



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-327/82-18 and 50-328/82-18

Licensee: Tennessee Valley Authority
500A Chestnut Street
Chattanooga, TN 37401

Facility Name: Sequoyah Nuclear Plant

Docket Nos. 50-327 and 50-328

License Nos. DPR-77 and DPR-79

Inspection at Sequoyah site near Soddy Daisy, Tennessee

Inspectors: *R. V. Blaylock for*
E. J. Ford

8/20/82
Date Signed

R. V. Blaylock for
S. D. Butler

8/20/82
Date Signed

Approved by: *D. E. Quick*
D. E. Quick, Section Chief, Division of
Project and Resident Programs

8/20/82
Date Signed

SUMMARY

Inspection on July 6 - August 5, 1982

Areas Inspected

This routine, unannounced inspection involved 175 inspector-hours on site in the areas of Operational Safety Verification, Employee Training, Annual REP Drill, License Requirements and Independent Inspection Effort.

Results

Of the five areas inspected, no violations or deviations were identified in four areas; one violation was found in one area (327, 328/82-18-01), Failure to install properly sized control power fuses in the B Control Room Emergency Pressurization Fan breaker (paragraph 5).

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DETAILS

1. Persons Contacted

Licensee Employees

C. C. Mason, Plant Superintendent
J. E. Cross, Assistant Plant Superintendent
P. R. Wallace, Assistant Plant Superintendent
J. M. McGriff, Assistant Plant Superintendent
J. W. Doty, Maintenance Supervisor (M)
B. M. Patterson, Maintenance Supervisor (I)
D. C. Craven, Maintenance Supervisor (E)
L. M. Nobles, Operations Supervisor
R. W. Fortenberry, Results Supervisor
R. J. Kitts, Health Physics Supervisor
J. T. Crittenden, Public Safety Service Supervisor
R. L. Hamilton, Quality Assurance Supervisor
M. R. Harding, Compliance Supervisor
W. M. Halley, Preoperational Test Supervisor
J. Robinson, Outage Director

Other licensee employees contacted included field services craftsmen, technicians, operators, shift engineers, security force members, engineers, maintenance personnel, contractor personnel and corporate office personnel.

Other Organizations

R. C. Lewis, Director, Division of Resident and Project Inspection, Region II
D. R. Quick, Chief, Reactor Projects Section 1A, Region II
A. F. Gibson, Chief, Technical Inspection Branch, Region II
G. E. Jenkins, Chief, Emergency Preparedness Section, Region II
Seven inspectors, Region II

2. Exit Interview

The inspection scope and findings were summarized with the Plant Superintendent and/or members of his staff on July 19 and the identified violation was discussed and the licensee acknowledged.

During the reporting period, frequent discussions are held with the Plant Superintendent and his assistants concerning inspection findings.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Operational Safety Verification

The inspector toured various areas of the plant on a routine basis throughout the reporting period. The following activities were reviewed/verified:

- a. Adherence to limiting conditions for operation which were directly observable from the control room panels.
- b. Control board instrumentation and recorder traces.
- c. Proper control room and shift manning.
- d. The use of approved operating procedures.
- e. Unit operator and shift engineer logs.
- f. General shift operating practices.
- g. Housekeeping practices.
- h. Posting of hold tags, caution tags and temporary alteration tags.
- i. Personnel, package, and vehicle access control for the plant protected area.
- j. General shift security practices on post manning, vital area access control and security force response to alarms.
- k. Surveillance testing in progress.
- l. Maintenance activities in progress.
- m. Health Physics Practices.

On July 12, 1982 the inspector observed the performance of maintenance on the B train Control Room Emergency Pressurization (CREP) fan breaker. The fan had been out of service as allowed by technical specifications since July 8 when the control power transformer in the breaker compartment failed causing a small fire in the switchboard (See LER SQRO-50-327/82080). The inspector observed reinstallation of the fan breaker in the switchboard and reviewed the work package which consisted of maintenance Request MR #039828, Maintenance Instruction MI-6.20 "Configuration Control During Maintenance Activities" and Modification and Addition Instruction M&AI-12 "Interconnecting Cable Termination and Insulation Inspection." A licensee quality control inspector was present to verify proper retermination of

leads in the breaker compartment. The work appeared to have been performed by qualified personnel in accordance with applicable requirements.

Once the breaker installation was complete, post maintenance testing was coordinated with operations personnel and the breaker was shut in preparation for functionally testing the fan. Shortly after the breaker was shut smoke began to issue from the switchboard and the electrician quickly opened the breaker, racked it out of the switchboard and extinguished the small fire. Subsequent to the second control power transformer failure the inspector observed troubleshooting and investigation of the problem by electricians and engineering personnel. It was determined that a Crydon relay failure on the load side of the transformer had caused excessive current to be drawn through the transformer. It was also determined that the fuses installed to protect the transformer were 10 amp instead of 1 amp as designated on drawing 45N779-21 R-14. This allowed the relay failure to fail the transformer instead of simply blowing the fuses. Failure to maintain safety-related equipment in accordance with applicable drawings is a violation of 10 CRR 50 Appendix B, Criterion V and a notice of violation will be issued (327, 328/82-18-01). The failed relay and transformer were subsequently replaced and tested and the fuses were replaced with properly sized fuses. The fan was returned to service within the time allowed by technical specifications. A spot check of fuses in other breaker compartments in the same switchboard was performed and no other problems were immediately identified.

The inspector discussed the sequence of events with the Electrical Maintenance Supervisor to attempt to determine why the wrong fuses were installed and why the failed relay was not discovered prior to the second transformer failure. The supervisor could not identify any work that would have involved changing the fuses and concluded the error must have been made when the fuses were originally installed. The A train CREP fan has 10 amp fuses installed since it receives control power from a main control power bus in the switchboard instead of an individual transformer in the breaker compartment as on the B train fan. He contended that the relay failure was not identified following the original transformer failure because a failure on the secondary side of the transformer was not suspected since the fuses were not blown and failures of Crydon relays are not as readily detected as with standard relays because of their solid state design. A notice has been distributed to maintenance personnel to caution them to be aware of this problem in the future when troubleshooting circuits that have Crydon relays.

The violation was also discussed with the Compliance Section Supervisor who indicated he had discussed the problem with the Electrical Maintenance Supervisor and they were in the process of initiating a program to inspect fuses installed in safety-related components throughout the plant and comparing their rating to drawing requirements and possibly labeling the fuse clips to ensure that replaced fuses were of the proper rating.

On July 27, 1982 the inspector witnessed the performance of Surveillance Instruction SI-7 "Electrical Power System: Diesel Generators" for Diesel Generator (DG) 2A-A. The SI was being performed to verify operability of

the DG prior to returning it to service following replacement of the turbo-chargers. The inspector verified that the test was authorized and being performed by a qualified person in accordance with a properly approved procedure. The inspector reviewed the surveillance procedure to ensure that it adequately covered the surveillance requirements to demonstrate DG operability as described in technical specification surveillance requirement 4.8.1.1.2.a. The inspector was informed that the 2A-A DG had been started earlier by a simulated loss of offsite power signal as required by the procedure. The machine was paralleled and loaded without problem; however, the DG was stopped using the emergency stop feature when an auxiliary operator stationed at the DG noticed smoke coming from the new turbo-chargers. Maintenance personnel were contacted and determined that the smoke was not unusual following maintenance due to the use of penetrating oil or other general accumulation of oil in the turbocharger and exhaust manifold. The DG restart was observed by the inspector and an hour run at full load was completed without problem. The smoking stopped shortly after the machine was fully loaded. During the 2A-A DG outage the inspector verified that the other three DG's were periodically tested to ensure operability. The 2A-A DG was returned to service within the time allowed by technical specifications.

Also on July 27, the inspector observed maintenance on the 1A1-A Control and Auxiliary Vent Board. The board was out of service because of arcing that caused the feeder breaker to trip. The licensee attributed the arcing to a bus link that was loose causing increased resistance. The inspector reviewed the work package in use which consisted of Maintenance Request #45350 and Modification and Addition Instruction M&AI-9 "Inspection of Bolted Connections." The electricians performing the work had repaired the damaged bus and were awaiting a quality control inspector to verify the torque used to retighten bolted connections. The work appeared to be performed by qualified personnel in accordance with applicable requirements. The switchboard was returned to service within the time allowed by technical specifications.

On July 28, 1982 the inspector witnessed maintenance being performed on the 1A-A DG. The turbo-chargers were being replaced as required by Unit 1 license condition 2.c.(15) as discussed in the Safety Evaluation Report (SER) Supplement 2, Section 8.3.1. The work was discussed with maintenance personnel and the cognizant engineer. The work package was reviewed and consisted of Maintenance Request MR #014784 for the 1A-1 engine and MR #014785 for the 1A-2 engine and Special Maintenance Instruction SMI-0-82-1 "Replacement of Diesel Generator Turbocharger." The work was also being supervised by a specialist from the licensee's rotating equipment group.

Following completion of the turbo-charger replacement on both engines of the 1A-A DG post maintenance testing was being performed in accordance with SI-7 and a problem was identified with the DG control circuitry that was unrelated to the turbo-charger replacement. Troubleshooting by the licensee resulted in identification and replacement of a malfunctioning motor driven potentiometer. The DG was successfully tested and returned to service within the time allowed by technical specifications. During the 1A-A DG

outage the inspector verified that the other three DG's were periodically tested as required to ensure their operability.

On July 28, 1982 the licensee discovered during routine surveillance that the pressurizer relief tank (PRT) level indication in the Unit 2 backup control room was inoperable. Technical Specification 3.3.3.5 requires that the instrument be repaired in seven days or the Unit must be shut down. The licensee determined the problem to be located in the instrument transmitter which is located in the lower containment and inaccessible during power operations due to high radiation levels. The licensee contacted the Office of Nuclear Reactor Regulation (NRR) and requested an extension for the Tech Spec action time to allow continued operation until the next scheduled outage. During subsequent discussions between the licensee and the NRR licensing project manager (LPM) it was concluded that the PRT level indication is not safety-related and need not be included in the instrument requirements of Tech Specs as a condition for continued operation. On August 3 NRR approved the deletion of required PRT level indication in the backup control room for both Unit 1 and 2 Tech Specs. The inspector discussed the Tech Spec change with the LPM and did not object to the change. Region II management was informed of the change request and the subsequent approval by NRR.

On July 14, 1982 the inspector became aware of a problem the licensee was having with Auxiliary Feedwater (AFW) check valve seat leakage on Unit 1. The check valves are located in the AFW lines to the four steam generators (SG) and isolate the system from the SG's when it is in a standby mode. It appeared that one or more of the valves was leaking past the seat and allowing hot water to back up into the "A" Motor Driven AFW pump and suction piping. The inspector reviewed the situation to determine what the requirements are for limits on the seat leakage for these particular valves and what measures the licensee planned in correcting the situation.

It was determined by drawing review that the design temperature for the AFW pumps and piping upstream of the check valves was 120°F. The inspector determined by discussion with the Operations Supervisor and Assistant Superintendent - Operations and observation that the licensee was monitoring system temperature upstream of the check valves and operating the AFW pump as necessary to maintain it within the design temperature limits. In conjunction with this the licensee was isolating the check valves one at a time to determine which ones were leaking. The inspector periodically verified that proper administrative controls were being exercised to ensure proper system configuration and tech spec limits were being met for inoperable AFW systems. The licensee subsequently identified and repaired the leaking valves which corrected the problem.

The inspector reviewed the testing requirements of the licensee's tech specs, Section XI of the ASME Code and 10 CFR 50 Appendix J. The valves are not included in tech spec requirements to measure seat leakage. The licensee has classified the valves as type C in accordance with Section XI of the ASME code in their Inservice Inspection Program which is currently under review by the NRC. Type C valves are those which are self actuating

such as relief or check valves and do not require seat leakage tests unless they are also classified as type A. The valves are not classified as containment isolation valves as discussed in the Sequoyah Safety Evaluation Report (SER), Supplement 5, Section 6.2.4, therefore they are not required to receive type C leak testing as described in 10 CFR 50, Appendix J. In light of the above review the inspector determined that there doesn't appear to be any restrictions on the seat leakage of the AFW check valves other than system and component design temperature and pressure limits. The inspector discussed his findings with Region II management and will continue to pursue the problem with the Region II technical support staff.

During repair of the leaking check valves the licensee identified a possible generic manufacturing defect which contributed to the valve seat leakage. The valve manufacturer has been contacted and the licensee is in the process of evaluating the defect for reportability under 10 CFR 21.

No other violations or deviations were identified.

6. Employee Training

On July 6, 1982 the inspector attended a session of the licensee's employee training covering the new Radiological Work Permit program which is a major change to the present Special Work Permit program to allow more operational flexibility without degrading worker protection. The inspector verified that the training was presented by a qualified person and covered the areas identified in the training outline.

No violations or deviations were identified.

7. Annual Radiological Emergency Plan (REP) Drill

The inspector participated with a team of Region II Emergency Preparedness inspectors in witnessing the licensee's annual REP drill on July 8, 1982. The inspector witnessed the licensee's response in the main control room including initial diagnosis and response, notification, plant operations, classification of severity levels and attempts to diagnose and mitigate subsequent problems during the scenario. The inspectors comments and observations were provided to the team leader for the exit meeting that was held with the licensee on July 9. For details of the drill and identified deficiencies see IE report 50-327, 328/82-13.

No violations or deviations were identified.

8. License Requirements

The inspector is remaining cognizant of the licensee's efforts concerning Unit 1 license requirement 2.c.(15) as described in SER Supplement 2 section 8.3.1. The requirement is to increase the reliability of the emergency DG's by replacing the turbo-chargers with "heavy-duty" 17:9:1 gear ratio units, provide maintenance, quality control and operations personnel with specific training concerning emergency diesel generators and install air dryers and

filters in the DG air start system. These items must be completed prior to the end of the first refueling outage for Unit 1. The turbo-chargers have been replaced on the 1A-A and 2A-A DG's as described in paragraph 5. The inspector has reviewed the licensee's training program for emergency DG's and finds it acceptable. The inspector will verify prior to startup following the first Unit 1 refueling outage that the turbo-chargers on the 1B-B and 2B-B DG's are replaced, appropriate personnel have received the emergency DG training and the air start systems are modified on all four DG's. The results of the inspection will be reported at that time.

No violations or deviations were noted.

9. Independent Inspection Effort

The inspector routinely attended the morning scheduling and staff meetings during the reporting period. These meetings provide a daily status report on the operational and testing activities in progress as well as a discussion of significant problems or incidents associated with the operations effort.

In response to a problem identified with thermal sleeve failures at several pressurized water reactors (PWR's), the inspector reviewed the design and installation of thermal sleeves in the 10" cold-leg safety injection nozzle's of the Sequoyah Units. Drawings were reviewed and installation methods were discussed with licensee and vendor representatives at the site. It appears that the installation method for the thermal sleeves at Sequoyah is significantly different than that used at sites where failures have occurred and it also appears that the method used would be less susceptible to failure. Notification of the potential failures has been made to all power reactor licensees by the NRC in IE Information Notice 82-30 and the entire problem is under review by the NRC to determine what further corrective action is necessary.

In conjunction with recent allegations concerning the burial of contaminated equipment at TVA construction sites, a Region II Health Physics inspector requested that the resident inspector inquire into the possibility of the burial of contaminated equipment at the Sequoyah site. On July 19, 1982 the inspector questioned the Assistant Superintendent-Operations and Engineering and the Health Physics Supervisor to determine if they had any knowledge of the burial of contaminated equipment at the site. They both stated that they neither had any knowledge or suspected that any contaminated equipment was being buried onsite. The Assistant Superintendent in addition stated that it is not a practice to bury any kind of trash or debris onsite. The inspector had no further questions. This information was relayed to Region II.

The inspectors attended the quarterly resident inspector meeting in Atlanta, Ga. on July 23, 1982.

No violations or deviations were identified.