TENNESSEE VALLEY AUTHORITY
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NOV 21 1989

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - 10 CFR 50.55a(a)(3) - PROPOSED ALTERNATIVE ACCEPTANCE TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION III

This letter requests NRC approval in accordance with 10 CFR 50.55a(a)(3) of an alternative to ASME Section III requirements.

During construction of Watts Bar Unit 1, it was discovered that the vendor of certain containment penetration assemblies had exercised specific provisions of the ASME Code Section III that permitted them to substitute the system hydrostatic tests for the component hydrostatic test. This fact was not discovered by the WBN construction forces until the Unit 1 system hydrostatic tests of the systems in which the penetration assemblies had been installed were completed. Therefore, although the system pressure tests were performed and the penetration assemblies were exposed to the required ASME Section III hydrostatic test pressure, no provisions were made to examine the vendor welds during this test. Nonconformance Report (NCR) 5609 was initiated to document this condition.

NCR 5609 was originally dispositioned use-as-is. It was subsequently decided that the NCR 5609 disposition did not result in a request for an exemption from our commitments to ASME Section III. Condition Adverse to Quality Report (CAQR) WBP 870310 was issued to change the disposition of NCR 5609 to require that the hidden vendor welds on the penetration assemblies be brought to the ASME Section III examination pressure and visually examined for leakage in accordance with ASME Section III. It has now been determined that this disposition will, as stated in 10 CFR 50.55a(a)(3), "result in hardship and unusual difficulties without a compensating increase in the quality and safety" of Watts Bar.

TVA wishes to request relief pursuant to 10 CFR 50.55a(a)(3) to apply an alternative to the ASME Section III requirements for visual examinations during hydrostatic testing for the vendor welds that are not accessible and were not examined during the original field hydrostatic test. TVA proposes to accept the original use-as-is disposition which provides an acceptable level of safety.

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In order to make the welds in question accessible for examination, as proposed in the disposition to CAQR WBP 870310, it will require cutting several "windows" in the guard pipe protecting the process pipe. Experience gained during similar work on Unit 2 indicates that this effort will be very difficult, especially replacing the "windows." Even with the "windows" cut in the guard pipe, some of the unexamined welds will only be accessible for examination by using remote viewing devices such as mirrors or fiberoptics. This type of examination is difficult to execute to ensure both completeness and accurate interpretation.

The penetration assemblies for which relief is being requested are tabulated in the enclosed Table 1 along with various information about the assemblies. Sketches depicting the physical configuration of the various types of penetration assemblies are included as Enclosure 1 following Table 1. TVA believes that a use-as-is disposition of these welds is technically acceptable for the following reasons:

1. The circumferential welds in question were fabricated and inspected in accordance with ASME III, Division 1, with Authorized Nuclear Inspector (ANI) involvement at the manufacturer.

2. A hydrostatic or pneumatic test to ASME III, NC-6000 was performed on the field welds installing the penetration assemblies in the piping system. Each of these was visually examined in accordance with ASME Section III and accepted.

3. Pressure boundary pipe containing longitudinal weld seams used by the manufacturer to fabricate the penetration assemblies was hydrostatically tested by the material manufacturer in accordance with the ASME material specification. Therefore, all longitudinal welds were pressure tested and inspected as required by the ASME code.

4. Many of the vendor welds not visually inspected during field hydrostatic testing are so close to TVA field welds which were inspected that it is reasonable to assume leakage from these welds would have been detected during the inspection of field welds. The distance from the field weld to the unexamined vendor weld is listed in Table 1.

5. The circumferential welds in question were volumetrically examined (radiography) and accepted by the vendor in accordance with ASME Section III, Class 2 requirements. These radiographs were subsequently reviewed and accepted by TVA.

6. The systems involved include the Safety Injection, Residual Heat Removal, Containment Spray, and Auxiliary Feedwater Systems. These systems are safety-related and are necessary to achieve and maintain cold shutdown. Also affected are the relief valve discharge line from the Safety Injection System which carries relief valve discharge back to the Reactor Coolant Drain Tank and is classified as part of the Reactor Coolant System, and the reactor coolant pump seal water injection lines. The other systems involved (main steam, ventilation, control air,

demineralized water, ice condensor, chemical and volume control, waste disposal, fuel handling, primary makeup water, and spares originally associated with the upper head injection system) either isolate or are already isolated during accidents. The likelihood of compromising the safe function of any of the affected systems by accepting this condition is believed to be minimal for the following reasons.

a. As stated previously, all penetrations involved were part of a system test and therefore have been to hydrostatic or pneumatic test pressure. If a discontinuity large enough to cause total loss of function existed and was of such a nature as to cause failure during operation, it would have failed during testing whether or not the visual examination was performed.

b. As stated previously, all involved penetrations were radiographed. It is extremely unlikely that a defect which would have caused leakage during testing could exist and not be visible on the RT film. Therefore, since the film was acceptable, it is extremely unlikely that such a defect exists.

For certain penetration assemblies (Types I and II) a spool piece was attached to the outboard side of the flued head by the vendor in order to meet overall dimensional requirements for the design. These welds will be examined during hydrostatic testing currently scheduled for the affected systems. Penetration assemblies having an outboard spool piece are identified in Table 1.

Upon receiving approval for these exceptions, TVA will revise the Final Safety Analysis Report (FSAR) and CAQR WBP 870310 to document deviation from ASME Section III for visual examinations of welds during hydrostatic testing and to provide justification for acceptance of this condition.

Enclosure 2 lists the new commitments made in this report.

If there are any questions, please telephone G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Ralph H. Shell

for Manager, Nuclear Licensing
and Regulatory Affairs

Enclosures
cc: See page 4

U.S. Nuclear Regulatory Commission

NOV 21 1989

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Spring City, Tennessee 37381

TABLE 1

Penetration Number	System	Type	TVA Class	Distance to Inboard TVA Weld
1K-14	74	XI	B	5'-7"
1K-15	74	XI	B	5'-7"
1K-16	72	XI	B	5'-7"
1K-17	72	XI	B	5'-7"
1X-8A ***	03A	II	B	10'-7" & 24'-3"
1X-8B ***	03A	II	B	24'-3"
1X-8C ***	03A	II	B	24'-3"
1X-8D ***	03A	II	B	10'-7" & 24'-3"
1X-12A ***	03A	II	B	23'-6"
1X-12B ***	03A	II	B	23'-6"
1X-12C ***	03A	II	B	23'-6"
1X-12D ***	03A	II	B	23'-6"
1X-13A ***	01A	I	B	10'-6" & 24'-6"
1X-13B ***	01A	I	B	10'-6" & 24'-6"
1X-13C ***	01A	I	B	10'-6" & 24'-6"
1X-13D ***	01A	I	B	10'-6" & 24'-6"
1X-14A	01B	IV	B	3'-7"
1X-14B	01B	IV	B	3'-7"
1X-14C	01B	IV	B	3'-7"
1X-14D	01B	IV	B	3'-7"
1X-15	62	IV	B	3'-7 5/8"
1X-16	62	VII	B	1'-4"
1X-17	63	III	B	10'-1"
1X-20A	63	V	B	3'-5"
1X-20B	63	V	B	3'-5"
1X-21	63	V	B	3'-6 3/4"
1X-22	63	V	B	3'-7"
1X-24	68	V	B	3'-7 1/4"
1X-30	63	IV	B	4'-8"
1X-32	63	V	B	3'-6 3/4"
1X-33	63	V	B	3'-6 3/4"
1X-34 *	32	VI	B	1'-4 1/2"
1X-40A	03B	VIII	B	0'-9"
1X-40B	03B	VIII	B	0'-9"
1X-41	77	VI	B	1'-4 1/2"
1X-42	81	VII	B	1"-4 1/2"
1X-43A	62	VI	B	1'-4 1/2"
1X-43B	62	VI	B	1'-4 1/2"
1X-43C	62	VI	B	1'-4 1/2"
1X-43D	62	VI	B	1'-4 1/2"
1X-44	62	VII	B	1'-3"
1X-45	77	IV	B	3'-8"
1X-46	77	V	B	3'-7 1/2"
1X-47A	61	V	B	3'-7 1/2"
1X-47B	61	V	B	3'-7 1/2"
1X-48A	72	IX	B	2'-11"
1X-48B	72	IX	B	2'-11"
1X-49A	72	IX	B	3'-0"
1X-49B	72	IX	B	3'-0"

TABLE 1 (continued)

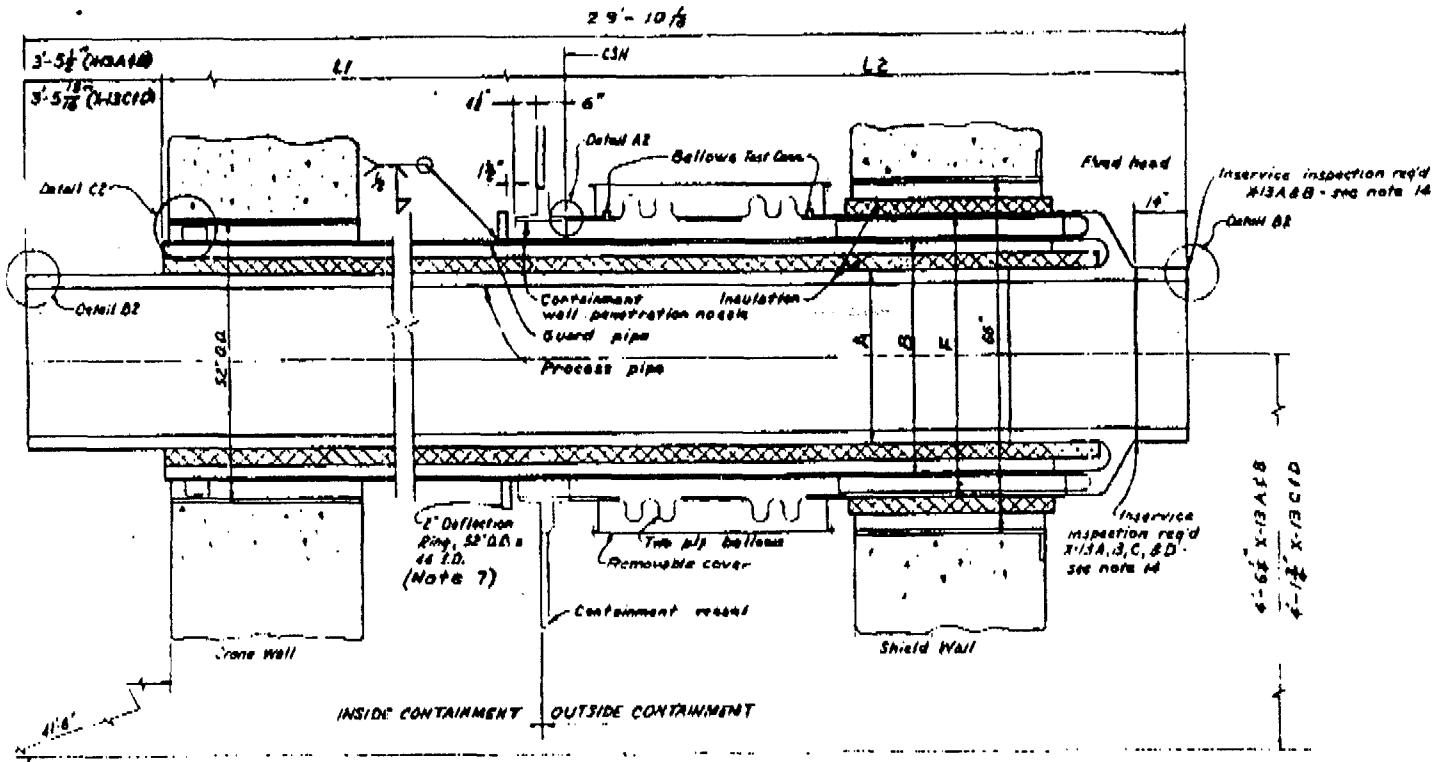
Penetration Number	System	Type	TVA Class	Distance to Inboard TVA Weld
1X-77	59	VI	B	1'-4 1/2"
1X-81	77	IV	B	3'-8"
1X-82	78	VII	B	1'-4"
1X-83	78	VII	B	1'-4"
1X-90 *	32	VI	B	1'-4 1/2"
1X-91 *	32	VI	B	1'-4"
1X-97 *	30	VI	B	1'-4"
1X-107	74	III	B	10'-6"
1X-108 **	87	XIV	B	2'-5"
1x-109 **	87	XIV	B	2'-5"

* These penetration assemblies were pneumatically tested rather than hydrostatically tested. The requested relief is for examination during pneumatic testing rather than hydrostatic testing.

** These penetration assemblies have been converted to spares, however, we are requesting relief in the event that we may use them in the future.

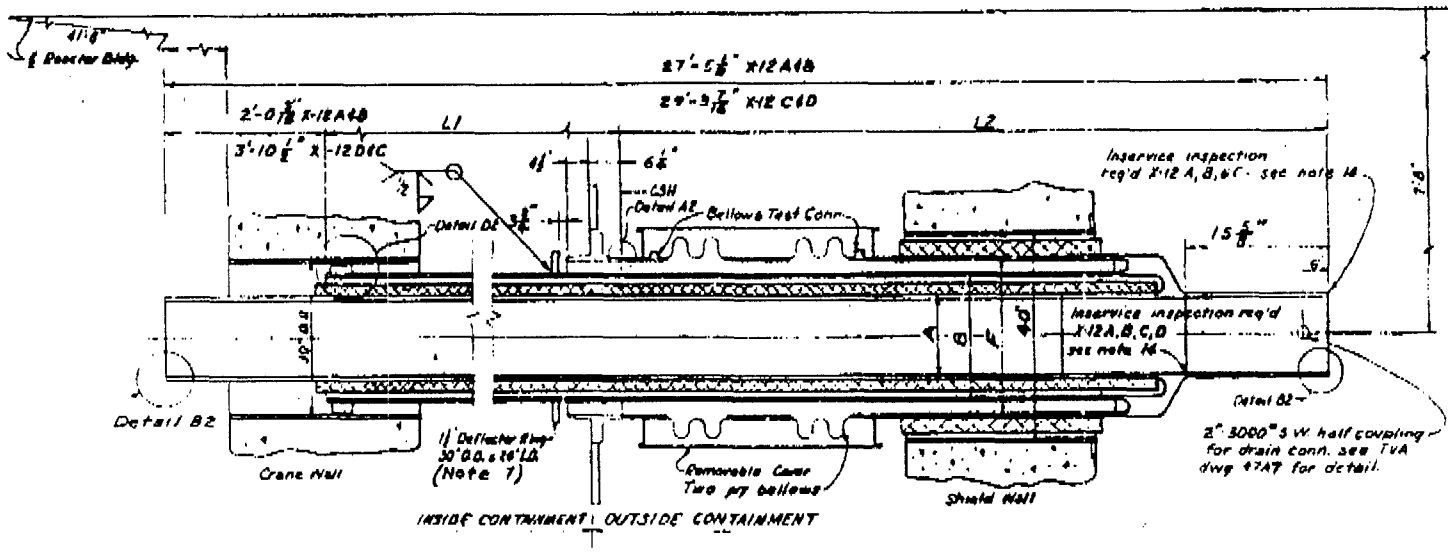
*** These penetration assemblies have a spool welded to the outboard side of the flued head which will be examined during hydrostatic testing.

ENCLOSURE 1



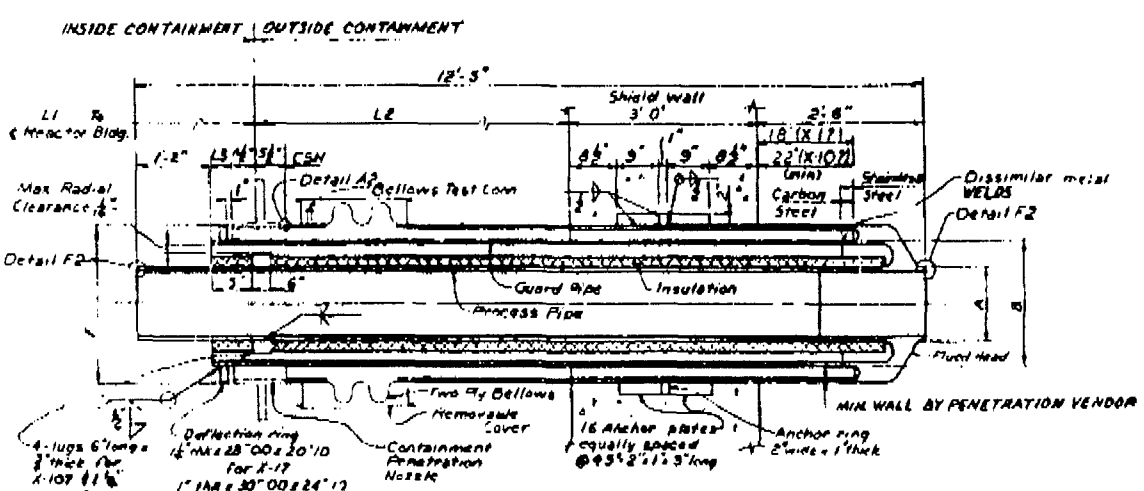
TYPE I

Main Steam X-13A, X13B, X-13C, X13D



TYPE II

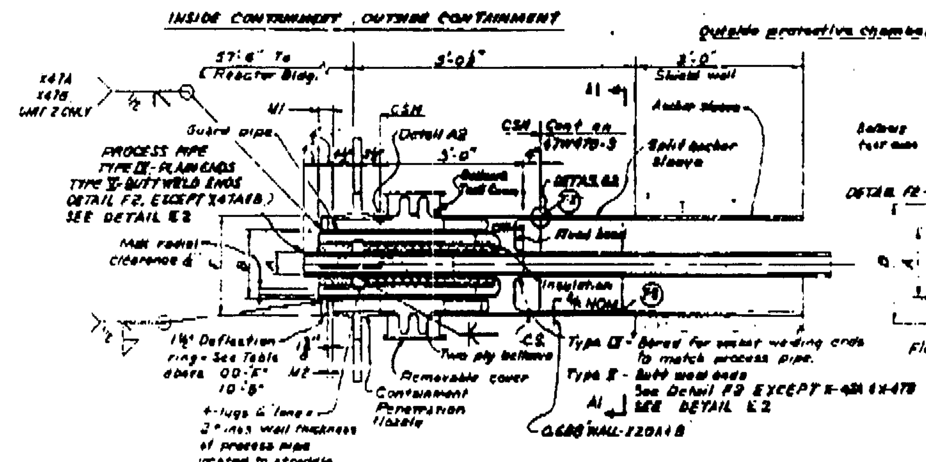
Feedwater X-12A, X12B, X12C, X12D



TYPE III

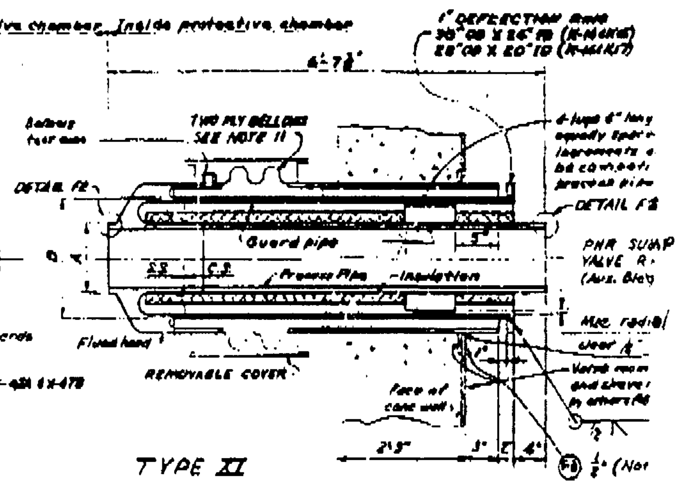
Residual Heat Removal

ENCLOSURE 1

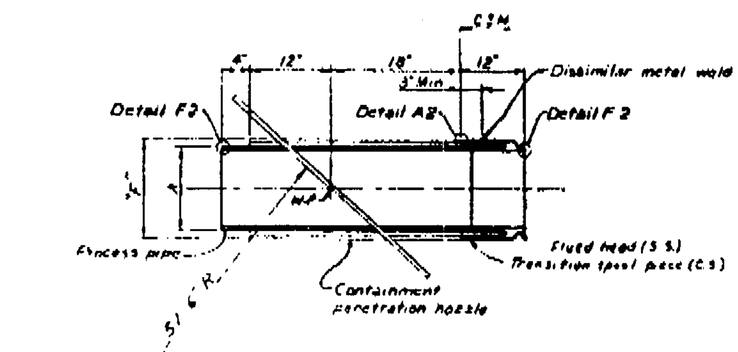


TYPE IV / V

Type IV Socket Weld Ends
Type V Butt Weld Ends



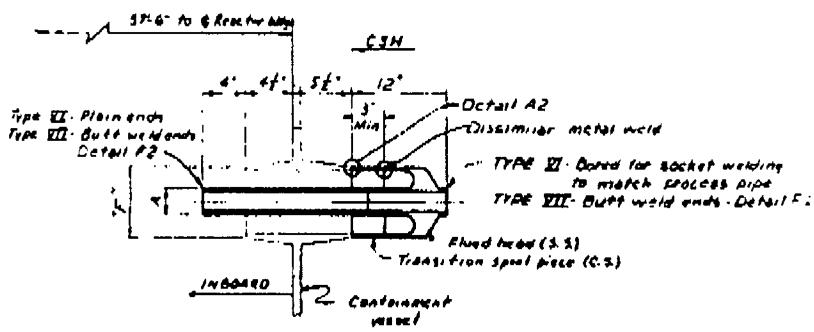
TYPE XI



TYPE IX

FOR S.S. PROCESS LINES

Not to scale

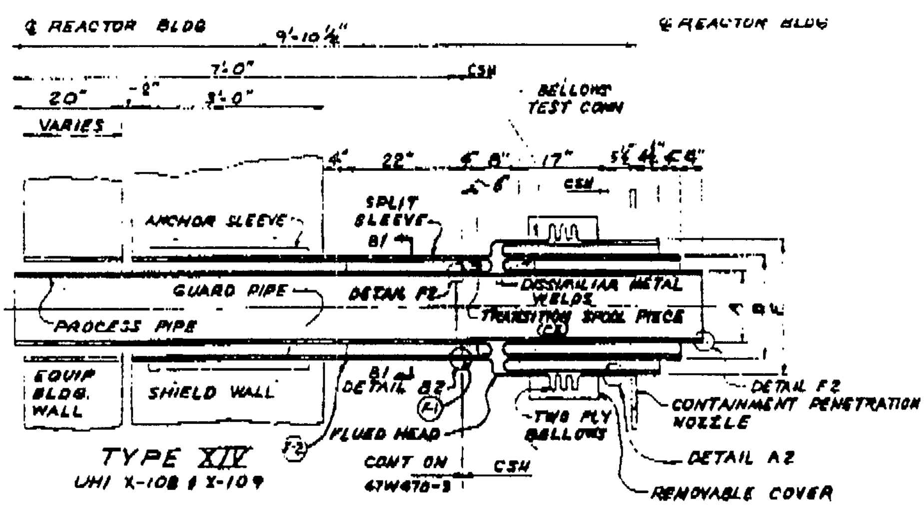


TYPE VI / VII

Type VI for socket weld SS process lines

Type VII for butt weld SS process lines

Not to scale



TYPE XIV

UHI X-108 & X-109

ENCLOSURE 2

LIST OF COMMITMENTS

1. TVA will revise the Final Safety Analysis Report (FSAR) to document deviation from ASME Section III for visual examinations of welds during hydrostatic testing.

2. Spool piece welds on the outboard of Type I and II penetration assemblies will be examined during hydrostatic testing.

3. Upon receiving approval of these exemptions, TVA will revise Condition Adverse to Quality Report (CAQR) WBP 870310 to document these exceptions.