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

July 22, 2004

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

SUBJECT: SEQUOYAH NUCLEAR POWER PLANT - NRC INTEGRATED INSPECTION REPORT 05000327/2004003 AND 05000328/2004003

Dear Mr. Singer:

On June 26, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Sequoyah Nuclear Power Plant, Units 1 and 2. The enclosed integrated inspection report documents the inspection findings, which were discussed on July 2, 2004 with Mr. J. R. Douet 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 be a violation 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 the issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny the 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 Sequoyah facility.

In accordance with 10 CFR 2.390 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/

Stephen J. Cahill, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket No.: 50-327, 50-328
License No.: DPR-77, DPR-79

Enclosure: Inspection Report 05000327/2004003 AND 05000328/2004003
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-327, 50-328
License Nos:	DPR-77, DPR-79
Report No:	05000327/2004003 and 05000328/2004003
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Sequoyah Nuclear Plant
Location:	Sequoyah Access Road Soddy-Daisy, TN 37379
Dates:	March 28, 2004 - June 26, 2004
Inspectors:	S. Freeman, Senior Resident Inspector R. Telson, Resident Inspector M. Speck, Resident Inspector S. Shaeffer, Senior Project Engineer (Section 1R04, 1R15) R. Carrion, Project Engineer (Sections 1R16, 4OA1) S. Rudisail, Project Engineer (Sections 1R01, 1R19, 4OA3) M. Scott, Senior Reactor Inspector (Section 1R12) L. Mellen, Senior Operations Engineer (Sections 1EP1, 1EP4) L. Miller, Senior Operations Engineer (Sections 1EP1, 4OA1) R. Baldwin, Senior Operations Engineer (Sections 1EP1, 4OA1)
Approved by:	S. Cahill, Chief Reactor Projects Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000327/2004003, IR 05000328/2004003; 03/28/2004 - 06/26/2004; Sequoyah Nuclear Power Plant, Units 1 & 2; Maintenance Risk Assessments and Emergent Work Evaluation, Event Followup.

The report covered a three-month period of inspection by resident inspectors and project engineers and announced inspections by four region-based inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. <u>NRC-Identified and Self-Revealing Findings</u>

Cornerstone: Initiating Events

- Green. A self-revealing finding was identified for an improperly abandoned cable in the non-safety related 250-VDC Battery Board 2 system that resulted in a reactor trip of Unit 1. A Design Change Notice (DCN) in 1999 required the cable to be disconnected and insulated on both ends; however, the work was done only on one end. The cable subsequently grounded and, in conjunction with a second ground, actuated a protective relay on the main bank transformer and tripped the unit.

  This finding is more than minor because it affected the design control attribute of the initiating event cornerstone and resulted in an upset in plant stability. This finding is of very low safety significance because no mitigating system was affected (Section 4OA3.1).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification (TS) 6.8.1 for a self-revealing failure to comply with status control procedures. While attempting to get information to set a limit switch on Electric Board Room Chiller A, maintenance personnel removed the slide valve position indicator cover on Electric Board Room Chiller B. When replacing it, the cover contacted the control power circuits and caused a short circuit that tripped the B Chiller. In removing the cover, maintenance personnel had not obtained prior approval from operations, nor did they have work documents that authorized the actions.

  This finding is more than minor because it affected the availability of both electric board room chillers, a mitigating system. Alteration of safety-related equipment configuration outside of approved processes would, if left uncorrected, result in a more significant safety concern. A protected train that is lost due to configuration control errors has an increased chance that it will not restart.

This finding is of very low safety significance because there was no loss of safety function, no loss of TS equipment for more than the allowed outage time, no loss of maintenance rule (MR) risk-significant system for more than 24 hours, and no increase in risk from external events. The cause of this finding is related to the cross-cutting area of human performance. (Section 1R13).

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status:

Both Units 1 and 2 operated at or near 100% rated thermal power (RTP) during the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed the licensee's completion of Procedure 0-PI-OPS-000-006.1, Summer Operation, Revision 2. The inspectors reviewed the Summer Operation Checklist within this procedure and the inspectors performed a walkdown of the Diesel Generator Building and Turbine Building to confirm the ventilation fan operability listed in the procedure. In addition, the inspectors reviewed a portion of Procedure 2-SI-OPS-000-002.0, Shift Log, Revision 62, where the Ultimate Heat Sink temperature is monitored, to ensure that it does not exceed TS limits in the summer.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

.1 Partial System Walkdowns

The inspectors performed a partial walkdown of the following three systems to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. Inspectors attempted to identify any discrepancies that impacted the function of the system, and, therefore, could potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control system components and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program. Documents reviewed are listed in the attachment.

- Unit 2 A and B Motor-Driven Auxiliary Feedwater (AFW) during Turbine-Driven AFW Trip Solenoid Repair

- Remaining Essential Raw Cooling Water (ERCW) Pumps during Concurrent Q-A, M-B, and R-A Pump Maintenance
- ERCW Pumps K-A, Q-A, P-B, and N-B during Traveling Screen and Motor Cable Maintenance

.2 Complete System Walkdown

The inspectors performed a complete system walkdown of the Standby Emergency Diesel Generators (EDGs) to verify proper equipment alignment and identify any discrepancies that could impact the function of the system and increase risk.

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), system procedures, system drawings, and system design documents to determine the correct lineup and then examined system components and their configuration to identify any discrepancies between the existing lineup and the correct lineup. The inspectors reviewed the licensee’s corrective action program documents and work orders related to the EDG system components to determine whether issues related to the system were being appropriately addressed. The inspectors also held discussions with system engineering personnel responsible for system health monitoring to verify that performance trending was being conducted to enhance early detection of adverse performance trends.

During review of corrective action documents associated with the EDGs, the inspectors reviewed the detailed proposed corrective actions for PER 02-006970, which involved an identified failure of 6.9 KV ERCW motor power supply cabling. Failure of the ERCW cabling has been a periodic problem based a generic concern with the jacket material consisting of cross linked polyethylene insulation (XLPE). This type of insulation has been found to be subject to water tree degradation while the cable is submerged and energized for long periods of time. Water tree degradation can be identified via cable testing. The subject PER also identified that the EDG cables from the EDG Building to the Auxiliary Building are also made of XLPE material and have also been periodically submerged. However, the licensee considered that because the EDG cables are not continuously energized for long periods of time, they were less likely to have the conditions established which could lead to premature failure of the cables. The inspector questioned the licensee regarding the current testing of the EDG cables and was informed that no testing of the cables for this potential degradation had been performed; however, future testing was scheduled to be completed for all of the EDG cables in February 2005. The inspectors concluded that future testing of the EDGs cables was prudent given the susceptibility of the EDG cabling to this problem and previous failures of this type on the ERCW cabling. The documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted a tour of the ten areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with the licensee's administrative procedures; fire detection and suppression equipment was available for use; that passive fire barriers were maintained in good material condition; and that compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with the licensee's fire plan.

- Auxiliary Building Elevation 759 (Control Rod Drive (CRD) Equipment and Pressurizer Heater Transformer Rooms)
- Auxiliary Building Elevation 714 (Corridor)
- Auxiliary Building Elevation 749 (480-V Reactor MOV Board Rooms)
- Auxiliary Building Elevation 690 (Corridor)
- Control Building Elevation 706 (Spreading Room)
- Control Building Elevation 669 (250-VDC Battery and Battery Board Rooms)
- Common Station Service Transformers
- Control Building Elevation 685 (Auxiliary Instrument Rooms)
- Emergency Diesel Generator Building
- Control Building Elevation 734 (Shutdown Board Rooms and Battery Board Rooms)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed simulator training on June 21, 2004. The training involved a series of equipment failures requiring a manual reactor trip and automatic safety injection, including an emergency classification. The inspectors observed crew performance in terms of communications; ability to take timely and proper actions; prioritizing, interpreting and verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high-risk operator actions; oversight and direction provided by shift manager, including the ability to identify and implement appropriate TS actions; and group dynamics involved in crew performance. The inspectors also observed the evaluators critique and reviewed simulator fidelity to verify that it closely paralleled recent modifications.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

Biennial Periodic Evaluation (PE) Inspection

The inspectors reviewed the licensee's Maintenance Rule periodic assessment, "Sequoyah Nuclear Plant - Maintenance Rule Fourth Periodic Assessment Report, October 1, 2001 through December 31, 2002," Revision 0, for Maintenance Rule implementation. The report was issued to satisfy paragraph (a)(3) of 10 CFR 50.65, and covered the period as indicated for both units. The inspection was to evaluate the effectiveness of the assessment and ensure that it was issued in accordance with the time requirement of the Maintenance Rule (MR) and included evaluation of: balancing reliability and unavailability, (a)(1) activities, (a)(2) activities, and the use of industry operating experience. To verify compliance with 10 CFR 50.65, the inspectors reviewed selected MR activities covered by the assessment period for the following maintenance rule systems and equipment: vital ventilation (control building), reactor coolant pumps (RCP), Siemens 6.9-kV breakers (DS), W2 handswitches, residual heat removal (RHR) system, and civil structures. Specific procedures and documents reviewed are listed in the attachment to this report.

The inspectors also reviewed selected plant work order data and the site guidance implementing procedure; discussed and reviewed relevant corrective action issues; reviewed generic operations event data and probabilistic risk reports; observed the corrective actions in two problem areas; and discussed issues with system engineers. Operational event information was evaluated by the inspectors in its use in MR functions. The inspectors selected work orders, MR assessments, and other corrective action documents of systems recently removed from 10 CFR 50.65 a(1) status and those in a(2) status for some period to assess the justification for their status. The documents were compared to the site's MR program criteria, and the MR a(1) evaluations and rule-related data bases.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the following seven activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. The inspectors verified that risk assessments were performed as required by 10 CFR 50.65 (a)(4), and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors verified the appropriate use of the licensee's risk assessment tool and risk categories in accordance with Procedure SPP-7.1, On Line Work Management, Revision 5, and Instruction 0-TI-DSM-000-007.1, Risk Assessment Guidelines, Revision 8.

- WO 04-773820, U2 Turbine-Driven AFW Trip Solenoid Repair
- Concurrent removal of 6.9-kV SD Board A Fan 1B and 1A-A Emergency Diesel Generator
- Concurrent removal of ERCW Pumps R-A, Q-A, M-B and 1A-A Emergency Diesel Generator
- Concurrent removal of 2A Component Cooling Pump and 2A-S Turbine Driven AFW Pump
- Concurrent testing of Unit 1 Train A SSPS and Cold Overpressure Protection
- Removal of two ERCW Pumps per Train due to Traveling Screen Maintenance and Motor Cable Problems
- Two Electric Board Room Chillers out-of-service Due to inappropriate action

b. Findings

Introduction: The inspectors identified a Green NCV for a self-revealing failure to comply with plant configuration control procedures.

Description: On May 18, 2004, while attempting to get information to set a limit switch on Electric Board Room Chiller A, maintenance personnel removed the slide valve position indicator cover on Electric Board Room Chiller B. Train A was removed from service, rendering Train B as the operating or protected train. When replacing the B chiller cover, the cover contacted the control power circuits and caused a short circuit that tripped the chiller. In removing the cover, maintenance personnel had not obtained prior approval from operations, nor did they have work documents that authorized the actions. The licensee determined the cause of this action to be failure of those involved to meet expectations to stop when the scope of work extends beyond the original work instructions.

The inspectors reviewed the potential increase in risk from having both electric board room chillers out-of-service simultaneously. A special run of the licensee’s Sentinel risk tool showed the increase in risk to be minimal from a probabilistic perspective and not allowed from a deterministic perspective. However, the inspectors determined that removing the cover from Chiller B did not comply with Procedure SPP-10.1, System Status Control, Revision 1, guidance instructing all responsible individuals to ensure that all activities that change the configuration of plant equipment are authorized by an approved plant procedure, clearance, work order, or Temporary Alteration Control Form.

Analysis: This finding was more than minor because by working on the protected train, it affected the availability of both electric board room chillers, a mitigating system. Alteration of safety-related equipment configuration outside of approved processes would, if left uncorrected, result in a more significant safety concern. A protected train that is lost, even for a short time, due to configuration control errors, has an increased chance that it will not restart. Because there was no loss of safety function, no loss of TS equipment for more than the allowed outage time, no loss of a MR risk-significant system for greater than 24 hours, and no increase in risk from external events, the tripping of Electric Board Room Chiller B, because of failure to follow configuration control procedures, was considered to be of very low safety significance (Green).
The cause of the finding is related to the cross-cutting area of human performance.

Enforcement: TS 6.8.1.a requires that procedures be implemented covering the activities in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. Paragraph 1c of Appendix A recommends procedures for equipment control. Licensee Procedure SPP-10.1 requires that all activities that change the configuration of plant equipment be authorized by an approved plant procedure or work document. Contrary to the above, on May 18, 2004, the licensee failed to implement Procedure SPP-10.1 by removing the slide valve position indicator cover on Electric Board Room Chiller B without an approved plant procedure or work document, resulting in a chiller trip. Because this violation was determined to be of very low safety significance (Green), it is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000327, 328/2004003-01, Failure to Comply with Configuration Control Procedures. This violation is in the licensee's corrective action program as PER 61626.

1R15 Operability Evaluations

a. Inspection Scope

For the six operability evaluations described in the PERs listed below, the inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred. The inspectors reviewed the UFSAR to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures implemented to verify that the compensatory measures worked as stated and that the measures were adequately controlled. The inspectors also reviewed a sampling of PERs to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the attachment.

- PER 34302, Sediment and Moisture in Oil Sample for 2A Motor-Driven AFW Pump
- PER 33435, Unit 2 TDAFW Pump Failed to Trip During Surveillance
- PER 33616, Auxiliary Building Gas Treatment System (ABGTS) Flow Switch Calibration
- PER T-04-050, Released Retaining Clip on Siemens Breaker-to-Cubicle (Banana) Linkage
- PER 33514, EDG Heat Exchanger Discharge Flow Instrument 2-FI-67-69 As-Found Data Out of Tolerance
- PER 22179, Capacitor in EDG Governor Installed Incorrectly

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of deficiencies that constituted operator workarounds to determine whether or not they could affect the reliability, availability, and potential for misoperation of a mitigating system; affect multiple mitigating systems; or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents.

The inspectors also assessed whether operator workarounds were being identified and entered into the corrective action program at an appropriate threshold. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the six post-maintenance tests listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee’s test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety functions. Documents reviewed are listed in the attachment.

- WO 04-773820-000, Unit 2 Turbine-Driven AFW Trip Solenoid Repair
- WO 04-774530-000, AFW Level Control Valve 2-LCV-3-171 Failed Stroke Time Test
- WO 04-774296-000, ERCW Pump M-B 6.9-kV Circuit Breaker Failure Troubleshooting and Repair
- WO 04-774538-000, Flush Oil and Evaluate Contaminant in 2A Motor-Driven AFW Pump Inboard Bearing
- WO 03-018176-000, Chiller Controller Replacement, MCR Chiller A
- WO 03-005323-001, Replace Degraded Section(s) of Power Cable 1PP674A to ERCW Pump J-A

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the five surveillance tests identified below, by witnessing testing and/or reviewing the test data, the inspectors verified that the systems, structures, and components (SSCs) involved in these tests satisfied the requirements described in the TS surveillance requirements, the UFSAR, applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions. Those tests included the following:

- 1-SI-SXP-074-201.A, Residual Heat Removal Pump 1A-A Performance Test, Revision 6 *
- 0-SI-FPU-026-193, Diesel Driven Fire Pump B Monthly Test, Revision 3
- 2-SI-IFT-030-042.4, Functional Test of Containment Pressure Channel IV Rack 12 Loop P-30-42 (P-934), Revision 6
- 2-SI-IFT-068-06A.1, Functional Test of Loop 1 Reactor Coolant Flow Channel F-68-6A (F-414), Revision 7
- 2-SI-MIN-061-108.0, Ice Condenser Intermediate Deck Door Weekly Inspection, Revision 1**

*This procedure included inservice testing requirements
** This procedure included an ice condenser system surveillance

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the two temporary modifications listed below and the associated 10 CFR 50.59 screening, and compared each against the UFSAR and TS to verify that the modification did not affect operability or availability of the affected system. The inspectors walked down each modification to ensure it was installed in accordance with the modification documents and reviewed post installation and removal testing to verify the actual impact on permanent systems was adequately verified by the tests. On the temporary modification concerning cooling to the main control room, the inspectors also reviewed the accompanying one-time TS change and observed testing of the system to verify that it was capable of adequately cooling the control room and did not adversely affect control room pressurization capability.

- Temporary Alteration Control Form (TACF) 2-04-0013-003, Turbine Driven AFW Pump Speed Control Solenoid
- TACF 0-04-0012-311, Temporary Control Room Air Conditioning System

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation

a. Inspection Scope

The inspectors reviewed the emergency exercise and scenario for the biennial 2004 emergency response exercise for Sequoyah which was required by section IV.F.2.c of Appendix E to 10 CFR Part 50. The review covered whether the licensee created a scenario suitable to test the major emergency plan elements in accordance with Appendix E to 10 CFR Part 50.

Licensee activities inspected during the exercise included independent observations in the Control Room Simulator, Central Emergency Control Center, Technical Support Center, and Operations Support Center. The exercise was conducted on June 23, 2004. The inspectors reviewed a sample of corrective actions from previous exercises and evaluated performance trends to determine if they represented a failure to: correct weaknesses, meet planning standards, or meet other regulatory requirements. The inspectors developed a list of performance areas to be observed in this exercise. The inspectors' evaluation focused on the risk-significant activities of event classification, notification of governmental authorities, onsite protective actions, offsite protective action recommendations, and accident mitigation. The inspectors also evaluated command and control, the transfer of emergency responsibilities between facilities, communications, adherence to procedures, and the overall implementation of the emergency plan. The inspectors attended the post-exercise critique to evaluate the licensee's self-assessment process, as well as the presentation of critique results to plant management.

At the conclusion of these evaluations and independent observations, the inspectors assessed whether the exercise was a satisfactory test of the Emergency Plan and the licensee's response met the requirements of 10 CFR Part 50.47(b).

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspectors reviewed all emergency action level changes against the requirements of 10 CFR 50.54(q) to determine whether they had not decreased the effectiveness of the Radiological Emergency Plan. The licensee had implemented Radiological Emergency Plan Revision 70, including modifications to the emergency action levels basis descriptions. The inspectors conducted a detailed review of all emergency action level basis changes. The inspectors reviewed documentation of the licensee's 10 CFR 50.54(q) screening evaluations for the revision and the Safety Evaluation Report prepared by NRC.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

Resident inspectors evaluated the conduct of a routine licensee emergency drill on May 26, 2004, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendations (PARs) development activities. The inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were done in accordance with EPIP-1, Emergency Plan Classification Matrix. The inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the two PIs listed below for the period from April 1, 2003, through March 31, 2004 for Units 1 and 2. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, “Regulatory Assessment Indicator Guideline”, Revision 2, were used to verify the basis in reporting for each data element.

- Safety System Unavailability: Heat Removal System (Auxiliary Feedwater)
- Safety System Unavailability: Residual Heat Removal System

The inspectors reviewed portions of the operations logs and raw PI data developed from monthly operating reports and discussed the methods for compiling and reporting the PIs with cognizant engineering personnel. The inspectors also independently calculated selected reported values to verify their accuracy. The inspectors compared graphical representations from the most recent PI report to the raw data to verify that the data was correctly reflected in the report.

b. Findings

No findings of significance were identified.

.2 Cornerstone: Emergency Preparedness

a. Inspection Scope

The inspectors sampled licensee submittals relative to the PIs listed below for the period March 2003 through March 2004. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 02, were used to confirm the reporting basis for each data element.

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

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review

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

.2 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, the inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also included licensee trending efforts and licensee human performance results. The inspectors' review nominally considered the six-month period of January 2004 through June 2004, although some examples expanded beyond those dates when the scope of the trend warranted. Specifically, the inspectors considered the results of daily inspector screening discussed in Section 4OA2.1, reviewed the descriptions of all PERs concerning the 6.9-kV Shutdown Boards from January 2003 through March 2004, and compared the results with licensee trend reports for the period from January 2004 through March 2004. The review also included a review of the two ERCW system health reports.

b. Findings and Observations

There were no findings of significance identified. The inspectors evaluated the licensee trending methodology and observed that the licensee had performed a detailed review. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in their data. The inspectors compared the licensee process results with the results of the inspectors' daily screening and did not identify any discrepancies or potential trends that the licensee had failed to identify.

4OA3 Event Followup

.1 (Closed) Licensee Event Report (LER) 05000327/2004-001-00, Unit 1 Automatic Reactor Trip with Main Feedwater Isolation and Auxiliary Feedwater Start as a result of a Main Generator Trip from Inadvertent Protective Relay Operation on a Main Transformer

a. Inspection Scope

On March 15, 2004, a turbine trip and reactor trip occurred when multiple electrical grounds occurred on the non-safety related 250-VDC Battery Board 2 system. These grounds inadvertently actuated the Unit 1 main bank transformer protective relay, which in turn tripped the main generator and reactor. Inspectors reviewed the LER and PER 33278, Unit 1 Reactor Trip Due to Spurious Trip of Main Transformer, which documented this event in the licensee corrective action program, to verify that the cause of the reactor trip was identified and that corrective actions were appropriate. Inspectors also 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: The inspectors identified a Green finding for a self-revealing failure to have adequate work controls for electrical cable abandonment associated with a 250-VDC battery board supply.

Description: The licensee identified the cause of the event to be multiple grounds on the 250-VDC Battery Board 2 system that tripped the protective relay (163TXS) associated with the Unit 1 spare main transformer, which was configured for the A phase at the time. One of the grounds was determined to be associated with an improperly abandoned cable. Although Design Change Notice (DCN) T14393A (August 1999) required disconnecting and insulating both ends of this cable, only one end was lifted and insulated. When another system ground occurred on March 15, 2004, conditions were established to cause the relay to trip, resulting in a main transformer trip and subsequent reactor trip.

Analysis: The finding was more than minor because it affected the design control attribute of the initiating event cornerstone and resulted in an upset in plant stability by causing a reactor trip. While the finding resulted in an actual trip, the inspectors determined that it 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 considered to be of very low safety significance (Green). This issue is in the licensee corrective action program as PER 33278.

Enforcement: Because the affected equipment was non-safety related, no violation of regulatory requirements occurred. Therefore, this finding is identified as FIN 05000327/2004003-02, Electrical Ground on Improperly Abandoned Cable Resulted in Reactor Trip. This LER is closed.

.2 (Closed) LER 05000327/2003-001-00, Manual Reactor Trip as a Result of a Main Generator Trip and Loss of Load

On August 28, 2003, the Unit 1 main generator output breakers tripped while operators were performing quarterly oil trip tests at the turbine front standard. Approximately 25 seconds after the generator output breakers opened, operators manually tripped the Unit 1 reactor. This manual reactor trip resulted in a turbine trip. At the time of this event, it appeared as though the reactor protection system had failed to automatically trip the reactor in response to a turbine trip. Because of this, the NRC conducted a special inspection of this event. The results of that inspection are documented in IR 05000327, 328/2003010.

The inspectors previously reviewed this LER to evaluate the cause of the event and any licensee performance deficiencies associated with the cause. This review was documented in IR 05000327, 328/2003006. This LER remained open pending NRC evaluation of the circumstances surrounding licensee actions to close the Main Steam Isolation Valves (MSIVs), including steam flow indication and the response of the unit as compared with the simulator. The inspectors completed this review and no findings of significance were identified. This event did not constitute a violation of NRC requirements. This LER is closed.

4OA4 Cross Cutting Aspects of Findings

The finding in Section 1R13 describes human performance errors where the licensee improperly removed the slide valve position indicator cover on one of the electric board room chillers without approval from operations or appropriate work documents that authorized the action. When replacing it, the cover contacted the control power circuits and caused a short circuit that tripped the chiller. Consequently, both electric board room chillers were simultaneously out of service for a short time.

4OA5 Other Activities

.1 (Open) NRC Temporary Instruction (TI) 2515/154, Spent Fuel Material Control and Accounting at Nuclear Power Plants

The inspectors completed Phase I and Phase II of Temporary Instruction 2515/154, Spent Fuel Material Control and Accounting at Nuclear Power Plants. Appropriate documentation of the results was provided to NRC management, as required by the TI.

.2 (Open) NRC TI 2515/156, Offsite Power System Operational Readiness

a. Inspection Scope

The inspectors collected data from licensee maintenance records, event reports, corrective action documents and procedures and through interviews of station engineering, maintenance, and operations staff, as required by the TI 2515/156. The data was gathered to assess the operational readiness of the offsite power systems in accordance with NRC requirements such as Appendix A to 10 CFR Part 50, General Design Criterion (GDC) 17; Criterion XVI of Appendix B to10 CFR Part 50, Plant Technical Specifications (TS) for offsite power systems; 10 CFR 50.63; 10 CFR 50.65(a)(4), and licensee procedures. Documents reviewed for this TI are listed in the attachment.

b. Findings and Observations

No findings of significance were identified. Based on the inspection, no immediate operability issues were identified. In accordance with TI 2515/156 reporting requirements, the inspectors provided the required data to the headquarters staff for further analysis.

4OA6 Meetings, including Exit

Exit Meeting Summary

On July 2, 2004, the resident inspectors presented the inspection results to Randy Douet and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV. Documents reviewed are listed in the attachment.

TS 6.8.4.f requires that the operability of radioactive and gaseous monitoring instrumentation be controlled in accordance with the methodology of the Off-site Dose Calculation Manual (ODCM). Contrary to this, on June 10, 2004, operability actions required by the ODCM were not implemented when radiation monitor 2-RM-90-120, Steam Generator Blowdown, was inoperable. During restoration following maintenance, the licensee left a jumper installed that would have prevented the radiation monitor from closing the steam generator blowdown discharge valve to the cooling tower discharge on a high radiation signal.

Because of this, grab samples were not obtained and analyzed at least once per 24 hours between June 10, 2004, and June 24, 2004 as required by the ODCM. This was identified in the licensee’s corrective action program as PER 63941. This finding is of very low safety significance (Green) because there was no increase in radioactivity in the blowdown line during the time when the jumper was installed.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee personnel:

J. Bajraszewski, Licensing Engineer
G. Buchanan, System Engineer Manager
R. Douet, Site Vice President
M. Gillman, Operations Manager
D. Kulisek, Plant Manager
J. Laughlin, Engineering and Site Support Manager
D. Lundy, Site Engineering Manager
K. Parker, Maintenance and Modifications Manager
R. Rogers, Design Manager
J. Reynolds, Operations Superintendent
P. Salas, Licensing and Industry Affairs Manager
K. Smith, Assistant Plant Manager
J. Smith, Site Licensing Supervisor
J. Traister, Site Security Manager

NRC personnel:

R. Bernard, Region II, Senior Reactor Analyst
M. Marshall, Project Manager, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000327, 328/2004003-01	NCV	Failure to Comply with Configuration Control Procedures (Section 1R13).
05000327/2004003-02	FIN	Electrical Ground on Improperly Abandoned Cable Resulted in Reactor Trip (Section 4OA3.1).

Closed

05000327/2004-001-00	LER	Unit 1 Automatic Reactor Trip with Main Feedwater Isolation and Auxiliary Feedwater start as a result of a Main Generator Trip from Inadvertent Protective Relay Operation on a Main Transformer (Section 4OA3.1).

05000327/2003-001-00	LER	Manual Reactor Trip as a Result of a Main Generator Trip and Loss of Load (Section 4OA3.2).

Discussed

05000327, 328/2515/154	TI	Spent Fuel Material Control and Accounting at Nuclear Power Plants (Section 4OA5.1)
05000327, 328/2515/156	TI	Offsite Power System Operational Readiness (Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED

Section 1R04 Equipment Alignment

1, 2-47W803-2, Mechanical Flow Diagram - Auxiliary Feedwater, Revision 59
1,2 -47W845-5, Mechanical Flow Diagram - Essential Raw Cooling Water, Revision 54
0-SI-82-12A, Diesel Generator 2A-A, Monthly Diesel Generator Run and Load Test
0-SO-82-5, Diesel Generator 1A-A Support Systems, Revision 7
0-SO-82-2, Diesel Generator 1A-A, 1B-B, 2A-A, 2B-B
0-SO-82-6, Diesel Generator Support Systems
1,2-47W839-1, Mechanical Flow Diagram - Diesel Generator System
1,2-47W840-1, Mechanical Flow Diagram - Diesel Generator System
1,2-47W845-1, Mechanical Flow Diagram - Diesel Generator System
System Status Report for the EDGs -1st quarter 2004
PER 02-006970, Functional Evaluation for failed ERCW Cable

Section 1R12: Maintenance Effectiveness

PER 00-008960-000, RCP 1-4 Vibration Increase
PER 04-000093-000, RCP 2-4 Vibration Change in Amplitude
PER 17618, RCP # 3 Motor Failure
PER 99-10945, Enhance Operator Knowledge of Chillers
PER 00-011349 , S/D, 480V , Electric, and Main Control Rooms Cooling - Chiller Reliability Issues
PER 16383, Chiller Corrective Action Effectiveness Reviews
PER 00-003773, W2 Hand Switch Failures (10 MR point Goal Setting plan)
PER 01-0099681-000, 1A RHR Manual Start Failure
PER 99-002075-000, 480V Breakers MR a(1) Entry
PER 60199, Siemens 6.9kV Retrofit Breakers Detailed Inspections
PER 29506, New Siemens Breaker Tripped Free
PER 20844, Review of Preventable Function Failures
PER 27072, Use and Entry of EPIX Data
PER 03-012979-000, System 65 Maintenance Rule Data
SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting - 10 CFR 50.65, Revision 2
EDMS Accession No. 87 030826 001, Maintenance Rule Structures Inspection, Revision 2, (Attachment “M” for MR update)
Assessment NO. SQN-ENG-03-003, Self Assessment - SQN Maintenance Rule Program and INPO CDE-EPIX, dates 9/15/03 to 9/19/03
0-GO-10, Electrical Apparatus Operation, Revision 21
0-GO-1, Unit Startup From Cold Shutdown to Hot Standby, Revision 33 (Section 3.2 T, RCP 4)
System 074, Residual Heat Removal, System Status Report dated 1st Quarter FY 04
System 030, A/C & Chillers, System Status Report dated 1st Quarter FY 04
Work Order 03-016742-000, 2-FCV-074-0002 VT-2 inspection (TYPICAL System 074, 2004 Closed)

Section 1R15: Operability Evaluations

0-SI-SXV-067-245.2, Full Stroking of the 2A-A Diesel Generator ERCW Supply Check Valves, Revision 3
Instrument Calibration Record FI-67-69, Emergency Diesel Heat Exchanger A-1 Discharge Flow, Revision 1

Section 1R16: Operator Work-Arounds

ODM - 3.7, Operator Work-Around Program, Revision 8
Sequoyah Select Focus Area Report, dated May 18, 2004
ARD 1, Unit 1 Auxiliary Building
ARD 2, Unit 2 Auxiliary Building
ARD 3, Unit 1 Turbine Building
ARD 4, Unit 2 Turbine Building
ARD 5, Control Building
ARD 6, Radwaste
ARD 7, Outside
ARD 8, Con DI

Section 1R19: Post Maintenance Testing

0-MI-EPM-317-102.0, Insulation Resistance Test of Cables and Motors, Revision 24
0-SI-SXP-067-201.J, Essential Raw Cooling Water Pump J-A Performance Test, Revision 5

Section 1R23: Temporary Plant Modifications

SQN-DC-V-21.0, Sequoyah Nuclear Plant - Environmental Design, Revision 18
0-SO-30-1, Control Building Heating, Air Conditioning, and Ventilation, Revision 26
Letter from Michael Marshal to John Scalice, dated May 21, 2004, Issuance of Amendments Regarding One-Time Temporary Revision of Control Room Air-Conditioning System

Section 1EP4: EAL and Radiological Emergency Plan Changes

PORC Item Sheet 6114
Safety Evaluation Report Regarding NEW EALs, Dated November 6, 2004
REP, Appendix B, Revision 70
TRN-30, Radiological Emergency Preparedness

Section 4OA1: Performance Indicator Verification

Various PERs initiated by Sequoyah Emergency Preparedness
Open and Closed Items in AMOS system maintained by Sequoyah Emergency Preparedness
Performance Indicator Frequently Asked Question number 357 and 338
Various Training record documentation
Sequoyah Nuclear Plant -2003 Green Team Drill package, October 9, 2003
Sequoyah Nuclear Plant -2003 Orange Team Drill package, October 31, 2003
EPIL-15, Rev. 7, Emergency Preparedness Performance Indicators

Section 4OA2: Identification and Resolution of Problems

Sequoyah Nuclear Plant Site Level Quarterly Integrated Review for the Second Quarter of FY 2004, dated May 13, 2004

Section 4OA5: Other Activities

SPP-5.8, Special Nuclear Material Control, Revision 5
FHI-3, Movement of Fuel, Revision 37
IGA-6 Intergroup Agreement, Revision 6
Sequoyah Grid Operating Instructions, dated February 4, 2003, July 14, 2003, and January 9, 2004
OPDP-2, Switchyard Access and Switching Order Execution, Revision 1
SWYD-18, Plant Voltage Schedule, Revision 24
0-TI-DSM-000-007.1, Risk Assessment Guidelines, Revision 8
0-SI-OPS-082-007.W, AC Electrical Power Source Operability Verification, Revision 8
1-SI-TDC-202-235.A, 6.9-kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train A (18 Months)
TI-4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10 CFR 50.65, Revision 16
Calculation B87 020731 001, Auxiliary Power System, Revision 12
LER 05000327/1992027-00, Reactor Trips as a Result of a Switchyard Power Circuit Breaker Fault and a Unit 2 Entry Into Limiting Condition for Operation (LCO) 3.0.3 When Both Centrifugal Charging Pumps Were Removed From Service
PER 61350, Weakness in SPP-7.1 Concerning Off Normal Grid Conditions

Section 4OA7: Licensee-Identified Violations

2-SO-15-1, Steam Generator Blowdown in Service via Heat Exchangers, Revision 28
1,2-47W801-2, Flow Diagram, Steam Generator Blowdown System, Revision 48
1,2-47W610-90-2, Mechanical Control Diagram, Radiation Monitoring System, Revision 36