

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
5N 157B Look ut Place

January 14, 1986

Director of Nuclear Reactor Regulation  
Attention: Mr. B. Youngblood, Project Director  
PWR Project Directorate No. 4  
Division of Pressurized Water Reactors (PWR)  
Licensing A  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Youngblood:

In the Matter of ) Docket Nos. 50-327  
Tennessee Valley Authority ) 50-328

As a result of comments received during a TVA-NRC meeting related to our welding program review which was held on January 7, 1986, TVA has decided to include, as part of the program review, a sample reinspection of welds at Sequoyah Nuclear Plant. Enclosed for your review and approval is our Work Plan for accomplishing that reinspection. This Work Plan will also be submitted as part of the TVA weld program review descriptions currently scheduled for January 17, 1986.

Because completion of the weld program review could affect the startup schedule of both units at Sequoyah, please expedite your review and notify R. H. Shell at FTS 858-2688 of your approval or comments with require resolution.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*J. W. Huffman*  
J. W. Huffman  
Manager of Licensing

Sworn to and subscribed before me  
this 14<sup>th</sup> day of Jan. 1986

*Paulette H. White*  
Notary Public

My Commission Expires 8-24-88

Enclosure  
cc: See page 2

*Add: E.B. Ballard*

*A047*

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Director of Nuclear Reactor Regulation

January 14, 1986

cc (Enclosure):

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Dr. J. Nelson Grace, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323

Mr. Carl Stahle  
Sequoyah Project Manager  
U.S. Nuclear Regulatory Commission  
7920 Norfolk Avenue  
Bethesda, Maryland 20814

WELDING PROJECT  
PHASE 2, PART 2  
SEQUOYAH REINSPECTION OF SELECTED WELDS  
WORK PLAN

OBJECTIVE

The objective of the program described in this submittal is to provide additional data addressing the adequacy of the Sequoyah weld program and to provide indicators regarding the suitability of welding in relation to restarting the SQN Units and address nonspecific employee concerns related to welding.

BACKGROUND

Employee concerns from Watts Bar have possible generic implications to the Sequoyah plant. Some of these concerns relate to the adequacy of: quality of weld filler materials, control of weld filler materials, welder qualifications, inadequate training of welders, inspector qualifications, falsification of records, weld adequacy, and record keeping. A reinspection of hardware to design requirements and comparison to the records package cuts across these and other issues to address the concerns, the welding program adequacy, and provides additional data regarding the suitability for restart of SQN Units.

Nonspecific employee concerns are best addressed by reestablishing confidence in the original programs. Inadequacies in the welding program in the areas of these concerns would be reflected in the hardware quality and the relevant records. While the concerns have generic implications, this reinspection will address them by focusing on safety portions of the plant where there have been fewer previous inspections and, therefore, fewer opportunities for weld defects to have been identified. Because Class 1 and 2 piping receive more inspections during construction, Preservice Inspection (PSI) and Inservice Inspection (ISI), these piping systems will be excluded. This is a conservative approach and biases the reinspection toward items which have had only one required inspection, and, therefore, have the most likelihood of having previously unreported defects.

This reinspection cuts across the various construction crafts, acceptance criteria, and timeframes of the construction phase as well as the operational phase of Sequoyah. To address these elements it is necessary to reinspect selected welds on piping and pipe supports, HVAC duct supports, conduit supports, cable tray supports, and miscellaneous structural steel within the safety-related portion of the plant.

Due to an employee concern on the duct work made from spiral welded pipe at Watts Bar Nuclear Plant and its subsequent investigation, TVA will reexamine a portion of a like system at SQN to verify that field welded joints meet the design requirements.

Due to the normal construction sequence at a job site, and because various crafts are involved throughout the construction phase, the selection of different systems and structures at various elevations of the plant will cut across different timeframes of plant construction. Piping and supports, electrical supports, HVAC supports, and structural steel are all installed by different crafts. Although the crafts are different, the welding programs are basically the same except for piping. For conservatism in this Work Plan, the installation crafts are being considered. Pipefitters', ironworkers', electricians', and sheetmetal workers' welds will be included in the reinspection. This increases the number of welds being reinspected. Rather than inspect only two groups of welds, piping and structural derived from the basic welding program five groups have been developed based on the welding program and the crafts which implement the program. The reinspection effort also includes some modifications performed by Nuclear Operations.

#### SCOPE

The reinspection of features described below addresses the concerns described above for various installation crafts and various timeframes.

1. Selected piping and attachment welds in Class 3 and ANSI B31.1 systems (ERCW, CCW, and AFW) at various elevations in the auxiliary building. The sample will include carbon and stainless steel lines.
2. Welds of supports for piping (related to above lines).
3. Welds of cable tray supports and conduit supports in the Auxiliary Building.
4. Structurally significant welds on miscellaneous structural steel in the Auxiliary Building.
5. HVAC support welds in the Auxiliary Building.

Approximately 100 welds will be reinspected in each of the above groups. The reinspection is to be in areas which will minimize inspector exposure to radiation and other hazards. Welds which are inaccessible due to wall or floor penetrations, or fireproofing will be excluded.

In addition to the above groups, butt-welds will be visually examined for a portion of spiral welded pipe used as ductwork.

For the structural steel and support welds, the principle weld attributes to be addressed are size and location. Existing paint will not affect this inspection. However, thickness as measured by a dry film thickness indicator will be reported for information. Structurally significant weld discontinuities will also be reported. Weld discontinuities, such as porosity, which indicate inadequate filler metal are to be reported. The generic type of filler metal is also to be reported, carbon steel as opposed to stainless steel.

For piping welds, the inspection will be that which was required by the Construction Code of record. Visual inspection will also be applied to all welds to assess indicators of weld filler metal adequacy such as porosity, and indicators of welder qualification. Weld metal generic type will also be checked by magnetic means.

## CRITERIA

All inspections will be conducted in accordance with established visual inspection procedures and this work plan. In case of conflicts, this work plan shall govern. Structural steel and support welds which were designed based upon the AISC specification will be reinspected to drawing requirements in accordance with NCIG-01. Paint need not be removed. Pipe welds will be reinspected to the B31.1 or B31.7 code of record using the visual and nondestructive examination methods and acceptance criteria as applicable. The generic filler metal type for all welds will be checked by the use of magnets. The acceptability will be based upon the weld metal being of the correct type; carbon steel or stainless steel as appropriate for the materials being joined. The confirmation of generic filler material type does not require a special procedure, as it is an accept/reject test. The results of filler metal type shall be recorded on the respective visual examination records. The acceptance criteria for spiral duct butt-welds will be the design requirements supplemented by the special data section.

## REINSPECTION PERSONNEL

All structural and support inspection personnel shall be qualified as AWS-Certified Welding Inspectors (CWIs). The CWIs will be from TVA's Quality Engineering Branch (Vendor Surveillance). For piping, inspection personnel shall be qualified in accordance with ASNT-TC-1A (or equivalent for visual) Level II or higher.

#### QUALITY ASSURANCE

The inspection work will be overviewed by a Certified Welding Inspector with ASNT-TC-1A Level II certifications for NDE who is independent of TVA. The independent inspector will provide a written report to the Welding Project Manager summarizing the overview activity and his concurrence or reason for disagreement with the results.

#### SPECIAL DATA

The inspectors will make a notation for each weld, their own opinion regarding the quality of the welders work: better than average, average, or does not meet requirements. The inspectors will note if the weld has been painted. In making the evaluation, the inspectors will consider undercut, porosity, convexity, spatter, overlap, or rollover and/or other specific indicators which he observes. This opinion is to be recorded on the inspection record.

#### RECORDS

For each weld there will be a record of acceptability as to size, location and structurally significant defects, the generic type of filler metal, indicators of filler metal quality and the inspectors opinion of the welder workmanship.



#### PLANT SAFETY & SECURITY

The plant safety and security procedures will apply.

#### RECORDS COMPARISON

Part of the independent verification audit will be to address at least one document package which the auditors select from each of the above five reinspection groups to confirm the records adequacy, and thereby close the loop regarding records and program adequacy. The independent audit is being performed by Bechtel and is described in the Welding Project Program Description as part of Phase 2, Part 1.

#### DISPOSITION OF DISCREPANT CONDITION

Discrepancies will be documented in accordance with TVA quality assurance program and dispositioned by the design organization. Determination of generic importance of discrepancies to the welding program will be performed by the Welding Project. All defects which require design disposition will be reported along with the ultimate disposition. Root causes will be determined where possible. All this will be included in the Phase 2 Final Report.

#### INSPECTION REPORT

The Inspection Report on this reinspection will immediately be forwarded to TVA Management and NRC and will subsequently be included in the overall report on the Welding Project activities on SQN.

SCHEDULE

This reinspection is scheduled to start on January 14, 1986 and expected to be completed within two weeks.