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

Report Nos.: 50-327/89-12, 50-328/89-12

Licensee: Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Square
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: April 6, 1989 thru May 5, 1989

Inspector: Binoy B. Desai for 5/24/89
K. Jenison, Senior Resident Inspector Date Signed

Inspectors: P. Harmon, Senior Resident Inspector
D. Loveless, Resident Inspector

Accompanying Personnel: Peter A. Balmain
Binoy B. Desai

Approved by: J B Brady 5/24/89
J. Brady, Acting Chief, Project Section 1 Date Signed
TVA Projects Division

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 housekeeping inspections. Other areas inspected included maintenance observations, surveillance testing observations, review of previous inspection findings, follow-up of events, review of licensee identified items, and review of inspector follow-up items.

Results:

The areas of Operations and Surveillance appeared to be adequate, improving and fully capable of supporting current plant operations. Control room operators were professional and the activities they conducted were well managed. An example of these control room activities included the implementation of the feedwater control corrective actions. A public meeting was held to discuss the three reactor trips that occurred as a result of feedwater control problems.

The area of maintenance work planning had some licensee identified weaknesses. However, the overall area of maintenance was adequate during this period. Line management involvement was acceptable and QA involvement in current issues and operations issues was aggressive.

No violations or deviations were identified.

Two non-cited violations were identified.

NCV 327,328/89-12-05, Diesel Generator Maintenance (paragraph 3).

NCV 327,328/89-12-06, Feedwater Reactor Trips, three examples (paragraphs 9.e, 9.f, and 9.g).

Three unresolved items and one inspector follow up item were identified.

URI 327,328/89-12-01, Licensed Power Indication, (paragraph 2.a)

URI 327,328/89-12-02, BIT Recirculation, (paragraph 9.a)

IFI 327,328/89-12-03, RCS Identified Leakage, (paragraph 9.d)

URI 327,328/89-12-04, AFW Maintenance, (paragraph 4.b)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. Bynum, Vice President, Nuclear Power Production
*J. LaPoint, Site Director
*S. Smith, Plant Manager
T. Arney, Quality Control Manager
*R. Beecken, Maintenance Superintendent
*M. Cooper, Compliance Licensing Manager
D. Craven, Plant Support Superintendent
*S. Crowe, Site Quality Manager
*T. Flippo, Quality Assurance Manager
R. Fortenberry, Technical Support Supervisor
J. Holland, Corrective Action Program Manager
J. Patrick, Operations Superintendent
R. Pierce, Mechanical Maintenance Supervisor
M. Burzynski, Site Licensing Staff Manager
A. Ritter, Engineering Assurance Engineer
R. Rogers, Plant Support Superintendent
M. Sullivan, Radiological Controls Superintendent
S. Spencer, Licensing Engineer
*C. Whittemore, Licensing Engineer

NRC Employees

*J. Brady, Acting Chief, Projects Section 1, TVA Projects Division

*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 and verified that proper control room staffing was maintained. The inspector also verified that access to the control room was properly controlled, and that operator behavior was commensurate with plant configuration and plant activities in progress and with on-going control room operations. The operators were observed adhering to appropriate and approved procedures, including Emergency Operating Procedures, for on-going activities. Operator activities on Unit 1 included adequate response and followup to indications of possible reactor vessel flange o-ring leakage. The operator actions and

review regarding this indication were deemed to be appropriate. It was determined that the leakage indications were the result of a possible thermocouple failure and a maintenance request was written to replace the applicable thermocouples.

Additionally, the frequency of visits to the control room by operations line management was observed and found to be acceptable. First line, second line and Duty Operations managers were observed in the control room and appeared to be engaged in activities that supported shift operations and the SOS.

The inspector also verified that the licensee was operating the plant in a normal plant configuration as required by TS. When abnormal conditions existed, operators were found to be complying with the appropriate LCO action statements. Upon inspection of LCO action statements, it was noted that the units were in a large number of action statements requiring non-emergent actions. Licensee management was well aware of these LCO action items and this issue was discussed on a daily basis. The licensee's TS interpretation of one action statement involving the TS 3.4.3.2 OPERABLE condition of the PORV block valves was questioned. The licensee's interpretation was conservative and this TS interpretation was later implemented by TS amendment 101 which was issued on April 3, 1989. Even though the TS interpretation appeared to be conservative, it took the place of a formal licensee 10 CFR 50.59 safety evaluation. The adequacy of the licensee's safety evaluation program implementation is a current issue of discussion between the licensee and NRC management. At least two of the licensee's staff organizations (QA and NSRB) have identified weaknesses with the licensee's 10 CFR 50.59 safety evaluation processes.

The inspector verified that RCS leak rate calculations were performed and that the calculated leakage rates were within the TS limits. In the specific case of the Unit 1 reactor vessel flange leak indication, total RCS leakage was determined to be less than 0.4 gpm. The inspectors reviewed control room indications associated with safety limits and determined that none were exceeded. The specific issue of the licensee's definition of IDENTIFIED LEAKAGE is discussed as IFI 327,328/89-12-03, in paragraph 9.e of this report.

The inspectors sampled instrumentation and recorder traces for indication of 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. Control rod insertion limits were observed as specified in the TS. During this review, the use of nuclear instruments vs the use of P250 computer, program U1118, to measure thermal power was questioned. Several issues were identified. These issues involved the following evaluations:

(1) An evaluation to determine which of the two power indications should be used to comply with the license condition which limits thermal power to 3411 MW.

(2) An evaluation of a specific eight hour period where thermal power, as indicated by the U1118 computer program, indicated an eight hour average in excess of 3411 MW.

(3) An evaluation of the same eight hour period for compliance with axial flux difference TS requirements stated in TS 3.2.1.

(4) An evaluation of a specific period of 52 minutes where thermal power exceeded 100.75%

Resolution of these issues will be tracked under URI 327,328/89-12-01. The licensee's current operating philosophy with regard to this issue appears to be adequate after corrective actions were taken. The licensee is currently operating using indications from the highest reading nuclear instrument to limit power to 100%. In addition, the licensee is considering the use of an eight hour average thermal power at or below 3411 MW thermal as measured by the U1118 program. Based on discussions with NRR and Region II technical specialists, both methods appear to be acceptable to the NRC staff.

No violations or deviations were observed.

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 inoperabilities were clearly noted and understood. The licensee is actively pursuing corrections to conditions requiring TACFs through its design change program. No issues were identified with these specific logs.

Plant chemistry reports were reviewed to confirm steam generator tube integrity in the secondary side and to verify 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.

No violations or deviations were observed.

c. ECCS System Alignment

The inspectors walked down portions of the following safety-related systems to verify operability, flow path, heat sink, water supply, power supply, and proper valve and breaker alignment:

RHR (unit 1 and 2)

SI (unit 2)

In addition, the inspectors verified that selected containment isolation valves were aligned correctly.

No deviations or violations 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 major components for leakage, proper lubrication, cooling water supply, and general conditions which could prevent fulfillment of their functional requirements.

The inspector observed shift turnovers and determined that necessary information concerning the plant systems status was addressed. Turnovers were detailed, and attended by the outage manager and usually the operations duty manager.

No violations or deviations were observed.

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 that 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:

RWP 89-20395 Seal Table

RWP 89-00155 CDWE

RWP 89-20409 Accumulator Room #3

The inspectors questioned the inclusion of a storm drain located on the rear of the control building in an RCA roped off area. The HP supervisor stated that the storm drain should not have been included within the RCA and had the RCA boundary moved so that it was no longer included. The inspector had no further questions.

No violations or deviations were identified.

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.

In addition, 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. Specifically, the resident inspectors:

(1) observed security drills
(2) observed security program response drill
(3) inspected security during outages
(4) reviewed licensee security event report
(5) visited central alarm station
(6) verified onsite/offsite communication capabilities

First line management and upper level management was very responsive to the inspector's questions. The activities observed involving security officers were conducted in a professional manner. No violations or deviations were identified.

g. Hold Orders

The inspectors reviewed the following HOs to verify compliance with AI-3, Revision 38, Clearance Procedure, and that the HOs contained adequate information to properly isolate the affected portions of the system being tagged. Additionally the inspectors ensured that the licensee verified that the required tags were installed on the affected equipment. The following tags were inspected to determine their age and that they did not impact plant operations:

Hold Order	Equipment
2-89-002	Incore Probe
2-89-003	Battery Charger

No violations or deviations were identified.

h. Conditions Adverse to Quality

The inspectors reviewed selected items to determine that the licensee's problem identification system as defined in AI-12, Corrective Action, was functioning. CAQR's were routinely reviewed for adequacy in addressing a problem or event. Additionally, a sample of the following documents were reviewed to determine that the program was functioning:

(1) Work Requests
(2) Potential Reportable Occurrences
(3) Radiological Incident Reports
(4) Test Deficiencies
(5) Problem Reporting Documents
(6) Licensee Event Reports

Issues appeared to be adequately resolved in a timely manner. The lower tier corrective action administrative feeder systems have a large number of issues being processed. However, no large backlog was identified, and the upper tier corrective action documents were the subject of upper level site management discussions.

No violations or deviations were observed.

Positive trends were identified in the operational safety verification area. General conditions in the plant were adequate and continue to improve. Control of general reactor operations and specifically startup operations has improved and is being strongly supported by Sequoyah line management. 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; LCO's were met; test results met acceptance criteria requirements 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.

No 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 the completion of TS surveillance requirements was discussed routinely at the site director and plant manager level.

The following activities were observed/reviewed:

SI-102M, Diesel Generator Mechanical Inspections

SI-7, Electrical Power Systems: Diesel Generators

MI-4.2.6, Two Year Preventive Maintenance of Diesel Engines
This activity was performed in support of SI-102M and SI-7. It involved the performance of preventive and corrective maintenance on the diesel generators and supporting systems. Maintenance performed on valves in the diesel air start system and diesel lubrication oil system was observed and determined to not include detailed configuration control with respect to seals and gaskets. However, specific technician training had been accomplished as part of routine craftsman training and a detailed drawing was provided in the maintenance package. In addition, the orientation of the lubrication oil check valves was not controlled during reinstallation. This was resolved with a procedure change to MI 4.2.6. Finally, torque values for jointed connections on the lubrication and air start lines was not addressed by this procedure. The licensee issued PRD SQP 890279P to evaluate an action plan for addressing torque requirements on diesel generator bolted connections. These issues collectively constitute a non-cited violation (NCV) 327,328/89-12-05. The corrective actions for these issues are adequate and the violation is not cited because the criteria specified in Section V.G of the Enforcement Policy were satisfied. Therefore, NCV 327,328/89-12-05 is closed.

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.

a. Temporary Alterations (TACFs)

The following TACFs were reviewed:

TACF 0-89-04-77, Pressure Switch 0-PS-77-429 on the B CST
This TACF was implemented with WR 243097 and will be permanently replaced with DCR 2688.

TACF 1-84-107-3, 1-FCV-3-3A MOV Fuse
This TACF changed the rating on the turbine building MOV board 1A/11B fuse to the above valve from 0.8 amps to 2.0 amps. This was necessary because of another FCR E-1756 that placed a heater in series with the MOV and caused an overload condition. Permanent corrective action will be accomplished with FCR 5009.

No violations or deviations were identified.

b. Work Requests

The following work requests were evaluated:

WR B797142 - valve 2-FCV-3-148

WR B780979 - 2A AFW pump packing
The activity for WR B780979 was repeated using WR B762254 and is under review to determine if the original packing or PMT was adequate. This is identified as URI 327,328/89-12-04.

WR B790418 - repair 2-PI-002-129

WR B216758 - install temporary feedwater instrumentation

WR B282399 - FCV 003-84 valve stroke

WR B797201 - calibrate feedwater flow modifier

WR B769961 - 2-PT-003-1 calibration

With the exception of URI 327,328/89-12-04, the activities accomplished under the above WRs were adequately performed and resulted in acceptable plant material conditions. First line management involvement in the performance of the above maintenance activities was adequate and appeared to be supported by second and third line maintenance management, outage management, and operations management.

5. Management Activities in Support of Plant Operations

TVA management activities were reviewed on a daily basis by the NRC inspectors. The resident inspectors observed that planning, scheduling, work control and other management meetings were effective in controlling plant activities. First line supervisors appeared to be knowledgeable and involved in the day-to-day activities of the plant. First line supervisor involvement in the field was observed. Management response to those plant activities and events that occurred during this inspection period appeared timely and effective. An example of this management action was its involvement in identifying and resolving the leaking RCS RTD manifold isolation valve described in paragraph 10. Following the public meeting held on April 23, 1989, the licensee demonstrated aggressive and effective corrective actions with respect to feedwater and steam generator level control issues. However, the meeting was the culmination of approximately seven months of discussions between the licensee and the NRC over the root cause of several steam generator level generated reactor trips.

6. Site Quality Assurance Activities in Support of Operations

During the inspection period, the site QA staff performed audits, inspections, and reviews. Some of these issues were reviewed by the inspector and found to be adequately resolved by the licensee. The following audits were reviewed:

QSQ-M-89-417, Operations

QSQ-M-89-445, Feedwater Instrumentation
This activity resulted in PRD SQQ-89-02-48 which addressed procedure deficiencies and weaknesses in the planning of the maintenance.

QSQ-M-89-456, Shutdown Board 2AA Maintenance

QSQ-M-89-462, Maintenance Activities
This activity identified weaknesses in the planning of maintenance.

QSQ-M-89-472, Commitments and Corrective Action
This activity identified duplication between several procedures including, AI-12, Corrective Action; AI-18.78, Post Trip Review; SQA-84, Potential Reportable Occurrences; SQA-135, Commitment Management; and SQA-186, Root Cause Assessment.

One outstanding issue was identified during the review of the above QA surveillance activities. This issue, which pertained to the adequacy of the licensee's 10 CFR 50.59 safety evaluations, is a current topic of discussion between the licensee and the NRC. The deficiencies identified by the QA organization were being presented to line management during this inspection period. No violations or deviations were identified. However, several weaknesses were identified in the detail of maintenance planning supplied to certain jobs. This issue was discussed with line management during the exit of this report and line management is currently pursuing resolution of this issue.

In addition to the above audits, the inspector discussed several recent issues with the Site QA Manager and the QA Surveillance Group Manager. The inspector determined that QA was deeply involved in these issues and had participated as a member of approximately 19 incident reviews chaired by the PORS organization. This indicated complete implementation of the Smith/Martin memorandum of understanding concerning the inclusion of QA in the review and root cause determination of plant events.

The inspector also discussed upcoming personnel reductions in the onsite QA organization. Approximately twenty persons including two managers will be eliminated by the middle of June 1989. This is expected to establish a stable level of personnel on site.

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

(Closed) Violation 50-327,328/88-29-04, Inadequate Procedures

This violation addressed two examples of inadequate procedures. The first example was procedure G-29, Radiographic Examination of Welded Joints. This procedure was found inadequate in that ANSI B31.7 weld standard inspection requirements for wall thickness reduction during the qualification of field piping welds were not implemented. The second example was procedure TI-89, Inservice Testing. This procedure was found inadequate in that ASME Section XI testing requirements for two specific relief valves were not implemented.

In both cases the procedures were corrected and adequate compensatory reviews were conducted. No additional or generic safety issues were identified during the licensee's reviews. The inspector had no further questions.

This violation is closed.

8. Licensee Event Report Followup (92700)

UNIT 1

(Closed) LER 327/88-027, Radiation Monitor Calibration Procedure

The licensee discovered that an incorrect source strength evaluation date existed in SI-83, Channel Calibration for Radiation Monitoring System. As a result, the common fuel storage pool radiation monitors were affected and monitor O-RM-90-103 was declared inoperable.

The inspector reviewed the licensee's root cause determination and corrective actions. Corrective actions included immediate verification of the inoperable radiation monitor, and a revision of SI-83. The verification of the inoperable radiation monitor indicated that it had performed within TS allowable limits. The corrective actions appeared to be adequate and the inspector had no further questions.

This LER is closed.

(Closed) LER 327/88-028, Suspension of Fire Watches

As a result of a sequence of plant activities, unit operators opened the Unit 1 RCS head vents resulting in an increase in airborne activity in the auxiliary building. The operators manually initiated the auxiliary building gas treatment system and restricted access. The restricted access prevented the performance of a compensatory measure for three breached fire barriers and LCO 3.7.12. The compensatory fire watches were returned within nine hours.

The inspector reviewed the licensee's corrective actions which also included the repair of eight SI valves which contributed to the sequence of events causing the airborne activity increase. The corrective actions appear to be adequate and the inspector had no further questions.

This LER is closed.

9. Event Follow-up (93702)

a. Unit 2 entered Mode 3 at 4:30 p.m. on April 6. At 4:55 p.m., the BIT to BAT recirculation was stopped and the BIT recirculation valves were shut to stop back leakage from the RCS to the BIT. This backleakage was causing dilution of the BIT and the BAT. The inspectors questioned this procedure because the recirculation path provides the only method of ensuring that the proper BIT volume is maintained. TS 3.5.4.1 requires the BIT to be Operable in Mode 3 with a minimum volume of 900 gallons. The action statement for this requirement is to restore the BIT to Operable within 1 hour or be in Hot Standby and borated to the appropriate shutdown margin within the next 6 hours. The licensee's position was that even though no on-line verification of BIT volume exists when the BIT is off recirculation, there is no reason to suspect that the volume is being reduced. Further, the surveillance requirement is to verify the proper volume is present every 7 days. The licensee therefore concluded that taking the BIT off recirculation is allowed as long as the surveillance to verify volume is performed within 7 days. The resident staff contacted the project manager requesting an

interpretation of the applicable T.S. After the resident inspector notified the plant staff of their concern regarding this issue, the BIT was placed back on recirculation at 10:02 a.m. on 10 April. The recirculation will be maintained until the issue is resolved. The inspector questioned the licensee's determination that taking the BIT off recirculation did not require entry into the LCO. In addition, the inspector questioned whether a proper safety evaluation had been completed. Resolution of (1) BIT operability and (2) whether an adequate review pursuant to 10 CFR 50.59 safety evaluation was performed will be tracked as URI 327,328/89-12-02.

b. AT 8:40 p.m. on April 8, the licensee observed a small leak from the high pressure seal on incore thimble K-2. The leak was approximately one drop every three minutes. A determination that a pressure boundary leak existed was made and a Notification of Unusual Event was entered. The licensee later determined that the thimble leak did not constitute a pressure boundary leak and the NOUE was exited.

c. At 8:24 p.m. on April 11, Unit 2 was taken critical and low power testing began. Then at 12:50 p.m. on April 13, Unit 2 entered Mode 1 at 1% power. The inspector observed the licensees performance during this evaluation.

d. At 6:47 p.m. on April 13, RCS leakage to the Pressurizer Relief Tank (PRT) suddenly increased to a value of 17.5 gpm. The leakage was classified as IDENTIFIED LEAKAGE although the source of the leak was not determined until a containment entry and walkdown of potential leakage sources was performed approximately 7 hours later. Valve 68-530, RCS loop 3 Hot Leg RTD Bypass Manifold Outlet isolation valve, was found to be not fully backseated. The valve has a leakoff to the PRT after the third ring of packing. RCS pressure had apparently blown a hole in the valve packing due to the valve not being properly backseated. The valve was backseated and the leak stopped at 2:05 a.m. on April 14. During the process of identifying the leakage source, the plant staff was not initially able to determine all the components and valves with leakoffs to the PRT. No single diagram or drawing represents all potential sources to the PRT. The team that entered containment was able to locate the leaking valve by backtracing from the PRT using a heat sensitive infrared device. Since the licensee was not able to produce documentation that all inputs to the PRT were known and bounded by appropriate analysis, the classification that any leakage to the PRT is IDENTIFIED LEAKAGE may not be appropriate. Resolution of this issue will be tracked as IFI 327,328/89-12-03.

e. At 12:09 a.m. on April 15, Unit 2 reactor tripped from 30% power during turbine generator trip testing. When the turbine tripped, S.G. level program automatically reset from the 44% value to the no-load value of 33%. The feed controllers then began reducing S.G.

levels to the new value and severe level oscillations began. The level oscillations were divergent and eventually reached the low-low level setpoint on the #4 S.G. Post trip analysis determined that the level controllers should be placed in the manual mode in future cases when the turbine is trip tested to preclude the step change in program level from initiating a level transient. This is example a of NCV 327,328/89-12-06. The enforcement and corrective action aspects of this and examples b and c are discussed in paragraph 9.h of this report.

f. At 12:48 a.m. on April 16, Unit 2 reactor tripped from 16% power on S.G. low-low level on #1 S.G. The trip was caused by level oscillations that began when operators were attempting to transfer from S.G. level control with the auxiliary feedwater system to control with the main feedwater system. The post trip review of this trip determined that the transfer from the auxiliary feedwater system to main feedwater system should be performed at a lower power level. The capabilities of the auxiliary feedwater system to keep up with steam flow is at its upper limits at approximately 1% power, and the changeover to the main feedwater system began at approximately 1.5% power. As a result, levels had begun to decrease below program level by the time the main feedwater system bypasses were placed in automatic. The bypass valves began to open to restore level to program, which introduced a large amount of cold feedwater. This caused a large level shrink and level oscillations began which eventually resulted in a low-low level trip on #1 S.G. This is NCV 327,328/89-12-06 example b. The enforcement and corrective action aspects of this issue are discussed in paragraph 9.h of this report.

g. At 4:47 a.m. on April 19, Unit 2 reactor tripped on low-low level on S.G. # 2. This trip was attributed to an inability to control S.G. levels in the manual mode on the feedwater system bypass valves. While escalating power to above 4%, automatic bypass control on loop 1 became erratic. Operators placed this bypass controller in manual and continued the startup. At approximately 10% power, loop #2 controller also became erratic and was placed in manual, and the power escalation was resumed. While attempting to transfer to the main feed regulating valves from the bypasses at approximately 18% power, level oscillations began which the operators were unable to control. Reactor power was reduced by stepping in control rods, which contributed to the level oscillations. The reactor eventually tripped from a power level of 1.9%. This is NCV 327,328/89-12-06 example c. The enforcement and corrective aspects of this issue are discussed in paragraph 9.h of this report.

h. At 2:00 p.m., on April 23, a public meeting with TVA was held to discuss the three most recent Unit 2 reactor trips and the six previous trips. TVA presented its corrective actions to resolve the increased number of reactor trips. These corrective actions are

described in the NRC meeting minutes and were subsequently inspected by the inspectors. The corrective actions were determined to be adequate. The three trips are identified as NCV 327,328/89-12-06, examples a through c for violation of TS 6.8.1 for failure to establish, implement and follow procedures. These are not being cited because the criteria specified in Section V.G. of the Enforcement Policy were satisfied. NCV 327, 328/89-12-06 is considered closed.

The inspectors observed line management and QA management involvement in the resolution of these issues. This involvement was determined to be adequate and is discussed in the respective section of this report.

10. Exit Interview (30703)

The inspection scope and findings were summarized on May 4, 1989, 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:

No violations, or deviations were identified.

(Open) URI 327,328/89-12-01, "Licensed Power Indication"
(Closed) NCV 327,328/89-12-05, "Diesel Generator Maintenance"
(Open) URI 327,328/89-12-04, "AFW Maintenance"
(Closed) VIO 327,328/88-29-04, "Inadequate Procedures"
(Closed) LER 327,328/88-027, "Radiation Monitor Calibration Procedure"
(Closed) LER 327,328/88-028, "Suspension of Fire Watches"
(Open) URI 327,328/89-12-02, "Recirculation of BIT"
(Open) IFI 327,328/89-12-03, "RCS Identified Leakage"
(Closed) NCV 327,328/89-12-06, "Feedwater Reactor Trips"

The areas of Operations and Surveillance appeared to be adequate, improving and fully capable of supporting current plant operations. The observed activities of the Operations section, the control room operators in particular, were professional and well managed. The area of maintenance had some licensee identified weaknesses in the area of work planning. However the area of maintenance was adequate during this period. Line management involvement was acceptable and QA involvement in current issues and operations issues was aggressive.

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
NCV - Non-cited Violation
NOV - Notice of Violation
NQAM - Nuclear Quality Assurance Manual
NRC - Nuclear Regulatory Commission
OSLA - Operations Section Letter - Administrative
OSLT - Operations Section Letter - Training
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
PRO - Potentially Reportable Occurrence
QA - Quality Assurance
QC - Quality Control
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