



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

Report Nos.: 50-327/90-34 and 50-328/90-34

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: October 6, 1990 - November, 5, 1990

Lead Inspector: *P. Harmon*
P. Harmon, Senior Resident Inspector

11/6/90
Date Signed

Inspectors: Scott Shaeffer, Resident Inspector

Approved by: *W. S. Little*
W. S. Little, Chief, Project Section I
TVA Projects

11/6/90
Date Signed

SUMMARY

Scope:

This announced inspection involved inspection effort by the Resident Inspectors in the area of operational safety verification including control room observations, operations performance, system lineups, radiation protection, safeguards, and conditions adverse to quality. Other areas inspected included surveillance testing observations, maintenance observations, review of previous inspection findings, follow-up of events, review of licensee identified items, and review of inspector follow-up items.

Results:

One violation and one apparent violation were identified. The violation detailed in Paragraph 2.d., involved the presence of a large amount of combustible material left stacked in the auxiliary building in violation of fire protection requirements. The apparent violation, detailed in Paragraph 6, is a repetitive similar violation which involved lack of control of overtime. The repetitive similar violation is considered significant in that corrective actions for previous violations have proven inadequate to prevent recurrence, and is under consideration for escalated enforcement.

One Non-cited violation was identified in Paragraph 2.e., concerning missing contaminated area postings for the auxiliary boiler.

One unresolved item was identified in Paragraph 8.c., concerning a lack of proper selective coordination between fuses and breakers separating vital and non-vital power supplies.

No deviations, or inspector follow-up items were identified.

During the inspection period Unit 1 was shut down to repair check valves in the main steam lines. Three check valve disks were found separated from the valves' disk posts. An Augmented Inspection Team performed an inspection into the circumstances of the check valve failures, remedial actions by the licensee, and other details of the event. Results of that inspection were documented in NRC Inspection Report 50-327/328-90-36.

The areas of Operations, Maintenance, and Surveillance were adequate and fully capable to support current plant operations. The observed activities of the control room operators were professional and well executed.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Bynum, Vice President, Nuclear Power Production
- *J. Wilson, Site Vice President
- W. Byrd, Manager, Project Controls/Financial Officer
- *C. Vondra, Plant Manager
- R. Beecken, Maintenance Manager
- L. Bryant, Work Control Superintendent
- *M. Cooper, Site Licensing Manager
- J. Gates, Technical Support Manager
- *G. Hipp, Licensing Engineer
- W. Lagergren, Jr., Operations Manager
- M. Lorek, Operations Superintendent
- R. Lumpkin, Site Quality Manager
- *R. Proffitt, Compliance Licensing Manager
- *R. Rogers, Technical Support Program Manager
- *M. Sullivan, Radiological Control Manager
- *P. Trudel, Project Engineer
- R. Thompson, Licensing Engineer
- C. Whittemore, Licensing Engineer

NRC Employees

- *W. S. Little, Chief, Project Section 1

*Attended exit interview

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

2. Operational Safety Verification (71707)

a. Control Room Observations

The inspectors conducted discussions with control room operators, verified that proper control room staffing was maintained, verified that access to the control room was properly controlled, and that operator attentiveness was commensurate with the plant configuration and plant activities in progress, and with on-going control room operations. The operators were observed adhering to appropriate, approved procedures, including Emergency Operating Procedures, for the on-going activities. The inspectors observed upper management in the control room on a number of occasions.

The inspector verified that the licensee was operating the plant in a normal plant configuration as required by TS and when abnormal conditions existed, that the operators were complying with the appropriate LCO action statements. The inspector verified that RCS leak rate calculations were performed and that leakage rates were within the TS limits.

The inspectors observed instrumentation and recorder traces for abnormalities and verified the status of selected control room annunciators to ensure that control room operators understood the status of the plant. Panel indications were reviewed for the nuclear instruments, the emergency power sources, the safety parameter display system and the radiation monitors to ensure operability and operation within TS limits.

No violations or deviations were identified.

b. Control Room Logs

The inspectors observed control room operations and reviewed applicable logs including the shift logs, operating orders, night order book, clearance hold order book, and configuration log to obtain information concerning operating trends and activities. The TACF log was reviewed to verify that the use of jumpers and lifted leads causing equipment to be inoperable was clearly noted and understood. The licensee is actively pursuing correction to conditions requiring TACFs. No issues were identified with these specific logs.

Plant secondary chemistry reports were reviewed. The inspector verified that primary plant chemistry was within TS limits.

The implementation of the licensee's sampling program was observed. Plant specific monitoring systems including seismic, meteorological and fire detection indications were reviewed for operability. A review of surveillance records and tagout logs was performed to confirm the operability of the RPS.

No violations or deviations were identified.

c. ECCS System Alignment

The inspectors walked down accessible portions of the Unit 1 Containment Spray System to verify operability, flow path, heat sink, water supply, power supply, and proper valve and breaker alignment.

In addition, the inspectors verified that a selected portion of the containment isolation lineup was correct.

The inspectors implemented a system status checklist derived from the Sequoyah Probabilistic Risk Assessment. The checklist provides a method for assuring the proper lineup of the principal systems required to prevent or mitigate the Design Basis Accidents based on the safety significance of the individual components. This checklist will be completed by the resident staff on a weekly basis.

No violations or deviations or were identified.

d. Plant Tours

Tours of the diesel generator, auxiliary, control, and turbine buildings, and exterior areas were conducted to observe plant equipment conditions, potential fire hazards, control of ignition sources, fluid leaks, excessive vibrations, missile hazards and plant housekeeping and cleanliness conditions. The plant was observed to be clean and in adequate condition. The inspectors verified that maintenance work orders had been submitted as required and that followup activities and prioritization of work was accomplished by the licensee.

The inspector visually inspected the major components for leakage, proper lubrication, cooling water supply, and any general condition that might prevent fulfilling their functional requirements.

The inspector observed shift turnovers and determined that necessary information concerning the plant systems status was addressed.

On October 11, 1990, a tour of the 669 elevation of the auxiliary building was made by the inspector. A large quantity of what appeared to be untreated wood (non fire rated) was discovered just outside the Unit 1 LAA safety injection pump room. The inspector questioned a roving fire watch in the area about the wood. The watch stated that the wood had been there for some time and went on with his appointed rounds. The wood appeared to be the remnants of a shipping crate and a large mounting skid. The approximate amount of wood was four, five by ten foot sheets of one inch plywood, one five by five foot section of the same material, and a mounting skid consisting of approximately six, four foot sections of eight by ten inch timbers. No documentation was attached to the wood.

The inspector informed the SOS in the CR of the situation and then contacted the Fire Brigade Leader. This individual informed the inspector that he was not aware of any transient fire load permit outstanding on the subject wood and that it should have been removed. The wood was identified as the shipping crate and skid for a recently refurbished Unit 2 RHR pump motor. The inspector asked to be informed when the wood was removed from the area. Approximately one hour later the inspector was notified of the removal.

Physical Security Instruction 13 (PHYSI-13), revision 55, Fire, attachments E and H, detail the controls imposed on transient fire loads in safety-related areas at Sequoyah.

Attachment E provides the written procedures for transient fire loading and Attachment H consists of a transient fire load permit form required to be used whenever wood of any type is brought into safety-related areas. Attachment E, Section 5.1.4 of PHYSI-13 states that equipment shipped in untreated combustible containers may be unpacked in safety-related areas only if the containers are immediately removed following unpacking. In addition, the containers shall not be left unattended for any period of time before, during, or after the unpacking process. Contrary to this, the wood identified by the inspector was left unattended from October 1 through October 11, 1990. This is a violation of TS 6.8.1 and is identified as 327,328/90-34-01, Failure to Control Transient Fire Loads in a Safety-related Area.

The inspector's review of the procedure with relation to the event determined that the following did not occur or appeared deficient as defined in the procedure:

- No transient fire load permit was issued for entry of the combustibles into the safety-related area. The work supervisor failed to initiate the required permit. The procedure appears to rely on the work supervisor to initiate a permit and lacks any positive control of combustibles entering safety-related areas.
- Section 5.1.4 of Attachment E provides a provision for untreated combustible packaging or containers to be unpacked in safety-related areas. It appeared to the inspector that when this section of the procedure would be referenced by a work supervisor for guidance, it may not be clear whether a transient fire load permit would be required at all.
- The required weekly plant inspections by Fire Operations to determine the adequacies of transient fire load controls did identify the problem on October 5, 1990. However, resolution of the issue did not occur.
- As per the inspector's discussions with the Fire Operations personnel, during the midnight outage turnover meeting on October 10, 1990, Operations /Maintenance was made aware of the wood prior to the inspector's identification. However, appropriate followup on the removal was again not made.
- No determinations for additional fire protection devices or fire watch coverage were performed. Per the procedure, a system of fire watch coverage shall be required in critical areas that contain medium or high fire loads.

The inspectors are concerned with the overall program implementation which allowed the unauthorized entry of the combustibles to occur. Of equal concern is the lack of followup in resolving the issue once it was identified by Fire Operations, Operations, and Maintenance personnel.

One violation was identified.

e. Radiation Protection

The inspectors observed HP practices and verified the implementation of radiation protection controls. On a regular basis, RWPs were reviewed and specific work activities were monitored to ensure the activities were being conducted in accordance with the applicable RWPs. Workers were observed for proper frisking upon exiting contaminated areas and the radiologically controlled area. Selected radiation protection instruments were verified operable and calibration frequencies were reviewed. The following RWPs were reviewed in detail:

90-2-20019, Remove/Replace Insulation in Support of U-2 Refueling

90-2-20011, U-2 Seal Table Work

On October 10, 1990, during a routine tour which included the turbine operating deck, the inspector identified a radiation area posting discrepancy. Due to an earlier contamination several years before, the auxiliary boiler manways were posted as a radiation area. It was discovered that two of the four lower manway radiation area signs were not posted as required. The inspector informed the turbine building operator of the discrepancy. The operator stated that the postings had always been on the manways since the earlier contamination event, however, he did not notice that the two located on the B auxiliary boiler were missing. When the inspector returned on October 11, 1990 the radiation area signs were posted as required.

Per discussions with the Radiological Controls Manager, the area was posted in order to require health physics to survey the inside of the boiler prior to personnel entry. Entry into the area would then be regulated by an RWP if contamination was found. The latest surveys taken indicated approximately 100 counts per minute with no smearable contamination. The licensee attempted to account for any entries into the manways while the radiation postings were down. No RWPs were written for entry into either of the auxiliary boiler manways. In addition to requiring a radiation survey prior to entering the manways, a confined space permit was required due to entering of the interior of the boiler. Due to the fact that none of these permits were issued during the time in which the radiation postings were missing, the licensee had reasonable assurance that unauthorized entry to the area did not occur. The licensee also determined that the area postings were attached to the manways with a plastic

yellow and magenta strip which tended to melt due to the heat of the boiler manway. More permanent mounting of the radiation area requirements was installed before the end of the inspection period. The missing postings are a violation of 10CFR 20.203 requirements, however, this NRC identified violation is not being cited because the criteria specified in section V.A. of the NRC Enforcement Policy were satisfied. This item is identified as NCV 327,328/90-34-02, RWP Area Entry Signs Not Installed on Auxiliary Boiler.

f. Safeguards Inspection

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 including: protected and vital area access controls; searching of personnel and packages; escorting of visitors; badge issuance and retrieval; and patrols and compensatory posts.

The inspectors observed protected area lighting, and protected and vital area barrier integrity. The inspectors verified interfaces between the security organization and both operations and maintenance. The Resident Inspectors interviewed individuals with security concerns, visited central alarm stations, verified protection of Safeguards Information, and verified onsite/offsite communication capabilities.

No violations or deviations were identified.

g. Conditions Adverse to Quality

The inspectors reviewed selected items to determine that the licensee's problem identification system as defined in Site Standard Practice SSP-3.2, Problem Reporting, Evaluation, and Corrective Action, was functioning. CAQR's were routinely reviewed for adequacy in addressing a problem or event. A sample of the following documents were reviewed for adequate handling:

- Work Requests
- Conditions Adverse to Quality, CAQRs
- Radiological Incident Reports
- Problem Evaluation Reports
- Correct-on-the-Spot Documents
- Licensee Event Reports

Of the items reviewed, each was found to have been identified by the licensee with immediate corrective action in place.

For those issues that required long term corrective action the licensee was making adequate progress.

No violations or deviations were identified.

No adverse trends were identified in the operational safety verification area. General conditions in the plant were adequate.

Radiation protection and security are adequate to continue two unit operations.

3. Surveillance Observations and Review (61726)

Licensee activities were directly observed/reviewed to ascertain that surveillance of safety-related systems and components was being conducted in accordance with TS requirements.

The inspectors verified that testing was performed in accordance with adequate procedures; test instrumentation was calibrated; LCOs were met; test results met acceptance criteria and were reviewed by personnel other than the individual directing the test; deficiencies were identified, as appropriate, and any deficiencies identified during the testing were properly reviewed and resolved by management personnel; and system restoration was adequate. For completed tests, the inspector verified that testing frequencies were met and tests were performed by qualified individuals.

SI 137.1, Reactor Coolant System Water Inventory, was observed/reviewed with no deficiencies identified.

No adverse trends were identified in the area of surveillance performance during this inspection period. The area of surveillance scheduling and management was observed to be adequate and improving.

No violations or deviations were identified.

4. Monthly Maintenance Observations and Review (62703)

Station maintenance activities on safety-related systems and components were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, industry codes and standards, and in conformance with T.S.

The following items were considered during this review: LCOs were met while components or systems were removed from service, redundant components were operable, approvals were obtained prior to initiating the work activities were accomplished using approved procedures and were inspected as applicable, procedures used were adequate to control the activity, troubleshooting activities were controlled and the repair records accurately reflected the activities, functional testing and/or calibrations were performed prior to returning components or systems to service, QC records were maintained, activities were accomplished by

qualified personnel, parts and materials used were properly certified, radiological controls were implemented, QC hold points were established where required and were observed, fire prevention controls were implemented, outside contractor force activities were controlled in accordance with the approved QA program, and housekeeping was actively pursued.

Work request WR C001694, Repair Betamax Personnel Contamination Monitor was reviewed.

No violations or deviations were identified.

5. Management Activities in Support of Plant Operations

TVA management activities were reviewed on a daily basis by the inspectors. The inspectors observed that planning, scheduling, work control and other management meetings were effective in controlling plant activities, with the exception of management and oversight of overtime discussed in section 6. First line supervisors appear to be knowledgeable and involved in the day to day activities of the plant. First line supervisor involvement in the field has been observed and appeared to be adequate. Management response to those plant activities and events that occurred during this inspection period appeared timely and effective. Examples of this management action were efforts to support the Augmented Inspection Team during the on-site inspection concerning the main steam line check valve failures.

6. Site Quality Assurance Activities in Support of Operations (71707)

The inspector discussed QA involvement in plant activities with the QA personnel and managers. The QA surveillance and audit schedules were reviewed and results were discussed with QA managers.

QA Monitoring Report OSQ-R-90-729, Overtime, was reviewed. This report detailed the monitoring of compliance with plant overtime requirements during the current Unit 2 Cycle 4 refueling outage. The report concluded that overtime requirements were still being violated and that management control of overtime was inadequate. The report listed specific instances where overtime limits imposed by Site Standard Practice SSP 32.53, Administration of Overtime, were exceeded. In addition, inadequate or missing documentation of exception requests for exceeding overtime limits were noted. In one instance, blanket approval for exceeding overtime limits for the entire outage was authorized for the Radiological Support section, contrary to the SSP requirement for specific authorization for each individual. Several instances were cited where justification for exceeding overtime limits consisted simply of a reference to the refueling outage. The report further states that conditions leading to a violation issued in NRC Inspection Report IR 90-22 were continuing. In short, the corrective actions taken by the licensee to control overtime have not been effective.

SSP 32.53 was written to ensure compliance with Generic Letter 82-12, and contains intent and limitations that parallel the Generic Letter. Both the GL and SSP 32.53 list the objectives and intent of controlling overtime and the imposed limits listed below:

Objective: Limit work hours for workers involved in safety-related activities to a standard 8 hour day, and 40 hours per week. Limit overtime in excess of the standard to necessary work during unusual circumstances or for extended outages such as refueling outages. When the circumstances require overtime, the workers' hours should not exceed 16 hours continuous, 24 hours in a 48 hour period, or 72 hours in a 7 day period. No routine use of overtime is allowed. In very unusual circumstances the limits for overtime may be exceeded with prior approval by the plant manager or his deputy. That prior approval for exceeding overtime limits requires documentation of the hours to be worked, the type of work to be accomplished, and the circumstances which force the limits to be exceeded.

The QA Monitoring report identified instances where overtime in excess of the limits was authorized without the required documentation of the circumstances dictating the excessive overtime, without prior approval to exceed the limits, without detailing the actual hours to be worked, and, in one case, with blanket approval for an entire section for the duration of the outage (blanket approval) justified only by the fact that a refueling outage was in progress. Management control of the plant's overtime was not evident to meet either the intent or the letter of the program. The requirement to receive prior management approval affords the opportunity for management to enforce the program. The Monitoring report concluded that the implementation of SSP 32.53 was inadequate, and management attention in this area was ineffective.

The inspectors reviewed the licensee's records of hours worked for the Operations section for weeks 10-08-90 through 10-14-90. The findings of this review are detailed below.

Average hours worked by section - 59 hours

Number of workers with overtime in excess of 72 hours in a 7 day period - 22 individuals

Inadequate documentation for exceeding limits - 22.

Number of instances where no documentation existed - 1.

Number of instances where authorization prepared after the fact - 5.

The principal contributor to the inadequacies for the 22 authorizations reviewed was the lack of documentation of the specific work to be performed during the overtime. SSP 32.53 requires in section 2.1.3 that the Overtime Limitation Exception Report, which is to be completed to document the rationale and justification for approval of overtime in excess of the limits, must ... "Specify in detail the exact work to be performed. For example, details would include a specific Work Plan number, applicable equipment identifier, type of work to be accomplished, and so forth".

The twenty-two employees included four who worked as much as 84,86,88 and 90 hours. None of the twenty-two Authorization forms contained the required details and in many cases the form was blank in all respects other than name of the individual and hours to be worked. The authorization forms were signed and approved by management including the Plant Manager. The twenty-two included licensed operators working the main control panel of the operating unit.

A review by the inspector of the overtime records for the weeks beginning September 10, 17 and 24, 1990, revealed numerous instances of radcon and operations personnel exceeding the 72 hours per 7 day limit without the required documentation.

In response to the previous similar Violation 327,328/90-22-01, TVA agreed that the violation had occurred, and concluded that Operations management had not exercised sufficient oversight and attention to the requirements of Administrative Instruction AI-30, Nuclear Plant Conduct of Operations, which controlled the administration of overtime. The control of overtime by AI-30 was not sufficient and TVA committed to incorporating the requirements into a new procedure. The transfer to a new procedure, SSP 32.53, was accomplished September 15, 1990. The inclusion of authorization forms for exceeding overtime limits was intended to provide the proper review and documentation for management to concur in the granting of relief to supervisors requesting such relief for individuals on a case by case basis. In the instances cited above, all levels of plant management demonstrated inadequate oversight of the intent and the letter of the requirements. Violation 50-327,328/90-22-01 concluded that the licensee had exceeded the overtime requirements of AI-30 on numerous occasions during the refueling outage for Unit 1, cycle 4 in the November 1989 to May 27, 1990 time frame. The inspection performed by the resident inspector during the current Unit 2, cycle 4 outage indicates that similar occasions of inadequate or missing authorizations for exceeding overtime limits have continued to occur. Repeat or similar violations indicate inadequate corrective action for the previous violations. In the Notice of Violation for IR 327,328/90-22, reference was made to the fact that Violation 327,328/90-22-01 was similar to Violation 327,328/87-78-01. NRC decided that since significant changes to plant management had occurred and the time between Violations 327,328-87-78-01 and 327,328/90-22-01 was very close to the two year criteria, escalated enforcement action would not be considered. TVA failed to adequately implement the corrective actions described in their response to Violation 327,328/90-22-01. As a result of this

inadequate corrective action, overtime in excess of limits specified in SSP 32.53 was performed by Operations personnel during the week of October 8, 1990 without the required documentation and authorization. This is an apparent Violation 50-327,328/90-34-03, Failure to Follow Procedures to Control and Document Overtime, and is under consideration for escalated enforcement.

After the inspector discussed the preliminary findings with the Plant Manager on October 26, 1990 the Plant Manager produced a memo distributed to his supervisors and managers. The memo described the QA monitoring report findings and required the individual managers to equalize overtime in their areas and placed an absolute limit of 88 working hours in a week regardless of the circumstances. The memo also acknowledged that the plant had not been adhering to the intent of SSP 32.53. The memo does not address the amount of overtime being worked. The outage began September 7, 1990 and plant management recognized the ongoing problems in the area of overtime control on October 17, 1990 the day of the QA report. The letter detailing the Plant Manager's response is dated October 25, 1990.

7. NRC Inspector Follow-up Items, Unresolved Items, Violations (92701, 92702)

(Closed) URI 327,328/90-06-02, Ice Condenser Flow Channel Inspection Discrepancies.

The issue involved several problems identified by the inspector concerning the performance of SI-106.3, Ice Condenser Bed (Unit 2). These issues were:

- The technicians performing the inspections were not aware of the total geometrical area that defined the flow channel.
- Questionable change in the acceptance criteria when blockages were at different elevations within the same flow channel.
- The technicians did not appear to be able to make consistent, conservative calls on the percentage of blockage noted in the channels.

In response to the above, the licensee reviewed SI-106.3 and instituted numerous changes to the procedure which included clarification of the criteria used for flow path inspection, clarification of instructions for obtaining basket weights and revised data sheets and sketches for consistency with the procedural instructions. The updated procedure also incorporated a detailed sketch of a typical flow path boundary in order to allow more consistent conservative calls by the test technicians on the percentage of blockage in the flow channels. Additionally, the licensee reanalyzed the data collected utilizing the unrevised procedure at the time of the inspector's concern. Upon review of the results, numerous

blockage percentages were more conservatively noted and reanalyzed for the total blockage calculation. The results indicated that the acceptance criteria of the test were still met. The Unit 1 procedure, SI-106.2 is currently scheduled to be revised in November 1990. The inspector believes that the procedure enhancements will allow more conservatism and consistency with the overall test results and had no further concerns at this time. This item is closed.

(Closed) VIO 327,328/89-25-04, Failure to Properly Classify Both Unit 2 EDG's Being Inoperable as a Notification of Unusual Event.

The violation involved the failure of the licensee to identify and enter a NOUE based on a condition where both unit-related EDGs were inoperable at the same time as a result of unscheduled maintenance or failure. The cause of the violation was personnel error in that the SOS failed to realize that the NOUE should have been declared. The SOS did not immediately consider entering the Radiological Emergency Plan because he was within a TS action statement and incorrectly assumed that the action statement was the only controlling document. Various contributing factors were identified by the licensee's root cause investigation. A review of EPIP-1, Emergency Plan Implementing Procedure, found that the unusual event classification process relied, in some cases, on memory of the SOS. For example, the loss of both EDGs on the same unit was not covered by an AOI or an EOI and consequently the SOS was not directed to enter the EPIP classification process. In order to improve this condition, the licensee has incorporated a revised format to EPIP-1, which added a tabular format to improve the method of emergency classifications and action levels. The incorporation of the tabular format was also prompted by the licensee's review of NRC Information Notice 89-072, Failure of Licensed Senior Reactor Operators to Classify Emergency Events Properly. Also, with the tabular addition, duplication and ambiguous wording was removed and the wording of events was clarified to allow easier identification and classification. The licensee also identified a training deficiency where not all unusual event classifications concerning normal TS events were routinely covered during simulator evaluations. The tabular classification format has been incorporated into the licensee's simulator training program and based on the inspector's review, should enhance the classification ability of the duty SOS. As a result of the violation, the licensee was requested to address several items involving the failure to appropriately classify and report events at Sequoyah.

The inspector reviewed the licensee's response, which included corrective actions for NRC Violation 327,328/88-33-01, Failure to Implement The REP In A Timely Manner. No problems with the corrective actions taken were identified. This item is closed.

(Closed) TMI Item II.E.4.2.5.B, Containment Isolation Dependability-Containment High Pressure Setpoint Modifications.

NRC IR 327,328/80-40, previously reviewed this issue. The containment pressure setpoint that initiates containment isolation was required by NUREG 0737 to be reduced to the minimum compatible with the normal operating conditions. The inspector reviewed the documentation which led to the closure of this issue. Per supplement No. 5 to the Safety Evaluation Report issued by the NRC in May of 1981, the original containment high pressure setpoint of 1.54 psig was adequate. It was determined that the reduction of this setpoint would provide no significant additional safety margin. In addition to this, TVA committed in a letter of May 26, 1981, from L. M. Mills to E. Adensam, to limit the opening of the containment purge valves to a maximum of 50 degrees to meet the requirements of the "Interim Position" of II.E.4.2 of NUREG-0737. The inspector verified the completion of the modifications to Units 1 and 2 on March 4, 1982 and June 15, 1981 respectively. This item is closed.

(Closed) TMI Item II.E.4.2.7, Containment Isolation Dependability-Radiation Signal on Purge Valves.

The issue involved NUREG-0737 guidance which required the containment purge valves to close promptly in order to reduce the amount of radiation released outside the containment following a release of radioactive materials to the containment. The inspector reviewed Sequoyah T.S. for the requirement for at least one radiation monitor that automatically closes the purge valves upon sensing high radiation in the containment be operable in Modes 1 thru 4. The requirement was found already addressed by SQN T.S. 3.3.2, functional unit 3.c of table 3.3.3, Engineered Safety Feature Activation Signal Instrumentation. The closure of this item was also documented previously by TVA's NUREG-0578 response to the NRC transmitted by the July 11, 1980, L. M. Mills to A. Schwencer letter. This item is closed.

(Closed) URI 327,328/89-27-04, Average Thermal Power. This URI involved the licensee's inadvertent operation of Unit 1 on November 29, 1989, with an eight hour thermal power average of 3411.3 MW, which was in excess of its rated thermal power of 3411 MW. This occurrence was identified as a potential repeat condition of a problem described in Violation 327, 328/89-15-03. The corrective actions for the violation put in place specific procedures for limiting and monitoring of average thermal power by the operator per GOI 5. The inspector reviewed the licensee's event report of the November 29, 1989 event and determined that the operations shift acted appropriately in reducing the turbine power once aware of the minor power oscillations which the inspector had identified. The eight hour average, although in excess of 3411 MW, was judged by the inspector to be within the bounds of normal fluctuations about a mean power level and did not approach the power level swings reached in the above referenced violation. This does not preclude the fact, however, that the operators were not readily cognizant of the power oscillations in question and increased attention to detail is warranted to monitor for power oscillations and other important plant parameters during power operation. This item is closed.

8. Event Follow-up (93702)

- a. On October 8, 1990, at 0721 hours, the licensee declared a Notice of Unusual Event (NOUE) due to commencing a forced shutdown of Unit 1 as required by TS. The shutdown was required because one of four main steam system check valves (1-MS-1-624) was found to have its disk separated from the valve per the results of radiographic examinations. The NOUE was subsequently exited upon entering mode 4 at 1534 hours. On October 9, with the unit in mode 4 after the shutdown, it was discovered during visual inspections that three of the four check valve discs had separated from the post/arm assemblies due to post failures. The investigations into the status of 1-MS-1-624 began during followup investigations into reports of a loud noise being heard in the vicinity of the east valve vault and main steam piping on September 21, 1990. One of the separated disks was found lodged in the check valve body against the seat. The two remaining separated disks were subsequently found lodged in separate main steam risers off the common mixing tee leading to the main turbine throttle valves in the turbine building.

A special NRC team inspection was conducted due to the check valve failures. The results of this inspection and additional review of the licensee's corrective actions are detailed in NRC Inspection Report 327, 328/90-36. Unit 1 was restarted on October 21, 1990 after repairs were effected on the check valves. The resident inspectors will follow the corrective actions, modifications, and monitoring related to this issue in subsequent inspection reports.

- b. On October 27, 1990, a non compliance was identified by the licensee with the requirements of Unit 2 License Condition 2.C.13.c, Appendix R. The issue was reported on both units in accordance with Unit 2 License Condition 2.H. Section III.G.1.a of 10 CFR 50 Appendix R, requires that one train of systems necessary to achieve and maintain hot shutdown conditions from either the main control room (MCR) or auxiliary control room (ACR) remain free from fire damage. It was discovered that seven ACR instrument loops required for remote shutdown capability were powered from a MCR power source. Therefore, a MCR fire could disable the affected instrumentation in both the MCR and ACR. The affected instrumentation loops were the following:

TI-68-1C	Loop 1 Reactor Coolant Hot Leg Temperature
TI-68-24C	Loop 2 Reactor Coolant Hot Leg Temperature
TI-68-43C	Loop 3 Reactor Coolant Hot Leg Temperature
TI-68-65C	Loop 4 Reactor Coolant Hot Leg Temperature
FI-62-137C	Emergency Boration Flow to Charging Pump Suction
TI-74-38C	Residual Heat Removal Hx "A" Outlet Temperature
TI-74-40C	Residual Heat Removal Hx "B" Outlet Temperature

Due to this condition, Unit 1 (in Mode 1) entered the action statement of TS 3.3.3.5 (remote shutdown instrumentation) on October 27, when the affected instruments were declared inoperable. The same TS had been entered previously for TI-68-1C on October 24, 1990. Unit 2 was in Mode 5 shutdown for the Cycle 5 refueling outage, and was not applicable to the TS action requirements. During the seven day LCO period allowed by TS 3.3.3.5, the power supplies for the affected instrumentation were modified to receive power from a supply unaffected by a MCR fire. The licensee did identify, as a mitigating circumstance, that the MCR was and will continue to be incorporated into the surveillance of hourly, roving fire watch patrols.

- c. On October 17, 1990, Unit 1 entered L.C.O. 3.0.3 due to more than one Vital Inverter and one Vital Battery Charger being declared inoperable. The 1-I, 1-III, 2-I, and 2-III Vital Inverters and the 1 and 3 Vital Battery Chargers were declared inoperable due to the lack of selective coordination between the Instrument Power Primary Fuse Isolator (IPPF) and the 480 volt feeder breaker that services the vital inverters and battery chargers. The lack of coordination means that a fault on the load side of the fuse could cause the breaker to open. The fuse provides load to non-1E equipment, while the breaker feeds both the IPPFI fuse and vital, 1E equipment including the inverters and chargers. In effect, a fault in the non-vital portion of the circuit could cause a loss of vital equipment. Selective coordination provides fuse and breaker sizing to ensure selective tripping and isolation of faults to minimize these interactions.

Immediate corrective actions were implemented to provide breakers that would properly coordinate with the IPPFI. The new breakers were installed and tested, and L.C.O. 3.0.3 was exited at 5:30 a.m. on October 18. The licensee is investigating the cause of the lack of selective coordination by means of an event report. Previous instances of a lack of coordination were reported and corrected and documented in LER 87-001, 87-045, and 87-061 and were the result of various design errors. The investigation for this instance was not complete at the end of the inspection period. This appears to be a design deficiency that was not reviewed or corrected as part of previous corrective actions. Pending completion of the event report, this item will be tracked as URI 327, 328/90-34-04.

10. Exit Interview (30703)

The inspection scope and findings were summarized on November 5, 1990, with those persons indicated in paragraph 1. The Senior Resident Inspector described the areas inspected and discussed in detail the inspection findings listed below. The licensee acknowledged the inspection findings and did not identify as proprietary any of the material reviewed by the inspectors during the inspection.

Inspection Findings:

One violation, one apparent violation, one non-cited violation, and one unresolved item were identified.

VIO 327,328/90-34-01, Failure to Control Transient Fire Loads
in Safety Related Areas

NCV 327,328/90-34-02, RWP Area Entry Signs Not Installed on
Auxiliary Boiler

Apparent VIO 327,328/90-34-03, Failure to Follow Procedures to
Control and Document Overtime

URI 327,328/90-34-04, Selective Coordination Causes T.S. 3.0.3
Entry

During the reporting period, frequent discussions were held with the Site Director, Plant Manager and other managers concerning inspection findings.

11. List of Acronyms and Initialisms

ABGTS-	Auxiliary Building Gas Treatment System
ABI -	Auxiliary Building Isolation
ABSCE-	Auxiliary Building Secondary Containment Enclosure
AFW -	Auxiliary Feedwater
AI -	Administrative Instruction
AOI -	Abnormal Operating Instruction
AUO -	Auxiliary Unit Operator
ASOS -	Assistant Shift Operating Supervisor
ASTM -	American Society of Testing and Materials
BIT -	Boron Injection Tank
BFN -	Browns Ferry Nuclear Plant
C&A -	Control and Auxiliary Buildings
CAQR -	Conditions Adverse to Quality Report
CCS -	Component Cooling Water System
CCP -	Centrifugal Charging Pump
CCTS -	Corporate Commitment Tracking System
CFR -	Code of Federal Regulations
COPS -	Cold Overpressure Protection System
CS -	Containment Spray
CSSC -	Critical Structures, Systems and Components
CVCS -	Chemical and Volume Control System
CVI -	Containment Ventilation Isolation
DC -	Direct Current
DCN -	Design Change Notice
DG -	Diesel Generator
DNE -	Division of Nuclear Engineering
ECN -	Engineering Change Notice
ECCS -	Emergency Core Cooling System

EDG - Emergency Diesel Generator
EI - Emergency Instructions
ENS - Emergency Notification System
EOP - Emergency Operating Procedure
EO - Emergency Operating Instruction
ERCW - Essential Raw Cooling Water
ESF - Engineered Safety Feature
FCV - Flow Control Valve
FSAR - Final Safety Analysis Report
GDC - General Design Criteria
GOI - General Operating Instruction
GL - Generic Letter
HVAC - Heating Ventilation and Air Conditioning
HIC - Hand-operated Indicating Controller
HO - Hold Order
HP - Health Physics
ICF - Instruction Change Form
IDI - Independent Design Inspection
IN - NRC Information Notice
IFI - Inspector Followup Item
IM - Instrument Maintenance
IMI - Instrument Maintenance Instruction
IR - Inspection Report
KVA - Kilovolt-Amp
KW - Kilowatt
KV - Kilovolt
LER - Licensee Event Report
LCO - Limiting Condition for Operation
LIV - Licensee Identified Violation
LOCA - Loss of Coolant Accident
MCR - Main Control Room
MI - Maintenance Instruction
MR - Maintenance Report
MSIV - Main Steam Isolation Valve
NB - NRC Bulletin
NOV - Notice of Violation
NQAM - Nuclear Quality Assurance Manual
NRC - Nuclear Regulatory Commission
OSLA - Operations Section Letter - Administrative
OSLT - Operations Section Letter - Training
OSP - Office of Special Projects
PLS - Precautions, Limitations, and Setpoints
PM - Preventive Maintenance
PPM - Parts Per Million
PMT - Post Modification Test
PORC - Plant Operations Review Committee
PORS - Plant Operation Review Staff
PRD - Problem Reporting Document
PRO - Potentially Reportable Occurrence
QA - Quality Assurance

QC - Quality Control
RCA - Radiation Control Area
RCDT - Reactor Coolant Drain Tank
RCP - Reactor Coolant Pump
RCS - Reactor Coolant System
RG - Regulatory Guide
RHR - Residual Heat Removal
RM - Radiation Monitor
RO - Reactor Operator
RPI - Rod Position Indication
RPM - Revolutions Per Minute
RTD - Resistivity Temperature Device Detector
RWP - Radiation Work Permit
RWST - Refueling Water Storage Tank
SER - Safety Evaluation Report
SG - Steam Generator
SI - Surveillance Instruction
SMI - Special Maintenance Instruction
SOI - System Operating Instructions
SOS - Shift Operating Supervisor
SQM - Sequoyah Standard Practice Maintenance
SQRT - Seismic Qualification Review Team
SR - Surveillance Requirements
SRO - Senior Reactor Operator
SSOMI - Safety Systems Outage Modification Inspection
SSQE - Safety System Quality Evaluation
SSPS - Solid State Protection System
STA - Shift Technical Advisor
STI - Special Test Instruction
TACF - Temporary Alteration Control Form
TAVE - Average Reactor Coolant Temperature
TDAFW - Turbine Driven Auxiliary Feedwater
TI - Technical Instruction
TREF - Reference Temperature
TROI - Tracking Open Items
TS - Technical Specifications
TVA - Tennessee Valley Authority
UHI - Upper Head Injection
UO - Unit Operator
URI - Unresolved Item
USQD - Unreviewed Safety Question Determination
VDC - Volts Direct Current
VAC - Volts Alternating Current
WCG - Work Control Group
WP - Work Plan
WR - Work Request