Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

.1 Review of Maintenance Effectiveness

a. Inspection Scope

The inspectors sampled portions of selected structures, systems, and components (SSC), 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) MR 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).

- 2B1-B 480 V switchboard normal supply breaker
- Train B auxiliary building isolation circuit
- Water in standby main feed pump bearing oil

- Train B shutdown boardroom air handling unit fan motor breaker
- Train A electric boardroom chiller
- Steam generator power-operated relief valve controller, 1-PIC-1-6A

b. Issues and Findings

No findings of significance were identified.

.2 Maintenance Rule Periodic Assessment

a. Inspection Scope

The inspector reviewed quarterly system status reports, an MR periodic assessment, dated March 30, 2000, which covered the period from April 1, 1998, until December 31, 1999, and MR self-assessment reports issued since completion of the periodic assessment. The inspector verified that the assessments were issued in accordance with the time requirements of the MR and included evaluation of balancing reliability and unavailability, MR (a)(1) and (a)(2) activities, and the use of industry operating experience. The inspector reviewed selected MR activities covered by the assessment period for the following risk significant systems: (1) 120 volt AC vital electrical (system 235); (2) hydrogen igniters (system 268); (3) air conditioning and control room emergency ventilation system (system 31); (4) switchyard power and equipment (systems 204, 245, and 246) and (5) radiation monitoring (system 90), to verify compliance with 10 CFR 50.65. The inspector reviewed licensee actions associated with corrective actions and the re-classification of system 31 and 268, classified as MR (a)(1) and identified no issues or concerns. Procedures and documents reviewed during this inspection are listed below.

- Technical Instruction (TI)-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting
- Site Programs and Processes (SPP)-6.6, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting
- MR system status reports for the 3rd and 4th quarter of fiscal years 2000, and 1st and 2nd quarter of fiscal year 2001
- Maintenance Rule Performance Improvement Plan for Shutdown Board Room Chillers
- Maintenance Rule Performance Improvement Plan for Main Control Room and Electric Board Room Chillers
- Expert panel minutes for 1/20/00, 6/13/00, and 5/3/01.
- MR self-assessments for the 3rd and 4th quarter of fiscal year 2000 and 1st and 2nd quarter of fiscal year 2001
- MR second periodic assessment report 10CFR 40.65 paragraph (a)(3), dated 3/30/00

b. Issues and Findings

No findings of significance were identified.

1R13 Maintenance Rule Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors evaluated, as appropriate for the selected SSC emergent maintenance 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.

- SDBR chiller B
- Standby main feedwater pump
- 1B EDG
- 2A EDG
- A main control room air handling unit

b. Issues and Findings

No findings of significance were identified.

IR14 Personnel Performance During Nonroutine Plant Evolutions

a. Inspection Scope

On, June 13, 2001, the inspectors witnessed the licensee response to the loss of a 125 VDC battery charger 6S, while 125V DC vital battery board I was being supplied from the 6S (spare) battery charger and the V (spare) battery. The inspectors observed the event response and assessed the licensee's use of plant SOIs, ARIs, SIs, and communications. Inspector observations of licensee performance were compared to licensee instructions to ensure regulatory and procedure requirements were met. The inspectors also reviewed the operator logs dated June 13 and 14, 2001, and Problem Evaluation Report (PER) 01-008720-000, concerning the loss of the 6S battery charger while aligned to the 125V DC vital battery board I. Inspectors observed the work on 125 VDC vital battery charger 6S and the follow-on surveillance (0-SI-236-21, 125 VDC Vital Battery I Quarterly Inspection) on 125 VDC vital battery I. The inspectors observed operations, maintenance, and the engineering restoration pre-job brief, restoration activities, and the post-job debrief. Additionally, interviews with operations, maintenance, and engineering personnel were conducted.

b. 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; (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 LCOs and the risk significance in accordance with the Significance Determination Process (SDP).

- 120 VAC vital inverter 1-IV voltage alarm
- The A electric boardroom (EBR) chiller large expansion valve failed to open
- Failure to reset EDG overspeed limit switch caused misadjustment of fuel injector timing on 1B and 2A EDGs
- Post-accident monitoring nuclear instruments not isolated from non-class 1E circuitry
- Clam shells in 1A EDG cooling water heat exchangers
- Incorrect bolts for 6.9kv breaker charging spring motors

b. Issues and Findings

The inspectors identified a Green finding due to the licensee's failure to perform timely operability evaluations for two degraded conditions and the failure of operability evaluations to provide adequate technical justification for two other degraded conditions.

On May 8, 2001, during a planned outage of the 2B EDG, maintenance personnel identified that a note in the WO package was missed. This note directed that the overspeed limit switch be reset prior to adjusting the fuel injectors. Failure to reset the limit switch prior to adjusting the fuel injectors resulted in retarding the timing of the fuel injectors. This same error was made during the previous planned outages on the 1B and 2A EDGs. The inspectors reviewed the licensee's operability evaluation for the 1B and 2A EDGs and determined that it did not adequately justify operability. The operability evaluation had two deficient areas. First, it stated that there would be increased long-term wear on the fuel injectors; however, the licensee staff did not know what the vendor meant by long-term. Secondly, it stated that there would be a slight loss of efficiency. However, the operability evaluation did not address the increased fuel usage due to the loss of efficiency or whether there was enough fuel oil available in the fuel oil tanks for seven days. The licensee was able to address these deficiencies and technically justify operability after additional discussions with the vendor and analyzing fuel usage and available inventory. The licensee initiated PER 0-007661-000 to address this issue.

On May 15, 2001, during maintenance on the 2A EDG, the licensee identified that the cooling water heat exchangers had tubes blocked with clam shells. The inspectors requested a copy of the evaluation of the as-found condition to evaluate if the blockage affected past availability of the 2A EDG. The inspectors determined that the engineering staff was not planning on evaluating the as-found condition of the heat exchangers. The licensee staff subsequently evaluated the condition and determined the 2A EDG operable with the as-found condition of the heat exchangers. The inspectors reviewed the evaluation and determined that it technically justified the

operability of the 2A EDG. The licensee initiated PER 01-007617-000 to address this issue.

On May 16, 2001, the 1A-A EDG breaker failed when the closing spring charging motor mounts failed (reference paragraph IR19). The cause for this problem was failure to correctly install a replacement spring charging motor, in that the replacement motor was of a slightly different dimension and required a spacer plate and longer bolts to be used for mounting. On the 1A-A EDG breaker the licensee found that neither the spacer plate nor the longer bolts had been installed. The pressurizer backup heater group 1B-B breaker and the G-B essential raw cooling water pump breaker had the spacer plate installed but had inadequate length bolts. The licensee evaluated bolt and motor housing strength for the condition of inadequate length bolts used in conjunction with the spacer plate and concluded that, even with inadequate thread engagement, the mounting arrangement had adequate strength to endure loads imposed by motor torque and seismic loading. The inspectors reviewed this evaluation and determined that, while the calculations adequately determined the value of load that the assembly could withstand, the conclusion was reached without understanding or calculating the imposed loading values from motor torque or seismic events. The licensee subsequently calculated applied loads and showed that the motor mounting assembly was able to withstand motor torque and seismic loads. Although the licensee promptly corrected the problems on each of the safety-related breakers, the evaluation for past operability initially lacked the adequate technical justification to support the conclusion drawn.

On May 4, 2001, the licensee identified that the shift crew failed to perform an operability evaluation for a failure of the large expansion valve on the Train A electrical board room (EBR) chiller. The component failure was identified by maintenance personnel on May 3 and documented in a work request. A senior reactor operator reviewed the work request and did not recognize that the failure affected operability of the chiller. Later that day, licensee staff tagged out the Train B EBR air handling unit for maintenance without recognizing that the Train A EBR chiller was potentially inoperable. The subsequent chiller operability evaluation required a week for engineering to complete and concluded that the Train A EBR chiller was operable without the large expansion valve. The licensee initiated PER 01-006750-000 to address this issue.

These operability determination deficiencies constitute a finding that had a credible impact on safety because improperly evaluated degraded or non-conforming conditions may result in continued operation with a structure, system, or component that is not capable of performing its design function. The failure to perform operability evaluations or adequate operability evaluations could result in a risk-significant system being unavailable without the licensee's staff being aware of it. This would result in unnecessary unavailability of mitigation systems and the potential to put the plant in a higher risk configuration if another risk-significant system was taken out of service for maintenance. The inspectors determined that this finding was of very low safety significance (Green) because it only affected the mitigating system and it did not result in an actual loss of safety function of a system or train. There were no compliance issues associated with this finding since the final evaluations demonstrated that the components were operable.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the post-maintenance test (PMT) procedures and/or test activities listed below, as appropriate, for 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; (8) and that equipment was returned to the status required to perform its safety function.

- WO 01-038650-000, Troubleshoot and Repair A Train Safety Injection Pump Flow Indication
- WO 01-004400-000, Troubleshoot and Repair SDBR Chiller B-B
- WO 01-004711-000, Troubleshoot and Repair Solid State Protection System Set II, Rack 1-R-7
- WO 01-001807-000, Replace Standby Main Feedwater Pump Lube Oil Cooler
- Maintenance Instruction (MI)-82.003, 18 Month Diesel Generator Inspection 2A EDG
- MI-82.003, 18 Month Diesel Generator Inspection 1B EDG
- WO 01-007794-000, Replace Makeup Mode Selector Switch
- WO 95-01661-000, Replacement of Spring Charging Motor

In addition, the inspectors reviewed the PER database to verify that the licensee was identifying post-maintenance testing problems at an appropriate threshold and entering them into the corrective action program. The inspectors reviewed selected PERs, listed below, for the adequacy of corrective actions.

- PER 00-006387-000, Individuals do not fully understand Section XI testing requirements for pipe replacement.
- PER 00-006596-000, Inadequate PMT for CCS pump causes two hours of additional unavailability.
- PER 00-007622-000, PMT did not functionally check all contacts.
- PER 00-013821-000, Failure to notify the PMT group resulted in failure to perform the PMT.

b. Issues and Findings

A finding of very low safety significance (Green) was identified by the inspectors for an inadequate maintenance instructions which resulted in failure of the 1A-A EDG breaker. This finding was also a non-cited violation of Technical Specification 5.7.1.1.a.

On May 16, 2001, after successful completion of a post-maintenance test which involved starting and operating the 1A-A EDG, the 1A-A EDG breaker was opened and, after being opened, the white breaker disagreement light came on signifying that the status of the breaker did not agree with the hand switch position. Visual inspection revealed that the spring charging motor was off its mounts and hanging by one wire. The licensee replaced the entire breaker in order to restore the 1A-A EDG to operable status. Further inspection showed the mounting bolts were stripped out of the spring charging motor housing and the motor housing was cracked.

The spring charging motor had been replaced in 1995 with a vendor-supplied replacement motor. The replacement motor housing was of a slightly different dimension than the original, requiring the use of a spacer plate and longer mounting bolts. Licensee investigation determined that the replacement motor was mounted using the original bolts, without the spacer plate between the motor and the breaker frame. Thus the motor was out of alignment and, after approximately 200 cycles, the mounting bolts broke out of the motor housing. Although the spacer plate and longer bolts were included by the vendor with the replacement motor package, the vendor did not provide any assembly instructions. Additionally, GE Service Advisory Letter 073-352.1, dated July 7, 1995, identified the replacement as “interchangeable.” An extent of condition review identified 26 breakers in the plant with this model spring charging motor. The licensee found the spacer plate missing in the 1A-A safety injection pump breaker and three spare breakers. All four of these breakers had the correct replacement bolts installed. The licensee also determined that eight breakers had the original mounting bolts still installed, which were one-fourth inch too short. Engineering analysis determined that although the shorter bolts did not have the accepted minimum standard thread engagement and should be replaced, they were acceptable for functionality (reference paragraph 1R15, Operability Evaluations). The licensee promptly replaced all the shorter bolts on installed safety-related breakers, planned replacement on nonsafety-related breakers, and tagged spare breakers to indicate replacement prior to use was required.

A review of WO 95-01661-000, which documented replacement of the spring charging motor on the 1A-A EDG, revealed no instructions that a spacer plate was required to ensure proper alignment of the motor. The licensee stated that although the vendor supplied all required pieces and parts, the vendor had supplied the motors as like-for-like replacements without special instructions that a spacer plate and longer bolts were required.

This issue had a credible impact on safety because the breaker failure led to approximately eight hours of unplanned unavailability for the 1A-A EDG. The issue was of greater concern because the condition was not confined to only one breaker and, although the 1B-B EDG breaker was not affected, the potential existed for common cause failure. Although the issue did have an impact on safety, since only one train of mitigating equipment was affected and the allowed TS outage time was not exceeded, the finding was considered to be of very low safety significance (Green). The inspectors also determined that the inadequate instructions in WO 95-01661-000 constituted an inadequate work procedure which was a violation of TS 5.7.1.1a. This violation is being treated as a non-cited violation, consistent with Section VI.A1 of the NRC Enforcement Policy, and is identified as NCV 50-390, 391/01-02-01, Inadequate Work Procedure for

Replacement of Spring Charging Motor. This violation is in the licensee's corrective action program as PER 0-007615-000.

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 TS, UFSAR, and 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.

- 1-SI-62-901-A, Centrifugal Charging Pump IA Quarterly Performance Test
- 1-SI-70-901-B, CCS Pump 1B Quarterly Performance Test
- 1-SI-72-901-B, Containment Spray Pump 1B Quarterly Performance Test
- 0-SI–82-11-A, Monthly Diesel Generator Start and Load Test 1A
- 0-SI-67-902-B, Essential Raw Cooling Water Pump F-B Performance Test
- 1-SI-3-901-A, Motor-Driven Auxiliary Feedwater Pump 1A Quarterly Performance Test

b. Issues and Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors evaluated Western Area Radiological Laboratory (WARL) portable instrument shipment receipt, storage, inventory control, return shipment, calibration procedures, self-assessment and audit reports, PERs, and calibration data files. The inspectors also interviewed instrument technicians, the health physics supervisor, and lab manager to evaluate compliance with the Radioactive Material Control Program, UFSAR, TS, 10 CFR Part 20 requirements, Offsite Dose Assessment Manual (ODCM), and Radiological Environmental Monitoring Program (REMP). In addition, the inspectors observed an instrumentation technician performing calibration procedures on portable radiation survey instruments and electronic dosimeters.

Procedures evaluated included the following:

- RC-06, Servicing Contaminated Portable Survey Instrumentation, 1/16/01
- LSAP-0014, Training and Qualification of Instrument Technicians
- CC-0001, Generic Criteria for Portable Radiation Survey Instrumentation

- RC-04, Procedures for Surveying WARL Facilities
- LSCP-0078, Calibration Procedure for the MG DMC-90, 100, and 2000-Computer Assisted
- LSCP-0117, Operating Procedure for use of Beta Sources
- LSCP-0107, Operation Procedure for Neutron Sources
- LSCP-0102, Operation of the Radiation Calibration Facility at the Western Area Radiological Laboratory
- LSCP-0065, Calibration Procedure for the Bicron Micro-Rem
- LSCP-0019, Calibration Procedure for Ludlum 12-4 with Neutron Detector
- LSCP-0009, Overload Test for Survey Instrumentation
- LSCP-0006, Calibration Procedure for Eberline Teletector 6112B
- LSAP-0039, Program Description for Portable Survey Instrument Calibration

Audit and Self-Assessment Reports evaluated included the following:

- Audit Report SSA9901, Plant Support Functional Area Audit, April 15, 1999
- CRP-RP-00-003, Calibration Procedures, dated 3/01/00 to 4/01/00
- CRP-RP-00-001, Control of Radioactive Material, dated 11/15/99 to 12/15/99

PERs included the following:

- Corporate 00-000059-000,00-000145-000,00-000220-000
- BFN 00-011259-000

b. Findings

No findings of significance were identified.

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

The inspectors reviewed the licensee's most recent Radioactive Effluent Release Report which delineated the quantities of radionuclides released in liquid and gaseous effluents during calendar 2000 and the radiation doses to the public resulting from those releases. The review included verification that the report included the information and data required to be reported to demonstrate conformance with 10 CFR 20.1302, 10 CFR 50.36a, and 10 CFR 50, Appendix I. The inspectors reviewed the recent changes to the ODCM and verified that those changes were evaluated pursuant to 10 CFR 50.59 when required. The inspectors toured the plant and verified that the radioactive effluent monitoring and processing equipment was configured as described in Section 11 of the UFSAR. During the tours the inspectors verified that radioactivity monitors for the following release pathways were in service as required by the ODCM:

- RE-90-122, Liquid Radwaste Effluent Line
- RE-90-121, Steam Generator Blowdown Effluent Line
- RE-90-225, Condensate Demineralizer Effluent Line
- RE-0-134 and 141, Essential Raw Cooling Water Effluent Line
- RE-90-212, Turbine Building Sump Effluent Line

- RE-90-119, Condenser Vacuum Exhaust
- RE-90-400A, Shield Building Exhaust
- RE-90-101B, Auxiliary Building Vent
- RE-90-132B, Service Building Vent

The inspectors observed the collection and analysis of samples of a liquid radwaste batch release and the weekly samples from the auxiliary building vent. The inspectors verified that the sampling, analytical, and batch release procedures were followed. The inspectors also verified that the total body dose calculation for the liquid radwaste batch release was consistent with the methodology described in the ODCM. The inspectors reviewed the records for the most recent calibrations of the liquid radwaste effluent monitor (RE-90-122), the auxiliary building vent monitor (RE-90-101B), and one gamma spectroscopic instrument in the count room and verified that their calibrations were current with respect to ODCM requirements. Sampling and analytical records were examined to verify that compensatory actions had been taken, as required by the ODCM, for a period in January 2000 during which the turbine building sump monitor was temporarily inoperable. The inspectors reviewed the results of interlaboratory comparisons from the third quarter of 2000 for typical effluent samples and verified that the licensee had maintained the quality of analyses consistent with the program guidance provided by Regulatory Guide 4.15. The effectiveness of characterization and resolution of selected effluent monitoring-related issues identified since April 2001 were evaluated by the inspectors.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program

a. Inspection Scope

The inspectors evaluated analytical environmental procedures, self-assessment reports, cross-check comparison results, and daily instrument control charts. They also interviewed chemists and chemistry technicians, lab supervisors, and the lab manager to evaluate compliance with the ODCM, REMP, UFSAR, TS, and 10 CFR Part 20 requirements. In addition, the inspectors observed a chemist and several chemistry technicians performing analytical procedures including a National Institute of Standards and Technology Cross Check Sample.

Procedures evaluated included the following:

- QC-104, Sample Receiving and Log-In
- SR-01, Radiochemical Determination of Strontium-89,90 in Environmental Samples
- I-01 Iodine-131 Activity Determination in Environmental Samples
- PPS-06 SR-89,90;NI-59,63;FE-55 and TRU(PU, NP and AM/CM Determinations
- PPS-01, Preparation of 10 CFR 61 Samples
- QC-26, Instrument Logbook and Control Chart Maintenance
- STD-01, Standardization of Carriers

- SP-01, Sample Preparation

Self-assessments and cross-checks evaluated included the following:

- CRP-ERMI-01-002, Radioanalytical Analysis of 10 CFR 61 and Radiological Effluent Samples, dated 1/16/2001 to 1/31/2001
- CRP-RP-00-002, Conduct of Radiological Environmental Monitoring Program (REMP), dated 6/1/2000 to 6/30/2000
- TVA Document Summary of Cross-Checks, dated February 2001
- National Institute of Standards and Technology Cross Check Samples 1343-9,1354-4,1368-7,1280-12, 1288-19, 1311-27, 1318-4, 1334-19

b. 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 Nuclear Energy Institute 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 0.

.1 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors reviewed operating logs, PERs, and monthly operating reports for the period of December 1, 2000, through April 1, 2001, to verify the accuracy and completeness of the Unplanned Transients per 7000 Critical Hours PI.

b. Issues and Findings

No findings of significance were identified.

.2 Safety System Unavailability

a. Inspection Scope

The inspector reviewed operating logs, weekly work schedules, and TS LCO entry records for the period of September 1, 2000, through March 31, 2001, to verify the accuracy and completeness of the EDG and AFW Safety Systems Unavailability PIs.

b. Issues and Findings

No findings of significance were identified

4OA5 Other

On February 7, 2000, a Severity Level II violation with a proposed civil penalty was issued to TVA. This violation involved employment discrimination contrary to the requirements of 10 CFR 50.7, "Employee Protection," in that TVA did not select a former employee to a competitive position in the corporate chemistry organization in 1996, due, at least in part, to his engagement in protected activities. On January 22, 2001, TVA denied the violation and on May 4, an Order was issued sustaining the violation and imposing the civil penalty. On June 1, TVA requested an enforcement hearing on the Order. Pending resolution of this violation, this issue is identified as Violation 50-390, 391/01-02-01, TVA Corporate Employee Discrimination.

4OA6 Management Meetings

The inspectors presented the inspection results to Mr. W. Lagergren and other members of licensee management at the conclusion of the inspection on June 27, 2001. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

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. Cox, Training Manager
L. Hartley, Maintenance Rule Coordinator
M. King, Acting Chemistry Manager
D. Kulisek, Assistant Plant Manager
W. Lagergren, Site Vice President
J. Maddox, Engineering Manager
D. Nelson, Business and Work Performance Manager
P. Pace, Licensing and Industry Affairs Manager
J. Roden, Operations Superintendent
T. Wallace, Operations Manager
J. West, Site Quality Manager

NRC

J. Bartley, Senior Resident Inspector
D. Rich, Resident Inspector

ITEMS OPENED AND CLOSED

Opened

50-390, 391/01-02-02	VIO	TVA Corporate Employee Discrimination. (Section 40A5)

Opened and Closed

50-390,391/01-02-01	NCV	Inadequate Work Procedure for Replacement of Spring Charging Motor (Section IR19)