



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

Report Nos.: 50-327/88-36 and 50-328/88-36

Licensee: Tennessee Valley Authority  
6N38 A 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 1 and 2

Inspection Conducted: July 12 - August 5, 1988

Inspector: J. B. Brady for 9/14/88  
P. E. Harmon, Senior Resident Inspector Date Signed

Resident Inspectors: D. P. Loveless  
W. K. Poertner  
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Approved by: K. M. Jenison 9/15/88  
K. M. Jenison, Acting Chief, Date Signed  
Projects Section 1,  
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SUMMARY

Scope: This routine, announced inspection involved inspection onsite by the Resident Inspectors in the areas of operational safety verification including operations performance, system lineups, radiation protection, safeguards and housekeeping inspections; maintenance observations; surveillance testing observations; review of previous inspection findings; and review of licensee identified items.

Results: One violation was identified.

Paragraph 6. - Failure to test Containment Spray check valves per 10 CFR 50 Appendix J. (327, 328/88-36-01)

\*One unresolved item was identified.

Paragraph 2.a - Auxiliary Feedwater valve out of alignment per SOI-3.1, Auxiliary Feedwater. (327,328/88-36-02)

No deviations were identified.

\*Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations.

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## Closures: LER's:

(Open) LER 327/88-07, Opening of Unit 1 containment results in secondary containment envelope outside the boundary set for surveillance testing of auxiliary building gas treatment system

(Closed) LER 327/88-21, Improper RHR valve alignment resulting in loss of RCS inventory.

(Closed) LER 327/88-16, Rev. 1, Inadvertent main steam isolation caused by an inadequate review of a work package.

(Closed) LER 327/87-03, Potential for loss of containment air return fan due to a design and construction deficiency.

(Open) LER 327/88-14, LER 327/88-17, LER 327/88-23, Spurious containment ventilation isolations due to EMI-induced radiation monitor actuations.

(Closed) LER 327/87-61, Rev. 1, Associated circuits that share a common power supply with appendix R circuits lacked selective coordination due to inadequate design calculations.

(Open) LER 328/88-20, Check valves used as containment isolation valves in a raw water system did not pass leak rate test due to improper application of valve usage.

(Closed) LER 328/88-24, Reactor trip resulting from low reactor coolant system flow signal caused by a procedure noncompliance.

(Closed) LER 328/88-25, Failure to comply with a TS action statement for diesel generator operability verification.

## Violations:

(Open) VIO 327,328/87-66-02, Failure to establish, implement, and maintain system operating instruction procedures for system 63 (safety injection).

(Closed) VIO 327,328/87-76-02, Failure to follow procedure.

(Open) VIO 327,328/88-02-01, Failure to comply with procedural requirements.

(Closed) VIO 327,328/88-06-02, Failure to adequately identify and correct SOI checklists for system alignment.

(Closed) VIO 327,328/88-06-01, Failure to specify qualifications and train individuals performing system alignments.

(Closed) VIO 327,328/88-20-01, Failure to develop or implement procedures.

(Closed) VIO 327,328/88-20-02, Missed surveillance test.

(Open) VIO 327,328/88-20-03, Failure to comply with technical specification limiting condition for operations.

(Open) VIO 327,328/88-20-04, Failure to ensure timely notification of the NRC of a loss of safety functions.

Unresolved items:

(Closed) URI 327,328/88-29-05, Adequacy of testing of check valves 72-547 and 72-548.

(Closed) URI 327,328/88-22-01, AFW valve out of position.

Conclusions:

In the area of Operational Safety Verification one URI was identified concerning a mispositioned valve in the AFW system. The remainder of the items inspected in this area appeared to be adequate. In the areas of surveillance and maintenance all items reviewed appeared to be adequate. Additionally the licensee's corporate commitment tracking system was reviewed, and on a limited scope of review, it appeared to be adequate.

Those items listed above were reviewed for closure during the inspection period. In those items designated as "closed" the licensee's actions appeared to be adequate. The items designated as "open" required further review by the inspector or further action by the licensee as identified in the body of the report. Four items remain open from this report which require resolution prior to Unit 1 restart. They are Violation 327,328/88-36-01, LER 327/88-07, LER 328/88-20 and Violation 327,328/88-20-03.

## REPORT DETAILS

### 1. Licensee Employees Contacted

J. Anthony, Operations Group Supervisor  
R. Beecken, Maintenance Superintendent  
J. Bynum, Vice President, Nuclear Power Production  
\*M. Cooper, Compliance Licensing Manager  
D. Craven, Plant Support Superintendent  
H. Elkins, Instrument Maintenance Group Manager  
R. Fortenberry, Technical Support Supervisor  
J. Hamilton, Quality Engineering Manager  
\*J. La Point, Acting Site Director  
L. Martin, Site Quality Manager  
R. Olson, Modifications Manager  
J. Patrick, Operations Group Manager  
R. Pierce, Mechanical Maintenance Supervisor  
M. Ray, Site Licensing Staff Manager  
R. Rogers, Plant Reporting Section  
\*B. Schofield, Licensing Engineer  
\*S. Smith, Plant Manager  
S. Spencer, Licensing Engineer  
M. Sullivan, Radiological Controls Superintendent  
C. Whittemore, Licensing Engineer

NRC Employees

\*Attended exit interview

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

### 2. Operational Safety Verification (71707)

#### a. Plant Tours

The inspectors observed control room operations; reviewed applicable logs including the shift logs, night order book, clearance hold order book, configuration log and TACF log; conducted discussions with control room operators; verified that proper control room staffing was maintained; observed shift turnovers; and confirmed operability of instrumentation. The inspectors verified the operability of selected emergency systems, and verified compliance with TS LCOs. The inspectors verified that maintenance work orders had been submitted as required and that followup activities and prioritization of work were accomplished by the licensee.

Tours of the diesel generator, auxiliary, control, and turbine buildings, and containment were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and plant housekeeping/cleanliness conditions.

During an inspection tour of the unit #1 containment on August 1, a large number of scaffolds, equipment, and other items were visible which were being utilized for work efforts necessary to support work required for restart of the unit. The ice condenser was included in the tour and the flow passages between the ice baskets in the areas that had been cleaned appeared acceptable. However the ice condenser floor and turning vanes had not yet been cleaned and a large amount of ice build-up existed there. Work was continuing and close-out cleanliness inspections had not been performed pertaining to these two areas.

The inspectors walked down accessible portions of the following safety related systems on Unit 1 and Unit 2 to verify operability and proper valve alignment:

- Residual Heat Removal (Unit 1)
- Diesel Generator Starting Air (Units 1 and 2)
- Auxiliary Feedwater (Unit 2)

During the walkdown of the AFW system the inspector identified that valve 2-FCV-3-824, isolation valve to a sample sink, was open as opposed to its SOI required configuration of closed. This was reported immediately to the UO who placed the valve in the configuration log as out of position. The valve was later placed in the proper position. This item will be reviewed further during the next inspection period and is identified as URI 327,328/88-36-02.

No violations or deviations were identified.

b. 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; and badge issuance and retrieval; patrols and compensatory posts.

In addition, the inspectors observed protected area lighting, protected and vital area barrier integrity. The inspectors verified interfaces between the security organization and both operations or maintenance. Specifically, the Resident Inspectors:

- (1) interviewed individuals with security concerns
- (2) inspected security during outages
- (3) reviewed licensee security event report

- (4) visited central or secondary alarm station
- (5) verified protection of Safeguards Information
- (6) verified onsite/offsite communication capabilities

No violations or deviations were identified.

c. 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. Selected radiation protection instruments were verified operable and calibration frequencies were reviewed.

The inspectors reviewed RWP #88-18-00 Rev. 1 during this reporting period. The work location was for all areas of the auxiliary building, except containment, and pertained to the inspection of pipe supports for SMI-0-317-69 and associated work. Protective clothing was referenced and respirator protection was specified for specific areas within the building. Dose rate meters or dose warning devices were required for various areas identified within the auxiliary building per the special instructions. In addition, HP coverage, housekeeping, and the use of tools were specified with reference to ALARA considerations. The briefing attendance record was reviewed. No deficiencies were noted.

The inspector reviewed RWP 1-88-19, unit 1 containment, upper and lower. No deficiencies were noted.

No violations or deviations were identified.

3. Monthly Surveillance Observations (61726)

Licensee activities were directly observed 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 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.

Work activities in progress associated with the performance of SI-260.2.1, Rev.3: BIT Cold Leg Injection Flow Balance, Pump Performance and Check Valve Test, were reviewed during this reporting period. This activity

provided detailed steps to determine that the CCPs injection line flow rates into the reactor coolant system and total flow rates were within technical specification limits. It further provided that the check valves in the flow path were fully stroked open during plant cold shutdown. No deficiencies or violations were noted.

The inspector monitored activities in progress associated with the performance of SI-109, Channel Calibration for RHR Flow Rate. No deficiencies were noted.

The inspector reviewed the latest performance of SI-5, Auxiliary Feedwater Valves Position Verification, and SOI-3.2, Auxiliary Feedwater System. The procedures appeared to be adequate and the instruction correctly performed.

No violations or deviations were identified.

#### 4. Monthly Maintenance Observations (62703)

Station maintenance activities of 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 TS.

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 what actually took place; 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.

The inspector reviewed work activities in progress during the performance of WR #B751026. This activity consisted of troubleshooting and the repair of the reactor building floor and equipment drain sump pump. The problem referenced was that the pump would not automatically start as required when a high water level condition existed in the sump. A second problem existed in that the pump would not trip upon a low level condition. The work and documentation reviewed appeared satisfactory.

The inspector reviewed activities associated with WR #B281268 for the repair of the 2A condensate booster pump. These activities were essential to correct lubrication and cooling water seal problems. The suspected



cause of the lubrication problem was that the oil pressure was actually greater than normal. This was caused by the auxiliary oil pump not operating correctly; not starting when required; failing to stop when the pressure reached the predetermined set-point, and therefore, contributing to a higher oil pressure in the system. No deficiencies were noted.

The inspector monitored work activities in progress associated with WR B789963. The purpose of this work request was to replace the outboard packing on component cooling water pump 1A. No deficiencies were noted.

No violations or deviations were identified.

#### 5. Licensee Event Report Followup (92700)

The following LERs were reviewed and evaluated for closure. The inspector verified that: reporting requirements had been met; causes had been identified; corrective actions appeared appropriate; generic applicability had been considered; the LER forms were complete; the licensee had reviewed the event; and no unreviewed safety questions were involved.

##### LER's Unit 1

(Open) LER 327/88-07, Opening of unit 1 containment results in secondary containment envelope outside the boundary set for surveillance testing of auxiliary building gas treatment system.

The inspector reviewed this event and the licensee's short and long term commitments. The short term commitments were found acceptable for the restart of Unit 2. However, the corrective actions required for the restart of Unit 1 have not been implemented and the licensee has committed in the LER to revising the response by September 1, 1988. Pending the review and acceptance of this response, this item will remain an open restart item for Unit 1.

(Closed) LER 327/88-21, Improper RHR valve alignment resulting in loss of RCS inventory.

This incident was reviewed by the shift inspector and documented in IR 327,328/88-28. The LER was later reviewed and it was determined that the licensee's short and long term corrective actions were appropriate. The immediate actions were to correct the valve alignment and restore the RCS inventory to the required volume. The long term actions were to revise the applicable procedures to prevent reoccurrence. This included a revision to AI-30, Rev. 19, Nuclear Plant Conduct of Operation, that implemented the requirement to use cards to record information when verbally directed to change the status of plant equipment and then verbally repeat back the information to the supervisor prior to performing the manipulation. Additionally, the procedure required the AUO's to realign the equipment to the original position in the event that other than the desired results are encountered. A further



commitment in the LER involved the revision (Rev. 48) of SOI 68.1, Reactor Coolant System, to add a HO on valve, HCV-74-34, during RCS drain-down to a specified level to prevent an inadvertent loss of suction to the RHR system. The requirement to place the HO was also implemented in SOI 74.1, Rev. 45, Residual Heat Removal System.

Based on the review of the event and the corrective actions taken by the Licensee, this LER is closed.

(Closed) LER 327/88015, Rev. 1, Inadvertent main steam isolation caused by an inadequate review of a work package.

This event resulted in an inadvertent main steam line isolation signal being generated while replacing the flexible sense lines on steam flow transmitter 1-FS-1-10B. At the time of this event bistable 1-FS-1-21A had already been placed in the tripped condition by maintenance personnel. When bistable 1-FS-1-10B was accidentally tripped during the maintenance activity, this completed the two out of three logic and generated a main steam isolation signal. The main steam isolation valves were closed at the time the signal was generated so an actual isolation did not occur.

The inspector reviewed the licensee's submittal and proposed corrective actions and found them acceptable.

This item is closed.

(Closed) LER 327/87-03, Potential for loss of containment air return fan due to a design and construction deficiency.

During design reviews at Sequoyah, the licensee determined that the potential existed for damage to and possible loss of one of the two containment air return fans installed in each unit's containment. The potential damage mechanism was water accumulation from the containment spray system that could enter the fan housing and impinge directly on the fan blades after a design basis accident requiring containment spray. The fan housing is located flush with the upper containment floor. The previously installed kick plate style curbing had been removed as it interfered with opening the nearby personnel hatch. With no curbing around the fan, water from the containment spray system could accumulate on the floor, enter the fan, and disable it. Only the train A fan for each unit was affected, because the other fan is mounted above the floor level.

Curbing was redesigned and installed for the Unit 2 fan prior to plant startup. The work for the Unit 1 fan was completed August 2, 1988. In addition to the modifications to each fan, Revision 11 to SI-19, Containment Systems Divider Barriers, Removable Curbs, Personnel Access Doors and Equipment Access Hatches provides a means of ensuring the curbing around the A train fans is installed prior to closeout of the containment after an outage.

This item is closed.

(Open) LER 327/88-014, LER 327/88-017, LER 327/88-023, Spurious Containment Ventilation Isolations due to EMI-Induced Radiation Monitor Actuations.

The first of these three events occurred on March 14, 1988, and was caused by IM's working on the containment purge radiation monitor, 1-RM-90-130 without first having the operations staff place the monitor in "Block".

The IM personnel returned the radiation monitor's local sample pump switch to the normal (run) position and the pump switch actuation caused an electromagnetic interference spike to be induced into the monitor. The EMI spike caused the tripping of the high radiation bistable, and the subsequent CVI. The corrective action for this event was the issuance of a memorandum to IM personnel, requiring them to contact operations so that the RM trip signal could be blocked before performing any work on RMs capable of actuating ESF equipment.

The second event, described in LER 327/88-017, occurred March 31, 1988. This CVI was initiated when an AUC noticed that the abnormal flow alarm light for 1-RM-90-130 was illuminated on the local RM panel. In attempting to clear the alarm, the AUC joggled the RM sample pump switch off and then back on. The pump switch actuation caused an EMI spike to trip the high radiation bistable, and a CVI occurred. The LER identified the root cause of this event as improperly controlling the operation of the sample pump switch after it had been identified as the cause of the March 14 CVI described above. The corrective action prescribed for this event included the issuance of a memorandum to operations personnel similar to the one previously issued to the IMs. In addition, a HO was placed on the local sample pump switch to prevent operation until switch replacement could be accomplished.

The third event, described in LER 327/88-023, occurred June 7, 1988, when two CVIs occurred within 30 minutes of each other. These CVIs were initiated by EM personnel working on 1-RM-90-130. The work, performed under WR B262490, was to replace the local sample pump switch on the RM which had caused the previous two CVIs. This WR was reviewed by the Unit 1 ASOS prior to its implementation. Power to the pump had been removed before the work was initiated, and the ASOS and the work planners assumed that no EMI spike could be generated when the pump switch was actuated. While the pump itself is powered from 480-volt power, an auxiliary set of contacts to indicate pump status opens and closes in parallel with the pump power supply. These auxiliary contacts are electrically isolated from the 480-volt power supply, but are common to the 120-volt power that actuates the radiation analyzer for the RM. TVA has theorized that the status circuitry and the auxiliary contacts are the components causing the EMI induced trips of the RM. Since the 480-volt pump power supply was thought to be the source of the EMI spikes, (and that power was isolated), the RM's handswitch was not placed in the "Block" position, which would have prevented the CVIs described by this LER.

These three LERs will remain open pending the completion of the licensee's corrective actions to preclude recurrence of CVIs associated with operation of the RM prior to placing the handswitch in "Block".

(Closed) LER 327/87061, Rev. 1, Associated circuits that share a common power supply with appendix R circuits lacked selective coordination due to inadequate design calculations.

During calculation reviews the licensee identified several cases where a fault on appendix R associated circuits could cause interruption of a required circuit. The cause of this deficiency was due to use of design cable lengths for fuse/breaker sizing.

This LER was reviewed in inspection report 327,328/88-19 and was left open pending review of revision 1 of the LER. The inspector reviewed the revision and found the description and corrective actions adequate.

This item is closed.

#### LER's Unit 2

(Open) LER 328/88-20, Check valves used as containment isolation valves in a raw water system did not pass leak rate test due to improper application of valve usage.

The licensee's proposed corrective action was to replace the unit one valves prior to entering mode 4 operation. The inspectors reviewed the status of the work and determined that most of the field work had been completed. However, the associated work packages, WP 7378-01 and WP 7378-02, had not been closed. This item will remain open and require a disposition prior to unit 1 entering mode 4.

(Closed) LER 328/88-24, Reactor trip resulting from low reactor coolant system flow signal caused by a procedure noncompliance.

The on-shift inspectors reviewed the licensee's analysis of the events associated with this reactor trip and the determination that the trip was a result of a failure to follow procedure when removing and returning the RCS flow transmitter to service during the calibration process. This was identified as violation, VIO 327,328/88-28-01. The corrective actions taken by the licensee includes determining the cause of the trip and a review of the event with the instrument maintenance personnel to ensure lessons learned from this event were identified and to re-emphasize the necessity of procedural compliance.

A further commitment was contained in the LER to review previous reactor trips for a similar occurrence of common equipment interactions causing reactor trips and is being carried in the licensee's CCTS, Control No. NC088013001.

This issue will be reviewed under Violation 327,328/88-28-01. The LER is closed.

(Closed) LER 328/88-25, Failure to comply with a TS action statement for diesel generator operability verification.

This issue involves the failure to meet the requirements of TS 3.8.1.1 action A when diesel generator 1A-A was removed from service for degraded voltage relay testing.

This event was reviewed in Inspection Report 327,328/88-34 and resulted in a violation being issued. The inspector reviewed the LER and found the licensee's corrective actions adequate.

This item is closed.

No violations or deviations were identified.

6. Licensee Action on Previous Inspection Findings (92702)

(Open) VIO 327,328/87-66-02, Failure to establish, implement, and maintain system operating instruction procedures for system 63 (safety injection).

The inspector reviewed SOI-63.1, Emergency Core Cooling System, and determined that the corrections identified in this violation had been completed and documented in Inspection Report 327,328/87-76. This item has been determined adequate for the restart of Unit 1. However, the commitment to implement a phase 2 procedures enhancement program to ensure human factors and consistency and clarity in all SOIs has not been fully implemented. This issue will remain open.

(Closed) VIO 327,328/87-76-02, Failure to follow procedure.

This event involved two examples of failure to follow procedure. The first example resulted in an improper inspection of the 2A-A Hydrogen recombiner and failure to identify and remove an obstruction from the recombiner orifice. The second example involved the failure to properly drain and depressurize a section of AFW piping prior to issuing a clearance on the system. Immediate actions were taken to correct the conditions and long-term commitments were to revise SI-153.4, Test Requirements for the Electric Hydrogen Recombiner System, to enhance the instruction and to implement training to insure procedural compliance.

The inspectors reviewed the training documentation and found this effort to be satisfactory. The SI-153.4 revision has not been completed but has been entered into the licensee's CCTS, Control No. NC0880105001. The procedures for Unit 1, SI-153.3.1, Test Requirements for the Electric Hydrogen Recombiner 1A-A, and SI-153.3.2, Test Requirements for the Electric Hydrogen Recombiner 1B-B, have been issued.

Based on these corrective actions, this item is closed.

(Open) VIO 327,328/88-02-01, Failure to comply with procedural requirements.

The inspectors reviewed actions taken by the licensee as a result of the four examples identified in the subject violation cited. The first example cited the opening of the MSIVs with the reactor coolant system temperature below that required by the procedure and resulted in a reactor trip. The second example involved opening only the #4 steam generator MSIV which was in conflict with the system operating instruction, SOI-1.1, Main Steam Supply, which required all four MSIVs to be opened simultaneously. The licensee's corrective actions associated with the two examples above included upgrading of SOI-1.1 to a category "A" procedure which requires the operator to have the procedure present and referred to during the performance of the activity. Further actions included a maximum pressure difference limitation prior to opening the MSIVs and the installation of temporary gauges for monitoring the pressures. Example #3 cited the use of an "information only" drawing utilized to perform troubleshooting/work in the plant on the containment spray system. The response to this issue is currently being revised. Example #4 involved poor housekeeping practices and the failure to properly perform SI-187, Containment Inspection. The corrective actions involved satisfactorily re-performing the SI and active participation by plant management to emphasize the importance of maintaining a high standard of work ethics.

Based on the above, this item has been determined technically adequate for Unit 1 restart but will remain open until the licensee's revised response has been received and evaluated.

(Closed) VIO 50-327,328/88-06-02, Failure to adequately identify and correct SOI checklists for system alignment.

The inspector reviewed a random sample of the SOI's and verified that revisions had been incorporated to correct the discrepancies identified. Further, it was verified that GOI-6, Rev. 34, Apparatus Operations, implemented the commitment for adding a definition section for electrical devices. The licensee's response to IR 327,328/88-06, received on March 30, 1988, which stated that all power availability checklists contained in AI-58, Maintaining Cognizance of Operational Status - Configuration Status Control, Appendix A, were reviewed to identify any devices whose required position could be misinterpreted. In addition, the correct position for each component was identified and corrections to the checklists were made as needed. Valve alignments were then field verified and documented by utilizing the corrected checklists and no discrepancies were discovered. The above licensee efforts appear satisfactory and therefore this violation is closed.

(Closed) VIO 327,328/88-06-01, Failure to specify qualifications and train individuals performing system alignments.



The inspectors reviewed the revised method for independent verification implemented in Rev. 42 of GOI-6. This revision specified the method for independently verifying equipment status. In addition, AI-37, Rev. 5, Independent Verification, was revised to implement the requirement for separation of independent verification. The methods utilized for verification, and the qualifications were specified for those persons performing the verifications. The licensee's corrective actions were appropriate to correct the identified issue. This violation is closed.

(Closed) VIO 327,328/88-20-01, Failure to develop or implement procedures.

A review of the corrective actions completed by the licensee appear adequate. Those actions completed included a revision to AI-6, Log Entries and Review, which addressed the level of detail for log entries; a review of formal SQN TS interpretations for technical adequacy and clarity; implementing the use of TSs into the licensed operator simulator training program; and entries made into the operation logs to reflect the findings of the valve non-actuation by the previous shifts. However, the licensee committed to training the Unit 1 operators on procedure changes and TS interpretation changes before Unit 1 enters mode 2 operation. This commitment must be satisfied prior to Unit 1 entering mode 2. The commitment is identical to that made for corrective action to VIO 327,328/88-20-03 below and will be tracked under that item. Therefore, VIO 327,328/88-20-01 is closed.

(Closed) VIO 327,328/88-20-02, Missed surveillance test.

The inspector reviewed the licensee's long term and short term corrective actions. The short term action involved immediate sampling of the #3 cold leg accumulator which identified that the boron concentration was above that allowed by TS. The inleakage from the RCS causing this problem was corrected. The long term corrective actions involved a revision of SOI 63.1, Emergency Core Cooling System, and SI-2, Shift Log. Based on this review, corrective actions taken by the licensee were determined to be technically adequate. This issue is closed.

(Open) VIO 327,328/88-20-03, Failure to comply with technical specification limiting condition for operations.

This violation arose from operators having the 2A-A CCP hand switch in the pull-to-lock position when the pump was required to be operable. Per conversations with the operators, they were relying on a TS interpretation that they believed existed which determined the pump to be operable with the hand switch in this position. Since this event, the licensee has reviewed the TS interpretations because some were found in disagreement with the TS and is requiring the operators to rely more on the TS. In addition, the licensee committed to perform additional TS training of the Unit 1 operators. This item will remain open and should be resolved prior to Unit 1 entry into Mode 2.

(Open) VIO 327,328/88-20-04, Failure to ensure timely notification of the NRC of a loss of safety functions.

The licensee's management became involved in the issue and has directed the SOS's to be conservative in evaluations of events involving TSs and to initiate a notification when situations indicate this action could be required. Based on these corrective actions, this item is closed as it pertains to the unit 1 restart but will remain open until a formal NRC acknowledgement to the licensee's response has been issued.

(Closed) URI 327,328/88-29-05, Adequacy of testing of check valves 72-547 and 72-548.

The inspector reviewed the adequacy of the testing of valves 72-547 and 72-548 in that they are not type "C" leak rate tested per 10 CFR 50 Appendix J. The adequacy of the containment isolation design with respect to GDC-56 was reviewed by the staff during the review of the nuclear performance plan and is documented in the May 1988 SER. The SER appeared to address only the outboard isolation valves stating the following:

Isolation designs which are adequate on "some other defined basis" are described in the standard review plan (SRP) Section 6.2.4, "Containment Isolation System," and ANSI Standard N271-1976, "Containment Isolation Provision: for Fluid Systems." For containment Spray line penetrations, as well as for other essential systems, the SRP and the ANSI standard identify the use of remote manual valves in lieu of automatic valves as acceptable. TVA, on the other hand, has traditionally relied on the closed system outside containment rather than identify an outboard remote manual valve as an isolation valve.

Therefore, the staff conclusion that the testing of penetrations X-48A and X-48B was acceptable, may not have taken into consideration the testing of the check valves.

The inspector reviewed the testing of valves 72-548 and 72-547 as well as valves 72-555 and 72-556, the RHR spray isolation valves, which are similar in function. These valves are not in a configuration to be type "C" tested per Appendix J. There is no isolation between the valves and the spray headers making it impossible to individually test these valves.

On June 8, 1988, NRC management notified the licensee that they were in violation of Appendix J. The licensee declared the containment isolation system inoperable at 2:10 p.m. and entered the Action Statement for LCO 3.6.1.1. The licensee exited the LCO upon determining that the containment isolation system remained operable as defined by the TS. This decision was based on the fact that the containment spray isolation configuration was similar to that of the UHI system and that an NRC approved exemption from Appendix J type "C" testing existed on the UHI system. This JCO was documented on ICF 88-0935 to SI-14.2, Verification of Containment Integrity, under the provisions of 10 CFR 50.59.



10 CFR 50 Appendix J states that:

- II.H.3 Type C testing is required for those valves that, " Are required to operate intermittently under postaccident conditions..."
- III.C.1 "Type C tests shall be performed by local pressurization. The pressure shall be applied in the same direction as that when the valve would be required to perform its safety function..."
- III.C.2 "Valves, which are sealed with fluid from a seal system shall be pressurized with that fluid to a pressure not less than 1.10 Pa."

Contrary to the above, the containment spray and RHR spray inboard containment isolation valves have not been type C tested for the life of the plant. This is a violation and shall be identified as VIO 327,328/88-36-01.

The licensee discussed this issue with the inspector and stated that they believe that they were always in compliance with the regulations. This was based on a statement from Appendix J III.C.3 stating:

Leakage from containment isolation valves that are sealed with fluid from a seal system may be excluded when determining the combined leakage rate: provided , that;

(a) Such valves have been demonstrated to have fluid leakage rates that do not exceed those specified in the technical specifications or associated bases, and (b) The installed isolation valve seal-water system fluid inventory is sufficient to assure the sealing function for at least 30 days at a pressure of 1.10 Pa.

This statement discusses only the combined type B and C leakage rate calculations from a water sealed system. The inspector does not take issue with the exclusion of the penetration from the combined leakage rate calculation per III.C.3. The inspector also recognizes that Type C testing for the outboard containment spray and RHR spray isolation valves pursuant to III.C.2. is acceptable. However, this does not exempt the licensee from performing a type C test under the provisions of III.C.1 for the inboard containment spray and RHR spray isolation valves.

The issues of Appendix J requirements and testing of these check valves for both units is addressed as Violation 327,328/88-36-01; therefore, URI 327,328/88-29-05 is closed.

(Closed) URI 50-327,328/88-22-01, AFW valve out of position.

The inspectors reviewed the corrective actions committed to by the licensee to prevent exiting an LCD when the system has not been properly realigned. This included a review of Rev. 16 to AI-6, Log Entries and Review, and associated log forms which implemented the requirement for documenting all specific actions/equipment which could affect the

operability of a system. This documentation was intended to insure that equipment that had been repositioned was reviewed and properly re-aligned prior to declaring the system operable. Based on these procedural changes incorporated by the licensee, this item is closed.

#### 7. Commitment Tracking Review

The inspector reviewed the licensee's CCTS and TROI systems for timeliness in meeting commitments, coordination between the two systems and the licensee's implementation. Over 100 items from the CCTS were reviewed for timeliness. Two items were identified as having missed the commitment date. Both items were discussed with NRC/OSP management prior to becoming late.

These tracking and trending systems will be reviewed further during the operational readiness inspection to be conducted prior to the unit one restart. No violations or deviations were identified during this review.

#### 8. Exit Interview (30703)

The inspection scope and findings were summarized on August 9, 1988, 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 was identified in paragraph 6.

One unresolved item was identified in paragraph 2.a.

No deviations or inspector follow-up items were identified.

The licensee expressed at the exit interview that the plant was always in compliance with Appendix J as it relates to the violation discussed in paragraph 6 of this report. The resident inspectors explained that the licensee's position did not agree with the NRC staff's interpretation of the regulations. The licensee was also informed that they may further address this issue in their response to the Notice of Violation.

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

#### 9. List of Abbreviations

AFW - Auxiliary Feedwater  
 AI - Administrative Instruction  
 ALARA - As Low As is Reasonably Achievable

ANSI - American Nuclear Standards Institute  
AUO - Auxiliary Unit Operator  
ASOS - Assistant Shift Operating Supervisor  
BIT - Boron Injection Tank  
C&A - Control and Auxiliary Buildings  
CCP - Centrifugal Charging Pump  
CCTS - Corporate Commitment Tracking System  
COPS - Cold Overpressure Protection System  
CVI - Containment Ventilation Isolation  
DC - Direct Current  
EM - Electrical Maintenance Technician  
EMI - Electromagnetic Interference  
ESF - Engineered Safety Feature  
FCV - Flow Control Valve  
FS - Flow Switch  
GDC - General Design Criteria  
GOI - General Operating Instruction  
HCV - Hand Control Valve  
HO - Hold Order  
HP - Health Physics  
ICF - Instruction Change Form  
IN - NRC Information Notice  
IM - Instrument Maintenance  
IR - Inspection Report  
JCO - Justification for Continued Operations  
LER - Licensee Event Report  
LCO - Limiting Condition for Operation  
MI - Maintenance Instruction  
MSIV - Main Steam Isolation Valve  
NOV - Notice of Violation  
NRC - Nuclear Regulatory Commission  
OSP - Office of Special Projects  
PRO - Potentially Reportable Occurrence  
QA - Quality Assurance  
QC - Quality Control  
RCS - Reactor Coolant System  
RM - Radiation Monitor  
RHR - Residual Heat Removal  
RWP - Radiation Work Permit  
SER - Safety Evaluation Report  
SI - Surveillance Instruction  
SMI - Special Maintenance Instruction  
SOI - System Operating Instructions  
SOS - Shift Operating Supervisor  
SRP - Standard Review Plan  
TACF - Temporary Alteration Control Room  
TROI - Tracking Open Items  
TS - Technical Specifications  
TVA - Tennessee Valley Authority  
UO - Unit Operator

URI - Unresolved Item  
VIO - Violation  
WP - Work Plan  
WR - Work Request