UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-327/95-18 and 50-328/95-18

Licensee: Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-327 and 50-328 License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah Units 1 and 2

Inspection Conducted: July 29 through September 2, 1995

Lead Inspector: SM Shaffer FOR 10-2-95
W. E. Holland, Senior Resident Inspector Date Signed

Inspectors: S. M. Shaeffer, Resident Inspector
R. D. Starkey, Resident Inspector
S. E. Sparks, Project Engineer

Approved by: MSLesser 10/2/95
Mark S. Lesser, Acting Chief, Branch 4 Date Signed
Division of Reactor Projects

SUMMARY

Scope:

Routine resident inspection was conducted in the areas of plant operations, maintenance observations, surveillance observations, onsite engineering, plant support, and licensee event report closeout. During the performance of this inspection, the resident inspectors conducted several reviews of the licensee's backshift and weekend activities at the plant.

Enclosure 2

Results:

One violation was identified during this report period. In the area of Engineering a violation was identified for failure to promptly identify and correct the adverse condition associated with degraded safety-related throttle valves (paragraph 6.a).

In the area of Operations, improved operator performance was observed in the areas of operations shift turnovers (paragraph 3.a.(3)), and good operator sensitivity in questioning a potential boron dilution condition on Unit 1, (paragraph 4.c). In addition, observation of training activities for licensee management in the areas of organizational and programmatic improvements appeared effective and appropriately focused on industry experience (paragraph 3.c). However, one inspection observation indicated that better coordination was needed between operations and maintenance in preparation for the Unit 1 Cycle 7 outage early in the period (paragraph 3.a.(1)); and another observation indicated a lack of attention to detail during surveillance documentation and review (paragraph 5.a).

In the area of Maintenance, review of maintenance activities associated with a safety related motor operated valve, an air operated valve, and a vital inverter indicated the activities were accomplished in a good manner. One observation indicated that documentation for troubleshooting activities could be improved, and another observation indicated that better planning of a post maintenance test could have reduced a safety-related component outage time in a Technical Specification LCO Action statement (paragraph 4).

In the area of Engineering, mixed performance was observed. The violation for inadequate prompt corrective action for degraded safety-related throttle valve was the most significant issue. In addition, a weakness was identified concerning grading deficiencies around ERCW cable vaults resulted in rain water runoff entering the vault during heavy rains (paragraph 3.b). Better performance was observed during review of an evaluation associated with potential Component Cooling System pump runout during establishment of residual heat removal recirculation flow after a postulated accident (paragraph 6.b).

In the area of Plant Support, continued good performance was observed in the areas of Radiological Protection, specifically relating to the licensee's ALARA program, and a review of an external assessment of the licensee's dosimetry monitoring program (paragraph 7.a). In addition, observations of the plant security program implementation indicated good performance (paragraph 7.b).

REPORT DETAILS

1. **PERSONS CONTACTED**

Licensee Employees

R. Adney, Site Vice President
*J. Baumstark, Plant Manager
L. Bergen, Site Vice President Program Manager
D. Brock, Maintenance Manager
L. Bryant, Outage Manager
*M. Burzynski, Engineering & Materials Manager
D. Clift, Planning and Technical Manager
M. Cooper, Technical Support Manager
*R. Driscoll, Nuclear Assurance & Licensing Manager
F. Fink, Business and Work Performance Manager
*T. Flippo, Site Support Manager
G. Enterline, Operations Manager
O. Hayes, Operations Program Manager
C. Kent, Radcon/Chemistry Manager
*B. Lagergren, Manager of Projects
D. Lundy, Engineering & Materials Program Manager
*K. Meade, Compliance Manager
*L. Pogue, Site Quality Assurance Manager
*R. Rausch, Maintenance and Modifications Manager
*J. Reynolds, Acting Operations Superintendent
G. Rich, Chemistry Manager
J. Robertson, Independent Analysis Manager
*R. Shell, Site Licensing Manager
M. Skarzinski, Manager, Methods and Procedures Group
J. Smith, Regulatory Licensing Manager
N. Welch, Operations Superintendent
K. Whittenburg, Public Relations Manager

NRC Employees

M. Lesser, Acting Chief, Branch 4, DRP
*W. Holland, Senior Resident Inspector
*R. Starkey, Resident Inspector
S. Shaeffer, Resident Inpector

*Attended exit interview.

Other licensee employees contacted included control room operators, shift technical advisors, shift supervisors and other plant personnel.

Acronyms and initialisms used in this report are listed in the last paragraph.

During this period, several management changes were made by the licensee in the Operations Department. The changes included Jerry Reynolds replacing Nick Welch as acting Operations Superintendent. In addition, several other managers in direct report positions to the Operations Manager or Operations Superintendent were exchanged with other managers from the training center and corporate offices.

2. PLANT STATUS

Unit 1 began the inspection period in power operation. The unit commenced coastdown to the Cycle 7 refueling outage on August 4, 1995. Unit 1 was operating at approximately 71 percent power when the inspection period ended.

Unit 2 began the inspection period in power operation. The unit operated at power for the duration of the inspection period.

3. PLANT OPERATIONS (71707 and 92901)

a. Daily Inspections

The inspectors conducted selective examinations, on a day-to-day basis which involved control room tours, plant tours, and management meetings. The following activities were specifically reviewed:

(1) During the week of August 7, 1995 the inspectors observed activities in progress regarding preparation for the Unit 1 Cycle 7 outage. During turbine building and auxiliary building tours, the inspectors questioned operators regarding outage preparations (staging, preliminary modification work, etc.) and whether these preparations were effecting continued safe operation of Unit 1. In some cases, the inspectors determined that good coordination and control of outage activities was not occurring. For example, work associated with modification of the secondary sampling system in accordance with DCN M11473 was going on in the Unit 1 turbine driven auxiliary feedwater pump room without control room operators knowledge on August 10, 1995. In addition, staging of the turbine building was occurring without good coordination between modification and operations personnel.

After discussing these observations with plant management, the licensee instituted better communications between operations and maintenance/modification personnel to assure that preparations for the Unit 1 Cycle 7 outage did not interfere with operation of the plant. During the later part of the period, the inspectors observed better coordination/communication in preparation for the outage.

The inspectors concluded that the licensee appropriately addressed the inspector's concern after identification of the issues.

(2) On August 16, 1995, during a plant walkdown, the inspectors observed a black rubber hose connected to the Unit 1 CVCS at a flange connection downstream of check valve 62-937. The inspectors questioned operations personnel as to which procedures authorized installation of the hose. On shift operators could not answer the inspector's question; however, they had stopped evolutions involving hookup and use of the hose until procedural controls were addressed. The inspectors discussed the above observations with operations management the same day.

On August 17, 1995, the Operations Superintendent met with the inspectors and provided a copy of the procedure being used to install the black rubber hose. The purpose of the installation was to provide a temporary flowpath to the spent fuel pit transfer canal in order to fill the canal with blended water from the CVCS in preparation for the Unit 1 Cycle 7 refueling. The evolution was controlled by O-SO-62-7, BORON CONCENTRATION CONTROL, Revision 0. The inspectors reviewed the procedure and determined that adequate controls were in place to safely operate CVCS equipment during the transfer with Unit 1 at power. However, they also determined that minimal controls existed to install and check out the temporary equipment (black hose and temporary valves). For example, the hose was installed using a minor maintenance work request. This type of maintenance activity normally relies on skill of the craft.

The inspectors conducted a plant walkdown on August 17, and observed several mechanical joints leaking on the black hose installation. The inspectors questioned operators and were informed that the hose was being checked out with primary water for leakage and flushing. This checkout was when the leaks were observed. No formal procedure was in use during the hose checkout/flushing evolutions. The inspectors also observed craft tightening the mechanical joints where leaks were observed. During the next several days, operations filled the spent fuel pool transfer canal using the temporary hose.

The inspectors reviewed revision 39 for SOI 62.2 dated October 26, 1992. This revision provided a safety assessment/safety evaluation for the section allowing for filling of the transfer canal using the temporary rubber hose. The inspectors determined that the revision was accomplished as required.

The inspectors concluded the transfer of blended water from the CVCS to the transfer canal was accomplished in accordance with approved procedures. However, additional controls may be warranted when installing the temporary hose prior to transfer evolutions.

(3) During this period, the inspectors noted that the operations shift turnover process was revised. The new process involved turnover of each operator on station commencing approximately 30 minutes prior to the normal shift turnover time. After completion of on station turnovers, the oncoming operations SOS conducted a formal crew briefing in the TSC. During the brief, the inspectors observed operator interaction which helped the entire crew understand activities in progress throughout the plant. In addition, the briefing focused on individual formality during the discussions of activities in progress or upcoming.

The inspectors noted improvement in overall information exchange during these briefings. In addition, a greater awareness of crew understanding of plant activities was sensed. The inspectors concluded the new operations crew shift turnover process was an improvement over past turnover processes.

b. Biweekly Inspections

The inspectors conducted biweekly inspections, using the licensee's IPE information, to verify operability of the following ESF trains.

During the inspection period, the inspectors performed selective reviews of the ERCW system to verify operability of key components and alignment of system flowpaths. The ERCW system is recognized as an important support system for many accident scenarios. Based on the reviews performed, the inspectors concluded that the system was being maintained in an operable status.

However, during heavy rains on August 7 and 8, the inspectors noted that runoff water outside of the CCW station was collecting and overflowing berms around two ERCW cable vaults. The vaults contain sump pumps to remove accumulated rainwater. Concrete berms are installed around the vaults to preclude normal area rain runoff/drainage from entering the vaults; however, due to localized flooding around the vaults, sediment had built up and diminished the effectiveness of the berms. The inspectors were also concerned that grading around the general area may have been modified resulting in a large quantity of runoff water exceeding the berm capacity around the vault and potentially the capacity of the vault sump pumps. Submerging of the ERCW cables had been a past problem at Sequoyah.

The inspectors expressed these concerns to the licensee. The subject cable vault water levels were subsequently checked and determined to be within the range of the sump pumps; however, there was no positive way of determining how high the transient levels had been within the vaults. The inspectors were informed that a design review would be performed and grading deficiencies would be addressed. The inspectors also reviewed the design of the ERCW cable vaults and determined that due to the sediment build up around the berms, the vaults were not being maintained in the as-designed configuration. The inspectors were later informed that the sediment around the berms would be removed to allow them to be effective in diverting runoff in the future. System engineering also discussed the possibility of raising the berm height if the proposed corrective actions were not effective. The inspectors noted that the site had established mechanisms to periodically monitor the cable vault for water buildup and effectiveness/operability of the vault sump pumps.

The inspectors concluded the licensee was not maintaining the grading around the vaults such that the berm design could be fully effective. The inspectors also noted that other ERCW cable vault berms had been modified in the past to cope with similar water intrusion issues. Degradation of grading around the cable vaults to preclude water intrusion into the vaults was identified as a weakness.

c. Monthly Inspections

On August 14, 1995, the inspectors monitored training activities for plant management in the areas of organizational and programmatic improvements and human error reduction. The training focused on the importance of a strong self-improvement culture in order to improve performance. In addition, key characteristics for improving plant culture were discussed along with positive and negative examples of each. The inspectors observed good management interaction during the presentation of material. In addition, plant senior management reinforced the course objectives and the need for improvement in plant culture.

The inspectors concluded that plant management was implementing training activities to improve plant performance and culture. In addition, the material presented was based on industry experiences and feedback.

d. Trimonthly Inspections

(1) During the inspection period the inspectors reviewed the use of overtime for licensed reactor operators and other plant personnel who perform safety-related work activities to determine if overtime usage is consistent with TS and procedure guidelines. The inspectors sampled documentation

of the overtime approval process in the Operations area and concluded that the licensee adequately documents overtime as required by TS and licensee procedures. The inspectors also reviewed overtime data for May, June, and July of 1995, and determined that usage did not appear excessive. The inspectors concluded that the licensee was managing overtime usage as required.

(2) During the inspection period the inspectors verified that the licensee was adhering to the posting requirements of 10 CFR 19.11 and 10 CFR 21.6. The inspectors reviewed SSP-4.7, POSTING NRC NOTICES AND INFORMATION TO EMPLOYEES, Revision 3, which implements and establishes the requirements for posting licensing notices and documents in accordance with NRC requirements. The SSP provides the requirements for the posting locations in the Gatehouse, Training Center, and the Site Engineering Complex. The inspectors concluded that SSP-4.7 met the intent of the 10 CFR posting requirements and that the posting locations inspected contained the required documents or stated where the documents could be examined.

e. Semi-Annual inspections

During this period, the inspectors reviewed licensee activities associated with seismic monitoring instrumentation operability testing. This review is discussed in paragraph 5.b.

f. Effectiveness of licensee controls

On August 19, 1995, Sequoyah requested a Notice of Enforcement Discretion for Units 1 and 2, TS LCO 3.7.5.c, to allow for an increase in the UHS temperature to 87 °F. On August 18, 1995, Sequoyah's UHS temperature was measured at 83 °F and rising. The TS LCO requires that the UHS temperature (i.e., Essential Raw Cooling Water supply header water temperature) be less than or equal to 84.5 °F when water level is above 680 feet mean sea level. At the current rate of temperature increase and based on projected weather patterns, Sequoyah estimated that the UHS temperature limit of 84.5 °F would be exceeded early on August 21, 1995. In the event this LCO limit is reached, the TS Action would require that both units be placed in cold shutdown. This discretionary enforcement from compliance with LCO 3.7.5.c was given until an exigent TS change could be submitted and approved by the NRC. This exigent TS change was submitted by the licensee on August 21, 1995, and proposed a revised Unit 1 and 2 TS LCO 3.7.5.c to allow for an increase in Sequoyah's UHS temperature to 87 °F until September 30, 1995. The request was approved and documented in the August 22, 1995, letter (NOED 95-6-012).

Prior to granting the NOED, Sequoyah's documentation of the safety consequences was reviewed by the NRC Region II staff and NRR. In addition, Sequoyah identified the following compensatory actions:

- maintaining control of lake level above the 680 foot elevation through daily communications with TVA's Norris laboratory and frequent monitoring of lake level indication by station personnel,

- controlling hydrostatic operation of TVA's upstream dams to ensure steady river flow and thereby minimize temperature fluctuations, and

- controlling any actions that would impact ERCW flow rates or availability of ERCW pumps.

The inspectors held discussions with licensee personnel to verify when and how the above compensatory actions were to be implemented. The inspector verified that the SOS was responsible for maintaining daily communications to ensure appropriate lake level, and that licensee personnel contacted upstream dams to ensure steady river flow. In addition, the inspector verified that Standing Order No. 95-057, issued August 19, 1995, and Standing Order No. 95-058, issued August 21, 1995, addressed compensatory actions. The licensee indicated that the above compensatory measures would be in effect if ERCW temperature was greater than 83 °F; however, Standing Order No. 95-058 stipulated compensatory measures above 82.5 °F. During the inspection period, the maximum temperature of the ERCW supply header was measured to be approximately 83.8 °F (August 20). As such, Sequoyah did not enter the TS LCO ACTION of 3.7.5.c during the period.

g. Followup reviews were accomplished during the inspection period for the following item:

(Closed) VIO 327, 328/95-08-01, Failure to perform monthly surveillance of the backup source range monitor on Unit 1 in January and February, 1995 and on Unit 2 from December, 1994 to March, 1995. The issue involved failure to perform channel checks on the backup source range monitor as required by TS.

The licensee determined that the root cause of the violation was inadequate procedure guidance regarding IF/THEN conditions and the use of not applicable (N/A) in a surveillance instruction. Contributing factors were that personnel performing the surveillance instruction failed to evaluate the mode of applicability and to realize that the mode of applicability had precedence over the IF/THEN condition of the surveillance. Additionally, there was no procedure guidance for the expected response for the backup source range monitor in Mode 1.

Operations personnel initiated a work request to correct the immediate problem of the deenergized backup source range monitor. The source range monitor was found to have a failed power supply which was replaced and the instrument was returned to operable status. A standing order was issued to Operations personnel informing them of the missed surveillance and directing them not to N/A steps when the equipment is required to be operable in the applicable mode, to closely evaluate any surveillance data to be N/A'd and not to generically N/A the data column. The appropriate surveillance instructions were revised to provide the proper guidance to ensure compliance to the TS requirements. Additionally, the licensee reviewed selected surveillance instructions with IF/THEN performance notes to determine if the notes may contain information that could result in the incorrect performance of a step. No other IF/THEN discrepancies were found. The licensee revised procedures 2-PI-OPS-000-023.1 and 2-PI-OPS-000-023.2, Control Room Operator MCR Duty Station Shift Relief and System Status Checklist, to require a tour of the auxiliary control room on a daily basis to identify any potential abnormalities associated with instrumentation and indications.

The inspectors concluded that the licensee's corrective actions were adequate to close this violation.

Within the areas inspected, no violations were identified.

4. **MAINTENANCE OBSERVATIONS** (62703 and 92902)

During the reporting period, the inspectors verified by making observations, conducting reviews, and interviewing maintenance personnel, that the licensee's maintenance activities result in reliable operation of plant safety systems and components, and are performed in accordance with regulatory requirements. Inspection areas included the following:

a. On July 31, 1995, during performance of stroke testing, 1-FCV-074-003-A, RHR PUMP A-A INLET FLOW CONTROL VALVE failed to fully stroke. A high priority work request (C195144) was written to troubleshoot the problem. In addition, PER SQ950971 was written for the same problem. Over the next 24 hours, troubleshooting and corrective maintenance activities restored the valve to an operable status. The inspectors obtained a copy of the completed work package and reviewed the maintenance activities with licensee engineering personnel. The review, conducted on August 11, 1995, provided a sequence of troubleshooting activities accomplished. The activities eliminated potential failure hardware and allowed for a technical conclusion that the problem was corrected by replacement of Arrow-Hart front mounted auxiliary contacts.

Subsequent to the August 11 group review, the inspectors reviewed the work package in detail. During this review the inspectors observed the following:

- The work order required troubleshooting to be performed in accordance with O-MI-MXX-317-001.0, TROUBLESHOOTING, Revision 3.

- Documentation in the troubleshooting portion of the work package provided adequate information to determine what work was accomplished. However, the work activities were not described in the chronological order or detail necessary to methodically understand all activities accomplished and be able to determine the probable failure mechanisms without discussion and clarification by craft and/or engineering personnel.

- A copy of the PER evaluation and conclusions were included in the work package. This documentation provided reasonable assurance that the troubleshooting and maintenance activities corrected the problem and returned the valve to operable status.

The inspectors concluded the maintenance activity was accomplished in a good manner and the evaluation and conclusions described in the PER were good. However, additional focus on improvement of troubleshooting documentation was warranted.

b. On August 8, 1995, the inspectors witnessed a portion of the scheduled maintenance performed on vital inverter 1-II. The work activity included the replacement of inverter capacitors, fans, relays, calibration of meters, and cleaning. The maintenance was scheduled to take approximately 14 hours to complete. Because the maintenance would consume approximately 60% of the TS allowed outage time of 24 hours (TS 3.8.2.1 action b.), the licensee had completed a more extensive review of the activity as required by SSP-7.1, Work Control, Revision 9. The inspectors also discussed the work being performed with the system engineer who was present during the work. The inverter was returned to service approximately 15 hours into the 24 hour AOT. The inspectors learned that a delay of approximately two hours resulted when Operations expressed concern regarding the potential consequences of a scheduled PMT. The PMT issue was subsequently resolved; however, PER SQ951277PER was written documenting the unanticipated delay in returning the inverter to service. The inspectors concluded that, with the exception of the delay related to the PMT, the maintenance activity on vital inverter 1-II was adequately planned and executed.

c. During the inspection period, the inspectors reviewed corrective maintenance activities associated with repair of the normal CVCS letdown supply valve 1-FCV-62-70-A. On July 30, the Unit 1 air

operated FCV failed to the closed position resulting in a loss of the normal CVCS letdown flowpath. Operators were made aware of the problem via a pressurizer level high alarm (greater than 70 percent) and made several attempts to reopen the FCV with no success. The operators referred to Abnormal Operating Instruction AOI-20, MALFUNCTION OF PRESSURIZER LEVEL CONTROL SYSTEM, Revision 10, for response to the abnormal condition. Actions were then taken to reduce charging flow and to place the excess letdown flowpath in service to reestablish RCS letdown capability. Pressurizer levels were then returned to normal levels.

WR C195113 was written to investigate the problem. The valve is located in the # 2 accumulator room and with the unit in power operation, the working area for the job was extremely hot, cramped, and not well lighted. Due to the adverse environment, maintenance craft were limited to 15 minute entry times. Initial inspection of the valve determined that the air diaphragm had ruptured. Replace of the diaphragm was accomplished under work order WO 95-08007-00. During the work activities, craft personnel determined that the diaphragm appeared to have been properly installed and that air supply pressure was within the required range of 55 psi +/- 5 psi. The inspectors examined the failed diaphragm and noted that the component did not appear to have failed due to age. The diaphragm was replaced and the valve was successfully stroked and verified to have no air leaks. Normal letdown was then re-established. The air diaphragm failure was documented on PER SQ950978. The licensee was unable to determine the exact cause of the failure. By the end of the inspection period, the failed component had been sent off-site to a facility specializing in failure analysis of these types of components to better understand the root cause of the problem.

In addition to the above, the inspectors noted a good sensitivity by an operator regarding operation of the excess letdown heat exchanger (LDHX) flowpath during the above activities. The operator questioned if the inventory that remained in the excess LDHX system could cause a reactivity concern when the system was again placed in service following the upcoming refueling outage. Specifically, since the excess LDHX had been in service with approximately 15 ppm RCS boron concentration, the operator questioned whether there would be an inadvertent dilution when the system was subsequently placed in service following refueling (when high ppm boron is needed). System engineering evaluated the concern and determined that the water volumes in the excess LDHX system were not sufficient to cause a problem. The inspectors reviewed the system engineering evaluation and considered the evaluation adequate.

The inspectors concluded that the diaphragm replacement activities were accomplished in a good manner considering the harsh environment in the maintenance area. The licensee's approach to evaluating the root cause of the failure was also considered

appropriate. The operators identification of the potential dilution issue was considered an example of a good questioning attitude on the part of the operator.

d. Followup reviews were accomplished during the inspection period for the following items:

(Closed) VIO 327, 328/93-42-01, Failure to follow the requirements of SSP-12.3 during performance of maintenance activities on the 1B 6.9 KV unit board. The issue involved a potentially significant personnel safety/equipment damage problem discovered during re-energizing checkouts of the 1B 6.9 kV Unit Board. Specifically, a set of grounds was discovered to have been incorrectly placed on the board. The subject violation involved several examples of a failure to follow the administrative requirements of SSP-12.3, EQUIPMENT CLEARANCE PROCEDURE. Specific problems involved: electricians performing work in a breaker without being under a clearance hold order; unauthorized transferring of grounds under a clearance between individuals; failing to remove multiple individuals from a clearance hold order while meggering was in progress; and incompletely filled out hold order documentation. Due to some of the issues involved in the violation, the licensee had established conditions which could have resulted in serious equipment damage and personnel injury if not discovered. Based on the potential problem, the NRC expressed overall concerns to licensee management regarding the process used to control work activities around energized equipment.

The inspectors reviewed the licensee's corrective actions taken for the violations described in replies to the subject violation dated December 9, 1993 and March 17, 1994. The second reply was requested by the NRC per letter dated January 5, 1994, to provide addition information necessary to address the subject violation. Corrective actions taken and reviewed by the inspectors included the following:

- Other grounds installed were verified to be installed in the correct locations and the floating ground process was terminated. Ground disks now have independent locations identified.

- Revisions to Site Management Directive regarding lowering the voltage level above which special precautions are required (from greater than nominal 125 volts to greater than 30-V AC or 30-V DC nominal). In addition, the term "in the vicinity" of energized equipment has been defined as breaking the plane of the cabinet, compartment, or cubical in which dangerous voltages are present.

- Management approval is needed to work on equipment higher than the above voltages.

- An audit of the outstanding hold orders had been performed and several other examples of incompletely filled out hold orders were identified. Operations management issued a letter describing the examples and providing additional expectations regarding hold order documentation.

- Clearance sheets now require specific ground locations.

The inspectors discussed the subject violation with individuals involved in the current hold order and clearance processes. In addition to the corrective actions described above, the inspectors considered that the incorporation of an electronic clearance process could help prevent issues similar to the subject violation. The new process established better controls for obtaining, returning, or transferring ground disks, ensures individuals have required training before being allowed on clearances or receiving grounds, required an electronic transfer of grounds prior to a releasing of a clearance, and provided an internal check to ensure all grounds were returned prior to releasing a clearance. The inspectors reviewed the new clearance system's attributes and concluded that it provided additional barriers to preclude similar violations of the established administrative controls. The inspectors verified a selected portion of the currently established clearances and ground locations. No incorrect clearances or grounds were identified. The inspectors also reviewed Nuclear Training Lesson Plan PPT210.001, SSP-12.3 EQUIPMENT CLEARANCE PROCEDURE - PLANT MAINT/MOD PERSONNEL. The inspectors considered that the training adequately presented the administrative requirements regarding the clearance process. Attached to the training guidance was a copy of II-S-93-033 which described the event of the subject violation.

The inspectors also reviewed the outstanding clearance hold orders which contained safety grounds. On the date of the review there were two hold orders which contained safety grounds. The inspectors noted several items were blank on the two hold orders and subsequently reviewed SSP-12.3, Equipment Clearance Procedure, Revision 9, to determine the requirement, if any, to complete those items. The procedure, in each case, stated that the information "should" be completed. The inspectors discussed these omissions with the OCC ASOS and concluded that the omitted information would have made the hold order information more complete, but that there was no procedure requirement to complete those items on the hold order form.

Regarding the NRC's overall concern related to the process used to control work activities around energized equipment, the licensee's investigation determined that Electrical Maintenance personnel, in general, had for some time prior to the violation nonconservatively interpreted and applied administrative work controls. The licensee considered that this problem was cross disciplined and included craft, engineers, and supervisors. Based

on the above reviews, the inspectors concluded that the licensee had made considerable progress in addressing the overall culture, attitudes, and methodology associated with electrical safety standards and requirements.

Within the areas inspected, no violations were identified.

5. **SURVEILLANCE OBSERVATIONS** (61726 and 92902)

During the reporting period, the inspectors ascertained, by direct observation of licensee activities, whether surveillance of safety significant systems and components were being conducted in accordance with technical specifications and other requirements. The inspection included a review of the following procedures and observation of surveillance:

a. On August 9, 1995, the inspectors monitored performance of 2-SI-SXP-062-001.B, CENTRIFUGAL CHARGING PUMP 2B-B OPERABILITY TEST, Revision 1. The purpose of the test was to assess the operational readiness of the pump in accordance with ASME, Section XI requirements. The inspectors reviewed the completed test package after the Unit 2 ASOS review, and observed some discrepancies in the test data. These discrepancies were reviewed with the ASOS who indicated they would be corrected. None of the discrepancies invalidated the test results. The inspectors concluded the test was accomplished as required; however, discrepancies identified were an example of a lack of attention to detail during test documentation and review.

b. On August 10, 1995, the inspectors observed a portion of the performance of SI-245, Functional Test Of Seismic Monitoring System, Revision 5, which is performed semi-annually. Specifically, the inspectors observed the functional testing of the SMA-3 Triaxial Time History Accelerograph which is located in the Unit 1 auxiliary relay room. During the test, the I&C technicians identified an error in step 5.3.15.1 regarding the required switch position, to test the accelerograph stylus drive, of the CAL/RUN/ZERO switch. At that point, the technicians stopped the test, consulted with their foreman and concluded that a procedure change was needed. The inspectors accompanied the technicians while they processed the procedure change. Several other minor procedure changes, which had been identified by the inspectors and the technicians, were also made at this time. Following the procedure change, the testing of the accelerograph was successfully completed. Later in the surveillance, the SMA-2 Triaxial Time-History Accelerograph, located in the diesel generator building, was tested and a deficiency was noted on the vertical axis recorder for seismic monitor XR-52-77. WR C256301 was written to initiate repair of the monitor.

The inspectors concluded that SI-245 was properly conducted and that licensee personnel took appropriate actions to correct identified procedure errors.

Within the areas inspected, no violations were identified.

6. **ONSITE ENGINEERING** (37551 and 92903)

During the reporting period, the inspectors conducted periodic engineering evaluations for regional assessment of the effectiveness of the onsite engineering staff. The inspection included a review of the following activities:

a. During this period, the inspectors reviewed licensee activities associated with PER SQ930800. The inspectors became aware of the issue in an MRC meeting late in the last inspection period, and requested licensee documentation on the issue. Documentation was provided this period and addressed an issue, identified at Watts Bar in September of 1993, involving cavitation induced erosion of ECCS throttle valve seats which may impair the ability of the ECCS to perform its long term accident mitigation function. The issue was initially reviewed at Sequoyah in December of 1993, and a determination was made that operability was not affected because Sequoyah had different throttle valves and would see minimal cavitation in long term flow conditions.

Other reviews of PER SQ930800 between January of 1994 and June of 1994 continued to result in evaluations that Sequoyah did not have a problem. In June of 1994, as part of the Watts Bar corrective action for their issue, a Sequoyah calculation was prepared to verify the throttle valves were acceptable for long term service. After the initial calculations, Westinghouse was tasked to evaluate the long term suitability of the throttle valves with an expected completion date of August 24, 1994. Westinghouse provided their evaluation of the ECCS throttle valves in a project letter (TVA-94-118 dated July 18, 1994) to Sequoyah. Westinghouse determined that the ECCS throttle valves do have excessive pressure drops during both cold leg recirculation and hot leg recirculation phases after an accident. As such, the balancing valves will erode and potentially fail under post-LOCA conditions for 100 days.

Westinghouse further provided Sequoyah in project letter TVA-94-158 dated August 31, 1994, with a justification for continued operation addressing the potential failures of the balancing valves located in the discharge lines of the centrifugal charging pumps and the safety injection pumps under post-LOCA conditions for 100 days.

After receipt of the justification for continued operation from Westinghouse, the licensee focused on a design change to the plant

to correct the issue. Documentation in PER SQ930800 indicated that a DCR was prepared and issued to install pressure reducing orifices in the CCP cold leg and SIP cold/hot leg injection lines. This activity was scheduled for completion by December 30, 1994. PER SQ930800 also provided an evaluation for operability dated February 27, 1995. The evaluation referenced the Westinghouse justification for continued operation as a basis for operability and stated that precautions were presented to the Emergency Preparedness Manager for an "immediate change" to EPIP-6 to ensure both CCP's and SIPs are shutdown per the JCO guidance. The inspectors reviewed EPIP-6, ACTIVATION AND OPERATION OF THE TECHNICAL SUPPORT CENTER, Revision 16. The revision added guidance for addressing the potential for CCP/SIP runout due to throttle valve erosion. However, the revision was not implemented until July 17, 1995.

The inspectors reviewed the documentation and questioned the licensee as to whether a 10 CFR 50.59 evaluation was accomplished when the issue was determined to be applicable to Sequoyah (July of 1994). The licensee stated that no 50.59 evaluation had been done to date. In addition, the licensee stated that the issue did not meet criteria requiring the safety evaluation. They further stated the issues would be corrected with modifications to the plant during future refueling outages, and currently they have revised EPIP-6, ACTIVATION AND OPERATION OF THE TECHNICAL SUPPORT CENTER to provide guidance for LOCA - CCP/SIP runout due to potential throttle valve erosion.

The inspectors referenced Generic Letter 91-18 and questioned whether the licensee followed the GL process in review of the issue. The inspectors stated that GL 91-18 provides guidance when a degraded condition is identified. It states that "delay or partial correction of a condition adverse to safety or quality is considered a change in facility or procedures and subject to 50.59 review."

In addition, the inspectors questioned the timeliness of corrective action for the degraded condition. The inspectors specifically focused on interim corrective actions from the time that the degraded condition was confirmed (July of 1994) to the time when interim corrective actions were incorporated into the EPIP (July 17, 1995). 10 CFR Appendix B Criterion XVI requires, in part, that conditions adverse to quality are promptly identified and corrected. Licensee interim corrective action for the degraded condition took approximately 1 year from the time the CAQ was confirmed to exist until a procedure revision was implemented. The inspectors determined that the actions were not timely. Failure to promptly identify and correct the adverse condition is identified as a violation (327, 328/95-18-01).

Additional discussions were held between licensee engineering management, licensing, and the inspectors on August 28, 1995. The

licensee provided the following insight as to the review process for the degraded throttle valve issue. They stated:

- The review process as outlined in the report was satisfactory,

- the safety significance of the degraded condition was minimal,

and the revision to the EPIP was an enhancement, and not a requirement for corrective actions.

The inspectors reviewed the licensee's additional information provided in the discussion and considered the violation occurred as stated. The inspectors concluded that licensee understanding of Generic Letter 91-18 guidance needs additional management attention in that it is not clear when an operability evaluation is required.

b. During this period, the inspectors reviewed licensee activities associated with an issue originally identified during an NRC inspection conducted in July of 1995 (NRC IR 50-390, 391/95-44 dated July 31, 1995) at the Watts Bar facility. The issue was associated with IPE success criteria for the CCS that required operator action be taken to isolate CCS loads while establishing RHR recirculation. The inspectors were specifically concerned with the effect on the A-train CCS pump and operator actions during the 10-15 minute time frame it takes to establish RHR recirculation with the maximum possible loads on the A-train CCS pump. The inspectors noted that the Watts Bar facility had not written a PER for this issue, but had initiated a DCN to evaluate the performance of the pumps.

Prior to the potential concern first identified at Watts Bar, Sequoyah had identified a concern relative to emergency diesel generator loading and CCS pump winding temperatures due to the potential for CCS pump flow greater than the design pump flow as stated in the FSAR. These concerns were documented and evaluated at Sequoyah with PER SQ940155II, dated November 22, 1994, and SQ950596, dated June 23, 1995. At the time of the Watts Bar finding, the maximum loads that could be placed on the Sequoyah A-train CCS pump had not been determined, and as such the licensee had no formal evaluation as to whether the pump would be in a runout condition. However, the licensee's previous evaluation concluded that the various CCS alarms would prompt operator action to reduce CCS loads during the swapover to RHR recirculation, and thus no operability concern existed.

The inspectors reviewed activities by the licensee relative to the Watts Bar concern. Plant emergency operating instruction ES-1.3, "Transfer to RHR Containment Sump", Rev. 6, required operators establish CCS flow to the RHR heat exchanger. If sufficient flow

could not be obtained (Response Not Obtained), ES-1.3 required that actions be taken, after transfer to the containment sump was completed, to coordinate actions with operators on the opposite unit to reduce CCS flow to the unaffected unit. A reference to AOI-15, Loss of Component Cooling Water, section 2.6, was also included in ES-1.3, which specifically delineates alignment of the spent fuel pool cooling header to CCS A-train of the unaffected unit. Also, ES-1.3 was revised in March 1995 because of an assessment observation from an independent operational performance inspection conducted in late 1994. This revision added a step at the end of the procedure to remind operators to coordinate actions to reduce CCS loads to the unaffected unit.

Licensee personnel stated that various low flow or low pressure alarms located in the A-train header and various component supply lines of the CCS would alert operators to a condition in which greater than design flow was demanded of the A-train CCS pump. As stated above, this evaluation had been conducted originally as a result of the previous PERs to address the original EDG loading and pump winding temperature concerns. In addition to these evaluations, after the Sequoyah site was made aware of the additional concern associated with potential pump runout at Watts Bar, engineering personnel conducted additional evaluations. These efforts initially centered around an informal calculation to determine the maximum potential flow for the A-train CCS pump, based on various hydraulic resistances in the system. This informal evaluation was partly based on actual test data from ASME Section XI testing, and periodic flow balancing. Based on the licensee's informal evaluation, the maximum pump flow would be less than the estimated flow at which pump runout would occur. The licensee initiated a PER SQ951275PER to develop design documentation which evaluates this potential system operational alignment. Based on the above activities, the inspectors concluded the licensee's activities in this area were adequate.

c. Followup reviews were accomplished during the inspection period for the following item:

(Closed) IFI 327, 328/94-04-04, Followup on ORAT Identified Observations. The issues involved excessive operations department overtime, weaknesses in the control room abandonment drill, lack of guidance for abnormal operating procedures, backlog of safety related vendor manual updates, and emergency lighting deficiencies.

The inspectors reviewed licensee actions for each of the issues and noted the following:

- Operations use of overtime has continued to trend down since identification of the issue. The inspectors also noted increased management attention in addressing this area to

minimize overtime usage. Several inspections in this area have documented this condition over the past two years.

- The licensee revised AOI-27, CONTROL ROOM INACCESSIBILITY, Revision 23 to provide better guidance to address weaknesses identified by the ORAT. The revised procedure clarified command and control duties, provided better sequencing of steps, and streamlined the requirements to allow for more efficient performance of the steps. In addition, EPIP-1, Revision 16 dated August 14, 1995, had better clarified conditions which warrant entry into emergency plan classifications.

- In order to reflect management expectations for AOIs, the licensee revised EPM-4, USER'S GUIDE, Revision 2. The revision specifically prescribed bases for entry into AOPs.

- The licensee provided resources and management overview of reduction in vendor manual backlog to reduce backlog from approximately 1800 items to 1070 items by October 30, 1994. As of August 28, 1995, the backlog had been reduced to less than 100 items.

- The licensee reviewed emergency lighting deficiencies identified and replaced batteries on lights considered to be degraded by environmental conditions. In addition, they put in place additional preventative maintenance requirements to require battery checkouts/replacement more frequently.

The inspectors concluded that the licensee's corrective actions were adequate to close this item.

Within the areas inspected, one violation was identified.

7. **PLANT SUPPORT** (64704,71750, 82301 and 92904)

During the reporting period, the inspectors conducted reviews to ensure that selected activities of the following licensee programs are implemented in conformance with the facility policies and procedures and in compliance with regulatory requirements.

a. Radiological Controls

During this period, plant walkdowns and review of other radiological control activities indicated that the licensee's ALARA program was continuing to result in good performance. In addition, the inspectors reviewed an assessment report which evaluated the licensee's dosimetry management process. The report reflected favorably on the licensee's implementation of the program.

b. Physical Security

During this period, toured the protected area noted the perimeter fence was intact and not compromised by erosion or disrepair. Personnel and packages entering the protected area were observed. Required searches were accomplished for entry into the protected as described in the physical security plan. The inspectors concluded the licensee was implementing the security plan in a good manner.

Within the areas inspected, no violations were identified.

8. **LICENSEE EVENT REPORT REVIEW** (92700)

The inspectors reviewed the LERs listed below to ascertain whether NRC reporting requirements were being met and to evaluate initial adequacy of the corrective actions. The inspector's review also included followup on implementation of corrective action and/or review of licensee documentation that all required corrective action(s) were either complete or identified in the licensee's program for tracking of outstanding actions.

(Closed) LER 327/95-07, Auxiliary Building Crane Interlocks and Physical Stops Were Defeated to Facilitate Replacement of the Spent Fuel Pool Fuel Storage Racks. The issue was identified when NRC inspectors identified that the practice of defeating the auxiliary building crane interlocks and physical stop for implantation of the spent fuel pool rerack project was contrary to TS SR 4.9.7.1. This issue was previously described in detail and identified as URI 327,328/94-45-01. Following a review of the issue, a non-cited violation was identified (NCV 327,328/95-14-02) for the violation of TS SR 4.9.7.1 during the initial fuel pool rerack project based on the licensee's corrective actions and the low safety significance of the event.

Corrective actions for the event included suspension of the rerack activities until a revision to the TS SR was incorporated to allow the crane interlocks and stops to be defeated for the rerack activities. The root cause of the event was determined to be an incorrect interpretation of the scope and application of TS SR 4.9.7.1 during the planning of the rerack project. On June 14, 1995, a TS Amendment was issued which deleted the requirements for both units applicability to TS SR 3/4.9.7. This LER is closed.

(Closed) LER 327/95-04, Missed Surveillance Resulting from Inadequate Procedural Guidance. This issue involved missed surveillances on the backup source range monitor located in the auxiliary control room. This issue was addressed in the closure of VIO 327, 328/95-08-01 in paragraph 3.g of this report. This LER is closed based on the licensee's corrective actions.

Within the areas inspected, no violations were identified.

9. EXIT INTERVIEW

The inspection scope and results were summarized on September 5, 1995, with those individuals identified by an asterisk in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

Item Number	Status	Description and Reference
VIO 327, 328/95-08-01	Closed	Failure to perform monthly surveillance of the backup source range monitor on Unit 1 in January and February, 1995 and on Unit 2 from December, 1994 to March, 1995.
VIO 327, 328/93-42-01	Closed	Failure to follow the requirements of SSP-12.3 during performance of maintenance activities on the 1B 6.9 KV unit board.
VIO 327, 328/95-18-01	Open	Failure to promptly identify and correct the adverse condition associated with degraded ECCS throttle valves.
IFI 327, 328/94-04-04	Closed	Followup on ORAT Identified Observations.
LER 327/95-07	Closed	Auxiliary Building Crane Interlocks and Physical Stops Were Defeated to Facilitate Replacement of the Spent Fuel Pool Fuel Storage Racks.
LER 327/95-04	Closed	Missed Surveillance Resulting from Inadequate Procedural Guidance.

Strengths and weaknesses summarized in the results paragraph were discussed in detail.

Licensee management was informed of the items closed in paragraphs 3, 4, 6, and 8.

10. ACRONYMS AND ABBREVIATIONS

AOI - Abnormal Operating Instruction
AOP - Abnormal Operating Procedure
AOT - Allowed Outage Time
ASME - American Society of Mechanical Engineers

ASOS - Assistant Shift Operations Supervisor
CAQ - Condition Adverse to Quality
CCP - Centrifugal Charging Pump
CCS - Component Cooling System
CCW - Circulating Water System
CFR - Code of Federal Regulations
CVCS - Chemistry and Volume Control System
DCN - Design Change Notice
DCR - Design Change Request
DRP - Division of Reactor Projects
ECCS - Emergency Core Cooling System
EPIP - Emergency Plan Implementing Procedure
EPM - Emergency Procedures Manual
ERCW - Essential Raw Cooling Water
ES - Emergency Supplemental Guidelines
ESF - Engineered Safeguard Features
FCV - Flow Control Valve
FSAR - Final Safety Analysis Report
GL - Generic Letter
I&C - Instrumentation and Control
IFI - Inspector Followup Item
IPE - Individual Plant Examination
JCO - Justification for Continued Operation
kv - Kilo-volt
LCO - Limiting Condition for Operation
LDHX - Letdown Heat Exchanger
LER - Licensee Event Report
LOCA - Loss of Cooling Accident
MCR - Main Control Room
MRC - Management Review Committee
NCV - Non Cited Violation
NOED - Notice of Enforcement Discretion
NRC - Nuclear Regulatory Commission
NRR - NRC Office of Nuclear Reactor Regulation
OCC - Operations Control Center
ORAT - Operational Readiness Assessment Team
PER - Problem Evaluation Report
PI - Periodic Instruction
PMT - Post Maintenance Test
RCS - Reactor Coolant System
RHR - Residual Heat Removal System
SI - Surveillance Instruction
SIP - Safety Injection Pump
SOI - System Operating Instruction
SOS - Shift Operations Supervisor
SSP - Site Standard Practice
TS - Technical Specifications
TSC - Technical Support Center
TVA - Tennessee Valley Authority
UHS - Ultimate Heat Sink
URI - Unresolved Item
V-AC - Voltage-Alternating Current

V-DC - Voltage-Direct Current
VIO - Violation
WO - Work Order
WR - Work Request