



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

August 13, 2001

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

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of ) Docket No. 50-296  
Tennessee Valley Authority )

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 3 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION PROGRAM, SECOND TEN-YEAR INTERVAL, REQUEST FOR RELIEF 3-ISI-11 (TAC NO. MB2560)**

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. The enclosure to this letter contains BFN Unit 3 request for relief 3-ISI-11 for NRC review and approval.

TVA is requesting relief from the ASME Section XI Code, 1989 Edition (no Addenda), requirement to perform volumetric examinations of the reactor pressure vessel head nozzles inside radius section. As an alternative, TVA is proposing to perform a visual (VT-1) examination of the RPV head nozzles inside radius section. The justification for this request is provided in the enclosed relief request, 3-ISI-11, and further supported by the ASME Boiler and Pressure Vessel Code, Case N-648-1, "Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI, Division I. TVA considers that its proposed alternative provides an acceptable level of quality and safety.

This request for relief is consistent with requests submitted by Detroit Edison for Fermi Unit 2, by letter dated June 11, 2001, and Florida Power and Light for Turkey Point Units 3 and 4 by letter dated June 11, 2001.

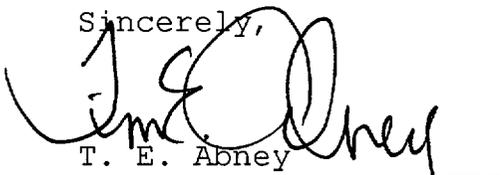
A047

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TVA requests review of this request for relief by January 31, 2002, to support the Unit 3 Cycle 10 (Spring 2002) refueling outage.

There are no commitments contained in this letter. In accordance with NRC RIS 2001-05, only one paper copy of this document is being sent to the NRC Document Control Desk. If you have any questions, please contact me at (256) 729-2636.

Sincerely,



T. E. Abney  
Manager of Licensing  
and Industry Affairs

Enclosure

cc: (Enclosure):

(Via NRC Electronic Distribution):

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ENCLOSURE

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-11

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(See Attached)

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

REQUEST FOR RELIEF 3-ISI-11

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Executive Summary: In accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from inservice inspection (ISI) requirements of the 1989 Edition, no addenda, of Section XI of the ASME Boiler and Pressure Vessel Code for the volumetric examination of Class 1, reactor pressure vessel (RPV) nozzle inside radius sections located in the RPV head. The examination requirement is for a volumetric examination for Examination Category B-D, "Full Penetration Welds of Nozzles in Vessels," Item No. B3.100, "Reactor Vessel, Nozzle Inside Radius Section."

TVA proposes to implement the alternative visual examination (VT-1) requirements of ASME Section XI, Code Case N-648-1, "Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles." TVA recognizes that the original publication of Code Case N-648 references a surface flaw acceptance criteria table that does not exist (i.e., Table IWB-3513-3, which is a typographical error). Code Case N-648 was revised to correct the error. Code Case N-648-1 references Table IWB-3510-3, which is the correct acceptance criteria. In addition, an editorial clarification was added in N-648-1 to provide guidance for determining component thickness to use with this table. A copy of the revised Code Case N-648-1 is provided in Attachment A of this request.

This request for relief is consistent with the requests submitted by Detroit Edison for Fermi 2 by letter dated June 11, 2001, and Florida Power and Light for Turkey Point 3/4 by letter dated June 11, 2001.

TVA believes that the proposed alternative visual examination (VT-1) will provide an acceptable level of quality and safety. The proposed alternative examination will also provide a significant savings in examination resources and personnel radiation exposure.

Note: Due to the restricted access caused by the vessel internals, which greatly limits the use of a remotely operated vehicle to perform the visual (VT-1) examination, TVA has elected to continue to perform the volumetric examination of the reactor pressure vessel shell nozzle inner radius sections.

Unit: BFN Unit 3

System(s): Reactor Pressure Vessel (RPV)

Components: RPV Nozzle Inside Radius Section, Nozzles N6A, N6B, and N7

ASME Code Class: ASME Code Class 1

Section XI Edition: 1989 Edition, no addenda

Code Table: IWB-2500-1

Examination Category: B-D, Full Penetration Welds of Nozzles in Vessels

Examination Item Number: B3.100 Nozzle Inside Radius Section (Nozzles N6A, N6B, and N7)

Code Requirement: The 1989 Edition, no addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item No. B3.100, requires a volumetric examination of the reactor pressure vessel head nozzles inside radius section.

Code Requirements  
From Which Relief  
Is Requested:

Relief is requested from the requirement to perform a volumetric examination of the inside radius sections of the nozzles located in the reactor pressure vessel head region (Nozzles N6A, N6B, and N7)

List Of Items  
Associated With  
The Relief Request:

Reactor Pressure Vessel Head Nozzles, N6A, N6B, and N7.

Note: TVA intends to implement the requirements of Code Case N-648-1 for the nozzle inner radius section of the reactor pressure vessel head nozzles only. The inner radius sections of the reactor pressure vessel shell nozzles will continue to receive the Code required volumetric examination.

Basis For Relief  
Request:

The volumetric examinations (ultrasonic) of the RPV nozzles, which are conducted from the outside surface of the vessel are difficult and time consuming due to the asymmetrical configuration of both the nozzle outside surface (where the transducers are manipulated) and the inside radius section of the nozzle being interrogated. Examination of the asymmetrical surfaces requires several different transducer/wedge angle combinations and are applied at various azimuths around the nozzle weld blend area on the vessel head surface. Different size nozzles usually require a different transducer/wedge angle combination and calibrations. Several hours may be required for the calibration and examination of one typical 6-inch diameter nozzle inner radius.

A visual examination (VT-1) of the nozzle inner radius sections would provide the Code required coverage and indicate the presence or absence of surface flaws. The option to perform a visual examination (VT-1) would provide an acceptable examination without compromising the level of quality and safety.

The proposed alternative will also provide a significant savings in examination resources and personnel radiation exposure.

Alternate Examination:

TVA will perform a visual examination (VT-1) of the inside radius sections of the reactor pressure vessel head nozzles. (Nozzles N6A, N6B, and N7).

Justification For The Granting Of Relief:

The inside radius section of the nozzles located in the RPV head have previously been examined using volumetric techniques (ultrasonic) specific to the nozzle configuration.

The nozzle inner radius sections are the only non-welded areas of the RPV requiring examination on the reactor pressure vessel. This ISI requirement was based on deterministic considerations made early in the development of ASME Section XI. For all RPV nozzles, other than feed-water, there is no significant thermal cycling during operation. The only RPV nozzles having identified failure mechanisms and, therefore, justifying the need to perform volumetric examinations are the feed-water nozzles and operational control rod drive (CRD) return line nozzles.

The development of Code Case N-648 was coordinated with the Westinghouse Owners Group (WOG), ASME, and NRC. On May 9, 2000, in Rockville, Maryland, the Westinghouse Owners Group met with the NRC staff to discuss issues related to the proposed inspection elimination for reactor pressure vessel inner radius regions. Although justification was presented to eliminate any examination of inner radius sections (excluding BWR feed-water nozzles and CRD nozzles), an agreement was reached between the WOG and the NRC staff, to replace the Code requirement to perform volumetric examinations with a visual examination (VT-1).

As a result of the above, TVA is requesting that relief be granted, in accordance with 10 CFR 50.55a(a)(3)(i), to perform an alternate visual examination (VT-1) of the reactor pressure vessel head nozzles inner radius section in lieu of the code required UT examination.

Implementation  
Schedule:

This request for relief is applicable to the remainder of the Second Ten-Year ASME Section XI, Inservice Inspection Interval for BFN Unit 3. This interval began November 19, 1996, and will conclude November 18, 2005.

Attachments:

Attachment A - ASME Code Case N-648-1, "Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles, Section XI, Division 1"

Attachment B - (3 sketches)

- Sketch SK-B2011, Attachments Map Top Head Assembly
- Sketch SK-B2015, Weld Detail Vent Nozzle N7
- Sketch SK-B2016, Weld Detail Head Spray/Instrumentation Nozzle N6

**Attachment A**

**3-ISI-11**

**ASME Code Case N-648-1**

BC 01-529

ISI 01-15

**Case N-648**

**Alternative Requirements for Inner Radius  
Examinations of Class 1 Reactor Vessel Nozzles  
Section XI, Division 1**

*Inquiry:* What alternative to the inservice examination requirements of Table IWB-2500-1, Examination Category B-D may be used for reactor vessels?

*Reply:* It is the opinion of the Committee that a VT-1 examination of the surface M-N shown in Figs.

IWB-2500-7(a) through (d) in the 1998 Edition may be performed in lieu of the volumetric examination required by Table IWB-2500-1, Examination Category B-D, Item No. B3.20 or Item No. B3.100, for inservice examination of reactor vessel nozzles other than BWR feedwater nozzles and operational control rod drive return line nozzles.

Crack-like surface flaws exceeding the acceptance criteria of Table IWB-3513-3 in the 1998 Edition are unacceptable for continued service unless the reactor vessel meets the requirements of IWB-3142.2, IWB-3142.3, or IWB-3142.4.

Table IWB-3510-3

The component thickness,  $t$ , to be applied in calculating the allowable surface flaw length,  $l$ , in Table IWB-3510-3 shall be selected as specified in Table IWB-3512-2.

# Attachment B

3-ISI-11

Reactor Pressure Vessel Head

Nozzle Sketches

SK-B2011

SK-B2015

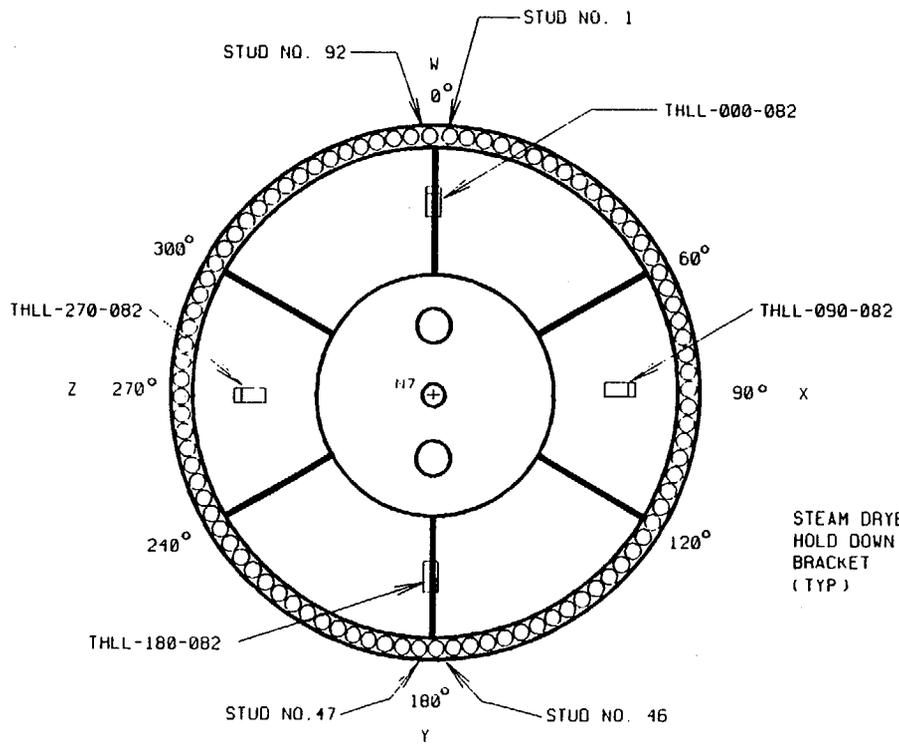
SK-B2016

REFERENCE 88W DRAWING NO. 122876E-7

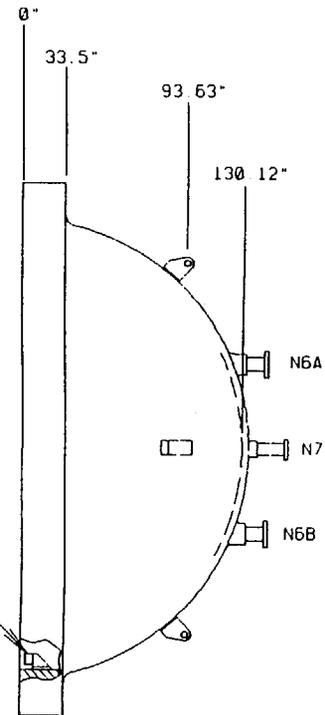
SKETCH RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	INITI	APPROVED	INITI
0	19-15-92	M. McLAVERTY	K. TROTTER	R. HOOPER		

PURPOSE



TOP VIEW  
OUTSIDE TOP HEAD ASSEMBLY



SIDE VIEW  
OUTSIDE TOP HEAD ASSEMBLY

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

DE DWF NO.  
A00-5306

PROJECT  
BROWNS FERRY 2

TITLE  
ATTACHMENTS MAP TOP HEAD ASSEMBLY

SKETCH NO.  
SK-B2011



