



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30303

Report Nos. 50-327/82-22 and 50-328/82-22

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

Facility Name: Sequoyah

Docket Nos. 50-327 and 50-328

License Nos. DPR-77 and DPR-79

Inspection at Sequoyah site near Chattanooga, TN

Inspector: J. L. Coley

10/15/82  
Date Signed

Approved by: J. J. Blake  
J. J. Blake, Section Chief  
Engineering Inspection Branch  
Division of Engineering and Technical Programs

10/15/82  
Date Signed

SUMMARY

Inspection on September 20-24, 1982

Areas Inspected

This routine, unannounced inspection involved 35 inspector-hours on site in the areas of inservice inspection, IE Bulletin No. 79-13 and follow-up on a regional request.

Results

Of the three areas inspected, no violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. McGriff, Assistant Plant Superintendent, Sequoyah Nuclear Plant (SNP)
- \*D. Howard, ISI Supervisor, Nuclear Central Office (NCO)
- \*T. Hale, ISI Engineer Associate (NCO)
- \*R. Bentley, ISI Power Plant Maintenance Specialist (NCO)
- \*E. Crane, ISI Mechanical Engineer (NCO)
- \*L. Wyatt, Mechanical and Welding QC, Construction (SNP)
- \*G. Kirk, Compliance Engineer (SNP)
- \*D. Gorman, QA Engineer (SNP)

#### NRC Resident Inspector

\*S. Butler

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on September 24, 1982, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection finding listed below. No dissenting comments were received from the licensee.

Unresolved Item 327,328/82-22-01, Determine welding activities of unqualified welder, paragraph 7.

### 3. Licensee Action on Previous Enforcement Matters

Not inspected.

### 4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 7.

### 5. Inservice Inspection-Observation of Work and Work Activities (73753 B) - Unit 1

The inspector observed the ISI activities described below to ascertain whether inservice examinations of pressure retaining components were performed in accordance with regulatory requirements and licensee commitments.

In accordance with 10 CFR Part 50.55a(g)(4)(iv), Sequoyah's ISI program was prepared to meet the requirements of the 1977 Edition, Summer 1978 Addenda of Section XI of the ASME Boiler and Pressure Vessel Code. Steam generator tubing examination requirements were in accordance with Regulatory Guide 1.83, Rev. 1, and TVA's Technical Specification 4.4.5.3. In accordance with 10 CFR Part 50.55a(b)(2) the extent of examination for piping welds, examination categories B-J and C-F were in accordance with the 1974 Edition, Summer 1975 Addenda of ASME, Section XI (examination categories B-J, C-F, and C-G). Extent of examination is defined as criteria for the selection of class A and class B components for examination and as criteria for determining which class B components may be exempt from examination. The extent of examination also specifies the location on the components to be examined (i.e., length of weld).

- a. In-process ultrasonic (UT) examinations including instrument calibrations were observed for the following main steam piping welds.

<u>Weld No.</u>	<u>Drawing No.</u>	<u>Class</u>	<u>Weld Type</u>
MSS-10	CHM-2340-C Rev.0	B	Circumferential Butt Weld
Longitudinal	CHM-2340-C Rev.0	B	Longitudinal Butt Weld
Weld @ 3:00			on Tee Fitting
between MSS-9			
and MSF-16			
Longitudinal	CHM-2340-C Rev.0	B	Longitudinal Butt on Tee
Weld @ 9:00			Fitting
between MSS-9			
and MSF-16			

The inspection was compared with the applicable procedure in the following areas:

- Recording of inspection results
- Type of apparatus used extent of coverage of weldment
- Calibration requirements
- Search units
- Beam angles
- DAC curves
- Reference level for monitoring discontinuities
- Method for demonstrating penetration
- Limits for evaluating and recording indications
- Recording significant indications
- Acceptance limits

- b. In-process eddy current examinations (ET) were observed for the first row of tubes on steam generator #1. The area of examination was the circular radius portion of the tubes. Eddy current examinations were performed by Cramer and Lindell Engineers, Inc.

The inspection was compared with the applicable procedure in the following areas:

- Equipment indentified in procedure
- Method of maximum sensitivity is applied
- Method for determining material permeability has been recorded
- Method of examination has been recorded
- Examination equipment has been calibrated in accordance with the applicable performance reference
- Amplitude and phase has been calibrated with the applicable calibration reference and is recalibrated at a predetermined frequency
- 100% coverage of steam generator tubes occurs during the examination
- Acceptance criteria is specified.

Within the areas examined, no violations or deviations were observed.

6. IE Bulletin 79-13 (92703) Unit 1

(Open) IE Bulletin 79-13, Cracking in Feedwater Piping. TVA's letter dated September 15, 1982, requested relief from IE Bulletin requirements of radiographically examining (RT) the feedwater piping welds from the steam generator nozzle and safe end welds to the first support, the feedwater line to containment penetration welds, the main feedwater line on pipe diameter downstream of the auxiliary feedwater to main feedwater connection, and performing visual inspections of all feedwater system piping supports and snubbers in containment other than required by ASME Section XI. TVA's basis for relief was that when IE Bulletin No. 79-13 was issued the real cause of the feedwater piping cracking problem was not fully understood. As a result of a subsequent investigation conducted by the Westinghouse owners group, and document in WCAP - 9693, Investigation of feedwater line cracking pressurized water reactor plants, dated June 1980, informati was obtained to substantiate that the feedwater pipe cracks were fatigue failures which were caused by thermal stratification and thermal striping during low-flow rate feedwater injection. The effects of thermal stratification and striping are enhanced by temperature difference between cold feedwater and hot steam generators.

TVA believes there is a basis for volumetric examinations of the feedwater nozzle-to-pipe welds because thermal stratification and striping are known to occur at this location. However, now that the cause of feedwater pipe cracking is known, TVA does not believe there is a basis for requiring volumetric examinations of the remaining feedwater piping because the thermal and geometric conditions do not exist at these locations to support thermal stratification and striping.

In addition, the feedwater piping in question for Sequoyah units 1 and 2 was in accordance with ANSI B31.7, 1969 Edition with 1970 Addenda, and was RT examined in accordance with TVA process specification 3.M.2.1(d) which

required 2T sensitivity and acceptance standards identical with NC-5000 of ASME Section III, which the bulletin required licensees to upgrade to. During this inspection the inspector reviewed the construction radiographs listed below to determine if 2T radiography was in fact obtained and to gain assurance that the radiographs were acceptable. Radiographs for the following unit 1 welds were reviewed:

<u>Weld No.</u>	<u>Material Thickness</u>	<u>System</u>
FDF-7	1.125"	Feedwater (FW)
FDS-29	.843"	FW
FDF-18	1.125"	FW
FDF-139B	.843"	FW
FDF-139A	.843"	FW
FDS-31	.843"	FW
FDS-7	.843"	FW
FDS-22	.843"	FW
FDS-23	.843"	FW
FDS-21	.843"	FW
FDS-20	.843"	FW
FDS-15	.843"	FW
FDS-14	.843"	FW
FDS-13	.843"	FW
FDF-24	.843"	FW

Within the areas examined no violations or deviations were noted. However, final evaluation of TVA's request for relief for Unit 1 was handled by other Region II and IE Headquarters personnel.

The licensee will be notified of the disposition of their request for relief in separate correspondence.

7. Follow-up on Regional Request (92705B) Units 1 and 2

Region II had received information alleging that welding had been performed on Sequoyah Units 1 and 2 by an unqualified welder. The inspector reviewed the qualification records for this individual and also reviewed the qualifications of several other welders disqualified when a recent QC audit of the OS-6 printout (printout of on-site welders qualifications) revealed that these welders had failed to maintain their qualifications in certain welding processes. The inspector held discussions with several construction QC inspectors who had performed the audit of the OS-6 printout and found that, although welders were disqualified, the licensee did not determine if the welders actually performed any welding that they were not certified to perform. As a result of incomplete records in the welder's qualification folders and insufficient time for the inspector to determine the welding activities of welders who had been disqualified, Mr. C. E. Greek, Construction Engineer for Sequoyah nuclear site, was requested to furnish the inspector the following information:

- (1) Determine how many on-site welders were disqualified as a result of the OS-6 printout audit.
- (2) Determine the welding activities of on-site welders who had qualification records missing or incomplete and were on the OS-6 printout as qualified. If combination process welds are indicated on the readout, determine if the welder welded both processes or a single process.
- (3) Determine how many of the welds identified above would be considered satisfactory if plate qualifications were used to qualify welders to limited positions of pipe in accordance with table QW-461.7 of Section IX of the ASME Code.

The licensee was notified that this item would be reported as Unresolved Item 327,328/82-22-01, Determine Welding Activities of Unqualified Welders.

Within the areas examined, no violations or deviations were observed.