



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609

March 24, 2000

10 CFR 50.55a(a)(3)(i)

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

Gentlemen:

In the Matter of) Docket Nos. 50-260
Tennessee Valley Authority) 50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 2 AND 3 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION, REACTOR PRESSURE VESSEL SUPPORT SKIRT WELD - REQUESTS FOR RELIEF 2-ISI-10 and 3-ISI-9 (TAC NOS. MA6408 AND MA8423)

In accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from specified inservice inspection requirements in Section XI of the ASME Boiler and Pressure Vessel Code. Enclosure 1 to this letter contains request for relief 2-ISI-10 and Enclosure 2 submits 3-ISI-9 for NRC review and approval.

TVA is requesting NRC approval to use the alternative rules of the ASME Section XI, Code Case N-323-1, for examination of the reactor pressure vessel (RPV) support skirt weld for BFN Units 2 and 3. The ASME Section XI Code requires that both surfaces (inside and outside) of the RPV support skirt weld receive a surface examination. However, for the inside surface of the BFN Units 2 and 3 RPV support skirt welds, access is restricted because of obstructions and high radiation levels. The ASME Code Case N-323-1 prescribes a surface examination of the accessible surface only. Also, in addition to the Code Case requirements, TVA is proposing

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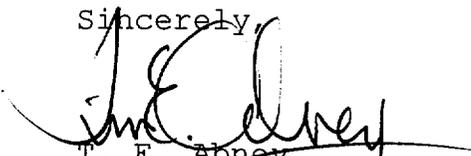
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to supplement the N-323-1 examination with a best-effort volumetric (ultrasonic) examination from the accessible surface of the weld. TVA considers that the proposed alternative examinations will provide an acceptable level of quality and safety.

The enclosed requests for relief are consistent with alternate examination requirements accepted for use at Hatch Nuclear Plant as stipulated by NRC letter to Southern Nuclear Operating Company, Incorporated, dated February 11, 2000.

TVA requests review of these requests for relief by January 2001, to support the Unit 2 Cycle 11 (Spring 2001) refueling outage and preparation for the Unit 3 Cycle 10 (Spring 2002) refueling outage. There are no commitments contained in this letter. If you have any questions, please telephone me at (256) 729-2636.

Sincerely,



T. E. Abney
Manager of Licensing
and Industry Affairs

Enclosures

cc: See Page 3

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Enclosures

cc: (Enclosures):

Mr. Paul E. Fredrickson, Branch Chief
U.S. Nuclear Regulatory Commission
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NRC Resident Inspector
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Mr. William O. Long, Senior Project Manager
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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 2
AMERICAN SOCIETY OF MECHANICAL ENGINEERS ASME SECTION XI
INSERVICE INSPECTION (ISI) PROGRAM
(SECOND TEN YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 2-ISI-10

(See Attached)

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 2
ASME SECTION XI INSERVICE INSPECTION PROGRAM
(SECOND TEN YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 2-ISI-10

Executive Summary:

During a review of the BFN Units 2 and 3 ASME Section XI programs for future outage inspections, TVA determined that access to the inside weld surface of the reactor pressure vessel (RPV) support skirt (see attachments 1 and 2) would be restricted. It was also determined that examination and support personnel would encounter high radiation levels. The enclosed request for relief seeks to provide an alternative examination that will provide an acceptable level of quality and safety.

The weld configuration for the BFN Unit 2 RPV support skirt weld requires a surface examination of the outside and inside weld surfaces. For the inside weld surface, access is restricted because of high radiation and obstructions due to uniquely fitted mirror insulation panels covering the inside weld surface. Control Rod Drive housings and high radiation levels also limit access by the examiner.

As an alternative, TVA is proposing to use the requirements of ASME Code Case N-323-1, which allows a surface examination of the accessible weld surface only. TVA will also perform a best-effort volumetric (ultrasonic) examination from the accessible surface of the weld to detect service related flaws in the inside weld surface.

TVA's use of the alternative requirements of Code Case N-323-1 in conjunction with the best-effort volumetric examination

from the accessible weld surface will provide reasonable assurance of the structural integrity of the weld.

TVA's proposed alternative is consistent with the alternative examination requirements, accepted for use at Hatch Nuclear Plant, as stipulated by NRC letter to Southern Nuclear Operating Company, Incorporated, dated February 11, 2000.

Therefore, in accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from inservice inspection requirements in the 1986 Edition, no addenda, Section XI of the ASME Boiler and Pressure Vessel Code for Category B-H, Integral Attachments For Vessels (RPV support skirt), Item No. B8.10.

<u>Unit:</u>	Two (2)
<u>System:</u>	Reactor Pressure Vessel (RPV)
<u>Components:</u>	Integral Attachments for Vessels (RPV Support Skirt)
<u>ASME Code Class:</u>	ASME Code Class 1
<u>Section XI Edition:</u>	1986 Edition, no Addenda
<u>Code Table:</u>	IWB-2500-1
<u>Examination Category:</u>	B-H (Integral Attachments for Vessels)
<u>Examination Item Number:</u>	B8.10 (Integrally Welded Attachments)
<u>Code Requirement:</u>	The 1986 Edition, no Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-H, Item B8.10 requires a surface or volumetric examination as applicable based on the configuration of the support skirt to vessel weld. BFN Unit 2 RPV support skirt configuration

is illustrated in ASME Section XI Code, Figure IWB-2500-13 which requires a surface examination of areas A-B (outside surface) and C-D (inside surface).

Code Requirements
From Which Relief
Is Requested:

Relief is requested from the requirement to perform a surface examination of the RPV support skirt weld examination area C-D (restricted access), as illustrated in Figure IWB-2500-13.

List Of Items
Associated With
The Relief Request:

RPV Support Skirt weld No:
RPV-SUPP-2-1-IA

Basis For Relief
Request:

The examination area C-D of Figure IWB-2500-13 is not accessible for examination due to the location, configuration, and insulation covering the C-D weld area. The bottom head and support skirt weld inside surface (C-D area) are covered with mirror insulation. The insulation fits uniquely around each control rod drive (CRD) penetration and in close proximity with the head, taking the contour/shape of the head. The only way to gain access inside the support skirt is through one eighteen-inch diameter access opening. Removal of the uniquely indexed insulation in such a limited space and then passing it through the 18-inch diameter access hole would require extensive time and personnel exposure.

Physical access by the examiner is limited because of high radiation levels and obstructions due to the CRD housings. Magnetic particle examination (yoke) cannot be used due to the space restrictions. The use of dye penetrant examination would require a very thorough cleaning of the weld and adjacent base material to remove rust and scale. The

preparation of the weld would potentially require using techniques such as manual wire brushing since power tools may not fit into the limited area.

Radiological Control (RADCON) has indicated that a dose rate in these areas would be approximately 150 to 200 millirem/hour. It is estimated that approximately 56 man-hours would be required (6 people at 8 hours to remove/install insulation, and 2 people at 4 hours to perform the examination). A total of 11.2 REM could be received by all involved personnel.

Further, there are no industry bulletins or reported failures of the subject weld. Thus, the hardship associated with the examination of the inside surface is unwarranted when industry experience and ALARA principles are considered.

Alternative Examination:

TVA will comply with the requirements of ASME Section XI, Code Case N-323-1 for the configuration illustrated in Figure 1 of the Code Case. In addition to the Code Case requirements, TVA will perform a best-effort volumetric (ultrasonic) examination from the accessible side of the weld to detect service related flaws in the inside weld surface.

Justification For The Granting Of Relief:

Code Case N-323-1 which was approved December 31, 1996, by ASME permits an alternative to the requirements of the 1986 Edition of ASME Section XI, Table IWB-2500-1, Examination Category B-H, Item B8.10 when only one surface of the weld is accessible for examination. Code Case N-323-1 permits a surface examination from the accessible side only of the attachment weld. A copy of Code Case N-323-1 is provided as Attachment 3 to this request for relief.

The proposed alternative Code Case examination requirements have been evaluated by the ASME Section XI Code Committee and have been judged technically acceptable. The Code Case was incorporated into the 1997 Addenda of the ASME Section XI Code, not as an alternative, but as the ASME Code requirement.

In addition to the alternative Code Case requirements, TVA will perform a best-effort volumetric (ultrasonic) examination from the accessible side of the weld to detect service related flaws in the inside weld surface.

Using the alternative examination methods stated above, TVA considers that an acceptable level of quality and safety will be achieved and public health and safety will not be compromised.

TVA's proposed alternative is consistent with the alternative examination requirements, accepted for use at Hatch Nuclear Plant, as stipulated by NRC letter to Southern Nuclear Operating Company, Incorporated, dated February 11, 2000.

Implementation
Schedule:

This request for relief is applicable to the Second Ten Year Inservice Inspection Interval for BFN Unit 2.

Attachments:

1. Sketch of BFN Unit 2 Reactor Pressure Vessel Assembly
2. Sketch of BFN Unit 2 support skirt to vessel weld configuration
3. Code Case N-323-1, Alternate Examination For Welded Attachments to Pressure Vessels

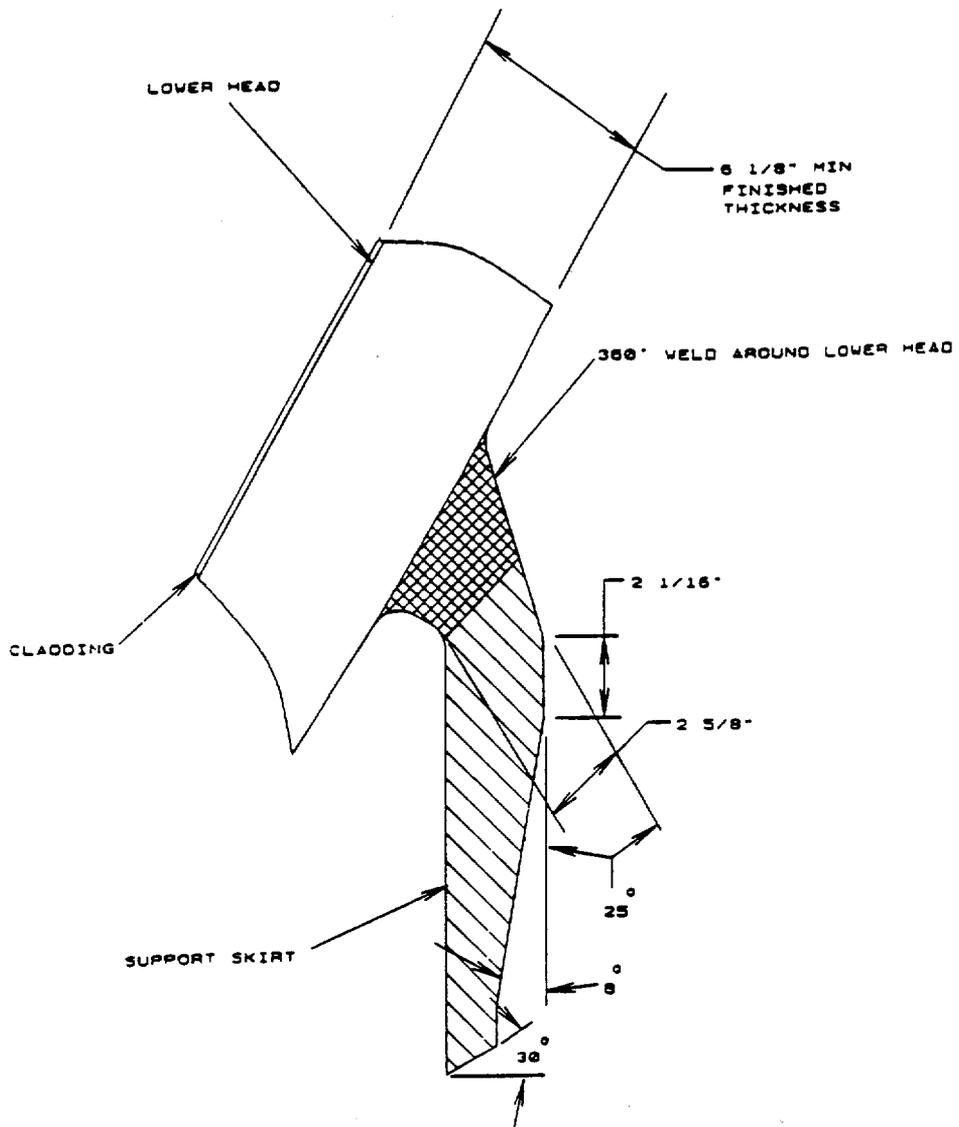
2-ISI-10

ATTACHMENT 1

2-ISI-10

ATTACHMENT 2

ATTACHMENT #2



SKETCH NO.
SK-B2030

TITLE
WELD DETAIL
SUPPORT SKIRT TO LOWER HEAD

PROJECT
BROWNS FERRY 2

DC. OR. NO.
A00-5306

NOTE: THIS SKETCH IS FOR 1ST PROGRAM USE ONLY AND SHALL NOT BE USED FOR FABRICATION/INSTALLATION.

REFERENCE B&W DRAWING NO. 122072E-8 (DETAIL D)

SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INIT	APPROVED	PURPOSE
0	12-8-92	M. MCLAVERTY	K. TROTTER	[Signature]	R. HOOPER	

2-ISI-10

ATTACHMENT 3

**CASE
N-323-1**

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: December 31, 1996

*See Numerical Index for expiration
and any reaffirmation dates.*

Case N-323-1

**Alternative Examination for Welded Attachments
to Pressure Vessels**

Section XI, Division 1

- E** *Inquiry:* What alternative to the requirements of Examination Category B-K of the 1995 Addenda or Examination Category B-H from the Winter 1981 Addenda, through the 1995 Edition may be performed for welded attachments to pressure vessels as shown in Figs. 1 and 2 when only one side of the attachment weld is accessible for examination?
- E** *Reply:* It is the opinion of the Committee that as an alternative to the requirements of Examination Category B-K of the 1995 Addenda or Examination Category B-H from Winter 1981 Addenda to the 1995 Edition:
- (a) for the configuration shown in Figs. 1 and 2, a surface examination from the accessible side of the attachment weld may be performed or;
 - (b) for the configuration shown in Fig. 2, a volumetric examination of Volume A-B, C-D from the accessible side of the attachment weld may be performed.

CASE (continued)
N-323-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

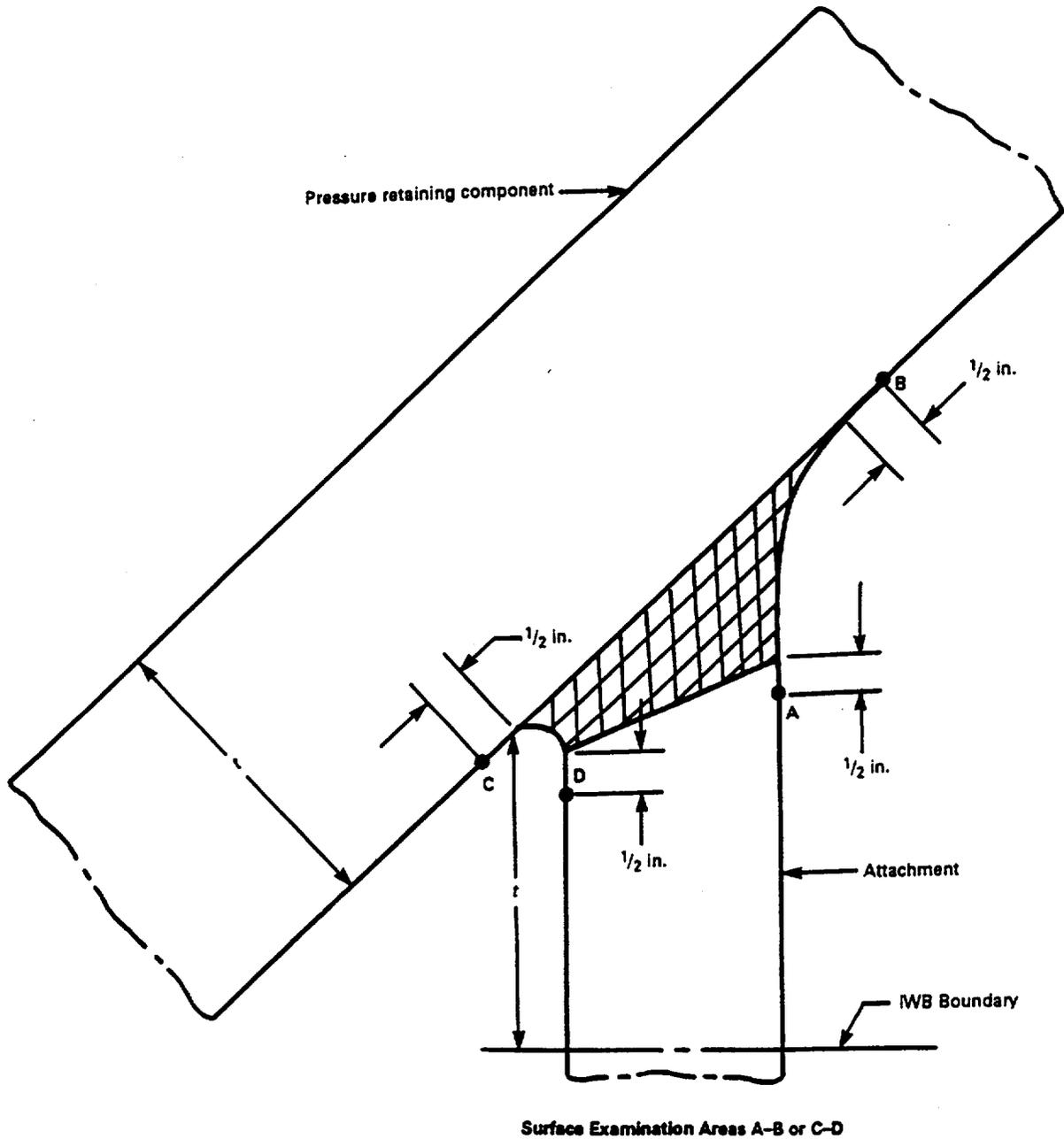
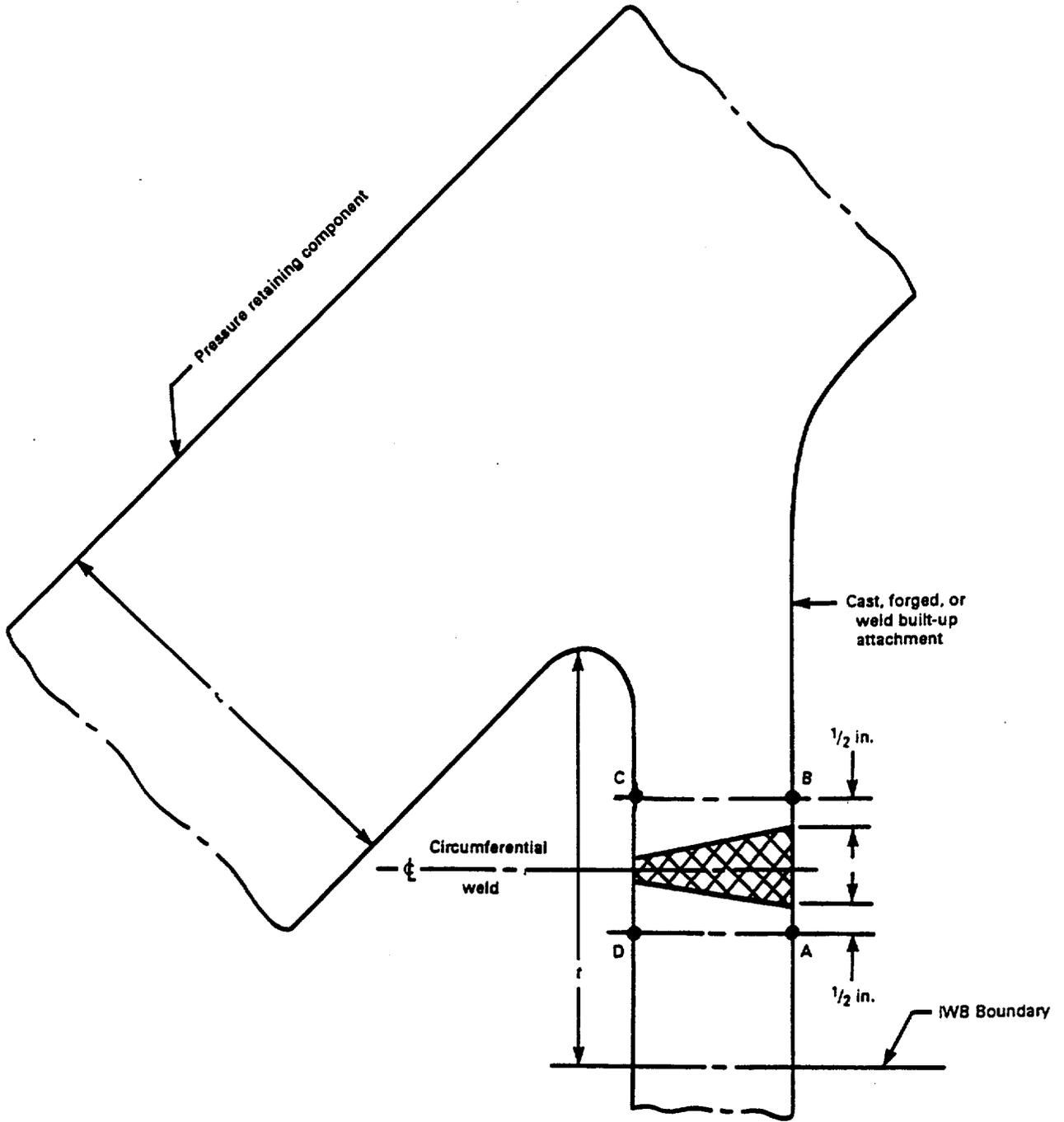


FIG. 1 WELDED ATTACHMENT

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



Surface Examination Areas A-B or C-D

FIG. 2 WELDED ATTACHMENT

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 3
AMERICAN SOCIETY OF MECHANICAL ENGINEERS ASME SECTION XI
INSERVICE INSPECTION (ISI) PROGRAM
(SECOND TEN YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 3-ISI-9

(See Attached)

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 3
ASME SECTION XI INSERVICE INSPECTION PROGRAM
(SECOND TEN YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 3-ISI-9

Executive Summary:

During a review of the BFN Units 2 and 3 ASME Section XI programs for future outage inspections, TVA determined that access to the inside weld surface of the reactor pressure vessel (RPV) support skirt (see attachments 1 and 2) would be restricted. It was also determined that examination and support personnel would encounter high radiation levels. The enclosed request for relief seeks to provide an alternative examination that will provide an acceptable level of quality and safety.

The weld configuration for the BFN Unit 3 RPV support skirt weld requires a surface examination of the outside and inside weld surfaces. For the inside weld surface, access is restricted because of high radiation and obstructions due to uniquely fitted mirror insulation panels covering the inside weld surface. Control Rod Drive housings and high radiation levels also limit access by the examiner.

As an alternative, TVA is proposing to use the requirements of ASME Code Case N-323-1, which allows a surface examination of the accessible weld surface only. TVA will also perform a best-effort volumetric (ultrasonic) examination from the accessible surface of the weld to detect service related flaws in the inside weld surface.

TVA's use of the alternative requirements of Code Case N-323-1 in conjunction with

the best-effort volumetric examination from the accessible weld surface will provide reasonable assurance of the structural integrity of the weld.

TVA's proposed alternative is consistent with the alternative examination requirements, accepted for use at Hatch Nuclear Plant, as stipulated by NRC letter to Southern Nuclear Operating Company, Incorporated, dated February 11, 2000.

Therefore, in accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from inservice inspection requirements in the 1989 Edition, no addenda, Section XI of the ASME Boiler and Pressure Vessel Code for Category B-H, Integral Attachments For Vessels (RPV support skirt), Item No. B8.10.

Unit: Three (3)

System: Reactor Pressure Vessel (RPV)

Components: Integral Attachments for Vessels (RPV Support Skirt)

ASME Code Class: ASME Code Class 1

Section XI Edition: 1989 Edition, no Addenda

Code Table: IWB-2500-1

Examination Category: B-H (Integral Attachments for Vessels)

Examination Item Number: B8.10 (Integrally Welded Attachments)

Code Requirement: The 1989 Edition, no Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-H, Item B8.10 requires a surface or volumetric examination as applicable based on the configuration of the support skirt to vessel weld. BFN Unit 3 RPV support skirt configuration

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List Of Items
Associated With
The Relief Request:

RPV Support Skirt weld No:
RPV-SUPP-3-1-IA

Basis For Relief
Request:

The examination area C-D of Figure IWB-2500-13 is not accessible for examination due to the location, configuration, and insulation covering the C-D weld area. The bottom head and support skirt weld inside surface (C-D area) are covered with mirror insulation. The insulation fits uniquely around each control rod drive (CRD) penetration and in close proximity with the head, taking the contour/shape of the head. The only way to gain access inside the support skirt is through one eighteen-inch diameter access opening. Removal of the uniquely indexed insulation in such a limited space and then passing it through the 18-inch diameter access hole would require extensive time and personnel exposure.

Physical access by the examiner is limited because of high radiation levels and obstructions due to the CRD housings. Magnetic particle examination (yoke) cannot be used due to the space restrictions. The use of dye penetrant examination would require a very thorough cleaning of the weld and adjacent base

material to remove rust and scale. The preparation of the weld would potentially require using techniques such as manual wire brushing since power tools may not fit into the limited area.

Radiological Control (RADCON) has indicated that a dose rate in these areas would be approximately 150 to 200 millirem/hour. It is estimated that approximately 56 man-hours would be required (6 people at 8 hours to remove/install insulation, and 2 people at 4 hours to perform the examination). A total of 11.2 REM could be received by all involved personnel.

Further, there are no industry bulletins or reported failures of the subject weld. Thus, the hardship associated with the examination of the inside surface is unwarranted when industry experience and ALARA principles are considered.

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Implementation
Schedule:

This request for relief is applicable to the Second Ten Year Inservice Inspection Interval for BFN Unit 3.

Attachments:

1. Sketch of BFN Unit 3 Reactor Pressure Vessel Assembly
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3-ISI-9

ATTACHMENT 1

3-ISI-9

ATTACHMENT 2

3-ISI-9

ATTACHMENT 3

**CASE
N-323-1**

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: December 31, 1996

*See Numerical Index for expiration
and any reaffirmation dates.*

Case N-323-1

**Alternative Examination for Welded Attachments
to Pressure Vessels
Section XI, Division 1**

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- (a) for the configuration shown in Figs. 1 and 2, a surface examination from the accessible side of the attachment weld may be performed or;
 - (b) for the configuration shown in Fig. 2, a volumetric examination of Volume A-B, C-D from the accessible side of the attachment weld may be performed.

CASE (continued)

N-323-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

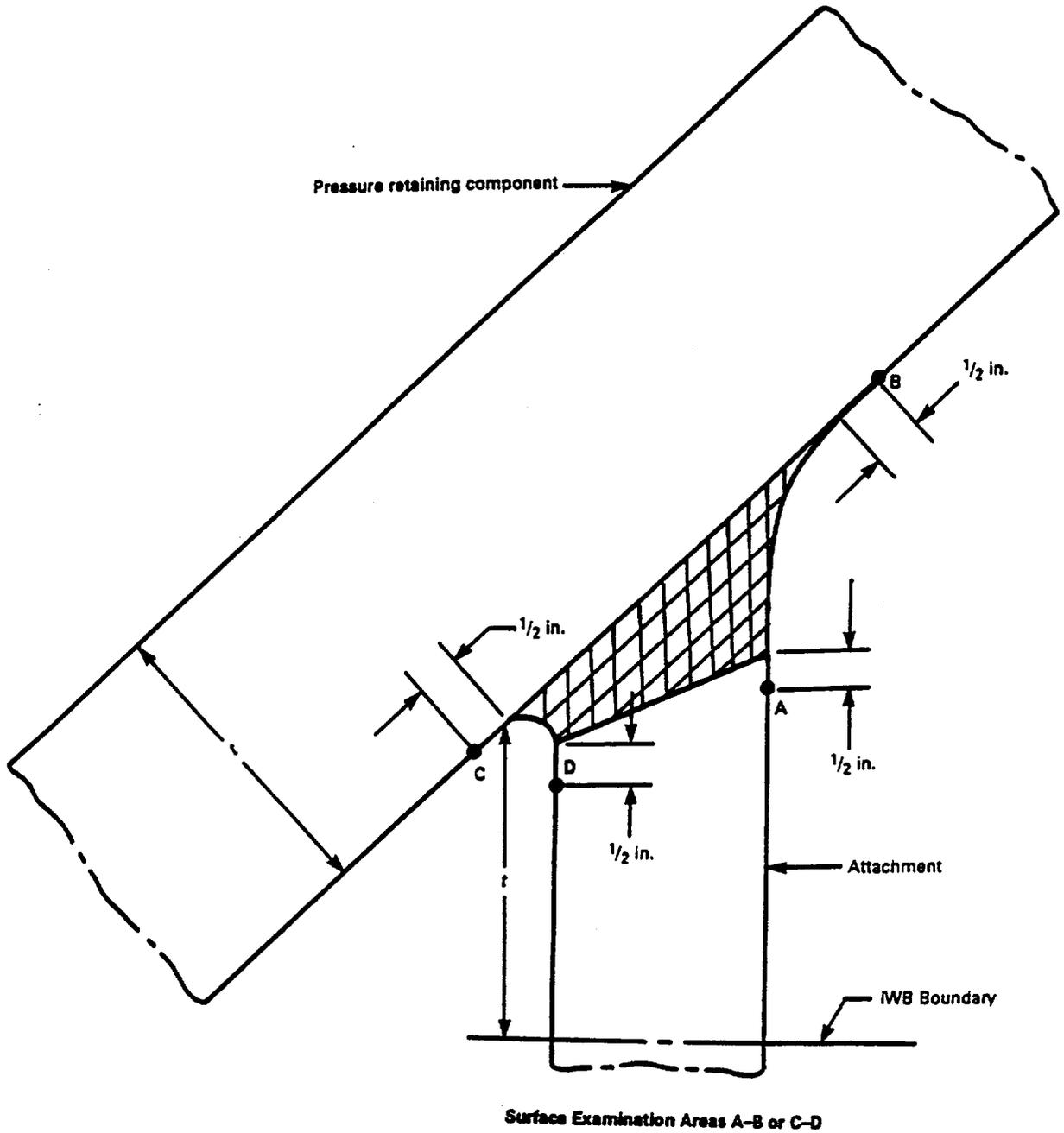
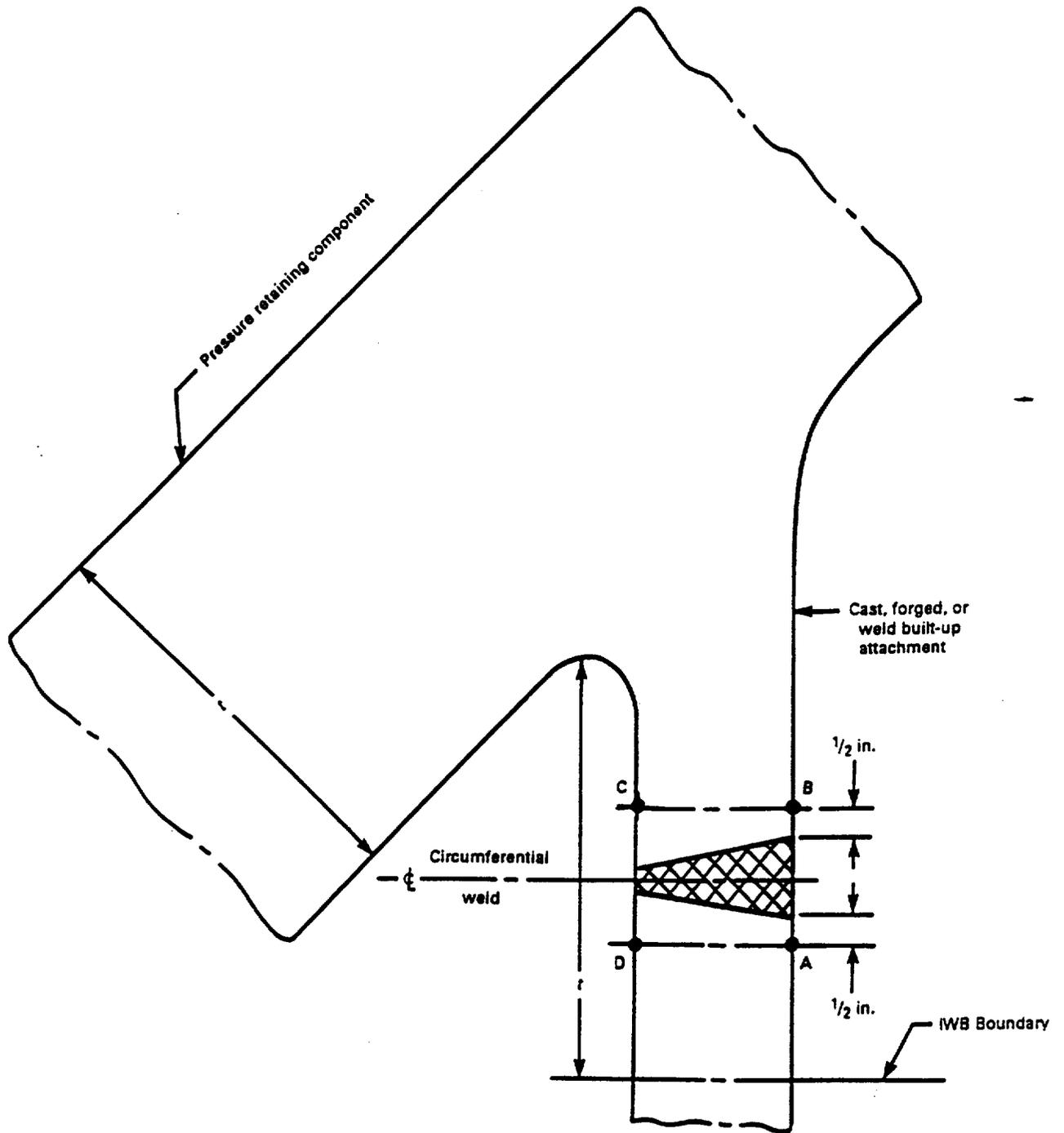


FIG. 1 WELDED ATTACHMENT

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



Surface Examination Areas A-B or C-D

FIG. 2 WELDED ATTACHMENT