

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

October 3, 1980

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

YELLOW CREEK NUCLEAR PLANT UNITS 1 AND 2 - NRC-OIE REGION II LETTER
RII:WPK 50-566/80-03 AND 50-567/80-03 INSPECTION REPORT - SECOND REVISED
RESPONSE TO INFRACTION

The subject letter dated February 28, 1980, cited TVA with one infraction in accordance with 10 CFR 2.201 on failure to establish adequate measures to control radiography. The initial response to this infraction was submitted on March 24, 1980. Supplemental reports were submitted on April 28, 1980, and June 10, 1980, and a revised response was submitted on August 18, 1980. NRC-OIE Inspector J. Coley requested that the scope of this infraction be expanded to cover the additional problem of film darkening. The enclosed second revised final report covers this problem.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 857-2851.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Jr., Director (Enclosure) ✓
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE
YELLOW CREEK NUCLEAR PLANT UNITS 1 AND 2
FAILURE TO ESTABLISH ADEQUATE MEASURES TO CONTROL RADIOGRAPHY
SECOND REVISED RESPONSE TO NRC INFRACTION
50-566/80-03-01, 50-567/80-03-01

Infraction

As required by 10CFR50, Appendix B, Criterion IX, and as implemented by Tennessee Valley Authority (TVA) Topical Report TVA-TR-75-A1, Section 17.1A.9, "Measures shall be established to assure that special processes, including---nondestructive testing are controlled and accomplished---in accordance with applicable codes---." ASME Code Section III, paragraph X3334.4, requires that penetrameters be placed adjacent to the weld seam, in addition paragraph NE-5211 requires full radiography for longitudinal butt welded containment joints.

Contrary to the above, on February 7, 1980, seven radiographs of containment structural butt welds exhibited penetrameters and shims extending into the weld obscuring part of the area of interest.

Corrective Actions Taken and Results Achieved

All radiographs made before February 22, 1980 (6,849), have been reexamined for similar deficiencies, and an additional 102 were found and nonconformed.

Reevaluation of the 102 radiographs by Chicago Bridge and Iron (CBI) initially nonconformed resulted in the determination that shims were not overlapping into the weld in 95 cases, and only 7 of these welds required reradiographing. TVA reevaluation of these 95 cases has resulted in 7 more welds which TVA has requested to be reradiographed. As stated in TVA's March 24, 1980, letter to J. P. O'Reilly, two of the radiographs cited by the NRC (seam A1 increments 1 to 2 and seam A2 increments 20 to 21) were reevaluated and found to be acceptable. Thus, only 19 welds will have to be reradiographed.

In the course of film review, a problem was revealed in that some of the film had undergone a severe darkening after being examined and accepted by CBI, TVA, and ANI. The film identified in this problem has also been nonconformed and reported in NCR YC-088. An initial investigation of this problem revealed that TVA had not performed routine checks of processed film for storage life quality. To rectify this situation, all film in storage was reviewed and company and industry expertise was called upon to determine if processed film could be effectively rewashed to achieve archival storage quality. After reviewing all film processed from April 5, 1979, through March 3, 1980 (6,943 film intervals), there were 758 film intervals with density 3.7 or above. These intervals were reprocessed. From the 758 intervals reprocessed, 117 intervals were acceptable, 622 were rejected and reshot. Nineteen intervals were located in penetration cutout areas of the shell; no reshoots were made on these. This information was noted on the film jacket.

A strip of film approximately 1-1/8" by 4-1/2" was selected, at random, from the end of a contract file film for a methylene blue test for each day's wash process. The results of the methylene blue tests on all rewashed and refixed films were very good. Concurrent with the rewash considerations, other factors affecting film storage life (film quality, chemical quality, processing technique) were thoroughly investigated.

As a result of these investigations, a portion of the film processing procedure was identified as the likely cause of the film darkening. Approximately 500 gallons of water used in film processing was supplied by a small trailer tank during the period from April 5, 1979, to July 11, 1979. The processing required 3 gal/min for film washing which could not be easily regulated from the trailer. In addition, through the hot months, the water from the tank trailer was too hot for process use (90° F) and the water cooler in the trailer could not cool fast enough to maintain 78° F wash water.

Steps Taken to Avoid Further Recurrence

In order to prevent a recurrence, the film interpreters and radiographers have been instructed in the requirements of shim placement. Also, CBI will issue a special written instruction informing all radiographers and film interpreters on proper placement of shims. This Special Instruction No. 5 will become part of the Special Instruction Folder No. 3.0 which is used in training new radiographers and film interpreters.

To prevent film darkening, TVA has established strict processing guidelines and tests to ensure that all film processed is of archival quality. Tests include hypo estimator tests each time the film is processed, as well as silver stain densitometric tests performed weekly and methylene blue tests performed every three months.

Date of Full Compliance

The special instruction on shim placement has been issued and the 12 welds were reradiographed by July 1, 1980.

Six additional welds identified by TVA were reradiographed by August 13, 1980. The seventh weld was removed for installation of a penetration and thus did not require reradiographing. All radiographs, both those reradiographed and others, were found acceptable from penetrameter concern.

Concerning the film darkening of radiographs, TVA's followup action of September 25, 1980, included random densitometer checks of reshot radiographs. The checks indicated that the radiographs are of archival quality.