

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

July 8, 1980

Central File

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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:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 80-08 - RII:JPO
50-327, -328, -390, -391, -438, -439, -566, -567 - SEQUOYAH, WATTS BAR,
BELLEFONTE, AND YELLOW CREEK NUCLEAR PLANTS

In response to your letter dated April 7, 1980, which transmitted
OIE Bulletin 80-08, we are enclosing the results of our investigation
for Sequoyah, Watts Bar, Bellefonte, and Yellow Creek Nuclear Plants.

If you have any questions concerning this matter, please get in touch
with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills
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
TVA RESPONSE TO IE BULLETIN 80-08
EXAMINATION OF CONTAINMENT LINER PENETRATION WELDS
FOR SEQUOYAH, WATTS BAR, BELLEFONTE AND YELLOW CREEK NUCLEAR PLANTS

The TVA responses to items 1 through 3 of the subject bulletin concerning welds on flued head penetration connections are as follows:

SEQUOYAH NUCLEAR PLANT

1. Yes, Sequoyah penetrations contain the flued head design.

2a. Applicability of ASME Code and/or RG 1.19

Regulatory Guide 1.19 does not apply

ASME Section III, Division 1, 1968 Edition, Summer 1969 Addenda applies.

2b. Type of Nondestructive Examinations Performed

The following examinations were performed on each penetration:

- (1) Fitup and cleanliness inspection.
- (2) Visual examination of weld joint.
- (3) Liquid Penetrant (PT) or magnetic particle (MT) examination.
- (4) Radiography examination (RT).

2c. Type of Weld Joints

All of the applicable weld joints are butt welds. No backing bars were used. Pipe materials employed are SA-155 KFC 70-1, SA-333 GR 1, SA-358TP316-1, SA-106 GR B, SA312 GR B, SA376TP304, SA376TP316, and SA312TP304.

Pipe sizes range from approximately 2 inches to 52 inches in diameter.

2d. Results of Construction NDE

The major defects found were lack of fusion, slag, and porosity. The penetrations requiring the most repairs (about half of the repairs to date) were the flued head penetrations with bellows. These penetrations required the fabrication assembly to the containment sleeve. Due to the number of segments required to fabricate the Dutchman and the facts that they were hand formed, that the working area was restricted, and that the material was difficult to weld, a large number of repairs were required.

3. Justification for Not Performing Radiography

Not applicable.

WATTS BAR NUCLEAR PLANT

1. Yes, Watts Bar penetrations contain the flued head design.

2a. Applicability of ASME Code and/or RG 1.19

Regulatory Guide 1.19 does not apply.

ASME Section III, Division 1, 1971 Edition, Winter 1971 Addenda applies.

2b. Type of Nondestructive Examination Performed

All penetrations were visually examined and radiographed.

2c. Type of Weld Joints

All applicable weld joints were open butt welds with no backing bars employed.

Pipe sizes ranged from 2 inches to 52 inches and pipe materials were SA106 GR B, SA105, SA234 WPB, SA333 GR 1, SA516 GR 60, and SA516 GR 70.

2d. Results of Construction NDE

Of a total of 221 welds to date (out of 234 total), 155 were acceptable without repairs. Sixty-six welds had rejectable indications which have since been repaired. These welds were rejected either singularly or in combination for a number of reasons, including (in order of frequency of occurrence) incomplete fusion (40 repairs), slag (26), porosity (23), concave root (13), burn through (9), melt through (4), surface indications (40), inclusions (3), undercut (2), and one each of incomplete penetration, voids, and cracks.

3. Justification for not Performing Radiography

Not applicable.

BELLEFONTE NUCLEAR PLANT

1. Yes, Bellefonte penetrations contain the flued head design.

2a. Applicability of ASME Code and/or RG 1.19

Regulatory Guide 1.19 applies.

ASME Section III, Division 2, 1975 Edition, without Addenda applies.

2b. Type of Nondestructive Examinations Performed

Out of 134 total welds, all but 6 were or are scheduled to be radiographed. The other 6 (type I on unit 1) will be ultrasonically examined (ut).

2c. Type Weld Joints

All of the subject welds were single vee butt welds with no backing bars. Pipe sizes ranged from 4 inches in diameter (0.337 inch thick) to 54 inches in diameter (1.5 inches thick). Piping materials employed are SA106 GR B, SA333 GRP 6, SA350LF2, SA516 GR 70, and SA182F304.

2d. Results of Construction NDE

Thus far 13 welds on unit 1 have required repair out of the 67 total welds of which 47 have been accepted. On unit 2, 10 welds required repair out of 67 total with 26 accepted. Repairs have been for normal defects expected to be encountered in welding operations of this type including (in order of occurrence) inclusions (in about 60 percent of the welds requiring repair), lack of fusion (35 percent), suckback (30 percent), lack of penetration (26 percent), surface indication, porosity, excess metal, undercut, burn through, and one crack.

3. Justification for Not Performing Radiography

TVA has decided to use MT and UT inspection methods rather than RT on 6 type I flued head penetration welds on unit 1 at Bellefonte. TVA's justification for using UT in place of RT for the type I flued head welds is that film placement for RT would have to be made from the annulus side through an opening between the process pipe and sleeve 2 to 4 inches in width for a distance of approximately 10 feet to the weld joint. TVA considers this situation as meeting the intent of NE-5211.1 for weld joint details that do not permit the use of radiography.

YELLOW CREEK NUCLEAR PLANT

1. Due to the stage of design and construction at Yellow Creek, TVA has not completed the design of the piping penetrations and the procurement

has not started. However, we expect to use the flued head design in accordance with previous TVA practice.

2a. Applicability of ASME Code and/or RG 1.19

Regulatory Guide 1.19 does not apply

ASME Section III, Division 1, 1977 Edition, Winter 1978 Addenda applies

2b. Type of Nondestructive Examinations Performed

TVA will require RT on all such penetrations where reasonable accessibility for film placement is available.

2c. Type of Weld Joints

This will depend on the final design and is not available at this time. This information will be available at the site.

2d. Results of Construction NDE

Not applicable

2e. Justification for Not Performing Radiography

Radiography will be performed in accordance with the construction schedule.