



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

Report Nos.: 50-327/92-35 and 50-328/52-35

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: November 1 through November 28, 1992

Lead Inspector: W. E. Holland  
W. E. Holland, Senior Resident Inspector

12-16-92  
Date Signed

Inspectors: S. M. Shaeffer, Resident Inspector  
S. E. Sparks, Resident Inspector

Approved by: Paul J. Kollmann  
Paul J. Kollmann, Chief, Section 4A  
Division of Reactor Projects

12/16/92  
Date Signed

SUMMARY

Scope:

This routine resident inspection was conducted on site in the areas of plant operations, plant maintenance, plant surveillance, evaluation of licensee self-assessment capability, licensee event report closeout, followup on previous inspection findings, and cold weather preparations. During the performance of this inspection, the resident inspectors conducted several reviews of the licensee's backshift or weekend operations.

## Results:

In the area of Plant Operations, an apparent violation of 10 CFR 50.9 concerning the completeness and accuracy of information during the performance of firewatch rounds was identified (paragraph 3.b (1)).

In the area of Plant Operations, an unresolved item was identified with regard to review of licensee documentation for fire watch round completion (paragraph 3.b (1)).

In the area of Safety Assessment, a weakness was identified with regard to licensee personnel and lower management sensitivity to evaluation of corrective actions on safety related systems, when the system is potentially inoperable or degraded but still available in MODES requiring the system to be operable (paragraph 5.a).

In the area of Engineering/Technical support, an unresolved item was identified concerning the licensee's procedures which may not establish an adequate acceptance criterion in surveillance instructions to ensure TS surveillance requirements were satisfied associated with testing of the control room emergency ventilation systems (paragraph 5.b).

In the area of Engineering/Technical Support, licensee technical evaluations concerning EDG 2B-B load oscillation problems during the past eight months had not been fully effective (paragraph 5.c).

In the area of Safety Assessment, the Sequoyah NSRB continued to be aggressive in probing plant problem areas and pressing plant management for appropriate corrective actions (paragraph 6).

In the area of Maintenance/Surveillance, a non-cited violation of Technical Specification 6.8.1 was identified consisting of two examples in which the licensee failed to adhere to procedural administrative requirements for installing labeling tags on plant components (paragraph 8.b).

In the area of Plant Operations, a review of the protective measures for freeze protection concluded that the licensee was adequately prepared prior to freezing weather. The licensee appeared to be addressing previous deficiencies in this area (paragraph 9).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

J. Wilson, Site Vice President  
\*R. Fenech, Future Site Vice President  
\*R. Beecken, Plant Manager  
L. Bryant, Maintenance Manager  
\*L. Bush, Acting Operations Manager  
\*M. Cooper, Site Licensing Manager  
\*T. Flippo, Site Quality Assurance Manager  
\*J. Gates, Technical Support Manager  
C. Kent, Radiological Control Manager  
R. Rausch, Modifications Manager  
\*J. Smith, Regulatory Licensing Manager  
R. Thompson, Compliance Licensing Manager  
\*P. Trudel, Nuclear Engineering Manager  
\*J. Ward, Engineering and Modifications Manager  
\*N. Welch, Operations Superintendent

#### NRC Employees

B. Wilson, Chief, DRP Branch 4  
P. Kellogg Chief, DRP Section 4A

\*Attended exit interview.

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

On November 16, 1992 Mr. Leonard Bush was assigned to the position of Acting Operations Manager, replacing Mr. P. Lydon at the Sequoyah Nuclear Plant. Mr. Bush had been the Operations Superintendent at the Watts Bar Nuclear Plant prior to his arrival at Sequoyah.

On November 19, 1992 licensee management notified the NRC that Mr. James Setliffe was appointed as the Acting Security Manager replacing Mr. H. Harper.

On November 20, 1992 Mr. Nick Welch assumed the duties and responsibilities as Operations Superintendent, replacing Mr. M. Lorek. Prior to assuming the Operations Superintendent position, Mr. Welch, who is a licensed SRO at Sequoyah, was the Operations Unit Manager.

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

## 2. Plant Status

Unit 1 began the inspection period in MODE 3. After correction of the control air quality problems which were discussed in NRC Inspection Report 327, 328/92-34, Unit 1 was restarted on November 2. The unit increased to approximately full power on November 6. Full power operation continued until November 9 when a power reduction began to approximately 15 percent to effect repairs to the loop # 2 MFW regulating valve. The repairs were conducted in conjunction with an NRC Waiver of Compliance for the applicable Technical Specification (see paragraph 4.a for discussion). On November 10, after the repairs to the MFW valve were completed, power escalation was briefly initiated (to 27 percent); however, the unit was returned to approximately 20 percent to repair boundary valve leakage on secondary heater work which was unrelated to the main feedwater system repairs. Late on November 10, the unit resumed power escalation and reached approximately full power on November 12. The unit operated at approximately full power for the remainder of the inspection period.

Unit 2 began the inspection period at approximately 30 percent power. After correction of the control air quality problems which were discussed in NRC Inspection Report 327, 328/92-34, Unit 2 commenced increasing power on November 1, and reached full power on November 3. The unit operated at approximately full power for the remainder of the inspection period.

## 3. Operational Safety Verification (71707)

### a. Daily Inspections

The inspectors conducted daily inspections in the following areas: control room staffing, access, and operator behavior; operator adherence to approved procedures, TS, and LCOs; examination of panels containing instrumentation and other reactor protection system elements to determine that required channels are operable; and review of control room operator logs, operating orders, plant deviation reports, tagout logs, temporary modification logs, and tags on components to verify compliance with approved procedures. The inspectors also routinely accompanied plant management on plant tours and observed the effectiveness of management's influence on activities being performed by plant personnel.

### b. Weekly Inspections

The inspectors conducted weekly inspections in the following areas: operability verification of selected ESF systems by valve alignment, breaker positions, condition of equipment or component, and operability of instrumentation and support items essential to system actuation or performance. Plant tours were conducted which included observation of general plant/equipment conditions, fire protection and preventative measures, control of activities in

progress, radiation protection controls, missile hazards, and plant housekeeping conditions/cleanliness.

- (1) On November 20, 1992, the inspectors held discussions with management of the Fire Protection Organization regarding events which appeared to indicate a falsification of fire watch records. Fire Protection foreman routinely conduct reviews of FDSIL-10, FIRE PROTECTION SECTION FIREWATCHES, Attachment D, FIRE WATCH ROUTE CHECK SHEET, as a verification that assigned firewatches are performing the check sheet as intended in order to fulfill TS required compensatory measures. Once reviewed, the satisfactory performance of the fire watch round is documented in O-PI-FPU-000-299.0, OPERATIONS FIRE PROTECTION FOREMAN SHIFT RELIEF AND STATUS CHECK SHEETS. During reviews of a November 5, 1992 FDSIL-10 check sheet, a Fire Operations Foreman identified instances where it appeared that two fire watches were signing for the same route. One of the signatures was crossed off in several locations. Statements from the two firewatches involved did not completely explain how the checkoffs were made. The situation was brought to the attention of Fire Operations Management, who initiated reviews of security door card access for the individuals. Fire Protection management determined that the security printouts did not correspond to the rounds that the firewatch personnel had verified. The firewatches were confronted with managements findings and eventually admitted to falsifying the record during the performance of one twelve hour shift. Subsequently, the two firewatches were relieved of their duties and terminated.

The inspectors reviewed the licensee's administrative requirements regarding the performance of firewatch rounds. Once the FDSIL-10 checklist is performed, O-PI-FPU-000-299.0 documents performance of the firewatch round. TS 6.8.1 requires that written procedures shall be established, implemented, and maintained covering the applicable procedures in Appendix A of Regulatory Guide 1.33, Revision 2, dated February, 1978. PIs are procedures required in RG 1.33. 10 CFR 50.9 requires, in part, that information required by the Commission's regulations, orders, or license conditions shall be complete and accurate in all material respects. This finding is being reviewed as an apparent violation of 10 CFR 50.9 concerning the completeness and accuracy of information and will be identified as an apparent violation of 10 CFR 50.9 (327, 328/92-35-01), Falsification During the Performance of Firewatch Rounds.

In addition, the inspectors also reviewed the documentation being used to verify compliance with the TS LCO ACTION requirements. It appeared that the licensee was not maintaining the actual performances of the FDSIL-10 check



sheets which are completed during the firewatch round. The licensee stated that the successful performances of the fire watch rounds were documented in O-PI-FPU-000-299.0. The documentation of O-PI-FPU-000-299.0; however, was not a QA record. The inspectors specifically asked the licensee to provide documentation for a week's period during February 1992, when TS LCO 3.7.12 ACTION statement applied for fire watches and provided compensatory measures for fire protection system degradation. The inspectors specifically wanted to verify that the licensee was maintaining adequate documentation in their system. The inspection period ended prior to the licensee being able to provide this information to the inspectors. This issue is identified as an unresolved item (URI 327, 328/92-35-02), Review of licensee documentation.

- (2) On November 22, 1992 the inspectors noted water on the floor of the auxiliary building during a tour of elevations 690, 669, and 653. The water appeared to be dripping from overhead piping and was possibly condensate forming on the outside of the piping lines or other building leakage (heavy rains had occurred earlier that day). The inspectors were concerned that the sensitivity of personnel to possible contaminated water leakage in the auxiliary building was diminished based on normal encounters with this water (this area of the auxiliary building was located in the RCA). The inspectors brought this item to the attention of operations shift management and other management personnel. They were informed that the water was due, in part, to a seal leak at one of the auxiliary building boundary door walls. This problem was being addressed by a work request to repair the seal. The inspectors have noticed water on the auxiliary building floor at other times in the past and questioned the licensee as to whether any technical evaluation and/or action plan had been prepared to address the issue. The licensee agreed with the inspectors concerns and wrote a problem evaluation report (SQPER920348) which documented the mutual concerns into the licensee's corrective action program. The inspectors will monitor licensee corrective actions with regard to the PER evaluation during future inspections.

c. Biweekly Inspections

The inspectors conducted biweekly inspections in the following areas: verification review and walkdown of safety-related tagouts in effect; review of the sampling program (e.g., primary and secondary coolant samples, boric acid tank samples, plant liquid and gaseous samples); observation of control room shift turnover; review of implementation and use of the plant corrective action program; verification of selected portions of containment

isolation lineups; and verification that notices to workers are posted as required by 10 CFR 19.

d. Other Inspection Activities

Inspection areas included the turbine building, diesel generator building, ERCW pumphouse, protected area yard, control room, vital 6.9 KV shutdown board rooms, 480 V breaker and battery rooms, and auxiliary building areas including all accessible safety-related pump and heat exchanger rooms. RCS leak rates were reviewed to ensure that detected or suspected leakage from the system was recorded, investigated, and evaluated; and that appropriate actions were taken, if required. The inspectors routinely independently calculated RCS leak rates using the NRC RCS leak rate computer program specifically formatted for Sequoyah. RWPs were reviewed, and specific work activities were monitored to assure they were being accomplished per the RWPs. Selected radiation protection instruments were periodically checked, and equipment operability and calibration frequencies were verified.

e. Physical Security Program Inspections

In the course of the monthly activities, the inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: protected and vital area access controls; searching of personnel and packages; escorting of visitors; badge issuance and retrieval; and patrols and compensatory posts. In addition, the inspectors observed protected area lighting, and protected and vital areas barrier integrity.

f. Licensee NRC Notifications

- (1) On November 18, 1992 the licensee made a one hour notification to the NRC as required by 10 CFR 50.72 with regard to potential operation of both units outside of their design basis when it was determined that both trains of the Control Room Emergency Ventilation System (CREVS) were inoperable. The CREVS was considered to be inoperable due to the inability of each train to maintain a positive 0.125 inches water pressure gauge relative to all areas adjacent to the main control room. The problem appeared to be related to operation of air supply fans in the auxiliary building adjacent to the main control room. At the time of determination of the condition, TS LCO 3.0.3 was entered for both units. This issue is further discussed in paragraph 5.b.
- (2) On November 19, 1992, the licensee made a four hour non-emergency notification to the NRC as required by 10 CFR

50.72 with regard to a notification made to the FAA due to one light not being illuminated on the # 1 cooling tower.

- (3) On November 21, 1992 the licensee made a four hour notification to the NRC as required by 10 CFR 50.72 with regard to a notification made to the Tennessee Emergency Management Agency. The TEMA notification was made due to a spill of approximately 1/2 gallon of oil into the plant intake canal. The spill was caused by rain causing oil collection drums to overflow due to the rain.

Within the areas inspected, one apparent violation and one unresolved item were identified.

#### 4. Maintenance Inspections (62703 & 42700)

During the reporting period, the inspectors reviewed maintenance activities to assure compliance with the appropriate procedures and requirements. Inspection areas included the following:

- a. Early in the inspection period, the inspectors reviewed problems associated with 1-LCV-3-48, Unit 1 Loop 2 MFW Regulating Valve. After Unit 1 returned to power operation following the October 26 turbine/reactor trip, unit operators observed indications of abnormal valve response. On November 4, the licensee initially investigated the problem and a minor adjustment was made to the volume booster. This adjustment apparently did not affect the minor SG level oscillations; however, subsequently, the oscillations stopped. This was performed at approximately 60 percent power. With no further abnormal indications, power escalation continued to approximately 100 percent on November 5.

Later on November 5, operators noted a decreasing water level in SG number 2 in conjunction with feed flow lagging steam flow. Operators took manual control of 1-LCV-3-48 and the levels were stabilized. Local investigations of the valve indicated that air was leaking at the bottom of the actuator spring case. The licensee reviewed the observations with the valve vendor and concluded that the air leak was caused by a degraded O-ring between the shaft and bushing. This condition was evaluated by the licensee as not to affect the ability of the valve to close in the required response time upon receipt of a FW isolation signal.

The licensee then developed proposed corrective maintenance for the valve which included evaluating/replacing O-rings, the volume booster, and the air regulator. However, performance of the activities required the valve to be declared inoperable in Mode 1, which was contrary to the requirements of TS LCO 3.3.2.1 FW isolation requirements. Subsequently, on November 9, 1992, the licensee formally requested a Waiver of Compliance for LCO 3.3.2.1, to effect the necessary repairs to the valve while



remaining in Mode 1, at approximately 15 percent power. After discussions between the licensee and NRC Headquarters and Region II personnel, the request was verbally approved on November 9. The approval was based on the intended TS feedwater isolation capability being maintained due to the manual FW isolation valve and its associated bypass valve being closed during the maintenance activities. The NRC approval was formally documented in a letter to the licensee dated November 12, 1992.

The inspectors reviewed the subsequent work on the valve which was performed on November 10 per WR C126425 and WO 92-13254. In order that FW flow to the affected SG would be provided by the Loop 2 bypass regulating valve, reactor power was reduced to approximately 15 percent. The inspector verified proper tagout of the valve for the activities. Performance of the work was accomplished via applicable portions of O-MI-MVV-003-001.0, FISHER MAIN FEEDWATER REGULATING VALVE MAINTENANCE, Revision 0. Inspection of the valve operator internals indicated the valve had a worn bushing on which the O-rings (2) are held in place. The licensee discussed the problem with the valve manufacturer onsite. The probable cause of the worn bushing was determined to be a minor distortion (bent or misaligned) of the two piece operator stem. The valve vendor recommended that once the bushing, O-rings, and two filter regulators were replaced, it would be acceptable to continue with the valve as is, until the next refueling outage. The worn bushing and O-ring degradation appeared to have occurred over a long period of time and was located on one side of the bushing. Inspection of the O-rings, after removal, revealed they were in good condition. The inspectors reviewed the PM for the MFW regulating valves with the system engineer. It was determined that the bushing was not part of the PM program for the valves. The O-rings were changed out in 1988 for both the Unit 1 and Unit 2 valves. Other PMs which were incorporated for the valves included routine lubrication, packing replacement, and calibration. The inspectors verified the initiation of WR C048344 to track followup inspection on the subject valve stem problem and inspection of the other MFW regulating valves for similar degradation. The inspectors concluded that the valve problems were not related to a recent water intrusion event in the air supply system (detailed in IR 327, 328/92-34) and that the maintenance activity was performed in a satisfactory manner.

- b. During the inspection period, the inspectors reviewed work regarding WR C128339. The WR was initiated due to a air line fitting leaking on 1-LCV-6-105A, # 3 heater drain tank bypass valve. A failure was identified on a 90 degree fitting on top of the actuator which supplied a regulator. The inspectors reviewed the work activities and concluded that the repairs made to the valve were adequate. During the work review, the inspectors became aware of other previous problems involving the air lines and connections for this type of secondary plant valve. The noted

problems have been occurring predominantly on the secondary (non-safety) portions of the plant. The inspectors performed a maintenance history review of 1-LCV-6-105A and other similar valves. The inspectors identified numerous previous air leakage problems due to air line and fitting breakage since the valves were installed. The inspectors discussed the possible root causes of the failures with the Operation Superintendent. He indicated a majority of the air leaks developed between the copper air line pipe solder joint connections; however, he also informed the inspectors that some long term improvements have been ongoing in this area. The inspectors then contacted engineering and technical support personnel in charge of long term improvements for the air system problems and discussed the current status. An identification of critical components was previously performed and WR's were written to install stainless steel flexible hose on the components identified as most vulnerable. Upgrades have already been accomplished on the Unit 2 FW regulating valves, both units steam dump valves, and others. The licensee indicated that improved reliability has already been observed. The remainder of the initially identified upgrades are currently scheduled for the Cycle 6 refueling outage for each unit. The inspectors concluded that the licensee was taking appropriate actions to upgrade the critical components initially identified.

Within the areas inspected, no violations were identified.

#### 5. Surveillance Inspections (61726 & 42700)

During the reporting period, the inspectors reviewed various surveillance activities to assure compliance with the appropriate procedures and requirements. The inspection included a review of the following procedures and observation of surveillances:

- a. The inspectors attended a morning status meeting on November 5, 1992, where problems with SIP 2B-B testing conducted on November 4, 1992, were being discussed. Unit 2 was operating at approximately rated power. During the surveillance, the licensee observed an increase in PRT level. The licensee determined the increase could be attributed to leakage through one or more of three relief valves. At the time of the initial surveillance, operability evaluations were made, based on leakage rates and TS required ECCS flow rates. The licensee developed plans to re-perform the testing with each of the relief valves lines instrumented with ultrasonics to identify which valve(s) were leaking. In parallel, planning was being conducted to prepare for possible valve(s) replacement. The licensee determined that a leaking relief valve on either of the hot legs would require isolation of the cross-connect valve to perform maintenance, making one SI pump inoperable. A leaking relief valve on the common cold leg would require both trains to be inoperable if maintenance were performed. In addition to the above planning

activities, the 2B-B EDG was inoperable as a result of problems experienced during periodic maintenance and testing.

The licensee was concerned that retesting would result or verify a leakage rate of greater than 26 gpm. A leakage rate of this value of greater would result in not satisfying TS ECCS flow requirements. If leakage was greater than 26 gpm, the condition would result in entry into TS LCO 3.0.3. If leakage was less than 26 gpm, the licensee planned to tag-out the SI system to support the replacement or maintenance of the leaking relief valve within the appropriate 72 hour TS ACTION Statement. The licensee's planned activities were focused on getting the plant out of the degraded condition as quickly as possible, and may have involved making both trains of SI unavailable while continuing to operate in MODE 1. Upon licensee senior management review of the action plan, it was determined that the appropriate SSP-7.1, WORK CONTROL, appendix had not been completed. The document, Appendix D, SCHEDULING AND PERFORMING LIMITING CONDITIONS FOR OPERATION (LCO)-PLANNED MAINTENANCE DURING PLANT OPERATIONS, would have required that proper evaluations by senior licensee management evaluation and NRC notification would have been accomplished prior to the maintenance activity.

The inspectors expressed several concerns to licensee supervision and management associated with the above scenario. Entry into TS LCO 3.0.3 involuntarily or voluntarily and then tagging out both trains of safety injection system to accomplish a maintenance activity would eliminate all capability of the safety system. The suspected condition of the leaking valves, worse case, would only result in system degradation and not system unavailability. Thus, the plant was operating at rated power, with the 2B-B EDG inoperable, and had developed plans to take a safety system out of service to correct a potential problem without a proper safety evaluation of the plan. The inspectors expressed concern that proposals to enter TS LCO 3.0.3 to perform such activities were very close to being implemented without proper upper management review and discussion with the NRC.

The inspector's concerns were discussed with senior plant management, who concurred with the rationale concerning proper entry into TS LCO 3.0.3. In response to the inspectors concerns, a memorandum was issued by the plant manager to maintenance, technical support, operations, and work control supervisors, describing the above event. The memo identified weaknesses in the plant's initial rationale, and lessons learned. In addition, the memo also attached Appendix D to SSP-7.1 to ensure that appropriate plant personnel were made aware of the requirements for its use.

The inspectors concluded that licensee personnel, including senior operations and technical support personnel, were not cognizant of the requirements of SSP-7.1. In addition, the safety benefit

rationale behind a potential maintenance activity while in TS LCO 3.0.3 had not been fully thought out. These concerns are identified as a weakness with regard to licensee personnel and lower management sensitivity to evaluation of corrective action for safety related systems, when the system is potentially inoperable or degraded but still available in MODES requiring the system to be operable.

The licensee was continuing with their evaluation of the cause for the increase in PRT level while running the 2B-B SI pump for testing. The inspectors will continue to monitor the licensee's activities in this area.

- b. On November 18, 1992, after the morning plan of the day meeting, the inspectors were informed of a condition where train B of the Control Room Emergency Ventilation System had been declared inoperable after it failed to pass the acceptance criteria of surveillance instruction O-SI-SFT-031-144.B, CONTROL BUILDING EMERGENCY AIR CLEANUP SYSTEM FILTER TRAIN B TEST, Rev. 0. Both units had entered TS LCO 3.7.7 ACTION statement on November 16, at 10:06 pm. Licensee engineering personnel stated that the test had failed due to identification of air leakage through a door seal into the control room from the electrical shutdown board room areas in the auxiliary building. The inspectors initially questioned the licensee with regard to the acceptance criteria for the test and were informed that the test passed the TS surveillance acceptance criteria; however, the control room inleakage resulted in the test failure.

The inspectors then reviewed TS LCO 3.7.7 and SURVEILLANCE REQUIREMENTS 4.7.7. The TS LCO requires that two independent control room emergency ventilation systems shall be OPERABLE in MODES 1, 2, 3, and 4. The TS ACTION states that with one control room emergency ventilation system inoperable, restore the inoperable system to operable status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Surveillance requirement 4.7.7.e.3 requires that each control room emergency ventilation system shall be demonstrated OPERABLE at least once per 18 months by verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch water Gauge relative to the outside atmosphere at a system flowrate of 4000 cfm + or - 10% (> or = 3000 cfm recirculation and < or = 1000 cfm fresh air).

After reviewing TS 3.7.7 and 4.7.7 requirements, the inspectors again met with engineering and licensing personnel. The inspectors informed licensee personnel that they did not consider that the surveillance instructions used to conduct testing had adequate acceptance criteria in that the instruction did not test for all areas outside the control room envelope and bounding the control room to insure that the control room pressure was greater than or equal to 1/8 inch water gauge. Licensee personnel



disagreed with the inspectors with regard to the test requirement and stated that they had never tested to this criterion before. The inspectors restated their position and requested that licensee personnel in the meeting review their position with management and notify the inspectors of the management position as soon as possible. The inspectors also requested that performance copies of O-SI-SFT-031-144.A and B which had been accomplished over the past two test periods be provided for review. Technical support management, who attended the latter part of the meeting, understood the inspectors concerns and directed licensee personnel to review the issue and provide feedback.

A review of NRC Information Notice IN 86-76 was conducted. During the review it was noted in paragraph 2 of Attachment 1 that "the purpose of maintaining a positive pressure in the control room during emergency operation is to ensure any leakage is out of (rather than into) the control room. Several licensees show compliance with their technical specifications by comparing control room pressure to the outside atmospheric pressure. Because areas adjacent to the control room envelope (CRE) can be at higher-than-atmospheric pressure, a relative negative control room pressure may exist across the CRE boundary, providing a motive force for inleakage." "Clearly it is appropriate to measure the differential pressure relative to the highest pressure adjacent to the CRE boundary or ventilation system."

Approximately 8 hours after the inspectors request, the licensee declared both trains of the control room emergency ventilation system inoperable and entered TS LCO 3.0.3. A one hour call to the NRC was made as discussed in paragraph 3.f (1). Immediate corrective actions over the next few hours included securing and tagging out the air supply fans which were causing the positive pressure in the auxiliary building adjacent to the control room. The licensee also conducted a special performance of O-SI-SFT-031-144.A for the A train of the control room emergency ventilation system after plans were made to test for proper acceptance criteria. Satisfactory completion of this test in conjunction with an engineering evaluation allowed for exit of TS LCO 3.0.3 on November 18 at 9:58 pm.

The inspectors conducted a review of the performance copies of O-SI-SFT-031-144.A, CONTROL BUILDING EMERGENCY AIR CLEANUP SYSTEM FILTER TRAIN A TEST, Rev. 0 which were conducted on March 18, 1991 and November 9, 1992. In the March 18, 1991 test, the recorded value for the control room pressure reading was 0.29 inches water Gauge. In the November 9, 1992 test, the recorded value for the control room pressure reading was 0.41 inches water Gauge. The inspectors also conducted a review of the performance copies of O-SI-SFT-031-144.B, CONTROL BUILDING EMERGENCY AIR CLEANUP SYSTEM FILTER TRAIN B TEST, Rev. 0 which were conducted on March 14, 1991 and November 17, 1992. In the March 14, 1991 test, the recorded value for the control room pressure reading was 0.3 inches water



Gauge. In the November 16, 1992 test, the recorded value for the control room pressure reading was 0.28 inches water Gauge. The inspectors noted that the B train test conducted on November 16, 1992 was the test in which air leakage through a door seal into the control room from the electrical shutdown board room areas in the auxiliary building had occurred. The licensee had concluded that the shutdown board room areas of the auxiliary building were pressurized to approximately 0.30 inches water Gauge, relative to the outside atmospheric pressure, when the air supply fans were running. Based on the inspectors review of the licensee's performance copies of surveillance instructions for testing of the control room emergency ventilation systems over the past two years, the inspectors concluded that both control room emergency ventilation systems were being evaluated by procedures which measured the outside atmospheric pressure relative to the control room pressure vice relative to the highest pressure adjacent to the control room. This practice could allow inleakage into the control room during emergency operation. This item will remain unresolved pending a review of the licensing basis for the plant by NRR and is identified as URI(327, 328/92-35-03).

After licensee management determined that the control room emergency ventilation systems were not being tested as required by TS on November 18, 1992 the inspectors noted that the licensee initiated an incident investigation to review the issue. In addition, immediate actions were instituted to demonstrate operability of the A train control room emergency ventilation system after securing of the auxiliary building electrical board rooms' air supply fans. Also, on November 21, 1992 the B train was tested in accordance with a revised test instruction and declared operable. The inspectors reviewed both completed test instructions for the A train and B train periodic tests which were accomplished on November 18 and 21, 1992 respectively. The inspectors consider that the testing verified system operability in accordance with TS Surveillance Requirements 4.7.7.e.3.

The inspectors also questioned the licensee as to why the plant design did not include a provision to secure the auxiliary building air supply fans on signals other than safety injection which cause the control room emergency ventilation systems to start. The licensee had already determined that the auxiliary building supply fans were automatically secured on a containment isolation signal associated with a safety injection initiation. This potential plant design deficiency was being reviewed by the licensee when the inspection period ended and is identified as IFI (327,328/92-35-04).

The inspectors observed extensive licensee senior management overview of this issue after identification of the problem. During discussions with senior management, the inspectors sensed a positive safety attitude with the way the problem was being evaluated.

NRC Inspection Report 327,328/92-31 documented the inspector's review of licensee activities concerning the EDG 2B-B failure on October 7, 1992. On November 4, 1992, EDG 2B-B experienced oscillations in load of approximately 200 KW, which were similar (although not as pronounced) to that during the October 7 test. The inspectors held discussions with licensee personnel concerning EDG 2B-B performance during the past several months, and EDG testing in general. The following summary of recent EDG problems were discussed:

- On March 16, 1992, EDG 2B-B experienced a load swing during the performance of 2-SI-OPS-082-007.B, ELECTRICAL POWER DISTRIBUTION, DIESEL GENERATOR 2B-B, Rev. 2. The licensee initiated WR C079167 to investigate the problem, and also generated SNQPER 920079. The load swing did not re-surface during troubleshooting and retesting. The licensee's troubleshooting did not identify a specific cause for the load swing, but suspected that the problem was associated with control circuitry which was bypassed during the emergency mode of EDG operation.
- On September 9, 1992 EDG 2B-B experienced load swings during the conduct of monthly EDG testing. The WR C126984, initiated by the system engineer, indicated that the KW load dropped from approximately 4500 KW to less than 4000 KW. The operator raised the load back to approximately 4500 KW, and moments later the load moved to greater than 5000 KW. The operator reduced load back to 4400 KW, and completed the test. Troubleshooting was again performed, and no specific problems were identified. The licensee declared the EDG operable based on similar reasoning as the previous EDG 2B-B problem; i.e. the speed controller portion of the control circuit would not be effected during an emergency start.
- On October 7, 1992 as the control room operators began slowly increasing load on the 2B-B EDG, several operating parameters began to oscillate, including frequency, VARs, and current. Two-hundred to 400 KW swings occurred at approximately 2000 KW such that the generator output was unstable. The control room operators shutdown the EDG and troubleshooting of the problem began. It appeared that the oscillations were due to a loose contact in the speed controller potentiometer. Work request C126984 (from last month's EDG problem) was used to repair the EDG, post maintenance testing was completed, and the EDG was returned to service on October 8, 1992. However, discussions with the system engineer indicated that the EDG governor was still operating 'rough', though this condition was determined by the licensee to not impair the safety function. The licensee classified this EDG test as a valid test and failure. The licensee initiated SQPER920316 to

review problems associated with EDG 2B-B. The licensee's planned activities included obtaining the services of a vendor technician for the governor. In addition, the licensee had initially intended to connect a recorder to signal points on the electric governor for troubleshooting purposes during two future EDG tests. However, the licensee later decided to delete the activities associated with recording governor signal points. The inspectors' discussions with the system engineer indicated he expressed the opinion at the time of the performance of WR C126984 that these activities may not fully resolve the oscillation problem, based on his past experience.

- On November 4, 1992 EDG 2B-B experienced oscillations in load of approximately 200 KW, which were similar (although not as pronounced) to that during the October 7 test. The licensee discussed the problem with the vendor, who recommended troubleshooting involving recording of several parameters. The licensee determined that the amplifier gain card needed replacement. After replacement, the gain required adjustment, which the licensee accomplished. However, problems still existed, and the licensee determined the gain needed to be adjusted 'cold'. This adjustment was made, the EDG post-maintenance test successfully completed, and EDG 2B-B was declared operable on November 6.

Discussions with the system engineer on November 17, 1992 indicated that the electric governor continued to operate 'rough'. The licensee classified this test as an invalid failure, due to the fact that the EDG was not loaded to greater than 50%, and the problems would not have prevented the EDG from performing its intended safety function. The inspectors determined that this classification was consistent with Regulatory Guide 1.108. The inspectors concluded that licensee technical evaluations concerning EDG 2B-B load oscillation problems during the past eight months had not been fully effective.

The inspectors and plant management noted that during the EDG problems around November 4, 1992 the licensee exhausted approximately 68 hours out of an available 72 hour TS LCO ACTION time for EDGs during the problems on November 4-6.

The inspectors also reviewed the licensee's methodology for performing monthly EDG testing. Each month, the licensee performs SI-102 M/M, DIESEL GENERATOR MECHANICAL MONTHLY INSPECTIONS, Rev. 7. This procedure allows visual checks of various EDG parameters and components. After initial checks are completed, the procedure requests that Operations start and load the EDG to 4000 KW. Additional visual checks are performed, then the EDG by procedure is shutdown by Operations, unless other Maintenance activities would require the EDG to continue to operate. The licensee considers other Maintenance activities to be the performance of

SI-7 (2-SI-OPS-082-007.B, ELECTRICAL POWER DISTRIBUTION, DIESEL GENERATOR 2B-B, Rev. 2). However, the performance of SI-7 is not clear, in that procedure SI-102 M/M could also require the EDG to be shutdown by Operations, then restarted to perform SI-7. Discussions with licensee personnel indicated that the reason SI-7 is performed concurrently with SI-102 M/M is to reduce the number of starts on the EDG. The methodology of minimizing the number of EDG starts is consistent with current NRC and industry guidance. The inspectors expressed concern regarding EDG testing methodology, in that problems identified during the performance of SI-102 M/M may not be reflected or evaluated by the licensee as part of their determination of EDG testing frequency. The licensee agreed to review SI-102 M/M, and make changes as necessary to clearly define when SI-OPS-082-007.B is to be performed.

Within the areas inspected, one violation was identified.

#### 6. Evaluation of Licensee Self-Assessment Capability (40500)

During this inspection period, selected reviews were conducted of the licensee's ongoing self-assessment programs in order to evaluate the effectiveness of these programs. The inspectors specifically focused on several of the licensee's incident investigations during the inspection period.

- a. On November 13, 1992, the inspectors attended portions of the quarterly on-site Nuclear Safety Review Board (NSRB) meeting. Various site management personnel presented a status of current operational performance and a status of other agenda items to the board. These discussions were followed with board subcommittee discussions of a variety of subjects. From observations of these discussions, the inspectors concluded that the board was focused on improving plant safety and personnel performance.
- b. On November 20, 1992 inspectors from both the Sequoyah and Brown's Ferry Nuclear Plants visited the licensee's corporate offices to review NSRB personnel composition. The inspectors discussed the subject area with the NSRB chairman and reviewed documentation which identified the makeup of the NSRB for each plant. The inspectors noted that the number of outside nuclear advisors identified as members for each plant had been decreased to three. The inspectors reviewed the Sequoyah NSRB makeup and determined that the makeup was in accordance with TS 6.5.2.

The inspectors considered that the Sequoyah NSRB continued to be aggressive in probing plant problem areas and pressing plant management for appropriate corrective actions.

Within the areas inspected, no violations were identified.



7. Licensee Event Report Review (92700)

The inspectors reviewed the LER 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 328/92-11, Reactor Trip and Safety-Injection Actuation as a Result of an Inadvertent Radio Transmission in the Incore Instrument Room. The issue involved a Unit 2 reactor trip and safety injection from approximately full power due to an inadvertent low pressurizer pressure signal. The apparent cause of the low pressurizer pressure signal was an inadvertent radio transmission in the incore instrument room which affected the pressurizer pressure transmitters in the area. This event was discussed in inspection report 327, 328/92-27. The inspectors monitored the licensee's actions immediately after the trip and also reviewed their post trip report and corrective actions prior to unit restart. In addition, the inspectors noted that the licensee has modified several portable radios, which will only receive transmissions, that are used by operators in containment around sensitive equipment.

Within the areas inspected, no violations were identified.

8. Action on Previous Inspection Findings (92701, 92702)

- a. (Closed) VIO 327, 328/92-03-03, Failure to Follow the Requirements of AI-30. The violation involved two examples where operations personnel failed to follow the requirements of Administrative Instruction (AI) 30, Conduct of Operations, Revision 36. The inspectors verified completion of the corrective actions identified in the licensee's violation response. The first example involved the failure of operators to adequately consider the expected response to the shutting of reactor trip breakers as a portion of a planned reactor trip breaker (RTB) test. As a result, the breakers automatically tripped open due to the presence of a valid trip signal. The licensee determined the involved operators were properly trained on the RTB functions; however, the operator assumed that jumpers installed for the test bypassed the trip signals. In addition, the annunciator status was not properly verified or discussed among test personnel. Corrective actions for this example included procedure revisions to SI-93, REACTOR TRIP INSTRUMENTATION FUNCTIONAL TESTS CONDITIONAL 31 DAYS PRIOR TO STARTUP, to ensure that reactor trip signals have been cleared before test performance. The second example of the violation involved a failure to properly log unexpected annunciation during a test and initiate the appropriate procedure revisions for incorporation prior to the next performance. The inspectors reviewed O-PI-OPS-047-760.0, MAIN



TURBINE OVERSPEED AND OIL SYSTEM TESTS, Revision 3. The inspectors verified that the licensee incorporated changes which adequately identified the possible alarms which could annunciate during performance of the tests. The inspectors also verified that training on the issues was conducted with the appropriate personnel. The inspectors concluded that the corrective actions were adequately completed.

- b. (Closed) URI 327, 328/92-30-02, Possible Installation of Tags/Labels Contrary to SSP-6.56. The issue involved the installation of tags and labels on plant equipment which may not have been performed in accordance with SSP-6.56, LABELING AND IDENTIFICATION TAG REQUEST FORM PROGRAMS, Rev. 0. Section 10.8 of SSP-6.56 states that tags/labels will be installed by responsible plant personnel according to their expertise or job classification. For example, Operations personnel will install tags/labels on equipment or components such as valves, fuses, pumps, etc. In addition, SSP-6.56 requires second party verification. The procedure also states that the Labeling Coordinator will determine the responsible plant personnel that install tags, labels, signs, or placards.

As discussed in Inspection Report No. 50-327,328/92-30, the inspectors held discussions with the individuals involved. The chemistry technician stated that he did not feel comfortable hanging tags unless the AVO was present. Likewise, the AVO stated he did not feel comfortable with the process of using non-operator personnel to hang tags and labels, or the second party verification. The process of hanging tags involved the AVO as the second party verifier, and the other individuals as the primary installers of tags or labels. The AVO stated that on some occasions in which he did not feel comfortable with the location or identification of components to be tagged, he notified his manager. The manager then requested other groups with expertise in this type of equipment to hang these tags.

The inspectors also held discussions with the manager of the Maintenance Programs group, who indicated that he and the AVO had discussed with the other group personnel the requirements of SSP-6.56. The Maintenance Programs manager stated that the AVO, working in conjunction with the other individuals, satisfied the minimum qualification requirements of SSP-6.56.

The licensee initiated PER No. SQPER9220306 on September 22, 1992, to address this problem. As part of the PER evaluation, the licensee performed a sample check of labels installed to verify that the labels were hung in the proper plant locations. The licensee performed a 100% check of all labels installed, and identified that three labels were not installed properly. These labels were to be hung on three valves located on each Unit 1 Condensate Booster Pump, but were instead hung on valves on the Unit 2 Condensate Booster Pumps.

The licensee initiated an incident investigation (II-S-92-076) to investigate the above problem, along with two additional labeling problems. The II concluded the root cause of the mis-hung labels was inattention to detail and failure to meet the qualification requirements of procedure SSP-6.56. Management failed to validate minimum skills necessary to properly identify and locate components for labeling. Corrective actions included revising SSP-6.56 to give direction on how to safely remove labels from sensitive electrical panels, appropriate disciplinary actions, issuance of a site dispatch to convey the new SSP-6.56 guidelines to all plant personnel which addressed inattention to detail, and clarification of SSP-6.56 concerning qualifications for individuals who may hang tags/labels.

The licensee's II also identified that on one of the mis-hung tags located on a Unit 1 Condensate Booster Pump, the AUO was the primary installer and a chemistry technician was the second party verifier. A second party verification using the chemistry technician was not in accordance with step 3.2.3 of SSP-12.6, VERIFICATION PROGRAM, Rev. 2., in that this individual is required to be task qualified. The II had determined that the chemistry technician was not task qualified in accordance with SSP-12.6. Discussions with licensee personnel indicated that this problem can be attributed to the AUO's failure to insure that second party verification was properly performed. As stated above, part of the II's corrective action included appropriate disciplinary action.

The inspectors reviewed the above information, and concluded the licensee failed to follow program administrative requirements. Procedure SSP-6.56 was not followed in that the individuals installing tags/labels did not have the appropriate expertise or experience to properly accomplish the job. The inspectors agreed with the licensee that the selection of individuals such as the ones above to perform labeling would be acceptable generically, so long as the licensee ensured that these individuals possessed the appropriate expertise. However, this was not accomplished by the licensee, and resulted in the improper installation of three tags. In addition, licensee personnel did not follow procedure SSP-12.6, in that the chemistry technician used to perform second party verification for some of the labeling was not task qualified. Discussions with licensee management indicated that this was an isolated example.

Failure to follow the requirements of SSP-6.56, and failure to properly implement procedure SSP-12.6, will be identified as two examples of a violation of TS 6.8.1 (327,328/92-35-05), Failure to Follow Procedures in Violation of TS 6.8.1 During Equipment Labeling Activities. This violation is not subject to enforcement action because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section VII.B of the NRC Enforcement Policy.

Within the areas inspected, no violations were identified.

9. Cold Weather Protection (71714)

During the inspection period, the inspectors reviewed the licensee's program for implementation of protective measures for extreme cold weather. The licensee's freeze protection program is implemented via several procedures. The primary being O-PI-OPS-000-006.0, FREEZE PROTECTION, Revision 0. The inspector's review was performed, in part, due to previous problems identified in this area by the inspectors. The problems included conditions where test deficiencies, identified during the performance of freeze protection procedures, were not being corrected in a timely manner and were not receiving adequate priority to ensure against freezing. In addition, the previous general freeze protection procedure, GOI 6H, FREEZE PROTECTION, was noted as being organized such that an adequate performance could not be accomplished in the weekly periodicity. Further deficiencies were discussed in NRC Inspection Reports 327, 328/90-40 and 91-26. The licensee was also tracking several of these problems via a QA CAQR.

Subsequently, the majority of the freeze protection procedures were revised after the 1991 - 1992 cold weather season due to past identified problems. Procedure changes were incorporated to better coordinate and simplify the performances of cold weather preparations. Procedure reviews conducted included the following:

O-PI-OPS-000-006.0, FREEZE PROTECTION, Revision 0.

O-PI-MIN-000-706.0, VITAL INSTRUMENTATION SENSE LINE INSULATION INSPECTION, Revision 0.

M&AI-27, FREEZE PROTECTION, Revision 0.

The inspectors reviewed performance of the revised procedures and concluded that although initial performances of the PIs were not always fully accomplished, by the time where the potential for freezing occurred, the performances of the weekly and monthly procedural verification of freeze protection measures were being accomplished in a timely manner. Performance of the M&AI also appeared to be acceptable. This procedure installs compensatory freeze protection for the main steam valve vaults. The inspectors noted that shift SOSs were aware of the vulnerability of all the compensatory measures taken and exhibited appropriate attention to maintain the measures in place. The inspectors did note that the new procedures contained some administrative errors which were identified during the initial performances; however, these errors did not result in the procedure being inadequate. The inspectors discussed these issues with the freeze protection coordinator who stated that appropriate procedural changes would be incorporated to correct the identified deficiencies. The inspectors also verified that critical components, such as RWST and FW transmitters, which were vulnerable to

freezing, were properly protected during the initial performances of the freeze protection program.

The inspectors noted improvements which included the monitoring of freeze protection items (outstanding deficiencies) in the daily turnover process. As of the end of the inspection period, the licensee had reduced the identified freeze protection deficiencies to 12. The inspectors noted that the remaining items were appropriately prioritized and that the overall work off of the identified freeze protection items was good. The inspectors concluded that the licensee was adequately prepared for freezing weather. The licensee also appeared to be adequately addressing the significant work performance and procedural problems of the two previous cold weather seasons. The inspectors will continue to monitor the implementation of the freeze protection program during subsequent inspections.

#### 10. Exit Interview

The inspection scope and results were summarized on November 30, 1992, 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 material was not reviewed during the inspection period. Dissenting comments were not received from the licensee.

<u>Item Number</u>	<u>Description and Reference</u>
VIO 327,328/92-35-01	Apparent Violation of 10 CFR 50.9 for Falsification of Firewatch Records (paragraph 2.b).
URI 327, 328/92-35-02	Review of Licensee Documentation of Fire Watch Rounds (paragraph 2.b)
URI 327,328/92-35-03	Inadequate TS Surveillance Testing Procedures Concerning the Control Room Emergency Ventilation Systems (paragraph 5.b).
IFI 327,328/92-35-04	Potential design deficiency for auxiliary building fans (paragraph 5.b)
NCV 327,328/92-35-05	Failure to Follow TS 6.8.1 During Labeling Activities (paragraph 8.b).

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

Licensee management was informed of the items closed in paragraphs 7 and 8.

## 11. List of Acronyms and Initialisms

AI	-	Administrative Instruction
AUO	-	Auxiliary Unit Operator
CAQR	-	Condition Adverse to Quality Report
CFR	-	Code of Federal Regulations
CREVS	-	Control Room Emergency Ventilation System
DRP	-	Division of Reactor Projects
EDG	-	Emergency Diesel Generator
ERCW	-	Essential Raw Cooling Water
ESF	-	Engineered Safety Feature
FW	-	Feedwater
GPM	-	Gallons per Minute
IFI	-	Inspection Follow-up Item
KV	-	Kilovolt
LCO	-	Limiting Condition for Operation
LER	-	Licensee Event Report
LOCA	-	Loss of Coolant Accident
NRC	-	Nuclear Regulatory Commission
NRR	-	Nuclear Reactor Regulation
PER	-	Problem Evaluation Report
PI	-	Periodic Instruction
PRT	-	Pressurizer Relief Tank
QA	-	Quality Assurance
RCS	-	Reactor Coolant System
RWST	-	Refueling Water Storage Tank
RWP	-	Radiation Work Permit
SG	-	Steam Generator
SI	-	Surveillance Instruction
SIP	-	Safety Injection Pump
SOS	-	Shift Operating Supervisor
SRO	-	Senior Reactor Operator
SSP	-	Site Standard Practice
TS	-	Technical Specifications
TVA	-	Tennessee Valley Authority
URI	-	Unresolved Item
WR	-	Work Request