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

May 27, 2008

10 CFR 50.55a

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket No. 50-259
Tennessee Valley Authority	)	

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION (ISI) AND SYSTEM PRESSURE TEST (SPT) PROGRAMS FOR THE SECOND TEN-YEAR INSPECTION INTERVAL

This letter submits the Second Ten-Year Interval Inservice Inspection (ISI) and System Pressure Test (SPT) Programs for Unit 1 of the Browns Ferry Nuclear Plant. The Code of record for these Second Ten-Year Interval Programs is the 2001 Edition, 2003 Addenda of the ASME Boiler and Pressure Vessel Code, Section XI. The Second Ten-Year Interval commences on June 2, 2008.

The applicable regulation, 10 CFR 50.55a(g), requires that ISI examinations for ASME Code Class 1, 2, and 3 components of a water-cooled nuclear facility meet the ISI requirements of ASME Section XI. In addition, 10 CFR 50.55a(g)(4)(ii) requires that the ISI Program be updated every 120 months to the latest NRC approved Edition and Addenda of Section XI, which is in effect 12 months prior to the start of the next 120-month inspection interval. The enclosed ISI and SPT program update satisfies that requirement.

Enclosure 1 of this letter contains the updated BFN Unit 1 ASME Section XI ISI Program for the Second Ten-Year inspection interval, which conforms to the 2001 Edition, 2003 Addenda of the ASME Section XI Code. Enclosure 2 of this letter contains the System Pressure Test program for the Second Ten-Year inspection interval.

A047

NRR

There are two requests for relief (Attachments 13 and 14) submitted for staff review and approval within the ISI program update. These requests are similar to, and consistent with, requests for relief that were reviewed and approved by NRC for use in the Unit 1 First Ten-Year ASME Section XI inspection interval.

One other request for relief, (Attachment 15, reactor pressure vessel circumferential weld examinations) was approved by NRC letter dated May 31, 2005, for the remaining term of operation under the existing license, which ends December 20, 2013, and is included in the Second Ten-Year ISI inspection program for completeness.

TVA anticipates that other ISI requests for relief may be necessary during the BFN Unit 1 Second Ten-Year ISI interval. These requests for relief would involve TVA's inability to obtain the specified examination coverage (greater than 90 percent) as a result of weld geometry or component interferences. These requests for relief will be submitted following the performance of the examinations when the specific component and examination coverage percentage have been determined.

There are no new commitments contained in this letter. If you have any questions, please contact me at (256) 729-2636.

Sincerely,

D. T. Langley
Manager of Licensing
and Industry Affairs

Enclosure
cc: See Page 3

cc (Enclosure):

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 1
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
SECTION XI, INSERVICE INSPECTION (ISI) PROGRAM

SUBMITTAL OF SECOND TEN-YEAR INSPECTION INTERVAL PROGRAM

(SEE ATTACHED)

Browns Ferry Nuclear Plant

Unit 1

Surveillance Instruction

1-SI-4.6.G

Inservice Inspection Program Unit 1

Revision 0008

Quality Related

Level of Use: Continuous Use

Effective Date: 05-15-2008

Responsible Organization: SCE, System Eng - Component

Prepared By: Frederick W. Froscello

Approved By: Steven C. Cephus

Current Revision Description

Pages Affected: All

Type of Change: Intent change Tracking Number: 010

General revision for the 10 year ISI Program update for the Second ISI Interval. Revision bars not shown.

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1.0 INTRODUCTION

1.1 Purpose

This Inservice Inspection (ISI) Program is an administrative Surveillance Instruction (SI) utilized to obtain data through nondestructive examinations (NDE) required by ASME Section XI. This procedure satisfies portions of the Technical Requirement 3.4.3 (TR 3.4.3.) and to fulfill the requirements of SPP-9.1, related to NDE of Code Class 1, 2, and 3 (equivalent) components in accordance with applicable ASME Section XI requirements. NDE results are used to verify continued structural integrity of the subject components and their acceptability for continued service, and to determine if a flaw is an isolated case or of a generic nature.

This program shall serve as TVA's ISI/NDE plan and schedule for ASME Code Class 1, 2, and 3 (equivalent) components, in accordance with the requirements of ASME Section XI, IWA-1400 for the second ISI interval.

Owner's Statement data is as follows:

Owner:	Tennessee Valley Authority
Address of Corporate Office:	Chattanooga Office Complex
1101 Market Street	
Chattanooga, TN 37402-2801	
Name & Address of Power Plant:	Browns Ferry Nuclear Plant P.O. Box 2000 Decatur, AL 35609
Applicable Nuclear Power Unit:	BFN, Unit 1
Construction Permit Date:	Permit was issued prior to May 10, 1967
Commercial Operation Date:	August 1, 1974
First 10 Year ISI Interval:	August 1, 1974 to June 1, 2008
Second 10 Year ISI Interval:	June 2, 2008 to June 1, 2017

1.2 Scope

This program is in effect for BFN Unit 1 during the second inspection interval which begins June 02, 2008. The Unit 2 and 3 ISI programs are contained in 2-, and 3-SI-4.6.G, respectively.

1.2 Scope (continued)

The Inservice Inspection Program (ISI) is designed to comply with the Codes listed in Section 1.4.

Requests For Relief (RFRs) are issued for regulatory review and approval when implementation of ASME Section XI requirements is determined to be impractical or when alternatives are adopted. These programs provide for implementation in accordance with the scheduling requirements of ASME Section XI, IWA-2400. Refer to Section 7.6.

Code Class (equivalent) boundaries are depicted on the color-coded drawings listed in Section 2.5.1. These drawings are prepared and maintained by Component Engineering and are issued and controlled through BFN Records Management (RM).

The ASME Section XI Code Class (equivalent) Boundary Drawings, and ISI Drawings identify the components and systems to be examined. The Unit 1 ISI Component and Component Support Drawings are listed in Section 2.5.

Certain elements of ASME Section XI (repairs and replacements, system pressure tests, pump and valve inservice testing, snubber examination and inservice testing, and containment inservice inspection) are implemented by other site procedures. Refer to Sections 7.7 and 7.8.

Specifics concerning performance of Nondestructive Examinations (NDE) are not part of this program, but are included in IEP-100, Nondestructive Examination Procedures.

1.3 Frequency

1.3.1 Inspection Interval and Inspection Periods

This second inspection interval is a shortened 9-year interval from June 02, 2008 to June 1, 2017. The inspection interval is divided into three periods in accordance with ASME Section XI, Inspection Program B. The associated period dates are listed below:

Inspection Period	Minimum Exams	Maximum Exams
First (06-02-2008 to 06-01-2011)	16%	50%
Second (06-02-2011 to 06-01-2014)	50%	75%
Third (06-02-2014 to 06-01-2017)	100%	100%

The minimum and maximum examination percentages are applicable to those examination categories where deferral is not permissible.

1.3.2 Extended operating license

The original operating license for BFN Unit 1 was to have expired on December 20, 2013. The BFN Unit 1 license has been extended (Renewed License No. DPR-33) and will now expire at midnight on December 20, 2033. The second 10 Year ISI Interval will therefore overlap the original and extended license time frames.

1.4 Section XI Requirements

1.4.1 Section XI Code of Record

Certification of NDE personnel are in accordance with ANSI/ASNT CP-189, 1995, Standard for Qualification and Certification of Nondestructive Testing Personnel, as amended by the requirements of Division 1, ASME Section XI, Division 1, including editions through 2001 Edition, 2003 Addenda.

The Nondestructive Examination Program (NDE techniques, qualification of personnel, weld reference system, and standards for examination evaluation) are in accordance with ASME Section XI, Division 1, including editions through the 2001 Edition, 2003 Addenda.

NDE personnel performing ultrasonic examinations of bolting and piping, Reactor Pressure Vessel welds, Weld "Overlay", and Reactor Pressure Vessel Nozzles and Dissimilar Metal welds are certified and qualified in accordance with the Performance Demonstration Initiative Program (PDI).

The ISI code of record for examination performance, including NDE method selection, examination volume/surface area, and evaluation, is the 2001 Edition with Addenda through 2003 of ASME Section XI.

1.4.2 Code Cases

The following code cases have been approved for use by the NRC in Regulatory Guide 1.147, Revision 15 and have been adopted by TVA for use at BFN Unit 1:

Code Case N-460, Alternative Examination Coverage for Class 1 and 2, Welds, Section XI, Division 1.

Code Case N-498-4, Alternative Rules for 10- Year Hydrostatic Pressure Testing for Class 1, 2, and 3 Systems, Section XI, Division 1.

Prior to conducting the VT-2 examination of Class 2 and 3 components not required to operate during normal plant operation, a 10 - minute holding time is required after attaining test pressure. prior to conducting the VT-2 examination of Class 2 and 3 components required to operate during normal plant operation, no holding time is required, provided the system has been in operation for at least 4 hours for insulated components or 10 - minutes for non - insulated components.

1.4.2 Code Cases (continued)

Code Case N-513-2, Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI, Division 1.

Code Case N-526, Alternative Requirements for Successive Inspections of Class 1, 2, and 3 Vessels Section XI, Division 1.

Code Case N-552, Alternative Methods - Qualification For Nozzle Inside Radius Section From the Outside Surface section XI, Division 1.

To achieve consistency with the 10 CFR 50.55a rule change published September 22, 1999 (64 FR 51370), incorporating Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," to Section XI, add the following to the specimen requirements:

"At least 50 percent of the flaws in the demonstration test set must be cracks and the maximum misorientation must be demonstrated with cracks. Flaws in nozzles with bore diameters equal to or less than 4 inches may be notches."

The number of false calls must not exceed three.

Code Case N-586-1, Alternative Additional Examination requirements for Class 1, 2, and 3 Piping, Components, and Supports Section XI, Division 1.

Code Case N-613-1, Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No.'s B3.10, and B3.90, Reactor Nozzle-To-Vessel Weld's Fig's. IWB-2500-7 (a), (b), and (c), Section XI, Division 1.

Code Case N-624, Successive Inspections, Section XI, Division 1.

Code Case N-648-1, Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI Division 1, subject to the following conditions:

In place of a UT examination, a visual examination with enhanced magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria of Table IWB-3512-1 with limiting assumptions on the flaw aspect ratio will be performed. The provisions of Table IWB-2500-1, Examination Category B-D, continue to apply except that, in place of examination volumes, the surfaces to be examined are the external surfaces shown in the figures applicable to this table (the external surface is from point M to point N in the figure).

Code Case N-658, Qualification Requirements for Ultrasonic Examination of Wrought Austenitic Pipe Welds, Section XI, Division 1.

Code Case N-663, Alternative Requirements for Classes 1 and 2 Surface Examinations, Section XI, Division 1.

1.4.2 Code Cases (continued)

Code Case N-664, Performance Demonstration Requirements for Examination of Unclad Reactor Pressure Vessel Welds, Excluding Flange Welds, Section XI, Division 1.

Code Case N-686, Alternative Requirements for Visual Examinations VT-1, VT-2, and VT-3 Section XI, Division 1.

Code Case N-695, Qualification Requirements for Dissimilar Metal Piping Welds, Section XI, Division 1.

Code Case N-700, Alternative Rules For selection of Class 1, 2, and 3 Vessel Welded Attachments for Examination, ASME Section XI, Division 1.

Preservice Inspection (PSI) History

A PSI program was not required for Unit 1 based on its construction permit date of May 10, 1967. TVA performed a voluntary PSI for Class 1 components to the 1971 Edition, Summer 1971 Addenda of ASME Section XI.

Another PSI program was performed, as a part of the Unit 1 recovery, utilizing the ASME Code, Section XI, 1995 Edition with Addenda through 1996.

1.4.3 First Inspection Interval History

Effective May 25, 2001, certification of NDE personnel was in accordance with ANSI/ASNT CP-189, 1991, Standard for Qualification and Certification of Nondestructive Testing Personnel, as amended by the requirements of Division 1, ASME Section XI, Division 1, including editions through 1995 Edition, 1996 Addenda.

Effective May 25, 2001 the Nondestructive Examination Program (NDE techniques, qualification of personnel, weld reference system, and standards for examination evaluation) was in accordance with ASME Section XI, Division 1, including editions through the 1995 Edition, 1996 Addenda, as stated below. Reference Letter of Intent (RIMS # L44 010810 800) sent to NRC on August 10, 2001.

The first period of the first interval in effect from August 1, 1974 through July 1, 1981, was to the 1971 Edition, Summer 1971 Addenda, of ASME Section XI. The long duration on this period was due to an extension for the fire outage and an additional one-year extension in accordance with IWA-2400 to establish concurrent intervals for Units 1, 2, and 3 beginning with the second period. See NRC letter dated June 20, 1986 (A02 860630 006), for approval of these adjustments.

The second period (July 1, 1981 through November 1, 1984) and the third period (November 1, 1984 through June 1, 2008) were to the 1974 Edition with Addenda through Summer 1975 of ASME Section XI.

1.4.3 First Inspection Interval History (continued)

Ultrasonic examination and evaluation of piping welds was upgraded to the 1977 Edition, Summer 1978 Addenda, of ASME Section XI for these periods. This included examination per IWA-2232(b), IWA-2232(c), and Appendix III, and evaluation per IWA-3000, IWB-3000, and IWC-3000 of the 1977 Edition, Summer 1978 Addenda.

In accordance with TVA's letter to the NRC dated March 1, 1988 (L44 880301 801), the second inspection interval for Unit 1 commences June 2, 2008 (one year after startup from the extended outages of 1984) to an "indeterminate" date approximately ten years after June 2, 2008. It has since been determined that the Second ISI Interval will be a shortened 9-year interval that will end on June 1, 2017.

Beginning January 1, 1992, the preservice inspection of pipe welds, including the extent of examination (Examination Categories B-F, B-J, and C-F), was performed in accordance with the 1977 Edition, Summer 1978 Addenda, of ASME Section XI, IWA-2232, IWA-3000, IWB-2200(c), Table IWB-2500-1, and Table IWC-2500-I.

Beginning on June 12, 1992, NDE methods, qualification of personnel, weld reference system, and standards for examination evaluation were in accordance with the 1989 Edition of ASME Section XI, as allowed by 10CFR50.55(g)(4)(iv). This included all portions of IWA-2200, IWA-2300, IWA-2600, IWA-3000, IWB-3000, IWC-3000, IWD-3000, and IWF-3000, as well as all portions of Appendices III, IV, and VI of ASME Section XI. Certification of NDE personnel was in accordance with the 1984 Edition of ASNT SNT-TC-1A, as approved by the Nuclear Regulatory Commission's letter from S.C. Black to O.D. Kingsley, Jr., dated January 18, 1990 (TAG No. 72833). Class 2 pressure-retaining bolting that exceeds two inches in diameter was volumetrically examined in accordance with Table IWC-2500-1, Examination Category C-D of the 1977 Editions, Summer 1979 Addenda of ASME Section XI. Class 2 pressure retaining bolting two inches or less in diameter was not examined (Request for Relief ISI-14). Preservice inspection of pipe welds was performed in accordance with the 1977 Edition, Summer 1978 Addenda of ASME XI.

Component support integrally welded attachment examinations for piping, pumps, and valves (Category B-K-1) were in accordance with the applicable section(s) of Table IWB-2500-1 of the 1977 Edition, Summer 1978 Addenda, of ASME Section XI for the examination requirements/methods.

2.0 REFERENCES

2.1 Technical Specifications

BFN Unit 1 Technical Requirements Manual Requirement 3.4.3.

2.2 Final Safety Analysis Report

Browns Ferry Nuclear Plant Updated Final Safety Analysis Report, Volume 2, Section 4.12.

2.3 NRC Documents

A. 10CFR50.55a, Code of Federal Regulations

B. 10CFR50.2, Code of Federal Regulations

C. BWR (Boiling Water Reactor) Vessel and Internals Project, Technical Basis for Revisions to Generic Letter (GL) 88-01 Inspection Schedules (BWRVIP-75). Reference Safety Evaluation Report (SER), RIMS # L44 020320 001 from NRC dated March 15, 2002. BWRVIP-75-A Final Report dated October 2005.

D. Regulatory Guide 1.26, Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants

E. Regulatory Guide 1.147, Inservice Inspection Code Case Acceptability ASME Section XI Division I

F. Generic Letter 88-01, NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping

G. NUREG-0313, Rev. 2, Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping, Final Report

H. NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking

I. NRC - Information Notice 98-42, Implementation of 10 CFR 50.55a (g), Inservice Inspection Requirements.

2.4 Plant Procedures and Instructions

A. SDP-NADP-1, Conduct of Quality Assurance

B. SDP-NEDP-3, Drawing Control

C. 1-SI-4.6.H.1, Visual Examination of Hydraulic and Mechanical Snubbers

D. 2-SI-4.6.G, Inservice Inspection Program for Unit 2

E. 3-SI-4.6.G, Inservice Inspection Program for Unit 3

F. 0-TI-140, Monitoring Program For Flow Accelerated Corrosion

G. 0-TI-376, ASME Section XI, Containment Inservice Inspection Program, Units 1, 2, and 3

H. 0-TI-365, Reactor Vessel Internals Inspection Units 1, 2, and 3

2.4 Plant Procedures and Instructions (continued)

I. 0-TI-400, ASME Section XI, Inservice Inspection Program Responsibilities And Interface Document.

J. MSI-0-001-VSL001, Reactor Vessel Disassembly and Reassembly

K. MCI-0-068-PMP001, Maintenance of Reactor Water Recirculation Pumps

L. IEP-100, Nondestructive Examination Procedures Approved for use on CSSC Items at all Nuclear Plants

M. IEP-200, Qualification and Certification Requirements for TVA Nuclear Nondestructive Examination (NDE) Personnel.

N. IEP-300, Qualification and Certification of Ultrasonic TVA Nuclear Personnel for Preservice and Inservice ASME Section XI Examinations.

O. MCI-0-001-VLV001, Main Steam Isolation Valves Atwood Morrill Co. Disassembly, Inspection, Rework, and Reassembly.

P. MCI-0-001-VLV002, Main Steam Relief Valves Target Rock Model 7567 Disassembly, Inspection, Rework, and Reassembly

2.5 Drawings

2.5.1 Unit 1 Section XI Code Class Boundary Drawings

A. 1-47E600-57A-ISI, RCS Instrumentation

B. 1-47E610-43-1-ISI, Sampling and Water Quality System

C. 1-47E801-1-ISI, Main Steam

D. 1-47E801-2-ISI, Main Steam

E. 1-47E803-1-ISI, Feedwater System

F. 1-47E805-3-ISI, Heater Drains and Vents and Miscellaneous Piping

G. 1-47E807-1-ISI, Turbine Drains & Misc. Piping

H. 1-47E807-2-ISI, Turbine Drains & Misc. Piping

I. 1-47E810-1-ISI, Reactor Water Clean-up System

J. 1-47E811-1-ISI, Residual Heat Removal System

K. 1-47E812-1-ISI, High Pressure Coolant Injection System

2.5.1 Unit 1 Section XI Code Class Boundary Drawings (continued)

L. 1-47E813-1-ISI, Reactor Core Isolation Cooling System

M. 1-47E814-1-ISI, Core Spray System

N. 1-47E817-1-ISI, Nuclear Boiler

O. 1-47E820-2-ISI, Control Rod Drive Hydraulic System

P. 1-47E820-6-ISI, Control Rod Drive Hydraulic System

Q. 1-47E822-1-ISI, Reactor Building Closed Cooling Water System

R. 0-47E839-5-ISI, Raw Water Chemical Treatment System

S. 1-47E844-2-ISI, Raw Cooling Water

T. 1-47E852-1-ISI, Floor & Dirty Radwaste Drainage System

U. 1-47E852-2-ISI, Clean Radwaste & Decon Drainage System

V. 1-47E854-1-ISI, Standby Liquid Control System

W. 1-47E855-1-ISI, Fuel Pool Cooling System

X. 1-47E856-2-ISI, Demineralized Water System

Y. 1-47E858-1-ISI, RHR Service Water System

Z. 1-47E859-1-ISI, Emergency Equipment Cooling Water System

AA. 0-117C2556-4-ISI, Rack 25-18

BB. 0-117C2556-5-ISI, Rack 25-18

CC. 1-164C5984-4-ISI, Rack 25-56A

DD. 1-164C5984-5-ISI, Rack 25-56B

2.5.2 Reactor Vessel

A. 1-CHM-0992-C-01, Reactor Vessel Weld and Nozzle Locations

B. 1-CHM-2001-C-1, Vessel Stud Locations

C. 1-CHM-2002-C-1, Control Rod Drive Penetrations (Locations)

D. 1-CHM-2102-A-1, Closure Head Assembly

2.5.2 Reactor Vessel (continued)

E. MSG-0020-A-1, Reactor Vessel Clad Patches

F. ISI-0443-C-1, Reactor Vessel Bottom Head Assembly

G. CHM-1090-A-1, RPV Control Rod Drive Penetration-BFN

H. CHM-1091-A-1, RPV Support Shirt Weld-BFN

I. CHM-1094-A-1 through 7, RPV Nozzle to Vessel Welds-BFN

J. CHM-1095-A-1 through 5, RPV Vessel and Head Welds-BFN

K. ISI-0414-C-1 and 2, Reactor Vessel Supports

2.5.3 Residual Heat Removal Heat Exchangers

CHM-2418-B-1, RHR Heat Exchanger Welds

2.5.4 Piping System Weld Locations

A. 1-CHM-1080-C-1, Feedwater System - Code Class 1

B. 1-CHM-1081-C-1 and 2, Recirculation System - Code Class 1

C. 1-CHM-1082-C-1 and 2, Main Steam System - Code Class 1

D. 1-CHM-1088-C-1, Residual Heat Removal System - Code Class 1

E. CHM-1088-C-2, Residual Heat Removal System - Code Class 1

F. 1-CHM-1089-C-1, Core Spray System - Code Class 1

G. 1-CHM-1097-C-1, CRD Hydraulic Return Line - Code Class 1

H. 1-CHM-1098-C-1 and 2, Reactor Water Cleanup and RCIC - Code Class 1

I. CHM-1099-C-1, High Pressure Coolant Injection - Code Class 1

J. ISI-0362-C-1 through 12, RHR Shutdown Supply - Code Class 2

K. 1-CHM-2690-C-1, Main Steam System - Code Class 2

L. CHM-2690-C-2, Main Steam System - Code Class 2

M. 1-ISI-0029-C-1, Closed Cooling Water System - Code Class 2

N. 1-ISI-0036-C-1 and 2, CRD Header - Code Class 2

2.5.4 Piping System Weld Locations (continued)

O. ISI-0091-C-1, HPCI - Code Class 2

P. 1-ISI-0091-C-2, HPCI - Code Class 2

Q. 1-ISI-0093-C-1, RCIC - Code Class 2

R. 1-ISI-0095-C-1 and 2, Core Spray - Code Class 2

S. 1-ISI-0409-C-1, Jet Pump Instrumentation Nozzle Class 1

T. ISI-0155-A-1, Jet Pump Instrumentation Nozzle Welds - Code Class 1

U. ISI-0159-A-1, Core Differential Pressure & Liquid Control Nozzle Class 1

V. ISI-0160-A-1, Instrumentation Nozzles Class 1

W. MSG-0019-B-1, Recirculation Inlet Nozzles Class 1

2.5.5 Piping System Support Locations

A. 1-CHM-2036-C-1, Feedwater System - Code Class 1

B. 1-CHM-2037-C-1 and 2, Recirculation System - Code Class 1

C. 1-CHM-2038-C-1 and 2, Main Steam System - Code Class 1

D. 1-CHM-2039-C-1, RHR System - Code Class 1

E. 1-CHM-2040-C-1, Core Spray System - Code Class 1

F. 1-CHM-2042-C-1, Reactor Water Cleanup and RCIC - Code Class 1

G. 1-CHM 2043-C-1, High Pressure Coolant Injection - Code Class 1

H. ISI-0363-C-1, 2, 3, 6, and 12, RHR Shutdown Supply - Code Class 2

I. 1-ISI-0363-C-4, 5, and 7 through 11, RHR Shutdown Supply - Code Class 2

J. 1-ISI-0030-C-1, Closed Cooling Water - Code Class 2

K. 1-ISI-0037-C-1 and 2, CRD Header - Code Class 2

L. 1-ISI-0049-C-1 and 2, Main Steam System - Code Class 2

M. 1-ISI-0085-C-1 and 2, RHR Service Water - Code Class 3

N. ISI-0085-C-3, RHR Service Water - Code Class 3

2.5.5 Piping System Support Locations (continued)

O. 1-ISI-0090-C-1, Fuel Pool Cooling - Code Class 3

P. 1-ISI-0092-C-1 and 2, HPCI - Code Class 2

Q. 1-ISI-0094-C-1, RCIC - Code Class 2

R. 1-ISI-0096-C-1 and 2, Core Spray - Code Class 2

S. ISI-0368-C-1 through 5 and 10 through 15, Emergency Equipment Cooling Water-Code Class 3

T. 0-ISI-0368-C-6, 7, and 9, Emergency Equipment Cooling Water-Code Class 3

U. 1-ISI-0391-C-1, Raw Cooling Water - Code Class 3

2.5.6 Pipe Bolting

ISI-0027-B-1, Main Steam Bolting - Code Class 1

2.5.7 Pump Support

ISI-0022-B-1, RHR Pump Support - Code Class 2

2.5.8 Reactor Vessel Support

1-ISI-0414-C-1 and 2, Reactor Vessel Support - Code Class 1

2.5.9 Pump Bolting

1-ISI-0420-C-1, Recirculation Pump Bolting - Code Class 1

2.6 Reference Documents

A. ASME Boiler and Pressure Vessel Code, Section XI, 1971 Edition with Addenda through Summer 1971.

B. ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition with Addenda through Summer 1975.

C. ASME Boiler and Pressure Vessel Code, Section XI, Appendix III, 1977 Edition with Addenda through Summer 1978.

D. ASME Boiler and Pressure Vessel Code, Section V, Articles 2, 6, 7, and 9, 1974 Edition with Addenda through Summer 1975.

2.6 Reference Documents (continued)

E. ASME Boiler and Pressure Vessel Code, Section V, articles 4 and 5, 1977 Edition with Addenda through Summer 1978.

F. ASME Boiler and Pressure Vessel Code, Section XI, 1986 Edition with No Addenda.

G. ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition with No Addenda.

H. ASME Boiler and Pressure Vessel Code, Section XI, 1995 Edition with 1996 Addenda.

I. ASME Boiler and Pressure Vessel Code, Section XI, 2001 Edition with 2003 Addenda.

J. GE SIL No. 571 Instrument Nozzle Safe End Inspection

2.7 Vendor Manuals

A. BFN-VTM-B014-0010, B&W Reactor Pressure Vessel Manual, Contract 66C60-90744

B. BFN-VTM-B580-0010, B&J Recirculation Pump Manual, Contract 67C60-91750

C. BFN-VTM-B260-0030, Bingham Pump Co. RHR Pump Manual, Contract 66C60-90744

D. BFN-VTM-P160-0010, VTM-P160-0010, Vendor Technical Manual for Perfex Corp. Heat Exchangers, Types NEN, CEU, CES, and CEN

2.8 Miscellaneous Documents

A. BF PER 951466, Inservice Inspection Program Problem Evaluation Report Units 1 & 3, Class 3 Pipe Supports for 1st Inspection Period of 1st Interval Are Not Documented.

B. BF PER 950681, Traceability of Units 1, 2, and 3 Reactor Pressure Vessel Head Studs, Nuts, and Washers

C. DNE Calculation, Exclusion Criteria for ISI Scope. RIMS R14020405108, R14950829109 and R14010222101. (MD-Q0999-950033)

D. GE Letter Nos.: BFSE 93-143, BFSE 94-001, BFSE 94-002, BFSE 94-005, and BFSE 94-007.

2.9 TVA Nuclear Standard Programs and Processes

A. SPP-2.2, Administration of Site Technical Procedures

B. SPP-2.4, Records Management

C. SPP-3.1, Corrective Action Program

D. SPP-3.5, Regulatory Reporting Requirements

E. SPP-9.1, ASME Section XI

F. SPP-9.3, Plant Modifications and Design Change Control

3.0 PRECAUTIONS AND LIMITATIONS

A. RADCON shall be contacted prior to any work in a radiologically-controlled area (RCA). RADCON shall determine the requirements for a radiological work permit (RWP) and any other radiological requirements.

B. Standard safety practices as outlined in the TVA Health and Safety Manual shall be followed.

C. Efforts should be made to ensure proper planning to reduce delays and radiation exposure during performance of examinations.

D. Any revisions to this instruction initiated by other groups shall be submitted to Components Engineering for concurrence prior to incorporation.

4.0 PREREQUISITES

Personnel responsible for performance of examinations should familiarize themselves with the requirements of this program prior to performing the examinations. Specifics concerning performance of NDE are not a part of this program, but are included in IEP-100, Nondestructive Examination Procedures.

5.0 SPECIAL TOOLS AND EQUIPMENT

Equipment is specified in the applicable NDE procedure utilized for performance of the examination.

6.0 ACCEPTANCE STANDARDS

Acceptance criteria are specified in the applicable NDE procedures of IEP-100, which are in compliance with ASME Section XI, Articles IWA-3000, IWB-3000, IWC-3000, IWD-3000, and IWF-3000 except where ASME Section III or other construction code examinations are employed to satisfy ASME Section XI requirements.

Acceptance by analytical evaluations performed in accordance with IWX-3000 for Class 1, 2, and 3 components and component supports shall be submitted to the regulatory authority having jurisdiction at the plant site. This information may be submitted with the Inservice Inspection Summary Report including Form NIS-1 or if deemed necessary, a separate report shall be submitted.

7.0 INSTRUCTION STEPS/ELEMENTS

7.1 Responsibilities

7.1.1 Materials Technology and Codes

A. Providing ASME Section XI, interpretations as requested by various site organizations or as required in program development and implementation.

B. Providing assessment and oversight of ISI programs and activities, including review of ISI Program reports and submittals prior to issuance.

C. Review of relief requests prior to issuance.

7.1.2 Component Engineering

A. Defining ASME Section XI, Code Class 1, 2, and 3 equivalent boundaries in accordance with applicable guidelines (e.g.: 10CFR50.2, 10CFR50.55a, ASME Section XI, Regulatory Guide 1.26, and others).

B. Preparing/revising ASME Section XI Code Class boundary drawings to identify the ASME Section XI Class 1, 2, and 3 equivalent boundaries within each plant system as defined in 7.1.2A above. Reference procedure 0-TI-400. See Section 2.5 for drawing list.

C. Preparing/revising ASME Section XI ISI drawings that identify the Class 1, 2, and 3 equivalent components (including supports) that require NDE to comply with ASME Section XI requirements. See Section 2.5 for drawing list.

D. Preparing/revising this instruction (ISI Program) in accordance with SPP-2.2, and submitting it to:

1. Site Procedures for approval and issue as a controlled document.

2. Records Management for subsequent submittal to the ANII for a detailed review per IWA-1400.

3. Site Licensing for subsequent submittal to the NRC, as required.

E. Ensuring this program includes the following information, as a minimum:

1. The ASME Section XI Code of Record for ISI

2. Inspection interval number and begin/end dates

3. List of ASME Section XI code class boundary drawings

4. List of ASME Section XI ISI drawings

7.1.2 Component Engineering (continued)

5. ASME Section XI Examination Category and Item Number for components.
6. Examination schedule providing quantities for each applicable code item number distributed over each period of the inspection interval
7. NDE method required for each code item number
8. Applicable relief requests
9. Name and address of Owner
10. Name and address of generating plant
11. Name or number designation of the unit
12. Commercial operation date of the unit
13. Description of the system utilized for maintaining record of completed examinations
14. Description of scan plan contents and control
15. Applicable augmented examination requirements and their basis.
16. Code Cases proposed for use and the extent of their application.

F. Providing a list of components scheduled for examination during each refueling outage to Inspection Services Organization (ISO) for scan plan development. This list shall include the component identifier, ASME Section XI examination category and item number, ISI drawing number and sheet number, and examination requirement source.

G. Approving scan plan and revisions and submitting copies of the approved scan plan to site management and the ANII.

H. Determining scope of additional samples and notification of site engineering when an indication(s) results from inservice inspection examinations.

I. Notifying site engineering of indications found during the final additional sample examination to allow evaluation for further actions to be taken.

J. Preparing a Request for Relief (RFR), as required, when conformance with Code requirements is impractical (see Section 7.6 below). ISO responsibilities related to identification of limited examinations are listed in Section 7.1.5.

K. Submitting RFRs to Site Licensing in a timely manner to support ISI activities.

L. Performing NDE in accordance with this instruction.

7.1.2 Component Engineering (continued)

M. Ensuring that ISI/PSI examinations are performed in accordance with approved TVA or contractor NDE procedures authorized by ISO.

N. Administering the Authorized Inspection Agency contract and ensuring that services of AIA are utilized when performing Code required activities. TVA's interface with the Authorized Inspector for ISI, repairs, and replacements is defined in SPP-9.1.

O. Providing AIA representative (ANII) with access to plant facilities and documentation in accordance with IWA-2130 of ASME Section XI.

P. Notifying ANII prior to performing ASME Section XI examinations.

Q. Preparing a Notification of Indication (NOI) to document rejectable indications detected during the performance of ASME Section XI examinations. The NOI process is defined in SPP-9.1.

R. Preparing examination reports and recording them (report number, date, and comments/NOI number) in the scan plan. When inservice examinations are implemented by instructions other than this program, copies of the examination data sheets shall be submitted to Component Engineering by the performing organization. These data sheets shall be used as examination reports and incorporated into the scan plan.

S. Ensuring that scan plan examinations are complete prior to completion of an outage.

T. Preparing (or ensuring preparation of) the ISI Summary Report including Form NIS-1. Ensuring that Form NIS-1 is signed by the ANII. Submitting the ISI Summary Report to Site Licensing in accordance with site schedules. Preparing augmented examination summary reports, obtaining ANII signature on the NIS-1 form, coordinating summary report review with ISO, and submitting augmented examination summary reports to Site Licensing.

U. Preparing and submitting the Site Final Report to RM as a QA record.

V. Ensuring records used as PSI records from manufacturers or construction organizations comply with SPP-9.1.

W. Ensuring the calculations of component support acceptance ranges, if required, are prepared in accordance with IEP-100, N-GP-7 and N-VT-1.

X. Maintaining calibration blocks stored at the plant site.

7.1.2 Component Engineering (continued)

Y. Initiating a pre-outage meeting to identify augmented examinations in accordance with Section 7.11.

Z. Ownership of the ISI Program, and assignment of an ISI Program Engineer with primary responsibility for ISI activities.

7.1.3 Site Engineering

A. Including provisions for inservice inspection access in designs, in accordance with ASME Section XI, IWA-1400(b) and IWA-1500.

B. Performing engineering evaluations in support of examination indications related to operability and corrective measures.

C. Performing evaluations of rejectable indications to determine if further action is required.

D. Determining those component supports that could be affected by observed failure modes and those nonexempt components that could be affected.

E. Providing specific written details for augmented requirements (Refer to Section 7.11), and determining if a post examination meeting is required.

7.1.4 Site Licensing

A. Filing this instruction, including revisions, with the NRC, in accordance with IWA-1400(c).

B. Submitting RFRs, the ISI Summary Report, including Form NIS-1 and IW(X)-3600 analytical reports, to the NRC.

7.1.5 Inspection Services Organization (ISO)

A. Developing and maintaining a computerized data base, at the direction of Component Engineering, to include components identified on the ISI weld and support drawings.

B. Preparing/revising scan plans for each refueling outage of the inspection interval, as directed by Component Engineering, utilizing the computerized data base. This includes providing additional information provided by NDE Level III personnel to complete the scan plan, such as NDE procedure references, calibration standard references, and UT scanning angles.

C. Providing NDE Level III approval of scan plan revisions that affect the additional information of Section 7.1.5B, above and maintaining a scan plan revision history log.

7.1.5 Inspection Services Organization (ISO) (continued)

D. Providing NDE Level III determination if a Request for Relief (RFR) is required because of areas that are inaccessible or partially inaccessible for examination or because it is determined that conformance with Code requirements is impractical and notifying Component Engineering. Reference Section 7.2.3E.

E. Approving contractor NDE procedures (using IEP-100 as a guideline), contractor written practices for qualification and certification of NDE personnel, and certifications of contractor's NDE personnel performing ISI/PSI.

F. Providing NDE Level III evaluation of successive examination results.

G. Packaging radiographs for storage and providing them with reader sheets as a life of plant record to RM.

H. Providing copies of IEP-100 NDE procedure revisions and evidence of personnel qualifications to RM as permanent records for the service lifetime of the plant, in accordance with IWA-1400(k).

I. Maintaining as-built calibration standard drawings and the calibration standard material certifications.

7.1.6 Site Records Management (RM)

A. Issuing controlled copies of ASME Section XI Code Class Boundary Drawings and ISI drawings.

B. Issuing this instruction and providing controlled copies to Component Engineering, ANI/ANII, and other requesting organizations.

C. Maintaining the site final report as a life of plant QA document. Other records referenced in the final report (work plans, radiographs, etc.), NDE procedure revisions, and evidence of personnel qualifications shall be retained for the service lifetime of the plant.

7.1.7 Authorized Nuclear Inservice Inspector (ANII)

A. Performing the duties of IWA-2110, including a detailed review of this instruction and subsequent revisions. He shall submit a report of the review to the Owner, in accordance with IWA-2110.

B. Having the prerogative and authorization to require requalification of an operator or procedure when he has reason to believe Code requirements are not being met.

7.1.8 Nuclear Assurance

A. Ensuring the adequacy of contractor's QA programs in accordance with the TVA Standard Programs and Processes.

7.2 Implementation

7.2.1 System for Maintaining Status of Examinations

A. ISI Data Base

A computerized data base shall be utilized for identification of the components requiring examination and for maintaining the status of completed examinations for ASME Section XI and/or augmented credit. Maintenance and updating of this data base is detailed in Section 7.9.

B. Scan Plan

1. The scan plan is developed from the ISI data base and details the examinations scheduled for performance during an outage. A scan plan may also be used for examinations performed pre-outage or between outages. It should contain as a minimum: components to be examined; Code examination category; Code item number; methods of examination; NDE procedure reference; calibration standard reference; ISI drawing and sheet number.

2. Prior to performing examinations, the scan plan shall be approved by Component Engineering.

3. When inservice examinations are performed as a result of instructions other than this program (e.g., maintenance instructions, work plans, etc.), copies of the examination data sheets shall be submitted to Component Engineering by the performing organization for assignment of a report number and incorporation into the scan plan.

7.2.1 System for Maintaining Status of Examinations (continued)

4. During implementation, it may become necessary to revise the scan plan. Scan plan revisions may be initiated by Component Engineering, ISO, or by other personnel involved with implementation of the scan plan. All changes shall be coordinated with Component Engineering and, as needed, with the appropriate plant planning and scheduling personnel for facilitating the use of supporting craft personnel.

5. Revisions to the scan plan shall be controlled in the same manner as the original. ISO shall maintain a scan plan revision history log. Interim working copies may be handwritten to allow examinations to be performed before a formal revision is issued. These changes shall be approved by Component Engineering and a NDE Level III, as required by Section 7.1.2G and Section 7.1.5C, respectively. Approving individuals shall initial and date such changes.

C. Configuration Changes

1. When portions of existing pipe or supports are replaced or new systems are added, a system walkdown shall be performed under the direction of Component Engineering to identify the pipe configuration, welds, components, and supports that are required to be added to this inspection program.

2. If variations in configuration are discovered, or if modifications (including additions or deletions), repairs, or replacements, are made during the service lifetime of the unit, the changes shall be marked on field corrected copies of the appropriate drawing listed in Section 2.0 by a Component Engineering representative. The field corrected copies shall be used in the performance of examinations and as records, until the drawing has been revised to reflect the change(s).

3. Component Engineering shall be responsible for reviewing the proposed change, revising the drawings as necessary, and ensuring the revised drawings are issued prior to the next refueling outage. The scan plan shall be revised to reflect any PSI examinations performed due to the variations in configuration. The ISI Engineer (or his designee) shall track the ISI field drawing revisions by utilization of a log book. This log book shall utilize the assigned RIMS (Record of Information Management System) number on the NEDP-3 Form, "Request For Administrative Change To Drawings", as the tracking number for the ISI field drawing revisions. Guidelines for preparation and control of ISI examination drawings are delineated in SPP-9.1, Part A, Appendix C, and NEDP-3 Paragraph 3.9.2, and Appendix C.

7.2.2 Notification of Indication (NOI)

A. NOI form, FORM SPP-9.1-2 of SPP-9.1, shall be used to document indication(s) exceeding the acceptance criteria of Article IWX-3000 of ASME Section XI. If engineering evaluation determines that the condition is unacceptable for continued service, corrective action shall be initiated Component Engineering shall provide/coordinate dispositions for NOIs in accordance with SPP-9.1 and SPP-3.1. Any Problem Evaluation Reports (PERs) or Work Orders (WOs) generated to support the NOI disposition shall be referenced on the NOI.

B. Additional Examinations

1. Additional examinations for Class 1 equivalent components (IWB) shall be in accordance with the requirements of IWB-2430.

   The additional examination samples are defined as those items (welds, areas, or parts) in a particular examination category and item number. Engineering judgement should be documented concerning expansion (or no expansion) into additional systems. The initial sample is the sample scheduled for examination at a particular outage for ASME Section XI credit.

   a. Examinations of the initial sample that reveal indications exceeding the acceptance standards of Table IWB-3410-1 shall be extended to include additional examinations in the same outage as the initial examinations.

      The first additional examination sample shall include items scheduled for this and the subsequent period. If examinations for that item are not scheduled in the subsequent period, the most immediate period containing scheduled examinations of that item shall be examined.

   b. If the first additional examinations of (1)(a) detect indications exceeding the acceptance standards of Table IWB-3410-1, further additional examinations shall be performed during the outage. The second additional examination sample shall include the remaining items of similar design, size, and function.

7.2.2 Notification of Indication (NOI) (continued)

2. Additional examinations for Class 2 equivalent components (IWC) shall be selected in accordance with IWC-2430.

   The additional examination samples are defined as those items (welds, areas, parts) in a particular examination category and item number. Engineering judgement should be documented concerning expansion (or no expansion) into additional systems. The initial sample is the sample scheduled for examination at a particular outage for ASME Section XI credit.

   a. Examinations of the initial sample that reveal indications exceeding the acceptance standards of Table IWC-3410-1 shall be extended to include additional examinations in the same outage as the initial examinations. The first additional sample shall include approximately the same number of items examined in the initial sample. The items selected should be those available in the interval sample that have the longest service time from its previous inservice examination.

   b. If the first additional examinations of (2)(a) detect indications exceeding the acceptance standards of Table IWC-3410-1, further additional examinations shall be performed during the outage. The second additional examination sample shall include the remaining items of similar design, size, and function.

3. Additional examinations for component supports (IWF) shall be in accordance with the requirements of IWF-2430.

   a. If component supports in the initial sample must be subjected to corrective measures in accordance with IWF-3000, the component supports immediately adjacent to those for which corrective action is required shall be examined. Also, the examinations shall be extended to include a first additional sample that includes supports within the system, equal in number and of the same type and function as those scheduled for examination during the period.

   b. When the additional examinations of (3)(a) require corrective measures in accordance with IWF-3000, a second additional sample of the remaining component supports within the system of the same type and function as in (3)(a) shall be examined

7.2.2 Notification of Indication (NOI) (continued)

c. When the additional examinations of (3)(b) require corrective measures in accordance with IWF-3000, examinations shall be extended to include a third additional sample of the remaining nonexempt supports potentially subject to the same failure modes that required corrective measures in (3)(a) and (3)(b). These additional examinations shall include nonexempt component supports in other systems when support failures requiring corrective measures indicate non-system related failure modes. At the request of Component Engineering, Site Engineering shall make the determination of failure mode applicability and select the third additional sample.

d. When the additional examinations required by (3)(c) require corrective actions in accordance with IWF-3000, examination shall be extended to those exempt component supports that could be affected by the same observed failure modes and could affect nonexempt components. At the request of Component Engineering, Site Engineering shall make the determination of failure mode applicability and select a fourth additional sample of exempt component supports that could affect nonexempt components.

e. If the final sample examinations in (3)(d) above detect indications exceeding the acceptance standards of Article IWF-3000 of ASME Section XI, Component Engineering shall notify Site Engineering to evaluate the indications and make recommendations for further action, if needed. These actions would be beyond those required by ASME Section XI.

7.2.3 Examinations

A. NDE shall be performed in accordance with IWA-2200 of ASME Section XI utilizing the NDE procedures of Inspection Services Organization (ISO) Programs Manual, Section 2, Engineering NDE Procedures, or approved contractor procedures, with the exception of NDE procedures for ultrasonic examinations, which shall be qualified to the requirements of Appendix VIII of ASME Section XI, as implemented by the Performance Demonstration Initiative Program (PDI).

B. Personnel performing NDE operations shall be qualified and certified in accordance with IWA-2300 of ASME Section XI, as specified in IEP-200, and qualified to the requirements of the 1995 Edition of ANSI/ASNT CP-189, with the exception of NDE personnel performing ultrasonic examinations, who shall be qualified to the requirements of Appendix VIII of ASME Section XI, as implemented by the Performance Demonstration Initiative Program (PDI).

7.2.3 Examinations (continued)

C. The inservice examinations may be performed by Component Engineering, ISO, or contractor personnel. Contract preparation, administration, and supervision shall be the responsibility of Component Engineering.

Inspection plans and/or quality assurance programs submitted by contractors shall be reviewed and approved by Nuclear Assurance prior to use. All contractor NDE procedures used during the inspection program shall be reviewed and approved by ISO using IEP-100 as a guideline.

D. A weld reference system shall be established for welds and areas subject surface or volumetric examination in accordance with IWA-2600.

E. Every attempt shall be made to provide 100% code coverage (volume or area) when performing an exam. When 100% code coverage is not obtained / obtainable, a NDE Level III shall promptly notify Component Engineering. If the coverage is limited due to an obstruction that is removable, an evaluation shall be performed by Component Engineering to either allow removal of the obstruction or to justify why the obstruction cannot be removed. When less than the required ASME Section XI code examination volume or area is examined, the percentage examined shall be documented on the examination data sheet. The cause of the limitation shall be clearly specified as a part of the data sheet documentation. An NDE level III representative shall review the limitations or impractical examinations during the refueling outage and determine if a code examination was achieved. If greater than 90% code coverage was not achieved, the NDE level III representative shall notify Component Engineering immediately to determine if an alternate component can be selected. If an alternate component cannot be selected the examination volume or area is qualified for request for relief action in accordance with Section 7.6. Reference Section 7.1.5D.

7.3 Components Subject to Examination

7.3.1 ASME Class 1 Equivalent Components Subject to Examination (IWB)

A. ASME Class 1 equivalent systems are listed below:

1. Control Rod Drive Hydraulic System (CRD)
2. Core Spray System (CS)
3. Feedwater System (FW)
4. High Pressure Coolant Injection System (HPCI)
5. Main Steam System (MS)

7.3.1 ASME Class 1 Equivalent Components Subject to Examination (IWB) (continued)

6. Reactor Core Isolation Cooling System (RCIC)
7. Recirculation System (RECIR)
8. Residual Heat Removal (RHR)
9. Reactor Pressure Vessel (RPV)
10. Standby Liquid Control System (SLC)

B. The specific components subject to examination are identified on ISI drawings listed in Section 2.5. Attachment 10 contains detailed information for selected Class 1 valves. The number of components within each system, the number selected for examination during the interval and the number selected for examination by period are provided in Attachment 1, Examination Schedule - Class 1 Equivalent (IWB) Components.

C. Adherence to IWB-1220 shall be in accordance with the 1989 Edition, No Addenda of ASME Section XI as required by 10 CFR 50.55a(b)(2)(xi). The component size and shape associated with IWB-1220(a) is determined by the calculation referenced in Subsection 2.8C. IWB-1220, footnote 1 allows the exemptions from examination in IWC-1220 to be applied for those components.

D. Selection and scheduling of ASME Class 1 equivalent components is in accordance with IWB-2412, Inspection Program B, IWB-1200 exemptions, and applicable requirements of Table IWB-2500-1.

E. The examination of Class 1 equivalent component supports is in accordance with Section 7.3.

F. ASME Class 1 equivalent piping and components that meet the size exemption listed in reference 2.8C are exempt from the Class 1 requirements of 10CFR50.55a(c)(1). The exempted piping /components would then be considered ASME Class 2 equivalent since they are part of the reactor pressure coolant boundary, but excluded from classification as ASME Class 1.

G. The extent of examination for Category B-D, Item No. B3.90, "Pressure Retaining Nozzle-To-Vessel Welds," shall be (next to the widest part of the weld) one-half (1/2) inch from each side of the weld crown in lieu of one-half (1/2) through-wall thickness from each side of the weld required by the 2001 Edition, 2003 Addenda of ASME Section XI, Code, Table IWB-2500-1, Figures 7 (a) and (b). Reference Code Case N-613-1.

7.3.1 ASME Class 1 Equivalent Components Subject to Examination (IWB) (continued)

H. The 2001 Edition, 2003 Addenda, ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item B3.100, requires a volumetric examination of the reactor pressure vessel head nozzles inside radius section. In accordance with Code Case N-648-1, TVA will perform an enhanced visual (EVT-1) examination, capable of a 1-mil resolution, of the reactor pressure vessel and reactor pressure vessel head nozzles inside radius sections, in accordance with ASME Section XI, VT-1 requirements. This does not apply to the six (N4) Feedwater nozzles. The six Feedwater nozzle inner radius sections will continue to be examined with ultrasonic techniques developed and qualified using GE-NE523-A71-0594-A, Revision 01 and ASME Section XI Code requirements.

I. Reactor Vessel Interior

ASME Code Category B-N-1, Item Number B13.10

The space above and below the vessel core that is made accessible by the removal of components during normal refueling outages shall be visually examined, VT-3, during the first refueling outage and at subsequent refueling outages at approximately three-year intervals (a minimum of once an inspection period). Reference Attachment 5.

The areas that are normally accessible include main steam nozzles, feedwater nozzles and spargers, core spray nozzles, piping, and spargers, top guide assembly, instrumentation nozzles, CRD return nozzle, and the RPV annulus area. Reference Attachment 5.

ASME Code Category B-N-2, Item Number B13.20

The accessible RPV attachment welds within the beltline region shall be visually examined (VT-1). The attachment welds within the beltline region are defined as the lower surveillance specimen bracket welds on shell course 2 and the jet pump riser brace pad welds. Reference Attachment 5.

ASME Code Category B-N-2, Item Number B13.30

The accessible RPV attachment welds outside the beltline region shall be visually examined (VT-3). The attachment welds normally accessible outside the beltline region are defined as the guide rod brackets, steam dryer support brackets, feedwater sparger brackets, core spray piping brackets and pads, RPV shroud support to RPV bottom head, and the surveillance specimen bracket welds on shell course 3. The shroud support leg to bottom RPV head welds are located under the core plate and are normally inaccessible. Reference Attachment 5.

7.3.1 ASME Class 1 Equivalent Components Subject to Examination (IWB) (continued)

ASME Code Category B-N-2, Item Number B13.40

The accessible surfaces of the core support structure shall be visually examined (VT-3). The core support structure is defined as the top guide, core plate, control rod guide tubes, control rod drive housings, shroud support ledges, and the fuel support castings. Areas that are accessible during normal refueling outages include the top surface of the top guide and the outer peripheral top surface of the core plate. Reference Attachment 5.

All augmented examination requirements and commitments for BFN vessel internal examinations during the ISI interval are stated in 0-TI-365. Reference Attachment 5.

NOTES

1) When visual examinations of RPV internal components are being performed for compliance with 0-TI-365 requirements and maintenance or refueling activities, credit may be taken for ASME Section XI requirements provided the visual examination meets the minimum requirements of ASME Section XI.
2) When specialized visual examinations are being performed, for compliance with 0-TI-365 requirements and maintenance or refueling activities, and access to areas are made available that are normally inaccessible, credit for ASME Section XI may be taken provided the visual examination meets the minimum requirements of ASME Section XI. These examinations shall be considered supplemental examinations.
3) All visual examinations performed on RPV internal components that meet the minimum VT-3 criteria, as stipulated in ASME Section XI, shall be considered for ASME Section XI, Code Category B-N-1 credit.
4) It is permissible to defer the visual examinations for ASME Section XI, Code Category B-N-2 to the end of the inspection interval. However, these examinations may be performed at any time during the interval.

7.3.2 ASME Class 2 Equivalent Components Subject to Examination (IWC)

A. ASME Class 2 equivalent systems are listed below:

1. Control Rod Drive Hydraulic System (CRD)
2. Core Spray System (CS)
3. High Pressure Coolant Injection System (HPCI)

7.3.2 ASME Class 2 Equivalent Components Subject to Examination (IWC) (continued)

4. Main Steam (MS)

5. Reactor Building Closed Cooling Water System (RBCCW)

6. Reactor Core Isolation Cooling System (RCIC)

7. Residual Heat Removal System (RHR)

B. The specific components subject to examination are identified on ISI drawings listed in Section 2.5. The number of components within each system, the number selected for examination during the interval and the number selected for examination by period are provided in Attachment 2, Examination Schedule - Class 2 Equivalent (IWC) Components.

C. Selection and scheduling of ASME Class 2 equivalent components is in accordance with IWC-2412, Inspection Program B, IWC-1200 exemptions, and applicable requirements of Table IWC-2520-1.

D. The examination of Class 2 equivalent component supports is in accordance with Section 7.3.4.

7.3.3 ASME Class 3 Equivalent Components Subject to Examination (IWD) and Non-Code Class Components

A. ASME Class 3 equivalent systems are listed below:

1. Emergency Equipment Cooling Water System (EECW).

2. Fuel Pool Cooling System (FPC).

3. Residual Heat Removal Service Water System (RHRSW), including the unit common headers.

B. The specific components subject to examination are identified on ISI drawings listed in Section 2.5. The number of components within each system, the number selected for examination during the interval, and the number selected for examination by period are provided in Attachment 3, Examination Schedule - Class 3 Equivalent (IWD) Components.

C. Selection and scheduling of ASME Class 3 equivalent components is in accordance with IWD-2412, Inspection Program B, IWD-1200 exemptions, and applicable requirements of Table IWD-2500-1.

D. The examination of Class 3 equivalent component supports is in accordance with Section 7.3.4.

7.3.4 Component Supports Subject to Examination (IWF).

A. ASME Class 1, 2, 3, and MC equivalent component and piping supports shall be examined in accordance with IWF-1000.

B. The specific components subject to examination are identified on ISI drawings listed in Section 2.5. The number of supports within each system, the number selected for examination during the interval, and the number selected for examination by period are provided in Attachment 4.

C. Selection and scheduling of component supports is in accordance with IWF-2410 Table IWF-2410-2, Inspection Program B, IWF-1200 exemptions, and applicable requirements of Table IWF-2500-1.

D. Supports depicted as snubbers on the ISI support drawings are subject to examination outside the boundaries of the snubber (including the pins) in accordance with IWF-5300(c). The examination of snubbers (excluding the pins) and any repair, replacement or adjustment to the snubber itself is addressed by the Snubber Inservice Testing Program (see Section 7.8) and RFR # 1-ISI-18 (pending).

E. The acceptance range for constant force and variable springs shall be in accordance with the support drawing. If the setting range is not identified on the drawing the applicable general notes contained in the 47B435-series of drawings shall be utilized in accordance with N-VT-1 and N-GP-7.

F. Component supports that have been adjusted in accordance with IWF-3000, or corrected or modified by repair/replacement activities shall be examined prior to return to service per the applicable examinations listed in Table IWF-2500-1.

Additionally, for systems that operate above 200 degrees F during normal operation, an additional preservice examination shall be performed on the affected component supports during or following the subsequent system heat-up and cool-down cycle unless determined unnecessary by evaluation. This examination shall be performed during operation or at the next refueling outage. Component supports requiring an additional preservice examination shall be scheduled for examination and added to the applicable scan plan.

7.3.5 Successive Examinations, Class 1, 2, or 3 Components and Class 1, 2, 3, or MC Component Supports

Any corrective actions required as a result of ISI examinations shall be performed in accordance with SPP-3.1.

Successive examinations shall be performed in accordance with the requirements of IWB, IWC, IWD, and IWF.

7.3.5 Successive Examinations, Class 1, 2, or 3 Components and Class 1, 2, 3, or MC Component Supports (continued)

A. Successive Examinations - Class 1 Equivalent Components

Areas containing flaw indications or relevant conditions evaluated in accordance with IWB-3132.3 or IWB-3142.4 that qualify for continued service shall be re-examined during the next three inspection periods as listed in the inspection schedules. If these re-examinations reveal that the flaw indication remain essentially unchanged for three successive inspection periods, then the component examination frequency may revert to the original schedule. Components requiring successive examinations shall be scheduled for examination and added to the applicable scan plan. If welded attachments are examined as a result of identified component support deformation, and the results of these examinations exceed the acceptance standards of Table IWB-3410-1, successive examinations shall be performed, if determined necessary, based on an evaluation.

B. Successive Examinations - Class 2 Equivalent Components

Areas containing flaw indications or relevant conditions evaluated in accordance with IWC-3122.3 or IWC-3132.3 that qualify for continued service shall be re-examined during the next inspection period as listed in the inspection schedule. If this re-examination reveals that the flaw indications remain essentially unchanged, then the component examination frequency may revert to the original schedule. Components requiring successive examinations shall be scheduled for examination and added to the applicable scan plan. If welded attachments are examined as a result of identified component support deformation, and the results of these examinations exceed the acceptance standards of Table IWC-3410-1, successive examinations shall be performed, if determined necessary, based on an evaluation.

C. Successive Examinations - Class 3 Equivalent Components

Areas containing flaw indications or relevant conditions evaluated in accordance with IWD-3000 that qualify for continued service shall be re-examined during the next inspection period as listed in the inspection schedule. If this re-examination reveals that the flaw indications remain essentially unchanged, then the component examination frequency may revert to the original schedule. Components requiring successive examinations shall be scheduled for examination and added to the applicable scan plan. If welded attachments are examined as a result of identified component support deformation, and the results of these examinations exceed the acceptance standards of Table IWD-3410-1, successive examinations shall be performed, if determined necessary, based on an evaluation.

7.3.5 Successive Examinations, Class 1, 2, or 3 Components and Class 1, 2, 3, or MC Component Supports (continued)

D. Successive Examinations for Component Supports (IWF)

Successive examinations for component supports (IWF) shall be determined in accordance with IWF-2420. (Refer to Section 7.3.4F for component supports requiring an additional preservice examination).

When a component support must be subjected to corrective measures in accordance with IWF-3000 that support shall be re-examined during the next inspection period listed in the inspection schedule. If these examinations do not require additional corrective measures during the next inspection period, then the examination frequency may revert to the original schedule. Components requiring successive examinations shall be scheduled for examination and added to the applicable scan plan.

7.4 Calibration Standards

Calibration standards are included in ASME Section XI, Appendix I. This appendix includes references to ASME Section XI, Appendix III and ASME Section V for additional requirements. As-built calibration standard drawings and calibration standard material certifications are maintained by ISO. The calibration blocks are stored at the plant site and maintained by ISI personnel.

7.5 Records and Reports

Records and reports shall be prepared in accordance with ASME Section XI, Subarticle IWA-1400, and Article IWA-6000.

7.5.1 ISI Summary Report

An ISI summary report for Class 1 and 2 (equivalent) Components shall be prepared and submitted to Site Licensing and other review organizations on a schedule that permits submittal to the NRC within 90 days after turbine generator synchronization following a refueling outage. Examinations, tests, replacements, and repairs conducted since the preceding summary report shall be included.

Information related to the Containment Inservice Inspection Program inspection of Class MC (equivalent) components (IWE) shall also be included in the ISI summary report as applicable. This information is compiled in accordance with 0-TI-376 for inclusion in the ISI summary report (see Section 7.5.1O).

Each summary report shall be formatted to contain the following:

A. Cover Sheet

A cover sheet stating "ASME Section XI Inservice Inspection Summary Report for Browns Ferry Nuclear Plant, Unit 1" and the Refueling Outage. The cover sheet shall also provide:

1. Date of document completion.
2. Name and address of owner.
3. Name and address of generating plant.
4. Name or number assigned to the nuclear power unit by TVA.
5. Commercial operation date for the unit.

B. Table of Contents

A table of contents for the report should follow the title page.

C. Form NIS-1

The Owner's Report for Inservice Inspections, Form NIS-1, as shown in Appendix II of ASME Section XI, shall be completed and included.

7.5.1 ISI Summary Report (continued)

D. Form NIS-2

The Owner's Report for Repair and Replacement, Form NIS-2, as shown in Appendix II of ASME Section XI, shall be completed and included.

E. Introduction and Summary of the Inspection

The introduction should include the following information: Plant, unit number, preservice or inservice examinations, RFO cycle, systems, components, and vessels examined, organizations examinations were performed by, dates examinations were performed, ASME Section Code of Record. The summary should include a brief description of the overall inspection. Included as part of the summary, ASME Class 1, 2, and 3 equivalent components and the integrally welded attachments whose examination results required evaluation analysis (IWB-3132.3 and IWB-3142.4 for Class 1, IWC-3122.3 and IWC-3132.3 for Class 2, and IWD-3600 for Class 3) shall be submitted to the NRC as required by IWB-3134, IWB-3144, by IWC-3125 and IWC-3134, and by IWD-3600.

F. Examination Summary

The examination summary shall tabulate the ASME Section XI examinations credited for the applicable period. Items should include the following information: category, total number of examinations required for the inspection interval, total number required for the applicable period, total number credited for the applicable period, and exclusions, exceptions, or deferrals.

G. Examination Plan

The Examination Plan shall give a detailed description of all areas subject to examination during the inspection. It should contain the following information: examination area, Code Category and Item Number, reference drawing, examination method, examination procedure, examination report number, calibration block, date of examination, and examination results. This plan may be submitted as the computerized Outage Report.

H. Component Re-Examination Reports

The component re-examination section shall give a detailed description of all components subject to re-examination due to rework, repair, or replacement resulting from a Notification of Indication (NOI). This section should contain the examination area, Code Category and Item Number, reference drawing, examination method, examination procedure, examination report number, calibration block, date of examination, and examination results.

7.5.1 ISI Summary Report (continued)

I. Summary of Notifications of Indications (NOIs)

The summary of NOIs shall give a short summary of each NOI report along with the indication discrepancy. It should also contain the final disposition, including a reference to the corrective action taken.

J. Additional Sample

The additional sample section, if applicable, shall indicate additional sample examinations performed as a result of a failed component. The summary should include reference to the applicable system, the affected component, the number of components examined as a result of the failure, and a description of additional samples and results of the additional sample examinations.

K. Successive Examinations

The successive examination section, if applicable, shall indicate examinations performed as a result of ASME Section XI requirements. This section should contain a reference to the applicable system, the affected components, and the results of the successive examinations.

L. Analytical Evaluation

The analytical evaluation section for ASME Class 1, 2, and 3 equivalent components and the integrally welded attachments whose examination results require evaluation analysis, if applicable, shall include a short summary of each analytical evaluation, the indication discrepancy, and its location.

A copy of each analytical evaluation should be included, with a reference to the applicable NOI and the component identifier.

M. Augmented Examinations

As applicable, a brief summary of the augmented examinations reportable to the NRC shall be included.

7.5.1 ISI Summary Report (continued)

N. Requests for Relief

The summary of requests for relief shall give a short summary of each relief request resulting from the inspection. This section shall summarize any components that did not receive the required examination coverage. The results should indicate the applicable component, Code Class, Code Category, Code Item Number, examination method, and calculated examination coverage. In addition, a description should summarize the access limitations and applicable reason why examination coverage cannot be obtained.

O. Containment Inservice Inspection Program (IWE)

This section, if applicable, should contain evaluations performed in accordance with the requirements of 10CFR 50.55a(b)(2)(x)(A), evaluation of inaccessible areas, and 10CFR50.55a(b)(2)(x)(D), evaluation for additional examinations.

7.5.2 Site Final Report

A site final report shall be prepared following each refueling outage and submitted to Records Management for retention as a permanent record. The site final report should contain, but not be limited to, the following:

- An index to record file
- The inservice and preservice NDE examination reports and calibration data sheets
- The ISI Summary Report with appendices prepared per Section 7.5.1
- Personnel certifications
- Reference to NDE procedures
- Reference to NDE examination records including radiographs and review forms
- Notification of Indication (NOI) Reports
- Scan plans and scan plan revision logs (if applicable)
- Containment Inservice Inspection Report prepared in accordance with 0-TI-376

7.5.3 RADIOGRAPHS

Radiographs shall be packaged by ISO and transmitted to RM for storage as a life of plant record.

7.6 Requests for Relief (RFR)

Deviations from Code requirements shall be submitted to NRC as written relief requests in accordance with 10CFR50.55a(g)(5). Alternatives to Code requirements shall be submitted to NRC in accordance with 10 CFR 50.55a(3)(i) and 10 CFR 50.55a(3)(ii). Proposed alternative examinations and information to support the basis and justification for relief shall be included. Requests For Relief are listed in Table 6.

ISO is responsible for notifying Component Engineering of impractical examination requirements and limitations that are encountered during performance of examinations. Reference Paragraph 7.1.5D and 7.2.3E.

RFRs shall be prepared in accordance with SPP-9.1. Corporate Nuclear Engineering shall be provided an opportunity to review RFRs.

7.7 Repairs and Replacements

ASME Section XI repair and replacement activities are performed in accordance with SPP-9.1 and 0-TI-363. Preservice examinations required for ASME Code Class 1, 2, and 3 (equivalent) repaired/replaced components are in accordance with the code of record specified in this surveillance instruction. The examination categories and NDE method for preservice examinations may be determined from those listed in Attachments 1 through 5.

7.8 ASME Section XI Programs not Addressed By 1-SI-4.6.G

7.8.1 System Pressure Tests

The system pressure test program is identified in SPP-9.1. Additional details are provided in 0-TI-364.

7.8.2 Pump and Valve Inservice Testing

The pump and valve inservice testing program is identified in SPP-9.1 and 0-TI-362.

7.8.3 Snubber Inservice Testing

Snubber inservice examination and testing is in accordance with 0-TI-398.

7.8.4 Containment Inservice Inspection

The containment inservice inspection program is identified in SPP-9.1 and 0-TI-376.

7.9 ISI Data Base Update and Maintenance

A. Component Engineering is responsible for maintaining the ISI Data Base. ISO may perform update functions at the direction of Component Engineering.

B. Changes to the ISI Data Base may become necessary for a number of reasons, such as; maintenance activities requiring Code examinations; repair/replacement activities; design changes adding or deleting components; implementation of Code Cases or requests for relief; or changes in planned examination scope due to additional or supplemental examinations.

C. All changes or updates shall be authorized by the ISI Program Engineer prior to entry into the ISI Data Base.

D. Upon completion of examinations for a given operating cycle, the ISI Data Base shall be updated to reflect the actual status of completed examinations. This should be done in a timely manner following the refueling outage (within 6 months as a guide) to ensure data base integrity. This update should be based on the completed NDE examination reports.

E. Scan plan revisions shall include a sign-off that the ISI Data Base has been updated as part of the revision approval cycle.

F. The ISI Program Engineer is responsible for ensuring that the ISI Data Base is updated in conjunction with ISI Program Plan revisions for items such as design changes, adopted Code Cases, and requests for relief.

7.10 Corrective Action

Any corrective action required as a result of ISI examinations shall be documented in accordance with SPP-3.1, Corrective Action Program.

7.11 Augmented Examinations

Augmented examinations are performed in addition to ASME Section XI Code requirements. The augmented examinations may be required by the NRC or be self-imposed by TVA. Typical sources include generic letters, IE Bulletins, technical specifications, vendor recommendations, and industry experience.

7.11 Augmented Examinations (continued)

The responsible organization or owner shall have technical and administrative responsibility for each augmented examination identified in this section. This responsibility shall include scheduling any examinations through Component Engineering, tracking the status of examinations, and reporting completed examinations. Responsible organizations requesting inclusion of augmented examinations in this section shall submit a written request to the ISI Program Engineer. The written request shall include specific details, such as requirement source, identification of components requiring examination, examination frequency, examination method, examination area/volume, acceptance criteria, types of flaws anticipated, high suspect areas, probability of failure, and reporting requirements. Copies of the written request shall be submitted to ISO and Component Engineering to facilitate nondestructive examination procedure preparation, establishment of training programs, and personnel familiarization.

Prior to each refueling outage, a meeting shall be initiated by the ISI Program Engineer. Meeting attendees shall include the responsible organizations, System Engineering, and ISO. The meeting agenda should include examination plans and schedules, updates on industry experience, and any additional pertinent information.

Following the completion of the augmented examination, Component Engineering shall report to the responsible organization items such as examination results and changes in results from previous examinations. The responsible organization shall determine if a meeting with the Component Engineering and/or other appropriate organizations is necessary to discuss items such as additional examinations to be conducted during the current outage, trends, lessons learned, and to identify any future actions, such as changes in the frequency of examination.

SILs and clarification letters listed in this Augmented Examination Section provide GE's recommendation for reactor internals inspection. The actual scope and criteria for reactor internals inspections shall be reviewed and approved by TVA Site Engineering prior to each refueling outage. Any indications found during inspections shall receive a review and shall be dispositioned by TVA Site Engineering. The responsible organization shall report augmented examination results to the NRC as required by the document initiating the examination.

7.11.1 Feedwater Nozzles

Responsible organization: Site Engineering. The augmented examination requirements for the feedwater nozzles are contained in NUREG-0619 and BWR Owners Group(BWROG) Licensing Topical Report GE-NE-523-A71-0594, Revision 1, August 1999, Table 6-1. An ultrasonic examination of all the feedwater nozzle bores, and inside blend radii are required every fifth refueling outage. The alternate examination requirements, contained in Table 6-1 of GE-NE-523-A71-0594, Revision 1, eliminate the need for liquid penetrant examinations. The feedwater spargers are internal to the reactor pressure vessel and shall be visually examined every fourth refueling outage in accordance with Table 6-1 of the above licensing topical report and 0-TI-365. Reporting is required within 6 months after the outage when an inspection was performed. The report of these examinations shall be included with the ISI Summary Report unless a special report is deemed necessary by Component Engineering. Refer to NUREG-0619, Section 4.4.3 for information to be included. Reference NCO040006083 and Boiling Water Reactor Feedwater Nozzle Program Implementation Package, Revision 1 (RIMS # B44060210007) where TVA committed to implement the Feedwater Nozzle Program currently being performed on BFN Units 2 and 3 (and described above) for U1 prior to U1 restart.

ISI DATA BASE EXAM REQUIREMENT SOURCE: B01-02.

7.11.2 CRD Return Line Reroute

Responsible organization: Site Engineering. The augmented examination requirements of the CRD return line reroute are included in NUREG-0619. The requirements are a final liquid penetrant examination of the capped nozzle after the modification.

Also, the welded connections joining the rerouted CRD return line to the reactor water cleanup system shall be ultrasonically examined for three consecutive refueling outages. The weld RCRD-1-45 shall be ultrasonically examined, including the base metal on each side within one wall thickness (nominal wall 0.531"). The pipe into which the CRD return flow is connected shall also be examined by ultrasonic methods to a distance of at least one pipe diameter downstream of the welded connection. Welds RCRDS-1-3 and RCRD-1-44 shall be ultrasonically examined along with the pipe on the downstream side. The refueling cycles for Unit 1 to be examined were/are: Cycle 4, Cycle 5, Cycle 6, and Cycle 7.

Reporting is required within 6 months of completing an outage during which an inspection was performed. Refer to NUREG-0619, Section 8.3, for information to be included.

ISI DATA BASE EXAM REQUIREMENT SOURCE: B01-02.

7.11.3 CRD Scram Discharge Volume

Responsible organization: Site Engineering. The augmented examination requirements of the Scram Discharge Volume (SDV) piping are included in NUREG-0803. The SDV piping shall be examined in accordance with the requirements of ASME Section XI Class 2 components. The inservice examinations of the SDV piping began during the second cycle of the first inspection interval. See Attachment 2 for weld size and scheduled examinations. Results are to be included with the final report.

7.11.4 HPCI Pump Discharge Support Inspection Following Injection

NRC commitment NCO850144002 for the augmented examination of the supports on the HPCI discharge line following an injection was revised on March 7, 1995. The revised commitment requires the examination of the HPCI discharge line supports in accordance with the normal ASME Section XI requirements. The revised commitment number is NCO950027001.

7.11.5 Augmented Examination of Austenitic Stainless Steel and Dissimilar Metal Welds Susceptible to IGSCC (Generic Letter 88-01, NUREG-0313, Revision 2, and BWRVIP-75-A)

Responsible organization: Site Engineering. Austenitic stainless steel and dissimilar metal circumferential welds in piping 4" NPS or larger that contain reactor coolant at a temperature above 200 degrees F during power operation shall be examined in accordance with the requirements of Generic Letter 88-01 and NUREG-0313, Revision 2. Sample expansion shall be in accordance with Generic letter 88-01 based on the IGSCC Category (A, B, C, D, or E) as defined in the generic letter. The welds requiring examination per this paragraph are listed in Attachment 8 by IGSCC category.

The examination schedule is based on the IGSCC category and shall be as indicated below

IGSCC EXAMINATION EXTENT AND CATEGORY SCHEDULE

A	25% every 10 years (at least 12% in 6 years)
B	None in Unit 1
C	100% within next 2 refueling cycles after initial post-stress improvement examination, then 100% every 10 years (at least 50% in 6 years)
D	100% every 2 refueling cycles
E	None in Unit 1
F	None in Unit 1
G	100% during each outage

7.11.5 Augmented Examination of Austenitic Stainless Steel and Dissimilar Metal Welds Susceptible to IGSCC (Generic Letter 88-01, NUREG-0313, Revision 2, and BWRVIP-75-A) (continued)

ISI DATA BASE EXAM REQUIREMENT SOURCE: B02-02.

In addition to the requirements for procedure and personnel qualification in Section 7.2.3B, the examination procedures and personnel used for IGSCC examinations per NUREG-0313 Rev. 02 and Generic Letter 88-01, were qualified to the requirements of Appendix VIII of ASME Section XI as implemented by the Performance Demonstration Initiative Program (PDI). BWRVIP-75 shall be implemented in the second inspection interval program, which begins June 2, 2008 (one year following restart from the extended recovery outage, i.e.: 6R).

7.11.6 Reactor Vessel Interior Examinations

Responsible organization: Site Engineering. In addition to the code required ISI examinations in Section 7.3.1, augmented examinations shall be performed at the frequency specified in accordance with procedure 0-TI-365, Reactor Pressure Vessel Internals Inspection (RPVII) Unit 1, 2, and 3. Examination results shall be included in the augmented summary report (notification of unsatisfactory results may impose additional reporting requirements as denoted by the source requirement).

7.11.7 Level Instrument Nozzle Safe Ends BWRVIP-49 and Core Plate deltaP Standby Liquid Control (SLC) Nozzle BWRVIP-27

Responsible organization: Site Engineering. Inspections prior to the Unit 1 cycle 6 recovery were required in accordance with GE SIL-571. BWRVIP-49, "Instrument Penetration Inspection and Flaw Evaluation Guidelines", replaces the requirements of GE SIL-571. BWRVIP-49 inspection guidance follows ASME Section XI Code with no additional augmented BWRVIP examinations. For commercial dependability an ASME Section XI, IWB-2500, Code Category B-P, VT-2 examination for instrument penetrations shall be performed as an augmented examination. A VT-2 leakage inspection shall be performed on the safe end to nozzle weld during the system leakage test performed each outage. Insulation removal is not necessary to perform the leak check.

BWRVIP-27, "BWR Standby Liquid Control System/Core Plate deltaP Inspection and Flaw Evaluation Guidelines", replaces the guidance of GE SIL-571. BWRVIP-27 follows the ASME Section XI Code examinations with no additional augmented BWRVIP examinations. For commercial dependability, an ASME Section XI, IWB-2500, Code Category B-P, VT-2 examination for the SLC penetration shall be performed as an augmented examination. A VT-2 leakage inspection shall be performed of the safe end to nozzle weld and safe end during the system leakage test performed each outage. Insulation removal is required to perform the leak check.

ISI DATA BASE EXAM REQUIREMENT SOURCE: B06-02

7.11.8 Core-Spray and Recirc Inlet Safe Ends

Responsible organization: Site Engineering. Perform UT inspection of the Core Spray and Recirc Inlet Safe Ends per the recommendation of GE Letter No. BFSE 94-007. The Core Spray and Recirculation Inlet safe ends were replaced with IGSCC resistant material, and in the case of the Recirculation inlet safe ends an improved design was used which eliminated crevices. These changes in materials and design mitigate the possibility of future Inter Granular Stress Corrosion Cracking (IGSCC). Per guidance provided in NRC Generic Letter 88-01 (NUREG 0313 Rev-2) and the recommendation of GE Letter No. BFSE 94-007 these safe ends shall be inspected at the frequency established for Category "A" weldments.

The accessible areas of the safe end base material which has exposure to the annulus/crevice area created by the thermal sleeve shall be inspected with UT. This inspection should be conducted in conjunction with the augmented UT inspection of the safe end to nozzle weld. Techniques previously used to inspect for safe end (IGSCC) cracking should be utilized as practical in the inspection effort to detect internal diameter (ID) initiated IGSCC indications. The implementation interval started with the Unit-1 cycle-6R restart outage. The described safe end base material shall be inspected at the same interval as Category "A" weldments. Ideally the inspection should be performed in conjunction with the safe end to nozzle welds which are examined under the current augmented IGSCC examination plan. The report of these examinations shall be included in the augmented summary report unless a special report is deemed necessary by Site Engineering.

ISI DATA BASE EXAM REQUIREMENT SOURCE: B06-02

7.11.9 Weld Inspection For Pipe Whip Protection per TRM 3.4.3.2

Responsible organization: Site Engineering. Additional ultrasonic examinations shall be performed each inspection interval on certain circumferential pipe welds to provide additional protection against pipe whip in accordance with Technical Requirement Manual Requirement (TRMR) 3.4.3.2. The welds requiring examination each interval for pipe whip protection are,

CS-1-002-014, CS-1-S002-015, CS-1-002-027, CS-1-S002-026, GFW-1-09, GFW-1-12, GFW-1-15, GFW-1-26, GFW-1-29, GFW-1-32, KFW-1-13, KFW-1-31, KFW-1-38, KFW-1-39, HPCI-1-001-002, THPCI-1-152, HPCI-1-001-001, THPCI-1-153B, GMS-1-06, GMS-1-15, GMS-1-24, GMS-1-32, KMS-1-024, KMS-1-104, RHR-1-012-026, RHR-1-014-004, RWCU-1-001-013, and RWCU-1-001-016.

A report of these examinations shall be included with the ISI Summary Report.

ISI DATA BASE EXAM REQUIREMENT SOURCE: B04-02

7.11.10 RPV Shell Weld Examination

Responsible organization: M/N Engineering. The RPV shell welds, Examination Category B-A, Item Nos. B1.11 and B1.12 were examined for Unit 1 in outage Cycle 6 recovery in accordance with the guidance of 10 CFR 50.55a(g)(6)(ii)(A) per TVA's commitment to the NRC dated September 27, 1991 (RIMS# R08 910927 826).

TVA shall take ASME Section XI credit for these examinations as satisfying the requirements of Table 2500-1, Examination Category B-A, Item Number B1.10. A report of these examinations shall be included with the ISI Summary Report.

8.0 TABLES/ATTACHMENTS

Attachment 1: Examination Schedule, ASME Class 1 Equivalent (IWB)

Attachment 2: Examination Schedule, ASME Class 2 Equivalent (IWC)

Attachment 3: Examination Schedule, ASME Class 3 Equivalent (IWD)

Attachment 4: Examination Schedule, Component Supports (IWF)

Attachment 5: RPV Interior Checklist

Attachment 6: Notes

Attachment 7; Augmented Examinations

Attachment 8: Unit 1 Welds Required to be Examined per Generic Letter 88-01/BWRVIP-75-A

Attachment 9: Unit 1 Stainless and Dissimilar Metal Welds not Subject to Generic Letter 88-01 Exams

Attachment 10: Class 1 Valve Data

Attachment 11: Class 1 Piping Flange Bolted Connections group List

Attachment 12: Requests For Relief, Attachments 13 through Attachment 16

Attachment 1
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Examination Schedule - Class I Equivalent (IWB)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
B-A	B1.11	4	RPV	4	-	-	-	1-CHM-0992-C-01	UT	Reference RFR# 1-ISI-19
B-A	B1.12	15	RPV	15	-	-	15	1-CHM-0992-C-01	UT	
B-A	B1.21	3	RPV	1	-	-	1	1-CHM-2102-A-1 ISI-0443-C-1	UT	See Note A
B-A	B1.22	16	RPV	6	2	2	2	1-CHM-2102-A-1 ISI-0443-C-1	UT	See Note A
B-A	B1.30	1	RPV	1	-	-	1	1-CHM-0992-C-01	UT	
B-A	B1.40	1	RPV	1	-	-	1	1-CHM-2102-A-1	UT&MT	Includes radius to flange (flex)
B-A	B1.51	1	RPV	1	-	-	1	1-CHM-0992-C-01	UT	
B-D	B3.90	31	RPV	31	10	10	11	1-CHM-0992-C-01 1-CHM-2102-A-1 ISI-0443-C-1	UT	Ref. Paragraph 7.3.1.G
B-D	B3.100	31	RPV	31	10	10	11	1-CHM-0992-C-01 1-CHM-2102-A-1 ISI-0443-C-1	UT/ EVT-1	Ref. Paragraph 7.3.1.H & Code Case N-648-1
B-F	B5.10	17	RPV	17	6	6	5	1-CHM-1098-C-2 1-CHM-1089-C-1 1-CHM-1081-C-1 1-CHM-1081-C-2 1-ISI-0409-C-1	UT	Reference Code Case N-663
B-G-1	B6.10	92	RPV	92	30	30	32	1-CHM-2001-C-1	VT-1	Closure Head Nuts
B-G-1	B6.20	92	RPV	92	-	-	92	1-CHM-2001-C-1	UT	Studs. See note D. When removed
B-G-1	B6.40	92	RPV	92	-	-	92	1-CHM-2001-C-1	UT	Threads in Flange
B-G-1	B6.50	92	RPV	*4 92 Sets	- 30	- 30	*4 32	1-CHM-2001-C-1	VT-1	*Bushings when head removed Ref Code Inquiry #IN04-009 -Washers (92 sets of 2)

Attachment 1
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Examination Schedule - Class I Equivalent (IWB)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
B-G-1	B6.180	32	RECIR	16	-	-	16	1-ISI-0420-C-1	UT	Pump selected for B-L-2 exam
B-G-1	B6.190	2	RECIR	2	When Disassembled			1-ISI-0420-C-1	VT-1	Flange surface
B-G-1	B6.200	64	RECIR	16	-	-	16	1-ISI-0420-C-1	VT-1	Pump selected for B-L-2 exam; nuts & washers
B-G-2	B7.50	30							VT-1	*See Note I
			MS/12	1 group*	*	*	*	ISI-0027-B		Pipe-to-pipe
			MS/13	1 group*	*	*	*	ISI-0027-B		Pipe-to-valve
			RECIR/2	1 group*	*	*	*	1-CHM-1081-C-1 1-CHM-1081-C-2		
			RPV/3	2 groups*	*	*	*	1-CHM-2102-A-1		
B-G-2	B7.70	36							VT-1	* See Note C
			CS/4	2 groups*	*	*	*	1-CHM-1089-C-1		
			FW/4	1 group*	*	*	*	1-CHM-1080-C-1		
			MS/8	1 group*	*	*	*	1-CHM-1082-C-1 1-CHM-1082-C-2		FCV-1-XX
			MS/13	1 group*	*	*	*	ISI-0027-B		PCV-1-XXX
			RCIC/1	1 group*	*	*	*	1-CHM-1098-C-2		
			RECIR/4	2 groups*	*	*	*	1-CHM-1081-C-1 1-CHM-1081-C-2		
			RHR/2	1 group*	*	*	*	1-CHM-1088-C-1		CKV-74-54 & 68
B-G-2	B7.60	4	RECIRC/4	2	*	*	*	1-ISI-0420-C	VT-1	* See Note I
B-G-2	*See Note H	185	CRD	*See Note G	-	-	-		VT-1	When disassembled and bolts reused
B-J	B9.11	368		102	30	34	38		UT	Reference Code Case N-663
			CS/30	8	4	2	2	1-CHM-1089-C-1		
			FW/77	22	7	7	8	1-CHM-1080-C-1		

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Examination Schedule - Class I Equivalent (IWB)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
			HPCI/22	6	2	2	2	1-CHM-1099-C-1		
			MS/114	30	7	11	12	1-CHM-1082-C-1 1-CHM-1082-C-2		
			RCIC/5	2	-	1	1	1-CHM-1098-C-2		
			RECIRC/61	17	5	6	6	1-CHM-1081-C-1 1-CHM-1081-C-2		
			RHR/30	8	3	2	3	1-CHM-1088-C-1		
			RPV/13	5	1	2	2	1-CHM-0992-C-01 1-CHM-2102-A-1		
			RWCU/16	4	1	1	2	1-CHM-1098-C-1 1-CHM-1098-C-2		
B-J	B9.21	N/A								See Section 2.8 (C) and 7.3.1.F Make up exclusion exemption
B-J	B9.31	30		8	2	4	2		UT	Reference Code Case N-663
			MS/26	7	1	4	2	1-CHM-1082-C-1 1-CHM-1082-C-2		
			RECIRC/4	1	1	-	-	1-CHM-1081-C-1 1-CHM-1081-C-2		
B-J	B9.32	N/A								See Section 2.8 (C) and 7.3.1.F Make up exclusion exemption
B-J	B9.40	N/A						1-CHM-1081-C-1 1-CHM-1081-C-2		See Section 2.8 (C) and 7.3.1.F Make up exclusion exemption
B-K	B10.10	9	RPV	1	-	-	1	1-ISI-0414-C-1 1-ISI--0414-C-2	*MT	*RPV Support Skirt Stabilizer Code Case N-700

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Examination Schedule - Class I Equivalent (IWB)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
B-K	B10.20	109		14	3	6	5		PT or MT	
			CS/6	1	1	-	-	1-CHM-2040-C-1		
			FW/29	3	-	3	-	1-CHM-2036-C-1		
			HPCI/3	1	-	1	-	1-CHM-2043-C-1		
			MS/35	4	-	-	4	1-CHM-2038-C-1 1-CHM-2038-C-2		
			RECIR/23	3	1	2	-	1-CHM-2037-C-1 1-CHM-2037-C-2		
			RHR/10	1	1	-	-	1-CHM-2039-C-01		
			RWCU/3	1	-	-	1	1-CHM-2042-C-1		
B-K	B10.30	6	RECIRC/6	1	-	-	1	1-CHM-2037-C-1 1-CHM-2037-C-2	PT	
B-K	B10.40	2	FW/2	1	-	1	-	1-CHM-2036-C-1	PT or MT	
B-L-2	B12.20	2	RECIR	1	*	*	*	1-ISI-0420-C-1	VT-3	*When Disassembled
B-M-2	B12.50	20 (Groups) 53 valves							VT-3	*When Disassembled
			CS/6	6	*	*	*	1-CHM-1089-C-1		
			FW/6	6	*	*	*	1-CHM-1080-C-1		
			HPCI/3	3	*	*	*	1-CHM-1099-C-1		
			MS/13	13	*	*	*	ISI-0027-B		PCV-1-XXX
			MS/8	8	*	*	*	1-CHM-1082-C-1 1-CHM-1082-C-2		FCV-1-XX
			RCIC/1	1	*	*	*	1-CHM-1098-C-2		
			RECIR/4	4	*	*	*	1-CHM-1081-C-1 1-CHM-1081-C-2		
			RHR/9	9	*	*	*	1-CHM-1088-C-1		
			RWCU/3	3	*	*	*	1-CHM-1098-C-1		

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Examination Schedule - Class I Equivalent (IWB)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
B-N-1	B13.10	1	RPV	1	1	1	1	1-CHM-0992-C-1	VT-3	RPV Interior
B-N-2	B13.20	1	RPV	1	-	-	1	1-CHM-0992-C-1	VT-1	RPV beltline attachments
B-N-2	B13.30	1	RPV	1	-	-	1	1-CHM-0992-C-1	VT-3	RPV beyond beltline attachments
B-N-2	B13.40	1	RPV	1	-	-	1	1-CHM-0992-C-1	VT-3	Core support structure
B-O	B14.10	40	RPV	-	-	-	-	1-CHM-2002-C-1	PT	CRD housing welds - Make up exclusion exemption
B-P	B15.10		REFER TO system pressure test program SPP-9.1						VT-2	Pressure Test Program

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Examination Schedule - Class II Equivalent (IWC)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
C-A	C1.10	12	RHR	3	1	1	1	CHM-2418-B-1	UT	RHR HT EXCH
C-A	C1.20	4	RHR	1	-	-	1	CHM-2418-B-1	UT	RHR HT EXCH
C-B	C2.31	16	RHR	4	-	2	2	CHM-2418-B-1	MT or PT	RHR HT EXCH
C-B	C2.33	8	RHR	2	2	2	2	CHM-2418-B-1	VT-2	Nozzle telltale
C-C	C3.10	12	RHR	1	-	-	1	CHM-2418-B-1	MT or PT	
C-C	C3.20	154		18	4	6	8		MT or PT	
			CRD/7	1	-	1	-	1-ISI-0037-C-1 1-ISI-0037-C-2		
			CS/12	2	1	-	1	1-ISI-0096-C-1 1-ISI-0096-C-2		
			HPCI/18	2	1	-	1	1-ISI-0092-C-1 1-ISI-0092-C-2		
			MS/11	2	2	-	-	1-ISI-0049-C-1 1-ISI-0049-C-2		
			RCIC/11	1	-	-	1	1-ISI-0094-C-1		
			RHR/95	10	-	5	5	ISI-0363-C-01 ISI-0363-C-02 ISI-0363-C-03 1-ISI-0363-C-04 1-ISI-0363-C-05 ISI-0363-C-06 1-ISI-0363-C-07 1-ISI-0363-C-08 1-ISI-0363-C-09 1-ISI-0363-C-10 1-ISI-0363-C-11 ISI-0363-C-12		
C-C	C3.30	4	RHR/4	1	-	-	1	ISI-0022-B	MT or PT	
C-F-1	C5.11	11		11	3	4	4		UT	Reference Code Case N-663

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Examination Schedule - Class II Equivalent (IWC)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
			CS/6	6	2	2	2	1-ISI-0095-C-1 1-ISI-0095-C-2		
			HPCI/5	5	1	2	2	1-ISI-0091-C-2		
C-F-2	C5.51	1013		79	17	27	35		UT	Reference Code Case N-663
			CRD/71	6	2	2	2	1-ISI-0036-C-1 1-ISI-0036-C-2		
			CS/159	12	2	4	6	1-ISI-0095-C-1 1-ISI-0095-C-2		
			HPCI/140	11	3	3	5	1-ISI-0091-C-1 1-ISI-0091-C-2		
			MS/121	10	2	4	4	1-CHM-2690-C-1 1-CHM-2690-C-2		
			RCIC/82	7	1	3	3	1-ISI-0093-C-1		
			RHR/440	33	7	11	15	ISI-0362-C-01 ISI-0362-C-02 ISI-0362-C-03 1-ISI-0362-C-04 1-ISI-0362-C-05 ISI-0362-C-06 1-ISI-0362-C-07 1-ISI-0362-C-08 1-ISI-0362-C-09 1-ISI-0362-C-10 1-ISI-0362-C-11 ISI-0362-C-12		
C-H		Class 2	Refer to system pressure test program						VT-2	SPP-9.1 & 0-TI-364

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Examination Schedule - Class III Equivalent (IWD)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
D-A	D1.20	30		4	1	1	2		VT-1	
			EECW/13	1	-	1	-	ISI-0368-C-12 ISI-0368-C-13 ISI-0368-C-14 ISI-0368-C-15		
			FPC/1	1	-	-	1	1-ISI-0090-C-01		
			RHRSW/16	2	1	-	1	1-ISI-0085-C-1 1-ISI-0085-C-2		
D-B	D2.10	-	ALL	Refer to system pressure test program					VT-2	SPP-9.1 & 0-TI-364

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Examination Schedule - Component Supports (IWF)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
F-A	F1.10	145		39	11	12	16		VT-3	
F-A	F1.10A*	3		1			1		VT-3	* See Note E
			MS/1	1	-	-	1	1-CHM-2038-C-2		
			RWCU/2	-	-	-	-	1-CHM-2042-C-1		
F-A	F1.10B*	18		7	4	-	3		VT-3	* See Note E
			CS/2	1	-	-	1	1-CHM-2040-C-1		
			FW/4	1	1	-	-	1-CHM-2036-C-1		
			HPCI/1	1	-	-	1	1-CHM-2043-C-1		
			MS/9	3	3	-	-	1-CHM-2038-C-1 1-CHM-2038-C-2		
			RHR/1	1	-	-	1	1-CHM-2039-C-01		
			RWCU/1	-	-	-	-	1-CHM-2042-C-1		
F-A	F1.10C*	59		15	1	8	6		VT-3	* See Note E
			CS/6	1	-	1	-	1-CHM-2040-C-1		
			FW/10	3	1	2	-	1-CHM-2036-C-1		
			HPCI/2	1	-	1	-	1-CHM-2043-C-1		
			MS/17	4	-	1	3	1-CHM-2038-C-1 1-CHM-2038-C-2		
			RECIR/12	3	1	-	2	1-CHM-2037-C-1 1-CHM-2037-C-2		
			RHR/10	2	-	2	-	1-CHM-2039-C-01		
			RWCU/2	1	-	-	1	1-CHM-2042-C-1		

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Examination Schedule - Component Supports (IWF)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
F-A	F1.10D*	64		16	5	5	6		VT-3	* See Note E
			CS/4	1	1	-	-	1-CHM-2040-C-1		RFR # 1-ISI-18 (pending)
			FW/19	5	-	5	-	1-CHM-2036-C-1		
			HPCI/2	-	-	-	-	1-CHM-2043-C-1		
			MS/18	4	2	-	2	1-CHM-2038-C-1 1-CHM-2038-C-2		
			RECIR/11	3	-	-	3	1-CHM-2037-C-1 1-CHM-2037-C-2		
			RHR/7	2	1	-	1	1-CHM-2039-C-01		
			RWCU/3	1	1	-	-	1-CHM-2042-C-1		
F-A	F1.20	345		55	20	17	18		VT-3	
F-A	F1.20A*	81		12	3	5	5		VT-3	* See Note E
			CRD/16	2	-	2	-	1-ISI-0037-C-1 1-ISI-0037-C-2		
			CS/12	2	-	1	1	1-ISI-0096-C-1 1-ISI-0096-C-2		
			HPCI/14	2	2	-	-	1-ISI-0092-C-1 1-ISI-0092-C-2		
			RCIC/17	2	-	-	2	1-ISI-0094-C-1		
			RHR/22	4	-	2	2	ISI-0363-C-01 ISI-0363-C-03 1-ISI-0363-C-04 1-ISI-0363-C-05 ISI-0363-C-06 1-ISI-0363-C-07 1-ISI-0363-C-08 1-ISI-0363-C-09 1-ISI-0363-C-11 ISI-0363-C-12		

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Examination Schedule - Component Supports (IWF)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
F-A	F1.20B*	104		18	4	8	6		VT-3	* See Note E
			CRD/17	3	-	3	-	1-ISI-0037-C-1 1-ISI-0037-C-2		
			CS/15	3	-	3	-	1-ISI-0096-C-1 1-ISI-0096-C-2		
			HPCI/14	2	1	-	1	1-ISI-0092-C-1 1-ISI-0092-C-2		
			MS/4	1	1	-	-	1-ISI-0049-C-1		
			RCIC/2	1	-	-	1	1-ISI-0094-C-1		
			RHR/52	8	2	2	4	ISI-0363-C-01 ISI-0363-C-02 ISI-0363-C-03 1-ISI-0363-C-04 1-ISI-0363-C-05 ISI-0363-C-06 1-ISI-0363-C-07 1-ISI-0363-C-08 1-ISI-0363-C-09 1-ISI-0363-C-10 1-ISI-0363-C-11 ISI-0363-C-12		

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Examination Schedule - Component Supports (IWF)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
F-A	F1.20C*	125		19	13	3	3		VT-3	* See Note E
			CS/14	2	2	-	-	1-ISI-0096-C-1 1-ISI-0096-C-2		
			HPCI/11	2	-	-	2	1-ISI-0092-C-1 1-ISI-0092-C-2		
			MS/36	5	5	-	-	1-ISI-0049-C-1 1-ISI-0049-C-2		
			RCIC/5	1	-	-	1	1-ISI-0094-C-1		
			RHR/59	9	6	3	-	ISI-0363-C-01 ISI-0363-C-02 ISI-0363-C-03 1-ISI-0363-C-04 1-ISI-0363-C-05 ISI-0363-C-06 1-ISI-0363-C-07 1-ISI-0363-C-08 1-ISI-0363-C-09 1-ISI-0363-C-10 1-ISI-0363-C-11		
F-A	F1.20D*	35		6	1	1	4		VT-3	RFR # 1-ISI-18 (pending)
			HPCI/3	1	-	-	1	1-ISI-0092-C-1 1-ISI-0092-C-2		* See Note E
			RCIC/4	1	-	-	1	1-ISI-0094-C-1		
			RHR/28	4	1	1	2	1-ISI-0363-C-04 ISI-0363-C-06 1-ISI-0363-C-07 1-ISI-0363-C-08 1-ISI-0363-C-09 1-ISI-0363-C-10 1-ISI-0363-C-11		

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Examination Schedule - Component Supports (IWF)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
F-A	F1.30	123		13	4	4	5		VT-3	
F-A	F1.30A*	37		3	2	1	-		VT-3	* See Note E
			EECW/24	2	1	1	-	ISI-0368-C-12 ISI-0368-C-13 ISI-0368-C-14 ISI-0368-C-15		
			FPC/2	-	-	-	-	1-ISI-0090-C-01		
			RHRSW/11	1	1	-	-	1-ISI-0085-C-2 ISI-0085-C-3		
F-A	F1.30B*	72		9	2	3	4		VT-3	* See Note E
			EECW/25	3	1	1	1	ISI-0368-C-06 ISI-0368-C-12 ISI-0368-C-13 ISI-0368-C-14 ISI-0368-C-15		
			FPC/3	1	-	-	1	1-ISI-0090-C-01		
			RHRSW/44	5	1	2	2	1-ISI-0085-C-1 1-ISI-0085-C-2 ISI-0085-C-3		
F-A	F1.30C*	11		1	-	-	1		VT-3	* See Note E
			RHRSW/11	1	-	-	1	1-ISI-0085-C-2 ISI-0085-C-3		
F-A	F1.30D*	N/A	N/A	-	-	-	-			* See Note E RFR # 1-ISI-18 (pending)
F-A	F1.40	49		149	46	49	54		VT-3	See Note F
F-A	F1.40A*	112	PRI CONT/112	112	37	37	38	0-ISI-PCE-001	VT-3	* See Note E & F

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Examination Schedule - Component Supports (IWF)

Examination Category	Item Number	Number of Components	System/ Subtotal	Second Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	ISI Drawing	Exam Method	Remarks
F-A	F1.40B*	26		9	-	3	6		VT-3	* See Note E
			CS/4	1	-	-	1	1-ISI-0096-C-1 1-ISI-0096-C-2		
			HPCI/3	2	-	-	2	1-ISI-0092-C-1 1-ISI-0092-C-2		
			RCIC/2	1	-	-	1	1-ISI-0094-C-1		
			RHR/16	4	-	3	1	CHM-2418-B		
			RPV/1	1	-	-	1	1-ISI-0414-C-2		
F-A	F1.40C*	11		6	4	1	1		VT-3	* See Note E
			FW/2	1	-	1	-	1-CHM-2036-C-1		
			RECIR/8	4	4	-	-	1-CHM-2037-C-1 1-CHM-2037-C-2		
			RPV/1	1	-	-	1	1-ISI-0414-C-1		
F-A	F1.40D*	28		22	5	8	9		VT-3	RFR # 1-ISI-18 (pending) *See Note E
			RECIR/12	6	-	3	3	1-CHM-2037-C-1 1-CHM-2037-C-2		
			PRI CONT/16	16	5	5	6	0-ISI-PCE-001		MC Supports - See Note F

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BFN UNIT 1 RPV INTERIOR CHECKLIST ASME SECTION XI REQUIRED EXAMINATIONS

ASME Section XI, Code Category B-N-1

ITEM NO.	DESCRIPTION	REQUIREMENT	CYCLE 6R	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10
B13.10	4 - MAIN STEAM NOZZLES (N3)	VT-3	R-2224				
B13.10	6 - FEEDWATER NOZZLES (N4)	VT-3	R-2224				
B13.10	FEEDWATER SPARGERS	VT-3	R-2224				
B13.10	CORE SPRAY PIPING	VT-3	R-2224				
B13.10	2 - CORE SPRAY NOZZLES (N5)	VT-3	R-2224				
B13.10	CORE SPRAY SPARGERS	VT-3	R-2224				
B13.10	TOP GUIDE ASSEMBLY (TOP SIDE)	VT-3	R-2224				
B13.10	4 - INSTRUMENTATION NOZZLES (2-N11, 2-N12)	VT-3	R-2224				
B13.10	CRD RETURN NOZZLE (N9)	VT-3	R-2224				

ASME Section XI, Code Category B-N-2

ITEM NO.	DESCRIPTION	REQUIREMENT	CYCLE 6R	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10
B13.20	JP RISER BRACE PAD WELDS	VT-1	R-2224				
B13.20	SURV. SPEC BRACKETS (SH. COURSE 2)	VT-1	R-2224				
B13.30	GUIDE ROD BRACKETS	VT-3	R-2224				
B13.30	STEAM DRYER SUPPORT BRACKETS	VT-3	R-2224				
B13.30	STEAM DRYER SUPPORT BRACKETS ON TOP HEAD	VT-3	R-2224				
B13.30	FEEDWATER SPARGER BRACKET	VT-3	R-2224				
B13.30	CORE SPRAY PIPING BRACKETS AND PADS	VT-3	R-2224				
B13.30	RPV SHROUD SUPPORT TO RPV BOTTOM HEAD (H-9)	VT-3	R-2224				
B13.30	SURVEILL. SPECMN. BRACKETS (SHELL COURSE 3)	VT-3	R-2224				
B13.40	TOP GUIDE	VT-3	R-880 & 2224				
B13.40	CORE PLATE	VT-3	R-880 & 2224				

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BFN UNIT 1 RPV INTERIOR CHECKLIST ASME SECTION XI REQUIRED EXAMINATIONS

ASME Section XI, Code Category B-N-1

ITEM NO.	DESCRIPTION	REQUIREMENT	CYCLE 6R	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10
B13.10	ALL INTERNAL COMPONENTS	VT-3	R-2224				

ASME Section XI, Code Category B-N-2

ITEM NO.	DESCRIPTION	REQUIREMENT	CYCLE 6R	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10
B13.30	RPV SHROUD SUPPORT LEGS TO RPV BOTTOM HEAD (H-12)	VT-3	R-2224				
B13.40	FUEL SUPPORT CASTINGS	VT-3	R-880 & 2224				
B13.40	CONTROL ROD BLADE GUIDE TUBES	VT-3	R-880 & 2224				
B13.40	CONTROL ROD DRIVE HOUSINGS	VT-3	R-880 & 2224				
B13.40	CORE SHROUD SUPPORT ABOVE CORE PLATE	VT-3	R-880 & 2224				
B13.40	CORE SHROUD SUPPORT BELOW CORE PLATE	VT-3	R-880 & 2224				

1 When visual examinations of RPV internal components are being performed for compliance with 0-TI-365 requirements and maintenance or refueling activities, credit may be taken for ASME Section XI requirements provided the visual examination meets the minimum requirements of ASME Section XI.

2 When the specialized visual examinations are being performed for compliance with 0-TI-365 requirements and maintenance or refueling activities, and access to areas are made available that are normally inaccessible, credit for ASME Section XI may be taken provided the visual examination meets the requirements of ASME Section XI. These examinations shall be considered supplemental examinations.

3 Visual examinations performed on RPV internal components that meet the VT-3 criteria, as stipulated in ASME Section XI, shall be considered for ASME Section XI, Code Category B-N-1 credit.

4 It is permissible to defer the visual examinations for ASME Section XI, Code Category B-N-2 to the end of the inspection interval; however, these examinations may be performed at any time during the interval.

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NOTES

A. The accessible length of the RPV circumferential and meridional head welds will be ultrasonically examined in accordance with the extent and frequency of examination in Table IWB-2500-1, Examination Category B-A, Item Numbers B1.21 and B1.22. The two bottom head circumferential welds (C-S-LH and C-S-BH) and ten bottom head meridional welds (V-BH-1 through V-BH-10) are inaccessible because of their location in the bottom head and proximity to the CRD and in-core instrumentation housings. These welds will not be scheduled for examination since they are inaccessible. The accessible portions of the seven top head circumferential and meridional welds will be ultrasonically examined.

B. The Feedwater and Main Steam system percentages are maintained by examination of nozzle to safe-end (transition piece) welds under the RPV system.

C. Number of Groups of Class 1 valves exceeding NPS 4 contained within this system. (Examination Category and/or Item Number). All of the bolts or studs and nuts in each connection of one valve within each group of valves shall be visually examined during the inspection interval in accordance with visual examination method VT-1. All of the bolting from one valve within each group of valves shall be examined during the inspection interval when the B-M-2 valve interior surface examination is performed. If the B-M-2 valve interior surface examination is not performed during the interval, then all of the bolting from one valve in each group of valves shall be visually examined in place at the end of the interval.

D. Studs (Bolting) may be examined in place under tension, when connection is disassembled, or when the bolting is removed. The four studs (# 22, 23, 24, and 25) normally removed for refueling have been scheduled under Item Number B6.20. Reference Table IWB-2500-1, Examination Category B-G-1, NOTES: (1) and (7).

E. F-A item number suffices (A, B, C, D) represent categorization in accordance with NOTE (1) to Table IWF-2500-1, i.e., A = one directional rod hangers, B = multi-directional restraints, C = supports that allow thermal movement such as springs, D = other, including snubbers.

F. 10 CFR 50.55a(g)(4) does not specifically refer to IWE (Class MC) component supports - only integral attachments. BFN has used this as the basis for excluding the inspection of supports for Class MC components from the scope of ASME Section XI, Subsection IWF inspections during the current (original) licensing term. The ASME Section XI Subsection IWF Program will be enhanced to manage the drywell, torus, and vent system equivalent Class MC supports during the Second ISI Interval (prior to the period of extended operation).

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G. The Control Rod Drive Hydraulic System lateral restraint clamps and beams are not classified as ASME Code items since they are not part of the core support structure or part of the pressure boundary. Reference DCN # 7792 and General Electric Document # 23A6371

H. Code Category B-G-2, Item No. B7.80, CRD Housing Bolts, Studs, and Nuts, were deleted in the ASME Section XI Division 1 Code 1995 Edition 1995 Addenda. 10CFR 50.55a published October 01, 2004, 69FR58804 includes a mandatory limitation in (b)(2)(xxi) (B), as follows: "(B) The provisions of Table IWB-2500-1, Examination Category B-G-2, Item No. B7.80, that are in the 1995 Edition are applicable only to reused bolting when using the 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section." If the RPV CRD Flange bolting is disassembled and the bolting is reused, they shall receive a VT-1 Visual examination.

I. Number of Groups of Class 1 Piping and Pump Bolted Connections contained within this system (Examination Category and/or Item Number). All of the bolts or studs and nuts in one flange bolted connection among a group of flange bolted connections that are similar in design, size, function, and service shall be visually examined during the inspection interval in accordance with visual examination method VT-1. Examination is required only when a flange is disassembled. Examination is required only once during the interval.

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Augmented Examination Table

Augmented Examination Category	Reference Program Section	Number of Components	Reqmt Source Code	Refueling Cycle 6 Sample	Refueling Cycle 7 Sample	Refueling Cycle 8 Sample	Refueling Cycle 9 Sample	Refueling Cycle 10 Sample	Refueling Cycle 11 Sample	Exams Required	Remarks
B-D	7.11.1	6	B01-02	6	-	2	2	-	2	UT	FW Nzl Bores & IR
B-D	7.11.1	6	B01-02	6	-	-	-	6	-	VT-1	FW Spargers
B-J	7.11.2	3	B01-02	-	3	-	-	-	-	UT	CRD Mixing Tee
A	7.11.5	126	B02-02	126	6	7	7	7	7	UT	IGSCC
C	7.11.5	10	B02-02	10	10	-	-	-	5	UT	IGSCC
D	7.11.5	5	B02-02	5	2	-	3	2	-	UT	IGSCC
G	7.11.5	2	B02-02	2	2	2	2	2	2	VT-2	IGSCC
N/A	7.11.6		0-TI-365							0-TI-365	RPV Interior
N/A	7.11.7 7.11.7	7	B06.02	7	7	7	7	7	7	VT-2	BWRVIP-27 BWRVIP-49
N/A	7.11.8	All	B06.02			as	accessible			UT	Recirc/CS SE BM
N/A	7.11.9	28	B04.02	28	-	9	4	5	10	UT	TS 3.4.3.2 Pipe Whip

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Unit 1 Welds Required to Be Examined Per Generic Letter 88 01/BWRVIP 75

WELD IDENTIFIER	SYSTEM	NPS	CONFIGURATION	IGSCC EXAM CAT.
CS-1-W002-020	CS	10"	Nozzle-to-Safe End	A
CS-1-W002-021	CS	10"	Nozzle-to-Safe End	A
CS-1-002-019	CS	10"	Safe End-to-Pipe	A
CS-1-002-022	CS	10"	Safe End-to-Pipe	A
CS-1-002-017	CS	12"	Elbow-to-Valve	A
CS-1-002-024	CS	12"	Elbow-to-Valve	A
CS-1-002-016	CS	12"	Pipe-to-Valve	A
CS-1-002-025	CS	12"	Pipe-to-Valve	A
CS-1-002-012	CS	12"	Elbow-to-Valve	A
CS-1-002-029	CS	12"	Elbow-to-Valve	A
CS-1-002-011	CS	12"	Pipe-to-Valve	A
CS-1-002-030	CS	12"	Pipe-to-Valve	A
CS-1-002-008	CS	12"	Pipe-to-Pipe	C
CS-1-002-033A	CS	12"	Pipe-to-Pipe	C
RWCU-1-001-001	RWCU	6"	Branch-to-Valve (69-500)	A
RWCU-1-001-002	RWCU	6"	Valve (69-500)-to-Pipe	A
RWCU-1-S001-005	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-S001-007	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-001-008	RWCU	6"	Valve-to-Pipe	A
RWCU-1-001-009	RWCU	6"	Valve-to-Pipe	A
RWCU-1-S001-010	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-S001-011	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-001-013	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-001-016	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-001-018	RWCU	6"	Pipe-to-Elbow	A
RWCU-1-001-019A	RWCU	6"	Flued head-to-pipe	A
RWCU-1-001-019	RWCU	6"	Pipe-to-Valve	A
DRHR-1-2	RHR	24"	Pipe to Valve 74-53	D
DRHR-1-3	RHR	24"	Valve-to-Flued Head	D
DRHR-1-3B	RHR	24"	Flued Head-to-pipe	G
RHR-1-012-001	RHR	24"	Pipe-to-Elbow	C
RHR-1-012-S001A (SW-TPRHR-1-3)	RHR	24"	Elbow-to-Elbow	A
RHR-1-012-006	RHR	24"	Elbow-to-Valve 74-54	A
RHR-1-012-007	RHR	24"	Valve 74-54 -to-Pipe	A
RHR-1-012-026	RHR	24"	Pipe-to-Elbow	A
RHR-1-012-S026A (SW-TPRHR-1-1)	RHR	24"	Elbow-to-Elbow	A

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Unit 1 Welds Required to Be Examined Per Generic Letter 88 01/BWRVIP 75

WELD IDENTIFIER	SYSTEM	NPS	CONFIGURATION	IGSCC EXAM CAT.
RHR-1-012-027	RHR	24"	Elbow-to-Valve 74-55	A
RHR-1-012-028	RHR	24"	Valve 74-55 -to-Pipe	A
RHR-1-012-029	RHR	24"	Pipe-to-Recirc (tee)	A
DRHR-1-11	RHR	24"	Pipe to Valve 74-67	D
DRHR-1-12	RHR	24"	Valve-to-Flued Head	D
DRHR-1-13B	RHR	24"	Flued Head-to-pipe	G
RHR-1-014-001	RHR	24"	Pipe-to-Elbow	C
RHR-1-014-S012A (SW-TPRHR-1-6)	RHR	24"	Elbow-to-Elbow	A
RHR-1-014-002	RHR	24"	Elbow-to-Valve 74-68	A
RHR-1-014-003	RHR	24"	Valve-to-Pipe	A
RHR-1-014-004	RHR	24"	Pipe-to-Elbow	A
RHR-1-014-005	RHR	24"	Elbow-to-Valve	A
RHR-1-014-006	RHR	24"	Valve-to-Pipe	A
RHR-1-014-007	RHR	24"	Pipe-to-Recirc (tee)	A
RHR-1-013-006	RHR	20"	Tee-to-Recirc (tee)	A
RHR-1-013-S005A (SW-TPRHR-1-8)	RHR	20"	Tee-to-Elbow	A
RHR-1-013-005	RHR	20"	Elbow-to-Valve	A
RHR-1-013-004	RHR	20"	Elbow-to-Valve	A
RHR-1-013-003	RHR	20"	Elbow-to-Valve	A
RHR-1-013-002	RHR	20"	Elbow-to-Valve	A
RHR-1-013-001	RHR	20"	Elbow-to-pipe	A
RWR-1-W001-071	RWR	28"	Nozzle-to-Safe End	A
RWR-1-001-006	RWR	28"	Safe End-to-Elbow	A
RWR-1-001-005	RWR	28"	Elbow-to-pipe	A
RWR-1-001-004	RWR	28"	Pipe-to-Pipe	A
RWR-1-001-003	RWR	28"	Elbow-to-Valve 68-1	A
RWR-1-001-002	RWR	28"	Valve 68-1-to-Pipe	A
RWR-1-001-S012A (SW-TPR-1-22)	RWR	4"	Pipe-to-branch nozzle	A
RWR-1-001-012	RWR	4"	Branch-to-Flange	A
RWR-1-001-S013A (SW-TPR-1-18)	RWR	28"	Pipe-to-Elbow	A
RWR-1-001-001	RWR	28"	Elbow-to-Pump	A
RWR-1-001-022	RWR	28"	Pump-to-pipe	A
RWR-1-001-S023A (SW-TPR-1-23)	RWR	4"	Pipe-to-branch nozzle	A
RWR-1-001-023	RWR	4"	Branch-to-Cap	A

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Unit 1 Welds Required to Be Examined Per Generic Letter 88 01/BWRVIP 75

WELD IDENTIFIER	SYSTEM	NPS	CONFIGURATION	IGSCC EXAM CAT.
RWR-1-001-024	RWR	28"	Pipe-to-Valve 68-3	A
RWR-1-001-025	RWR	28"	Valve 68-3 -to-Elbow	A
RWR-1-001-027	RWR	28"	Elbow-to-pipe	A
RWR-1-001-030	RWR	28"	Pipe-to-Tee	A
RWR-1-001-040	RWR	22"	Cross-to-Hdr. arm	A
RWR-1-001-S040A	RWR	22"	Hdr. arm-to-reducer	A
RWR-1-001-048	RWR	22"	Cross-to-Hdr. Arm	A
RWR-1-001-S048A	RWR	22"	Hdr. Arm-to-reducer	A
RWR-1-001-042	RWR	12"	Reducer-to-pipe	A
RWR-1-001-043	RWR	12"	Pipe-to-Elbow	A
RWR-1-001-044	RWR	12"	Elbow-to-safe end	A
RWR-1-W001-066	RWR	12"	Safe end-to-nozzle	A
RWR-1-001-041	RWR	12"	Pipe-to-Header	A
RWR-1-001-045	RWR	12"	Elbow-to-safe end	A
RWR-1-W001-067	RWR	12"	Safe end-to-nozzle	A
RWR-1-001-047	RWR	12"	Pipe-to-reducer	A
RWR-1-001-046	RWR	12"	Elbow-to-safe end	A
RWR-1-W001-068	RWR	12"	Safe end-to-nozzle	A
RWR-1-001-049	RWR	12"	Pipe-to-Header	A
RWR-1-001-053	RWR	12"	Elbow-to-safe end	A
RWR-1-W001-069	RWR	12"	Safe end-to-nozzle	A
RWR-1-001-050	RWR	12"	Reducer-to-pipe	A
RWR-1-001-051	RWR	12"	Pipe-to-Elbow	A
RWR-1-001-052	RWR	12"	Elbow-to-safe end	A
RWR-1-W001-070	RWR	12"	Safe end-to-nozzle	A
RWR-1-W002-031	RWR	28"	Nozzle-to-Safe End	A
RWR-1-002-061	RWR	28"	Safe End-to-Elbow	A
RWR-1-002-058	RWR	28"	Elbow-to-pipe	A
RWR-1-002-056	RWR	28"	Pipe-to-Pipe	A
RWR-1-002-055	RWR	28"	Elbow-to-Valve 68-77	A
RWR-1-002-053	RWR	28"	Valve 68-77 -to-Pipe	A
RWR-1-002-S050A (SW-TPR-1-24)	RWR	4"	Pipe-to-branch nozzle	A
RWR-1-002-050	RWR	4"	Branch-to-Flange	A
RWR-1-002-S048A (SW-TPR-1-20)	RWR	28"	Pipe-to-Elbow	A
RWR-1-002-048	RWR	28"	Elbow-to-Pump 1B	A
RWR-1-002-011	RWR	28"	Pump 1B-to-pipe	A

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Unit 1 Welds Required to Be Examined Per Generic Letter 88 01/BWRVIP 75

WELD IDENTIFIER	SYSTEM	NPS	CONFIGURATION	IGSCC EXAM CAT.
RWR-1-002-S011B (SW-TPR-1-25)	RWR	4"	Pipe-to-branch nozzle	A
RWR-1-002-011A	RWR	4"	Branch-to-Cap	A
RWR-1-002-012	RWR	28"	Pipe-to-Valve 68-79	A
RWR-1-002-013	RWR	28"	Valve 68-79-to-Elbow	A
RWR-1-002-015	RWR	28"	Elbow-to-pipe	A
RWR-1-002-017	RWR	28"	Pipe-to-Tee	A
RWR-1-002-032	RWR	22"	Cross-to-Hdr. Arm	A
RWR-1-002-S034A	RWR	22"	Hdr. Arm-to-reducer	A
RWR-1-002-044	RWR	22"	Cross-to-Hdr. Arm	A
RWR-1-002-S042A	RWR	22"	Hdr. Arm-to-reducer	A
RWR-1-002-034	RWR	12"	Reducer-to-pipe	A
RWR-1-002-035	RWR	12"	Pipe-to-Elbow	A
RWR-1-002-036	RWR	12"	Elbow-to-safe end	A
RWR-1-W002-026	RWR	12"	Safe end-to-nozzle	A
RWR-1-002-033	RWR	12"	Pipe-to-Header	A
RWR-1-002-037	RWR	12"	Elbow-to-safe end	A
RWR-1-W002-027	RWR	12"	Safe end-to-nozzle	A
RWR-1-002-045	RWR	12"	Pipe-to-reducer	A
RWR-1-002-038	RWR	12"	Elbow-to-safe end	A
RWR-1-W002-028	RWR	12"	Safe end-to-nozzle	A
RWR-1-002-043	RWR	12"	Pipe-to-Header	A
RWR-1-002-039	RWR	12"	Elbow-to-safe end	A
RWR-1-W002-029	RWR	12"	Safe end-to-nozzle	A
RWR-1-002-042	RWR	12"	Reducer-to-pipe	A
RWR-1-002-041	RWR	12"	Pipe-to-Elbow	A
RWR-1-002-040	RWR	12"	Elbow-to-safe end	A
RWR-1-W002-030	RWR	12"	Safe end-to-nozzle	A
RCRD-1-33	CRD	4"	Cap-to-nozzle	C
RWR-1-W003-001	RPV	5"	Nozzle-to-Safe End	A
RWR-1-W003-050	RPV	5"	Nozzle-to-Safe End	A
RCRD-1-49	CRD	4"	Pipe-to-Valve 85-577	C
RCRD-1-50	CRD	4"	Pipe-to-Valve 85-577	C
RCRD-1-52	CRD	4"	Pipe-to-Valve 85-576	C
RWR-1-001-047A	RWR	12"	Pipe-to-Pipe	A
RWCU-1-005-028	RWCU	4"	Pipe-to-Elbow	C
RWCU-1-005-005	RWCU	4"	Elbow-to-Valve	C
RWCU-1-005-006	RWCU	4"	Valve-to-Valve	D

Attachment 9
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Unit 1 Stainless and Dissimilar Metal Welds Not Subject to Generic Letter 88 01 Exams

WELD NUMBER	SYSTEM	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC EXAM CATEGORY	ISI DRAWING	COMMENTS
CS-1-009-003	CS	12	V, P	N/A	1-ISI-0095-C-2	TEMPERATURE EXCLUSION
DCS-1-01	CS	12	E, V	N/A	1-ISI-0095-C-1	TEMPERATURE EXCLUSION
DCS-1-01A	CS	14	E, E	N/A	1-ISI-0095-C-1	TEMPERATURE EXCLUSION
DCS-1-02X	CS	12	P, V	N/A	1-ISI-0095-C-1	TEMPERATURE EXCLUSION
DCS-1-03 CS	CS	12	PEN, V	N/A	1-CHM-1089-C-1	TEMPERATURE EXCLUSION
DCS-1-04A C	CS	10	P, PEN	N/A	1-CHM-1089-C-1	TEMPERATURE EXCLUSION INACCESSIBLE IN PENETRATION X-16A
DCS-1-12 CS	CS	12	PEN, V	N/A	1-CHM-1089-C-1	TEMPERATURE EXCLUSION
DCS-1-12A	CS	12	P, PEN	N/A	1-CHM-1089-C-1	TEMPERATURE EXCLUSION INACCESSIBLE IN PENETRATION X-16B
DSCS-1-14	CS	14	E, P	N/A	1-ISI-0095-C-1	TEMPERATURE EXCLUSION
TCS-1-02A	CS	12	P, P	N/A	1-ISI-0095-C-1	TEMPERATURE EXCLUSION

Attachment 10
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Class I Valve Data

VALVE NO.	CODE CLASS	PIPING SYSTEM	VALVE SIZE	VALVE TYPE	B-G-2 BOLTING	GROUP NO.	TVA Dwg No (WELD MAP)	VENDOR Dwg. No.	VENDOR	MATERIAL SPEC.	VALVE FUNCTION	FORGING/ CASTING
CKV 3-554	1	Fdwtr.	24"	Check	YES	1	CHM-1080-C	52116-A	Atwood & Morrill	A-216 WCB	PSIV	Casting
CKV 3-558	1	Fdwtr.	24"	Check	YES	1	CHM-1080-C	52116-A	Atwood & Morrill	A-216 WCB	PSIV	Casting
CKV 3-568	1	Fdwtr.	24"	Check	YES	1	CHM-1080-C	52116-A	Atwood & Morrill	A-216 WCB	PSIV	Casting
CKV 3-572	1	Fdwtr.	24"	Check	YES	1	CHM-1080-C	5116-A	Atwood & Morrill	A-216 WCB	PSIV	Casting
SHV 3-67	1	Fdwtr.	24"	Gate	N0	2	CHM-1080-C	035879-2	Powell	A-216 WCB	Maint.	Casting
SHV 3-66	1	Fdwtr.	24"	Gate	NO	2	CHM-1080-C	035879-2	Powell	A-216 WCB	Maint.	Casting
FCV 68-1	1	Recirc	28"	Gate	YES	3	CHM-1081-C	94-12086	Darling	A351 CF8	Oper.	Casting
FCV 68-77	1	Recirc	28"	Gate	YES	3	CHM-1081-C	94-12086	Darling	A351 CF8	Oper.	Casting
FCV 68-3	1	Recirc	28"	Gate	YES	4	CHM-1081-C	94-12086	Darling	A351 CF8	PSIV	Casting
FCV 68-79	1	Recirc	28"	Gate	YES	4	CHM-1081-C	94-12086	Darling	A351 CF8	PSIV	Casting
FCV 1-14	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-26	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-37	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-51	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-15	1	M. Stm.	25"	Globe	YES	5	CHM-1082-C	2085l-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-27	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-38	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
FCV 1-52	1	M. Stm.	26"	Globe	YES	5	CHM-1082-C	20851-H	Atwood & Morrill	A216 WCB	PSIV	Casting
PCV 1-4	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	See Note 1	MSRV	Casting
PCV 1-179	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-5	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-18	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-19	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	See Note 1	MSRV	Casting
PCV 1-22	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-23	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting

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Class I Valve Data

VALVE NO.	CODE CLASS	PIPING SYSTEM	VALVE SIZE	VALVE TYPE	B-G-2 BOLTING	GROUP NO.	TVA Dwg No (WELD MAP)	VENDOR Dwg. No.	VENDOR	MATERIAL SPEC.	VALVE FUNCTION	FORGING/ CASTING
PCV 1-30	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-31	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-34	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-41	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-180	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
PCV 1-42	1	M. Stm.	6"	Relief	YES	6	ISI-0027-C	PL-7657F-100	Target Rock	"	MSRV	Casting
SHV 74-69	1	RHR	24"	Gate	NO	7	CHM-1088-C	035880-3	Powell	A351 CF8M	Maint.	Casting
SHV 74-55	1	RHR	24"	Gate	NO	7	CHM-1088-C	035880-3	Powell	A351 CF8M	Maint.	Casting
CKV 74-68	1	RHR	24"	Check	YES	8	CHM-1088-C	03-27746-01	Anchor Darling	A351 CF8M	PSIV	Casting
CKV 74-54	1	RHR	24"	Check	YES	8	CHM-I088-C	03-27746-01	Anchor Darling	A351 CF8M	PSIV	Casting
FCV 74-67	1	RHR	24"	Gate	NO	9	CHM-1088-C	A-12334-M1F	Walworth	A351 CF8M	PSIV	Casting
FCV 74-53	1	RHR	24"	Gate	NO	9	CHM-1088-C	A-12334-M1F	Walworth	A351 CF8M	PSIV	Casting
SHV 74-49	1	RHR	20"	Gate	NO	10	CHM-1088-C	036207-2	Powell	A351 CF8M	Maint.	Casting
FCV 74-47	1	RHR	20"	Gate	NO	11	CHM-1088-C	A-12332-M1C	Walworth	A216 WCB	PSIV	Casting
SHV 75-55	1	C Spray	12"	Gate	YES	12	CHM-1089-C	036034-2	Powell	A351 CF8M	Maint.	Casting
SHV 75-27	1	C Spray	12"	Gate	YES	12	CHM-1089-C	036034-2	Powell	A351 CF8M	Maint.	Casting
CKV 75-54	1	C Spray	12"	Check	YES	13	CHM 1089-C	04-27758-01	Edwards	SA351 CF8M	PSIV	Casting
CKV 75-26	1	C Spray	12"	Check	YES	13	CHM-1089-C	04-27758-01	Edwards	SA351 CF8M	PSIV	Casting
FCV 75-53	1	C Spray	12"	Gate	NO	14	CHM-1089-C	IVP-11978	Walworth	A351 CF8M	PSIV	Casting
FCV 75-25	1	C Spray	12"	Gate	NO	14	CHM 1089-C	IVP-11978	Walworth	A351 CF8M	PSIV	Casting
SHV 69-500	1	RWCU	6"	Gate	NO	15	CHM-1098-C	W0226062	Anchor Darling	SA351-CF8M	Maint.	Casting
FCV 69-1	1	RWCU	6"	Gate	NO	16	CHM-1098-C	03-25607-02	Anchor Darling	SA351-CF8M	PSIV	Casting
FCV 69-2	1	RWCU	6"	Gate	NO	16	CHM-I098-C	03-25607-01	Anchor Darling	SA351-CF8M	PSIV	Casting
FCV 71-40	1	RCIC	6"	Check	NO	17	CHM-1098-C	1-15184-02	Atwood & Morrill	SA216 WCB	PSIV	Casting
FCV-73-2	1	HPCI	10"	Gate	NO	18	CHM-1099-C	W0326086	Anchor Darling	SA216-WCB	PSIV	Casting

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Class I Valve Data

VALVE NO.	CODE CLASS	PIPING SYSTEM	VALVE SIZE	VALVE TYPE	B-G-2 BOLTING	GROUP NO.	TVA Dwg No (WELD MAP)	VENDOR Dwg. No.	VENDOR	MATERIAL SPEC.	VALVE FUNCTION	FORGING/ CASTING
FCV-73-3	1	HPCI	10"	Gate	NO	18	CHM-1099-C	04-28922-03	Anchor Darling	SA216-WCB	PSIV	Casting
FCV-73-45	1	HPCI	14"	Check	NO	19	CHM-1099-C	52007-A	Atwood & Morrill	SA216-WCB	PSIV	Casting
FCV-74-48	1	RHR	20"	Gate	NO	20	CHM-1088-C	A-12331-M1C	Walworth	A351-CF8M	PSIV	Casting
*CKV 69-629	1	RWCU	4"	Check	*NO	21	ISI-0332-C	04-28463-01	Anchor Darling	SA216-WCB	PSIV	Casting

* Exempt from B-M-2 examination due to size.

1 MSRV's with serial numbers 205, 206, 207, 208, 209, 1014, 1015, 1016, 1032, 1033, and 1034 are complete forgings (A105). All other MSRV's have cast bodies (A216 WCB) with forged top works (A105).

Valve Actuation
MO - Motor Operated
CO - Cylinder Operated
SA - Self-Actuating
Man - Manual

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CLASS 1 PIPING FLANGE BOLTED CONNECTIONS GROUP LIST

GROUP NUMBER	COMPONENT NUMBER	SIZE (INCHES)	SYSTEM	ISI DWG NUMBER	COMMENTS
1	MSBC-1-01	6	Main Steam	ISI-0027-B-01	
	MSBC-1-02	6	Main Steam	ISI-0027-B-01	
	MSBC-1-03	6	Main Steam	ISI-0027-B-01	
	MSBC-1-04	6	Main Steam	ISI-0027-B-01	
	MSBC-1-05	6	Main Steam	ISI-0027-B-01	
	MSBC-1-06	6	Main Steam	ISI-0027-B-01	
	MSBC-1-07	6	Main Steam	ISI-0027-B-01	
	MSBC-1-08	6	Main Steam	ISI-0027-B-01	
	MSBC-1-09	6	Main Steam	ISI-0027-B-01	
	MSBC-1-10	6	Main Steam	ISI-0027-B-01	
	MSBC-1-11	6	Main Steam	ISI-0027-B-01	
	MSBC-1-12	6	Main Steam	ISI-0027-B-01	
2	PCV1-1-004-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-005-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-018-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-019-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-022-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-023-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-030-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-031-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-034-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-041-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-042-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-179-PBC	6	Main Steam	ISI-0027-B-01	
	PCV1-1-180-PBC	6	Main Steam	ISI-0027-B-01	
3	RBC-1-1	4	Recirc.	1-CHM-1081-C-01	
	RBC-1-2	4	Recirc.	1-CHM-1081-C-02	
4	N6A-1-1-BC	6	RPV	1-CHM-2102-A-01	
	N6B-1-2-BC	6	RPV	1-CHM-2102-A-01	
5	N7-1-3-BC	4	RPV	1-CHM-2102-A-01	
6	RSF-A-1-BC	6	Recirc	1-ISI-0420-C	
	RSF-B-1-BC	6	Recirc	1-ISI-0420-C	
7	RCH-A-2-BC	6	Recirc	1-ISI-0420-C	
	RCH-B-2-BC	6	Recirc	1-ISI-0420-C	

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Requests For Relief Summary Listing

1-PDI-4	Relief to use ASME Section XI, Appendix VIII and Performance Demonstration Initiative (PDI) for RPV Shell-to-Flange Weld and RPV Closure Head-to-Flange Weld	Pending Approval
1-ISI-18	Alternate Testing Requirement for Snubbers	Pending Approval
1-ISI-19	RPV Circumferential Welds scope deletion (approved until the end of the original operating license - 12/20/13)	Approved 5/31/05 TAC# MC3151

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TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN), UNIT 1
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION (ISI) PROGRAM SECOND TEN YEAR INTERVAL REQUEST FOR RELIEF 1-PDI-4

USE OF APPENDIX VIII AND PERFORMANCE DEMONSTRATION INITIATIVE (PDI) METHODOLOGIES FOR PERFORMANCE OF THE ULTRASONIC EXAMINATION OF REACTOR PRESSURE VESSEL SHELL-TO-FLANGE WELDS AND CLOSURE HEAD-TO-FLANGE WELD IN LIEU OF THE REQUIREMENT OF APPENDIX I AND THE ASSOCIATED ARTICLE 4, ASME SECTION V

TVA requests approval of an alternative to ASME Section XI, paragraph IWA-2232 of 2001 Edition with the 2003 Addenda for the 10-year Reactor Pressure Vessel (RPV) examinations performed at Browns Ferry Unit 1.

EXECUTIVE SUMMARY:

In accordance with 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from the specific requirements of performing the volumetric examination of the reactor pressure vessel (RPV) circumferential shell-to-flange weld and the RPV closure head-to-flange weld in the subject TVA unit in accordance with the requirement of Appendix I of Section XI. In addition, the guidance of Regulatory Guide (RG) 1.150, Revision 1, was historically applied with these processes. In lieu of the requirements of Appendix I and its associated sub-requirements of Article 4 of Section V, TVA shall use the techniques, personnel, and equipment qualified to meet the requirements of ASME Section XI Appendix VIII, Supplements 4 and 6 of the 2001 Edition, in accordance with 10 CFR 50.55a(b)(2)(xxiv) and, as amended by Sections 10 CFR 50.55a(b)(2)(xv)(B) through 10 CFR 50.55a(b)(2)(xv)(G), and 10 CFR 50.55a(b)(xvi)(A), by following the Electric Power Research Institute's (EPRI) Performance Demonstration Initiative (PDI) processes. This proposed alternative represents the best available methodology in qualification of equipment and personnel performing ultrasonic examinations and uses an examination process that has provided and will provide the highest practical quality and greatest amount of coverage for the performance of the flange weld examinations. As such, the proposed alternative methodology provides an acceptable level of quality and safety. In addition, the approval of this relief results in savings in the cost of performing the examinations, with not having to incorporate the use of two different sets of examination equipment, and also results in lower personnel radiation exposure from not having to use a different methodology for the flange welds. Note that this request for relief is similar to that requested by TVA for the reactor vessel-to-flange weld submitted initially in a letter to the NRC, dated February 23, 2005 and approved by the Staff in a letter dated August 2, 2005 (reference TAC # MC6232 and MC6237).

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I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED:

ASME Code Class 1 Reactor Pressure Vessel (RPV) Upper Vessel Shell-to-Flange Weld and RPV Closure Head-to-Flange Weld, Table IWB-2500-1 Category B-A, Item Numbers B1.30 and B1.40, TVA ISI Program Weld Designations 1-C-5-FLG and RCH-1-2C.

II APPLICABLE CODE EDITION AND ADDENDA FOR THE GIVEN EXAM

2001 Edition with the 2003 Addenda, as amended by 10 CRF 50.55a, "Mandatory Limitations and Modifications."

III CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED:

In accordance with ASME Section XI, paragraph IWA-2232, "Ultrasonic examinations shall be conducted in accordance with Appendix I."

Further, in accordance with Appendix I, paragraph I-2110(b) "Ultrasonic examination of reactor vessel-to-flange welds, closure head-to-flange welds, and integral attachment welds shall be conducted in accordance with Article 4 of Section V, except that alternative examination beam angles may be used."

IV RELIEF REQUESTED:

Pursuant to 10 CFR 50.55a(a)(3)(i), TVA requests relief from performing the designated vessel shell-to-flange weld examination and the closure head-to-flange weld examination in accordance with the requirements of ASME Section XI, paragraph IWA-2232, Appendix I, and the associated Article 4 of Section V methodology in accordance with paragraph I-2110(b).

V BASIS FOR RELIEF:

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In accordance with ASME Section XI, Subarticle IWA-2232, TVA is required to perform ultrasonic examinations (UT) of the RPV upper shell-to-flange weld and the closure head-to-flange weld using Section XI, Appendix I, which in turn requires the use of the NDE methodologies and processes of ASME Section V, Article 4. In addition, the guidance of RG-1.150, Revision 1, was historically applied. The above listed welds are the only circumferential shell welds in the RPV that are not examined in accordance with the requirements of ASME Section XI, Appendix VIII, as mandated in 10 CFR 50.55a with the issuance of the rule change shown in the Federal Register Notice 64 FR 51370, dated September 22, 1999. This rule change mandated the use of ASME Section XI, Appendix VIII, Supplements 4 and 6 for the conduct of RPV examinations. It has been recently stated in EPRI PDI coordination meetings between the PDI committee members and the NRC Staff representatives that the NRC Staff expectations are that licensees should submit requests for relief to use the more technically advanced Appendix VIII/PDI processes for the shell-to-flange weld exams and the closure head-to-flange welds, in lieu of the Section XI Appendix I and its associated Section V, Article 4 processes.

VI PROPOSED ALTERNATIVES

TVA proposes the following. In lieu of the requirements of Appendix I and its associated sub-requirements of article 4, Section V, TVA will use the techniques, personnel, and equipment qualified to meet the requirements of ASME Section XI Appendix VIII, Supplements 4 and 6 of the 2001 Edition, in accordance with 10 CFR 50.55a(b)(2)(xxiv) and, as amended by Sections 10 CFR 50.55a(b)(2)(xv)(B) through 10 CFR 50.55a(b)(2)(xv)(G), and 10 CFR 50.55a(b)(xvi)(A), by following the Electric Power Research Institute's (EPRI) Performance Demonstration Initiative (PDI) processes.

VII JUSTIFICATION FOR GRANTING RELIEF:

ASME Section V, Article 4, describes the required techniques to be used for the UT of welds in ferritic pressure vessels with wall thicknesses greater than 2 inches. The techniques were first published in ASME Section V in the 1974 Edition, summer 1975 Addenda. The calibration techniques, recording criteria and flaw sizing methods are based upon the use of a distance-amplitude-correction curve (DAC) derived from machined reflectors in a basic calibration block. UT performed in accordance with Section V, Article 4, used recording thresholds of 50 percent DAC for the outer 80 percent of the required examination volume and 20 percent DAC from the clad/base metal interface to the inner 20 percent margin of the examination volume. Indications detected in the designated exam volume portions, with amplitudes below these thresholds, were therefore not required to be recorded. Use of the Appendix VIII/PDI processes would enhance the quality of the examination results reported because the detection sensitivity is more conservative and the procedure requires the examiner to evaluate all indications determined to be flaws regardless of their associated amplitude. The recording thresholds in Section V, Article 4, requirements and in the guidelines of RG-1.150, Revision 1, are generic and somewhat arbitrary and do not take into consideration such factors as flaw orientation, which can influence the amplitude of UT responses.

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The EPRI Report NP-6273, "Accuracy of Ultrasonic Flaw Sizing Techniques for Reactor Pressure Vessels," dated March 1989, established that UT flaw sizing techniques based on tip diffraction are the most accurate. The qualified prescriptive-based UT procedures of ASME Section V, Article 4 have been applied in a controlled process with mockups of RPVs which contained real flaws and the results statistically analyzed according to the screening criteria in Appendix VIII of ASME Section XI. The results show that the procedures in Section V, Article 4, are less effective in detecting flaws than procedures qualified in accordance with Appendix VIII as administered by the PDI processes. Appendix VIII/PDI qualification procedures use the tip diffraction techniques for flaw sizing. The proposed alternative Appendix VIII/PDI UT methodology uses analysis tools based upon echo dynamic motion and tip diffraction criteria which has been validated, and is considered more accurate than the Section V, Article 4 processes.

UT performed in accordance with the Section V, Article 4 processes requires the use of beam angles of 0°, 45°, 60°, and 70° with recording criteria that precipitates equipment changes. Having to perform these process changes is time consuming and results in increased radiation exposure for the examination personnel.

Having to comply with the specific ASME Section XI, Appendix I requirements for the RPV circumferential shell-to-flange weld and the closure head-to-flange weld, when the data is obtained using a less technically advanced process, results in an examination that does not provide a compensating increase in quality and safety for the higher costs and personnel exposures involved.

Past RPV shell-to-flange examinations already performed at TVA plants and units (i.e., for BFN Units 2 and 3) used automated and manual UT systems operated by qualified vendors. The examination coverage achieved during the 2001 exam of the Unit 2 weld (during the 2nd ISI program interval) resulted in a coverage of approximately 76.6 percent which is less than the required essentially 100 percent. Manual examination techniques were performed from the outside surfaces of the RPV during the Unit 2 examination in order to maximize the coverage. Examination coverage performed from the inside surfaces was limited due to the taper in the vessel wall at the edge of the weld area and the obstructions encountered with the guide rods and the steam nozzle plugs with the specific UT equipment used during the exam. The manual examination of the weld volume performed from the outside surfaces was limited by the flange configuration. This limited exam with a percentage of coverage of less than 90 percent was the subject of a BFN Unit 2 relief request number RR 2-ISI-14. This relief was reviewed by the NRC and found to be acceptable. A safety evaluation report (SER), on this relief, was issued by the NRC in a letter to J. A. Scalice, from Allen G. Howe, dated April 3, 2003, [see TAC NOS. MB5309, MB8130, MB8132, and MB8133 (ML030970815)]. The examination performed on the Unit 3 RPV used a different set of newer designed UT equipment and thereby achieved a calculated coverage of 95 percent. Therefore, the Unit 3 examination results did not require the submittal and review of a relief request.

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For future RPV shell-to-flange weld examinations and closure head-to-flange examinations, TVA does not anticipate any less coverage than the required minimum of 90 percent of coverage. However, if any such limitations are encountered during the conduct of the examinations, separate individual relief requests shall be submitted, as needed.

Procedures, equipment, and personnel qualified through the Appendix VIII, Supplements 4 and 6 PDI programs have shown to have a high probability of detection of flaws and are generally considered superior to the techniques employed earlier for RPV examinations. This results in increased reliability of RPV inspections and conditions where an acceptable level of quality and safety is provided with the proposed alternative methodologies. Accordingly, approval of this alternative evaluation process is requested pursuant to 10 CFR 50.55a(a)(3)(i).

VIII IMPLEMENTATION SCHEDULE AND DURATION:

This Request For Relief is applicable to the Second Inservice Inspection (ISI) Interval for BFN Unit 1.

IX Precedents

This request for relief is similar to, and closely follows the content and statements made in, the relief requested by TVA for the reactor vessel-to-flange weld submitted initially in a letter to the NRC, dated February 23, 2005 and approved by the Staff in a letter dated August 2, 2005 (reference TAC # MC6232 and MC6237).

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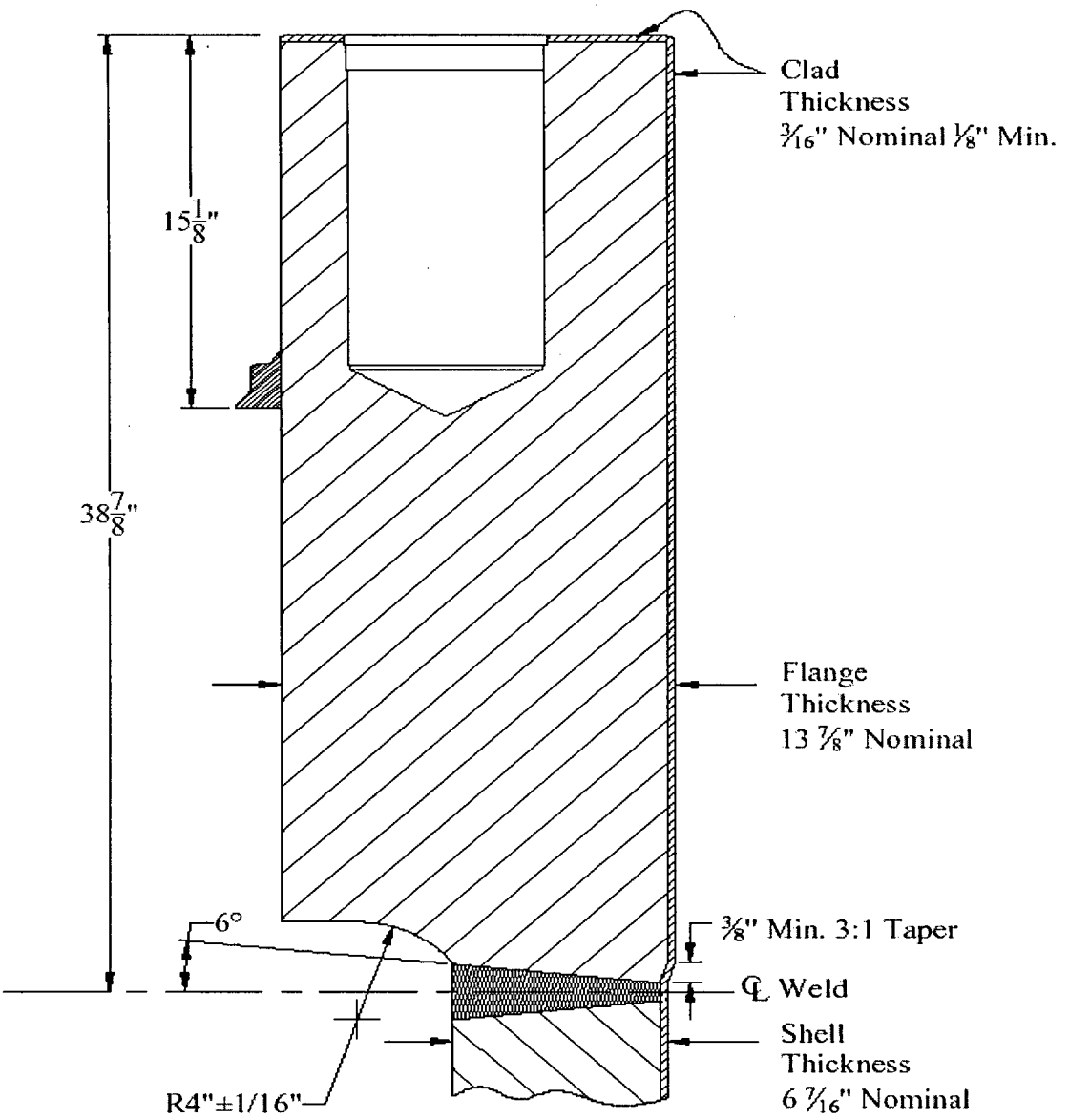
Figure 1
BFN Units 1, 2, & 3 RPV Flange to Shell Weld



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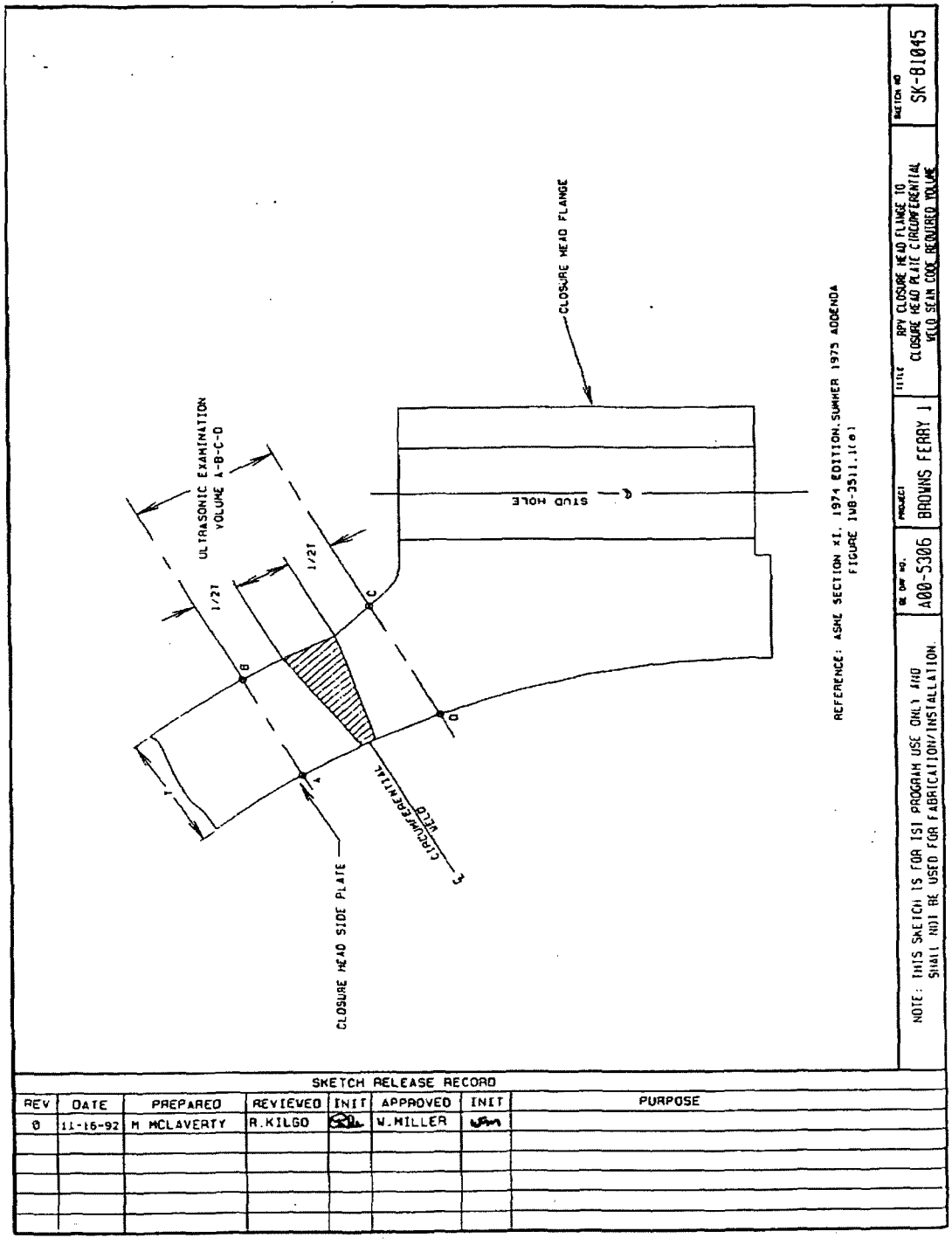

Figure 2

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TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION (ISI) PROGRAM SECOND TEN YEAR INTERVAL REQUEST FOR RELIEF 1-ISI-18

Executive Summary

Pursuant to 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from the ASME Section XI Code requirements related to selection, examination, and testing of snubbers. TVA proposes to use the selection, examination, and testing plans currently defined in the BFN Technical Requirements Manual (TR 3.7.4). The Technical Requirement Manual (TRM) criteria have been promulgated and approved by the NRC, while ASME Section XI imposes overlapping requirements which do not enhance the quality or safety of the snubber examination and testing program.

Components: Component/piping snubbers

Code Class: 1, 2, 3, and MC

Examination Category: N/A

Item Number: N/A

Code Requirement: 2001 Edition of ASME Section XI with 2003 Addenda

IWF-5300(a) and (b) inservice examination and testing in accordance with the first Addenda to ASME/ANSI OM-1987, Part 4, with OMa-1988

IWF-5400 Repairs and Replacements of snubbers shall be in accordance with the first Addenda to ASME/ANSI OM-1987, Part 4, with OMa-1988

IWA-6230 requires inservice inspection summary reports for snubbers to be filed with the regulatory authority.

IWA-2110 requires Authorized Nuclear Inservice Inspector (ANII) involvement for snubber examination and testing.

Code Requirement From Which Relief Is Requested: In accordance with 10CFR50.55a(a)(3)(i), relief is requested from the ASME Section XI 2001 Edition, 2003 Addenda, requirement for inservice examinations and tests for snubbers, and repair/replacement examinations and tests of snubbers:

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IWF-5300(a) and (b) inservice examination and testing, and implied OM-1987, Part 4, with OMa-1988, Sections 2.3, Inservice Examination, 2.4, Examination Documentation, and 3.2, inservice Operability Testing, and 3.3, Testing Documentation.

IWF-5400 Repairs and Replacements of snubbers shall be in accordance with the first Addenda to ASME/ANSI OM-1987, Part 4, with OMa-1988, Sections 1.5.6, Snubber Maintenance or Repair, and 1.5.7, Snubber Modification and Replacement

IWA-6230, Summary Reports (for snubbers)

IWA-2110, Duties of the Inspector (for involvement for snubber examination).

Basis For Relief: ASME Section XI Class 1, 2 and 3 equivalent snubbers are examined and tested in accordance with Browns Ferry Nuclear (BFN) Plant Technical Requirements Manual (TRM), TR 3.7.4. BFN TR 3.7.4 is prepared in accordance with the guidance given by NRC in Generic Letter 90-09. The scope for snubbers examined and tested in accordance with TR 3.7.4 is not limited by line size or other applicable code exemptions and includes a numerically greater population of snubbers than the Section XI program. Examination and testing of the snubbers in accordance with both ASME Section XI and the plant TRM would result in a duplication of effort utilizing different standards and require the preparation of a separate program and associated procedures. This would result in additional cost and unnecessary radiological exposure. In addition the personnel performing snubber visual examinations would also be required to be certified in accordance with the American Society of Nondestructive Testing (ASNT) SNT-TC-1A "Personnel Qualification and Certification in Nondestructive Testing," and ASME/ASNT-CP-189, which is an additional certification as compared to the task training qualification required to perform the TRM required examinations and testing of snubbers. The existing TRM program for examination and testing of snubbers was promulgated and accepted by NRC.

The implementation of OM-1987, Part 4, with OMa-1988 would require BFN to initiate a snubber examination and testing program that is more complicated and expensive to perform, without a compensating increase in the level of quality and safety.

Alternate Examinations: The BFN TRM, TR 3.7.4, requirements will be utilized for the examination and testing of snubbers for preservice, inservice, and repair/replacement activities. The procedures utilized for these examinations are: 1-SI-4.6.H-1, "Visual Examination of Hydraulic and Mechanical Snubbers"; 0-SI-4.6.H-2A, "Functional Testing of Mechanical Snubbers"; 0-SI-4.6.H-2B, "Functional Testing of Bergen-Patterson, Anchor/Darling, or Fronek Snubbers"; 0-SI-4.6.H-2C, "Functional Testing of Bergen-Patterson Torus Dynamic Restraints"; MPI-0-000-SNB002, "Hydraulic Shock and Sway Arrestor Bergen-Patterson, Anchor/Darling, and Fronek Unit Disassembly and Reassembly"; and MPI-0-000-SNB004, "Removing and Reinstalling Pacific Scientific Mechanical, Bergen-Patterson, Anchor/Darling, Fronek, and Grinnell Hydraulic, and Bergen Patterson, or Lisega Torus Dynamic Restraint Snubbers." This will include the pin-to-pin area inclusive of applicable snubbers.

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Testing of repaired and replaced snubbers will also be performed in accordance with TR 3.7.4.

Visual examination of repaired and replaced snubbers will be performed in accordance with MPI-0-000-SNB004, "Removing and Reinstalling Pacific Scientific Mechanical, Bergen-Patterson, Anchor/Darling, Fronek, and Grinnell Hydraulic, and Bergen Patterson, or Lisega Torus Dynamic Restraint Snubbers."

Snubber examination and testing data will be maintained in accordance with the requirements of TR 3.7.4, the site corrective action program, SPP-3.1, and the implementing procedures (1-SI-4.6.H-1, 0-SI-4.6.H-2A, 0-SI-4.6.H-2B, 0-SI-4.6.H-2C, MPI-0-000-SNB002, and MPI-0-000-SNB004).

The areas inclusive of the pins back to building structure and to the component/piping being supported will remain in the ASME Section XI examination boundary.

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Justification For The Granting Of Relief: The current program, as defined by TR 3.7.4, provides for a level of quality and safety equal to or greater than as that provided by OM Code 1987, Part 4, with OMa-1988, and utilizes NRC guidance not incorporated into the OM Code referenced by the 2001 Edition, 2003 addenda of ASME Section XI.

Examination, testing, repair and replacement of snubbers is currently performed in accordance with TR 3.7.4, which utilizes the guidance provided by NRC in Generic Letter 90-09. The OM Code referenced by ASME Section XI has a different basis for examination (failure mode groups) and testing plans (10%, 37, or 55). It is impractical to implement both plans because of the resulting duplication of examination and testing efforts and different requirements for snubber quantities subject to examination or test, actually examined and/or tested, and sample expansion requirements. This would result in additional cost and unnecessary radiological exposure. The existing TRM program for examination and testing of snubbers has been promulgated and accepted by NRC. The differences in the two programs could create confusion when selecting test samples, applying acceptance criteria, corrective actions, and examination schedules for failed snubbers. This situation could increase the possibility of applying the wrong action, thus creating a nonconformance, an in-operability or even a violation of a TRM requirement.

To eliminate any misinterpretation or confusion in administering overlapping requirements for snubbers, and to remove the possibility of applying contradicting requirements to the same snubber(s), BFN proposes to examine and test snubbers in accordance with BFN TR 3.7.4.

Subarticle IWF-5400 provides the requirements for repair and replacement of snubbers to be in accordance with OM-1987, Part 4. OM-1987, Part 4, Sections 1.5.6, "Snubber Maintenance or Repair" and 1.5.7, "Snubber Modification and Replacement" require repaired and replaced snubbers to meet the visual examination requirements of Paragraph 2.3.1.2 and the operability test requirements of Paragraph 3.2.11. Section 1.5.6 also requires an evaluation of the maintenance or repair activity and Section 1.5.7 requires a suitability evaluation on the replacement/modified snubber. TR 3.7.4 (TSR 3.7.4.6) requires replacement snubbers and snubbers which have repairs which might affect the functional test results to be tested to meet the functional test criteria prior to installation.

Maintenance procedure MPI-0-000-SNB004 provides visual examination criteria for installation of a snubber after repair or replacement. The ASME Section XI repair/replacement program at BFN documents the suitability of repairs/replacements, IWA-4160.

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ASME Section XI VT-3 certification required by personnel performing snubber visual examinations is an additional certification as compared with the TRM program training qualifications. Personnel performing the TRM required visual examinations are "process qualified" to perform the examinations and testing required by the TRM and implemented by the referenced procedures. This training currently includes a visual test associated with face mask fit and specific training on the acceptance criteria associated with procedure MPI-0-000-SNB004. Additional "visual acuity" verification for personnel performing snubber visual examinations will include visual acuity requirements that meet ASME Section XI. The training and documentation of personnel to the visual acceptance criteria, specified in the TRM implementing procedures, provides an acceptable level of quality and safety.

Because relief is sought from the ASME Section XI snubber examination and test requirements, there will be no ASME Section XI snubber examination and test activities to require ANII involvement. The BFN TRM snubber program does not require the use of an ANII for examination and test requirements. The ANII will not be involved in the TRM required visual examination or testing activities performed in lieu of the ASME Code requirements. A snubber program manager provides oversight of the TRM snubber program implementation for both visual examination and functional testing. This oversight includes both review and evaluation of visual examination and functional testing data to ensure TRM requirements are met. The snubber program manager provides an acceptable level of quality and safety without ANII involvement in those activities. ANII involvement in other inservice repair and replacement snubber activities, as required by IWA-2110(g) and (h) and implemented by BFN's ASME Section XI repair and replacement program will be maintained.

Subarticle IWA-6230 and OM-1987, Part 4, Sections 2.3 and 3.3 provide requirements for ASME Section XI inservice examination and test documentation for snubbers and a summary report of examinations and testing. Under the alternate requirements for snubbers, there will be no ASME Section XI inservice examination and testing to document in a summary report. TR 3.7.4 is implemented by surveillance instructions 1-SI-4.6.H-1, 0-SI-4.6.H-2A, 0-SI-4.6.H-2B, and 0-SI-4.6.H-2C and maintenance instruction MPI-0-000-SNB004. These instructions are written and approved in accordance with the TVA Nuclear Quality Assurance Program, include data sheets for documenting the visual examination and functional test data and results, and provide for documentation of nonconforming results and evaluation of those results. The completed data sheets are QA records and are controlled and maintained in accordance with the BFN QA records program. These records are available onsite for review and inspection. The QA records documenting snubber visual examinations and functional tests provide an acceptable level of quality and safety when compared to the requirements of ASME Section XI and OM-1987, Part 4, with OMa-1988.

Based on the justification provided, BFN's examination and testing of snubbers, in accordance with TR 3.7.4 will provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), TVA request that relief be granted from the 2001 Edition, 2003 addenda of ASME Section XI Code requirements related to inservice examination and testing for snubbers.

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TVA's request for relief 1-ISI-18 is consistent with request for relief 3-ISI-2 submitted by TVA letter dated October 19, 2005 and supplemented by letter dated October 17, 2006, for the BFN Unit 3 Third Ten-Year Inservice Inspection Interval. The NRC staff approved request for relief 3-ISI-2 by letter dated December 22, 2006.

TVA's request for relief 1-ISI-18 is also consistent with request for relief 2-ISI-13 submitted by TVA letter dated October 25, 2002, for the BFN Unit 2 Third Ten-Year Inservice Inspection Interval. The NRC staff approved the request for relief by letter dated January 7, 2003.

Implementation Schedule: TR 3.7.4 will be implemented during the BFN Unit 1 Second Ten-Year ASME Section XI inspection interval for snubber examination and testing in lieu of the code requirements listed above.

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TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, INSERVICE INSPECTION (ISI) AND AUGMENTED PROGRAM SECOND TEN YEAR INTERVAL REQUEST FOR RELIEF 1-ISI-19

Executive Summary

TVA is requesting permanent relief from the inservice inspection requirements for volumetric examination of reactor pressure vessel (RPV) circumferential shell welds. This request applies to the remaining term of operation under the existing license and applicable license extensions.

This request for relief will eliminate examination of the BFN Unit 1 RPV circumferential shell welds and is consistent with the guidance provided in NRC Generic Letter (GL) 98-05, "Boiling Water Reactor Licensees Use Of The BWRVIP-05 Report To Request Relief From Augmented Examination Requirements On Reactor Pressure Vessel Circumferential Shell Welds" dated November 10, 1998.

The intent of the 1992 10 CFR 50.55a rule change was to require licensees to perform an expanded RPV shell weld examination as specified in the 1989 Edition of the ASME Section XI Code, on an "expedited" basis. "Expedited" in this context effectively means "during the inspection interval that the rule was approved or the first period of the next inspection interval". The final rule change was published in the Federal Register on August 6, 1992.

The examination schedule for the RPV axially-oriented welds shall continue as required by the ASME Section XI Code.

TVA is scheduled to perform the RPV shell weld examinations required by the ASME Section XI Code on BFN Unit-1 prior to restart of the unit and in accordance with the requirements of ASME Section XI for the remaining term of the existing license due to expire on December 20, 2013.

The BWRVIP-05 Report and the associated NRC SER supports exclusion of the examinations of the RPV circumferential shell welds provided certain limiting conditions regarding end of license vessel embrittlement and cold over-pressurization events are satisfied. TVA has satisfied the limiting conditions specified in GL 98-05 for BFN Unit 1.

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Further, BFN Unit 1 was shut down and in an extended outage from 1985. Due to this extended shutdown, the BFN Unit 1 reactor vessel total neutron fluence at the end of the current operating license (December 20, 2013) will be much less than that the 32 Effective Full Power Years (EFPY) of operation. Further, since TVA intends to submit license amendment requests to allow operation at approximately 120% of the current licensed power level (Extended Power Uprate), and to allow operation in an extended operational domain (Maximum Extended Load Line Limit Analysis Plus), the end of license fluence value used below also reflects operation at these higher power levels. Accordingly, there is substantial conservatism in the evaluation supporting this request.

This request for relief is consistent with those submitted to NRC for BFN Unit 3 by TVA letters dated June 25, 1999, and October 22, 1999, and for BFN Unit 2 by letter dated March 24, 2000. NRC letters to TVA dated November 18, 1999, and August 14, 2000 approved these relief requests for BFN Unit 3 and BFN Unit 2, respectively.

Therefore, in accordance with the guidance provided in GL 98-05 and pursuant to 10 CFR 50.55a(a)(3)(i), TVA requests that relief be granted from performing the volumetric examinations of the BFN Unit 1 RPV circumferential shell welds.

Unit: One (1)

System: Reactor Pressure Vessel (RPV)

Components: Table 1 lists the BFN Unit 1 RPV circumferential welds for which TVA is requesting permanent relief from volumetric examination. The proposed relief is for the remaining term of operation under the existing license which expires December 20, 2013.

TABLE 1

Weld Description	Category and Exam Method	Table IWB-2500-1 Item Number
Vessel Shell to Shell Weld No.C-4-5	B-A, Volumetric	B1.11
Vessel Shell to Shell Weld No. C-3-4	B-A, Volumetric	B1.11
Vessel Shell to Shell Weld No. C-2-3	B-A, Volumetric	B1.11
Vessel Shell to Shell Weld No. C-1-2 (Located in Belt-line Region)	B-A, Volumetric	B1.11
Vessel Shell to Bottom Head Weld No. C-BH-1	B-A, Volumetric	B1.11

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ASME Code Class: ASME Code Class 1

Section XI Edition: 1995 Edition, 1996 addenda

Code Table: IWB-2500-1

Examination Category: B-A (Pressure Retaining Welds in Reactor Vessel)

Examination Item Number: B1.11 (Circumferential Shell Welds)

Code Requirement From Which Relief Is Requested:

The inservice inspection requirements for the volumetric examination of RPV circumferential welds, ASME Section XI, Table IWB-2500-1, Examination Category B-A, Item B1.11, Circumferential Shell Welds, and the (expedited) augmented examination requirements of 10 CFR 50.55a(g)(6)(ii)(A) for vessel circumferential welds.

List Of Items Associated With The Relief Request: See Table 1

Basis for Relief: The basis for this request for relief is outlined in the NRC's July 28, 1998 Safety Evaluation (BWRVIP-05 Report SER) for the BWRVIP-05 Report (Electric Power Research Institute Report No. TR-105697) and the guidance outlined in GL 98-05. These documents provide the basis for the elimination of examinations of the BWR RPV circumferential shell welds. The BWRVIP-05 Report SER concluded that the probability of failure of the BWR RPV circumferential shell welds is orders of magnitude lower than that of the axial shell welds. In addition, the NRC conducted an independent risk-informed assessment of the analysis contained in the BWRVIP-05 Report SER. The NRC assessment and GL 98-05 concluded that the inspection of BWR RPV circumferential shell welds does not measurably affect the probability of failure. The industry examination results identified in the BWRVIP-05 report indicate that the necessity for performance of the circumferential shell weld volumetric examinations is not warranted based upon the low probability of failure of these welds.

TVA has addressed the two criteria listed in the "Permitted Action" section of Generic Letter 98-05: (1) the Unit 1 RPV is bounded by the applicable limiting conditional failure probability identified in the NRC Staff's July 28, 1998 Safety Evaluation of the BWRVIP-05 report, and (2) licensees have implemented operator training and established procedures that limit the frequency of cold over-pressure events to the amount specified in the BWRVIP-05 SER. These criteria are addressed below.

Conditional Failure Probability

The conditional failure probability of the BFN Unit 1 RPV beltline weld is bounded by the limiting Babcock & Wilcox (B&W) circumferential weld identified in Table 2.6-4 of the NRC Staff's Safety Evaluation of the BWRVIP-05 report (BWRVIP-05 SER).

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The BFN Unit 1 RPV was manufactured by B&W.

The NRC Staff's review of the BWRVIP-05 Report included an independent assessment of the failure probability for BWR reactor vessels, based on manufacturer. As part of that assessment, the NRC Staff calculated conditional failure probabilities for the circumferential welds (probability of failure assuming occurrence of a cold overpressure event). Those conditional failure probabilities were based on limiting weld assumptions for each manufacturer. TVA has evaluated the BFN Unit 1 beltline girth weld against these limiting assumptions and has determined that it is bounded by the assumptions used in the NRC assessment.

The NRC evaluation used an end of license ¼ T fluence of 0.095×10^{19} n/cm^2 for B&W reactor vessels. TVA has calculated an end of license ¼ T fluence of 0.0799×10^{19} n/cm^2 for the BFN Unit 1 beltline weld (Weld C-1-2), assuming very conservative assumptions. Specifically, the BFN Unit 1 fluence assumes 32 EFPY of operation, 120% of original licensed thermal power (Extended Power Uprate conditions), and operation in an expanded operating domain (Maximum Load Line Limit Analysis Plus).

Assuming operation at Extended Power Uprate conditions and in the expanded operating domain ensures that this evaluation bounds anticipated BFN Unit 1 license amendments. Further, BFN has been shut down since 1985 and is expected to accumulate less than 14 EFPY by the end of its current license. This combination of inputs results in an extremely conservative evaluation relative to the development of the end of license Mean Nil Ductility Transition Temperature (RT_{NDT}). Even given these conservative assumptions, the BFN Unit 1 beltline girth weld fluence is less than that listed in Table 2.6-4 of the BWRVIP-05 SER for B&W reactor vessels.

Based on the BFN Unit 1 Weld C-1-2 chemistries, the chemistry factor is less than that assumed in the NRC assessment for the B&W circumferential weld. The result of these assumptions and properties is that the calculated BFN Unit 1 end of license Mean RT_{NDT} is less than that used in the NRC assessment; therefore, the conditional failure probability of the BFN Unit 1 reactor vessel circumferential welds are bounded by the results obtained in the NRC assessment. A comparison of the data used in the BFN Unit 1 calculation and the NRC Staff assessment is provided in Table 2 below.

Operator Training and Procedures

The NRC staff stated in GL 98-05 that beyond design-basis events occurring during plant shutdown could lead to cold over-pressure events that could challenge vessel integrity. Although unlikely, the industry concluded that condensate and control rod drive pumps could cause conditions that could lead to cold over-pressure events that could challenge vessel integrity. For a BWR to experience such an event, the plant would require several operator errors.

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The NRC staff's assessment described several types of events that could be precursors to BWR RPV cold over-pressure transients. These were identified as precursors because no cold over-pressure event has occurred at a U.S. BWR.

The staff assessment identified one actual cold over-pressure event that occurred during shutdown at a non-U.S. BWR. This event apparently included several operator errors that resulted in a maximum RPV pressure of 1150 psi with a temperature range of 79°F to 88°F. The operating procedures for BFN Unit 1 are sufficient to prevent a cold over-pressure event from occurring during activities such as the system leak test performed at the conclusion of each refueling outage. Thus, the challenge to the BFN Unit 1 RPV from a non-design basis cold over-pressure transient is unlikely. The following discussion will provide further information to support TVA's conclusion.

BFN Operation procedures and administrative control processes are in place to minimize the potential for occurrence of RPV cold over-pressurization events.

These processes include plant operating procedures, plant evolution planning and scheduling, administrative controls, and operator training.

TABLE 2

PARAMETER	BFN UNIT 1 Weld C-1-2	LIMITING B&W RPV
Fluence (10^{19} n/cm^2)	0.0799	0.095
Initial RT_{NDT}	20°F	20°F
Chemistry Factor	184	196.7
Cu (Wt %)	0.27%	0.31%
Ni (Wt %)	0.60%	0.59%
ΔRT_{NDT}	69°F	79.8°F
Mean RT_{NDT} [Initial RT_{NDT} + ΔRT_{NDT}]	89.9°F	99.8°F

Since cold over-pressurization events are most likely to occur during normal cold shutdown conditions, BFN operating procedures are written to require that RPV water level, pressure, and temperature are established and maintained in well controlled bands. Plant Unit Operators frequently monitor these parameters for abnormalities and indications of unwanted transients. Also, any plant evolution which requires changes in these critical parameters is performed under the oversight of the Shift Manager who is also notified immediately of any abnormalities in the indications. Therefore, any deviation of these parameters from the established bands are promptly identified and corrected.

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In addition to these procedures, unit conditions for on-going activities which potentially can affect the maintenance of acceptable operating conditions and available contingency systems and plans are discussed by unit operations personnel at the time of shift turnover. These administrative controls and procedures provide assurance that activities which could adversely affect RPV water level, temperature, and pressure are precluded.

Nuclear Experience reviews and industry operating histories have shown that inadequate work-control processes and procedures could precipitate a cold over-pressurization event. For BFN, outage work is controlled through planning and scheduling activities performed by the Outage Management and Work Control Team. Unit and system work activities are carefully reviewed and coordinated to avoid conditions which could adversely affect the unit's RPV water level, temperature, and pressure. Plant activities are routinely coordinated through the use of a plan-of-the-day (POD) which contains a list of activities to be performed and frequently contains cautionary notes on the activities.

These PODs are reviewed and discussed with station management and copies are maintained in appropriate locations.

Changes to work schedules are approved through the Operations Department Management and the Shift Manager. In addition, during outages, work on unit systems and components is coordinated through work control centers which provide an additional level of unit operations oversight.

In the main control room, the Shift Manager is required to maintain cognizance of any activity which could potentially affect reactivity, reactor water level, or decay heat removal. Unit Operators are required to provide positive control of reactor water level, temperature, and pressure within the specified bands, promptly report when operation outside the required bands occurs, and notify the Shift Manager of any restoration corrective measures being taken. As part of the outage work control process, special procedures such as hydrostatic testing require pre-job briefings conducted with operations personnel for any activity which could potentially affect critical plant parameters. The pre-job briefing includes all cognizant individuals who are involved in the work activities. Expected plant system and component responses and contingency actions to mitigate unexpected conditions are also discussed.

When the plant is in cold shutdown, plant procedures require that the RPV head vent valves be opened after the reactor has been cooled to less than 212°F. Administrative and plant operations control procedures for this evolution and for controlling reactor water level, temperature, and pressure are an integral part of operator initial and re-qualification training. Responses to abnormal water level and RPV conditions are also part of the operator's training. In addition, unit-specific brittle-fracture operating pressure-temperature limit curves and procedures have been developed to provide the appropriate guidance for compliance with the operating limits and the associated Technical Specification requirements.

Review of High Pressure Injection Sources

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RPV water injection sources during cold shutdown conditions include three systems. During normal cold shutdown, RPV water level and pressure are controlled through the Control Rod Drive (CRD) and the Reactor Water Cleanup (RWCU) Systems. RPV conditions are controlled through a "feed and bleed" process using these two systems. The RPV and its piping system are not placed in solid water conditions and after the plant is cooled below 212°F, the head vent valves are opened. If either one of the RWCU or CRD Systems fail, the Unit Operator would adjust the other system to maintain the proper water level and pressure. In addition, BFN also has water level instrumentation with set-points for high and low water levels that alarm to alert operators that a level transient is in progress and action is required. During these plant activities the CRD System typically injects water at a rate of less than 60 gallons per minute (gpm). Injection rates at this level allow the operator sufficient time to compensate for unanticipated level and pressure changes.

Therefore, the probability of an occurrence of a high-pressure/low temperature event from these two systems, which places RPV conditions outside the pressure-temperature curve limits is low.

In addition to the RWCU and CRD Systems, the Standby Liquid Control (SLC) System is another high-pressure source to the RPV. For BFN, SLC System operation occurs only if the system is manually initiated by operator action in accordance with emergency operating procedures. Thus, SLC operation will not occur during cold shutdown operations except under stringently controlled test conditions. In the event of an inadvertent injection, the SLC injection rate (approximately 50 gpm) is sufficiently low to allow operators to intervene and control the reactor pressure.

During cold shutdown periods following refueling, the RPV is pressure tested in accordance with the applicable ASME Section XI Code requirements. BFN hydrostatic tests of the RPV and the reactor coolant system are designated as complex and infrequently performed tests. For these types of tests BFN requires a detailed pre-job briefing with all individuals participating in the test. RPV and reactor coolant system pressure testing is a carefully controlled plant evolution which receives special Operations management oversight and utilizes procedural controls to ensure that the test does not precipitate a transient outside the specified safety limits. These tests are also performed after the RPV and system are heated to the proper system inservice pressure test temperatures prior to increasing the system pressure. During these tests the RPV pressure, water level, and temperature are controlled through the CRD and RWCU Systems using the "feed and bleed" process. Increases (or decreases) in system pressure are limited to 50 pounds per square inch (psi) per minute. For example, if any RWCU valve fails, then the CRD pump is tripped and the RPV is depressurized. This practice minimizes the probability of exceeding the specified Technical Specification pressure-temperature limits during the system pressure test.

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During plant startup following a cold shutdown, the High Pressure Coolant Injection (HPCI) and the Reactor Core Isolation Cooling (RCIC) pumps provide a possible means to over-pressurize the RPV. However, for BFN, these systems have high pressure steam-driven pumps which have automatic isolation instrumentation allowable values of 100 psig and 50 psig respectively; and will not function when the plant is in cold shutdown.

Based upon the above evaluation the likelihood of a cold over-pressure transient event placing the Unit 1 RPV in non-design conditions is very low. Therefore, the probability of an occurrence of a cold over-pressure transient is considered to be less than or equal to the probability used in the analysis described in the NRC independent evaluation performed in the assessment of the BWRVIP-05 Report.

Alternative Examination: As an alternative, TVA proposes to perform only the Unit 1 RPV longitudinal shell weld examinations for the remaining term of the existing license.

Justification For The Granting Of Relief: Based upon the previous stated technical justifications, performance of the examination of the Unit 1 RPV circumferential shell welds in accordance with the ASME Code requirements, is not warranted. This position is supported by actual industry inspection experience, industry initiatives, and their supporting calculations. Further, the additional costs and personnel exposure that would be incurred without any apparent increase in safety does not warrant the performance of the examinations. These factors provide reasonable assurance of the continued structural integrity of the BFN Unit 1 RPV. Therefore, pursuant to 10 CFR 50.55a (a)(3)(i), TVA requests that permanent relief, to the end of the current operating license (December 20, 2013) be granted from the inservice inspection and the augmented inspection requirements of 10 CFR 50.55a(g)(6)(ii)(A), for volumetric examination of reactor pressure vessel circumferential shell welds, ASME Section XI, Table IWB-2500-1, Examination Category B-A, Item B1.11, Circumferential Shell Welds as permitted by GL 98-05.

Further, in accordance with the guidance specified in the NRC SER, Section 4.0 for the BWRVIP-05 Report, TVA intends to examine the RPV circumferential shell welds should axial weld examinations reveal an active mechanistic mode of degradation. The scope and schedule of these examinations would be submitted to NRC for approval.

This request for relief is consistent with those submitted to NRC for BFN Unit 3 by TVA letters dated June 25, 1999, and October 22, 1999, and for BFN Unit 2 by letter dated March 24, 2000. NRC letters to TVA dated November 18, 1999, and August 14, 2000 approved these relief requests for BFN Unit 3 and BFN Unit 2, respectively.

Implementation Schedule: This Request for Relief will be implemented during the First Ten-Year ISI Inspection Interval for Browns Ferry Unit 1 and continue in effect for the remaining term of operation under the existing license.

Attachment: Brown Ferry Unit 1 RPV shell weld location schematic drawing.

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Supplemental Submittals and NRC SER:

RIMS# R08040813730 Response to NRC RAI for 1-ISI-19

RIMS# R08041108787 Revision to RFR 1-ISI-19

RIMS# R08050304863 Supplemental Information for 1-ISI-19

Letter from NRC dated May 31, 2005 - Safety Evaluation for 1-ISI-19

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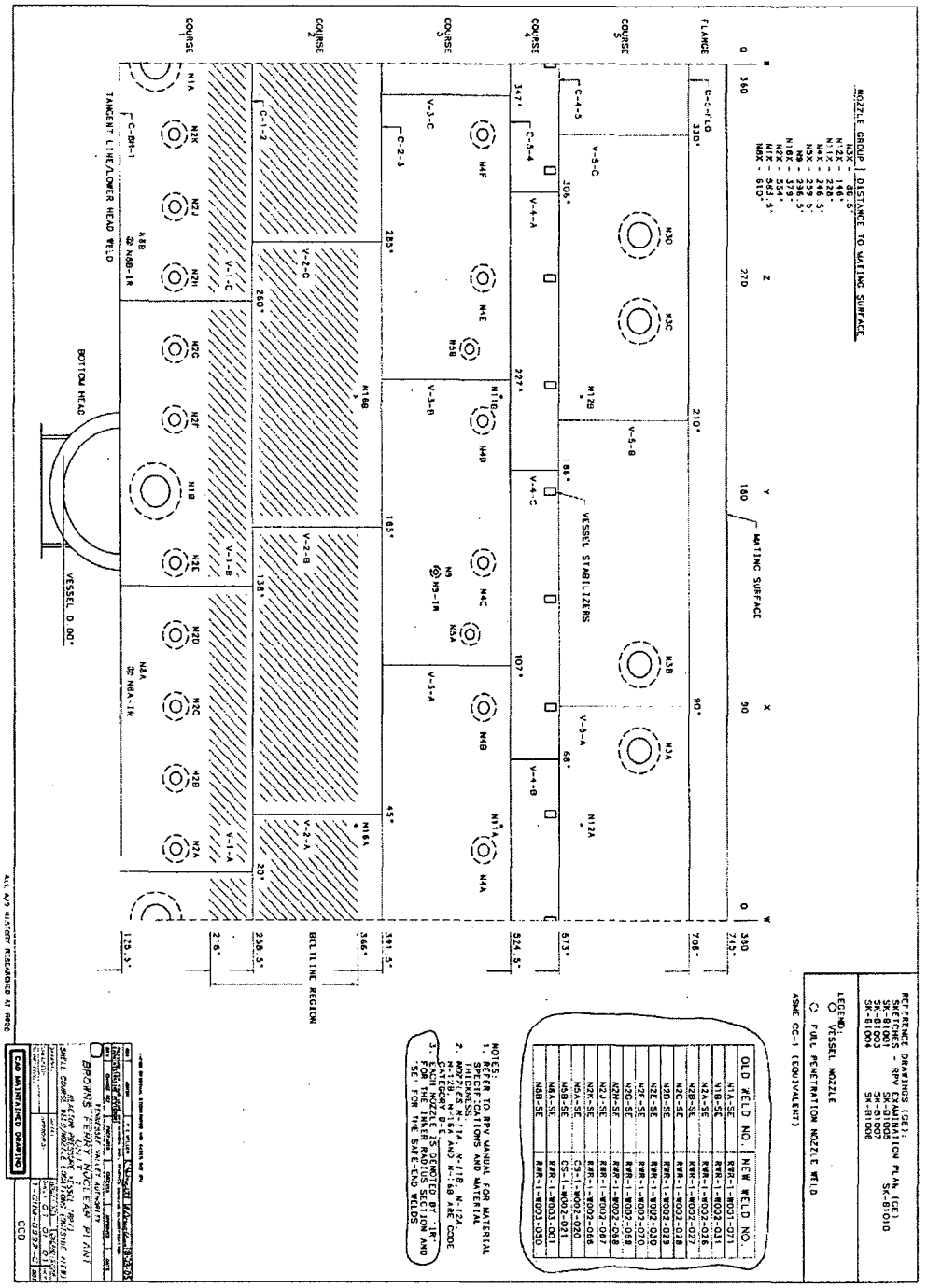

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 1
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
SECTION XI, SYSTEM PRESSURE TEST (SPT) PROGRAM

SUBMITTAL OF SECOND TEN-YEAR INSPECTION INTERVAL PROGRAM

(SEE ATTACHED)

BFN UNIT 1

SYSTEM PRESSURE TEST PROGRAM

2001 EDITION, 2003 ADDENDA OF ASME SECTION XI CODE

SYSTEM PRESSURE TEST PROGRAM FOR THE SECOND 10-YEAR INTERVAL

BROWNS FERRY NUCLEAR PLANT UNIT 1

INSERVICE PRESSURE TEST PROGRAM

Owner	:	Tennessee Valley Authority
Address of Corporate Office	:	Knoxville Office Complex 400 Commerce Avenue Knoxville, Tennessee 37902
Name and Address of Nuclear Power Plant	:	Browns Ferry Nuclear Plant Post Office Box 2000 Decatur, Alabama 35609-2000
Applicable Nuclear Units	:	Browns Ferry Nuclear Plant Unit 1
Commercial Operation Date	:	August 1, 1974

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1.0 STATEMENT OF APPLICABILITY

This program outlines the requirements for performing American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI system pressure tests during the second inspection interval for Browns Ferry Nuclear Plant (BFN) Unit 1 systems which are classified ASME Code Class 1, 2 or 3 or equivalent, and contain water, steam or radioactive waste (other than radioactive waste management system).

Pressure tests will be performed in accordance with the ASME Section XI editions, addenda, and cases, NRC approved requests for relief and additional provisions specified below or provisions approved by the NRC at a later date. Details concerning performance of system pressure tests are not part of this program description, but are contained in plant surveillance instructions. Performance of pressure tests required because of Repair/Replacement activities will be prescribed and controlled by the work documents performing the Repair/Replacement work.

The requirements of this program are applicable during the second 10-year inspection interval which begins on June 2, 2008.

2.0 PURPOSE

This program is designed to meet the requirements of Section XI of the ASME Boiler and Pressure Vessel Code which pertain to the inservice pressure testing of pressure retaining code class 1, 2 and 3 components, and pressure testing required following Repair/Replacement activities, at BFN Unit 1 during the second inspection interval. Compliance with Section XI of the ASME Boiler and Pressure Vessel Code is required by Part 50 of Title 10 of the Code of Federal Regulations.

3.0 INSPECTION INTERVAL AND INSPECTION PERIODS

The second 10-year inspection interval for BFN Unit 1 begins on June 2, 2008. Due to the extension of the first 10-year inspection interval by one year, as allowed by subarticle IWA-2400 of Section XI of the ASME Code, the second 10-year inspection interval will be nine calendar years in length. The second 10-year inspection interval will be divided into three inspection periods of three years each and will end in June 2017. The dates of the three inspection periods are:

First inspection period	-	June 2, 2008 to June 1, 2011
Second inspection period	-	June 2, 2011 to June 1, 2014
Third inspection period	-	June 2, 2014 to June 1, 2017

4.0 CODES OF RECORD

4.1 PRIMARY CODE EDITION

This inservice system pressure test program is prepared to meet the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 2001 Edition, 2003 Addenda.

4.2 ADOPTED PORTIONS OF LATER EDITIONS AND ADDENDA

None.

4.3 ADOPTED ASME SECTION XI CODE CASES (as approved by NRC Regulatory Guide 1.147)

Code Case N-566-2 - Corrective Actions for Leakage Identified at bolted Connections – for systems containing boron for the purpose of controlling reactivity.

Code Case N-686 - Alternative Requirements for Visual Examinations, VT-1, VT-2 and VT-3

5.0 REQUEST FOR RELIEF

None.

6.0 TENTATIVE SYSTEM PRESSURE TEST SCHEDULE

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN), UNIT 1

SYSTEM DESCRIPTION	CODE CLASS	UNIT 1 FUEL CYCLE					
		7	8	9	10	11	12
Reactor Recirculation (Primary System)	1	L[1]	L[1]	L[1]	L[1]	L[1, 4]	[5]
Small Bore Primary System Piping	2		L	L[2]		L	
Main Steam System	2		L	L[2]		L	
Fuel Pool Cooling	3		L	L[2]		L	
Standby Liquid Control	2		L	L[2]		L	
Core Spray	2		L	L[2]		L	
Residual Heat Removal – Shutdown Cooling	2		L	L[2]		L	
Residual Heat Removal – Injection Loops	2		L		L[3]	L	
High Pressure Coolant Injection	2		L		L[3]	L	
Reactor Core Isolation Cooling	2		L		L[3]	L	
RHR Service Water	3	L		L[2]		L	
Emergency Equipment Cooling Water	3		L		L[3]	L	

LEGEND: L - System leakage test {IWA-5211(a)}

Notes:
[1] – At the end of the cycle refueling outage, prior to startup
[2] - After 6/2/2011
[3] - Before 6/1/2014
[4] - All Class 1 pressure retaining components {IWB-5222(b)}
[5] – U1C12 refueling outage will fall within the following 10 year interval

Note: Code references in this section are from the 2001 Edition/2003 Addenda.