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

October 10, 2002

EA-02-202

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 NO. 50-390/02-03 AND 50-391/02-03

Dear Mr. Scalice:

On September 14, 2002, the NRC completed an inspection at your Watts Bar Nuclear Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on September 18, 2002, with Mr. W. Lagergren and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, two self-revealing issues of very low safety significance (Green) were identified. One of these issues was also determined to involve a violation of NRC requirements. However, because of the 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 any non-cited violation in the enclosed report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Watts Bar facility.

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/reading-rm/adams.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 50-390/02-03**,** 50-391/02-03
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:	50-390/02-03, 50-391/02-03
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 16 through September 14, 2002
Inspectors:	J. Bartley, Senior Resident Inspector J. Reece, Resident Inspector R. Carrion, Project Engineer D. Jones, Senior Health Physicist (Sections 2OS3, 2PS3)
Approved by:	P. Fredrickson, Chief Reactor Projects Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Integrated Inspection Report 05000390-2002-03, 05000391-2002-03, on June 16, 2002 - September 14, 2002, Tennessee Valley Authority, Watts Bar, Units 1 & 2, maintenance risk assessment and event followup.

The inspection was conducted by resident inspectors, a regional radiation specialist, and a project engineer. 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 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, and at its Reactor Oversight Process web site at http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html.

A. Inspector-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing, non-cited violation of 10 CFR 50.65 (a) (4) was identified for inadequate implementation of a risk management action (RMA) to protect vital DC busses during maintenance on a 6.9 KV shutdown boardroom chiller.

  The finding was of very low safety significance because, although it increased the likelihood of a reactor trip, it did not increase the likelihood of a primary or secondary system loss of coolant accident (LOCA) initiator, did not contribute to a combination of a reactor trip and loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood (Section 1R13).

- Green. A self-revealing, finding was identified for inadequate work controls for an electrical splice associated with a main generator C-phase current transformer.

  The finding was of very low safety significance because, although it caused a reactor trip, it did not increase the likelihood of a primary or secondary system loss of coolant accident (LOCA) initiator, did not contribute to a combination of a reactor trip and loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood (Section 4OA3.1).

B. Licensee Identified Violation

None

Report Details

Summary of Plant Status

Unit 1 operated at or near 100 percent power for the entire inspection period except for one reactor trip. On July 13, Unit 1 automatically tripped due to a shorted splice on a C-phase current transformer. The cause of the scram was determined and the unit was restarted on July 14. Unit 2 remained in a suspended construction status.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

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

- A train emergency core cooling system (ECCS), containment spray, and auxiliary feedwater (AFW) during essential raw cooling water (ERCW) pipe replacement
- A and B train AFW during turbine-driven auxiliary feedwater (TDAFW) outage
- A train motor-driven auxiliary feedwater (MDAFW) during B train MDAFW outage

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

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

systems, equipment, and features; and (3) the fire barriers used to prevent fire damage or fire propagation.

- TDAFW pump room
- A and B train 6.9 KV shutdown boardrooms (SDBR)
- Channel 1, 2, 3 and 4 vital DC boardrooms
- MDAFW pumps
- CCS pumps
- A and B train 480V vital AC boardrooms

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed internal flood protection barriers associated with control building elevation 708 ft to verify that the flood protection barriers and equipment were being maintained consistent with the UFSAR. The inspectors reviewed licensee instructions for shutdown in the event of severe flooding and other documentation regarding flood protection as listed in the attachment. Licensee's corrective action documents were reviewed to verify that corrective actions with respect to flood-related items identified in problem evaluation reports (PER) were adequate. The inspectors walked down the selected area, 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 material condition.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed operators in the plant's simulator during licensed operator retraining to verify operator performance was adequate, that the training was being conducted in accordance with Procedures TRN-1, Administering Training, and TRN-11.4, Continuing Training for Licensed Personnel, and that evaluators' critiques covered identified deficiencies. The inspectors observed Scenario 3-OT-SRT0049A which consisted of a fuel failure followed by a transient on the secondary system which required the operator to manually trip the unit due to high turbine vibrations.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors sampled portions of selected structures, systems or components (SSCs), listed below, as a result of risk-significant, performance-based problems, to assess the effectiveness of maintenance efforts that apply to scoped SSCs and to verify that the licensee was following the requirements of 10 CFR 50.65; Technical Instruction (TI)-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting; and SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting 10 CFR 50.65. Reviews focused on: (1) appropriate work practices; (2) identifying and addressing common-cause failures; (3) scoping in accordance with 10 CFR 50.65(b); (4) characterizing reliability issues; (5) charging unavailability; (6) trending key parameters; (7) classifications as per 10 CFR 65.(a)(1) or (a)(2); and (8) appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1). The specific documents reviewed are listed in the attachment.

- 480 V Vital AC power distribution breaker failed to close
- 480 V electric boardroom air chiller tripped

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors evaluated, as appropriate, for the selected SSCs listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors 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.

- Work Order (WO) 02-007476-000, Replace ERCW pipe to repair through-wall leak
- WO 02-010380-000, Repair protection cabinet 3 power supply
- WO 01-008815-000, Replace regulator on 1-LCV-3-173 (TDAFW loop 2 control valve)
- WO 02-011171-000, Repair 2A1 diesel generator (DG) fuel oil transfer pump
- WO 02-012266-000, Preventative maintenance on A train vital inverter while B SDBR chiller out of service

b. Findings

Introduction: A Green self-revealing, non-cited violation of 10 CFR 50.65(a)(4) was identified for inadequate implementation of a risk management action (RMA).

Description: On September 4, 2002, the licensee was performing maintenance activities on the B train 6.9 KV SDBR chiller per WO 02-011726-000. The associated risk assessment required by 10 CFR 50.65(a)(4) determined that the activities were low risk or a yellow condition per TI-124, Equipment to Plant Risk Matrix. Procedure SPP-7.1, Work Control Process, required the establishment of RMAs for out-of-service SSCs where the modeled risk is a yellow condition. Accordingly, the licensee managed the increase in risk for WO 02-011726-000 by a RMA that involved the establishment of a compensatory measure which stated, "No work will be allowed to start or continue that involves the protected equipment." TI-124 identified that the protected equipment included the plant's vital DC system (Busses I, II, III, and IV). The licensee failed to adequately implement the RMA in that work was allowed to start on WO 02–008095-000, 125V Vital Charger III Inspection Monthly Preventative Maintenance (PM). The failure was revealed when a technician inadvertently tripped the AC input breaker on the adjacent Vital Inverter III. Although the associated 120 VAC Vital Instrument Power Board III did not lose power (the auctioneered circuit on the vital inverter swapped to the Vital DC Channel III supply), loss of the vital inverter and the resultant loss of power to the 120 VAC Vital Instrument Power Board III would have resulted in a reactor trip.

Risk Analysis: The inadequate implementation of the RMA to protect the vital DC system busses had a credible impact on the Initiating Events cornerstone. This was due to an increase in the likelihood of a plant trip resulting in an upset of plant stability and challenge of critical safety functions. Using the significant determination process (SDP), the inspectors determined that the finding degraded the Initiating Event cornerstone in that it increased the likelihood of a reactor trip. In addition, the inspectors determined that the finding did not contribute to the likelihood of a Primary or Secondary system LOCA initiator, did not contribute to a combination of a reactor trip and loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood. Thus, the finding was screened as Green (very low safety significance).

Enforcement: 10 CFR 50.65(a)(4) requires in part that, "Before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities." Contrary to this, on September 4, 2002, the licensee failed to manage the increase in risk associated with the maintenance activities on B train 6.9 KV SDBR chiller in that an inadequate implementation of the RMA to protect the Vital DC system busses as specified by TI-124 allowed work to start on WO 02–008095-000, 125V Vital Charger III Inspection Monthly PM, that resulted in a configuration control problem on Vital Inverter III. This violation is being treated as a non-cited violation (NCV), consistent with Section VI of the NRC Enforcement Policy, and is identified as NCV 50-390/02-03-01, Failure to Adequately Implement a Risk Management Action. This issue is in the licensee's corrective action program as PER 02-012266-000.

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) 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 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, and SPP-10.6, Engineering Evaluations for Operability Determinations.

- PER 02-009358-000, Flood protection door found unlatched
- PER 02-009374-000, ABGTS damper failed to close
- PER 02-009589-000, EDG reverse power trip relays not tested properly
- WO 02-007030-000, Install ultrasonic flow detectors on ERCW lines to safety-related room coolers

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of the two operator workarounds against the system descriptions in the Final Safety Analysis Report 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 workarounds evaluated under this cumulative review were:

- Reactor coolant pump standpipes require frequent filling and assessment by operator to determine if reactor coolant system seal leakage is in question.
- Frequent loose parts monitoring alarms require Operations to perform the TI to determine status and cause of the alarm.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed Design Change Notice (DCN) E-51228 which increased the main steam isolation valve (MSIV) pressure regulator setpoints to allow the MSIVs to fully backseat. The inspectors reviewed this DCN because of the risk significance of the MSIVs and because the DCN posed a possible common cause failure mode for all four MSIVs. The inspectors verified that the design bases, licensing bases, and TS-required performance of the MSIVs was not degraded by the modification and that the modification did not place the plant in an unsafe condition. The inspectors discussed the modification and post-maintenance testing (PMT) with engineering personnel. The inspectors reviewed the completed work package, WO 02-003849-000, to verify that work was completed as planned and observed performance of the 1-SI-1-904, Full Stroke Exercising of MSIVs, to verify that the MSIVs would close within the TS limiting time.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed 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.

- WO 02-009317-000, Repair pressurizer pressure master controller
- WO 02-010380-000, Repair protection cab 3 power supply
- WO 02-009371-000, Repair failure of damper 0-FCO-030-0137-A to close
- WO 02-011171-000, Repair 2A-A DG fuel oil transfer pump 2A1
- WOs 02-011726-000 and 02-010708-000, Repairs to B Shutdown Boardroom Chiller

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed surveillance tests and/or reviewed test data of selected risk-significant SSCs, listed below, to 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.

- 1-SI-30-26-A, Containment Air Return Fan 1A-A Quarterly Operability Test
- 1-SI-74-901-B, Residual Heat Removal Pump 1B-B Quarterly Performance Test
- 1-SI-3-901-A, Motor-driven Auxiliary Feedwater Pump 1A-A Quarterly Performance Test
- 1-SI-3-902, Turbine-driven Auxiliary Feedwater Pump 1A-S Quarterly Performance Test
- 0-SI-307-A, Auxiliary Building Gas Treat System Pressure Test Train A

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Temporary Alteration Configuration Form (TACF) 1-02-013-067, 0-RFV-67-550B, CCS C heat exchanger ERCW discharge relief valve tailpipe not installed, and verified that the modification did not affect ERCW system operability or availability as described by the TS and UFSAR. In addition, the inspectors verified that the configuration of the temporary modification was consistent with the safety evaluation, that adequate configuration control was in place, and that the implementation was consistent with SPP-9.5, Temporary Alterations, and SPP-9.4, 10 CFR 50.59 Evaluation of Changes, Test, and Experiments.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

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

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

.1 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors evaluated portable survey instrument calibrations performed at the Western Area Radiological Laboratory (WARL). Licensee procedural guidance and current calibration records for four types of portable radiation instruments were reviewed and evaluated. Measurement accuracies for recently calibrated frisker, ion chamber, GM telescan, and electronic dosimeter instrumentation awaiting transfer to reactor sites were evaluated through exposure of the equipment to known radiation fields/sources and comparison of instrument readouts with expected values. The alarm setpoint of an electronic dosimeter also was tested. The licensee's procedures and practices for instruments found to be significantly out of calibration were also evaluated by the inspectors.

Licensee procedures and activities related to radiation monitoring instrumentation were evaluated for consistency with TS and 10 CFR 20.1501(b). The licensee's instrumentation-related procedures, reports, and records reviewed during the inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors evaluated in detail the self-assessment related to radiation monitoring instrumentation that is listed in the attachment to this report. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP)

.1 REMP Implementation

a. Inspection Scope

The inspectors evaluated instrument calibration and analytical quality control procedures for REMP sample analyses performed at the WARL.

Records for efficiency calibrations of gamma spectroscopic detector No. 141 performed during December 1996 and October 1999 were reviewed. Records for quality control checks performed on July 9, 2002, were also reviewed and evaluated. The inspectors also independently calculated and assessed the currently achievable I-131 lower limit of detection for gamma spectroscopic analysis of charcoal filters. Results of inter-laboratory comparisons made during 2001 and 2002 for typical REMP type samples were reviewed and evaluated.

Licensee procedures and activities related to the REMP were evaluated for consistency with TS and the Offsite Dose Calculation Manual details. The licensee's REMP-related procedures, reports, and records reviewed during the inspection are listed in the attachment.

b. Findings

No findings of significance were identified

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors evaluated in detail the self assessment related to environmental monitoring and instrumentation listed in the attachment to this report. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP3 Response to Contingency Events

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the threat level "orange" protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verifications

High Pressure Injection and Residual Heat Removal Safety System Unavailability

a. Inspection Scope

Licensee records were reviewed to determine whether the submitted PI statistics were calculated in accordance with the guidance contained in NEI 99-02, Regulatory Assessment Performance Indicator Guideline. The inspectors reviewed operating logs and TS LCO entry records for the period of October 1, 2001, through June 30, 2002, to verify the accuracy and completeness of the high pressure injection and residual heat removal safety system unavailability PIs.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed PER 01-016011-000, "Corrective actions to perform periodic flow monitoring of ERCW flow to identify potential adverse trends for biofouling has not been timely," and PER 02-002116-000, "Evaluate trend of PERs initiated due to motor oil levels Standby Main Feedwater pump (SBMFW), AFW pumps, ERCW pumps) greater than the maximum mark." PER 02-002116-000 was selected for review because it affected the motors for risk-significant pumps, it represented a potential common cause failure mode and it was an NRC-identified issue. PER 01-016011-000 was selected based on the significance of not performing timely corrective actions on the Problem Identification and Resolution cross-cutting area.

The PERs were reviewed against the following performance attributes: (1) complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem commensurate with its safety significance; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions which are appropriately focused to correct the problem; (7) completion of corrective actions in a timely manner commensurate with the safety significance of the issue; and (8) verification that interim corrective actions and/or compensatory actions have been identified and implemented to minimize the problem and/or mitigate its effects until the permanent action could be implemented. The specific documents reviewed are listed in the attachment.

b. Findings

The inspectors determined that, with one exception, the PERs adequately addressed the performance attributes they were reviewed against. The inspectors identified that the evaluation for PER 02-002116-000 failed to identify that the high oil levels could cause oil intrusion into the motors. The evaluation determined that the high oil levels would only contribute to a housekeeping problem for the SBMFW and AFW pump motors. Subsequently, the inspectors identified indications of internal oil contamination of the SBMFW pump motor. The evaluation of the motor internal oil contamination determined that the oil would cause long-term degradation of the motor windings. The SBMFW and AFW pump motor bearing configurations are similar. The inspectors determined that the issue was minor because of the long-term nature of the degradation and because there were no current or past operability issues associated with the high oil levels.

4OA3 Event Followup

.1 (Closed) Licensee Event Report (LER) 50-390/2002-003-00, Automatic Turbine/Reactor Trip Due To Main Transformer Protection Circuit Ground Due To Inadequate Cable Splice

a. Inspection Scope

The inspectors reviewed the LER and PER 02-009532-000, which documented this event in the corrective action program, to verify that the cause of the July 13, 2002, reactor trip event was identified and that corrective actions were reasonable. The turbine trip/reactor trip was caused by a bolted cable splice associated with a C-phase main transformer differential relay shorting to a junction box. The inspectors reviewed plant parameters and verified that timely notifications were made in accordance with 10 CFR 50.72, that licensee staff properly implemented the appropriate plant procedures, and that plant equipment performed as required.

b. Findings

Introduction: A Green self-revealing, finding for inadequate work instructions was identified.

Description: The licensee determined, pending confirmatory testing, that the root cause of the event was inadequate work instructions that allowed lower temperature-rated tape to be used on a cable replacement splice because the operating environmental conditions within the junction box were unknown and/or inadequate application of splice material.

Risk Analysis: The inspectors determined this finding was more than minor because it resulted in an upset in plant stability by causing a reactor trip. While the finding resulted in an actual trip, the inspectors determined that the finding did not contribute to the likelihood of a primary or secondary system LOCA initiator, did not contribute to a loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood. Thus, the finding was screened as Green (very low safety significance). This issue is in the licensee's corrective action program as PER 02-012266-000.

Enforcement: The inspectors determined that the finding did not represent a noncompliance with the regulations because it occurred on non-safety-related secondary plant equipment.

.2 (Closed) LER 50-390/2002-002-00, Missing Auxiliary Feedwater Guard Pipe Inspection Covers
(Closed) LER 50-390/2002-002-01, Missing Auxiliary Feedwater Guard Pipe Inspection Covers
(Closed) LER 50-390/2002-002-02, Missing Auxiliary Feedwater Guard Pipe Inspection Covers - Voluntary LER

a. Inspection Scope

The inspectors reviewed the LERs and the environmental evaluation of the effects of a TDAFW pump steam supply line break with the missing covers to verify that safety-related equipment would be able to perform their safety function. A licensed operator identified that the inspection covers for the TDAFW pump steam supply line were missing on March 7, 2002. The guard pipe functions to isolate a steam leak in the case of a TDAFW pump steam supply line break and vent it to the TDAFW pump room where temperature sensors will actuate to isolate steam to the supply line. The failure to install the guard pipe inspection covers constituted a violation of minor significance that is not subject to enforcement action in accordance with Section VI of the NRC's Enforcement Policy. This issue is in the licensee's corrective action program as PER 02-003388-000.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. W. Lagergren and other members of licensee management at the conclusion of the inspection on September 18, 2002. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Boone, Radiological Control Manager
L. Bryant, Plant Manager
S. Casteel, Radiological and Chemistry Control Manager
J. Cox, Training Manager
L. Hartley, Maintenance Rule Coordinator
M. King, Chemistry Superintendent
D. Kulisek, Assistant Plant Manager
W. Lagergren, Site Vice President
J. Laughlin, 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

NRC

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

ITEMS OPENED AND CLOSED

Opened

None

Opened and Closed

50-390/2002-03-01	NCV	Failure to Adequately Implement a Risk Management Action (Section 1R13)

Closed

50-390/2002-002-00	LER	Missing Auxiliary Feedwater Guard Pipe Inspection Covers (Section 4OA3.2)

Attachment

50-390/2002-002-01	LER	Missing Auxiliary Feedwater Guard Pipe Inspection Covers (Section 4OA3.2)
50-390/2002-002-02	LER	Missing Auxiliary Feedwater Guard Pipe Inspection Covers - Voluntary LER (Section 4OA3.2)
50-390/2002-003-00	LER	Automatic/Turbine Trip/Reactor Trip Due to Mn Transformer Protection Circuit Due to Inadequate Cable Splice (4OA3.1)

LIST OF DOCUMENTS REVIEWED

Section 1R04

- SOI-3.02, Auxiliary Feedwater System
- SOI-62.01, CVCS - Charging and Letdown
- SOI-63.01, Safety Injection System
- SOI-72.01, Containment Spray System
- SOI-74.01, Residual Heat Removal System

Section 1R06

- USFAR Section 2.4, Hydrologic Engineering
- USFAR Section 3.4, Water Level (Flood) Design
- USFAR Section 3.8.4, Other Category I Structures
- TR 3.7.2, Flood Protection Plan
- AOI 7.0.1, Maximum Probable Flood
- PER 02-009358-000, 0-DOOR-410-C026 found not latched

Section 1R12

- Maintenance Rule Corrective Action Status and Effectiveness Evaluation Report dated 8/30/2002
- PER Sort on “BKR” for 8/1/2000 to 8/1/2002
- PER Sort on “BREAKER” for 8/1/2000 to 8/1/2002
- PER 00-016477-000, Spring release device latch assembly for breaker #052 DS-632 had to be replace during PMs
- PER 00-016760-000, MR functional failure of a 480 V Shutdown Power system breaker which was not reported
- PER 01-000648-000, 480V normal feeder breaker to 480 V Shutdown Board 2B1-B closed and then tripped open
- PER 01-002102-000, Problems found during the performance of MI-57.002 on breaker Ser#299
- PER 01-012240-000, Condenser vacuum pump breaker appears to be tripping free

- PER 02-003377-000, Shutdown Board Room Chiller A compressor motor breaker failed to close
- PER 02-003409-000, 1-BKR-212-B2/4B failed to transfer during testing
- PER 02-005532-000, 480V Boardroom chiller trip
- TI-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting
- TI-109, Breaker Testing and Maintenance Program
- WBN-VTD-E322-0160, Vendor Technical document for Ellis and Watts Operation, Maintenance and Service Manual for C-4001 Compressor Unit
- WO Report for 4/16/02
- WO 02-005545-000, Troubleshoot reason for 480V Boardroom chiller trip

Section 2OS3

- Laboratory Services Calibration Procedures (LSCP)-0027, Rev. 7, Calibration Procedure for the Ludlum 177/177-1
- LSCP-0049, Rev. 7, Calibration Procedure for Bicron Model RSO-5, RSO-50, and RSO-500 Survey Meters
- LSCP-0090, Rev. 1, Calibration Procedure for Xetex Telescan Model 330A
- LSCP-0078, Rev. 9, Calibration Procedure for the MG DMC-90, 100, and 2000-Computer Assisted
- LSCP-1000, Rev. 7, As Found Calibration Check
- Calibration records for the following portable radiation monitoring instrumentation: Ludlum 177 frisker, Number (No.) 522469, calibrated 5/16/02; Bicron RSO-5 ion chamber No. 561243, calibrated 6/18/02; Xetex Telescan 330A extendible GM probe, No. 841911 calibrated 7/8/02; and MG DCM-2000 electronic dosimeter, No. 170605, calibrated 6/26/02.
- Accuracy evaluations were conducted for the following instruments: Bicron Surv-50 frisker No.838757, Bicron RSO-5 ion chamber No. 534138, Xetex Telescan 330A extendible GM probe, No. 841911, and MG DCM-2000 electronic dosimeter, No. 166927.
- Self-Assessment No. CRP-ERMI-01-004, Environmental Radiological Monitoring and Instrumentation

Section 2PS3

- Offsite Dose Calculation Manual
- Quality Control (QC)-04, Rev. 8 Gamma Efficiency Calibration of Germanium Detectors
- QC-01, Rev. 5, Germanium Spectroscopy System Energy Calibration and Count Reproducibility Check
- Self Assessment No. CRP-ERMI-01-004 Environmental Radiological Monitoring and Instrumentation

Section 4OA2

- PER 01-016011-000, Corrective actions to perform periodic flow monitoring of ERCW flows to identify potential adverse trends for biofouling has not been timely

- PER 02-002116-000, Evaluate trend of PERs initiated due to motor oil levels (SBMFW pump, AFW pumps, ERCW pumps) greater than the maximum mark
- Watts Bar Nuclear Plant Site Bulletin, Vol. XVII, No. 8, dated January 25, 2002, Accountability for Timely Completion of PER Corrective Actions
- WO 01-016008-000, Obtain ERCW flow data for Centrifugal Charging Pump Room Cooler 1A-A
- WO 01-016009-000, Obtain ERCW flow data for Centrifugal Charging Pump Room Cooler 1B-B
- Watts Bar Root Cause Analysis Independent Review for PER 01-016011-000, dated 2/8/02
- SEMD-3, System Performance Monitoring and Trending