TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

2-SI-4.6.G

INSERVICE INSPECTION PROGRAM UNIT 2

REVISION 7

PREPARED BY: S. T. HOBSON PHONE: 2795

RESPONSIBLE ORGANIZATION: NUCLEAR ENGINEERING

APPROVED BY: EUGENE PRESTON DATE: 04/26/96

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QUALITY-RELATED

REVISION LOG

Procedure Number: 2-SI-4.6.G Revision Number: 7

Pages Affected:

15,19,22,27,28,46,47,49,53,57,64,65,70,71,73,75,80,81,83,84,85, 100, &105.

Description of Change:

- IC-08- ENHANCEMENT - This revision incorporates organizational changes, various editoral corrections, changes to quantities in section 8.1 to reflect the current examination schedule, and revise the coverage percentage in relief request ISI-2-4.

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OWNER'S STATEMENT

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 2
Commercial Operation Date:	March 1, 1975

Construction Permit was issued prior to January 1, 1971.

1.0 INTRODUCTION

1.1 Purpose

This Inservice Inspection (ISI) Program is an administrative Surveillance Instruction (SI) employed to obtain data through nondestructive examinations (NDE) of ASME Section XI Code Class 1, 2, and 3 equivalent components that can be used to determine if a flaw is an isolated case or is of a generic nature. It shall serve as TVA's ISI plan and schedule in accordance with the requirements of IWA-1400. The examinations required by this program shall establish acceptance for continued use of components during operation.

This program is organized to comply with the ISI NDE requirements of the 1986 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Division 1, Articles 1000, 2000, 3000, and 6000 in accordance with Title 10 Code of Federal Regulations (CFR) Part 50, 50.55a(g); to implement the Browns Ferry Nuclear Plant (BFN) Technical Specifications, Unit 2, Surveillance Requirement 4.6.G.; and to fulfill the requirements of SSP-6.10, ASME Section XI Inservice Inspection Program.

This ISI Program reflects the built-in limitations of the original plant design, geometry, construction, component materials, and state-of-the-art nondestructive examination techniques. It specifies the number of components to be examined, the examination methods to be used and provides schedule tables from which specific items are scheduled for examination by Mechanical/Nuclear (M/N) Engineering. These items are documented in scan plans for each refueling outage.

1.2 Scope (Applicability)

This program outlines details for planning and performing the second inspection interval NDE for the ASME Section XI Code Class 1, 2, and 3 equivalent components at BFN in accordance with IWA-2432, Inspection Program B.

The ASME Section XI Code Class Boundary Drawings and the ISI Drawings listed in Section 2.5 identify the components and systems to be examined. These drawings are prepared and maintained by M/N Engineering and are issued and controlled through BFN Records Management (RM).

1.0 INTRODUCTION (Continued)

Personnel responsible for performance of the 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.

Elements of ASME Section XI, Articles 4000, 5000, 6000, and 7000 other than NDE, such as Pump and Valve Inservice Testing, Snubber Inservice Testing, Repairs and Replacements, and System Pressure Tests, are covered by other procedures. See Sections 7.8, 7.9, 7.10, and 7.11.

1.3 Frequency

1.3.1 Inspection Interval and Inspection Periods

The ISI examinations required by ASME Section XI, Division 1, IWA-2432, Inspection Program B shall be performed during this inspection interval (May 24, 1992 to May 24, 2001). The inspection interval duration is nine years since the first interval was extended by one year per IWA-2400(a), 1974 Edition/Summer 1975 Addenda (See IWA-2430(d), 1986 Edition for equivalent rule). The inspection interval shall be separated into three inspection periods of three years each. Except for examinations that may be deferred to the end of the inspection interval, the required examinations shall be performed in accordance with the following schedule that complies with IWB-2412, Program B and Table IWB-2412-1; IWC-2412, Program B and Table IWC-2412-1; IWD-2412, Program B and Table IWD-2412-1; and (N-491)-2410(b) and (c) and Table -2410-2, Program B.

Inspection Period	Minimum Examinations Completed, %	Maximum Examinations Completed, %
First (5/92-5/95)	16	34
Second (5/95-5/98)	50	67
Third (5/98-5/01)	100	100

The examinations deferred to the end of the inspection interval shall be completed before the end of the inspection interval. The inspection interval may be extended in accordance with IWA-2430(e) if unit 2 is out of service continuously for six months or more.

2.0 REFERENCES

2.1 Technical Specifications

BFN Unit 2 Technical Specifications, Surveillance Requirement 3/4.6.G, Structural Integrity.

2.2 Final Safety Analysis Report

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

2.3 NRC Documents

10 CFR Part 50, 50.55a(g).

10 CFR Part 50.2.

Regulatory Guide 1.26.

Regulatory Guide 1.147.

IE Bulletin 80-13, Core Spray Spargers.

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

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

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

2.4 Plant Procedures and Instructions

SSP-3.1, Quality Assurance Program.

SSP-3.4, Corrective Action.

SSP-4.5, Regulatory Reporting Requirements.

SSP-6.9, ASME Section XI Repairs and Replacements.

SSP-6.10, ASME Section XI Inservice Inspection.

SSP-8.5, ASME Section XI System Pressure Test Program.

SSP-8.6, ASME Section XI Pump and Valve Inservice Testing.

2.0 REFERENCES (Continued)

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

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

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

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

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

MMI-46, Liquid Penetrant Examination of Piping and Piping Components Which Were Exposed to Residue from Plant Fire Unit 1 and 2.

MMI-53, Evaluation of Corrosion Damage of Piping Components Which Were Exposed to Residue from March 22, 1975 Fire (canceled).

MSI-0-001-INS001, Reactor Vessel Internals Visual and Ultrasonic Inspection.

IEP-200, Qualification and Certification Requirements for NQA NDE Personnel.

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

2.5 ISI Drawings

2.5.1 Unit 2 Section XI Code Class Boundary Drawings

2-47E2600-57A-ISI, RCS Instrumentation.

2-47E600-58-ISI, Mech. Instr. and Controls.

2-47E610-43-1-ISI, Mech. Control Diag. Sampling and Water Quality.

2-47E2600-301-ISI, CRD Hyd. Sys.

2-47E2600-302-ISI, CRD Hyd. Sys.

2-47E600-599-ISI, Mech. I&C.

2.0 REFERENCES (Continued)

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

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

2-164C5981-4-ISI, Rack 25-7.

2-164C5981-5-ISI, Rack 25-7.

2-164C5984-4-ISI, Rack 25-56A.

2-164C5984-5-ISI, Rack 25-56B.

2-164C5985-4-ISI, Rack 25-57.

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

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

2-47E803-1-ISI, Feedwater.

2-47E803-5-ISI, Feedwater.

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

2-47E810-1-ISI, Reactor Water Cleanup.

2-47E811-1-ISI, Residual Heat Removal.

2-47E812-1-ISI, High Pressure Coolant Injection.

2-47E813-1-ISI, Reactor Core Isolation Cooling.

2-47E814-1-ISI, Core Spray.

2-47E815-4-ISI, Aux. Boiler Sys.

2-47E817-1-ISI, Nuclear Boiler.

2-47E820-2-ISI, Control Rod Drive Hydraulic.

2-47E2820-6-ISI, Control Rod Drive Hydraulic.

0-47E839-5-ISI, Hypochlorite System.

2-47E822-1-ISI, Reactor Bldg Closed Cooling Water.

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

2-47E852-1-ISI, Floor and Dirty Radwaste Drainage.

2.0 REFERENCES (Continued)

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

2-47E854-1-ISI, Standby Liquid Control.

2-47E855-1-ISI, Fuel Pool Cooling.

2-47E856-2-ISI, Demineralized Water.

2-47E858-1-ISI, RHR Service Water.

2-47E859-1-ISI, Emergency Equipment Cooling Water.

2-47E867-3-ISI, Sampling and Water Quality.

2.5.2 Unit 0 ISI Component Support Drawing

ISI-0368-C, EECW and RHRSW Pumping Station Class 3.

ISI-0390-C, EECW Unit 3 Class 3.

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

2.5.3 Unit 2 ISI Bolting, Nozzles, and Welds Drawings

CHM-2046-C, Reactor Vessel Nozzle and Weld Locations Class 1.

ISI-0444-C, Reactor Vessel Bottom Head Assy. Class 1.

ISI-0316-A, Reactor Vessel Clad Patches.

ISI-0343-A, Core Differential Pressure and Liquid Control Nozzle Weld Locations.

ISI-0351-A, Instrumentation Nozzles Class 1.

ISI-0312-B, Main Steam Bolting Class 1.

ISI-0347-B, Recirculation Inlet Nozzles Class 1.

ISI-0031-C, Reactor Building Closed Cooling Water System Class 2 Welds.

ISI-0040-C, CRD Hydraulic Header Class 2 Welds.

ISI-0103-C, Core Spray System Class 2 Welds.

ISI-0128-C, HPCI System Class 2 Welds.

2.0 REFERENCES (Continued)

ISI-0129-C, RCIC System Class 2 Welds.

ISI-0221-C, RHR System Class 1 Welds.

ISI-0222-C, Main Steam System Class 1 Welds.

ISI-0266-C, Vessel Stud Locations Class 1.

ISI-0269-C, Feedwater System Class 1 Welds.

ISI-0270-C, Recirculation System Class 1 Welds.

ISI-0271-C, Core Spray System Class 1 Welds.

ISI-0272-C, RWCU, RCIC, and CRD Systems Class 1 Welds.

ISI-0273-C, HPCI System Class 1 Welds.

ISI-0292-C, Control Rod Drive Penetrations, Drain Nozzle, and Flux Monitor Nozzles Class 1.

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

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

CHM-1094-A, RPV Nozzle to Vessel Wells, BFN.

CHM-1095-A, RPV Vessel and Head Wells, BFN.

ISI-0380-C, Standby Liquid Control System Class 1 Welds.

ISI-0383-C, Feedwater Instrumentation Class 1 Welds.

ISI-0406-C, RHR Heat Exchanger Welds and Supports Class 2.

ISI-0407-C, Recirculation Pump Bolting Class 1.

ISI-0408-C, Closure Head Assembly Class 1.

ISI-0410-C, Jet Pump Instrument Nozzle Class 1.

MSG-0018-C, RHR System Class 2 Welds.

MSG-0021-C, Main Steam Class 2 Welds.

2.0 REFERENCES (Continued)

2.5.4 Unit 2 ISI Component Support Drawings

ISI-0310-B, RHR Pump Class 2.

ISI-0032-C, Reactor Building Closed Cooling Water System Class 2.

ISI-0041-C, CRD Header Class 2.

ISI-0079-C, Main Steam System Class 2.

ISI-0105-C, Core Spray System Class 2.

ISI-0130-C, HPCI System Class 2.

ISI-0131-C, RCIC System Class 2.

ISI-0133-C, FPC System Class 3.

ISI-0145-C, RHR Service Water System Class 3.

ISI-0274-C, RWCU, RCIC, and CRD Systems Class 1.

ISI-0275-C, HPCI System Class 1.

ISI-0276-C, RHR System Class 1.

ISI-0277-C, Feedwater System Class 1.

ISI-0278-C, Recirculation System Class 1.

ISI-0279-C, Main Steam System Class 1.

ISI-0280-C, Core Spray System Class 1.

ISI-0324-C, RHR System Class 2.

ISI-0379-C, Standby Liquid Control System Class 1.

ISI-0387-C, Feedwater Instrumentation Class 1.

ISI-0412-C, Main Steam Relief Valve Blowdown Class 3.

ISI-0415-C, Reactor Vessel Class 1.

2.6 Interface Documents

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

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

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

2.6.4 BFN-VTM-P160-0010, Vendor Technical Manual For Prefex Corp. Heat Exchangers Types NEN, CEU, CES, and CEN, Contract 66C60-90744.

2.7 Reference Documents

ASME Boiler and Pressure Vessel Code, Section XI, Division 1, 1986 Edition.

ASME Section XI Code Cases as listed in Section 4.1.

2.8 General Electric Service Instruction Letters

2.8.1 GE SIL No. 289, Core Spray Piping Visual Examination.

2.8.2 GE SIL No. 409, Incore Dry Tube Cracks.

2.8.3 GE SIL No. 420, Inspections of Jet Pump Sensing Lines.

2.8.4 GE SIL No. 433, Shroud Head Bolt Cracks.

2.8.5 GE SIL No. 462, Shroud Support Access Hole Cover Cracks.

2.8.6 GE SIL No. 572, Core Support Shroud Examination.

2.8.7 GE SIL No. 330, Jet Pump Beams Inspections.

2.8.8 GE SIL No. 465, Jet Pump Throat Inspections.

2.8.9 GE SIL No. 551, Jet Pump Riser Brace Inspections.

2.8.10 GE SIL No. 574, Jet Pump Adjusting Screws Inspections.

2.8.11 GE SIL No. 544, Visual Examination of RPV Top Guide.

2.8.12 GE SIL No. 571, Instrument Nozzle SAFE ENDS Examination.

2.8.13 GE SIL No. 588, Top Guide and Core Plate and Bolting Examinination

2.9 Miscellaneous Documents

2.9.1 Incident Investigation No. 11-B-93-026 Unit #2 Steam Dryer Bracket Inspection.

2.9.2 DNE Caclulcation, Exclusion Criteria for ISI Scope. RIMS R14950829109.

3.0 PRECAUTIONS AND LIMITATIONS

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.

4.0 CODES OF RECORD AND CODE CASES

4.1 Current Code Requirements and Code Cases

This program is in effect for unit 2 for the second inspection interval beginning on May 24, 1992. The Units 1 and 3 program is contained in 1/3-SI-4.6.G.

The Code of Record for the second inspection interval of unit 2 is the 1986 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, Division 1 in accordance with 10 CFR 50, 50.55a(g)(4). Additionally, in accordance with 10 CFR 50, 50.55a(b)(2)(ii), the extent of examination for Examination Category B-J welds shall be in accordance with the 1974 Edition, Summer 1975 Addenda of ASME Section XI. Extent of examination is defined as the criteria for the selection of the Class 1 B-J welds to be examined. See Section 7.3.2.B. Beginning on December 15, 1995, NDE methods, qualification of personnel, weld reference system, and standards for examination evaluation shall be in accordance with the 1989 Edition of ASME Section XI as allowed by 10CFR50.55a(g)(4)(iv).

Certification of NDE personnel shall be in accordance with the 1984 Edition of ASNT SNT-TC-1A as approved by the Nuclear Regulatory Commission's (NRC's) letter from S.C. Black to O. D. Kingsley, Jr., dated January 18, 1990 (TAC No. 72833).

TVA shall use the following Code Cases that have been approved by the NRC per Regulatory Guide 1.147 or by special written permission from the NRC:

A. Code Case N-307-1, Revised Ultrasonic Examination Volume for Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1, When the Examinations Are Conducted From the Center-Drilled Hole, Section XI, Division 1.

B. Code Case N-435-1, Alternative Examination Requirements for Vessels With Wall Thickness 2 in. or Less, Section XI, Division 1.

4.0 CODES OF RECORD AND CODE CASES (Continued)

C. Code Case N-445, Use of Later Editions of SNT-TC-1A for Qualification of Nondestructive Examination Personnel, Section XI, Division 1.

D. Code Case N-457, Qualification Specimen Notch Location for Ultrasonic Examination of Bolts and Studs, Section XI, Division 1.

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

F. Code Case N-461, Alternative Rules for Piping Calibration Block Thickness, Section XI, Division 1.

G. Code Case N-491, Alternative Rules for Examination of Class 1, 2, 3, and MC Component Supports of Light-Water Cooled Power Plants, Section XI, Division 1. Use approved by the Nuclear Regulatory Commission's (NRC's) letter from Fredrick J. Hebdon to Dr. Mark O. Medford, dated May 18, 1992 (TAC Nos. M81952, M81953, and M81954).

H. Code Case N-524, Alternate Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping - Section XI, Division 1. Use approved by the NRC's letter from Frederick J. Hebdon to Oliver D. Kingsly, dated September 28, 1994.

4.2 History of Codes of Record and Code Cases

For unit 2 a preservice inspection (PSI) program was not required. TVA performed a self-imposed PSI program for Class 1 components to the 1971 Edition, Summer 1971 Addenda of ASME Section XI.

For unit 2 the history of the ASME Section XI code of record and Code Cases used are as follows:

A. The first period of the first interval, in effect from March 1, 1975 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.

4.0 CODES OF RECORD AND CODE CASES (Continued)

B. The second period (July 1, 1981 through July 7, 1988) and the third period (February 26, 1986 through May 23, 1992) were to the 1974 Edition with Addenda through Summer 1975 of ASME Section XI. 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 (to the extent specified in Request for Relief ISI-15) and evaluation per IWA-3000, IWB-3000, and IWC-3000 of the 1977 Edition, Summer 1978 Addenda.

The overlap of the second and third periods occurred because of the extended outage from September 15, 1984 to May 24, 1991 and TVA's decision to complete the second and third period examinations during this time to close out the first interval. This decision was made since the first interval had been extended twice and it was prudent to end it and commence with a second inspection interval to a current Edition of ASME Section XI.

C. 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-2500-1.

D. Code Cases N-234, 235, 307-1, 308, 341, 356, 416, 435-1, 460, and 461 that were approved by Regulatory Guide 1.147 were used at BFN during the first interval.

5.0 SPECIAL TOOLS AND EQUIPMENT

Equipment shall be specified and controlled by individual NDE Procedures.

6.0 ACCEPTANCE STANDARDS

The acceptance criteria shall be in accordance with the individual NDE Procedures of IEP-100 that shall comply with the requirements of ASME Section XI, Articles IWA-3000, IWB-3000, IWC-3000, IWD-3000, and (N-491)-3000.

Evaluations of examinations in accordance with IWB-3132.4, IWB-3142.4, IWC-3122.4, IWC-3132.3, (N-491)-3112.3, or (N-491)-3122.1 shall be

submitted to the regulatory authority having jurisdiction at the plant site. This information shall be submitted with the Inservice Inspection Summary Report or, if deemed necessary, a separate report shall be submitted.

7.0 INSTRUCTION STEPS/ELEMENTS

Any revisions initiated by other groups shall be submitted to M/N Engineering for approval prior to incorporating the revisions into this program.

7.1 Responsibilities

7.1.1 Corporate Engineering, Materials & Inspection (M & I) responsibilities:

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

B. Providing assessments and oversite of this program and ISI activities on site.

C. Review and comment all PSI/ISI Program Requests for relief prior to issuance.

7.1.2 M/N Engineering responsibilities:

A. Defining ASME Section XI Code Class 1, 2, and 3 equivalent boundaries in accordance with 10 CFR 50.2, 10 CFR 50.55a, ASME Section XI, and Regulatory Guide 1.26, R3.

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 7.1.2.A. 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 inservice and/or preservice nondestructive examination (NDE) to comply with ASME Section XI requirements. See Section 2.5 for drawing list.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

D. Preparing/revising this instruction (ISI Program) and submitting it to:

(1) RM for approval and issue as a controlled document.

(2) RM for subsequent submittal to the ANII for a detailed review per IWA-2110(a)(1) and (a)(2). See Sections 7.1.5.A and 7.1.8.A.

(3) Site Licensing for subsequent submittal to the NRC. See Section 7.1.4.A.

E. Ensuring that this program provides detailed instructions for ISI including the following information as a minimum:

(1) The ASME Section XI Code of Record for ISI.

(2) The inspection interval.

(3) A list of the ASME Section XI Code Class Boundary drawings.

(4) A list of the ASME Section XI ISI drawings.

(5) An examination schedule providing the total number of each Code Item Number, the number of samples for the inspection interval, and the number of samples for each period of the interval.

(6) The NDE method to be used for each Item Number.

(7) The ASME Examination Category and Item Number for each component.

(8) Copies of all Relief Requests.

(9) Name and address of the Owner.

(10) Name and address of generating plant.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

(11) Name or number designation of the unit.

(12) Commercial operation date of the unit.

(13) A description of the system for maintaining status of completed examinations.

(14) A discussion of scan plans that provide details of required component examinations, such as component identifier, NDE procedure, calibration standard reference, ISI drawing number, sheet number, etc.

(15) Augmented examination requirements closely related to ASME Section XI based on other codes/standards, regulatory guides, NRC commitments, etc.

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, examination method, ISI drawing number and sheet number, and examination requirement source. See Section 7.2.1.B.

G. Approving the scan plan and revisions and submitting copies of the approved scan plan to site management and the ANII. See Section 7.2.1.B.

H. Providing any additional samples required due to examinations performed. See Section 7.2.2.

I. Notifying Site Engineering of an indication found during the final additional sample examination for their evaluation. See Sections 7.1.3.C and 7.2.2.B.(4).

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

J. Preparing a Request for Relief (RFR) when required because of areas that are inaccessible or partially inaccessible for examination or because it is determined that conformance with Code requirements is impractical. See Sections 7.1.5.D and 7.2.3.E for ISO responsibilities of notifying M/N Engineering if limited exams indicate the need to initiate an RFR. See Section 7.6.

K. Submitting Requests for Relief to the Site Licensing organization. See Section 7.6.

L. Performing NDE per the requirements of this instruction. See Section 7.2.3.

M. Ensuring that ISI/PSI examinations are performed in accordance with TVA NDE procedures or in accordance with contractor procedures that have been reviewed by ISO. See Section 7.2.3.

N. Administering AIA contract and ensuring that services of AIA are used when performing Code required activities. TVA's interface with the Authorized Inspector for ISI, repairs, and replacements is defined in SSP-6.9 and SSP-6.10.

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

P. Notifying ANII prior to performing examinations.

Q. Preparing IR's, documenting followup examinations, and assuring closure, proper filing, and providing/coordinating dispositions for IR's in accordance with SSP-3.1. See Section 7.2.2.A.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

R. Preparing examination reports and recording them (report number, date, examiner's initials and comments/IR number) in the scan plan. When inservice examinations are implemented by instructions other than this program (i.e., MMI's), copies of the examination data sheets shall be submitted to M/N Engineering by the performing organization. These data sheets shall be used as examination reports and incorporated into the scan plan. See Section 7.2.1.B.(3).

S. Ensuring that all scan plan examinations are complete prior to completion of an outage and that all examinations are recorded in the scan plan.

T. Preparing inservice inspection summary reports, preparing augmented examination summary reports, obtaining ANII signature on NIS-1 form, coordinating summary report reviews with ISO, and submitting inservice inspection and augmented examination summary reports to Site Licensing. The NIS-1 summary report shall be submitted to Site Licensing within 60 days of the end of the outage. See Section 7.5.

U. Preparing and submitting the Site Final Report to RM as a QA record. See Sections 7.1.6.C, 7.5, and 7.12.4.

V. Ensuring records used as PSI records from manufacturers, or construction organizations comply with procedures.

W. Calculation of component support acceptance ranges, if required, in accordance with IEP-100, N-GP-7 and N-VT-1. See Section 7.3.6.D.

X. Maintaining calibration blocks stored at the plant site. See Section 7.4.

Y. Initiating a pre-outage meeting on augmented examination per Section 7.12.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.1.3 Site Engineering responsibilities:

A. Designing, fabricating, erecting, and constructing components to quality standards commensurate with the safety function to be performed. This includes designing for access in accordance with ASME Section XI, IWA-1400(b) and IWA-1500.

B. Performing engineering evaluations in support of IR dispositions or other examination indications. See Sections 7.2.2.A and 7.12.

C. Performing evaluations of indications found during final additional sample examinations to determine if further action is required. See Sections 7.1.2.I and 7.2.2.B.(4).

D. Determining those component supports that could be affected by observed failure modes and could affect nonexempt components as prescribed in Section 7.2.2.B.(3).

E. Providing specific written details for any augmented requirements for which they are responsible per Section 7.12 and determining if a post examination meeting is required.

7.1.4 Site Licensing responsibilities:

A. Filing this Surveillance Instruction (2-SI-4.6.G) and revisions with the NRC per IWA-1400(c). M/N Engineering should be included on distribution of correspondence. See Section 7.1.2.D.(3).

B. Submitting Requests for Relief and Summary Reports to the NRC. M/N Engineering should be included on distribution of all related correspondence. See Section 7.1.2.K, 7.1.2.T, and 7.5.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.1.5 ISO responsibilities:

A. Preparing/revising a computerized data base to include all components on the ISI drawings of Section 2.5. See Section 7.2.1.A.

B. Preparing/revising scan plans for each refueling outage of the inspection interval utilizing a 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. See Section 7.2.1.B.

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

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 M/N Engineering of this fact per Sections 7.2.3.E and 7.6. See Section 7.1.2.J.

E. Approving contractor NDE procedures, contractor written practices for qualification and certification of NDE personnel and certifications of contractor's NDE personnel performing ISI/PSI. See Section 7.2.3.

F. Providing NDE level III evaluation of successive examinations. See Sections 7.3.2.E, 7.3.4.E, and 7.12.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

G. Packaging radiographs for storage and providing them with reader sheets to RM as a life of plant record. See Sections 7.1.6.C and 7.5.

H. Providing copies of IEP-100 NDE procedure revisions and evidence of personnel qualifications to RM as RIMS records for the service lifetime of the plant in accordance with IWA-1400(k). See Sections 7.1.6.C and 7.5.

I. Maintaining as-built calibration standard drawings and the calibration standard material certifications. See Section 7.4.

7.1.6 Site Records Management (RM) responsibilities:

A. Issuing controlled copies of ASME Section XI Code Class Boundary Drawings and ISI Drawings to specified distribution lists.

B. Issuing this program as an SI and providing controlled copies to M/N Engineering, the ANI/ANII, and other organizations as requested.

C. Maintaining the Site Final Report as a life of plant QA document. Other records referenced in the final report (work plans, radiographs, etc.) and NDE procedure revisions, and evidence of personnel qualifications shall be retained for the service lifetime of the plant. See Sections 7.1.2.U, 7.1.5.G, and 7.5.

7.1.7 Project Management responsibilities:

A. Providing specific written details for any augmented requirements for which they are responsible per Section 7.12 and determining if a post examination meeting is required.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.1.8 The Authorized Nuclear Inservice Inspector (ANII) responsibilities:

A. Performing the duties of IWA-2110, including a detailed review of this ISI Program (Plan) prior to May 24, 1992 [See IWA-2110(a)(1)] and a review of revisions to this ISI Program [See IWA-2110(a)(2)]. He shall submit a report of the reviews to the Owner [See IWA-2110(a)(3)]. See Section 7.1.2.D.(2).

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

7.1.9 Nuclear Assurance and Licensing responsibilities:

A. Nuclear Assurance and Licensing is responsible for reviewing, inspection plans, and/or quality assurance programs submitted by contractors.

7.2 Implementation

7.2.1 System for Maintaining Status of Examinations

A. Data Base

ISO and M/N Engineering shall utilize a computerized data base, for maintaining the status of completed examinations for ASME Section XI credit and for augmented credit. See Sections 7.1.5.A and 7.1.5.B.

B. Scan Plan

(1) The Scan Plan is the primary scheduling document that is developed by ISO utilizing a computerized data base. 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 number and sheet number, and for UT, the scanning angles. See Sections 7.1.2.G, 7.1.2.F, 7.1.5.B, and 7.1.5.C.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

(2) Prior to performing examinations, the scan plan shall be approved by M/N 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 M/N Engineering by the performing organization for assignment of a report number and incorporation into the scan plan. See Section 7.1.2.R.

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

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 M/N Engineering and/or an NDE Level III, if required by Section 7.1.2.G or Section 7.1.5.C. Approving individuals shall initial and date such changes.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

C. Configuration Changes

(1) When major portions of existing pipe or supports are replaced or new systems are added, a system walkdown should be performed under the direction of M/N Engineering to identify the pipe configuration, welds, components, and supports that shall be included in the inspection program.

(2) If variations in configuration are discovered or 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 2.5 by an M/N 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 changes.

(3) M/N Engineering shall be responsible for reviewing the proposed change, revising the drawings as necessary, and issuing the revised drawings prior to the next refueling outage. The scan plan shall be revised per Section 7.2.1.B.(4) to reflect any PSI examinations performed due to the variations in configuration.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.2.2 Inspection Report (IR)

A. An Inspection Report (IR) shall be used to officially document and provide a disposition for an indication that exceeds the acceptance criteria of Article 3000 of the ASME Section XI Code or of -3000 of Code Case N-491. M/N Engineering shall provide/coordinate dispositions for IR's in accordance with SSP-3.1. See Sections 7.1.2.Q and 7.7.

B. Additional Examinations Required by IR's

(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 IWB-3410-1 shall be extended to include additional examinations in the same outage as the initial examinations, except for volumetric and surface examinations where IWB-3112(b) is applicable. The flaws detected by volumetric or surface examinations that meet the nondestructive examination standards of NB-2500 and NB-5300, as documented in QA records, shall be acceptable.

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.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

(b) If the first additional examinations of (1)(a) reveal indications exceeding the acceptance standards of Table IWB-3410-1 except where IWB-3112(b) is applicable, further additional examinations shall be performed during the outage. The second additional examination sample shall include all the items of similar design, size and function within the system under examination.

(2) Additional examinations for Class 2 equivalent components (IWC) shall be selected per IWC-2430. If it is determined (Section 7.1.2.H) that additional examinations are required, those examinations shall be performed in the same outage as the initial examinations. 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) A first additional sample shall be selected for those initial samples that detect indications exceeding the allowable standards of IWC-3000, except where the flaw is acceptable under IWC-3112(b). 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.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

(b) If the additional examinations of (2)(a) detect indications exceeding the acceptance standards of IWC-3000, further additional examinations shall be performed during the outage. The second additional sample shall include the remaining number of items of the interval sample not examined in the initial or first additional sample. If no items remain in the interval sample, a notification of the first additional sample results shall be provided to Site Engineering as described in Section 7.2.2.B.(4).

(3) Additional examinations for component supports (IWF) shall be in accordance with -2430 of Code Case N-491.

(a) If component supports of the initial sample must be subjected to corrective measures in accordance with (N-491)-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 (N-491)-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.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

(c) When the additional examinations of (3)(b) require corrective measures in accordance with (N-491)-3000, examinations shall be extended to include a third additional sample of all 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 M/N Engineering, Site Engineering shall make the determination of failure mode applicability and select the third additional sample.

(d) When the additional examinations of (3)(c) require corrective measures in accordance with (N-491)-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 M/N Engineering, Site Engineering shall make the determination of failure mode applicability and select a fourth additional sample of all component supports on exempt components that could affect nonexempt components. See Section 7.1.3.D.

(4) After completion of the additional examinations, ASME Section XI code requirements for additional examinations are complete. If the final sample examinations reveal indications exceeding the acceptance standards of Article 3000 of ASME Section XI, M/N Engineering shall notify Site Engineering to evaluate the indications and make recommendation(s) for further action, if needed. See Section 7.1.2.I.

7.2.3 Examinations

A. NDE shall be performed in accordance with IWA-2200 of ASME Section XI utilizing the NDE procedures of IEP-100 or approved contractor procedures.

B. Personnel performing NDE operations shall be qualified and certified in accordance with IWA-2300 of ASME Section XI as specified in IEP-200.

C. The inservice examinations shall be performed by M/N Engineering, ISO, or contractor personnel. Contract preparation, administration, and supervision shall be the responsibility of M/N Engineering. Inspection plans and/or quality assurance programs submitted by contractors shall be reviewed and approved by Nuclear Assurance and Licensing 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. See Section 7.1.5.E.

D. In accordance with IWA-2600, a reference system shall be established for all welds and areas subject to surface or volumetric examination. Each such weld and area shall be located and identified by a system of reference points. The system shall permit identification of each weld, location of each weld center line, and designation of regular intervals along the length of the weld.

E. 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 one was not achieved, the NDE level III representative shall notify M/N Engineering immediately to determine if a large enough examination volume or area percentage was achieved to qualify for request for relief action in accordance with Sections 7.1.5.D and 7.6. Another component may be selected for a substitute examination if sufficient examination coverage was not achieved. See Section 7.1.2.J.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.3 Components Subject to Examination

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

A. ASME Class 1 equivalent systems (including the components and integral attachments contained therein, but excluding the supports) subject to examination are:

(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),

(6) Reactor Core Isolation Cooling System (RCIC),

(7) Reactor Pressure Vessel (RPV),

(8) Reactor Water Cleanup System (RWCU),

(9) Recirculation System (RECIR),

(10) Residual Heat Removal System (RHR), and

(11) Standby Liquid Control System (SLC).

B. The specific components subject to examination are identified on ISI drawings listed in Section 2.5. Class 1 valves are further defined in Section 8.3. 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 Section 8.1 Examination Schedule, Part 1 -Class 1 Equivalent (IWB) Components.

C. The rules of IWB-1220 (a) and (b) have been used to exempt components from examination and establish the numbers in Section 8.1, Part 1. Specifically, piping NPS 1 and smaller and components and their connections in piping NPS 1 and smaller are exempt from NDE examinations.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

D. ASME Class 1 equivalent piping and components that meet the size exemption listed in reference 2.9.2 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. The associated piping.component sizes are 2-inch schedule 40 (water) and 4-inch schedule 40 (steam) or smaller inside diameter, which are exempt from examination in accordance with IWC-1220.

7.3.2 Selection of ASME Class 1 Equivalent Components

A. All Examination Category B-F circumferential welds shall be examined in the Interval with approximately 1/3 examined in each Period. The Code basis for this selection of Item Numbers B5.130, B5.140, and B5.150 is Table IWB-2500-1, Examination Category B-F, 1986 Edition of ASME Section XI.

B. All carbon and low alloy steel (similar metal) nozzle to safe end welds shall be examined this interval. Additional Examination Category B-J circumferential welds that were not examined in the first interval shall be selected to provide a 25 percent sample this interval. Continuation of this selection method during the third and fourth intervals shall result in examination of approximately 90% of the Examination Category B-J circumferential welds over the life of the plant. BFN does not have stress level calculations as required for selection per Table IWB-2500-1, Examination Category B-J, NOTE: (1)(b). The Code basis for this method of selection of Item Numbers B9.11, B9.21, B9.31, B9.32, and B9.40 is Table IWB-2500-1, Examination Category B-J, 1986 Edition of Section XI except the extent of examination is determined by the requirements of Table IWB-2500 and Table IWB-2600, Examination Category B-J, 1974 Edition with Addenda through Summer 1975 as allowed by 10CFR50.55a(b)(2)(ii). See Section 4.1.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

C. ASME Class 1 equivalent longitudinal welds, Examination Category B-J, Item Numbers B9.12 and B9.22 shall be selected for examination by virtue of intersecting a circumferential weld (Item Number B9.11 or B9.21) selected for examination. The examination of longitudinal welds is in accordance with the alternative described in Code Case N-524.

D. The entire length of each circumferential weld selected shall be examined, unless otherwise noted or if a physical limitation exists. Examination shall include intersecting longitudinal welds in accordance with Code Case N-524.

E. Successive Inspections of ASME Class 1 equivalent components shall be in accordance with IWB-2420(a), IWB-2420(b) and IWB-2420(c).

(1) IWB-2420(a) shall be utilized except for Examination Category B-K-1 integral attachments and Examination Category B-J welds. The reasons are the modification of the integral attachments (B-K-1) in conjunction with the support modifications explained in Section 7.3.6.F and the extent of examination for B-J welds established in Section 7.3.2.B.

(2) Indications, evaluated in accordance with IWB-3132.4 or IWB-3142.4 qualifying for continued service, shall be reexamined in the next three inspection periods.

(3) If the reexaminations reveal essentially no change in the indication for the three periods, the examination schedule shall revert to the original schedule.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.3.2.1 Reactor Vessel Interior

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 during the first refueling outage and at subsequent refueling outages at approximately three-year intervals.

The integrally welded core support structures and interior attachments (specimen holding bracket, etc.) to the reactor vessel shall be visually examined. The examination shall include 100 percent of the visually accessible attachment welds and core support surfaces.

The attachments are: dryer hold down brackets, dryer support brackets, guide rod brackets, feedwater sparger brackets, core spray sparger brackets, surveillance specimen holder brackets, jet pump riser support brackets and shroud support. The core support structure consists of the top guide and the core plate.

All augmented examination requirements and commitments for BFN vessel internal examinations during the ISI interval are stated in Section 7.12.11 of this program.

The general surveillance of the reactor vessel internals is in accordance with MSI-0-001-INS001 and/or an approved contractor procedure.

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

A. ASME Class 2 equivalent systems (including the components and integral attachments contained therein, but excluding the supports) subject to examination are:

(1) Control Rod Drive Hydraulic System (CRD),

(2) Core Spray System (CS),

(3) High Pressure Coolant Injection System (HPCI),

(4) Main Steam System (MS),

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

(5) Reactor Building Closed Cooling Water System (RBCCW),

(6) Reactor Core Isolation Cooling System (RCIC), and

(7) Residual Heat Removal System (RHR).

B. The specific components subject to examination are identified on ISI drawings identified 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 Section 8.1 Examination Schedule, Part 2 -Class 2 Equivalent (IWC) Components.

C. The rules of IWC-1221 for components within RHR and HPCI (includes containment heat removal) and IWC-1222 for components in all other systems have been used to exempt components from examination and establish the numbers in Section 8.1, Part 2. Specifically, the following components are exempt from NDE examinations:

(1) Vessels, piping, pumps, valves, and other components NPS 4 and smaller in all systems,

(2) Component connections NPS 4 and smaller in all systems,

(3) Vessels, piping, pumps, valves, other components, and component connections of any size that operate at a pressure equal to or less than 275 psig and at a temperature equal to or less than 200 degrees F in systems other than RHR and HPCI, and

(4) Piping and other components of any size beyond the last shutoff valve in open ended portions of systems that do not contain water during normal plant operating conditions in all systems.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.3.4 Selection of ASME Class 2 Equivalent Components

A. One hundred percent of the C-F-1 welds shall be examined in the interval. To the extent possible, welds examined in the first interval, second and third periods, shall be selected for reexamination in the respective periods of the second interval. The first period welds shall be selected at random since the 1971 Edition of the Code was utilized for unit 2 during the first period of the first interval and no Class 2 examinations were performed. The Code basis for this method of selection of Item Numbers C5.11 and C5.12 is Table IWB-2500-1, Examination Category C-F-1, 1986 Edition of Section XI.

NOTE: There are no 'Excluded' welds (< 3/8" nominal wall) at BFN for Examination Category C-F-1.

B. To the extent practical, Examination Category C-F-2, Item Numbers C5.51, C5.70, and C5.80 circumferential welds that have been previously examined shall be in the 7.5 percent sample selected for examination during the second interval in accordance with IWC-2420(a). Welds examined in the first interval, second and third periods, shall be selected to the extent practical for reexamination in the respective periods of the second interval. The first period welds shall be selected at random since the 1971 Edition of the Code was utilized for unit 2 during the first period of the first interval and no Class 2 examinations were performed.

NOTE: Note (2) of Table IWC-2500-1, Examination Categories C-F-2 establishes an 'Excluded' welds category for welds with < 3/8" nominal wall. Excluded welds shall not be examined for Code credit, since they have no Item Number under the Examination Category. The Item Number is designated as N/A in Section 8.1 Examination Schedule, Part 1 - Class 2 IWC Components.

The excluded welds that are not exempt are included in the total count to which the 7.5% was applied to determine the number of C-F-2 welds to be examined in the interval. The Code basis for this method of selection of Item Numbers C5.51, C5.70, and C5.81 is Table IWB-2500-1, Examination Category C-F-2, 1986 Edition of Section XI.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

C. ASME Class 2 equivalent longitudinal welds, Examination Category C-F-2, Item Numbers C5.52 and C5.82, shall be selected for examination by virtue of intersecting a circumferential weld (Item Numbers C5.11, C5.41, C5.51 or C5.81) selected for examination. The examination of longitudinal welds is in accordance with the alternative described in Code Case N-524.

D. The entire length of each circumferential weld shall be examined, unless otherwise noted or if physical a limitation exists. Examinations shall include intersecting longitudinal welds in accordance with Code Case N-524.

E. Successive Inspections of ASME Class 2 equivalent components shall be in accordance with IWC-2420(a), IWC-2420(b) and IWC-2420(c).

(1) The sequence of component examinations established during the first inservice inspection interval shall be repeated, to the extent practical, as established in this Section, A. and B. above for Examination Categories C-F-1 and C-F-2, respectively.

(2) Indications, evaluated in accordance with IWC-3000, qualifying for continued service shall be reexamined in the next inspection period.

(3) If the reexaminations reveal essentially no change in the indication, the examination schedule shall revert to the original schedule. See Section 7.1.5.F.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.3.5 ASME Class 3 Equivalent Components Subject to Examination (IWD)

A. ASME Class 3 equivalent systems (including the components and integral attachments contained therein, but excluding the supports) subject to examination are:

(1) Emergency Equipment Cooling Water System (EECW),

(2) Fuel Pool Cooling System (FPC), and

(3) Residual Heat Removal Service Water System (RHRSW), and

(4) Main Steam (MS).

B. The specific integral attachments subject to examination are identified on ISI drawings listed in Section 2.5. The number of integral attachments within each system, the number selected for examination during the interval and the number selected for examination by period are provided in Section 8.1 Examination Schedule, Part 3 - Class 3 Equivalent (IWD) Components.

C. The rules of IWD-1220.1 and IWD-1220.2 have been used to exempt components from examination and establish the numbers in Section 8.1, Part 3. Specifically, integral attachments of supports connected to components that are NPS 4 or smaller are exempt from NDE examinations.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.3.6 Component Supports Subject to Examination (IWF, Code Case N-491)

A. Component and piping supports shall be examined in accordance with Table -2500-1 (N-491). Component supports to be examined shall be the supports of those components that are required to be examined under IWB-2500, IWC-2500, and IWD-2500 by volumetric, surface, or visual (VT-1 or VT-3) examination methods. Piping supports to be examined shall be the supports of piping not exempted under IWB-1220, IWC-1220, and IWD-1220. These component and piping supports are within the systems identified in Sections 7.3.1.A, 7.3.3.A, and 7.3.5.A. The specific supports subject to examination are identified on ISI drawings listed in Section 2.5. The method of support exemption is given in Section 7.3.6.C below.

B. The number of supports subject to an examination sample plan, the number selected for examination during the interval and the number selected for examination by period are provided in Section 8.1 Examination Schedule, Part 4 - Component Supports (IWF, Code Case N-491).

C. Component supports exempt from NDE examinations are those connected to components and items exempted by IWB-1220, IWC-1220, and IWD-1220, and portions of those that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe. Piping supports exempt from examination shall be the supports of piping exempted under IWB-1220, IWC-1220, and IWD-1220 and those that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

D. Support examination boundaries shall be in accordance with (N-491)-1300. Examination and acceptance of variable support settings shall be in accordance with the detailed support drawing. If a total acceptance range is required and is not given on the detail support drawing, it shall be calculated per IEP-100, N-GP-7 and N-VT-1. See Section 7.1.2.W.

E. Component supports that have been adjusted in accordance with (N-491)-3000, repaired, or replaced shall be examined prior to return of the system to service per the applicable examinations listed in Table -2500-1. 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 heatup and cooldown cycle unless determined unnecessary by evaluation. This examination shall be performed during operation or at the next refueling outage.

F. Successive Inspections of component supports shall be in accordance with -2420(b) and -2420(c) of Code Case N-491. Utilization of (N-491)-2420(a) is not practical. The components supports were completely redesigned and modified in the last period of the first interval (forced outage 9/15/84 to 5/24/91) to comply with Generic Letter 79-14. A sequence shall be established this inspection interval that may be used in future intervals.

(1) A component support subjected to corrective measures in accordance with (N-491)-3000 shall be reexamined in the next inspection period.

(2) When additional corrective measures are not required by the reexamination of (1) above, the inspection schedule may revert to the original schedule.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.4 Calibration Standards

Calibration blocks shall be used for ultrasonic examination. The blocks shall be fabricated in accordance with ASME Section V and ASME Section XI. ISO shall maintain as-built calibration standard drawings and calibration standard material certifications (CMTR's). The calibration blocks shall be stored at the plant site and maintained by M/N Engineering personnel. See Sections 7.1.2.X and 7.1.5.I.

7.5 Records and Reports

Records and reports shall be in accordance with ASME Section XI, Articles IWA-1400(k), IWA-1400(1), and IWA-6000.

A. The Inservice Inspection (ISI) Summary Report shall include, as a minimum, the information required by IWA-6220(c) and IWA-6220(d) and shall be submitted to Site Licensing on a schedule that permits submittal to the NRC within 90 days after the refueling outage. The ISI Summary Report shall contain: (a) the examinations and System Pressure Tests associated with ISI, replacements, and repairs conducted since the preceding summary report; (b) National Board numbers assigned to the components by the manufacturer, if applicable; (c) identifiers of the components examined including size, material, etc.; (d) name and address of manufacturers; (e) manufacturer's component I.D.'s, if applicable; (f) date of completion of examinations; (g) name of Inspector verifying examinations, his company and company address; (h) abstract of examinations and tests performed; conditions recorded; and corrective measures taken; (i) signature of the Inspector; and (j) Owner's Report for ISI (NIS-1). The cover sheet shall contain: (a) the date of document completion, (b) name and address of the Owner, (c) name and address of generating plant, (d) unit designation, and (e) commercial operating date.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

B. A Site Final Report shall be prepared and submitted to RM. The Site Final Report, and the references therein, shall be maintained as a QA record for the service lifetime of the plant in accordance with IWA-6300. The Site Final Report shall contain: (a) an index to record file, (b) the inservice and preservice NDE examination reports, (c) the NIS-1 and NIS-2 summary reports. The Site Final Report shall also contain, as a minimum, reference to: (a) this ISI Program (inspection plan), (b) repair records and reports, (c) replacement records and reports, (d) NDE Procedures, and (e) NDE examination records including radiographs and review forms.

C. Radiographs shall be packaged by ISO and provided to RM for storage as a life of plant record. See Sections 7.1.5.G, 7.1.6.C, and 7.5.B.

D. NDE Procedure revisions (IEP-100) and evidence of personnel qualifications shall be maintained by RM as RIMS records for the service lifetime of the plant. See Sections 7.1.5.H, 7.1.6.C, and 7.5.B.

E. Reproduction and microfilming shall meet the requirements of IWA-6320.

7.6 Requests for Relief (RFR)

Where TVA has determined that Code requirements or examinations are impractical, TVA shall submit written Requests for Relief (RFR) to the NRC with information to support the need for relief and any proposed alternate examinations. The impractical Code requirements or relief situation shall be identified as a part of the Section 8.1 examination schedules in this program and references to a particular RFR shall be included.

When impractical examination requirements are identified in the field, ISO shall notify M/N Engineering in accordance with Sections 7.1.5.D and 7.2.3.E.

M & I shall review and comment on any new RFR's.

The Requests for Relief are contained in Section 8.4 of this program.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.7 Corrective Action Program

Any corrective action required as a result of ISI examinations shall be handled in accordance with SSP-3.4.

7.8 Repairs and Replacements

Repair and replacement shall be in accordance with SSP-6.9. Preservice inspections (PSI) shall be performed on any component that is repaired, replaced, or modified that is of an Examination Category and Item Number as specified in Section 8.1. The NDE method shall be as specified in Section 8.1.

7.9 System Pressure Tests

System pressure test and VT-2 examinations shall be in accordance with SSP-8.5.

7.10 Pump and Valve Inservice Testing

Pump and valve inservice testing shall be in accordance with SSP-8.6.

7.11 Snubber Inservice Testing

IWF-5000 or (N-491)-5000 is not a part of this program. Snubber inservice testing shall be in accordance with 2-SI-4.6.H.1.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12 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. Section 8.1, Part 5 provides a schedule for augmented examinations.

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 the M/N 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 Lead M/N Engineering. 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, areas of high suspect, probability of failure, and reporting requirements. Copies of the written request shall be submitted to M & I and the M/N 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 M/N Engineering. Meeting attendees shall include the responsible organizations, M/N Engineering, M & I, and Site Engineering. 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, the M/N 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 M/N 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 identify any future actions such as changes in the frequency of examination.

SIL's and clarification letters listed in this Augmented Inspection Section provide GE's recommendation for reactor internals inspection. The actual scope and criteria for reactor internals inspections will be reviewed and approved by TVA Site Engineering prior to each refueling outage. Any indications found during inspections will receive a review and will be dispositioned by TVA Site Engineering.

Augmented examinations that require reporting to the NRC shall be the responsibility of the responsible organization.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.1 Weld DSRHR-2-05A

Responsible organization: Site Engineering. Weld DSRHR-2-05A has an indication that was determined to be lack of fusion between layers of welding. It shall receive augmented RT and UT examinations each inspection period to monitor the size of the indication. Evaluation of the indication shall be performed by an ISO NDE level III by comparison to previous examinations. If there is any change, Site Engineering shall be formally requested to provide additional evaluation. See Sections 7.1.3.B and 7.1.5.F. A report of the examinations shall be forwarded to the NRC with the NUREG-0313 report of Section 7.12.8. [NRC/C] Reference NRC Inspection Report 86-03, Open Item 86-03-03 (RIMS L29 860925 984)]. PRISIM Exam Requirement Source: D01-02.

7.12.2 RPV Cladding Indication

Responsible organization: Site Engineering. An indication in the RPV cladding was discovered in August 1988 during the RPV interior examination. It is located at 15 degree azimuth, 32 3/4" below the RPV flange surface. This indication shall receive a VT-1 examination in refueling cycles 6, 7, and 8 to determine if there is any degradation. Evaluation of the indication shall be performed by an ISO NDE level III by comparison to previous examinations. If there is any change, Site Engineering shall be formally requested to provide additional evaluation. See Sections 7.1.3.B and 7.1.5.F. A report of the examination shall be forwarded to the NRC with the ISI Summary Report. The examination data from the four consecutive cycles shall be evaluated after the cycle 8 refueling outage to determine if further augmented exams shall be required (RIMS W10 880831 850, W10 880908 873, and B22 880920 022). PRISIM Exam Requirement Source: D02-02.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.3 Welds KR-2-14, KR-2-36, KR-2-37, and KR-2-41

Responsible organization: Site Engineering. These welds, which had IGSCC indications that were evaluated to be acceptable for continued operation, shall be reexamined (UT) in the cycle 6 refueling outage per NRC commitment NCO 850264005 (RIMS L44 860311 803). Evaluation of the indication shall be performed by an ISO NDE level III by comparison to previous examinations. If there is any change, Site Engineering shall be formally requested to provide additional evaluation. KR-2-37 has volumetric indications in the base metal that require monitoring in accordance with Engineering disposition. See Sections 7.1.3.B and 7.1.5.F. A report of the examinations shall be forwarded to the NRC with the NUREG-0313 report of Section 7.12.8. PRISIM Exam Requirement Source: D03-02.

7.12.4 HPCI Pump Discharge Support Inspection Following Injection

NRC commitment NCO850144002 for the augumented 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.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.5 Weld GR-2-64(OL)

[NRC/C] Responsible organization: Site Engineering. This structurally over-layed weld shall be one of the IGSCC Examination Category E welds examined during the cycle 8 refueling outage. A report of the examinations shall be forwarded to the NRC with the NUREG-0313 report of Section 7.12.8. PRISIM Exam Requirement Source: B02-02. [NC094028101]

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.6 CRD Return Line Reroute

Responsible organization: Site Engineering. The augmented examination requirements of the CRD return line reroute are contained in NUREG 0619. The welded connections joining the rerouted CRD return line to the reactor water cleanup system shall be ultrasonically examined during the Cycle 6 refueling outage. The weld RCRD-2-45 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-2-3 and RCRD-2-44 shall be ultrasonically examined along with the pipe on the downstream side. Reference memorandum from NRC to TVA dated July 2, 1981 RIMS # A02810708001.

Reporting to the NRC is required within 6 months of completing an outage during which 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 M/N Engineering. Refer to NUREG-0619, Section 8.3 for information to be included. PRISIM Exam Requirement Source: B01-02.

7.12.7 Feedwater Nozzles

Responsible organization: Site Engineering. The augmented examination requirements for the feedwater nozzles is contained in NUREG-0619. An ultrasonic examination of all the feedwater nozzle safe ends, bores, and inside blend radii are required every second refueling outage. The feedwater spargers shall be visually examined every fourth refueling outage (MSI-0-001-INS001). A liquid penetrant examination of the nozzle bore and inner radius is required every nine refueling cycles or within 135 startup/shutdown cycles based on the replacement date. 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 M/N Engineering. Refer to NUREG-0619, Section 4.4.3 for information to be included. PRISIM Exam Requirement Source: B01-02.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.8 Augmented Examination of Austenitic Stainless Steel and Dissimilar Metal Welds Susceptible to IGSCC (Generic Letter 88-01 and NUREG-0313, Rev. 2)

Responsible organization: Site Engineering.
Austenitic stainless steel and dissimilar metal circumferential welds in piping four inches or larger NPS that contain reactor coolant at a temperature above 200° F during power operation shall be examined in accordance with the requirements of Generic Letter 88-01 and NUREG-0313, Rev. 2. Sample expansion shall be in accordance with Generic Letter 88-01 (GL 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 Section 8.2 - Part 1. Stainless steel and dissimilar metal welds that are exempt from examination because they contain coolant of 200 degrees or less are listed in Section 8.2 - Part 2.

In addition to the requirements of Section 7.2.3.A for examination procedures, the examination procedures used for IGSCC examinations shall satisfy the requirements of GL 88-01.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

In addition to the requirements of Section 7.2.3.B for personnel qualifications, personnel shall be qualified by the program described in GL 88-01 for performing IGSCC examinations. The examination schedule is based on the IGSCC category and shall be as indicated.

IGSCC CATEGORY	EXAMINATION EXTENT AND SCHEDULE
A	25 percent every 10 years (at least 12 percent in 6 years).
B	50 percent every 10 years after initial post-stress improvement (SI) examination (at least 25 percent in 6 years).
C	100 percent within next 2 refueling cycles after initial post-SI examination (at least 50 percent in 6 years).
D	100 percent every 2 refueling cycles.
E	50 percent next refueling cycle after crack discovery and/or overlay. 100 percent every 2 refueling cycles thereafter.
F	100 percent every refueling outage.
G	100 percent during each outage.*

*The two IGSCC Category G welds (DRHR-2-03B and -13B) are to be examined (VT-2) for leakage during each refueling outage per NRC Letter A02 930223 002.

NOTE: The ANII shall be required to verify these examinations.

Any flaws identified that do not meet the IWB-3500 criteria for continued operation without evaluation, or a change found in the condition of the welds previously known to be cracked, shall be reported to the NRC under the guidelines of NUREG-0313, Rev. 2. PRISIM Exam Requirement Source: B02-02.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.9 Technical Specification Surveillance Requirement 4.6.G.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 Specification Surveillance Requirement 4.6.G. The welds requiring examination each interval for pipe whip protection are:

TCS-2-407, TCS-2-423, TSCS-2-408, TSCS-2-424, GFW-2-09, GFW-2-12, GFW-2-15, GFW-2-26, GFW-2-29, GFW-2-32, KFW-2-13, KFW-2-31, KFW-2-38, KFW-2-39, THPCI-2-070, THPCI-2-070A, THPCI-2-071, THPCI-2-072, GMS-2-06, GMS-2-15, GMS-2-24, GMS-2-32, KMS-2-024, KMS-2-104, DSRHR-2-04, DSRHR-2-06, DSRHR-2-07, DSRWC-2-03, DSRWC-2-04, DSRWC-2-05, AND DSRWC-2-06.

A report of these examinations shall be included with the ISI Summary Report. PRISIM Exam Requirement Source: B04-02.

7.12.10 RPV Shell Weld Examination

Responsible organization: M/N Engineering. The RPV shell welds, Examination Category B-A, Item Numbers B1.11 and B1.12 shall be examined during the second inspection interval in accordance with the guidance of 10 CFR 50.55a(g)(6)(ii)(A) per TVA's revised commitment to the NRC dated March 25, 1993 (R08 930325 853).

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. PRISIM Exam Requirement Source: B05-02.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11 RPV Interior Examinations

Responsible Organization: Site Engineering.

In addition to the code required ISI examinations in Section 7.3.2.1, the following augmental examinations shall be performed during the inspection intervals at the frequencies as specified in the paragraphs below unless specified otherwise by Site Engineering.

PRISIM Exam requirement Source: B06-02.

7.12.11.1 Core Spray Spargers and Associated Piping

Responsible organization: Site Engineering. The augmented examination requirements of the core spray spargers and associated piping is included in MSI-0-001-INS001 and/or an approved contractor procedure, which implements IE Bulletin 80-13. The spargers shall be visually examined each refueling outage. Volumetric techniques may be used to evaluate any indications. The reporting criteria is listed in MSI-0-001-INS001. A report of these examinations shall be included with the ISI summary report.

7.12.11.2 Core Support Shroud SIL-572

Perform inspection of the Core Support Shroud to the recommendations of SIL-572. This consist of performing visual or UT inspection of the accessible weld areas of the shroud.

The implementation interval for the Unit 2 shroud inspection recommended in SIL-572 shall start with the Unit 2 Cycle 7 refueling outage. If no indications are found, the shroud shall be inspected every second refueling outage following Cycle 7. If indications are found, the shroud should be inspected each following refueling outage or as directed by an engineering analysis of the indications.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.3 Shroud Support Access Hole Covers SIL-462

Inspect the Shroud Support Access Hole Covers per the recommendations in SIL-462. This consist of performing UT inspection of the access hole cover weld areas.

The implementation interval for the Unit 2 access hole cover inspection recommended in SIL-462 started in the Unit 2 Cycle 6 refueling outage. Based on current operation (16 to 18 month fuel cycles) the access hole covers shall be inspected every second refueling outage following Cycle 6. If 2 year operating cycles are utilized, the covers shall be inspected each refueling outage.

7.12.11.4 Shroud Head Bolts SIL-433

Perform a UT inspection on the original designed Shroud Head Bolts to the recommendations of SIL-433. These SIL's are applicable to the "Original Design" bolts only and do not apply to "New Design" non-creviced bolts.

The implementation interval for the Unit 2 shroud head bolt inspection recommended in SIL-433 started during the Unit 2 Cycle 5 outage. Any installed "Old Design" bolts shall be inspected each refueling outage following Cycle 5 or as required by an engineering disposition of the installed old design bolts.

7.12.11.5 Core Spray T-Box Welds SIL-289

Perform visual inspection of the Core Spray T-Box front cover plate weld and the Core Spray T-Box to thermal sleeve weld joint to the recommendations of SIL-289. Per SIL-289, the inspection should be performed in conjunction with NRC IE Bulletin 80-13 inspections of the core spray sparger which are performed each outage.

The implementation interval for the Unit 2 Core Spray T-Box inspection recommended by SIL-289 started in the Unit 2 Cycle 5 outage. The Core Spray T-Box shall be reinspected during each subsequent refueling outage following the Cycle 5 outage.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.6 Jet Pump Beams SIL-330

Perform inspection of the jet pump beams per the recommendations in SIL-330. SIL-330 recommends that beams with a modified heat treatment be inspected per NUREG CR-3052. Per NUREG CR-3052, UT inspection of beams manufactured with a modified heat treatment shall be performed at 10 year intervals. The Unit 2 beams were replaced with beams manufactured from a modified heat treatment material during the Cycle 5 outage. The installed Unit 2 beams are original equipment (G001) material with a High Temperature Anneal (HTA) heat treatment.

Per NUREG CR-3052, the inspection interval of the beams shall be once every 10 year interval. All Unit 2 beams shall be inspected during the current second 10 year code inspection interval and once during each subsequent 10 year interval.

7.12.11.7 Jet Pump Sensing Lines SIL-420

Perform visual inspect of the Jet Pump Sensing Lines when convenient per the recommendations of SIL-420. The recommendation is to inspect the instrument lines when equipment is available and when inspections are being performed in the. general area of the instrument lines.

The inspection interval for the Unit 2 Jet Pump Sensing Lines shall start during the Cycle 7 outage. The sensing lines shall be inspected during each refueling outage when equipment is available and when other adjacent area inspections are performed.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.8 Jet Pump Throats SIL-465

Perform visual inspection of the Jet Pump Throats per the recommendations of SIL-465.

The inspection interval for Jet Pump Throats will be determined as required by engineering review of jet pump flow data. Per SIL-465, if engineering review of jet pump flow data indicates a degraded flow performance condition, the throats of at least 2 jet pumps throats should be inspected during the next refueling outage.

7.12.11.9 Jet Pump Riser Braces SIL-551

Perform visual inspection of the Jet Pump Riser Braces per the recommendations in SIL-551. This consists of visually inspecting 50% of the riser brace welds during each refueling outage.

The implementation interval for the Unit 2 Jet Pump Riser Brace inspection recommended in SIL-551 shall start with the Unit 2 Cycle 7 refueling outage. Riser Braces on Jet Pump numbers 1 through 10 shall be inspected during the Cycle 7 outage, and then repeated at every second refueling outage following Cycle 7. Riser Braces on Jet Pump numbers 11 through 20 shall be inspected during the Cycle 8 refueling outage and then repeated during every second refueling outage following Cycle 8.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.10 Jet Pump Adjusting Screws SIL-574

Perform visual inspection of the Jet Pump Adjusting Screws per the recommendation of SIL-574. This consist of inspecting the adjusting screws on each Jet Pump during each refueling outage.

The implementation interval for the Unit 2 Jet Pump Adjusting Screws inspection shall start with the Unit 2 Cycle 7 outage. Inspection of the adjusting screws shall be conducted during the Cycle 7 outage and during each subsequent refueling outage following Cycle 7.

7.12.11.11 Top Guide SIL-554

Perform visual inspection of the Top Guide per the recommendations of SIL-554. This consists of inspecting the Top Guide when fuel and blade guides have been removed as part of refueling operation. GE Letter No.'s BFSE 94-001 & BFSE 94-002 indicates that based on neutron fluence levels top guide inspection should be performed.

The implementation interval for the Unit 2 Top Guide inspection shall start with the Unit 2 Cycle 8 outage. Inspection shall be performed during the Cycle 8 outage and during subsequent refueling outages as conditions allow (i.e., fuel and blade guides are removed as part of refueling operations). Per the GE letter, inspection of 5 to 10 percent of the top guide cell areas each outage is adequate as allowed for by refueling operations.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.12 IRM/SRM Dry Tubes SIL-409

Perform visual inspection of the IRM/SRM Dry Tubes per the recommendations in SIL-409. The recommendations are to inspect the original design dry tubes following the fourth refueling outage after installation and then at every second refueling outage. Modified design tubes should be inspected the sixth refueling outage after installation and then at every third refueling outage. As of the Unit 2 Cycle 5 outage all but one dry tube was originally installed equipment. All dry tubes were inspected during the Cycle 5 outage.

The implementation interval for the Unit 2 Dry Tube inspection recommended in SIL-409 started with the Unit 2 Cycle 5 outage. All originally installed Dry Tubes shall be inspected at every second refueling outage following the Cycle 5 outage. The new tube installed during the Cycle 5 outage shall be inspected during the Cycle 11 refueling outage and then at every third refueling outage following Cycle 11. Any new tube installed during future refueling outages shall be inspected at the frequency prescribed in SIL-409.

7.12.11.13 Unit 2 Steam Dryer Drain Channel Welds

Steam dryer drain channel welds on Unit 2 which have received weld buildup shall be inspected to the requirements provided in GE Letter No. BFSE 94-002 dated 1/18/94. All Unit 2 steam dryer drain channel welds were repaired and mitigated by weld buildup during the Cycle 5 outage.

The implementation interval for the drain channel inspection started in the Unit 2 Cycle 5 outage. Per GE Letter No. BFSE 94-002 one drain channel weld shall be inspected every second outage following the Cycle 5 baseline inspection. Previously cracked welds should be inspected first in the inspection sequence.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.14 Unit 2 Steam Dryer Bracket (Incident Investigation No. II-B-93-026)

Perform visual inspection of the unit 2 steam dryer bracket located on the northwest side of the dryer. This bracket was damaged during the Unit 2 Cycle 6 outage. An engineering disposition of the damaged bracket required inspection of the bracket following one cycle of operation. (Reference Incident Investigation No. II-B-93-026.) Visual inspection of the bracket shall be performed and compared to the Cycle 6 inspection results to determine if additional degradation has occurred. If any additional degradation has occurred an engineering review of the brackets condition shall be performed.

An engineering analysis shall be performed on any change of condition of the bracket. Additional subsequent inspections will be performed if required by this engineering analysis.

7.12.11.15 Instrument Nozzle Safe Ends SIL-571

Perform UT and visual inspection of the stainless steel level instrumentation nozzle safe ends and stainless steel core differential pressure/standby liquid control (SLC) nozzle safe ends per the recommendation of SIL-571. The recommendations are to perform a visual leak check of the safe ends during the drywell leak check effort performed each outage. Insulation removal is not necessary to perform the leak check. A UT inspection of the accessible areas of all the safe end base material shall be performed. Per GE Letter No. BFSE 94-005 these stainless steel safe ends should be UT inspected following 15 years of hot operation time and then at a frequency of once every second 24 month fuel cycle or once every third 18 month fuel cycle as applicable.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

The implementation interval shall start with the Unit 2 Cycle 7 refueling outage. Leakage inspections shall be performed as described during the Cycle 7 outage and during each subsequent refueling outage. Based on current 16-18 month refueling cycles UT inspection shall be performed during the Cycle 9 refueling outage and then at every second refueling cycle following Cycle 9.

7.12.11.16 Core Spray and Recirc Inlet Safe Ends

Perform UT inspection of the Core Spray and Recirc Inlet Safe Ends per the recommendation of GE Letter No. BFSE 94-007. The Unit 2 Core Spray and Recirc Inlet Safe Ends were replaced during the Cycle 5 outage. The safe ends were replaced with IGSCC resistant material, and in the case of the Recirc-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 2 Cycle 5 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 also classified category "A".

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.12.11.17 Top Guide and Core Plate Bolting Examination - GE SIL 588

The top guide and core plate bolting should be VT-3 examined during the Unit 2, cycle 8 outage (TROI item GE SIL 588, seq 04) in accordance with GE SIL 588. The top guide examination includes the accessible areas of the members which provide the load path between the top guide and the shroud. The core plate bolt inspection should assure that their locking devices are in place for the bolts that become accessible during normal refueling activities.

7.0 INSTRUCTION STEPS/ELEMENTS (Continued)

7.13 Voluntary Examinations

Certain examinations are done on a voluntary basis to obtain additional information to support inservice inspections or to resolve a problem identified through the corrective action program. Key voluntary examinations are defined and documented in this Section.

7.13.1 Examination of RPV Nuts and Washers based on FIR BFQ910238FIR and Other Voluntary Examinations

PRISIM Exam Requirement Source: V01-02. Unit 2 RPV nuts and washers shall be reexamined in cycle 6 based on FIR BFQ910238FIR. This will be a one time volunteer examination to assure that nut and washer records include their unique position (1 through 92) with respect to the RPV stud locations in the flange. In the Core Spray System, welds TCS-2-4XX received a pre-stress improvement voluntary examination during cycle 6 to assure that IGSCC did not exist.

8.0 TABLES/ATTACHMENTS

This Section contains Examination Schedules (8.1), List of Welds requiring examination by Generic Letter 88-01 (8.2), Class 1 Valve List (8.3), and Requests for Relief (8.4).

A list and status of the Requests for Relief contained in Section 8.4 is presented here:

(1) RFR ISI-2-1, Reactor Pressure Vessel (RPV) Support Integral Attachment withdrawn pending examination performance.

(2) RFR ISI-2-2, Reactor Pressure Vessel (RPV) Threads in Flange. withdrawn.

(3) RFR ISI-2-3, Reactor Pressure Vessel (RPV) Nozzle to Vessel Head Weld (N6 Nozzle). Submitted to the NRC as a part of Revision 2 of this SI.

(4) RFR ISI-2-4, Class 1 Piping Welds. Submitted to the NRC as a part of Revision 2 of this SI.

(5) RFR ISI-2-5, Longitudinal Welds in Class 1 and 2 Piping. Submitted to NRC for utilization of Code Case N-524. Incorporated in Revision 4 of this SI.

(6) RFR ISI-2-6, Reactor Pressure Vessel (RPV) nozzle to vessel welds. Incorporated in Revision 5 of this SI.

(7) RFR ISI-2.7, Class 1 Integral Welded Attachments. Incorporated in Revision 5 of this SI.

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-A	B1.11	5	RPV	1	-	-	1	CHM-2046-C	UT	RPV Shell Circ Weld See Section 7.12.10
B-A	B1.12	15	RPV	1	-	-	1	CHM-2046-C	UT	RPV Shell Long Weld See Section 7.12.10
B-A	B1.21	3	RPV	1	1	-	-	ISI-0408-C	UT	RPV Circ Top Hd Wld (RCH-2-1C) RPV Circ Bot Hd Wld (C-S-BH)
B-A	B1.22	16	RPV	1	-	1	-	ISI-0408-C	UT	RPV Mer Top Hd Wld (RCH-2-XV) RPV Mer Bot Hd Wld (V-BH-X)
B-A	B1.30	1	RPV	1	-	-	1	CHM-2046-C	UT	RPV Flg Weld (C-5-FLG)
B-A	B1.40	1	RPV	1	-	-	1	ISI-0408-C	UT	RPV Hd-Flg Weld (RCH-2-2C)
B-A	B1.40	1	RPV	1	-	-	1	ISI-0408-C	PT	RPV Hd-Flg Flex Area (RCH-2-2C-FLEX)

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-A	B1.51	N/A	RPV	N/A	-	-				RPV Repair Weld(s) None
B-B		N/A		N/A						None
B-D	B3.90	31	RPV	31	10	10	11	CHM-2046-C & ISI-0292-C & ISI-0380-C	UT	RPV Noz-Ves Wld
B-D	B3.100	31	RPV	31	10	10	11	CHM-2046-C & ISI-0292-C & ISI-0380-C	UT	RPV Noz IR
B-E	B4.11	6	RPV	6	-	-	6	CHM-2046-C	VT-2	RPV Partial PENX. Nozzles
B-E	B4.12	185	RPV	47	-	-	47	ISI-0292-C	VT-2	CRD Nozzle Interval Hydro
B-E	B4.13	55	RPV	14	-	-	14	ISI-0292-C	VT-2	Instrumentation Noz
B-F	B5.10	17	RPV	17	5	6	6	ISI-2070-C ISI-2071-C ISI-0272-C ISI-0410-C	UT & PT	Noz-SE Wld ≥ 4"

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-F	B5.20							Refer to Section 7.3.1.D		
B-F	B5.30	N/A		N/A						None
B-F	B5.130	9		9	3	2	4		UT & PT	Dissim Pipe Wld => 4"
			CS/8	8	2	2	4	ISI-0271-C		
			RHR/1	1	1	-	-	ISI-0221-C		
B-F	B5.140							Refer to Section 7.3.1.D		
B-F	B5.150							Refer to Section 7.3.1.D		
B-G-1	B6.10	92	RPV	92	22	35	35	ISI-0266-C	MT	Clos Hd Nuts
B-G-1	B6.20	92	RPV	92	22	35	35	ISI-0266-C	UT(*2)	Studs (In Place)
B-G-1	B6.30	92	RPV	4(*2) 92 (if studs removed)	-	-	4(*2)	ISI-0266-C	MT & UT(*2)	Studs (When Removed)
B-G-1	B6.40	92	RPV	92	22	35	35	ISI-0266-C	UT	Threads (When Head Removed)

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-G-1	B6.50	92 sets	RPV	92 sets	22 sets	35 sets	35 sets	ISI-0266-C	VT-1	Washer (Sets of 2)
B-G-1	B6.50	92	RPV	92	22	35	35	ISI-0266-C	VT-1	Bushings (When Head Removed)
B-G-1	B6.150	N/A		N/A						None
B-G-1	B6.180	32	RECIR	16(*3)	-(*1)	-	16	ISI-0407-C	UT	Recir Pump Bolting
B-G-1	B6.190	2	RECIR	1(*3)	1(*3)	-	-	ISI-0407-C	VT-1	Flange Face
B-G-1	B6.200	32	RECIR	16(*3)	-(*1)	-	16	ISI-0407-C	VT-1	Recir Pump Nuts
B-G-1	B6.200	32	RECIR	16(*3)	-(*1)	-	16	ISI-0407-C	VT-1	Recir Pump Washers
B-G-1	B6.210	N/A		N/A						None
B-G-2	B7.10	N/A		N/A						None
B-G-2	B7.50	17		17	5	5	7		VT-1	Pipe Bolting ≤ 2"
			MS/12	12	4	4	4	ISI-0312-B		
			RECIR/2	2	1	-	1	ISI-0270-C		
			RPV/3	3	-	1	2	ISI-0408-C		Bolting to RPV Hd Noz
B-G-2	B7.60	N/A		N/A						None

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-G-2	B7.70	46		15(*10)	5	5	5		VT-1	Valve Bolting ≤ 2" See Section 8.3
			CS/4	2(*10)	1	-	1	ISI-0271-C		
			FW/6	2(*10)	1	-	1	ISI-0269-C		
			HPCI/1	1(*10)	-	-	1	ISI-0273-C		
			MS/8	1(*10)	1	-	-	ISI-0222-C		FCV-1-??
			MS/13	1(*10)	-	1	-	ISI-0312-B		PCV-1-???
			RECIR/6	3(*10)	1	2	-	ISI-0270-C		
			RHR/5	3(*10)	1	1	1	ISI-0221-C		
			RWCU/3	2(*10)	-	1	1	ISI-0272-C		
B-G-2	B7.80	185	RPV	185(*4)	45(*4)	--(*4)	--(*4)	ISI-0292-C	VT-1	CRD Housing Bolts
B-H	B8.10	2	RPV	2	1	1(*5)	1(*5)	ISI-0415-C	PT or UT	RPV IA's RFR-ISI-2-1
B-J	B9.11	389		100(*6)	29	36	35		ST & UT	Circumferential Welds ≥ 4"
			CS/23	5	5	-	-	ISI-0271-C	MT & UT	
			FW/76	18	1	10	7	ISI-0269-C	MT & UT	
			HPCI/20	5	5	-	-	ISI-0273-C	MT & UT	
			MS/120	26	6	9	11	ISI-0222-C	MT & UT	
			RCIC/6	2	2	-	-	ISI-0272-C	MT & UT	
			RECIR/78	17	2	10	5	ISI-0270-C	PT & UT	
			RHR/35	8	-	1	7	ISI-0221-C	PT & UT	
			RPV/13	13	4	4	5	ISI-0222-C * ISI-0269-C & ISI-0408-C	MT & UT	RPV Nox-SE Alloy Steel Welds (Not Dism Metal)
			RWCU/18	6	4	2	-	ISI-0272-C *	PT & UT	

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-J	B9.12	Note 7							ST & UT	Longitudinal Welds ≥ 4"
B-J	B9.21							Refer to Section 7.3.1.D		
B-J	B9.22	N/A		N/A						None
B-J	B9.31	42		11	3	4	4		ST & UT	Branch Connections ≥ 4"
			MS/26	6	-	2	4	ISI-0222-C	MT & UT	
			RECIR/15	4	3	1	-	ISI-0270-C	PT & UT	
			RHR/1	1	-	1	-	ISI-0221-C	PT & UT	
B-J	B9.32							Refer to Section 7.3.1.D		

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-J	B9.40							Refer to Section 7.3.1.D		
B-K-1	B10.10	54		54	14	18	22		ST	Piping Integral Attachments (IA's) ≥ 5/8"
			CS/5	5	-	-	5	ISI-0280-C	MT	
			FW/10	10	10	-	-	ISI-0277-C	MT	RFR ISI-2-7
			HPCI/1	1	1	-	-	ISI-0275-C	MT	
			MS/17	17	-	17	-	ISI-0279-C	MT	
			RECIR/18	18	-	1	17	ISI-0278-C	PT	
			RHR/3	3	3	-	-	ISI-0276-C	MT	
B-K-1	B10.20	6	RECIR	6	2	2	2	ISI-0278-C	PT	Pump IA's ≥ 5/8"
B-K-1	B10.30	2	FW	2	-	-	2	ISI-0277-C	MT	Valve IA ≥ 5/8"
B-K-1	N/A	48		N/A						Class 1 IA < 5/8"
B-L-1	B12.10	N/A		N/A						None
B-L-2	B12.20	2	RECIR	1(*8)	1(*8)	-	-	ISI-0407-C	VT-3	Pump Casing Interior

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
B-M-1	B12.30	N/A		N/A						None
B-M-1	B12.40	N/A		N/A						None
B-M-2	B12.50	55		21(*9)	8	-	13(*9)		VT-3	Valve Body > 4" See Section 8.3.
			CS/6	3(*10)	2	-	1	ISI-0271-C		
			FW/6	2(*10)	1	-	1	ISI-0269-C		
			HPCI/3	2(*10)	1	-	1	ISI-0273-C		
			MS/21	2(*10)	1	-	1	ISI-0222-C		
			RCIC/1	1(*10)	-	-	1	ISI-0272-C		
			RECIR/6	3(*10)	-	-	3	ISI-0270-C		
			RHR/9	6(*10)	2	-	4	ISI-0221-C		
			RWCU/3	2(*10)	1	-	1	ISI-0272-C		
B-N-1	B13.10	1	RPV	1	1	1	1	CHM-2046-C	VT-3	RPV Interior
B-N-2	B13.20	1	RPV	1	-	-	1	CHM-2046-C	VT-1	RPV Interior Att in Beltline Region
B-N-2	B13.30	1	RPV	1	-	-	1	CHM-2046-C	VT-3	RPV Interior Att Beyond Beltline Region
B-N-2	B13.40	1	RPV	1	-	-	1	CHM-2046-C	VT-3	Shroud Supp Surfaces
B-O	B14.10	40	RPV	4	-	-	4	ISI-0292-C	PT	CRD Housing weld
B-P	ALL	--	---------- See Section 7.9 and SSP-8.5----------						VT-2	Pressure Test Program

SECTION 8.1 EXAMINATION SCHEDULE
PART 1 - CLASS 1 EQUIVALENT (IWB) COMPONENTS (Continued)

NOTES:

(*1) Bolting replaced in cycle 6 refueling outage. Preservice examination performed on all 32 sets of bolting.

(*2) Studs (Bolting) may be examined in place under tension (B6.20), when connection is disassembled (B6.20, or when the bolting is removed (B6.30). Studs shall be surface examined only if removed. The four studs normally removed for refueling have been scheduled under Item Number B6.30. Others shall receive a surface exam if removed in accordance with Table IWB-2500-1, Examination Category B-G-1, NOTE: (1).

(*3) Examine bolting of only one pump in accordance with Table IWB-2500-1, B-G-1, NOTE: (3) in conjunction with B-L-2, NOTE: (1).

(*4) Bolts, studs, and nuts in CRD Housing examined only when disassembled in accordance with Table IWB-2500-1, Examination Category B-G-2, Extent and Frequency of Examination.

(*5) UT accessible length of RPV-SUPPORT-IA, approximately half 2nd period and half 3rd period.

(*6) Approximately 90% of the B-J welds, within practical limits of accessibility, shall be examined during the life of the plant. All carbon steel or low alloy (similar metal) RPV nozzle-to-safe end welds plus additional welds to comprise a 25% sample shall be examined each interval. All dissimilar metal welds are examined under Examination Category B-F.

(*7) Class 1 longitudinal welds shall be examined when they intersect a circumferential weld selected for examination. The examination of longitudinal welds is in accordance with the alternative specified in Code Case N-524.

(*8) Examine only one pump in accordance with Table 2500-1, B-L-2, NOTE: (1) & (2). This examination shall be performed during Cycle 6 in accordance with the NRC SER for Relief Request ISI-4 (letter A02 891030 018) associated with the first inspection interval.

(*9) Examine only one valve per Group in accordance with Table 2500-1, B-M-2, NOTE: (3). There are 21 Groups of Class 1 valves NPS 4 or larger.

(*10) Number of Groups of CLass 1 valves exceeding NPS 4 contained within this system (Examination Category and/or Item Number).

SECTION 8.1 EXAMINATION SCHEDULE
PART 2 - CLASS 2 EQUIVALENT (IWC) COMPONENTS

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
C-A	C1.10	12	RHR	3(*1)	1	1	1	ISI-0406-C	UT	RHRHX RHRG-2-07 Shell RHRG-2-08 Circ. RHRG-2-09 Head
C-A	C1.20	4	RHR	1(*1)	-	-	1	ISI-0406-C	UT	RHRHX RHRG-2-10 Circ.
C-A	C1.30	N/A		N/A						None
C-B	C2.10	N/A		N/A						None
C-B	C2.21	4	RHR	1(*2)	1	-	-	ISI-0406-C	UT&MT	RHRHX RHRG-2-11 Head Noz Weld.
C-B	C2.22	N/A		N/A				None		
C-B	C2.31	16	RHR	4(*2)	-	2	2	ISI-0406-C	MT	RHRHX RHRG-2-05A Noz Rein RHRG-2-05B forcing RHRG-2-06A Plate RHRG-2-06B Welds.
C-B	C2.32	N/A		N/A						None
C-B	C2.33	8	RHR	2(*2)	2	2	2	ISI-0406-C	VT-2	RHRHX RHRG-2-05 & -06, Noz Reinforcing Plt relief "telltale" hole @ Press Test.
C-C	C3.10	12	RHR	3(*3)	1	1	1	ISI-0406-C	MT	Pres Ves IA's => 3/4"
C-C	C3.20	46		46	10	20	16		MT	RHRHX Piping IA's => 3/4"
			CS/6	6	6	-	-	ISI-0105-C	MT	
			HPCI/4	4	-	4	-	ISI-0130-C	MT	
			MS/8	8	4	4	-	ISI-0079-C	MT	
			RHR/28	28	-	12	16	ISI-0324-C	MT	

SECTION 8.1 EXAMINATION SCHEDULE
PART 2 - CLASS 2 EQUIVALENT (IWC) COMPONENTS

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
C-C	C3.30	4	RHR	4	1	1	2	ISI-0310-B	MT	Pump IA's => 3/4"
C-C	C3.40	N/A		N/A						None
C-C	N/A	98		N/A						CLASS 2 IA's <3/4"
C-D		N/A		N/A						None
C-F-1	C5.11	13		13	4	4	5		PT & UT	Dissim metal & SS circ welds > 4" & >= 3/8" nom. wall.
			CS/6	6	2	4	-	ISI-0103-C		
			HPCI/5	5	-	-	5	ISI-0128-C		
			RHR/2	2	2	-	-	MSG-0018-C		
C-F-1	C5.12	Note 4							PT & UT	Dissim metal & SS long welds > 4" & => 3/8"nom. wall.
C-F-1	C5.20	N/A		N/A						BWR Plant
C-F-1	C5.30	N/A		N/A						None
C-F-1	C5.40	N/A		N/A						None
C-F-2	N/A	151(*6)		N/A	-	-	-		N/A	< 3/8" nom. wall Excluded See Section 7.3.4.B
			CS/21	N/A				ISI-0103-C		
			RBCCW/16	N/A				ISI-0031-C		
			RCIC/38	N/A				ISI-0129-C		
			RHR/76	N/A				MSG-0018-C		

SECTION 8.1 EXAMINATION SCHEDULE
PART 2 - CLASS 2 EQUIVALENT (IWC) COMPONENTS

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
C-F-2	C5.51	935 (1086) (*5)		84	26	30	28		MT & UT	CS Circ Welds > 4" & => 3/8" nom. wall.
			CRD/72	6	6	-	-	ISI-0040-C		
			CS/144	12	-	-	12	ISI-0103-C		
			HPCI/156	14	7	7	-	ISI-0128-C		
			MS/114	10	10	-	-	MSG-0021-C		
			RCIC/43	6	3	3	-	ISI-0129-C		
			RHR/406	36	-	20	16	MSG-0018-C		Includes containment heat removal.
C-F-2	C5.52	Note 4							MT & UT	CS Long Welds > 4" & => 3/8" nom. wall.
C-F-2	C5.60	N/A		N/A						BWR Plant
C-F-2	C5.70	N/A		N/A						None
C-F-2	C5.81	5		1						
			RHR/3	1	-	-	1	MSG-0018-C	MT	Sweep-o-let branch connection
			CS/1	-	-	-	-	ISI-0103-C		
			MS/1	-	-	-	-	MSG-0021-C		
C-G	C6.10	N/A		N/A						None
C-G	C6.20	N/A		N/A						None
C-H	ALL	--	ALL	--See Section 7.9 and SSP-8.5.				--		VT-2

Pressure Test Program.

SECTION 8.1 EXAMINATION SCHEDULE
PART 2 - CLASS 2 EQUIVALENT (IWC) COMPONENTS

NOTES:

(*1) Examinations limited to one vessel of similar design, size, function in accordance with Table IWC-2500-1, Examination Category C-A, NOTE: (3).

(*2) Examinations limited to one vessel of similar design, size, function in accordance with Table IWC-2500-1, Examination Category C-B, NOTE: (4).

(*3) Examinations limited to one vessel of similar design, size, function in accordance with Table IWC-2500-1, Examination Category C-C, NOTE: (2).

(*4) Class 2 longitudinal welds will be examined when they intersect a circumferential weld selected for examination. The examination of longitudinal welds is in accordance with the alternative specified in Code Case N-524.

(*5) Total count (1087) of Item Numbers C5.51 (circumferential welds >= 3/8" nominal wall) & Item Numbers N/A (excluded welds due to thickness being < 3/8" nominal wall) to which the 7.5 % sampling rate is applied to arrive at 82 welds to be examined. The second interval sample is prorated to each system by using the ratio of the nonexempt C-F-2 welds for the system to the total of C-F-2 circumferential welds. [i.e. For RHR: (74 + 406)/1095 X 82 = 36]. See Table IWC-2500-1, C-F-2, NOTES: (2).

(*6) Item Numbers N/A are the circumferential welds < 3/8" nominal wall. There are 151 of these welds and they are included here to establish a total weld count. They are not subject to examination. See Section 7.3.4.B.

SECTION 8.1 EXAMINATION SCHEDULE
PART 3 - CLASS 3 EQUIVALENT (IWD) COMPONENTS

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
D-A		N/A		N/A						None
D-B	D2.10	--	All	-- See Section 7.9 and SSP-8.5.--					VT-2	Pressure Test Program.
D-B	D2.20	94		94	31	31	32		VT-3	IA's Comp Supports & Restraints.
			EECW/74	74	12	31	31	ISI-0368-C		
			RCW/2	2	1	-	1	ISI-0391-C		
			RHRSW/18	18	18	-	-	ISI-0145-C		
D-B	D2.30	15	MS	15	5	5	5	ISI-0412-C	VT-3	IA's ON SNUBBERS.
D-B	D2.40	35		35	11	12	12		VT-3	IA's Spring Type Piping Comp Supports.
			MS/26	26	2	12	12	ISI-0412-C		
			RHRSW/9	9	9	-	-	ISI-0145-C		

SECTION 8.1 EXAMINATION SCHEDULE
PART 3 - CLASS 3 EQUIVALENT (IWD) COMPONENTS

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
D-B	D2.50	N/A		N/A						None
D-B	D2.60	N/A		N/A						None
D-C	D3.10	--	All	-- See Section 7.9 and SSP-8.5. --					VT-2	Pressure Test Program.
D-C	D3.20	1	FPC	1	-	-	1	ISI-0133-C	VT-3	IA's on Comp Supports & Restraints.
D-C	D3.30 thru D3.60	N/A		N/A					None	

SECTION 8.1 EXAMINATION SCHEDULE
PART 4 - COMPONENT SUPPORTS (IWF, CODE CASE N-491)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
F-A	F1.10	139		40	14	13	13			VT-3 CLASS 1 PIPE SUPPORTS. SUBTOTALS FOLLOW BELOW.
F-A	F1.10A	6		2	1	1	-	VT-3	ONE DIRECTIONAL RIGID SUPPORTS	
			MS/5	1	1	-	-	ISI-0279-C		
			RECIR/1	1	-	1	-	ISI-0278-C		
F-A	F1.10B	18		7	2	3	2		VT-3	MULTIDIRECTIONAL RIGID SUPPORTS.
			FW/4	1	1	-	-	ISI-0277-C		
			HPCI/1	1	1	-	-	ISI-0275-C		
			MS/5	1	-	1	-	ISI-0279-C		
			RECIR/2	1	-	1	-	ISI-0278-C		
			RHR/2	1	-	-	1	ISI-0276-C		
			RWCU/2	1	-	-	1	ISI-0274-C		
			CS/2	1	-	1	-	ISI-0280-C		

SECTION 8.1 EXAMINATION SCHEDULE
PART 4 - COMPONENT SUPPORTS (IWF, CODE CASE N-491)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
F-A	F1.10C	115		31	11	9	11		VT-3	VARIABLE SUPPORTS. (SNUBBERS, CONSTANT FORCE, SPRINGS, ETC.)
			CS/10	3	3	-	-	ISI-0280-C		
			FW/29	8	8	-	-	ISI-0277-C		
			HPCI/3	1	-	1	-	ISI-0275-C		
			MS/36	10	-	8	2	ISI-0279-C		
			RECIR/22	5	-	-	5	ISI-0278-C		
			RHR/13	3	-	-	3	ISI-0276-C		
			RWCU/2	1	-	-	1	ISI-0274-C		
F-A	F1.20	336		51	15	17	19		VT-3	CLASS 2 PIPE SUPPORTS. SUBTOTALS FOLLOW BELOW.

SECTION 8.1 EXAMINATION SCHEDULE
PART 4 - COMPONENT SUPPORTS (IWF, CODE CASE N-491)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
F-A	F1.20A	107		17	5	5	7		VT-3	ONE DIRECTIONAL RIGID SUPPORTS
			CRD/14	2	2	-	-	ISI-0041-C		
			CS/16	2	2	-	-	ISI-0105-C		
			HPCI/25	4	-	-	4	ISI-0130-C		
			RBCCW/2	1	1	-	-	ISI-0032-C		
			RCIC/11	2	-	-	2	ISI-0131-C		
			RHR/39	6	-	5	1	ISI-0324-C		
F-A	F1.20B	65		10	3	3	4		VT-3	MULTIDIRECTIONAL RIGID SUPPORTS
			CRD/13	2	2	-	-	ISI-0041-C		
			CS/8	1	1	-	-	ISI-0105-C		
			HPCI/7	1	-	-	1	ISI-0130-C		
			MS/6	1	-	-	1	ISI-0079-C		
			RCIC/4	1	-	-	1	ISI-0131-C		
			RHR/27	4	-	3	1	ISI-0324-C		
F-A	F1.20C	158		24	7	9	8		VT-3	VARIABLE SUPPORTS. (SNUBBERS, CONSTANT FORCE, SPRINGS, ETC.)
			CS/13	3	3	-	-	ISI-0105-C		
			HPCI/20	3	3	-	-	ISI-0130-C		
			MS/31	4	-	-	4	ISI-0079-C		
			RCIC/8	1	-	1	-	ISI-0131-C		
			RBCCW/1	1	1	-	-	ISI-0032-C		
			RHR/85	12	-	8	4	ISI-0324-C		
F-A	F1.30	450		48	13	18	17		VT-3	CLASS 3 PIPE SUPPORTS. SUBTOTALS FOLLOW BELOW.

SECTION 8.1 EXAMINATION SCHEDULE
PART 4 - COMPONENT SUPPORTS (IWF, CODE CASE N-491)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
F-A	F1.30A	116		13	4	5	4		VT-3	ONE DIRECTIONAL RIGID SUPPORTS.
			EECW/85	8	-	5	3	ISI-0368-C		
			FPC/1	1	-	-	1	ISI-0133-C		
			MS/1	1	1	-	-	ISI-0412-C		
			RCW/4	1	1	-	-	ISI-0391-C		
			RHRSW/25	2	2	-	-	ISI-0145-C		
F-A	F1.30B	268		28	7	11	10		VT-3	MULTIDIRECTIONAL RIGID SUPPORTS.
			EECW/180	18	-	9	9	ISI-0368-C		
			FPC/4	1	-	-	1	ISI-0133-C		
			MS/53	6	6	-	-	ISI-0412-C		
			RCW/5	1	1	-	-	ISI-0391-C		
			RHRSW/26	2	-	2	-	ISI-0145-C		
F-A	F1.30C	66		7	2	2	3		VT-3	VARIABLE SUPPORTS. (SNUBBERS, CONSTANT FORCE, SPRINGS, ETC.)
			EECW/3	1	-	-	1	ISI-0368-C		
			MS/54	4	2	2	-	ISI-0412-C		
			RHRSW/9	2	-	-	2	ISI-0145-C		

SECTION 8.1 EXAMINATION SCHEDULE
PART 4 - COMPONENT SUPPORTS (IWF, CODE CASE N-491)

Examination Category	Item No.	Number of Components	System/ Subtotal	Second Inspection Interval Sample	First Period Sample	Second Period Sample	Third Period Sample	Components Shown On ISI Drawing #	Exam(s) Required	Remarks
F-A	F1.40	74		33	11	11	11			ALL CLASSES OF COMPONENT SUPPORTS (NOT PIPE SUPPORTS). SUBTOTALS FOLLOW BELOW.
F-A	F1.40A	1	RCIC/1	1	0	0	1	ISI-0131-C	VT-3	
F-A	F1.40B	48		16(*1)	6	6	4		VT-3	MULTIDIRECTIONAL RIGID SUPPORTS.
			CRD/6	3(*1)	3	-	-	ISI-0041-C		TANK SUPPORTS.
			CS/4	1(*1)	1	-	-	ISI-0105-C		PUMP SUPPORTS.
			EECW/16	2(*1)	2	-	-	ISI-0368-C		PUMP & STRAINER SUPPORTS.
			HPCI/3	3	-	-	3	ISI-0130-C		TURBINE & PUMP SUPPORTS.
			RCIC/2	2	-	2	-	ISI-0131-C		TURBINE & PUMP SUPPORTS.
			RHR/12	3(*1)	-	3	-	ISI-0406-C		RHR HX SUPPORTS.
			RHR/4	1(*1)	-	1	-	ISI-310-B		RHR PUMP SUPPORTS
			RPV/1	1	-	-	1	ISI-0415-A		RPV SUPPORT.
F-A	F1.40C	25		16(*1)	5	5	6			
			FW/2	2	2	-	-	ISI-0277-C	VT-3	VALVE SUPPORTS
			RECIR/2	2	2			ISI-0278-C	VT-3	VALVE SUPPORTS
			RECIR/18	9(*1)	-	4	5	ISI-0278-C	VT-3	RECIR PUMP SUPPORTS
			RHR/2	2	-	1	1	ISI-0324-C	VT-3	VALVE SUPPORTS
			RPV/1	1	1	-	-	ISI-0415-C	VT-3	RPV STABILIZER

NOTE:

(*1) For multiple components other than piping, within a system of similar design, function, and service, the supports of only one of the multiple components are required to be examined. See Table -2500-1, Examination Category F-A, Note: (3).

SECTION 8.1 EXAMINATION SCHEDULE
PART 5 - AUGMENTED EXAMINATIONS(*1)

Augmented Exam Category	Ref. Program Section	Number of Components	Exam Regmt 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
A	7.12.8	42	B02-02	-	-------	6(12%)in	6 years--	--11(25%)	in 10 years	UT	Section 8.2 NUREG-0313
C	7.12.8	120	B02-02	-	121	-60(50%)	in 6 years	-120(100%)	in 10 years	UT	Section 8.2 NUREG-0313
D	7.12.8	7	B02-02	12	6	4	3	4	3	UT	Section 8.2 NUREG-0313
E	7.12.8	16	B02-02	9	7	9	7	9	7	UT	Section 8.2 NUREG-0313
G	7.12.8	2	B02-02	8	2	2	2	2	2	VT-2	Section 8.2 NUREG-0313
NA(*2)	7.12.8	15	B02-02	-		-		-		N/A	Stainless Welds,Temp. Exclusion NUREG-0313
B-D	7.12.7	6	B01-02	-	6	-	6	-	6	UT	NUREG-0619 Feedwater, Nozzle, Bore & SE
B-J	7.12.6	3	B01-02	3	-	-	-	-	-	UT	NUREG-0619 Welds at CRD Reroute
B-N-1	7.12.7	6	B01-02	-	-	-	6	-	-	VT-1	NUREG-0619 FN Nozzles Spargers.
NA	7.12.6	1	B01-02	1	-	-	-	-	-	UT	NUREG-0619 Base metal at CRD Reroute.

SECTION 8.1 EXAMINATION SCHEDULE
PART 5 - AUGMENTED EXAMINATIONS(*1)

Augmented Exam Category	Ref. Program Section	Number of Components	Exam 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	Exam(s) Required	Remarks
B-N-1	7.12.11.1	2	B06-02	2	2	2	2	2	2	VT-1	IEB 80-13 CS Spargers
B-J	7.12.9	31	B04-02	1	8	-	11	-	11	UT	Tech Spec 4.6.G.2 Pipe Whip
B-A	7.12.10	21	B05-02	-		-	-	21	-	UT	RPV Welds
C	7.12.1	1	D01-02	1	-	-	1	1	-	UT&RT	
B-N-1	7.12.2	1	D02-02	1	1	1	-	-	-	VT-1	
E	7.12.3	4	D03-02	4	-	-	-	-	-	UT	

NOTES:

(*1) Most of these components are considered within the Code examination numbers presented in Parts 1 through 4 of this Section. Where one examination may serve as Code credit and as Augmented credit, it shall be so credited.

(*2) These stainless steel welds contain coolant at a temperature of 200 degrees or less during power operation and do not require examination under NUREG-0313. These welds are listed in Section 8.2, Part 2.

SECTION 8.2 - PART 1
UNIT 2 WELDS REQUIRED TO BE EXAMINED PER GENERIC LETTER 88-01

WELD NUMBER	SYSTEM	EXAM METHOD	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC EXAM CATEGORY
2RA5	RECIR	UT	12	P,P	A
2RA6	RECIR	UT	12	P,SE	A
2RB5	RECIR	UT	12	P,P	A
2RB6	RECIR	UT	12	P,SE	A
2RC5	RECIR	UT	12	P,P	A
2RC6	RECIR	UT	12	P,SE	A
2RD5	RECIR	UT	12	P,P	A
2RD6	RECIR	UT	12	P,SE	A
2RE5	RECIR	UT	12	P,P	A
2RE6	RECIR	UT	12	P,SE	A
2RF5	RECIR	UT	12	P,P	A
2RF6	RECIR	UT	12	P,SE	A
2RG5	RECIR	UT	12	P,P	A
2RG6	RECIR	UT	12	P,SE	A
2RH5	RECIR	UT	12	P,P	A
2RH6	RECIR	UT	12	P,SE	A
2RJ5	RECIR	UT	12	P,P	A
2RJ6	RECIR	UT	12	P,SE	A
2RK5	RECIR	UT	12	P,P	A
2RK6	RECIR	UT	12	P,SE	A
2RA1	RPV	UT	12	N,SE	A
2RB1	RPV	UT	12	N,SE	A
2RC1	RPV	UT	12	N,SE	A
2RD1	RPV	UT	12	N,SE	A
2RE1	RPV	UT	12	N,SE	A
2RF1	RPV	UT	12	N,SE	A
2RG1	RPV	UT	12	N,SE	A
2RH1	RPV	UT	12	N,SE	A
2RJ1	RPV	UT	12	N,SE	A
2RK1	RPV	UT	12	N,SE	A
JP-2-1A	RPV	UT	4	N,SE	A
JP-2-1B	RPV	UT	4	N,SE	A
DRWC-2-07A	RWCU	UT	6	P,P	A
DRWC-2-07B	RWCU	UT	6	P,P	A
RWC-2-001-G001	RWCU	UT	4	V,V	A
RWC-2-001-G002	RWCU	UT	4	E,V	A
RWCU-2-003-G001	RWCU	UT	6	E,P	A
RWCU-2-003-G002	RWCU	UT	6	E,P	A
RWCU-2-003-G003	RWCU	UT	6	PEN,P	A
RWCU-2-003-G004	RWCU	UT	6	P,V	A
RWCU-2-004-G073	RWCU	UT	4	P,V	A
RWCU-2-004-G074	RWCU	UT	4	P,V	A

SECTION 8.2 - PART 1
UNIT 2 WELDS REQUIRED TO BE EXAMINED PER GENERIC LETTER 88-01

WELD NUMBER	SYSTEM	EXAM METHOD	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC EXAM CATEGORY
DCS-2-04	CS	UT	12	P,P	C
DCS-2-05	CS	UT	12	P,V	C
DCS-2-07	CS	UT	12	P,P	C
DCS-2-13	CS	UT	12	P,P	C
DCS-2-13A	CS	UT	12	P,P	C
DCS-2-14	CS	UT	12	P,V	C
DSCS-2-01	CS	UT	12	E,P	C
DSCS-2-02	CS	UT	12	E,P	C
DSCS-2-09	CS	UT	12	P,P	C
TCS-2-403	CS	UT	10	P,SE	C
TCS-2-405	CS	UT	12	E,V	C
TCS-2-406	CS	UT	12	P,V	C
TCS-2-410	CS	UT	12	E,V	C
TCS-2-422	CS	UT	12	P,V	C
TCS-2-426	CS	UT	12	E,P	C
TSCS-2-418	CS	UT	10	P,SE	C
GR-2-01	RECIR	UT	28	P,PMP	C
GR-2-02	RECIR	UT	28	P,V	C
GR-2-03	RECIR	UT	28	E,V	C
GR-2-04	RECIR	UT	4	C,P	C
GR-2-07	RECIR	UT	4	C,P	C
GR-2-08	RECIR	UT	28	T,X	C
GR-2-09	RECIR	UT	12	P,P	C
GR-2-12	RECIR	UT	12	P,P	C
GR-2-18	RECIR	UT	22	H,X	C
GR-2-19	RECIR	UT	12	P,P	C
GR-2-22	RECIR	UT	12	P,P	C
GR-2-25	RECIR	UT	22	H,V	C
GR-2-26	RECIR	UT	22	H,V	C
GR-2-27	RECIR	UT	28	P,PMP	C
GR-2-28	RECIR	UT	28	P,V	C
GR-2-29	RECIR	UT	28	E,V	C
GR-2-30	RECIR	UT	4	C,P	C
GR-2-33	RECIR	UT	4	C,P	C
GR-2-34	RECIR	UT	28	P,X	C
GR-2-35	RECIR	UT	12	P,P	C
GR-2-38	RECIR	UT	12	P,P	C
GR-2-41	RECIR	UT	12	P,R	C
GR-2-44	RECIR	UT	22	H,X	C
GR-2-48	RECIR	UT	12	P,P	C
GR-2-51	RECIR	UT	22	H,V	C

SECTION 8.2 - PART 1
UNIT 2 WELDS REQUIRED TO BE EXAMINED PER GENERIC LETTER 88-01

WELD NUMBER	SYSTEM	EXAM METHOD	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC EXAM CATEGORY
GR-2-52	RECIR	UT	22	H,V	C
GR-2-54	RECIR	UT	28	E,P	C
GR-2-55	RECIR	UT	28	P,T	C
GR-2-56	RECIR	UT	28	E,V	C
GR-2-57	RECIR	UT	28	P,V	C
GR-2-58	RECIR	UT	28	E,PMP	C
GR-2-60	RECIR	UT	28	E,P	C
GR-2-62	RECIR	UT	28	E,V	C
GR-2-63	RECIR	UT	28	P,V	C
GR-2-63A	RECIR	UT	4	F,F	C
GR-2-63B	RECIR	UT	4	BC	C
KR-2-01	RECIR	UT	4	BC	C
KR-2-02	RECIR	UT	28	E,P	C
KR-2-03	RECIR	UT	28	P,T	C
KR-2-04	RECIR	UT	4	BC	C
KR-2-11	RECIR	UT	22	R,X	C
KR-2-12	RECIR	UT	22	H,X	C
KR-2-13	RECIR	UT	12	BC	C
KR-2-15	RECIR	UT	22	C,H	C
KR-2-19	RECIR	UT	12	BC	C
KR-2-20	RECIR	UT	12	BC	C
KR-2-23	RECIR	UT	4	BC	C
KR-2-24	RECIR	UT	28	E,P	C
KR-2-25	RECIR	UT	28	P,T	C
KR-2-26	RECIR	UT	4	BC	C
KR-2-33	RECIR	UT	22	R,X	C
KR-2-34	RECIR	UT	22	H,X	C
KR-2-35	RECIR	UT	12	BC	C
KR-2-42	RECIR	UT	12	BC	C
KR-2-45	RECIR	UT	28	E,P	C
KR-2-46	RECIR	UT	28	P,T	C
KR-2-47	RECIR	UT	28	E,P	C
KR-2-48	RECIR	UT	28	E,P	C
KR-2-49	RECIR	UT	4	BC	C
KR-2-50	RECIR	UT	28	E,P	C
KR-2-51	RECIR	UT	28	E,P	C
KR-2-52	RECIR	UT	28	E,P	C
KR-2-53	RECIR	UT	4	BC	C

SECTION 8.2 - PART 1
UNIT 2 WELDS REQUIRED TO BE EXAMINED PER GENERIC LETTER 88-01

WELD NUMBER	SYSTEM	EXAM METHOD	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC EXAM CATEGORY
DRHR-2-02	RHR	UT	24	P,V	C
DRHR-2-04	RHR	UT	24	E,P	C
DRHR-2-05	RHR	UT	24	P,V	C
DRHR-2-06	RHR	UT	24	P,V	C
DRHR-2-07	RHR	UT	24	P,V	C
DRHR-2-08	RHR	UT	24	P,V	C
DRHR-2-13	RHR	UT	24	E,P	C
DRHR-2-14	RHR	UT	24	E,V	C
DRHR-2-15	RHR	UT	24	P,V	C
DRHR-2-16	RHR	UT	24	E,V	C
DRHR-2-17	RHR	UT	24	P,V	C
DRHR-2-18	RHR	UT	24	P,T	C
DRHR-2-19	RHR	UT	20	P,T	C
DRHR-2-21	RHR	UT	20	E,V	C
DRHR-2-23	RHR	UT	20	P,V	C
DSRHR-2-01	RHR	UT	24	E,P	C
DSRHR-2-02	RHR	UT	24	P,P	C
DSRHR-2-03	RHR	UT	24	P,P	C
DSRHR-2-04	RHR	UT	24	E,P	C
DSRHR-2-04A	RHR	UT	24	E,P	C
DSRHR-2-05	RHR	UT	24	E,P	C
DSRHR-2-05A	RHR	UT	24	E,P	C
DSRHR-2-06	RHR	UT	24	P,P	C
DSRHR-2-07	RHR	UT	24	E,P	C
DSRHR-2-08	RHR	UT	6	BC	C
DSRHR-2-09	RHR	UT	20	E,P	C
DSRHR-2-10	RHR	UT	20	E,P	C
DSRHR-2-11	RHR	UT	20	E,P	C
TRHR-2-191	RHR	UT	20	E,V	C
N 1A-SE	RPV	UT	28	N,SE	C
N 1B-SE	RPV	UT	28	N,SE	C
TCS-2-401	RPV	UT	10	N,SE	C
TCS-2-417	RPV	UT	10	N,SE	C
DRWC-2-01	RWCU	UT	6	P,V	C
DRWC-2-01A	RWCU	UT	6	P,V	C
DRWC-2-02	RWCU	UT	6	E,V	C
DRWC-2-03	RWCU	UT	6	P,V	C
DSRWC-2-01	RWCU	UT	6	E,P	C

SECTION 8.2 - PART 1
UNIT 2 WELDS REQUIRED TO BE EXAMINED PER
GENERIC LETTER 88-01

WELD NUMBER	SYSTEM	EXAM METHOD	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC EXAM CATEGORY
DSRWC-2-01A	RWCU	UT	6	E,P	C
DSRWC-2-02	RWCU	UT	6	E,P	C
DSRWC-2-06	RWCU	UT	6	E,P	C
RCRD-2-49	CRD	UT	4	E,V	D
RCRD-2-50	CRD	UT	4	E,V	D
RCRD-2-52	CRD	UT	4	P,V	D
DRHR-2-03	RHR	UT	24	P,V	D
DRHR-2-11	RHR	UT	24	P,V	D
DRHR-2-12	RHR	UT	24	P,V	D
RCRD-2-33	RPV	UT	4	C,N	D
TCS-2-421(OL)	CS	UT	12	E,V	E
GR-2-15(OL)	RECIR	UT	12	P,R	E
GR-2-45(OL)	RECIR	UT	12	P,P	E
GR-2-53	RECIR	UT	28	P,SE	E
GR-2-59(OL)	RECIR	UT	28	P,SE	E
GR-2-61(OL)	RECIR	UT	28	P,P	E
GR-2-64(OL)	RECIR	UT	28	E,PMP	E
KR-2-14	RECIR	UT	12	BC	E
KR-2-36	RECIR	UT	12	BC	E
KR-2-37	RECIR	UT	22	C,H	E
KR-2-41	RECIR	UT	12	BC	E
DRHR-2-09	RHR	UT	24	P,T	E
DRHR-2-22	RHR	UT	20	P,V	E
DSRWC-2-03(OL)	RWCU	UT	6	E,P	E
DSRWC-2-04(OL)	RWCU	UT	6	E,P	E
DSRWC-2-05(OL)	RWCU	UT	6	E,P	E
DRHR-2-03B	RHR	VT-2	24	P,P	G
DRHR-2-13B	RHR	VT-2	24	P,P	G

SECTION 8.2 - PART 2
UNIT 2 STAINLESS AND DISSIMILAR METAL WELDS
NOT SUBJECT TO GENERIC LETTER 88-01 EXAMS

WELD NUMBER	SYSTEM	PIPE SIZE (INCHES)	WELD CONFIG	IGSCC CATEGORY	EXAM METHOD	COMMENTS
DCS-2-01	CS	12	P,V	NA	N/A	TEMPERATURE EXCLUSION
DCS-2-02	CS	12	E,V	NA	N/A	TEMPERATURE EXCLUSION
DCS-2-03	CS	12	P,V	NA	N/A	TEMPERATURE EXCLUSION
DCS-2-10	CS	12	E,V	NA	N/A	TEMPERATURE EXCLUSION
DCS-2-11	CS	12	P,V	NA	N/A	TEMPERATURE EXCLUSION
DCS-2-12	CS	12	P,V	NA	N/A	TEMPERATURE EXCLUSION
DSCS-2-14	CS	12	E,P	NA	N/A	TEMPERATURE EXCLUSION
DSCS-2-15	CS	12	E,P	NA	N/A	TEMPERATURE EXCLUSION
DSCS-2-16A	CS	12	P,PEN	NA	N/A	INACCESSIBLE IN PENETRATION X-16A. TEMPERATURE EXCLUSION.
DSCS-2-16B	CS	12	P,PEN	NA	N/A	INACCESSIBLE IN PENETRATION X-16A. TEMPERATURE EXCLUSION.
SHPCI-2-1	HPCI	12	F,P	NA	N/A	TEMPERATURE EXCLUSION
SHPCI-2-2	HPCI	12	E,P	NA	N/A	TEMPERATURE EXCLUSION
SHPCI-2-3	HPCI	12	E,P	NA	N/A	TEMPERATURE EXCLUSION
SHPCI-2-4	HPCI	12	E,P	NA	N/A	TEMPERATURE EXCLUSION
SHPCI-2-5	HPCI	12	E,P	NA	N/A	TEMPERATURE EXCLUSION

SECTION 8.3 ASME CLASS 1 EQUIVALENT VALVE LIST

GROUP NUMBER	VALVE NUMBER	SIZE INCH	SYSTEM	ISI DWG NUMBER	VENDOR	VENDOR DWG NO.	MATERIAL SPEC.	VALVE TYPE	COMMENTS
1	3-554 3-558 3-568 3-572	24	FW	ISI-0269-C	ATWOOD & MORRILL	20788-H	A-216 WCB	CHECK	
2	HCV3-66 HCV3-67	24	FW	ISI-0269-C	POWELL	035879-2	A-216 WCB	GATE	
3	FCV68-01 FCV68-77	28	RECIR	ISI-0270-C	DARLING	94-12086	A351 CF8	GATE	
4	FCV68-03 FCB68-79	28	RECIR	ISI-0270-C	DARLING	94-12086	A351 CF8	GATE	
5	FCV68-33 FCV68-35	22	RECIR	ISI-0270-C	DARLING	94-12086	A351 CFB	GATE	
6	FCV1-14 FCV1-15 FCV1-26 FCV1-27 FCV1-37 FCV1-38 FCV1-51 FCV1-52	26	MS	ISI-0222-C	ATWOOD & MORRILL	20851-H	A216 WCB	GLOBE	

SECTION 8.3 ASME CLASS 1 EQUIVALENT VALVE LIST (Continued)

GROUP NUMBER	VALVE NUMBER	SIZE INCH	SYSTEM	ISI DWG NUMBER	VENDOR	VENDOR DWG NO.	MATERIAL SPEC.	VALVE TYPE	COMMENTS
7	PCV1-004 PCV1-005 PCV1-018 PCV1-019 PCV1-022 PCV1-023 PCV1-030 PCV1-031 PCV1-034 PCV1-041 PCV1-042 PCV1-179 PCV1-180	6	MS	ISI-0312-B	TARGET ROCK	PL-7657-100	A216 WCB & A105	PILOT OPERATED RELIEF	
8	HCV74-69 HCV74-55	24	RHR	ISI-0221-C	POWELL	035880-3	A351 CF8M	GATE	
9	FCV74-54 FCV74-68	24	RHR	ISI-0221-C	ATWOOD & MORRILL	20800-H	A351 CF8M	CHECK	
10	FCV74-53 FCV74-67	24	RHR	ISI-0221-C	WALWORTH	A-12334-M1E	A351 CF8M	GATE	No B-G-2 Bolting.
11	HCV74-49	20	RHR	ISI-0221-C	POWELL	036207-2	A351 CF8M	GATE	
12	FCV74-47	20	RHR	ISI-0221-C	WALWORTH	A-12332-M1C	A216 WCB	GATE	No B-G-2 Bolting.
15	85-577	4	CRD	ISI-0272-C	VELAN	P-339231-13	A182 TP316	GATE	Exempt from B-M-2 exams. Size < = 4".

SECTION 8.3 ASME CLASS 1 EQUIVALENT VALVE LIST (Continued)

GROUP NUMBER	VALVE NUMBER	SIZE INCH	SYSTEM	ISI DWG NUMBER	VENDOR	VENDOR DWG NO.	MATERIAL SPEC.	VALVE TYPE	COMMENTS
16	HCV75-27 HCV75-55	12	CS	ISI-0271-C	POWELL	0360334-2	A351 CF8M	GATE	
17	FCV75-26 FCV75-54	12	CS	ISI-0271-C	ROCKWELL	PD-420652	A351 CF8M	CHECK	
18	FCV75-25 FCV75-53	12	CS	ISI-0271-C	WALWORTH	IVP-1198	A351 CF8M	GATE	NO B-G-2 bolting.
19	69-500	6	RWCU	ISI-0272-C	VELAN	P-33160-20	A182 F316	GATE	
21	FCV69-01 FCV69-02	6	RWCU	ISI-0272-C	VELAN	P-33160-20	A182 F316	GATE	
22	69-579	4	RWCU	ISI-0272-C	VELAN	P-35177-4	A105 GR11	CHECK	Exempt from B-M-2 exams. Size < = 4".
23	69-580	4	RWCU	ISI-0272-C	VELAN	P-35177-3	A105 GR11	GATE	Exempt from B-M-2 exams. Size < = 4".
24	FCV71-40	6	RCIC	ISI-0272-C	ROCKWELL	PD-420688	A216 WCB	CHECK	
25	FCV73-02 FCV73-03	10	HPCI	ISI-0273-C	CRANE	PB-139989	A216 WCB	GATE	No B-G-2 bolting.
26	FCV73-45	14	HPCI	ISI-0273-C	ROCKWELL	PD-420687	A216 WCB	CHECK	
27	FCV74-48	20	RHR	ISI-0221-C	WALWORTH	A-12331-M1C	A351 CF8M	GATE	No B-G-2 bolting.
28	69-630	4	RWCU	ISI-0272-C	ANCHOR/ DARLING	C23650	SA351 CF8M	CHECK	Exempt from B-M-2 exams. Size < = 4"

SECTION 8.4

REQUESTS FOR RELIEF

REQUEST FOR RELIEF ISI-2-1

WITHDRAWN

REQUEST FOR RELIEF ISI-2-2

WITHDRAWN

REQUEST FOR RELIEF ISI-2-3

Components:	Reactor Pressure Vessel Nozzle to Vessel Head Weld (N6 Nozzle)
Classification:	1
Code Category:	B-D
Item Number:	B3.90
Inspection Requirements:	ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item Number B3.90, Volumetric Examination, Figure IWB-2500-7.
Basis for Relief:	The nozzle to head contour limits the accessible volume of examination performed from the O.D. to 60%.
Alternate Inspection:	None.

REQUEST FOR RELIEF ISI-2-4

Components:	Class 1 Piping Welds (refer to attached list)
Classification:	1
Code Category:	B-F and B-J
Item Number:	B5.130, B9.10, or B9.30
Inspection Requirements:	ASME Section XI, Table IWB-2500-1, Examination Category B-F and B-J piping welds greater than or equal to NPS 4-inch
Basis for Relief:	In some cases it is not possible to perform the volumetric ultrasonic examination from both sides of the weld due to configuration or permanent features such as piping supports or fire retardant insulation in the adjacent wall penetration. Attached is a detailed description of the limitations for each weld listed and a summary of the scans performed.
Alternate Inspection:	None.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	ITEM NUMBER	MAT'L.	SIZE NPS	ISI DRAWING	CONFIGURATION	CODE SCAN %	REMARKS
DCS-2-03	B-J	B9.11	SS	12	ISI-0271-C	VALVE TO BELLOWS	37.4	No scan 3 or 4, limited scans 5 and 6
DCS-2-12	B-J	B9.11	SS	12	ISI-0271-C	VALVE TO BELLOWS	37.4	No scan 3 or 4, limited scans 5 and 6
TCS-2-422	B-F	B5.130	DM	12	ISI-0271-C	PIPE TO VALVE	86.5	No scan 4, limited scans 5 and 6
GMS-2-10	B-J	B9.11	CS	26	ISI-0222-C	PIPE TO VALVE	86	No scan 3 and surface restriction
DRHR-2-03	B-J	B9.11	SS	24	ISI-0221-C	VALVE TO FLUED HEAD	65	Limited due to surface contour
TRWCU-2-02	B-J	B9.11	SS	4	ISI-0272-C	VALVE TO VALVE	50	No scans 3 or 4
DRWC-2-01A	B-J	B9.11	SS	6	ISI-0272-C	VALVE TO WELDOLET	72	Limited scans 3 and 4 due to configuration
KR-2-01	B-J	B9.31	SS	4	ISI-0270-C	PIPE TO WELDOLET	32	No scan 3 and limited scans 4, 5, and 6

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
DCS-2-03	B-J	Valve to Bellows	37.4	Basis for Relief No Scan 3 performed due to a stainless steel valve. The combined effect of the valve surface taper and the anisotropic nature of the stainless material creates a scan limitation and prevents a scan from this side of the weld. No scan 4 performed due to a bellows configuration. Search unit contact is lost by the radius of curvature from the bellows side. Scans 5 and 6 are limited due to the weld to fitting junction. Loss of contact of the search unit impedes obtaining code coverage for scans 5 and 6. Scans 5 and 6 were supplemented with a 45 degree refracted longitudinal wave search unit in order to maximize coverage. The limitations are noted on the ultrasonic examination data sheets. Justification for Relief: TVA performed a surface and ultrasonic examination on accessible areas of the 12 inch circumferential valve to flued head weld, DCS-2-03. The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Conclusion: Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
DCS-2-12	B-J	Valve to Bellows	37.4	Basis for Relief No Scan 3 performed due to a stainless steel valve. The combined effect of the valve surface taper and the anisotropic nature of the material creates a scan limitation and prevents a scan from this side of the weld. No scan 4 performed due to a bellows configuration. Search unit contact is lost by the radius of curvature from the bellows side. Scans 5 and 6 are limited due to the weld to fitting junction. Loss of contact of the search unit impedes obtaining code coverage for scans 5 and 6. Scans 5 and 6 were supplemented with a 45 degree refracted longitudinal wave search unit in order to maximize coverage and improve attenuation loss by shear wave search units on weld metal. Justification for Relief: TVA performed a surface and ultrasonic examination on accessible areas of the 12 inch circumferential valve to flued head weld, DCS-2-12. The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Conclusion: Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
TCS-2-422	B-J	Pipe to Valve	86.5%	Basis for Relief No Scan 4 performed due to a stainless steel valve. The combined effect of the valve surface taper and the anisotropic nature of the stainless material creates a scan limitation and prevents a scan from this side of the weld. Scans 5 and 6 are limited due to the weld to fitting junction. Loss of contact of the search unit impedes obtaining code coverage for scans 5 and 6. Scans 5 and 6 were supplemented with a 45 degree refracted longitudinal wave search unit in order to maximize coverage and improve attenuation loss by shear wave search units on weld metal. Justification for Relief: TVA performed a surface and ultrasonic examination on accessible areas of the 12 inch circumferential pipe to valve weld, TCS-2-422. A high percentage of code coverage was obtained (86.5%). The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Conclusion: Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
GMS-2-10	B-J	Valve to Pipe	86	Basis for Relief No Scan 3 performed due to a valve. The combined effect of the valve surface taper and the anisotropic nature of the material creates a limitation and prevents a scan from this side of the weld. Scan 4 was limited due to fire retardant insulation inside the penetration. Scan 4 was limited to a distance of 1.9 inches from centerline for the 45 degree shear and a distance of 1.5 inches for the 60 degree shear. Scans 5 and 6 are limited due to the weld to fitting junction. Loss of contact of the search unit impedes obtaining code coverage for scans 5 and 6. Justification for Relief: TVA performed a surface and an ultrasonic examination on accessible areas of the 26 inch circumferential valve to pipe weld, GMS-2-10. A high percentage of code coverage was obtained (86%). The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. This limitation is due to permanent asbestos-type insulation installed inside the penetration up to the subject weld. Removal requires: 1. A Design Change Notice to revise drawings depicting removed insulation from the mechanical drywell penetration assemblies, 2. a calculation to evaluate the impact of the removed insulation, 3. a design and manufacturer of special metal reflective insulation sections to replace removed insulation, 4. a work area ventilated tent to contain asbestos insulation, 5. insulation workers having to contend with the requirements of working in both a contaminated area (C-Zone) and an asbestos hazard area. Conclusion: Based on the above justification and hardship, it is concluded that the code requirements are impractical. TVA's supplemental examinations and high percentage of coverage provides an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
DRHR-2-03	B-J	Valve to Penetration	65	Basis for Relief: Scan 3 is limited due to a stainless steel valve. The combined effect of the valve surface taper and the anisotropic nature of the stainless material creates a scan limitation however a best effort scan was performed from this side of the weld in order to maximize coverage. A 60 degree search unit was used to increase effective coverage. Scan 4 limited due to a fluted head penetration. Search unit scan area is limited by the penetration configuration. A 60 degree search unit was used to increase effective coverage. Scans 5 and 6 are limited due to the weld to fitting junction. Loss of contact of the search unit impedes obtained code coverage for scans 5 and 6. Scans 5 and 6 were supplemented with a 45 degree refracted longitudinal wave search unit in order to maximize coverage and improve attenuation loss by shear wave search units on weld metal. Justification for Relief: TVA performed an ultrasonic examination on accessible areas of the 24 inch circumferential valve to flued head weld, DRHR-2-03. The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Conclusion: Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
TRWCU-2-02	B-J	Valve to Valve	50	Basis for Relief: NOTE: THIS WELD WAS REPLACED PRIOR TO STARTUP DURING THE UNIT 2, CYCLE 6 OUTAGE DUE TO THE 69-580 VALVE REPLACEMENT. TVA REQUEST FOR RELIEF IN ORDER TO MAINTAIN CODE PERCENTAGE REQUIREMENTS FOR THE FIRST PERIOD. Best effort scan 3 performed from stainless steel valve side. The combined effect of the valve surface taper and the anisotropic nature of the stainless material creates a scan limitation and prevents a meaningful scan from this side of the weld. Loss of search unit contact due to fitting taper radius was a major contributor in the limitation noted. Best effort scan 4 performed from stainless steel valve side. Scans 5 and 6 were supplemented with a 45 degree refracted longitudinal wave search unit in order to maximize coverage. Justification for Relief: TVA performed a surface and an ultrasonic examination on accessible areas of the 4 inch circumferential valve to valve weld, TRWCU-2-02. Conclusion: The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
DRWC-2-01A	B-J	Valve to Branch Connection	72	Basis for Relief: Scans 3 and 4 are limited due to configuration, s stainless steel valve is welded to a weldolet. The combined effect of the branch connection and valve surface tapers and the anisotropic nature of the stainless material creates a scan limitation. However, a best effort scan with a 45 degree refracted longitudinal wave transducer was performed on the weld crown in both axial directions in order to maximize coverage. Justification for Relief: TVA performed an ultrasonic examination on accessible areas of the 6 inch circumferential valve to branch connection weld, DRWC-2-01A. In addition, a post-weld crown reduction surface examination was performed with no recordable indications detected. The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Conclusion: The design configuration of the subject weld combined with the anisotropic nature of the materials involved limits ultrasonic examination providing a constraint to achieving code examination coverage. Ultrasonic examination techniques for the detection of IGSCC revealed no evidence of stress corrosion cracking. Additional ultrasonic search units and angles were utilized to maximize coverage. Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

REQUEST FOR RELIEF ISI-2-4 (Continued)

WELD NUMBER	CODE CAT.	CONFIGURATION	SCAN %	EXAMINATION LIMITATION DETAILS
KR-2-01	B-J	Pipe to Branch Connection	32	Basis for Relief: No scan 3 and a limited scan 4 was performed due to configuration. Scans 5 and 6 were performed; however, code credit scan percentage was conservatively estimated (due to surface condition) and code credit was not taken. The combined effect of the OD contour, component configuration, and component thickness, resulted in the scan limitations noted. 30 and 45 degree shear waves and a 45 degree refracted longitudinal scan were utilized for scan 4 (axial). Justification for Relief: TVA performed an ultrasonic examination on accessible areas of the 4-inch weldolet to 28-inch recirculation pipe weld, KR-2-01. The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Scan 4 was supplemented with both a 30 degree shear wave and a 45 degree refracted longitudinal wave examination in order to maximize coverage. In addition, a surface examination was performed with no unacceptable indications detected. Conclusion: The design configuration of the subject weld limits ultrasonic examination preventing 100% code examination coverage. Ultrasonic examination techniques for the detection of IGSCC were applied with no crack-like indications noted. Supplemental transducers and angles were utilized to maximize scan effectiveness and coverage. Based on the above justification, it is concluded that the code requirements are impractical. TVA's supplemental examinations provide an acceptable level of quality and safety.

Request for Relief ISI-2-5 (Unit 2)

Components: Longitudinal Welds in Class 1 and 2 Piping.

Classification: Class 1 and 2.

Code Categories: B-J, C-F-1, and C-F-2.

Item Numbers: B9.12, B9.22, C5.12, C5.22, C5.42, C5.52, C5.62 and C5.82.

Inspection Requirements: ASME Section XI, 1986 Edition, Table IWB-2500-1 requires a volumetric and/or surface examination be performed of at least one pipe diameter length but no more than 12 inches of each longitudinal weld that intersects a circumferential weld required to be examined under Code Category B-J.

ASME Section XI, 1986 Edition, Table IWC-2500-1 requires a volumetric and/or surface examination to be performed of at least 2.5t, where "t" is the thickness of each longitudinal weld that intersects a circumferential weld required to be examined under Code Categories C-F-1 and C-F-2.

Basis for Relief: Longitudinal piping welds are fabricated during the manufacturing process under controlled shop conditions, which produce higher quality welds and more uniform residual stress patterns.

Longitudinal piping welds undergo heat treatment in the manufacturing facility, which enhances the material properties of the weld and reduces the residual stress created by welding.

Results of previous weld inspections throughout the industry indicate that longitudinal welds have not been a safety concern, and there has been no evidence of longitudinal weld defects compromising safety at nuclear power plants.

Longitudinal welds have not been shown to be susceptible to any particular degradation mechanism.

The only areas of a longitudinal weld that may be suspect are the ends of the weld adjacent to the field fabricated circumferential weld.

Basis for Relief (cont.): Longitudinal welds are extremely difficult to locate even when the piping is identified as welded pipe. Typically, the existence and location of longitudinal welds must be determined by acid etching, eddy current examination, or a combination of the two methods. This results in an increase in personnel radiological exposure and generation of radwaste above that incurred as a result of performing the required examinations of the longitudinal welds.

The radiological exposure and cost associated with the inspection of longitudinal welds are dependent on the time it would take to remove and reinstall insulation and interferences, prepare the weld for examination, and perform the examination.

Based on the above, the inspection of longitudinal welds as currently required by ASME, Section XI is not technically warranted. The ASME Code Committee has recognized this fact and has published Code Case N-524, "Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping Section XI, Division 1".

Alternate Inspection: As an alternative to the existing ASME, Section XI requirements, Browns Ferry Nuclear Plant will adopt the provisions of ASME Code Case N-524 for the examination of Class 1 and 2 longitudinal piping welds.

Request for Relief ISI-2-6

Components: Reactor Pressure Vessel (RPV) Nozzle to Vessel Welds (refer to listing below for weld number identification)

Code Class: 1

Examination Category: B-D

Item Number: B3.90 and B3.100

Code Requirement: B3.90 - Volumetric examination of the weld and adjacent base material as specified in Figure IWB-2500-7 (Table IWB-2500-1, examination category B-D).

B3.100 - Volumetric examination of the nozzle inner radius as specified in Figure IWB-2500-7 (Table IWB-2500-1, examination category B-D).

Code Requirement From Which Relief is Requested: Relief is requested from the ASME Section XI requirement of performing volumetric examination of essentially 100% of the weld and base material volume specified in Figure IWB-2500-7 for the following RPV nozzle to vessel welds: N1A, N2B, N2F, N2J, N3D, N4A, N4F, N5A, and N8A. Relief is also requested from the ASME Section XI requirement of performing volumetric examination of essentially 100% of the inner radius volume specified in Figure IWB-2500-7 for the RPV nozzle N8A.

Basis for Relief: The RPV nozzle to vessel welds scheduled for examination during Unit 2, cycle 7 were examined utilizing the General Electric (GE) GERIS 2000 automated scanning device from the vessel OD. Each weld requires nine scans to achieve 100% coverage; however, RPV nozzle design allows only seven scans and in some cases those are limited. The limitations are inherent to the barrel-type nozzle weld design and is compounded by the close proximity of the biological shield wall, approximately 11-inches away from the RPV, and non-removable mirror insulation. Scanning from the nozzle or bore side produces sound beams oriented nearly parallel with the long axis of a postulated planar flaw and is therefore ineffective. Use of additional angles or scanning from the nozzle taper or bore side does not result in an effective increase in coverage. Coverage was maximized by supplementing with additional scans from the O.D. blend radius, where practical. Access to the vessel to nozzle welds is by a series of doorways in the concrete biological shield wall which swing open. Insulation in these doorways is designed for removal around the nozzle circumference.

Basis for Relief (cont.): Experience from the performance of volumetric examinations conducted from the inside of the RPV on Unit 3, which is of similar design, has indicated that the vessel to nozzle weld access will not be greatly enhanced by the current state-of-the-art techniques and that a relief request would still be necessary.

The coverage achieved for the vessel to nozzle welds examined during the Unit 2 cycle 7 outage is listed on the attached Table. Coverage calculations were conservatively determined utilizing bi-directional coverage of the base material. (Refer to Notes 1-2.)

Alternate Examinations: Accessible portions of the RPV vessel to nozzle welds were ultrasonically examined from the vessel exterior utilizing the GERIS 2000 automated device. Manual examination techniques from the O.D. blend radius were utilized to supplement the automated examination in order to maximize coverage where practical. Since the accessible surfaces on the vessel side of the RPV vessel to nozzle welds were scanned, there are no available alternative examinations.

Justification for the Granting of Relief: TVA utilized a combination of state-of-the-art automated ultrasonic examination performed by GE utilizing the GERIS 2000 device in conjunction with additional ultrasonic techniques where practical to maximize the coverage of the RPV nozzle to vessel welds. The primary causal factor for the limitations encountered during performance of the ultrasonic examinations was related to the component design. Based on a construction permit date of May 10, 1967 for BFN Unit 2 and as required by 10 CFR 50.55a(g)(1) and 10 CFR 50.55a(g)(4), BFN must meet the requirements of ASME Section XI, except design and access provisions, to the extent practical within the limitations of design, geometry, and materials of construction of the components. BFN Unit 2 was not designed to provide access for ASME Section XI examinations.

NOTES:

(1) Examination volume coverage calculations are based upon the following ultrasonic scan nomenclature:
a) 0 degree weld metal scan; b) 45 degree Transverse (T)-scan from the vessel side; c) 45 degree T-scan from the nozzle side; d) 60 degree T-scan from the vessel side; e) 60 degrees T-scan from the nozzle side; f) 45 degree Parallel (P)-scan clockwise (CS) direction; g) 45 degree P-scan counter-clockwise (CCW) direction; h) 60 degree P-scan CW direction; i) 60 degree P-scan CCW direction.

(2) The 45 and 60 degree T-scans (c&e scans in Note 1) were typically not practical from the nozzle side for the nozzles listed in this relief request. Portions of the remaining seven scans were limited due to the inherent design geometry, biological shield wall proximity, and/or non-removable mirror insulation.

REQUEST FOR RELIEF ISI-2-6 (Continued)

WELD NUMBER	NPS	ISI Drawing	SCAN %	Remarks
N1A <Recirc. outlet}	28"	CHM-1094-A	60%	0 degree L-wave, 45 and 60 degree T-scans were restricted due to biological shield and thermo-couple. 45 and 60 degree T-scans from the OD blend radius were restricted due to the biological shield. 45 and 60 degree P-scans were restricted due to the biological shield. No examinations were practical from nozzle side due to configuration.
N2B (Recirc. inlet)	12"	CHM-1094-A	52%	Manual 0 degree L-wave and 60 degree T-scans, and automated 0 degree L-wave, 45 and 60 degree T-scans were restricted due to insulation. No examinations were practical from nozzle side due to configuration.
N2F (Recirc. inlet)	12"	CHM-1094-A	55%	0 degree L-wave and 60 degree T-scans were restricted due to insulation. No examinations were practical from the nozzle side due to configuration.
N2J (Recirc. inlet)	12"	CHM-1094-A	55%	0 degree L-wave and 60 degree T-scans were restricted due to insulation. No examinations were practical from the nozzle side due to configuration.
N3D (Main Stm.)	26"	CHM-1094-A	57%	0 degree L-wave, 45 and 60 degree scans were restricted and no examinations were practical from the nozzle side due to configuration.
N4A (Feedwater)	12"	CHM-1094-A	59%	Automated 0 degree L-wave, 45 and 60 degree T-scans, 45 and 60 degree scans from the OD blend radius and manual 60 degree T-scans were restricted due to the adjacent N11A nozzle and insulation support ring. No examinations were practical from the nozzle side due to configuration.

REQUEST FOR RELIEF ISI-2-6 (Continued)

WELD NUMBER	NPS	ISI Drawing	SCAN %	Remarks
N4F (Feedwater)	12"	CHM-1094-A	54%	0 degree L-wave, 45 and 60 degree T- and P-scans, 45 and 60 degree scans from the OD blend radius and manual 60 degree T-scans were restricted due to the adjacent insulation and insulation support ring. No examinations were practical from the nozzle side due to configuration.
N5A (Core spray)	10"	CHM-1094-A	53%	0 degree L-wave, 45 and 60 degree T-scans and OD blend radius scans were restricted due to insulation support ring. 45 and 60 degree P-scans restricted due to insulation support ring. No examinations were practical from nozzle side due to configuration.
N8A (Instr. nozzle)	4"	CHM-1094-A	68%	0 degree L-wave, 45 and 60 degree scans were restricted and no examination was practical from the nozzle side due to configuration of the nozzle to vessel weld. OD blend radius scans were not practical due to configuration.
N8A-IR	4"	CHM-1094-A	73%	60 and 70 degree scans and supplemental 80 degree scans were restricted. No examinations were practical from the nozzle side due to configuration of the nozzle to vessel weld.

Request for Relief ISI-2-7

Components: Class 1 Integral Welded Attachments (refer to attached list)

Classification: 1

Code Categories: B-K-1

Item Numbers: B10.10

Code Requirement: ASME Section XI, 1986 Edition (no addenda), Table IWB-2500-1, Examination Category B-K-1 integrally welded attachments greater than or equal to 5/8-inch thickness, Figure IWB-2500-15.

Code Requirement From Which Relief is Requested: Relief is requested from the ASME Section XI, Table IWB-2500-1, requirements to perform a volumetric or surface examination, as applicable, of essentially 100% of the examination volume/area.

Basis for Relief: TVA is requesting relief from ASME Section XI, 1986 Edition (no addenda) requirements related to the 100% examination of the required weld and base material volume required by Figure IWB-2500-15 for Examination Category B-K-1 integrally welded supports. The supports are identified on the attached list, which will be updated as required. Examination of the accessible areas of the integral attachment welds without removal of support members would result in estimated savings of approximately $110,000 for personnel and materials, and approximately 150 man-rems of exposure, which equates to $1,500,000 during the remaining inservice inspection intervals for a total Unit 2 savings of $1.6 million dollars.

ASME Section XI, 1986 Edition, Table IWB-2500-1, Examination Category B10.10, requires examination of essentially 100% of the weld and base material for integrally welded attachments. In some cases this examination would require the removal of support members to achieve the coverage required by the 1986 Edition of ASME Section XI. Estimated duration for activities associated with the temporary removal of supports for the examination of integrally welded supports follow:

Activity	Duration (man-hrs)
Engineering evaluation of temporary support	20
Craft time for support member removal, installation of temporary support, and support reinstallation	100
Quality Control verification of activity	5

An average man hour cost of $35/hour was utilized for the estimate along with approximately 25 supports requiring temporary removal for the current inspection interval. An average drywell exposure rate of 50 mrem/hr was utilized for the man-rem exposure estimate. These values result in estimated savings of approximately $110,000 for personnel and materials. A cost of $10,000 per man-rem for the 150 man-rems of exposure estimated during the remaining inservice inspection intervals for Unit 2 would result in a savings of $1,500,000.

The Code of record requires examination of 100% of the Class 1 integrally welded attachments subject to examination which precludes selection of alternate integrally welded attachments without interference to meet code requirements.

The 25 supports estimated as requiring disassembly to conduct the examination of the integrally welded attachments represent approximately 45% of the total number of integrally welded Class 1 supports in this code category subject to examination.

Alternate Inspection: Perform the required examination method from Table IWB-2500-1, Examination Category B-K-1, on the accessible examination volume/area of the support integral attachment without removal of support members.

Justification for the Granting of Relief:

The limitations encountered during performance of the surface examination were caused by component configuration. Based on a construction permit date of May 10, 1967 for BFN Unit 2 and as required by 10 CFR 50.55a(g)(1) and 10 CFR 50.55a(g)(4), BFN must meet the requirements of ASME Section XI, except design and access provisions, to the extent practical within the limitations of design, geometry, and materials of construction of the components. BFN Unit 2 was not design to provide access for ASME Section XI examinations.

The surface examination of the subject integral attachment from one side provides an effective assessment of the integral attachment's structural integrity.

The examination of the accessible areas without removal of support members was approved for a future code revision by the ASME Section XI committee during their March 1995 meeting (Subcommittee activity number ISI95-08).

REQUEST FOR RELIEF ISI-2-7 (Continued)

SUPPORT NUMBER	CODE CAT.	ITEM NUMBER	IWA THK.	ISI DRAWING	EXAM %	REMARKS
2-47B415S0009	B-K-1	B10.10	.75"	ISI-0277-C	63%	The integrally welded attachment is box shaped and welded on both sides. Access is limited to the exterior weld and portions of the weld on the opposite side that are not on the interior of the box shape.
2-47B415H0002	B-K-1	B10.10	1.625"	ISI-0277-C	88%	The integrally welded attachment consists of 4 lugs (1-5/8" wide by 2" long) which are welded on three sides with a pipe clamp on the un-welded end. The pipe clamp is on a vertical section of a 12" Feedwater line and the examination was limited by the pipe clamp.
2-47B415H0004	B-K-1	B10.10	1.625"	ISI-0277-C	88%	The integrally welded attachment consists of 4 lugs (1-5/8" wide by 2" long) which are welded on three sides with a pipe clamp on the un-welded end. The pipe clamp is on a vertical section of a 12" Feedwater line and the examination was limited by the pipe clamp.

REQUEST FOR RELIEF ISI-2-7 (Continued)

SUPPORT NUMBER	CODE CAT.	ITEM NUMBER	IWA THK.	ISI DRAWING	EXAM %	REMARKS
2-47B415H0006	B-K-1	B10.10	1.625"	ISI-0277-C	88%	The integrally welded attachment, consists of 4 lugs (1-5/8" wide by 2" long) which are welded on three sides with a pipe clamp on the un-welded end. The pipe clamp is on a vertical section of a 12" Feedwater line and the examination was limited by the pipe clamp.
2-47B415H0008	B-K-1	B10.10	1.5"	ISI-0277-C	88%	The integrally welded attachment consists of 4 lugs (1-1/2" wide by 2" long) which are welded on three sides with a pipe clamp on the un-welded end. The pipe clamp is on a vertical section of a 12" Feedwater line and the examination was limited by the pipe clamp.
2-47B415H00010	B-K-1	B10.10	1.56"	ISI-0277-C	88%	The integrally welded attachment consists of 4 lugs (1-9/16" wide by 2" long) which are welded along both vertical sides with a pipe clamp on one of the un-welded end. The pipe clamp is on a vertical section of a 12" Feedwater line and the examination was limited by the pipe clamp.

REQUEST FOR RELIEF ISI-2-7 (Continued)

SUPPORT NUMBER	CODE CAT.	ITEM NUMBER	IWA THK.	ISI DRAWING	EXAM %	REMARKS
2-47B415H00012	B-K-1	B10.10	1.625"	ISI-0277-C	88%	The integrally welded attachment consists of 4 lugs (1-5/8" wide by 2" long) which are welded on three sides with a pipe clamp on the un-welded side. The pipe clamp is on a vertical section of a 12" Feedwater line and the examination was limited by the pipe clamp.
2-47B415S00023	B-K-1	B10.10	2.0"	ISI-0277-C	21%	The integrally welded attachment consists of 4 lugs inside a circular frame with shims adjacent to the lugs. The examination is limited by the structural frame and shims.
2-47B415S00025	B-K-1	B10.10	2.0"	ISI-0277-C	21%	The integrally welded attachment consists of 4 lugs inside a circular frame which shims adjacent to the lugs. The examination is limited by the structural frame and shims.

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