INSERVICE INSPECTION PROGRAM

SECOND TEN YEAR INTERVAL

UNITS 2 & 3

FOR

PEACH BOTTOM ATOMIC POWER STATION

Prepared by
The NED Technical Services Branch

REV NO.	DATE	REASON FOR ISSUE	LEAD			NON-LEAD			
			ORIGINATOR	REVIEWER	APPROVAL	APPROVAL	APPROVAL	APPROVAL	APPROVAL
	9/22/95	Addendum 1 to Rev. 2	rec	[signature]	TAM	mjb			
2	12/29/94	Complete rev. Incorporates ECR 94-10073, ECR 94-10237, ECR 94-11412, ECR 94-10790, ECR 94-07476, NCR 94-00374, & Addendum 1.	rec	rhz	kah for vmn	mjb			
	8/30/94	Addendum 1 to Rev. 1	nas	rhz	vmn	wtb			
1	3/14/94	ISSUED FOR USE	nas	rec	vmn	mjb			

PECO ENERGY

PBAPS UNITS 2 & 3
ISI PROGRAM
AT
PEACH BOTTOM ATOMIC
POWER STATION

NO. M-733

REV NO. 2 Addendum 1

Summary of Addendum 1 to Revision 2

The primary purpose of this addendum is to update the Augmented Inspection Programs applicable to Reactor Pressure Vessel Internals to reflect the latest VIP based planning. In addition, other changes were incorporated as a function of the transition of programmatic responsibility from Nuclear Engineering to the Station.

The following documents contributed to this revision:

A0915259
A0931782
A0916146
A0947305

Specific changes within this revision include:

1. Updated Table 2.5-1, to reflect latest Code Case revisions and status.

2. Updated Section 8.3.4 to reflect approval for use of Code Case N-498-1.

3. Updated Appendix A Table of Contents to reflect relief request activity since the last revision of this document.

4. Addition of Relief Request RR-14, Rev. 4.

5. Updated Appendix B Table of Contents to include Commitment Tracking Annotation and updated Aug-10 Program title.

6. Revised references for AUG-03 Inspection Program.

7. Updated AUG-09 Inspection Program to reflect latest VIP based planning.

8. Expanded AUG-10 Inspection Program to include recommendations of GE SIL 588.

9. Expanded Attachment 2 to include the following PECO Energy approved Position papers:

   PSC-95-001 Components added to Program
   PSP-95-004 Weld Reference Marking System

10. Updated the following ISI Program and Augmented ISI Program Tables:

    RPV Tables to include 100% shell weld selections per 10CFR50 on Unit 2.

    Various System Tables to reflect component reselections for 3R10.

    AUG-09 Inspection Program Tables for the RPV Shroud.

    AUG-10 Inspection Program Tables to include SIL 588 recommendations.

CONTENT OF ADDENDUM 1 TO REVISION 2

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1.0 INTRODUCTION

This document contains the Inservice Inspection (ISI) Program for the second 10-year interval of the Peach Bottom Atomic Power Station Units 2 & 3 (PBAPS 2 & 3), as required by Title 10, Code of Federal Regulations, Part 50 (10CFR50), Article 55a, "Codes and Standards." It details the technical basis of the program and provides an overall description of the activities planned to fulfill the ISI requirements for pressure-retaining components and their supports, as defined in the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." This Program identifies the Class 1, 2, and 3 components (e.g. piping, pumps, valves, vessels) and their supports, subject to the examination and test requirements of Subsections IWB, IWC, IWD and IWF of ASME Section XI. It also identifies and details the programs established to satisfy augmented requirements imposed at PBAPS 2 or 3, during the second inspection interval.

The second interval for PBAPS 2 begins on September 19, 1986, and ends on November 4, 1997. The second interval for PBAPS 3 begins on December 23, 1985, and ends on August 14, 1997. The above dates represent adjustments to the PBAPS 2 & 3 second interval due to refueling outage alignment and extended plant shutdown as detailed in Reference 1.1.2.

The ISI Program consists of two parts; the Program text with appendices, and a tables section. The text defines the basis of the ISI Program. It lists and explains the specific boundary, exemption, sample size, and component selection criteria utilized for Class 1, 2 and 3 components and their supports. The Appendices contain: Relief Requests, programs established to satisfy augmented requirements, copies of important reference documents needed to explain program details, and listings of the ASME Section XI Drawings including: ISI Boundary drawings, ISI Isometric drawings, component drawings, and calibration block drawings. The tables portion includes the ISI Program Tables. The ISI Program Tables contain an itemized listing of all nonexempt components within the Class 1, 2 and 3 ASME boundaries depicted on the ASME Section XI Boundary Drawings, along with examination requirements which apply.

1.1 REFERENCE DOCUMENTS

1.1.1 Safety Evaluation Report for second 10-year interval ISI Program issued via an April 8, 1986, letter from Dr. Muller (NRC) to E. G. Bauer, Jr. (PECo).

1.1.1a Safety Evaluation report for Updated second 10-year interval ISI Program issued via a December 23, 1992 letter from C. L. Miller (NRC) to G.J. Beck (PECo).

1.1.2 Revised PBAPS interval dates as documented in a August 17, 1988, letter from J.W. Gallagher (PECo) to W. T. Russel (NRC), and February 25, 1991 letter from G.J. Beck (PECo) to NRC.

1.1.3 Generic Letter 88-01, NRC position on IGSCC in BWR Austenitic Stainless Steel Piping, dated January 25, 1988; including Supplement 1, February 4, 1992 (T02791).

1.1.4 **CM-1**, PBAPS 2 & 3 response to NRC Generic Letter 88-01 dated August 2, 1988, March 31, 1989, June 4, 1990, and August 17, 1992 (T02791).

1.1.5 NUREG-0313, revision 2 - Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping, January, 1988.

1.1.6 NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking (November 1980) with Generic Letter 81-11 (February 20, 1981).

1.1.7 **CM-2,** PBAPS 2 & 3 Implementation Program for NUREG-0619, PECo letter of January 21, 1981, J. W. Gallagher to Darrell G. Eisenhut (NRC) (T03155).

1.1.8 PBAPS 2 & 3 Implementation Report for NUREG-0619, PECo letter of September 29, 1983, J. W. Gallagher to Darrell G. Eisenhut (NRC).

1.1.9 IE Bulletin No. 80-13, Cracking in Core Spray Spargers, dated May 12, 1980.

1.1.10 **CM-3,** PBAPS 2 & 3 Response to IE Bulletin No. 80-13, PECo letter of June 13, 1980, S. L. Daltroff to Boyce H. Grier (NRC) (T03414).

1.1.11 General Electric Company SIL No. 289, Core Spray Visual Inspection Revision 0, dated February 1979 and including Revision 1, Supplement 1, dated February 23, 1989.

1.1.12 NUREG/CR-3052, Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure, November, 1984.

1.1.13 IE Bulletin No. 80-07, BWR Jet Pump Assembly Failure, dated April 4, 1980, and including Supplement No. 1 dated May 13, 1980.

1.1.14 General Electric Company, SIL No. 330, Jet Pump Beam Cracks, June 9, 1980.

1.1.15 PBAPS Unit 2 Response to IE Bulletin No. 80-07, PECo letter of May 2, 1980, S. L. Daltroff to Boyce W. Grier (NRC).

1.1.16 PBAPS Unit 3 Response to IE Bulletin No. 80-07, PECo letter of May 7, 1980, S. L. Daltroff to Boyce W. Grier (NRC).

1.1.17 A-C-80 - PECO Energy Corporate ASME Section XI Administrative Procedure.

1.1.18 PBAPS 2 & 3 Updated Final Safety Analysis Report.

1.1.19 PBAPS 2 & 3 Technical Specifications.

1.1.20 NED Specification number M-710, PBAPS 2 & 3 Pump and Valve Inservice Testing Program, Second Ten Year Interval.

1.1.21 Evaluation of ISI Examinations at PBAPS 2 & 3, PECo letter of February 19, 1980, E. G. Bauer, Jr. to T. A. Ippolito (NRC).

1.1.22 Safety Evaluation for PBAPS 2 & 3 First Interval ISI Program Relief Request, NRC letter of May 2, 1983, J. F. Stolz to E. G. Bauer, Jr.

1.1.23 NED Specification M-679, General Requirements for the ASME Section XI Repair and Replacement Program.

1.1.24 Regulatory Guide 1.147, Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1, Revision 11, October 1994.

1.1.25 General Electric Company, SIL No. 409, Incore Dry Tube Cracks, July 31, 1986.

1.1.26 General Electric Company, SIL No. 474, Steam Dryer Drain Channel Cracking, October 26, 1988.

1.1.27 Updated PBAPS 2 & 3 Second Interval ISI Program initial submittal and subsequent updates; PECo to NRC letters dated 11/15/90, 3/19/92, and 4/16/92.

1.1.28 General Electric Company, SIL No. 462, Shroud Support Access Hole Cracks, December 19, 1990.

1.1.29 PECO Energy calculation ME-34, Class 1 exemption sizes.

1.1.30 General Electric Company, SIL No. 551, Jet Pump Riser Brace Cracking, 2/26/93.

1.1.31 General Electric Company, SIL No. 554, Top Guide Cracking, 4/6/93.

1.1.32 Stone & Webster calculation PM-945, CRD Housing Weld Exclusion Evaluation.

1.1.33 Generic Letter 94-03, Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors.

1.1.34 PECO Energy response to Generic Letter 94-03, dated August 24, 1994.

1.1.35 **CM-4,** PBAPS Unit 2 response to Generic Letter 94-03, dated September 9, 1994 (T03415).

1.2 DEFINITIONS

1.2.1 **ASME Section XI Drawings** - Include Piping and Instrument Diagrams (P&ID's), isometrics, and component drawings which delineate the specific boundaries, areas, or items requiring NDE, test, or repair and replacement per ASME Section XI; and augmented NDE or tests.

1.2.2 **Augmented Requirements** - Those NDE or tests required by documents other than ASME Section XI, such as; Regulatory Guides, NUREG's, NRC Generic Letters, I. E. Bulletins/Notices, FSAR, Technical Specifications, manufacturer's recommendations, etc.

1.2.3 **Authorized Nuclear Inservice Inspector (ANII)** - A person employed and qualified by an Authorized Inspection Agency to verify that NDE, tests, and repairs and replacements (excluding welding and brazing) are performed in accordance with the rules of ASME Section XI.

1.2.4 **Calibration Block Drawings** - The drawings which detail the specific configuration of individual standards used for calibrating ultrasonic test equipment.

1.2.5 **Code** - ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," edition and addenda applicable to the individual PECo nuclear plant programs.

1.2.6 **Component** - An item in a nuclear power plant such as a vessel, pump, valve, etc. Component may also be used to refer to systems or portions of systems such as welds, bolting, and supports.

1.2.7 **Form NIS-1, Owners' Data Report for Inservice Inspections** - An ASME form used to document the results of Inservice Inspection examinations on Class 1 and 2 components. It is to be used as the certification page for submittal of the ISI Summary Report.

1.2.8 Deleted.

1.2.9 **Inservice Inspection (ISI)** - Those Nondestructive Examinations (NDE) including visual examinations performed on certain Class 1, 2, and 3 (or equivalent) components and their supports throughout the operating life of the nuclear plant, as required by ASME Section XI, subsections IWA, IWB, IWC, IWD, and IWF; and as applicable, IWE.

1.2.10 **Inservice Inspection Summary Report** - The report that is prepared at the completion of each refueling outage as specified in ASME Section XI. In the case of PSI, it is submitted per FSAR requirements prior to commercial operation.

1.2.11 **Inservice Testing (IST)** - Those tests conducted on certain pumps and valves to verify their operational readiness and/or integrity throughout the operating life of the nuclear plant, as required by ASME Section XI, subsections IWP and IWV.

1.2.12 **Inspection Interval** - As defined by regulations, a ten year time interval, during which the ISI/IST/R&R program is applicable using a specific Edition and Addenda of ASME Section XI. The first ten year inspection interval commences on the date of commercial operation with the successive intervals beginning on the date the previous interval ends. An inspection interval length may be increased or decreased up to one year, to correspond with plant outages. Additionally, the interval may be extended for a period equivalent to an outage, which extends continuously for six months or more.

1.2.13 **Inspection Period** - A time frame approximately equivalent to one third of an interval. It is used for apportioning the implementation of ISI Program NDE during the interval.

1.2.14 **ISI Program Document** - The site/unit specific document (including applicable drawings) which addresses the overall ISI requirements during a ten year interval. The complete ISI Program is made up of 4 sub-programs as follows:

- Welds, Bolting, and Component Subprogram
- Component Supports and Snubbers Subprogram
- Reactor Pressure Vessel (RPV) Subprogram
- Pressure Test Subprogram

1.2.15 **ISI Tables** - The unit specific listing of the total population of items such as welds, bolting, components, RPV internals, supports, snubbers, and portions of systems which are subject to examination, pressure test, and Repair and Replacement during the ten year interval (i.e. all nonexempt components). These listings are included within the ISI Program Document(s), and, as a minimum, identify items selected for examination along with examination frequency requirements and other mandatory requirements, if special consideration is applicable. These tables provide the primary basis for development of the ISI Implementing Plan.

1.2.16 **ISI Implementing Plan** - The listing of nonexempt components identified in the ISI Tables, with the information necessary for implementation of examinations. Such information shall include: components selected for examination; scheduling information; applicable NDE methods, procedures, and calibration blocks; etc.

1.2.17 **ISI Outage Plan** - A listing of those components identified in the ISI Implementing Plan which are required to be examined during a particular outage.

1.2.18 **Instrument Root Valve** - The first valve, in an instrument line, off of the main process line.

1.2.19 **Nominal Operating Pressure** - For Class 1 systems, the range of pressures which may normally be expected when the system is known to be operating at 100% reactor power.

1.2.20 **Nondestructive Examination (NDE)** - Any of several physical, optical, chemical, electrical, or electromagnetic tests used primarily to examine items for surface or internal defects without destroying the items or impairing their function. Also known as Nondestructive Testing (NDT) and includes visual, surface, and volumetric methods.

1.2.21 **PECO Energy Corporate ASME Section XI Administrative Procedure** - The document which defines and controls the all-encompassing effort of Preservice Inspection, Inservice Inspection, Preservice Testing, Inservice Testing, Repair and Replacement, and Augmented requirements at PECo's nuclear plants. This procedure, endorsed by the Nuclear Group Senior Management, will apply to all organizations involved with this endeavor.

1.2.22 **Position Statement** - An ISI/IST/R&R Program record which documents the details of positions taken by PECO Energy with respect to generalized Code requirements. These records amplify the Code requirement and provide consistent guidance for the implementation of the requirement.

1.2.23 **Preservice Inspection (PSI)** - Those Nondestructive Examinations (NDE) including visual examinations performed on certain ASME Class 1, 2, and 3 (or equivalent) components and their supports once, prior to initial plant operations as part of the Preservice Inspection Program, or following a component repair, replacement, or modification. The results of these examinations provide a baseline for comparison to subsequent ISI examinations.

1.2.24 **Pressure Test Subprogram** - A portion of the overall ISI Program which identifies the components and portions of piping in ASME Class 1, 2 and 3 (or equivalent) systems, which are subject to various pressure tests during the ten year interval. These tests include the hydrostatic, pneumatic, leakage, functional, or inservice types.

1.2.25 **Reactor Pressure Vessel (RPV) Subprogram** - A portion of the ISI Program which identifies the internal attachments, surfaces, welds, and components within the reactor pressure vessel boundary, including the safe-ends, which require NDE during the ten year interval.

1.2.26 **Regulatory Authority** - The United States Nuclear Regulatory Commission, empowered to issue and enforce federal regulations influencing design, construction, and operation of nuclear power plants.

1.2.27 **Relief Request** - A written request submitted to the regulatory authority which identifies specific components which cannot be examined or tested in accordance with ASME Section XI or augmented requirements. It includes the reason these requirements cannot be met and technical justification for performing an alternative to the requirements.

1.2.28 **Snubber** - A dynamic restraint device utilized in certain component supports. Can be either hydraulic or mechanical.

1.2.29 **Snubber Assembly** - The functional unit of a snubber-type component support, including: the snubber body, extension piece or end bracket, and the load pins along with their retainers.

1.2.30 **Source Document** - Any document containing requirements to which PECO Energy is committed or which apply to PECO Energy by virtue of law, such as federal, state, and local laws and regulations.

1.2.31 **Structural Discontinuity Welds** - Include circumferential welds joints at pipe to vessel nozzle, pipe to valve body, pipe to pump casing, pipe to fittings and pipe to pipe of different schedule wall thickness.

1.2.32 **Terminal End Weld** - Circumferential welds at the extremities of pipe runs that connect to structures or components or circumferential welds in piping within 3 pipe diameters of the centerline of rigid pipe anchors.

1.2.33 **Welds, Bolting, and Component Subprogram** - A portion of the ISI Program which identifies the non-exempt welds, bolting, and components on ASME Class 1, 2, and 3 (or equivalent) systems which are subject (selected and non-selected) to NDE during the ten year interval.

1.3 ABBREVIATIONS

1.3.1 ALARA - As Low As Reasonably Achievable

1.3.2 ANS - American National Standard

1.3.3 ANSI - American National Standard Institute

1.3.4 ASME - American Society of Mechanical Engineers

1.3.5 ASNT - American Society for Nondestructive Testing

1.3.6 AUG. - Augmented

1.3.7 BWR - Boiling Water Reactor

1.3.8 DISG - Examine one of a group when disassembled

1.3.9 DISS - Examine when disassembled

1.3.10 EOI - End of interval

1.3.11 ID - Interval distribution

1.3.12 IGSCC - Intergranular Stress Corrosion Cracking

1.3.13 ISI - Inservice inspection

1.3.14 ISO - Isometric

1.3.15 IST - Inservice testing

1.3.16 MT - Magnetic particle testing

1.3.17 NDE - Nondestructive examination

1.3.18 NPS - Nominal pipe size

1.3.19 NRC - United States Nuclear Regulatory Commission

1.3.20 PBAPS - Peach Bottom Atomic Power Station

1.3.21 PECo - PECO Energy

1.3.22 P&ID - Piping and instrument diagram

1.3.23 PT - Penetrant examination

1.3.24 RO - Refueling outage

1.3.25 RPV - Reactor pressure vessel

1.3.26 R&R - Repair and replacement

1.3.27 RR-XX - Relief request

1.3.28 RT - Radiographic examination

1.3.29 SIL - Service information letter

1.3.30 UT - Ultrasonic examination

1.3.31 VT - Visual examination

1.3.32 1P, 2P, 3P - First period, second period, third period

1.3.33 74S75 - 1974 Edition thru and including the Summer 1975 Addenda

1.3.34 80W81 - 1980 Edition thru and including the Winter 1981 Addenda

1.3.35 86A87 - 1986 Edition thru and including 1987 Addenda

1.4 CODES AND STANDARDS

1.4.1 Title 10, Code of Federal Regulations, Part 50 (10CFR50), Article 55a, "Codes and Standards."

1.4.2 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: "Rules for Inservice Inspection of Nuclear Power Plant Components; 1980 Edition, Winter 1981 Addenda."

1.4.3 Regulatory Guide 1.26 R/3 Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants.

1.4.4 SNT-TC-1A, 1980 Edition, Recommended Practice for Personnel Qualification in Non-destructive Testing.

1.4.5 ANSI N45.2.6, 1976, Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants.

1.4.6 Regulatory Guide 1.58 R/1 Qualification of Nuclear Power Plant Inspection Examination and Testing Personnel (endorses ANSI N45.2.6, 1978).

1.4.7 Regulatory Guide 1.65 R/0 Materials and Inspection for Reactor Vessel Closure Studs.

1.4.8 Regulatory Guide 1.147, latest revision, Inservice Inspection Code Case Acceptability, ASME Section XI, Division I.

1.4.9 Regulatory Guide 1.150 R/1 - Alternate Method Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination.

1.4.10 Deleted.

1.4.11 Deleted.

2.0 REGULATORY REQUIREMENTS

2.1 CLASSIFICATION OF COMPONENTS

In accordance with 10CFR50.55a (g)(1), an ASME classification has been assigned to plant components and systems for the purpose of applying the appropriate rules of ASME Section XI for Inservice Inspection. Classification has been applied in accordance with 10CFR50.2(v) for Class 1 systems and Regulatory Guide 1.26 Revision 3 for Class 2 and 3 systems. System safety functions are consistent with the 1988 revision of the PBAPS UFSAR.

For instruments connected to Class 1 piping, the boundary extends to the excess flow check valve. For instruments connected to Classes 2 and 3 piping (except main steam), the boundary extends to the instrument root valve. Branch connections (including instruments lines) on Class 2 main steam piping, outside containment, which are less than 2-1/2" NPS were not classified, since these lines are not required to be seismically designed per Regulatory Guide 1.29.

It must be noted that the classification of components as equivalent to ASME Classes 1, 2, or 3 implies equivalency for purposes of inservice inspection only and does not imply that the components were designed in accordance with ASME requirements. Since most of the basic plant design was accomplished prior to December 1969, codes and standards applicable at that time were used as set forth in the PBAPS UFSAR.

See Attachment 1 for the complete basis of component classifications.

2.2 ASME SECTION XI

In accordance with 10CFR50.55a(g)(4), this program is in compliance, where possible, with the applicable requirements of the 1980 Edition of Section XI with Addenda through Winter 1981 (80W81). Although the basic plant design, accomplished prior to December 1969, is not totally consistent with the examination requirements of later codes, every attempt has been made to obtain maximum compliance. For instances where 100% compliance is not feasible, alternative examinations and tests have been proposed which will satisfy the intent of the Code. This program identifies the areas for which compliance cannot be achieved, with proposed alternative methods of assurance of system integrity.

An exception to the use of the 80W81 code is found in the area of Class 1 & 2 pipe welds as discussed in the following sections:

2.2.1 ASME Code Class 1 Pipe Welds

10CFR50.55a(b)(2)(ii) allows for the optional use of the 1974 Edition with Addenda through Summer 1975 (74S75) of Section XI for determining the extent of examination for Class 1 pressure-retaining pipe welds if the plant's construction permit was docketed prior to July 1, 1978.

"...the extent of examination for Code Class 1 pipe welds may be determined from the requirements of Table IWB-2500 and IWB-2600 Category B-J of Section XI of the ASME Code in the 1974 Edition and Addenda through the Summer 1975..."

Table IWB-2600 from the 74S75 Section XI, which specifies the type of NDE to be applied to the welds on various size piping, is not used in this ISI Program. For this program, the type of NDE applied is determined from the 80W81 of Section XI. This position utilizes the later code directions and represents a more practical approach for determining examination method and associated acceptance criteria.

To summarize the approach taken for Class 1 pipe welds:

Exemptions

- The 80W81 Edition of Section XI was used to determine exemptions (See Section 2.3.1)

Sample Size

- The 74S75 Edition of Section XI is used for determining the percentage of nonexempt welds which are subject to examination.

Weld Selection

- The welds selected represent areas expected to experience higher stresses, as determined by guidance provided in the 80W81 Code. (See Section 3.5.1)

Examination Method

- The 80W81 Section XI is used for determining the type of NDE applied to these welds.

2.2.2 ASME Code Class 2 Pipe Welds

10CFR50.55a(b)(2)(iv)(A) requires the use of the 74S75 Edition of Section XI for determining the extent of examination of Class 2 pipe welds in the Residual Heat Removal, Emergency Core Cooling Systems and Containment Heat Removal Systems.

"...the extent of examination for these systems shall be determined by the requirements of Paragraph IWC-1220, Table IWC-2520, Category C-F and C-G, and Paragraph IWC-2411 in the 1974 Edition and Addenda through the Summer 1975 Addenda."

10CFR50.55a(b)(2)(iv)(B) allows the optional use of the 74S75 Edition of Section XI for determining the extent of examination for Class 2 pressure-retaining pipe welds, for the remaining Class 2 systems, if the plant's construction permit was docketed prior to July 1, 1978, as is the case at PBAPS 2 & 3.

"...the extent of examination for Code Class 2 pipe welds may be determined by the requirements of paragraph IWC-1220, Table IWC-2520, Category C-F and C-G and paragraph IWC-2411 in the 1974 Edition and Addenda through Summer 1975 Addenda of Section XI of the ASME Code..."

PBAPS 2&3 has incorporated the above for all Class 2 piping welds as summarized below:

Exemptions

- The 74S75 Edition of Section XI was used to determine exemptions, as required by 10CFR50.55a, (See Section 2.3.2).

Sample Size

- The 74S75 Edition of Section XI was used to determine the percentage of nonexempt welds which are subject to examination.

Weld Selection

- Weld selections were distributed among all applicable systems based on geometric configuration, (i.e. pipe to elbow, pipe to tee, etc.) to develop a representative sample of structural discontinuity welds. Selections also included terminal ends. (See Section 3.5.1)

Examination Method

- The 80W81 Edition of Section XI was used for determining the type of NDE applied to these welds.

2.2.3 Non-applicability of Subsection IWE

Subsection IWE (Class MC Components) of ASME Section XI has not been endorsed for use by the NRC and is therefore not addressed in this Program. Testing, as required by the Code of Federal Regulations, Appendix J, is being performed at PBAPS 2&3 to verify the integrity of the containment.

2.2.4 Subsections IWP and IWV

Subsection IWP (Pump Testing) and Subsection IWV (Valve Testing) are not addressed in this program document. For information regarding these topics, see Reference 1.1.20.

2.3 EXEMPTIONS

ASME Section XI rules allow certain components or portions of components (and their supports), which are classified as ASME Class 1, 2, or 3 (or equivalent), to be exempt from the surface and volumetric examination requirements of the Code. The specific Code exemptions which have been applied to the PBAPS 2 & 3 ISI Program are detailed below. It should be noted that these exemptions do not apply to the pressure testing requirements of the Code, and the accompanying VT-2 Examination.

2.3.1 Class 1 Exemptions

Discussion: The Class 1 exemptions used in this ISI Program are taken directly from the 80W81 Section XI, Sub-article IWB-1220.

Exemptions used:

1. Components that are connected to the reactor coolant system and part of the reactor coolant pressure boundary and that are of such a size and shape so that upon postulated rupture the resulting flow of coolant from the reactor coolant system under normal plant operating conditions is within the capacity of make up systems which are operable from on-site emergency power.

   For PBAPS 2 & 3, this exemption is applicable to 3" nominal pipe size (NPS) or less for lines containing steam and 1.5" NPS or less for lines containing water (see reference 1.1.29).

2. Piping of 1" (NPS) and smaller along with components and their connections in piping of 1" NPS and smaller.

3. Reactor vessel head connections and associated piping, 2-inch NPS and smaller, made inaccessible by control rod drive penetrations.

2.3.2 Class 2 Exemptions

Discussion: The Class 2 exemptions are taken from 74S75 Section XI, subarticle IWC-1220, and from one relief request, as presented in the following:

Exemptions used:

1. Components in systems where both the design pressure and temperature are equal to or less than 275 psig or 200°F respectively.

2. Components in systems or portions of systems, other than emergency core cooling systems, which do not function during normal reactor operation.

3. Component connections, piping, and associated valves, and vessels (and their supports) that are 4" NPS and smaller.

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

   Note: This exemption is not identified in the 74S75 edition of Section XI; however, it is allowed by the 1986 Edition which has been approved for use by 10CFR50,55a(b)(2). Justification for use of this exemption is provided in Relief Request RR-11.

2.3.3 Class 3 Exemptions

Discussion: The Class 3 exemptions are taken from the 80W81 Section XI, subarticle IWD-1220, as presented in the following.

Exemptions used:

1. Integral attachments of supports and restraints to components that are 4" NPS and smaller within the system boundaries of Examination Categories D-A, D-B, and D-C of Table IWD-2500-1 shall be exempt from the visual examination VT-3, ...

   Note: Included in this exemption are non-pipe components for which neither the cumulative inlet nor cumulative outlet area exceeds the area of a 4" I.D. pipe.

2. Integral attachments of supports and restraints to components exceeding 4" NPS may be exempted from the visual examination VT-3 of Table IWD-2500-1, provided:

   a. The components are located in systems (or portions of systems) whose function is not required in support of reactor residual heat removal, containment heat removal, and emergency core cooling; and

   b. The components operate at a pressure of 275 psig or less or at a temperature of 200°F or less.

2.4 AUGMENTED REQUIREMENTS

For purposes of this ISI Program, augmented examinations are those scheduled examinations which are not required by ASME Section XI. These augmented requirements are typically pursuant to NRC Generic Letters, NRC Regulatory Guides, or NSSS supplier recommendations (SIL's), etc. The PBAPS 2 & 3 augmented examination programs are explained and their examination requirements tabulated in Appendix B. It should be noted that some components are subject to both ISI and augmented requirements. In these instances, the component's ISI requirements are identified in the ISI Program Tables, and a reference to applicable augmented requirements is also provided. The actual augmented examination requirements are then found in the referenced augmented program which is contained in Appendix B.

2.5 ADDITIONAL BASES

In addition to published Code rules, ASME Section XI Code Cases and Interpretations may be used in formulating the bases of the ISI program. Table 2.5-1 lists the Code Cases and Interpretations which have been used to establish the bases of this PBAPS 2 & 3 ISI Program.

TABLE 2.5-1
CODE CASES AND INTERPRETATIONS APPLICABLE TO THE ISI PROGRAM

Code Case Number	Title	Approved by USNRC Reg. Guide 1.147
N-343	Alternative Scope of Examination of Attachment Welds for Examination Categories B-H, B-K-1 and C-C	Yes (Rev. 9)
N-356	Certification Period for NDE Level III Personnel	Yes
N-389	Alternative Rules for Repairs, Replacements, or Modifications	Yes
N-406	Alternate Rules for Replacement	Yes (Rev. 8)
N-416	Alternate Rules for Hydrostatic Testing of Repair or Replacement of Class 2 Piping	Yes
N-416-1	Alternate Rules for Hydrostatic Testing of Repair or Replacement of Class 1, 2, & 3 Piping.	No
N-419	Extent of VT-1 Examinations, Category B-G-1 of Table IWB-2500-1	Yes
N-426	Extent of VT-1 Examinations, Category B-G-2 Table IWB-2500-1	Yes
N-427	Code Cases on Inspection Plans	Yes
N-435-1	Alternative Examination Requirements for Vessels with Wall Thickness 2 in. or less	Yes
N-448	Qualifications of VT-2 and VT-3 Visual Examination Personnel	Yes
N-449	Qualification of VT-4 Visual Examination Personnel	Yes
N-460	Alternative Examination Coverage for Class 1 and Class 2 Welds	Yes
N-461	Alternate Rules for Piping Calibration Block Thickness	Yes
N-479	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test	Yes (Rev. 9)
N-498	Alternative Rules for 10 - Year Hydrostatic Pressure Testing for Class 1 and 2 Systems	Yes
N-498-1	Alternative Rules for 10 - Year Hydrostatic Pressure Testing for Class 1, 2, & 3 Systems.	No

NOTES: (1) Code Cases approved by Reg. Guide 1.147 are available for use.
(2) Refer to Relief Request RR-14 for Code Cases not yet approved.

2.6 ASME SECTION XI DRAWINGS

The ASME Section XI Drawings define and detail the extent of systems and/or components subject to the rules of ASME Section XI, additionally, they depict parts and equipment used to implement the required examination programs.

2.6.1 ASME Section XI ISI Boundary Drawings

These ASME Section XI ISI Boundary Drawings are Piping and Instrumentation Diagrams (P&ID's) that have been color coded to define the extent of the ASME classification boundaries and the portions therein which are exempt from the surface and volumetric examination requirements of Section XI. In addition, the boundary drawings indicate portions of systems which are outside the ASME boundaries but subject to the PBAPS 2 & 3 ASME Section XI Repair and Replacement Program.

2.6.2 ASME Section XI ISI Isometric Drawings

The ASME Section XI ISI Isometric Drawings are specifically prepared isometric-type drawings which are derived from design isometric drawings. They depict the ASME classified systems, and identify the components (welds, bolts, supports, etc.), subject to examination, within these systems. They also depict components which are subject to augmented examination requirements and ASME Section XI rules for repair and replacement only.

2.6.3 ASME Section XI ISI Component Drawings

The ASME Section XI ISI Component Drawings are specifically prepared detailed drawings of components, which identify specific areas of these components which are subject to examination in accordance with Section XI rules.

2.6.4 ASME Section XI ISI Calibration Block Drawings

The ASME Section XI ISI Calibration Block Drawings are design/as-built drawings of the standards which are used for calibration of the ultrasonic examination equipment prior to the performance of the code required examinations.

2.6.5 Component Support Design Drawings

The Component Support Design Drawings, while not uniquely an ISI drawing, are an important informational source and are referenced in the ISI Tables. These design drawings detail the component support and generally contain a bill of materials which identifies the scope of items subject to the visual examination requirement of the code.

An index of all ASME Section XI ISI Drawings (excluding component support drawings) is contained in Appendix C.

2.7 SYSTEM IDENTIFICATION

The following is a list of systems which are included in this ISI Program. The associated Engineering/Design system identification number and Station System number are also included.

Engineering/ Design System Number	System	Station System Number
01	Main Steam	01
02	Reactor Recirculation	02
03	Control Rod Hydraulic	03
04	Nuclear Boiler Vessel Instrumentation and Reactor Drain	04
06	Feedwater	06
10	Residual Heat Removal (RHR)	10
11	Standby Liquid Control	11
12	Reactor Water Cleanup	12
13	Reactor Core Isolation Cooling (RCIC)	13
14	Core Spray	14
19	Fuel Pool Cooling and Clean-up	19
23	High Pressure Coolant Injection (HPCI)	23
32	High Pressure Service Water	32
33	Emergency Service Water	33
48	Emergency Cooling Water	48

3.0 INSERVICE INSPECTION PROGRAM

3.1 RESPONSIBILITY

As owner of PBAPS 2 & 3, PECO Energy bears the overall responsibility for the performance of ISI. The required nondestructive examinations may be performed by PECO Energy or a qualified examination agency. The results and evaluation of the examinations, performed by NDE vendors, will be reported to PECO Energy, who shall retain responsibility for final evaluation and disposition of all NDE.

3.2 RECORDS

Records and documentation of all information and inspection results, which provide the basis for evaluation and which facilitate comparison with results from previous and subsequent inspections, will be maintained and available for the active life of the plant in accordance with Section XI, IWA-6000.

3.3 METHODS OF EXAMINATION

Nondestructive examination methods to be used for the ISI Program include: visual, surface, and volumetric. Personnel performing nondestructive examinations will be qualified with a written procedure prepared in accordance with ASME Section XI Article IWA-2300 and the following documents as applicable for the techniques and methods used:

(1) The American Society for Nondestructive Testing (ASNT), Recommended Practice No. SNT-TC-1A, June 1980 Edition.

(2) American National Standard (ANS), ANSI/ASME N45.2.6, 1978 Edition as modified by Regulatory Guide 1.58, Rev. 1.

3.3.1 Visual Examination

Visual examinations (VT) will be performed in accordance with IWA-2210 which defines four types of VT examinations. These types of VT examinations are summarized as follows:

(1) VT-1 examinations shall be conducted to determine the condition of the part, component, or surface examined. The examination shall determine conditions such as cracks, wear, corrosion, erosion, or physical damage on the surfaces of the part or components. This type of examination may be performed by direct or remote methods as defined in IWA-2211.

(2) VT-2 examinations shall be conducted to detect leakage (or abnormal leakage) from pressure retaining components during system pressure or functional tests.

(3) VT-3 examinations shall be conducted to determine general mechanical and structural conditions of components and their supports, such as the presence of loose parts, debris, or abnormal corrosion products, wear, erosion, corrosion, and the loss of integrity at bolted or welded connections.

(4) VT-4 examinations shall be conducted to determine conditions related to operability of components or devices, such as mechanical and hydraulic snubbers, component supports, pumps, valves, and spring loaded and constant weight hangers.

3.3.2 Surface Examination

A surface examination will be performed in accordance with ASME Section XI, IWA-2220 to detect the presence of surface cracks or discontinuities. It may be conducted by either magnetic particle (MT) or liquid penetrant (PT) techniques where the surface conditions, material, and accessibility permit such an examination.

3.3.3 Volumetric Examination

A volumetric examination will be performed in accordance with ASME Section XI, IWA-2230 to detect the presence of discontinuities throughout the volume of material. Two such volumetric techniques are radiographic (RT) and ultrasonic (UT) examination. The UT methods are used for the planned examinations in this program, however RT may be used as applicable.

3.4 REPAIR AND REPLACEMENT

Repairs, replacements, and modifications of ASME Class 1, 2, 3 components and additional components depicted on the ASME Section XI ISI Boundary Drawings will be performed in accordance with the PECO Energy Repair and Replacement Program, contained in Specification M679 (see ref. 1.1.23).

3.5 EXAMINATIONS - GENERAL

The bulk of the ISI Program is the planned periodic examinations of specific components as required by Section XI. This section describes the Code requirements which have been used as criteria for determining which Class 1, 2 and 3 components require examination during the second 10 year inspection interval. It describes the philosophy utilized for selection and implementation of component examinations along with the basis used for performing the evaluation of examination results. Sections 4.0 through 9.0 provide a summary of the specific areas or groups of examinations (i.e. Code examination category and item number) planned for: the Reactor Pressure Vessel, Class 1 and 2 welds, bolting and components, Class 3 components, pressure testing, and the component supports and snubbers. Therefore, these sections describe how PECO Energy plans to implement the requirements of subsection IWB, IWC, IWD, and IWF of the Code, for PBAPS 2&3.

3.5.1 Selection Basis

Class 1 piping welds (Category B-F and B-J), which were examined during the first inspection interval, were reviewed to confirm that their population yielded, in general, a representative sample of Class 1 welds, including: dissimilar metal, structural discontinuity, and terminal end butt welds, along with their intersecting longitudinal welds. This approach, similar to the guidelines provided in the 80W81 Code Edition, was utilized in light of the fact that the 74S75 Code Edition does not provide guidance for the selection of specific types of welds for examination. Where previously examined welds did not fulfill the above criteria, a different weld was selected from the remaining nonexempt population.

Class 2 piping welds, (Category C-F and C-G) were selected for examination, using the guidance provided in the 74S75 Edition of the Code. A 25% sample of Class 2 piping welds, selected from all geometric configurations throughout the Class 2 systems, was developed using the multiple component concept. (See Section 6.5). This criteria yielded a representative population of structural discontinuities in both main and branch piping. A sample of terminal end welds was also included in the overall examination population. Longitudinal welds intersecting any of the selected circumferential welds, were also included in the sample.

Additionally, if system modifications resulted in an increase to the component population, a sampling criteria, as described above, with considerations to ALARA and access was used to select the required additional component examinations.

3.5.1.1 Multi-Component Concept

For Class 1, 2, and 3 multiple components of similar design, function, and service, Section XI allows for the examinations to be performed on only one of the components or divided among the components such that the total number of examinations performed is equivalent to the number that would be performed if only one of the components was required to be completely examined. This multi-component concept is used in this ISI Program and is indicated in the applicable examination categories listed in Sections 4.0 through 9.0 of this document. Those items qualifying as multiple components are identified in the ISI Program tables by listing the specific multi-component group in the notes column of the table.

3.5.2 Implementation

In accordance with Section XI, Article IWA-2400, all portions of the ISI Program conform to Inspection Program B of IWA-2420. Program B defines the inspection interval duration as ten years. However, the durations of the second inspection intervals for PBAPS 2 & 3 have been modified, as discussed in Section 1.0. Accordingly, the second inspection intervals for PBAPS 2 & 3 end on November 4, 1997 and August 14, 1997 respectively. All Code required examinations identified in this ISI Program must be completed by these dates, unless the intervals are extended due to lengthy outages experienced at both plants. This extension is allowable, in accordance with IWA-2400(C).

Inspection Program B of the Code further divides the inspection interval into three periods. The normal duration of these periods are: First Period - 3 years; Second Period - 4 years; Third Period - 3 years. As allowed by IWB-2412(b), these durations may be decreased or extended by one year, to enable an examination to coincide with a plant outage, provided the net increase or decrease over the 10 year interval does not exceed one year. Because of the adjustment of the length of the second interval, the inspection periods for PBAPS 2 & 3 will be adjusted accordingly.

In addition to completing all Code required examinations by the end of the interval, Section XI requires several categories of examinations to be completed progressively during the interval, in accordance with the following table:

TABLE 3.5-1
DISTRIBUTION OF EXAMINATIONS
DURING THE INTERVAL

Period	Examination Completion
1st	16% minimum and not to exceed 34% of the total examinations.
2nd	50% minimum and not to exceed 67% of the total examinations. This includes the examinations performed during the 1st Period.
3rd	100% of all required examinations (total for all three periods).

Applicable examinations within this program will be implemented in accordance with the above table. This implementation concept is referred to as INTERVAL DISTRIBUTION (ID). It can be applied to some individual examinations as well as to categories of examinations. (i.e. examination of a portion of a weld length each period).

The remainder of the ISI examinations will be implemented as required by the Code. These Code requirements vary, and may include the following:

- Examinations which can only be conducted during a refueling outage. These examinations will be noted as RO in the ISI Tables.
- Examinations which must be conducted during a specific period. These examinations will be noted as 1P, 2P or 3P, as appropriate, in the ISI Tables.
- Examinations which may be conducted anytime during the interval, including deferral until the end of the interval. These examinations will be noted as EOI for "End of Interval" in the ISI Tables.
- Examinations which must take place when an item is disassembled. These examinations will be noted as DISS in the ISI Tables. For items within a multi-component group, where only one of the multiple components must be examined at time of disassembly, the examination will be noted as DISG in the ISI Table.

3.6 RELIEF REQUESTS

In cases where the Section XI requirements have been determined to be impractical or impossible to comply with, Relief Requests have been prepared in accordance with 10CFR50.55a(g)(5)(iii). Although most of the second 10-year interval Relief Requests were previously issued for the first 10-year interval ISI program, some new requests for relief have been added.

All requests for relief from the inspection requirements of Subsections IWB, IWC, IWD or IWF of Section XI will include the following as a minimum:

1. A unique alpha-numeric identifier for the Relief Request.

   The identifiers for Class 1, 2, and 3 Relief Requests will take the following format:

   RR-XX

   Where:

   RR = Relief Request

   XX = Sequentially assigned two-digit number

2. Identification of the component(s) for which relief from Section XI requirements is requested. This shall include a brief description of the component's function.

3. The ASME Code Class, Examination Category, and Item Number.

4. The specific ASME Code examination requirement(s) from which relief is requested.

5. Information which justifies the request for relief.

6. When applicable, a description of the alternate examination or test which will be performed in lieu of the ASME Code requirements.

7. The schedule for implementation of the alternate examination or test.

The IWB, IWC, IWD and IWF relief requests can be found in Appendix A.

3.7 EVALUATION OF EXAMINATION RESULTS

Applicable ISI examination results will be evaluated in accordance with Section XI, Subsection IWA-3000. If criteria is not specified in Section XI, the evaluation will utilize the criteria of the original Construction Code as allowed by Paragraph IWA-3100(b). While original construction at PBAPS 2&3 was performed in accordance with ANSI B31.1, 1967 Edition for piping, and ASME Section III, 1965 Edition with Winter 1965 addenda for the RPV, the construction Code referenced for use in evaluation is interpreted at Peach Bottom to mean the 1968 Edition of ASME Section III. This approach will maintain the necessary consistency between the baseline examinations and future ISI examinations to meet the intent of ASME Section XI. Acceptance of this interpretation was requested from the NRC by reference 1.1.21. Approval of this request was granted by the NRC ir. reference 1.1.22. The NRC evaluation concluded that it would be impractical to discard the present data bank in favor of establishing a new evaluation criteria, especially where it is based on earlier Section III Code requirements.

If future modifications take place, the construction Code referenced will be the Code applicable to the construction of that component, as well as the evaluation of examination results.

4.0 REACTOR PRESSURE VESSEL (RPV) EXAMINATIONS

Code Examination Categories and/or Item Numbers which apply exclusively to pressurized water reactor (PWR) plants are specifically excluded from this document.

4.1 PRESSURE-RETAINING WELDS IN RPV (CATEGORY B-A)

Items B1.10, B1.11, B1.12 - Shell Welds (Section XI requirements)

Scope of Examination - 100% of one beltline region longitudinal and one beltline region circumferential shell weld (does not include the shell to flange weld which is Item B1.30).

Examination Schedule - End of Interval (EOI)

Discussion - Through a change to 10CFR50, the NRC has imposed an augmented examination program for the reactor pressure vessel shell welds. The program requires examination of each of the shell welds (longitudinal and circumferential) by the end of the second inspection interval. Due to plant design, access to these welds is impractical from outside of the vessel, therefore, the examinations are planned to be performed from the inside of the vessel. Examination of 100% of the length of these welds may not be achievable. Examination limitations will be identified in Relief Request RR-01, and submitted to the NRC for approval.

Items B1.20, B1.21, B1.22 - Bottom Head Welds

Scope of Examination - 100% of accessible length of one circumferential and one meridional head weld.

Examination Schedule - End of Interval (EOI)

Discussion - Meridional and circumferential seam welds in the bottom head will be considered individually for physical accessibility and radiation levels.

Items B1.20, B1.21, B1.22 - Top Head Welds

Scope of Examination - 100% of the accessible length of one circumferential and one meridional head weld.

Examination Schedule - Interval Distribution (ID)

Discussion - The welds on the closure head are accessible for volumetric examination when the head is removed for refueling.

Item B1.30 - Shell to Flange Weld

Scope of Examination - 100% of the shell to flange weld.

Examination Schedule -

1. Interval Distribution (ID)
   or
2. First Period (1P) and Third Period (3P)

   a. First Period - Minimum 50% of the total weld length.

   b. Third Period - Remainder of weld length not performed in first period, so that 100% of weld length has been examined.

Discussion - This weld will be examined ultrasonically from the seal surface using straight beam examination techniques as an alternative examination technique as provided by IWA-2240. Examination from the shell side of the weld will be performed during the third period.

Item B1.40 - Head to Flange Weld

Scope of Examination - 100% of head to flange weld.

Examination Schedule - Interval Distribution (ID)

Discussion - This weld is available for UT and MT Examination when the head is removed for refueling.

Item B1.50, B1.51 - Repair Welds

Scope of Examination - One weld repair area.

Examination Schedule - End of Interval (EOI)

Discussion - For material (base metal) weld repairs in the beltline region, where the repair depth exceeds ten percent nominal of the vessel wall, one (1) repair weld area will be examined once per inspection interval. If the location of the weld repair is not accurately known, then the individual shell plate, forging, or shell course containing the repair shall be included.

4.2 FULL PENETRATION WELDS OF NOZZLES IN THE RPV - INSPECTION PROGRAM B (CATEGORY B-D)

Note: Inspection Program A is not applicable to the PBAPS 2 & 3 ISI Program.

Item B3.90 and B3.100 - Reactor Vessel Full Penetration Nozzle Welds

Scope of Examination - 100% of all nozzle to vessel welds and nozzle inside radius sections.

Examination Schedule

(a) 1st Period (1P) - At least 25% but not more than 50% of the nozzles.

(b) 2nd Period (2P) - See 3rd Period

(c) 3rd Period (3P) - The remainder of nozzles examination must be completed by the end of the 3rd Period.

Note: Exam schedule for the above is indicated in the ISI Program Table as 1P, 3P.

Discussion - These RPV nozzle welds are accessible for UT examination from the outside surface of the RPV when the surrounding sections of the sacrificial shield and insulation are removed. However, due to component configuration (nozzle forging design), a complete Code examination is not practical. See Relief Request No. RR-13.

4.3 PARTIAL PENETRATION WELDS IN THE RPV (CATEGORY B-E)

Items B4.11, B4.12, B4.13 - Partial Penetration Welds

Scope of Examination - Visually examine 25% of all nozzles within each of the following categories:
Item B4.11 - Vessel Nozzles
Item B4.12 - Control Rod Drive Nozzles
Item B4.13 - Instrumentation Nozzles

Examination Schedule - Interval Distribution (ID)

Discussion - A VT-2 examination will be conducted for evidence of leakage of partial penetration welds in the RPV in accordance with IWA-5240. The examinations will be performed when the RPV is pressurized prior to operation.

4.4 DISSIMILAR METAL WELDS (CATEGORY B-F)

Item B5.10, B5.20 - Reactor Vessel Dissimilar Metal Butt Welds

Scope of Examination - 100% of all nozzle to safe-end butt-welds that meet the dissimilar metal requirements.

Examination Schedule

1. Interval Distribution (ID)
   or
2. Perform at the same time as the adjacent nozzle to vessel welds, Category B-D, (see Paragraph 4.2).

Discussion - There is a dissimilar metal weld between the carbon steel nozzle forgings and the piping system on some of the RPV nozzles. Access to these dissimilar metal welds will be provided for in the same manner as for the nozzle-to-vessel primary welds (Category B-D).

Item B5.30 - Reactor Vessel Dissimilar Metal Socket Welds

Not applicable to PBAPS 2 & 3. There are no Reactor Vessel nozzle-to-safe end dissimilar metal socket welds.

4.5 PRESSURE-RETAINING BOLTING GREATER THAN 2" DIAMETER (CATEGORY B-G-1)

Item B6.10, B6.20, B6.30, B6.40, and B6.50 - Reactor Vessel Bolting

Scope of Examination - All closure head nuts (B6.10), studs (B6.20, B6.30), threads in flange holes (B6.40), closure washers, and bushings (B6.50). Bushings and threads in flange holes only require examination in the event the connection is disassembled.

Examination Schedule - Each of the following:

1. End of Interval (EOI) - Closure head nuts and washers. Closure head studs shall be examined when removed.

2. Disassembly (DISS) - Threads in flange holes and bushings only.

Discussion - The closure head nuts, when removed, will be volumetrically examined as an alternative to a surface examination in accordance with IWA-2240. Closure head studs which are not removed will be subject to a volumetric examination in place. Not all of the closure studs are scheduled to be removed during any one refueling. However, during the course of the interval, all studs which are removed will be subjected to both volumetric and surface examination.

4.6 PRESSURE-RETAINING BOLTING LESS THAN OR EQUAL TO 2" DIAMETER (CATEGORY B-G-2)

Item B7.10 - Reactor Vessel Bolting

Not applicable to PBAPS 2 & 3. There is no Reactor Vessel pressure retaining bolting less than or equal to 2" in diameter.

Item B7.70 - Bolts, Studs, and Nuts

Scope of examination - All bolts, studs, and nuts in certain selected Class 1 valves. That is, for valve bolting, studs, and nuts, examinations are limited to the valves selected under Category B-M-2 (i.e., one valve under a group of valves which are greater than 4 inch and of the same size, constructional design, and manufacturing method, and that perform similar system functions).

Examination Schedule - Interval Distribution (ID).

Item B7.80 - CRD Housing Bolting

Scope of Examination - All bolts, studs, and nuts on CRD housings.

Examination Schedule - Only examined when disassembled (DISS).

4.7 INTEGRALLY WELDED ATTACHMENTS TO VESSELS (Category B-H)

PBAPS 2 & 3 has adopted Code Case N-343 which limits examinations of this category to integrally welded attachments that meet the following conditions:

a) the attachment is on the outside surface of the pressure retaining components

b) the attachment provides component support as defined in NF-1110

c) the attachment base material design thickness is 5/8 in. or greater and

d) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.

Weld buildup on nozzles that is in compression under normal conditions and provides only component support is excluded from examination.

Item B8.10 - Integrally Welded Attachments to Reactor Vessel

Scope of Examination - 100% of the RPV support skirt weld, and stabilizer bracket attachment welds.

Examination Schedule - Interval Distribution (ID)

Discussion Category B-H requires a volumetric or surface examination method be utilized, as applicable. Volumetric examination of the PBAPS RPV integral attachment weld configurations is not practical; therefore, surface examination shall be performed on the RPV support skirt and stabilizer bracket attachment welds.

4.8 PRESSURE RETAINING WELDS IN PIPING (CATEGORY B-J)

Items B9.11, B9.21, and B9.40 - Circumferential/Socket Welds

Scope of Examinations - 25% of all nonexempt circumferential butt welds and socket welds per the 74S75 Edition of Section XI.

Examination Schedule - Interval Distribution (ID)

Discussion - Piping welds in this Category included with the reactor pressure vessel examinations are those welds outboard of the vessel nozzles which are not associated with another system within the ISI boundaries (e.g. head vent line, instrumentation lines, . . .)

4.9 RPV INTERIOR SHELL AND CORE SUPPORT STRUCTURE (CATEGORY B-N-1 and B-N-2)

Item B13.10, B13.20, B13.21, and B13.22

Scope of Examination - All accessible surfaces of the vessel shell interior surfaces and critical internal components (B13.10), vessel interior attachment welds (B13.20, B13.21) and core support structure surfaces (B13.22).

Examination Schedule - Each of the following:

1. Refueling Outages (RO) - All surfaces of the vessel shell interior and internal components (B13.10) made accessible by removal of components during a refueling outage shall be examined during the 1st refueling outage and every other refueling outage thereafter (approximately once per period).

2. End of Interval (EOI) - Applicable to interior attachment welds (B13.20, B13.21) and the Core Support Structure (B13.22) only.

4.10 CONTROL ROD DRIVE PRESSURE-RETAINING WELDS (CATEGORY B-0)

Item B14.10 - Reactor Vessel CRD Housing Welds

Scope of Examination - Pressure-retaining welds in 10% of the peripheral CRD Housings

Examination Schedule - End of Interval (EOI)

See Reference 1.1.32 for calculation/justification.

4.11 PRESSURE TESTING (CATEGORY B-P)

ITEM B15.10, B15.11 - Reactor Vessel Pressure Retaining Boundary

See Section 8.1

5.0 CLASS 1 WELDS, BOLTING, AND COMPONENT EXAMINATIONS (EXCLUDING THE RPV)

This section applies to Class 1 welds, bolting, and component examinations other than the RPV. Examinations applicable to the RPV are discussed in Section 4.0. Code examination categories and/or item numbers which apply exclusively to pressurized water reactor (PWR) plants are specifically excluded from this document.

5.1 DISSIMILAR METAL WELDS (CATEGORY B-F)

Item B5.150 - Dissimilar Metal Socket Welds

Not applicable to PBAPS 2 & 3. There are no Class 1 dissimilar metal socket welds in the system design.

Item B5.130 and B5.140 - Piping Dissimilar Welds

Scope of Examination - All dissimilar metal nonexempt pipe welds.

Examination Schedule - Interval Distribution (ID)

Discussion - This category applies to dissimilar metal welds in piping systems. This includes combinations of carbon or low alloy steels to high alloy steels, carbon or low alloy steels to high nickel alloys, and high alloy steels to high nickel alloys.

5.2 PRESSURE-RETAINING BOLTING GREATER THAN 2" DIAMETER (CATEGORY B-G-1)

Items B6.150 through B6.170 and B6.210 through B.230 - Bolting in Piping and Valves

Not applicable PBAPS 2 & 3. There is no Class 1 bolting greater than 2" diameter for piping or valves utilized in the system design.

Item B6.180, B6.190, and B6.200 - Bolting in Pumps

Scope of Examination - All studs, bolts, nuts, bushings, and washers. Should the flanged connection be disassembled, the bushings and threads in flange stud holes and 1" annular surface of the flange surrounding stud or bolt shall be examined.

The examination of bolting may be limited to the pump selected for examination under B-L-2 as allowed by Code Case N-419. Category B-L-2 permits the application of the multi-component concept for pumps.

Examination Schedule

1. Disassembly (DISG) - Bushings and threads in flange stud holes and flange surfaces only. and
2. End of Interval (EOI) - Bolts, studs, nuts, and washers.

Discussion - The Reactor Recirculation Pumps are the only Class 1 pumps. Examinations of bolts, studs, nuts and washers will be performed on only one recirculation pump on each unit. Examination of bushings and threads in flange stud holes and flange surfaces will be performed whenever a pump is disassembled.

5.3 PRESSURE-RETAINING BOLTING LESS THAN OR EQUAL TO 2" DIAMETER (CATEGORY B-G-2)

Item B7.60 - Bolting in Pumps

Not applicable to PBAPS 2 & 3. There are no Class 1 Pumps which contain bolting 2" diameter or less.

Item B7.50 and B7.70 - Bolting in Piping and Valves

Scope of examination - All bolts, studs, and nuts. For valves, Code Case N-426 allows the bolting examinations to be limited to valves selected for examination under B-M-2. Category B-M-2 permits the application of the multi-component concept for valves. For piping, the bolting requiring examination is bolting in piping required to be examined under B-J.

Examination Schedule

1. Interval Distribution (ID) - Piping

2. Disassembly (DISG) - Valves

Discussion - Valves which do not have pressure retaining bolting are listed in Category B-M-2 section of the ISI Program table with a note indicating no pressure retaining bolting.

5.4 PRESSURE-RETAINING WELDS IN PIPING (CATEGORY B-J)

Items B9.10 through B9.40

Scope of Examinations - 25% of all nonexempt circumferential and branch connection pipe welds per the 74S75 Edition of Section XI (Reference Section 2.2.1). All longitudinal pipe welds intersecting any of the selected circumferential welds shall also be examined for a length of at least one pipe diameter, but not more than 12 inches.

Examination Schedule - Interval Distribution (ID)

Discussion - Welds selected for examination represent areas expected to experience higher stresses. If system modifications result in an increase to the weld population, a representative sampling criteria, with considerations to ALARA, access, geometry, stress levels, etc., will be used to select the required additional welds.

5.5 INTEGRAL ATTACHMENTS (CATEGORY B-K-1)

PBAPS 2 & 3 has adopted Code Case N-343 which limits examinations of this category to integrally welded attachments that meet the following conditions:

a) the attachment is on the outside surface of the pressure retaining components

b) the attachment provides component support as defined in NF-1110

c) the attachment base material design thickness is 5/8 in. or greater and

d) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.

A surface examination is planned for integral attachments in this category. However, a volumetric examination may be used if the integral attachment has a full penetration weld to an appurtenance of the component, as allowed by ASME Section XI, Figure IWB-2500-14.

Item B10.30 - Integral Attachments to Valves

Not applicable to PBAPS 2&3. There are no integral attachments to Class 1 valves in the plant design.

Item B10.10 and B10.20 - Integral Attachments to Piping and Pumps

Scope of Examination - The examinations include only the welded attachments to piping required to be examined under Examination Category B-J and the welded attachments to pumps associated with this piping. The multi-component concept is not applicable to this examination category. This is interpreted to mean 100% of all Class 1 integrally welded attachments with a base material design thickness of 5/8" or greater.

Examination Schedule - Interval Distribution (ID)

Discussion - Integral attachments to piping include not only attachments associated with component supports, but also attachments associated with piping at containment penetrations. The Class 1 nonexempt piping containment penetrations at PBAPS 2 & 3 are of a forged design as shown in Section XI, Figure IWB-2500-14. The surface exams required by B-K-1 need only be performed on welds that are within a region that is "t" inches from the pressure-retaining component, where "t" is the wall thickness of the pressure-retaining component (the piping in this case). At PBAPS 2 & 3, none of the Class 1 nonexempt piping containment penetrations have welds that are within this region.

Containment penetrations N-7A-D, 9A & B, 11, 12, 13A & B, 14, 16A & B, & 17 are the expansion bellows type in which the process pipe passes inside a guard pipe. Spacer lugs are welded to the outside of the process pipe and to the inside of the guard pipe. These lugs do not provide component support as defined in ASME Section III NF-1110 and are therefore not subject to examination.

5.6 PRESSURE-RETAINING WELDS IN PUMP CASINGS (CATEGORY B-L-1)

Item B12.10 - Pump Casing Welds

There are no pressure-retaining welds in pump casings that fall under Category B-L-1. There are window welds in the recirculation pump casing, but they are not a weld joint as defined in Figure IWB-2500-16, but rather a core closure weld in a casting. Per IWA-2500, these welds are not required to be examined under Category B-L-1.

5.7 INTERNAL PRESSURE-RETAINING SURFACES OF PUMP CASINGS (CATEGORY B-L-2)

Item B12.20 - Pump Casings

Scope of Examination - Multi-component concept is applicable; ie., only the interior surface of one recirculation pump requires examination.

Examination Schedule - DISG

Discussion - The only pumps in this category subject to examination are those in the Reactor Recirculation System. VT-3 examinations will be scheduled and performed when the pumps are disassembled for maintenance purposes per Relief Request RR-02.

5.8 PRESSURE-RETAINING WELDS IN VALVE BODIES (CATEGORY B-M-1)

Item B12.30 and B12.40 - Valve Body Welds

Not applicable to PBAPS 2 & 3. There are no valve body welds.

5.9 INTERNAL PRESSURE-RETAINING SURFACES OF VALVE BODIES (CATEGORY B-M-2)

Item B12.50 - Valve Body

Scope of Examination - Multi-component concept is applicable; however, it is supplemented by the requirement that examinations are limited to one valve within a group of valves that are of the same functional design (globe, gate, check), manufacturing method, and that perform similar functions within the system.

Examination Schedule - DISG

Discussion - The examination of the internal surfaces of the valve bodies will be performed when the valves are disassembled for maintenance purposes per Relief Request RR-03.

5.10 PRESSURE TESTING (CATEGORY B-P)

Items B15.50 through B15.71

See Section 8.1

6.0 CLASS 2 WELDS, BOLTING, AND COMPONENT EXAMINATIONS

6.1 PRESSURE-RETAINING WELDS IN CLASS 2 PRESSURE VESSELS (CATEGORY C-A)

Item C1.20 and C1.30 - Head Circumferential and Tubesheet to Shell Welds

Not applicable to PBAPS 2 & 3. There are no welds of this type utilized at PBAPS.

Item C1.10 - Shell Circumferential Welds

Scope of Examination - Examination of 100% of the weld length of shell circumferential welds at a gross structural discontinuity, such as a shell to flange weld. Multi-component concept is applicable, in that the requirements may be limited to one vessel or distributed among vessels of similar size, design, and service. The only Class 2 vessels that are in scope for this examination category are the RHR Heat Exchangers. These Heat Exchangers qualify for the multi-component approach.

Examination Schedule - Interval Distribution (ID)

Discussion - The shell circumferential welds on the selected RHR Heat Exchanger will be examined to the extent possible as described in Relief Request RR-08. There is a circumferential weld located approximately at the center of each RHR Heat Exchanger, however this weld is not a structural discontinuity.

6.2 PRESSURE-RETAINING NOZZLE WELDS IN VESSELS (CATEGORY C-B)

Items C2.10 through C2.22 - Nozzles

Not applicable to PBAPS 2 & 3. Plant design does not utilize nozzles within these categories.

Items C2.31 and C2.32 - Nozzles

Scope of Examination - All nozzles integrally welded or cast to vessels which are connected to piping examined under Examination Category C-F. Examinations shall include nozzle to shell, reinforcing plate to nozzle, and reinforcing plate to vessel welds. The multi-component concept is applicable.

Discussion - The nozzle to shell welds are inaccessible for examination from inside the vessel, therefore, the tell-tale hole in the reinforcing plate shall be examined for leakage during the system pressure test VT-2 examination.

Examination Schedule - Interval Distribution (ID)

6.3 INTEGRAL ATTACHMENTS TO VESSELS, PIPING AND PUMPS (CATEGORY C-C)

Item C3.40 - Valves

Not applicable to PBAPS 2 & 3. There are no integral attachments to Class 2 valves.

PBAPS has adopted code case N-343 which limits the examinations of this category to integrally welded attachments that meet the following requirements:

(a) the attachment is on the outside surface of the pressure retaining component;

(b) the attachment provides component support as defined in NF-1110;

(c) the attachment base material design thickness is 3/4 in. or greater; and

(d) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.

Items C3.10, C3.20 and C3.30 - Pressure Vessels, Piping, and Pumps

Scope of Examination - 100% of all integral attachments to vessels, piping and pumps. The multi-component concept may be applied to vessels.

Examination Schedule - Interval Distribution (ID)

6.4 PRESSURE-RETAINING BOLTING GREATER THAN 2" DIAMETER (CATEGORY C-D)

This category is not applicable to PBAPS 2 & 3. Plant design does not utilize pressure retaining bolting greater than 2 inches in diameter.

6.5 CLASS 2 PRESSURE-RETAINING PIPE WELDS (CATEGORY C-F)

ITEMS C5.10 through C5.32 - Pipe Welds

The extent of piping welds to be examined will be determined by the 74S75 Edition of Section XI (Reference Section 2.2.1). The 74S75 Edition has two categories for pipe welds, C-F and C-G, however PBAPS has elected to categorize all Class 2 piping welds Category C-F. This is a more conservative approach since Category C-F requires a larger percentage of welds to be examined than Category C-G. The weld selection basis is provided in Section 3.5.1. The parts examined and the examination method is determined by the 80W81 Edition of Section XI.

Scope of Examination - Nonexempt pipe welds include all circumferential pipe welds and branch connection welds (>4" NPS) located on nonexempt piping. For piping systems or portions of systems, that consist of a single train; 25% of the nonexempt pipe welds shall be examined. All longitudinal pipe welds intersecting any of the selected circumferential welds shall also be examined for a length of at least 2.5T.

i.e. Total welds = 100 x 25% = 25 welds examined.

For piping systems or portions of systems that consists of more than one train (multi-train); 25% of the total number of nonexempt welds in all the trains divided by the number of trains, shall be examined.

i.e. Train A welds = 50
Train B welds = 54
Total A & B = 104 ÷ 2 = 52 x 25% = 13 welds examined

Examination Schedule - Interval Distribution (ID)

In addition, all longitudinal pipe welds intersecting a selected circumferential pipe weld shall also be examined.

Discussion - If system modifications result in an increase in the weld population, a representative sampling criteria with considerations to ALARA access, geometry, etc. will be used to select the required additional welds.

6.6 PRESSURE-RETAINING WELDS IN PUMPS AND VALVES (CATEGORY C-G)

This category is not applicable to PBAPS 2 & 3. There are no pressure retaining welds in the Class 2 pumps or valves.

6.7 PRESSURE TESTING (CATEGORY C-H)

See Section 8.2

7.0 CLASS 3 COMPONENT EXAMINATIONS

Pressure testing for Categories D-A, D-B, and D-C is discussed in Section 8.3.

7.1 CLASS 3 INTEGRAL ATTACHMENTS (CATEGORIES D-A, D-B, AND D-C)

The selection basis for this Examination Category is addressed in Section 9.0 Component Supports, Paragraph 9.3.3, since the examination scope consists of integral attachments corresponding to component supports that are selected to be examined under IWF of Section XI, per Note 3 of Tables IWD-2500-1 Examination Category D-A, D-B, and D-C.

8.0 PRESSURE TESTING

All pressure retaining components within the ASME Classification boundaries are subject to periodic pressure testing in accordance with Section XI, IWA-5000 and Code Case N-498. In addition, certain repairs, replacement, and modifications of ASME classified and associated components are subject to pressure testing prior to resumption of service.

8.1 CLASS 1 PRESSURE TEST PROGRAM

8.1.1 Pressure Test Requirements (Table IWB-2500-1 Category B-P)

Items B15.20 through B15.41

Not applicable to PBAPS 2 & 3. Items B15.20 through B15.31 pertain to a PWR. PBAPS 2 & 3 does not utilize Class 1 Heat Exchangers applicable to Items B15.40 and B15.41.

Items B15.10, B15.11, B15.50, B15.51, B15.60, B15.61, B15.70, and B15.71

Scope of Examination - All external portions of piping, pumps, valves, and the reactor vessel (including nozzles and safe ends) should be examined concurrent with a leakage test and/or hydrostatic test.

It should be noted that there are no exemptions applicable to the pressure test requirements of this examination category. However, alternative test methods are allowed as described in Section XI, Article IWB-5000.

Examination Schedule

1. Refueling Outages (RO) - Examination concurrent with a leakage test.

2. End of Interval (EOI) - Examination concurrent with a hydrostatic test.

8.1.2 System Leakage Test

Class 1 components will be subjected to a system leakage test of IWB-5221 prior to startup, following each reactor refueling outage at a test pressure not less than system nominal operating pressure (Reference Para. 1.2.19) associated with 100 percent rated reactor power at the Reactor Vessel Top Head Flange. The tests scheduled to be performed during the second 10-year interval are shown in Table 8.1-1.

8.1.3 System Hydrostatic Test

Class 1 components will be subjected to a system hydrostatic test or alternative test at or near the end of the inspection interval. In accordance with Code Case N-498, the system is pressurized to nominal operating pressure for at least four (4) hours for insulated systems and ten (10) minutes for noninsulated systems. The nominal operating pressure shall be maintained during the performance of the VT-2 visual examination at the corresponding test temperature derived from the plant technical specifications. The tests scheduled to be performed during the second 10-year interval are shown in Table 8.1-1.

Certain portions of Class 1 systems, by virtue of plant design, cannot adequately be hydrostatically tested with the balance of the Class 1 boundary. The Code requirements, however, may be satisfied by inclusion of these portions of piping into the Class 2 test boundary and testing at a higher (Class 2) test pressure.

TABLE 8.1-1 CLASS 1 SYSTEM PRESSURE TESTS

System	System Leakage Test	System Hydrostatic Test
Main Steam	See Footnote (1)	See Code Case N-498 or RR-04
Main Recirculation	See Footnote (1)	See Code Case N-498 or RR-04
Feedwater	See Footnote (1)	See Code Case N-498 or RR-04
Residual Heat Removal	See Footnote (1)	See Code Case N-498 or RR-04
Reactor Water Cleanup	See Footnote (1)	See Code Case N-498 or RR-04
Reactor Core Isolation Cooling	See Footnote (1)	See Code Case N-498 or RR-04
Core Spray	See Footnote (1)	See Code Case N-498 or RR-04
High Pressure Injection Coolant	See Footnote (1)	See Code Case N-498 or RR-04
Standby Liquid Control	See Footnote (1)	See Code Case N-498 or RR-04
Control Rod Drive Hydraulic System (2)	See Footnote (1)	See Code Case N-498 or RR-04

(1) Nominal Operating Pressure associated with 100% rated reactor power is defined as the range of pressure between 980 psig and 1035 psig.

(2) For purposes of this inservice inspection program, this system has been upgraded to Class 1, consistent with what was accomplished in the first ISI interval.

8.2 CLASS 2 PRESSURE TEST PROGRAM

8.2.1 Pressure Test Requirements (Table IWC-2500-1 Category C-H)

Items C7.10, C7.20, C7.30, C7.40, C7.50, C7.60, C7.70, and C7.80

Scope of Examination - All external portions of pressure vessels, piping, pumps, and valves shall be examined concurrent with both inservice or functional tests and the hydrostatic test.

Examination Schedule

1. 1st Period (1P) - 100% examination of the systems concurrent with an inservice or functional test.

2. 2nd Period (2P) - 100% examination of the systems concurrent with an inservice, functional, or hydrostatic test.

3. 3rd Period (3P) - 100% examination of the systems concurrent with an inservice, functional, or hydrostatic test required at or near the end of the inspection interval.

Note: An inservice or functional test is required each period. However, this requirement is waived in the period that the hydrostatic test is performed. A hydrostatic test must be performed at least once during the ten-year interval, either in the 2nd or 3rd period.

8.2.2 System Inservice or Functional Test

Class 2 components will be subjected to the system inservice or functional test requirements of IWC-5200. The tests scheduled to be performed during the second 10-year interval are shown in Table 8.2-1.

For those Class 2 systems which normally operate, an inservice test shall be performed while at normal operating pressure. For those Class 2 systems which do not normally operate, a functional test shall be performed at the pressure associated with the quarterly surveillance test. In all cases, only the boundary under pressure shall be VT-2 examined.

8.2.3 System Hydrostatic Test

Class 2 components will be subject to the system hydrostatic test requirements of IWC-5222 or alternate tests per Code Case N-498. The tests scheduled to be performed during the second 10-year interval are shown in Table 8.2-1

In accordance with IWC-5222 (c), open-ended portions of nonclosed systems extending to the first shutoff valve are exempted from the test requirements of IWC-5000. Examples of this exemption include suction lines from the torus, test lines, and minimum flow recirculation lines which discharge to the torus, containment spray lines, torus spray lines and turbine exhaust lines to the torus. For these lines, demonstration of an open flow path will be performed in lieu of pressure testing in accordance with IWC-5222 (d)

TABLE 8.2-1 CLASS 2 SYSTEM PRESSURE TESTS

System	System Inservice or Functional Test	System Hydrostatic Test (2)
Core Spray Cooling	See Footnote (1)	See Footnote (2)
High Pressure Coolant Injection	See Footnote (1)	See Footnote (2)
Reactor Core Isolation Cooling	See Footnote (1)	See Footnote (2)
Standby Liquid Control	See Footnote (1)	See Footnote (2)
Residual Heat Removal	See Footnote (1)	See Footnote (3)
CRD Scram Discharge Volume Piping	See Footnote (1)	See Footnote (2)
Main Steam	See Footnote (1)	See Footnote (2)

Notes

(1) System inservice or functional tests will be performed in accordance with paragraph 8.2.2, with examination per IWA-5000.

(2) System hydrostatic tests requirements will be satisfied using Code Case N-498 during the second or third inspection periods. The boundary subject to test pressurization shall extend to all Class 2 components required to operate or support the safety system function up to and including the first normally closed valve.

(3) VT-2 examine weep holes in reinforcing plates on selected RHR Heat Exchanger nozzles per IWC 2500-1, Category C-B, Item C2.32.

8.3 CLASS 3 PRESSURE TEST PROGRAM

8.3.1 Pressure Test Requirements (Table IWD-2500-1; Categories D-A, D-B and D-C)

Category D-A is not applicable to PBAPS 2 & 3 since there are no Class 3 systems in support of the reactor shutdown function.

Items D1.10, 2.10 and 3.10

Scope of Examination - All external portions of pressure vessels, piping, pumps, and valves shall be examined concurrent with both inservice or functional tests and the hydrostatic test.

Time Frame

1. 1st Period (1P) - 100% examination of the systems concurrent with an inservice or functional test.

2. 2nd Period (2P) - 100% examination of the systems concurrent with an inservice, functional, or hydrostatic test.

3. 3rd Period (3P) - 100% examination of the systems concurrent with an inservice, functional, or hydrostatic test required at or near the end of the inspection interval.

Note: An inservice or functional test is required each period. However, this requirement is waived in the period that the hydrostatic test is performed. A hydrostatic test must be performed at least once during the ten year interval, either in the 2nd or 3rd period.

8.3.2 System Inservice or Functional Test

Class 3 components will be subjected to the system inservice or functional test requirements specified in IWD-5200. The tests scheduled to be performed during the second 10-year interval is shown in Table 8.3-1.

For those Class 3 systems which normally operate, an inservice test shall be performed while at normal operating pressure. For those Class 3 systems which do not normally operate, a functional test shall be performed at the pressure associated with the quarterly surveillance test. In all cases, only the boundary under pressure shall be VT-2 examined.

8.3.4 System Hydrostatic Test

Class 3 components will be subject to a system hydrostatic test per IWD-5200 or alternate tests per Code Case N-498-1. Code testing will be conducted in accordance with IWD-5223. Buried components will be tested and examined in accordance with IWA-5244. The systems subject to testing and the tests scheduled to be performed during the second 10-year interval are shown in Table 8.3-1.

TABLE 8.3-1 CLASS 3 SYSTEM PRESSURE TESTS

System	System Inservice or Functional Test (1)	System Hydrostatic Test
Emergency Service Water	Normal Operating Pressure	110% Normal Operating Pressure[2][3], or Code Case 498-1
High Pressure Service Water	Normal Operating Pressure	110% Normal Operating Pressure[2][3], or Code Case N-498-1
Emergency Cooling Water Pressure	Normal Operating	110% Normal Operating Pressure[2][3], or Code Case N-498-1
Fuel Pool Cooling System Pressure	Normal Operating	Per IWD-5223(c)&(d)
Main Steam Relief Valve Discharge Piping	Not Required	See Relief Request RR-17

Notes:

(1) System inservice or functional test will be performed in periods in which the hydrostatic test is not performed. See Section 8.3.2.
(2) See Relief Request RR-09.
(3) IWD-5223(c), (d), and (e) are applied to portions of these systems.

9.0 CLASS 1, 2 AND 3 COMPONENT SUPPORTS EXCLUDING SNUBBER ASSEMBLIES

9.1 GENERAL

The ISI program for component supports has been developed in accordance with the requirements of Subsection IWF of the 1980 Edition of Section XI with Addenda through Winter 1981. Details of the examination program for component supports, excluding snubber assemblies (Reference Para. 1.2.29 and Figure 9.1-1), are identified in this section.

All non-exempt component supports, within the ASME classification boundaries, are listed in the ISI Program Tables and shown on the ISI Isometric Drawings. This includes those non-exempt component supports containing snubbers, since portions of these supports are subject to the examination requirements of the ASME Section XI ISI Program. Requests for relief from Section XI requirements are contained in Appendix A.

9.2 EXEMPTIONS

The same exemptions applied to Class 1, 2, and 3 pressure retaining components, as identified in Section 2.3, were applied to component supports.

9.3 EXAMINATION REQUIREMENTS

9.3.1 Examination Categories

ASME Section XI, Table IWF-2500-1 identifies three Examination Categories for component supports; F-A, F-B, and F-C. Each of these Categories contain identical requirements (ie. parts examined, examination method, frequency, etc.) and similar Item Numbers. Category F-C differs slightly, from the other categories, in that it also addresses spring and snubber type supports. Because of these similarities, this program groups all component supports into one category, noted as F-A, B, C, Item No. F0.00, on the ISI Tables. In lieu of categorization, this program identifies each applicable component support by functional type and identifies the examination method(s) required for each.

9.3.2 Examination Methods

Component support examination requirements include the VT-3 and VT-4 visual examination methods. The VT-3 method is applicable to all component supports, while the VT-4 method is only applicable to spring type supports.

9.3.3 Class 3 Integral Attachments

Applicable Class 3 integral attachments to the pressure boundary require VT-3 examination during ISI. Although the examination of Class 3 integral attachments is actually an IWD requirement, this section of the ISI Program addresses the examination of integral attachments. Integral attachments are normally considered a part of the pressure-retaining component rather than the component support, but for Class 3 attachments, there are two logical reasons for including them in the IWF Section of the ISI Program. The first reason is because the method of examination is the same as that for the support (ie. VT-3); secondly, the integral attachments selected for examination are those associated with the supports selected for examination. This is in accordance with Note 3 of Table IWD-2500-1, Examination Category D-A, D-B, and D-C in Section XI.

Note 3 states:

"....The integral attachments selected for examination shall correspond to those component supports selected by IWF-2510(b)."

Therefore, the ISI Program Tables list all integral attachments to non-exempt Class 3 components, while indicating a VT-3 examination requirement for only those associated with component supports selected for examination.

9.4 SELECTION BASIS

9.4.1 General

Component supports, per IWF-1100, are considered to be "...those metal supports designed to transmit loads from the component and piping to the load carrying building or structure. This shall include the attachment portion of intervening element(s) to pressure-retaining components, ..."Component supports can also be referred to as anything that supports, hangs, restrains, or anchors pressure-retaining components such as, piping, valves, pumps, vessels, heat exchangers, etc.

The ISI Program Tables lists all component supports of Class 1, 2, and 3 nonexempt pressure-retaining pipe and components at PBAPS 2 & 3. Those that are required to be examined during the second 10-year interval include; all supports on single train systems or portions of systems, and all supports on one train of a multiple-train system or portion of system.

9.4.2 Multi-Train Concept

This Program incorporates the multi-component concept specified in Section XI, IWF-2510(b). This paragraph states:

"For multiple components within a system of similar design, function and service, the supports of only one of the multiple components are required to be examined"

In the above paragraph, 'components' are considered to be either piping, vessels, pumps, etc., as defined in IWA-2110(h) of Section XI. This Program refers to a grouping of these items as trains, where a multiple train is more than one component, piping run, etc., of similar design, function, and service.

Systems containing multiple trains are identified by an alpha suffix in the drawing number of the ASME Section XI ISI isometric drawing, which depicts that system. All non-exempt supports on a single train require examination during ISI, while the supports of only one train of a multiple train system require examination. For multiple trains, the train with the most supports shall be selected. If all lines of a multiple train have the same number of supports, the train selection is random.

9.4.2.1 Single/Multiple-Train Rules

The following rules are used to determine train multiplicity:

- A multiple train is considered to be two or more runs of piping and associated components with a similar function and flow path between identical components (vessels, pumps, etc.).
- Determination of the number of trains in a multi-train piping systems is based on the entire system. If the system has four sections and only two discharges the system would be considered a two train system.
- Corresponding branch lines off each loop of a multiple train system are considered part of the parent train.
- Corresponding branch lines off each loop of a multiple train system which combine into headers, lesser in number than the number of loops in the main system, are considered additional trains in that system, from the point where such headers begin.

FIGURE 9.1-1
SEE SECTION 9.0 OF THE ISI PROGRAM

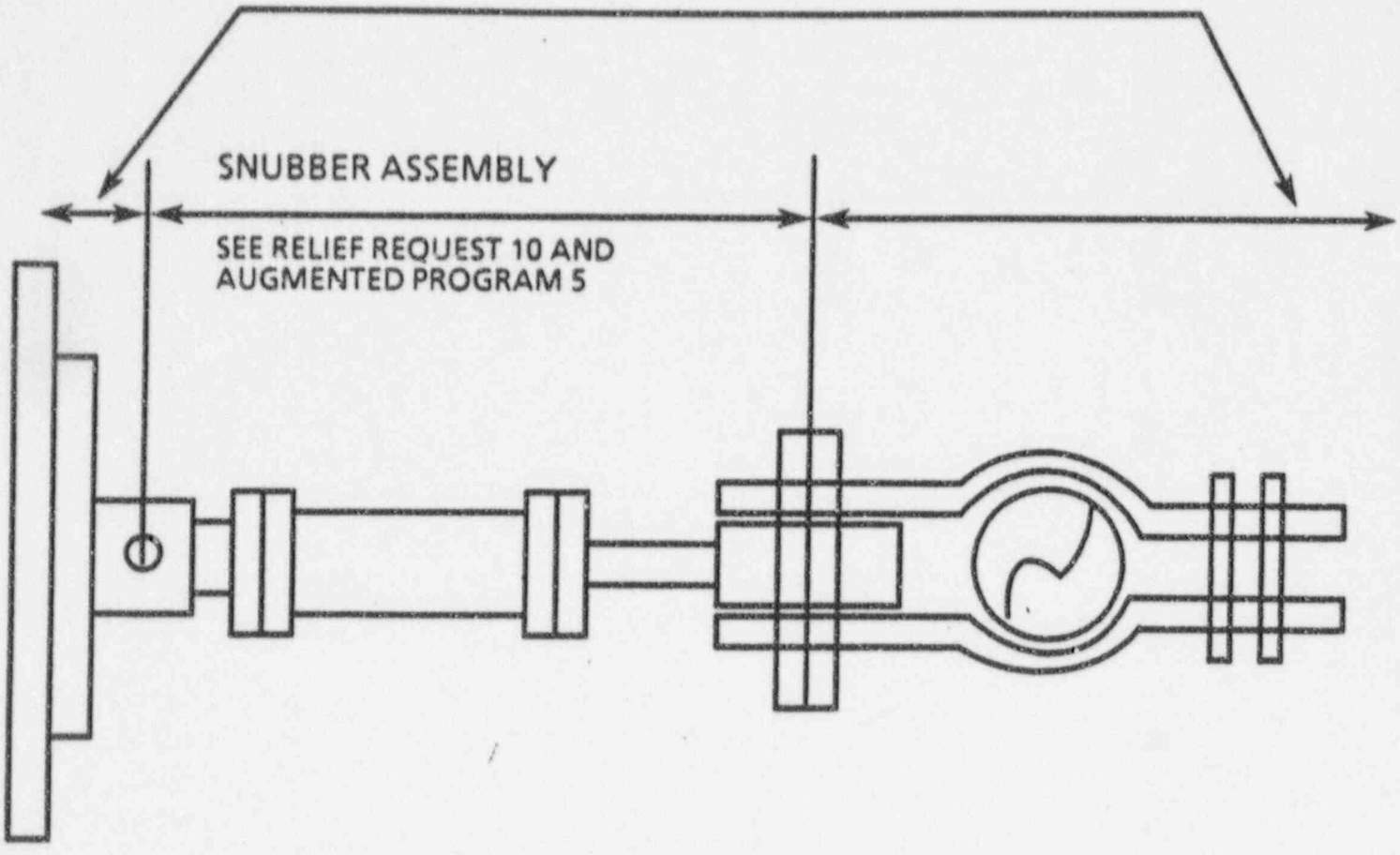

FIGURE 9.1-1

Example: 4 corresponding branch lines, each extending from a separate loop of a 4 loop system, combining into 2 headers, each supporting 2 of the branch lines, the headers are considered as additional trains in that system.

- Branch lines off only one loop of a multiple train system are considered as a single train branch.

- Where multiple lines enter a common header, the header is considered a single train.

9.5 EXAMINATION IMPLEMENTATION

All component support examinations and Class 3 integral attachment examinations will be performed utilizing the Interval Distribution (ID) method of implementation.

10.0 ISI PROGRAM TABLES

The ISI Program Tables, contained in this document, present an itemized listing of all nonexempt components which are subject to examination, (selected and non-selected) under the rules of ASME Section XI. Further, these tables identify which components have been selected for examination and provide general guidance for the scheduling of the subject examinations. Additionally, they provide reference to important pieces of information which apply to some of the listed components (i.e. relief requests, augmented requirements, etc.).

The content of the electronic data file which is used to create the ISI Program Tables is maintained by a specific revision control mechanism.

The ISI Program Tables are presented in two, slightly different formats, as follows:

The first format contains the tables for the Reactor Pressure Vessel (RPV) exclusively. These tables are sorted alpha-numerically by Code Category, Code Item Number, and Examination Area ID Number.

The second format is used for all remaining ISI Program Tables. These tables are sorted by system and (reference) drawing number, whereby all components (i.e., welds, bolting, equipment and component supports) which are depicted on a specific drawing are grouped and listed for that drawing, within the system.

Finally, in addition to the ISI Program Tables, Augmented Program Tables are contained in this document. Augmented requirements have been addressed in the augmented inspection programs of Appendix B. These tables provide an alpha numeric listing of components subject to specific augmented programs and provide additional information necessary to define the applicable program.

10.1 ISI PROGRAM TABLE FIELDS DESCRIPTION

The ISI Program Tables for PBAPS 2 & 3 are located in the tables section of this document. A sample table (Figure 10.1-1) and a brief description of each data field are given below.

Figure 10.1-1. Sample Table

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INSERVICE INSPECTION PROGRAM TABLES, FOR THE SECOND 10 YEAR INTERVAL

System: (1) Class: (2) Drawing: (3)

SECTION XI EXAM CAT AND ITEM NUMBER	EXAMINATION AREA ID NUMBER	EXAMINATION AREA DESCRIPTION	ISI EXAMINATION METHOD	DRAWING NUMBER	ISI SELECTED	SCHEDULING REQUIREMENTS	ISI RELIEF REQUEST	AUGMENTED PROGRAM	ISI NOTES	RECORD STATUS & DATE
(4)	(5)	(6)	(7)	(7a)	(8)	(9)	(10)	(11)	(12)	(13)

(1) System - The system name — SYSTEM: (1) CLASS: (2) DRAWING: (3)

(2) Class - The ASME Section XI Code class.

(3) Drawing - ASME Section XI isometric or other drawing on which the component is depicted.

(4) Section XI Exam CAT and Item No. - The specific Code Examination Category and applicable Item Number assigned to the component. A plus sign (+) next to the Exam. Cat., indicates augmented requirements are applicable to this component.

(5) Examination Area Identification Number - The unique Alpha-Numeric or descriptive identifier for the component or portion thereof to be examined.

(6) Examination Area Description - Description of the component identified.

(7) ISI Examination Method - Method of NDE that is required to be performed on the component.

Where:
- MT = Magnetic Particle Examination
- PT = Liquid Penetrant Examination
- UT = Ultrasonic Examination
- RT* = Radiograph Examination
- VT 1 = Visual Examination - 1
- VT 2 = Visual Examination - 2
- VT 3 = Visual Examination - 3

* Since UT is the preferred method of volumetric examination, it will normally be specified, however, RT may be performed in lieu of UT.

(7a) Drawing Number - the identification number of the drawing which depicts the specific examination area. NOTE: Applicable only to the RPV ISI Tables.

(8) ISI Selected - This column specifies whether or not (Yes or No) the component is selected for ISI examination in the second interval.

(9) Scheduling Requirements - This column will indicate the schedule for the required examination. This scheduling is explained in detail in Section 3.5.4. The abbreviations used in the ISI Tables are shown below:

1P	-	Examine during 1st Period
2P	-	Examine during 2nd Period
3P	-	Examine during 3rd Period
1P, 3P	-	Examine 25% to 50% during the 1st period and the remainder by the end of the third period.
ID	-	Interval Distribution
EOI	-	Examine by End of Interval
RO	-	Examine during the first Refueling Outage and during subsequent refueling outages at approximately 3 year intervals.
DISS	-	Examine when disassembled
DISG	-	Examine only one component within a multi-component group when and if disassembly is required for maintenance.
2	-	Examine every 2 refueling cycles.
2/9	-	Examine every 2,9 refueling cycles.
4	-	Examine every 4 refueling cycles.
ID	-	Interval Distribution.
RO-ALL	-	Examine during every refueling outage.
RO1	-	Examine during first refueling outage only.
Note	-	See ISI Notes Field.

(10) ISI Relief Request - The identification number of any applicable relief requests.

(11) Augmented Program - This column identifies which Augmented Program(s) apply to that component. All Augmented Programs are detailed in Appendix B. An example of the augmented program designations follows:

1 = Augmented Inspection Program-1: NRC Generic Letter 88-01
2 = Augmented Inspection Program-2 - NUREG 0619
3 = Augmented Inspection Program-3 - I.E. Bulletin 80-13
4 = Augmented Inspection Program-4 - I.E. Bulletin 80-07, NUREG/CR-3052
Etc.

(12) ISI Notes - Any additional pertinent information is provided in this space. If the component qualifies for the multi-component concept described in Section 3.5.1.1, the specific multi-group will be specified in this column.

(13) Record Status & Date - An entry in this column indicates that some information, associated with the line item record, has been revised, or the line item record has been added or deleted.

10.2 AUGMENTED PROGRAMS TABLE FIELDS DESCRIPTION

The Augmented Program Tables are also contained in the tables section of this document. A generic sample table (Figure 10.2-1) along with a brief description of each data field are given below.
Note however, that all fields may not apply to all Augmented Program Tables.

Figure 10.2-1, Sample Table - Augmented Programs

Printed MM/DD/YY
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PEACH BOTTOM ATOMIC POWER STATION - UNIT 2 & COMMON

Page

AUG-XX, AUGMENTED PROGRAM TITLE (1)

EXAMINATION AREA ID NUMBER	CLASS	SYSTEM	DRAWING REFERENCE	ISI SELECTED	AUG PROGRAMS	AUG-XX SELECTED	AUG-XX EXAM METHOD	IGSCC CATEGORY	AUG-XX EXAM FREQUENCY	AUG-XX NOTES	RECORD STATUS & DATE
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)

AUG-XX REPORT (15)

AUGMENTED PROGRAM TITLE (14)

(1) AUG-XX, Augmented Program Title - indicates the number and program title that applies to the listed components

(2) Examination Area ID Number - The unique alpha-numeric descriptive identifier for the component, or portion thereof, to be examined.

(3) Class - The ASME Section XI Code Class, as applicable.

(4) System - The system name within which the component is located.

(5) Drawing Reference - The isometric drawing or figure number on which the component is depicted.

(6) ISI Selected - This column specifies whether or not (Yes or No) the component is selected for ISI examination in the second inspection interval.

(7) AUG Programs - identifies all augmented programs applicable to an individual component.

(8) AUG-XX Selected - For a given augmented program XX, this column specifies whether or not (Yes or No) the component is selected for augmented examination.

(9) AUG-XX Exam Method - For a given augmented program XX, this column specifies the NDE method and/or test that is required to be performed per the augmented inspection program.

(10) IGSCC Category - The IGSCC category designator (A through F) assigned to the component as defined in NRC Generic Letter 88-01.

(11) AUG-XX Exam Frequency - For a given augmented program XX, this column specifies the frequency which the examination/testing is required to be performed.

(12) AUG-XX Notes - For a given augmented program XX, any additional pertinent information is provided in this space.

(13) Record Status & Date - An entry in this column indicates that some information, associated with the line item record, has been revised, or the line item record has been added or deleted.

(14) AUG-XX Report; Augmented Program Title - The applicable augmented program number and title appear at the bottom of each page.

APPENDIX A - TABLE OF CONTENTS
RELIEF REQUESTS

RR-18	B-H	Integral Attachments for Vessels
RR-19 (Withdrawn)		ISI Class 3 Pressure Retaining Components in the Emergency Service Water System.
RR-20 (Withdrawn)		Hydrostatic Testing following Repair/Replacements.

RELIEF REQUEST NO. RR-01
Revision 1

Relief Request Rescinded per NRC Generic Action

RELIEF REQUEST NO. RR-02
Revision 0

Approved: NRC SER dated 12/23/92 with comments *

I. IDENTIFICATION OF COMPONENTS

Reactor Recirculation Pumps, 2AP34 and 2BP34, (Unit #2) and 3AP34 and 3BP34 (Unit #3), Code Examination Category B-L-2, Item Number B12.20. These Class 1 pumps function during normal reactor operation to provide forced recirculation of reactor coolant through the reactor core.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda Code Category B-L-2 requires a VT-3 visual examination of the internal surfaces of at least one (1) of the two (2) Reactor Recirculation pump casings during the second inservice inspection interval.

Relief is requested from performance of the Code required visual examination of the pump casing internal surfaces due to impracticality of Code requirements at PBAPS.

III. BASIS FOR RELIEF

In the absence of any other required maintenance on either of the Reactor Recirculation pumps, the hardships associated with pump disassembly, solely for the purpose of visual inspection of the internal surfaces, far exceed any safety benefits resulting from such an inspection.

The disassembly of a reactor recirculation pump at PBAPS constitutes a maintenance job of major proportions, consuming an estimated 10,000 plus manhours and a cumulative dose of between 100 and 500 man-rem.

Plant experience with the pump casing material in this application is favorable. The additional assurance of structural integrity afforded by visual examination is far outweighed by the cost and potential hazards presented to facilitate the inspection.

IV. ALTERNATE PROVISIONS

VT-3 visual examinations will be performed on the internal surfaces of one (1) reactor recirculation pump should the required inspection area of either pump become accessible as a result of disassembly of the pump for other purposes. In addition, periodic performance tests are conducted which monitor pumping capability and provide an indication of the condition of pump internal clearances.

Finally, Code required visual examinations of the pump pressure boundary during system pressure testing provide added assurance of structural integrity.

* Relief was granted provided that if a pump has not been disassembled, that fact is reported by PECO Energy in the ISI Summary Report at the end of the interval.

RELIEF REQUEST NO. RR-03
Revision 0

Approved: NRC SER dated 12/23/92 with comments *

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 valve bodies exceeding four (4) inches nominal pipe size, Code Examination Category B-M-2, Item Number B12.50.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category B-M-2 requires a VT-3 visual examination of the internal surfaces of one (1) valve within each group of valves that are of the same constructional design, manufacturing method and that perform similar functions in the system, once during the second inservice inspection interval.

Relief is requested from performance of the Code required visual examination of the valve body internal surfaces due to impracticality of Code requirements at PBAPS.

III. BASIS FOR RELIEF

The requirement to disassemble ISI Class 1 valves solely for the purpose of performing a visual examination of the internal surfaces of the valve body is impractical. The hardships and potential hazards associated with disassembly far outweigh any foreseeable increase in plant safety resulting from the examination.

Many of the subject valves are non-isolatable from the reactor pressure vessel and would require off loading of fuel and draining the reactor pressure vessel prior to disassembly for examination. Personnel exposure to perform disassembly of the valves is also a major consideration.

In addition, Industry experience with both cast and forged valve bodies in this application has been favorble.

IV. ALTERNATE PROVISIONS

When a valve within a particular valve grouping is disassembled for routine maintenance, a VT-3 visual examination will be performed of the accessible internal surfaces of the valve body to meet the Code requirement for that grouping.

Valves in groupings where no maintenance has been done are still subject to VT-2 visual examination during routine system pressure tests. These tests provide added assurance of pressure boundary structural integrity.

* Relief is granted provided that if a valve has not been disassembled, that fact is reported by PECO Energy in the ISI Summary Report At the end of the interval.

RELIEF REQUEST NO. RR-04
Revision 1

Approved: NRC SER dated 12/23/92 *

I. IDENTIFICATION OF COMPONENTS

All ISI Class 1 pressure retaining components, Code examination Category B-P, Item Numbers B15.11, B15.51, B15.61 and B15.71.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category B-P requires that a system hydrostatic test of the pressure retaining components within the system boundary be performed once per inservice inspection interval, in accordance with the applicable system pressure test requirements of IWB-5000.

Relief is requested from meeting the hydrostatic test pressure as required by Table IWB-5220-1, "Test Pressure", (i.e., 1082 psig at 212°F).

III. BASIS FOR RELIEF

PBAPS Plant Technical Specifications require primary containment integrity be maintained whenever the reactor water temperature is above 212 degrees Fahrenheit and fuel is in the vessel. Primary containment integrity requires the drywell to be intact and all automatic primary containment isolation valves to be operable or deactivated in the isolated position. However, to facilitate visual inspection of the reactor pressure vessel head flange and head spray nozzle areas, the drywell head must be removed. Therefore, a complete Code hydrostatic test cannot be performed at reactor water temperatures above 212 degrees Fahrenheit.

Per Table IWB-5220-1, a test temperature of 212 degrees Fahrenheit corresponds to a test pressure of 1082 psig. PBAPS would like to conduct the hydrostatic test with all relief valves in place and perform the hydrostatic test at a pressure 30 psig below the lowest relief valve setting. (This setting is determined at the time of the hydrostatic test based on the most current relief valve bench test data.) Gagging and/or removal of the four (4) lowest set relief valves is costly in both critical path time and personnel exposure and is impractical for a relatively small increase in pressure to meet Code requirements. (1082 psig vs. 1075 ± 11 psig)

IV. ALTERNATE PROVISIONS

Code Category B-P hydrostatic testing will be performed at a test pressure approximately 30 psig below the lowest verifiable relief valve set point, nominally 1075 ± 11 psig (assuming bench test data of 1105 psig for the lowest relief valve setting), and at the applicable "Safe Operating Region" test temperature determined from the plant Technical Specifications, Figure 3.6.1.

* Not applicable when Code Case N-498 is used.

RELIEF REQUEST NO. RR-05
Revision 2

Approved: NRC SER dated 4/8/86 for Rev. 1

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 pressure retaining welds in piping including circumferential and longitudinal welds, branch pipe connection welds and socket welds, Code Examination Category B-J, Item Numbers B9.10 through B9.40 inclusive.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category B-J requires a volumetric and/or surface examination of essentially 100% of the weld length of all selected circumferential, and longitudinal welds, branch pipe connection welds and socket welds during the second inservice inspection interval.

Relief is requested from performance of a complete examination of the Code required area/volume of the weld due to limited accessibility as a result of plant design, component configuration and/or metallurgical or environmental restraints.

III. BASIS FOR RELIEF

The affected welds are individually detailed in Table RR-05-1 for PBAPS Unit #2 and in Table RR-05-2 for PBAPS Unit #3.

The examination coverage indicated is the maximum practical without undue hardship to PBAPS. Increased examination coverage is not possible without costly plant redesign/modification and/or excessive personnel exposure.

Partial examinations and examination of other similar selected welds in the system provide reasonable assurance of weld structural integrity. In addition, the affected welds are subject to Code Examination Category B-P requirements and are visually examined during system pressure testing throughout the interval.

IV. ALTERNATE PROVISIONS

For circumferential welds where examination is completely impractical (examination 0% complete), an additional Code Category B-J weld will be selected for examination.

RELIEF REQUEST NO. RR-05 REV. 2 (CONTD)

TABLE RR-05-1
UNIT #2

EXAMINATION AREA I.D. EXAM CAT/ITEM	SYSTEM/ CONFIGURATION	LIMITING CONDITION	EXAMINATION % COMPLETE
1-B-7 B-J, B9.11	Main Steam/ Tee-Pipe	Access limited due to pipe support components within the examination area	86% volumetric
1-B-7LD B-J, B9.12	Main Steam/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	35% each surface & volumetric
1-B-8 B-J, B9.11	Main Steam/ Pipe-Cap	One-sided examination due to material and/or design configuration with physical plant obstructions on remaining side	70% volumetric
1-B-8LU B-J, B9.12	Main Steam/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	0% surface & volumetric
1-D-9 B-J, B9.11	Main Steam/ Pipe-Elbow	Access limited due to pipe support components within the examination area	50% volumetric
1-D-9LU B-J, B9.12	Main Steam/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	0% surface & volumetric

RELIEF REQUEST NO. RR-05 REV. 2 (CONTD)

TABLE RR-05-1 (CONTD)
UNIT #2

EXAMINATION AREA I.D. EXAM CAT/ITEM	SYSTEM/ CONFIGURATION	LIMITING CONDITION	EXAMINATION % COMPLETE
1-D-12 B-J, B9.11	Main Steam/ Pipe-Valve	One-sided examination due to material and/or design configuration with physical plant obstructions on remaining side	40% volumetric
1-D-7LD B-J, B9.12	Main steam/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	45% each surface & volumetric
10-IB-15LU B-J, B9.12	Residual Heat Removal/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	10% each surface & volumetric
10-IA-15LU B-J, B9.12	Residual Heat Removal/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	20% each surface & volumetric
10-O-35LD B-J, B9.12	Residual Heat Removal/ Longitudinal Seam Weld	Access limited due to penetration	66% each surface & volumetric

RELIEF REQUEST NO. RR-05 REV. 2 (CONTD)

TABLE RR-05-2
UNIT #3

EXAMINATION AREA I.D. EXAM CAT/ITEM	SYSTEM/ CONFIGURATION	LIMITING CONDITION	EXAMINATION % COMPLETE
1-A-7LD B-J, B9.12	Main Steam/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	50% each surface & volumetric
1-B-7 B-J, B9.11	Main Steam/ Tee-Pipe	One-sided examination due to material and/or design configuration with physical plant obstructions on remaining side	85% volumetric
1-B-7LD B-J, B9.12	Main Steam/ Longitudinal Seam Weld	Access limited due to pipe support components within the examination area	25% each surface & volumetric

RELIEF REQUEST NO. RR-06
Revision 2

Approved: NRC SER dated 4/8/88 with comments *

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 integral attachments for piping and pumps, Code Examination Category B-K-1, Item Numbers B10.10 and B10.20.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category B-K-1 requires a volumetric or surface examination of essentially 100% of the weld length of integrally welded attachments to piping and pumps during the second inservice inspection interval.

Relief is requested from performance of a complete examination of the Code required area/volume of the weld due to limited accessibility resulting from plant design, component configuration, and/or metallurgical or environmental restraints.

III. BASIS FOR RELIEF

The affected welds are individually detailed in Table RR-06-01 and RR-06-02.

Table RR-06-01 lists those integrally welded attachments where examination is partially/completely obstructed due to plant design, i.e. access for complete examination is obstructed by other essential plant components (whip restraints, containment penetration, other support components such as lugs...). These welds are examined to the maximum extent practical. Increased examination coverage is not possible without costly plant redesign/modification.

Table RR-06-02 lists those integrally welded attachments (pipe lugs) where complete examination is not practical due to the support pipe clamp. Complete examination is possible only upon removal of the clamp. Removal of the clamp involves engineering analysis and rigging/temporary support of systems important to plant safety, in order to gain a small percentage of increased examination coverage. Examination of accessible portions of the attachment weld provide assurance of structural integrity without unnecessary hardship.

RELIEF REQUEST NO. RR-06 REV 2 (CONTD)

IV. ALTERNATE PROVISIONS

No alternate provisions are practical for the components listed in Table RR-06-01.

For those pipe support lugs listed in Table RR-06-02, examination of the obstructed weld locations will be performed should the pipe clamp be removed for maintenance or other reasons.

TABLE RR-06-01
PBAPS UNITS 2&3
Examination Category B-K-1, Item No B10.10

SYSTEM	EXAMINATION AREA IDENTIFICATION	UNIT	EXAMINATION % COMPLETE[1]
M.S.	GA1 (IA)	2	25%
M.S.	GB1 (IA)	2	0%
M.S.	GC1 (IA)	2	0%
M.S.	GD1 (IA)	2	0%
RHR	10DCN-H155(1A)	2	85%
RHR	10DCN-H156 (IA)	2	80%
M.S.	GA1 (IA)	3	0%
M.S.	GB1 (IA)	3	0%
M.S.	GC1 (IA)	3	0%
M.S.	GD1 (IA)	3	0%

1. Approximate % complete based on Code required examination area.

RELIEF REQUEST NO. RR-06 REV 2 (CONTD)

TABLE RR-06-02
PBAPS UNITS 2&3
Examination Category B-K-1, Item No B10.10

SYSTEM	EXAMINATION AREA IDENTIFICATION	UNIT	EXAMINATION % COMPLETE[1]
M.S.	HA1 (IA)	2	80%
M.S.	HB3 (IA)	2	80%
M.S.	HC3 (IA)	2	80%
M.S.	HD1 (IA)	2	80%
RECIRC	H1A (IA)	2	80%
RECIRC	H1B (IA)	2	80%
RECIRC	H9A (IA)	2	80%
RECIRC	H9B (IA)	2	80%
F.W.	6DD-H57 (IA)	2	80%
F.W.	6DD-H58 (IA)	2	80%
RWCU	12DCN-H149 (IA)	2	80%
RWCU	12DCN-H152 (IA)	2	60%
C.S.	14DCN-H73 (IA)	2	80%
C.S.	14DCN-H74 (IA)	2	80%
C.S.	14DCN-H77 (IA)	2	80%
C.S.	14DCN-H78 (IA)	2	80%
HPCI	23DBN-H51 (IA)	2	80%
M.S.	HA1 (IA)	3	80%
M.S.	HB3 (IA)	3	80%
M.S.	HC3 (IA)	3	80%
M.S.	HD1 (IA)	3	80%
F.W.	6DD-H57 (IA)	3	80%
F.W.	6DD-H58 (IA)	3	80%

1. Approximate % complete based on Code required examination area.

RELIEF REQUEST NO. RR-06 REV 2 (CONTD)

TABLE RR-06-02 (CONTD)
PBAPS UNITS 2&3
Examination Category B-K-1, Item No B10.10

SYSTEM	EXAMINATION AREA IDENTIFICATION	UNIT	EXAMINATION % COMPLETE[1]
F.W.	6DDNL-H6 (IA)	3	80%
F.W.	6DDNL-H18 (IA)	3	80%
F.W.	6DDNL-H24 (IA)	3	80%
F.W.	6DDNL-H25 (IA)	3	80%
F.W.	6DDNL-H26 (IA)	3	80%
F.W.	6DDNL-H27 (IA)	3	80%
F.W.	6DDNL-H28 (IA)	3	80%
F.W.	6DDNL-H44 (IA)	3	80%
RWCU	12DCN-H152 (IA)	3	60%
RWCU	12DCN-H149 (IA)	3	80%
C.S.	14DCN-H73 (IA)	3	80%
C.S.	14DCN-H74 (IA)	3	80%
C.S.	14DCN-H77 (IA)	3	80%
C.S.	14DCN-H78 (IA)	3	80%
HPCI	23DBN-H51 (IA)	3	80%

1. Approximate % complete based on Code required examination area.

* Approved Rev. 1 provided that examination of the obstructed integral attachment welds is performed when the pipe clamps are removed for maintenance or other reasons.

RELIEF REQUEST NO. RR-07
Revision 1

Withdrawn

RELIEF REQUEST NO. RR-08
Revision 0

Approved: NRC SER dated 12/23/92

I. IDENTIFICATION OF COMPONENTS

ISI Class 2, pressure retaining shell circumferential welds in the Residual Heat Removal (RHR) Heat Exchanger, Code Examination Category C-A, Item Number C1.10. The RHR Heat Exchangers provide heat removal capacity in support of various operating modes of the RHR system during normal and emergency conditions.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category C-A requires volumetric examination of essentially 100% of the weld length of shell circumferential welds at gross structural discontinuities on one (1) RHR Heat Exchanger or the equivalent of one (1) RHR Heat Exchanger distributed among all heat exchangers. The welds selected initially for examination shall be reexamined during the second inservice inspection interval.

Relief is requested from complete examination of the uppershell to flange circumferential weld, (10-2HXA-01, Units #2/#3) due to component design configuration.

III. BASIS FOR RELIEF

The subject RHR Heat Exchanger uppershell to flange weld can only be examined from one (1) side of the weld due to component configuration (i.e. the flange). In addition, access for a one-sided examination is limited due to weld crown configuration. Fifteen (15) percent of the required examination volume is inaccessible for examination due to the above conditions.

Partial examination of the subject weld coupled with complete examination of the remaining one (1) required shell weld on the heat exchanger provide adequate assessment of heat exchanger structural integrity.
Also, all welds - including inaccessible weld locations - are subject to VT-2 visual examination during routine system pressure tests.

IV. ALTERNATE PROVISIONS

Alternate examination provisions are not practical for this examination.

RELIEF REQUEST NO. RR-09
Revision 0

Approved: NRC SER dated 4/8/86

I. IDENTIFICATION OF COMPONENTS

ISI Class 3 pressure retaining components in the High Pressure Service Water (HPSW) System, the Emergency Service Water (ESW) System, and the Emergency Cooling System, Code Examination Category D-B, Item Number D2.10.

The HPSW System is designed to provide a reliable supply of cooling water for the Residual Heat Removal System under post-accident conditions, and for shut down cooling.

The ESW System is designed to provide a reliable supply of cooling water to the diesel engine coolers and selected equipment coolers and compartment air coolers during a loss of off-site power.

The Emergency Cooling System is designed to provide an adequate on-site heat sink to be used in conjunction with HPSW to support the RHR System during reactor shutdown, and with ESW to provide cooling for the reactor building cooling water heat exchangers, standby diesel generator coolers, and the ECCS pump room coolers. The Emergency Cooling System also provides sufficient water storage to allow operation of the emergency cooling tower until a water supply can be established.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category D-B requires a system hydrostatic test of all pressure retaining components within the system pressure retaining boundary once during the second inservice inspection interval. IWD-5223(a) of the Code requires the system hydrostatic test for the subject systems be performed at a test pressure of at least 1.10 times the system design pressure or the lowest pressure setting among the safety/relief valves within the boundary of the system to be tested.

Relief is requested from meeting the test pressure requirements of IWD-5223(a) due to plant hardship.

III. BASIS FOR RELIEF

Hydrostatic testing of the subject systems to at least 1.10 times the system design pressure is impractical to implement at PBAPS. The required test pressure is beyond the capability of the existing system pumps and, therefore, would require the use of hydrostatic test pumps. The only available test connections on these systems are 3/4 and 1 inch lines which would sharply limit the inflow capability from the hydrostatic test pumps. Under these conditions, successful performance of the test is a function of the degree of leak-tightness of large system valves (i.e., 14, 16, 20, and 24 inch). Valve leak-tightness

RELIEF REQUEST NO. RR-09 REV 0 (CONTD)

for these systems is not required and considerable manpower would be required to rework/upgrade these valves in preparation for performance of the hydrostatic test.

In addition, testing to 1.10 times the system design pressure would seriously affect plant operations since removal of the ESW or HPSW Systems would result in an interruption of shutdown cooling.

IV. ALTERNATE PROVISIONS

PBAPS proposes performance of Code required hydrostatic testing of the ESW, HPSW and Emergency Cooling Systems to 1.10 times the system operating pressure. Testing to this pressure can be accomplished utilizing existing plant equipment while still providing assurance of pressure boundary integrity of these systems.

RELIEF REQUEST NO. RR-10
Revision 0

Approved: NRC SER dated 4/8/86

I. IDENTIFICATION OF COMPONENTS

ASME Class 1, 2, and 3 snubber assemblies, Code Examination Category F-C, Item Number F3.50. This relief request is applicable to the snubber assembly only; that is, the snubber body and attachments out to and including the load pins and their retainers.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1980 Edition up to and including the Winter 1981 Addenda (80W81), Examination Category F-C requires a VT-3/VT-4 visual examination of mechanical type snubbers.

In addition, Article IWF-5000 details inservice testing requirements for snubbers less than 50 kips. (Requirements for snubbers 50 kips or greater are in the course of preparation.)

Relief is requested from the examination requirements of Articles IWF-1000, IWF-2000, (excluding IWF-2520), and Table IWF-2500-1 and the inservice testing requirements of Article IWF-5000 due to the redundancy of these examination/test requirements to PBAPS 2 & 3 Technical Specification requirements.

III. BASIS FOR RELIEF

Implementation of both the aforementioned Code requirements and requirements contained in the PBAPS 2 & 3 Technical Specifications results in redundancy and poses an unnecessary hardship, without a compensating increase in plant safety. Both programs are designed to demonstrate continued operational readiness and structural integrity by visual examination and functional testing of snubber assemblies. However, while the test requirements in the Code are incomplete (depending on the size of the snubber), the program described in Technical Specification 3/4.11.D is comprehensive and meets the intent of ASME Section XI examination and testing.

IV. ALTERNATE PROVISIONS

The examination and testing of snubber assemblies shall be performed in accordance with Technical Specification 3/4.11.D in lieu of the aforementioned Code examination and testing requirements. Following the issuance of a license amendment revising the PBAPS 2 & 3 Technical Specifications to incorporate the examination and testing requirements of Augmented Inspection Program-5 in place of the existing Technical Specification requirements, the examination and testing of snubber assemblies shall be performed in accordance with the revised Technical Specification 3/4.11.D in lieu of the aforementioned Code requirements. Note that the general requirements of Subsection IWA, such as examination methods, personnel qualifications, etc., still apply. Additionally, all repairs, replacements, records, and reports will be in accordance with ASME Section XI.

The remainder of the component support, outboard of the snubber assembly shall be examined in accordance with ASME Section XI, Subsection IWF requirements.

RELIEF REQUEST NO. RR-11
Revision 0

Approved: NRC SER dated 12/23/92

I. IDENTIFICATION OF COMPONENTS

ISI Class 2 piping and components beyond the last shutoff valve in open-ended portions of systems.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Article IWC-1000 does not provide any exemption for the subject piping and components, and, therefore, requires examination of appropriate pressure retaining components and their integral attachments in accordance with Table IWC-2500-1, during the second inservice inspection interval.

Relief is requested from the Code Examination requirements of Table IWC-2500-1 for ISI Class 2 piping and components beyond the last shutoff valve in open-ended portions of systems.

III. BASIS FOR RELIEF

The 1986 Edition of the Code, which has been approved for use, recognizes the impracticality of examination of the subject piping and components. Per IWC-1221 (f) and IWC-1222 (d), "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" shall be exempted from the inservice examination requirements of IWC-2500.

Much of the subject piping is impractical to examine due to limited access as a result of plant design. Also, since this portion of the system does not contain water during normal operating conditions, the piping is "pressure retaining" relatively infrequently.

Exemption of the subject piping and components, consistent with later Editions of the Code, does not preclude all examinations within the Code boundaries. Exempted piping and components are subject to the requirements of Code Examination Category C-H. Demonstration of open flow path testing provides assurance of the availability of the piping to perform its intended function.

IV. ALTERNATE PROVISIONS

ISI Class 2 piping and 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 shall be exempt from the examination requirements of IWC-2500.

RELIEF REQUEST NO. RR-12
Revision 1

Denied

RELIEF REQUEST NO. RR-13
Revision 1

Approved: NRC SER dated 12/23/92

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 full penetration nozzle to vessel welds in the reactor pressure vessel, Code Examination Category B-D, Item Number B3.90.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category B-D requires volumetric examination of the nozzle to vessel welds (full penetration) of all nozzles in the reactor pressure vessel during the second inservice inspection interval.

Relief is requested from performance of a complete examination of the Code required volume due to access restrictions as a consequence of plant design and/or component configuration.

III. BASIS FOR RELIEF

PBAPS has thirty (30) Code Category B-D nozzle to vessel attachment welds on each unit, many of which cannot be completely examined due to vessel nozzle forging configuration. The barrel type nozzle forging configuration precludes complete ultrasonic examination since scanning of the weld is only practical from one side of the weld. Also, in support of ALARA, many of the nozzle to vessel welds are to be examined utilizing a remote automated nozzle scanner; thereby, slightly exaggerating the limitations, versus a manual examination, due to scanner design. In addition to the nozzle forging configuration, physical plant design restrictions, such as adjacent components, further limit the available scan path.

Tables RR-13-1 (Unit #2) and RR-13-2 (Unit #3) list the nozzle to vessel welds and detail the extent of examinations completed (for nozzles already examined), or provide the expected examination coverage (for nozzles not yet examined).

All examinations are performed to the maximum extent practical. In the case of examinations performed utilizing remote automatic equipment, only a very slight increase in examination coverage (≈ 5%) can be realized with supplemental manual exams; however, this small increase comes with a significant increase in personnel exposure, and, therefore, manual examination was not performed.

Limited volumetric examination coupled with the visual examination requirements of Code Examination Category B-P during system pressure testing provide reasonable assessment of weld structural integrity.

IV. ALTERNATE PROVISIONS

No alternate provisions are practical for these examinations.

RELIEF REQUEST NO. RR-13 REV. 1 (CONTD)

TABLE RR-13-1
Effect of Nozzle Design Configuration
on Component Inspectability[1]
Examination Category B-D, Item No B3.90

Unit #2

Nozzle Identification/ Description	Type Scan[2]	% Code Complete[3]	% Inner 1/4T Code Complete[4]
N1A Recirculation Outlet	45T	17.2 (A)	41.5 (A)
	60T	28.3 (A)	66.9 (A)
	60P	23.6 (A)	57.2 (A)
N2A Recirculation Inlet	45T	29.1 (A)	51.5 (A)
	60T	37.4 (A)	71.1 (A)
	60P	23.0 (A)	43.9 (A)
N2B Recirculation Inlet	45T	28.7 (A)	50.8 (A)
	60T	36.9 (A)	70.1 (A)
	60P	22.7 (A)	43.2 (A)
N2C Recirculation Inlet	45T	28.7 (A)	50.8 (A)
	60T	36.9 (A)	70.1 (A)
	60P	24.0 (A)	45.8 (A)
N2D Recirculation Inlet	45T	29.5 (A)	52.2 (A)
	60T	37.9 (A)	72.1 (A)
	60P	23.4 (A)	44.5 (A)
N2E Recirculation Inlet	45T	32.0 (A)	56.7 (A)
	60T	41.1 (A)	78.1 (A)
	60P	25.7 (A)	48.9 (A)
N2F Recirculation Inlet	45T	28.2 (A)	50.0 (A)
	60T	36.3 (A)	69.0 (A)
	60P	22.4 (A)	42.6 (A)
N2H Recirculation Inlet	45T	33.6 (A)	59.6 (A)
	60T	43.2 (A)	82.2 (A)
	60P	26.7 (A)	50.8 (A)

RELIEF REQUEST NO. RR-13 REV. 1 (CONTD)

TABLE RR-13-1 (CONTD.)
Unit #2

Nozzle Identification/ Description	Type Scan[2]	% Code Complete[3]	% Inner 1/4T Code Complete[4]
N3A Main Steam	45T	9.6 (A)	33.4 (A)
	60T	23.7 (A)	66.9 (A)
	60P	11.3 (A)	40.1 (A)
N3D Main Steam	45T	8.9 (A)	31.2 (A)
	60T	22.2 (A)	62.5 (A)
	60P	10.4 (A)	36.7 (A)
N4 Feedwater (Typ. of 6 nozzles)	45T	28.8 (M)[5]	66.5 (M)[5]
	60T	45.5 (M)[5]	100.0 (M)[5]
	60P	27.0 (M)[5]	62.6 (M)[5]
N5A Core Spray	45T	23.6 (A)	46.7 (A)
	60T	34.2 (A)	65.1 (A)
	60P	19.7 (A)	39.4 (A)
N5B Core Spray	45T	23.6 (A)	46.7 (A)
	60T	34.2 (A)	65.1 (A)
	60P	19.7 (A)	39.4 (A)
N8A Jet Pump Instrumentation	45T	92.4 (M)	100.0 (M)
	60T	93.0 (M)	100.0 (M)
	45P	80.1 (M)	83.7 (M)
	60P	80.1 (M)	83.7 (M)
N9 Control Rod Drive Nozzle (Typ. of 1 nozzle)	45T	31.1 (M)[5]	71.6 (M)[5]
	60T	46.6 (M)[5]	100.0 (M)[5]
	45P	17.4 (M)[5]	37.3 (M)[5]
	60P	27.5 (M)[5]	62.5 (M)[5]

RELIEF REQUEST NO. RR-13 REV. 1 (CONTD)

Footnotes:

1) Component inspectability based on actual examination results or evaluation of nozzle design configuration for each given type/size nozzle.

2) Unless indicated, a 45 degree parallel scan is not practical due to weld configuration.

3) % Code complete is that percent of the ASME Code required examination volume which can effectively be examined using automated (A) or manual (M) ultrasonic examination techniques.

4) % Inner 1/4T Code complete is that percent of the critical inner 1/4T wall volume which can effectively be examined using automated (A) or manual (M) ultrasonic examination techniques.

5) N4 Feedwater and N9 Control Rod Drive nozzle % complete is optimum based on estimated accessible Code volume utilizing manual ultrasonic techniques; actual automated ultrasonic examination data, (not available at this time) is expected to yield slightly reduced coverage to due equipment limitations.

RELIEF REQUEST NO. RR-13 REV. 1 (CONTD)

TABLE RR-13-2
Effect of Nozzle Design Configuration
on Component Inspectability[1]
Examination Category B-D, Item No. B3.90

Unit #3

Nozzle Identification/ Description	Type Scan[2]	% Code Complete[3]	% Inner 1/4T Code Complete[4]
N1A Recirculation Outlet	45T	6.2 (A)	27.0 (A)
	60T	18.9 (A)	63.5 (A)
	60P	12.4 (A)	47.6 (A)
N2A Recirculation Inlet	45T	16.1 (A)	40.4 (A)
	60T	30.5 (A)	70.2 (A)
	60P	13.9 (A)	34.3 (A)
N2B Recirculation Inlet	45T	14.9 (A)	37.4 (A)
	60T	28.3 (A)	65.1 (A)
	60P	12.8 (A)	31.8 (A)
N2C Recirculation Inlet	45T	17.1 (A)	42.8 (A)
	60T	32.3 (A)	74.3 (A)
	60P	14.7 (A)	36.4 (A)
N2D Recirculation Inlet	45T	16.4 (A)	41.0 (A)
	60T	31.0 (A)	71.2 (A)
	60P	13.9 (A)	34.3 (A)
N2E Recirculation Inlet	45T	16.6 (A)	41.6 (A)
	60T	31.4 (A)	72.3 (A)
	60P	14.3 (A)	35.4 (A)
N2F Recirculation Inlet	45T	16.1 (A)	40.4 (A)
	60T	31.4 (A)	72.3 (A)
	60P	14.3 (A)	35.4 (A)
N2H Recirculation Inlet	45T	16.8 (A)	42.2 (A)
	60T	31.9 (A)	73.3 (A)
	60P	14.3 (A)	35.4 (A)

RELIEF REQUEST NO. RR-13 REV. 1 (CONTD)

TABLE RR-13-2 (CONTD.)
Unit #3

Nozzle Identification/ Description	Type Scan[2]	% Code Complete[3]	% Inner 1/4T Code Complete[4]
N3A	45T	9.8 (A)	38.1 (A)
Main Steam	60T	24.3 (A)	76.4 (A)
	60P	11.4 (A)	45.0 (A)
N3D	45T	9.4 (A)	36.6 (A)
Main Steam	60T	23.4 (A)	73.4 (A)
	60P	11.0 (A)	43.4 (A)
N4	45T	24.6 (M)[5]	63.3 (M)[5]
Feedwater	60T	41.7 (M)[5]	99.1 (M)[5]
(Typ. of 6 nozzles)	60P	23.0 (M)[5]	59.2 (M)[5]
N5A	45T	19.9 (A)	44.0 (A)
Core Spray	60T	31.3 (A)	65.4 (A)
	60P	15.1 (A)	35.6 (A)
N5B	45T	20.2 (A)	44.7 (A)
Core Spray	60T	31.8 (A)	66.4 (A)
	60P	15.3 (A)	36.2 (A)
N8A	45T	91.8 (M)	100.0 (M)
Jet Pump	60T	92.5 (M)	100.0 (M)
Instrumentation	45P	77.3 (M)	80.7 (M)
	60P	77.3 (M)	80.7 (M)
N9	45T	29.0 (M)[5]	70.6 (M)[5]
Control Rod Drive	60T	45.0 (M)[5]	100.0 (M)[5]
Nozzle	45P	14.9 (M)[5]	34.8 (M)[5]
(Typ. of 1 nozzle)	60P	25.4 (M)[5]	61.0 (M)[5]

RELIEF REQUEST NO. RR-13 REV. 1 (CONTD)

Footnotes:

1) Component inspectability based on actual examination results or evaluation of nozzle design configuration for each given type/size nozzle.

2) Unless indicated, a 45 degree parallel scan is not practical due to weld configuration.

3) % Code complete is that percent of the ASME Code required examination volume which can effectively be examined using automated (A) or manual (M) ultrasonic examination techniques.

4) % Inner 1/4T Code complete is that percent of the critical inner 1/4T wall volume which can effectively be examined using automated (A) or manual (M) ultrasonic examination techniques.

5) N4 Feedwater and N9 Control Rod Drive nozzle % complete is optimum based on estimated accessible Code volume utilizing manual ultrasonic techniques; actual automated ultrasonic examination data, (not available at this time) is expected to yield slightly reduced coverage to due equipment limitations.

RELIEF REQUEST NO. RR-14
Revision 4

Approved: NRC SER dated 8/24/95

I. SCOPE

This relief request has been developed to request approval for the use of specific ASME Section XI Code Cases in this ISI Program. These Code Cases have not yet been specifically endorsed for use by the NRC, in Regulatory Guide 1.147 (reference 1.1.24).

II. DISCUSSION

Code Cases are periodically published by the ASME for the purpose of either clarifying the intent of Code requirements or for providing requirements for circumstances which are not currently covered by existing Code, but need to be addressed in a timely manner. Use of these non-mandatory Code Cases for inservice inspection is subject to NRC acceptance of the Code Case(s). Regulatory Guide 1.147 lists those Code Cases that have been reviewed by the NRC and are generally acceptable for implementation in an ISI Program. Other Code Cases may be used provided specific authorization is secured pursuant to 10CFR50.55a.

The purpose of this relief request is to request authorization for the adoption of specific Code Case(s) for implementation in the PBAPS, Units 2 and 3 Second Interval ISI Program.

III. CODE CASE(S) REQUIRING AUTHORIZATION

The Code Case(s) requiring specific authorization for use in the PBAPS, Units 2 and 3 ISI Program are identified on the attached Table(s).

IV. ALTERNATE PROVISIONS

The alternative provisions of the Code Case(s) identified in Section III above, shall be implemented in the PBAPS, Units 2 and 3 ISI Program for the second inservice inspection interval. Any deviations from these requirements are identified in the referenced Tables. These Tables address the specific application of the associated Code Case in the ISI Program.

V. BASIS FOR RELIEF

The Code Case(s) referenced in Section III above, represent technically acceptable alternative requirements to the ASME Section XI Code requirements. The fact that the Code Case(s) has not been endorsed in the Regulatory Guide in no way detracts from their technical adequacy, since the major reason for their omission is the timing of their publication with respect to the most recent revision of the Regulatory Guide. That is, the subject Code Case(s) is relatively recent and it is expected that it will be accepted in a subsequent revision of the Regulatory Guide. Adoption of the Code Case(s) provides an acceptable level of quality and safety and does not compromise the adequacy of the PBAPS, Units 2 and 3 ISI Program in meeting the intent of ASME Section XI.

RELIEF REQUEST NO. RR-14 REV 4 (CONTD)

Table RR-14-1
CODE CASE N-498-1

I. IDENTIFICATION OF COMPONENTS

PBAPS, Units 2 and 3 Class 1, 2, and 3 systems.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

The 10-Year System Hydrostatic Pressure Testing requirements for Class 1, 2, and 3 systems, as identified in Section XI, Division 1, Table IWB-2500-1, Category B-P, Table IWC-2500-1, Category C-H, and Table IWD-2500-1, Categories D-A, D-B, and D-C respectively; as contained in the 1980 Edition of ASME Section XI, including addenda through the Winter 1981 Addendum.

III. BASIS FOR RELIEF - Code Case N-498-1:

The burden imposed by the higher test pressures associated with the current 10 year hydrostatic test requirement, is not commensurate with the increase in safety benefit. Hydrostatic pressure tests are performed at elevated pressures which require special maintenance activities for isolation of components to be tested, such as: temporary gagging or removal of relief valves installed to prevent overpressurization, leaktight repair of valving which does not normally serve a pressure isolation function, and installation of portable hydrostatic pressure pumps. The higher pressures imposed on the pressure boundary components during hydrostatic testing do not challenge the structural integrity of the material, and produce only a slight enhancement in leak detection capability. The additional leakage, above that which occurs during a system pressure test at nominal operating pressure, is inconsequential in determining pressure boundary integrity. Therefore, the additional burden, and in some instances additional radiological dose to personnel associated with these maintenance activities, can be avoided.The experience gained by the performance of these tests indicates that the goal of the test (i.e. to discover pressure boundary leakage or evidence of structural distress) will still be achieved at lower test pressures.

Adoption of this Code Case will allow substitution of a system pressure test, conducted at nominal operating pressure, for the ten year hydrostatic test, currently required for Class 1, 2, and 3 systems.

IV. ALTERNATE PROVISIONS

As an alternative to the hydrostatic testing requirements, a system pressure test, at nominal operating pressure, may be conducted at or near the end of the interval. The boundary, subject to test pressurization during this system pressure test, will extend to all Class 1, 2, and 3 components as identified on the ASME Section XI Boundary P & ID's.

RELIEF REQUEST NO. RR-14 REV 4 (CONTD)

Table RR-14-2
CODE CASE N-416-1

I. IDENTIFICATION OF COMPONENTS

PBAPS, Units 2 and 3 Class 1, 2, and 3 systems.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1980 Edition, Winter 1981 Addenda, Article IWA-4000 and IWA-5000 hydrostatic pressure test requirements.

III. BASIS FOR RELIEF - Code Case N-416-1:

The above Articles require that hydrostatic pressure testing be performed after welded repair or installation of replacement items by welding on ASME Class 1, 2 and 3 pressure boundary components.

The burden imposed by the process of hydrostatic testing is not commensurate with the increased level of safety achieved. Hydrostatic pressure tests are performed at elevated pressures which require special maintenance activities for isolation of components to be tested, such as: temporary gagging or removal of relief valves installed to prevent overpressurization, leaktight repair of valving which does not normally serve a pressure isolation function, and installation of portable hydrostatic pressure pumps. The higher pressures imposed on the pressure boundary components during hydrostatic testing do not challenge the structural integrity of the material, and produce only a slight enhancement in leak detection capability. The additional leakage, above that which occurs during a system pressure test at nominal operating pressure, is inconsequential in determining pressure boundary integrity. Therefore, the additional burden, and in some instances additional radiological dose to personnel associated with these maintenance activities, can be avoided.

Adoption of this Code Case will allow substitution of a system leakage test, conducted at nominal operating pressure, for the post-repair/replacement hydrostatic test, currently required for Class 1, 2, and 3 systems.

IV. ALTERNATE PROVISIONS

The requirements of Code Case 416-1 will be implemented as alternate provisions to the ASME Section XI Code, 1980 Edition with Addenda through Winter 1981, for Class 1, 2 and 3 pressure boundary component welded repairs and installation welds for replacement items.

RELIEF REQUEST NO. RR-14 REV 4 (CONTD)

Table RR-14-2
CODE CASE N-416-1

IV. ALTERNATE PROVISIONS (Contd)

In addition, Nondestructive Examination (NDE) of Class 1, 2, and 3 repair or replacement butt welds shall be performed in accordance with the UFSAR license commitments, which will equal or exceed the NDE methods and acceptance criteria of the applicable Subsection of the 1992 Edition of ASME Section III. In the absence of volumetric examination requirements, a surface examination of the root pass of the butt weld shall be performed.

Surface examination of Class 1, 2, and 3 repair or replacement socket welds shall be performed on the final pass of the socket weld.

The above provisions provide an equivalent level of safety to that associated with hydrostatic testing, and are consistent with ALARA good practice.

Use of this Code Case shall be documented on the applicable Code Form, and included in the ISI Summary Report.

RELIEF REQUEST NO. RR-15
Revision 1

Approved: NRC SER dated 12/23/92

I. IDENTIFICATION OF COMPONENTS

ISI Class 2 integral attachments for vessels, piping, pumps and valves, Code Examination Category C-C, item numbers C3.10 through 3.40.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category C-C, requires a surface examination of essentially 100% of the required area of each welded attachment selected for examination during the second inservice inspection interval.

Relief is requested from performance of a complete examination of the Code required area due to limited accessibility resulting from plant design, component configuration, and/or environmental restraints.

III. BASIS FOR RELIEF

The affected Unit #2/Unit #3 integral attachment welds are individually detailed in table RR-15-01.

Examination of these welds are to the maximum extent pratical. Increased examination coverage is not possible without costly plant redesign/modification.

IV. ALTERNATE PROVISIONS

No alternate provisions are pratical for the components listed in Table RR-15-01.

RELIEF REQUEST NO. RR-15 REV 1 (CONTD)

TABLE RR-15-01
UNIT #2/#3

EXAMINATION AREA IDENTIFICATION	UNIT	EXAMINATION % COMPLETE[1]	LIMITING CONDITION
PUMP-B-IWS (RHR PUMP LUGS)	2	50%	Complete exam is not practical due to support design; access restrictions exist on all of four (4) pumps.
PUMP-A-IWS (RHR PUMP LUGS)	3	50%	Complete exam is not practical due to support design; access restrictions exist on all of four (4) pumps.
10GB-H50(IA)	2	88%	Pipe Component Inteference.
PUMP-A-IWS	2	46%	Complete exam is not practical due to support design; access restrictions exist on all of four (4) pumps.
PUMP-C-IWS	2	44%	Complete exam is not practical due to support design; access restrictions exist on all of four (4) pumps.

RELIEF REQUEST NO. RR-16
Revision 0

Approved: NRC SER dated 12/23/92

I. IDENTIFICATION OF COMPONENTS

ISI Class 2 pressure retaining components, Code Examination Category C-H, Item Numbers C7.10 through C7.80 inclusive.

The specific Class 2 components affected by this relief request are detailed in Table RR-16-01.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category C-H, requires that all pressure retaining components within each system boundary be subject to system pressure tests of IWC-5000 under which conditions visual examination VT-2 is performed to detect leakage. These required VT-2 visual examinations are conducted in conjunction with functional tests, inservice tests, hydrostatic tests and/or pneumatic tests, as applicable, at the Code required pressures, temperatures, and holding times.

The required system pressure tests shall be performed during the second inservice inspection interval in accordance with Table IWC-2500-1.

Relief is requested from system pressure testing of portions of certain Class 2 piping systems and/or components which cannot be accomplished in accordance with the Code due to physical plant and/or operational restrictions.

III. BASIS FOR RELIEF

The affected components (pressure vessels, piping, pumps and valves) requiring relief are detailed in Table RR-16-01. Included in this Table is all pertinent information relative to the system pressure test including the basis for relief.

IV. ALTERNATE PROVISIONS

Where practical, any alternate provisions proposed in lieu of Code requirements are so noted in Table RR-16-01.

RELIEF REQUEST NO. RR-16 REV 0 (CONTD)

TABLE RR-16-01

I. IDENTIFICATION OF COMPONENTS

PBAPS 2 & 3 Class 2 Residual Heat Removal Heat Exchangers, HX 2AE24-2DE24 and 3AE24-3DE24 and associated test boundary piping and valves.

II. CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

IWC-5222 System Hydrostatic Test

III. BASIS FOR RELIEF

The Code required hydrostatic test pressure for the RHR heat exchangers is 562.5 psig (1.25 x 450 psig). However, plant operating procedures limit operation of the RHR System (shell side) to a pressure less than HPSW (tube side) pressure to preclude possible in-leakage of contaminated water into "clean" HPSW cooling water. The HPSW pumps are the limiting factor in that, even at dead head conditions, insufficient pressure is available to support Code hydrostatic test pressures. Therefore, relief is required from the system hydrostatic test pressure requirements of IWC-5222(a) to allow testing at a reduced pressure.

IV. ALTERNATE PROVISIONS

The RHR heat exchanger and associated test boundary piping and valves will be tested at 1.25 times the normal operating pressure. (Normal operating pressure for this test is RHR pump discharge pressure @ 11,000 gpm flow, nominally 230 psig ± 10.)

RELIEF REQUEST NO. RR-17
Revision 0

Approved: NRC SER dated 12/23/92

I. IDENTIFICATION OF COMPONENTS

ISI Class 3 pressure retaining components, Code Examination Categories D-A, D-B, and D-C, Item Numbers D1.10, D2.10, and D3.10, respectively.

The specific Class 3 components affected by this relief request are detailed in Table RR-17-01.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1980 Edition Winter 1981 Addenda, Code Category D-A, D-B, and D-C require that all pressure retaining components within each system boundary be subject to system pressure tests of IWD-5000 under which conditions visual examination VT-2 is performed to detect leakage. These required VT-2 visual examinations are conducted in conjunction with functional tests, inservice tests, hydrostatic tests and/or pneumatic tests, as applicable, at the Code required pressures, temperatures, and holding times.

The required system pressure tests shall be performed during the second inservice inspection interval in accordance with Table IWD-2500-1.

Relief is requested from system pressure testing of portions of certain Class 3 piping systems and/or components which cannot be accomplished in accordance with the Code due to physical plant and/or operational restrictions.

III. BASIS FOR RELIEF

The affected components (pressure vessels, piping, pumps and valves) requiring relief are detailed in Table RR-17-01. Included in this Table is all pertinent information relative to the system pressure test including the basis for relief.

IV. ALTERNATE PROVISIONS

Where practical, any alternate provisions proposed in lieu of Code requirements are so noted in Table RR-17-01.

RELIEF REQUEST NO. RR-17 REV 0 (CONTD)

TABLE RR-17-01

I. IDENTIFICATION OF COMPONENTS

PBAPS 2 & 3 Class 3 Main Steam relief valve discharge lines.

II. CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

IWD-5223, System Hydrostatic Test

III. BASIS FOR RELIEF

Hydrostatic testing of the subject piping is impractical at PBAPS 2 & 3. Per IWD-5223(f), a pneumatic test (at a pressure of 90% of the pipe submergence head of water) that demonstrates leakage integrity shall be performed in lieu of the system hydrostatic test. At PBAPS 2 & 3, this requirement translates into a pneumatic test at a test pressure of about 2 psig.

Currently, no test connections exist to facilitate performance of the pneumatic test; plant modification would be required to add the necessary test connections. The assurance of leakage integrity afforded through performance of a 2 psig pneumatic test is questionable; therefore, performance of the test at PBAPS 2 & 3 represents a hardship with no compensating increase in plant safety.

Relief is requested from meeting the system pressure test requirements of IWD-5223.

IV. ALTERNATE PROVISIONS

Instrumentation (acoustic, temperature) on these lines provide indirect information relative to the integrity of these lines. This instrumentation is routinely monitored when the MSRVs are lifted.

RELIEF REQUEST NO. RR-18
Revision 0

Approved: NRC letter dated 8/22/94

I. IDENTIFICATION OF COMPONENTS

ISi Class 1 Integrally Welded Attachments to the Reactor Pressure Vessel, Examination Category B-H, Item Number B8.10.

The specific Class 1 components affected by this relief request are detailed in Table RR-18-01.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1980 Edition, through the Winter 1981 Addenda, Code Category B-H; requires that 100% of the welds connecting all integral attachments to the Reactor Pressure Vessel be examined using the volumetric or surface examination methods. The required examinations shall be performed during the second inservice inspection interval in accordance with Table IWB-2500-1.

Relief is requested from performing a complete (100%) examination of certain Class 1 integrally welded attachments due to physical plant restrictions.

III. BASIS FOR RELIEF

The components requiring relief are detailed in Table RR-18-01. The subject welded attachments are the Eight (8) Reactor Pressure Vessel Stabilizer Bars. Access to perform complete examinations of these attachments is physically restricted by the bioshield wall. Because the top of the shield wall is immediately adjacent to the underside of the stabilizer bar, access for examination of a portion of this region does not exist. Major plant modifications would be required to improve access and increase examination coverage. Included in Table RR-18-01 is the pertinent information relative to the extent of examination which has been, or is expected to be completed, along with the basis for the access restrictions.

IV. ALTERNATE PROVISIONS

Each of the Stabilizer Bars will be examined to the maximum extent possible, using the surface examination method. No alternate provisions are applicable in this situation.

Relief Request RR-18 (Contd)
Revision 0

TABLE RR-18-01

UNIT 2

Component Identification	Description	Limiting Condition	Examination % Complete
Support-1(IA)	Stabilizer Bar @ 0 Deg.	Bioshield	76%
Support-2(IA)	Stabilizer Bar @ 45 Deg.	Bioshield	76%
Support-3(IA)	Stabilizer Bar @ 90 Deg.	Bioshield	76%
Support-4(IA)	Stabilizer Bar @ 135 Deg.	Bioshield	76%
Support-5(IA)	Stabilizer Bar @ 180 Deg.	Bioshield	76%
Support-6(IA)	Stabilizer Bar @ 225 Deg.	Bioshield	76%
Support-7(IA)	Stabilizer Bar @ 270 Deg.	Bioshield	76%
Support-8(IA)	Stabilizer Bar @ 315 Deg.	Bioshield	76%

UNIT 3

Support-1(IA)	Stabilizer Bar @ 0 Deg.	Bioshield	76%
Support-2(IA)	Stabilizer Bar @ 45 Deg.	Bioshield	76%
Support-3(IA)	Stabilizer Bar @ 90 Deg.	Bioshield	76%
Support-4(IA)	Stabilizer Bar @ 135 Deg.	Bioshield	76%
Support-5(IA)	Stabilizer Bar @ 180 Deg.	Bioshield	76%
Support-6(IA)	Stabilizer Bar @ 225 Deg.	Bioshield	76%
Support-7(IA)	Stabilizer Bar @ 270 Deg.	Bioshield	76%
Support-8(IA)	Stabilizer Bar @ 315 Deg.	Bioshield	76%

RELIEF REQUEST NO. RR-19
Revision 0

Submitted to NRC on 6/3/94
Withdrawn on 12/29/94

I. IDENTIFICATION OF COMPONENTS

ISI Class 3 pressure retaining components in the Emergency Service Water (ESW) System / Emergency Cooling Water (ECW) System.

The ESW System is designed to provide a reliable supply of cooling water to the emergency diesel generator engine coolers and selected equipment coolers and compartment air coolers during a loss of off-site power.

The ECW System is designed to provide an adequate on-site heat sink to be used in conjunction with High Pressure Service Water (HPSW) to support the Residual Heat Removal (RHR) System during reactor shutdown, and with ESW to provide cooling for the reactor building cooling water heat exchangers, emergency diesel generator coolers, and the Emergency Core Cooling System (ECCS) pump room coolers during a loss of the Conowingo Pond or during a design basis flood. The ECW System also provides sufficient water storage to allow operation of the emergency cooling tower for seven days, without makeup.

The specific location of the subject components, within the referenced systems, is annotated on the attached schematic diagram of the ECW System. This portion of the system is a ASME Class 3, moderate energy (i.e. less than 200° F max. operating temperature, and less than 275 psig max. operating pressure) cooling water system, and does not normally operate.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1980 Edition through and including the Winter 1981 Addenda, Subsections IWA-4000, IWD-4000, IWA-7000, and IWD-7000 provide rules for the repair and replacement of pressure retaining components within the ASME Class 3 jurisdictional boundaries of the Section XI Code. While there is no prescribed schedule for implementation of Class 3 repairs or replacements, PECO Energy's position is that the implied timely implementation of identified ASME Section XI Repairs or Replacements should be 30 calendar days. Accordingly, PECO Energy Company requests one-time schedular relief from the implied 30 day implementation schedule in order to develop and perform corrective actions, while avoiding a dual unit shutdown.

III. BASIS FOR RELIEF

As documented in Nonconformance Report (NCR) PB 93-00809, a leaking pinhole indication was discovered in the ESW Booster Pump suction piping during plant operations. The structural integrity of the degraded piping was verified by computation, and therefore the operability of the system was confirmed. The NCR disposition was to perform a non-intrusive ASME Section XI welded Code repair to correct the situation.

Relief Request RR-19 (Cont'd)
Revision 0

evaluated and found acceptable, thereby reaffirming the operability of the component and system. The effects of the leakage on surrounding components and cooling capabilities of the system were also evaluated and found to be acceptable. A revision to the original NCR was then developed. The revised NCR disposition included intrusion into the system to perform both welded repairs, as well as potential replacement of pressure boundary components.

The above circumstances were communicated to the NRC during a conference call on April 28, 1994. The need for this relief request was discussed during the teleconference. It was determined that the relief request was not needed at that time, since a Code repair was planned for the immediate future.

Since the degraded component is located in a non-isolable portion of the system, common to both Unit 2 and Unit 3, special isolation techniques are required to implement the repairs, otherwise, a dual unit shutdown would be necessary. Repeated attempts to isolate the affected portion of the system, using freeze plugs, have been unsuccessful, thereby delaying implementation of the planned repairs beyond the time frame identified in the teleconference. Therefore, this relief request is being submitted.

Also, because of the isolation problems described above, deferral of a Code acceptable repair until the next refueling outage, in accordance with the guidance of Generic Letter 90-05, is not applicable; since a one unit refueling outage does not allow this portion of the system to be isolated.

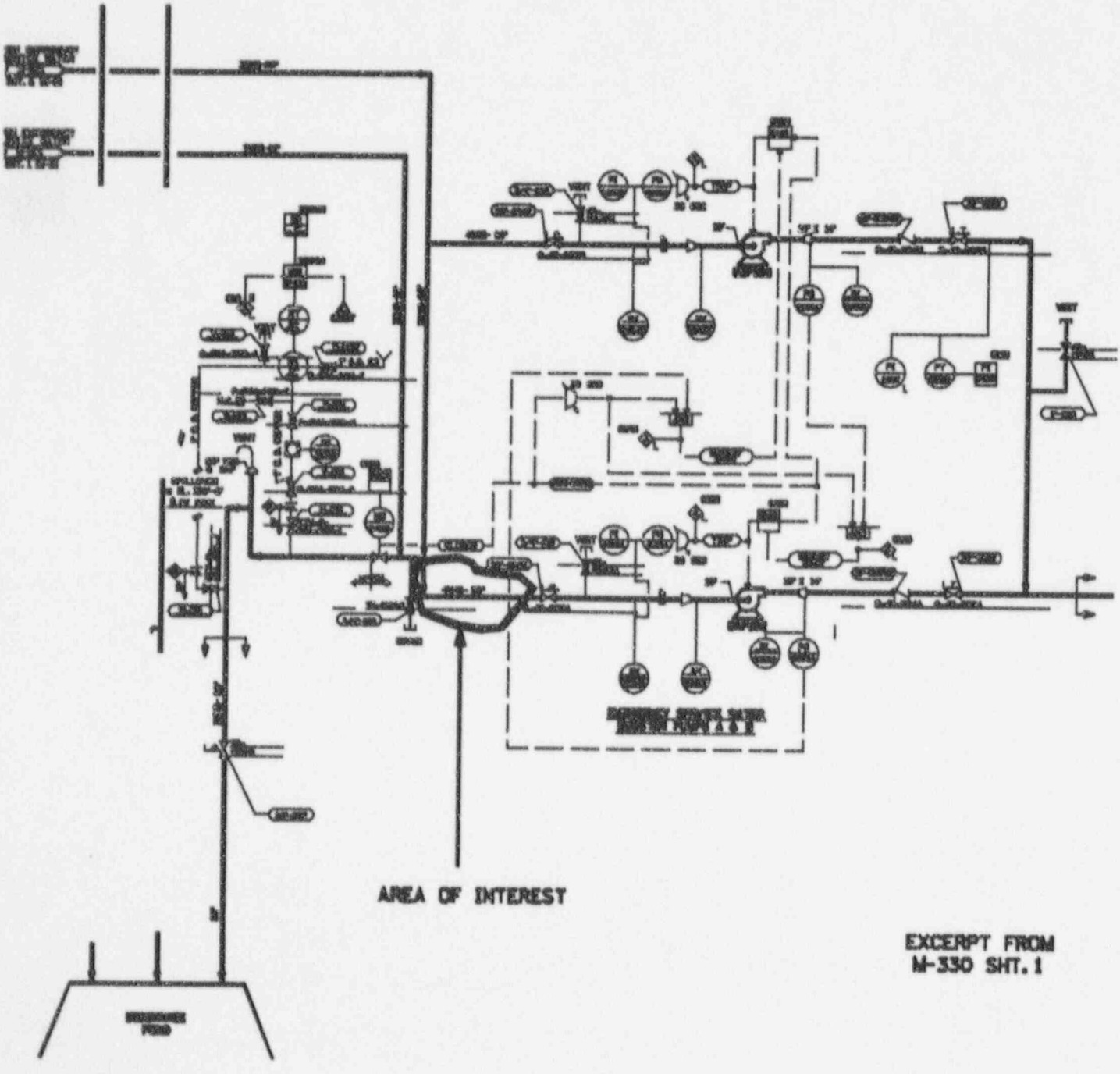
While Code acceptable repair and replacement are still under consideration, PECO Energy is investigating other options, including an alternative repair.

IV. ALTERNATE PROVISIONS

As a result of finding the pinhole leak in the pipe weld, ultrasonic (UT) thickness measurements were performed at the as-found indication as well as other locations around the weld. Subsequently, additional UT thickness measurements were performed to check for wall thinning or corrosion at other locations in this portion of the ESW System. The results of these additional examinations were then used to reaffirm both structural integrity, as well as component/system operability. While the pinhole has stopped leaking, it continues to be visually monitored on a weekly basis. Additionally, follow-up NDE will be performed every 90 days to verify the condition of the degradation, until repairs can be performed. Expansion of the existing examination locations for raw water piping, developed in accordance with Generic Letter 89-13, will be assessed.

PECO Energy will keep the NRC Staff informed as to progress of Code repairs or any alternative repair techniques being considered for implementation. Verbal notification of which option will be pursued is expected on or before July 15, 1994. It is intended that this relief will apply until either a Code acceptable repair is implemented, or until an alternative repair plan is submitted to, and approved by the NRC.

Relief Request RR-19 Rev. 0 (Cont'd)
Figure RR-19.1



APPENDIX "B" TABLE OF CONTENTS
AUGMENTED PROGRAMS

AUGMENTED INSPECTION PROGRAM - 1: NRC Generic Letter 88-01, Intergranular Stress Corrosion Cracking

GENERAL

This augmented program (AUG-1) defines the activities conducted during inservice inspection at PBAPS 2 and 3, pursuant to the examination requirements of NRC Generic Letter 88-01. This program addresses only those requirements dealing with periodic examination. Specific PECO Energy commitments concerning all of the aspects of NRC Generic Letter 88-01 are contained in the PECO Energy response to the letter, reference 1.1.4.

NRC Generic Letter 88-01 requires that an augmented inspection program be developed and implemented for certain austenitic stainless steel piping welds and reactor vessel attachments. The technical bases for the NRC staff positions, put forth in the Generic Letter, are detailed in Reference 1.1.5. The applicable requirements of the Generic Letter are summarized below.

DESCRIPTION OF NRC GENERIC LETTER 88-01 CRITERIA USED TO DETERMINE THE EXTENT OF PEACH BOTTOM COMPONENTS WITHIN AUG-1 PROGRAM SCOPE

NRC Generic Letter 88-01 applies to piping system portions that meet the following criteria:

- austenitic stainless steel,
- four inches or larger in nominal diameter, and
- contain reactor coolant at a temperature above 200°F, during power operation.

The following piping systems have portions which meet these criteria and are therefore within the scope of NRC Generic Letter 88-01:

- Reactor Recirculation System
- Residual Heat Removal System
- Core Spray System
- Reactor Water Clean-up System
- Reactor Pressure Vessel System

The NRC Generic Letter also applies to reactor vessel attachments and appurtenances such as jet pump instrumentation penetration assemblies, and head spray and vent components.

The following Reactor Vessel attachments and appurtenances have portions which are within the scope of NRC Generic Letter 88-01:

- Reactor Vessel Stainless Steel Safe Ends >4" NPS.

SCOPE OF COMPONENTS WITHIN THIS AUGMENTED PROGRAM

Reactor Recirculation System (Loops A & B)

Reference:

PBAPS 2 and Common
P&ID's M-353, sht. 1 and 2
ASME Section XI
Isometric Dwgs: RCS-02-MI-201-1-A
RCS-02-MI-201-1-B

PBAPS 3
P&ID's M-353, sht. 3 and 4
ASME Section XI
Isometric Dwgs: RCS-02-MI-301-1-A
RCS-02-MI-301-1-B

Scope:

- 28" NPS Reactor Recirculation Pumps A and B suction piping, from the welds joining the RPV N1 nozzles to safe-ends, through and including the welds to the Recirculation Pumps suction nozzle.
- 28" NPS Reactor Recirculation Pumps A and B discharge piping, from the weld to the Recirculation Pumps discharge nozzle, through the 22" NPS headers and including the five (5), 12" NPS piping segments, from the headers, to the RPV N2 nozzles to safe-end welds.
- The weld connecting the 20" NPS RHR piping to the A pump suction, and the welds connecting the 24" NPS RHR piping to the A and B pump discharge.

Residual Heat Removal System

Reference:

PBAPS 2
P&ID's M-361, sht. 1 and 2
ASME Section XI
Isometric Dwgs: DE-10-MI-203-9-A
DE-10-MI-203-9-B

DCN-10-MI-207-16

PBAPS 3
P&ID's M-361, sht. 3 and 4
ASME Section XI
Isometric Dwgs: DCA-10-MI-303-9-A
DCA-10-MI-303-9-B
DCA-10-MI-306-13

Scope:

- 20" NPS RHR supply piping, from the connection at the A loop Reactor Recirculation Pump suction line, up to normally closed inboard containment isolation valve MO-18. (Note: RHR piping beyond valve MO-18 is below 200°F during reactor power operation and is therefore not in scope).

- 24" NPS RHR return piping, from check valves AO-46A and B, to the Reactor Recirculation Pump A and B discharge piping. (Note: RHR piping beyond valves AO-46A and B is below 200°F during reactor power operation and is therefore not in scope.)

Core Spray System

Reference:

PBAPS 2 and Common
P&ID M-362, sht. 1
ASME Section XI
Isometric Dwgs: DCN-14-MI-203-5-A
DCN-14-MI-203-5-B

PBAPS 3
P&ID M-362, sht. 2
ASME Section XI
Isometric Dwgs: DCN-14-MI-303-4-A
DCN-14-MI-303-4-B

Scope:

- 12" NPS Core Spray supply piping, from valves 14A and B to the 10" NPS Reactor Vessel N5 nozzle to safe-end welds. (NOTE: The Core Spray piping beyond valves 14A and B is below 200°F during reactor power operation and is therefore not in scope).

Reactor Water Clean-Up System

Reference: PBAPS 2 and Common
P&ID M-354, sht. 1
ASME Section XI
Isometric Dwgs: DCA-12-MI-201-1
DE-12-MI 202-2
DCA-12-MI-203-3
DE-12-MI-203-4, 5, 6

PBAPS 3
P&ID M-354, sht. 2
ASME Section XI
Isometric Dwgs: DCA-12-MI-301-1
DE-12-MI-302-2
DCA-12-MI-303-3
DE-12-MI-303-4, 5, 6

Scope:

- RWCU 6" NPS piping, from the connection at the RHR Pump suction piping, thru primary containment penetration N-14, and up to 6" x 3" reducers in the RWCU pump suction header.
- RWCU 4" NPS piping, from 4" x 3" reducers in the RWCU pump discharge header, to the tube side inlet of the Regenerative heat exchanger.
- RWCU 4" NPS piping from the tube side outlet of the Regenerative heat exchanger, to the tube side inlets of the Non-Regenerative heat exchangers.
- RWCU 4" NPS return piping, from the shell side outlet of the Regenerative heat exchanger, to RWCU check valve 62 (just prior to returning to the Feedwater System).

Reactor Pressure Vessel System (Jet Pump Instrumentation)

Reference: PBAPS 2 and Common
P&ID M-352, sht. 1
ISI Dwgs. ISI-RPV-01
PBAPS 3
P&ID M-352, sht. 3
ISI Dwgs. ISI-RPV-01

Scope:

- Jet Pump Instrumentation Penetration seal to safe-end welds. These welds are associated with the N8 RPV nozzles for Unit 2. The Unit 3 safe-ends and penetration seals are one piece forgings that do not have a safe-end to penetration seal weld.

Reactor Vessel Stainless Steel Safe Ends

The RPV attachments and appurtenances within the scope of this response are limited to stainless steel safe-ends, greater than 4" NPS, attached tp RPV nozzles.

Reference:
PBAPS 2 and Common
P&ID M-351, sht. 1
P&ID M-352, sht. 1
ISI Dwgs. ISI-RPV-05
PBAPS 3
P&ID M-351, sht. 3
P&ID M-352, sht. 3
ISI Dwgs. ISI-RPV-05

Scope:

- The stainless steel safe-ends attached to RPV nozzles N8, and N9.

Note: Safe-end attachment to RPV nozzles N1, N2, and N5 are included, and have been previously identified within the scope description of the systems associated with these connections.

EXAMINATION PROGRAM

NRC Generic Letter 88-01 requires that each pressure retaining weld, in scope components, be assigned to a category. The available categories are Category A thru Category G. The assignment of these categories is based on the degree to which the weld is susceptable to Intergranular Stress Corrosion Cracking (IGSCC). Category A welds are least susceptable, Category G welds are most susceptable. NRC Generic Letter 88-01 and NUREG 0313 Rev. 2 provide details on the determination of IGSCC category. The inspection frequency for each of the scope welds is determined by the IGSCC category that is assigned to the weld . This is explained in more detail under the section of this augmented program document entitled INSPECTION SCHEDULES.

Inspection Methods and Personnel

PECO Energy is committed to complying with the NRC Staff positions on inspection methods and personnel as delineated in NRC Generic Letter 88-01. The inspection method to be performed is an ultrasonic (UT) type volumetric exam. For UT inspectable ASME Class 1 and 2 welds, the IGSCC inspections will generally be performed in accordance with the requirements contained in the applicable edition and addenda of ASME Section XI for the ASME class of the weldment. For UT inspectable ASME Class 3 and non-class welds, the requirements in Section XI for Class 2 welds will apply. Details of the volumetric examination method may be upgraded as practical to ensure that the examinations will be effective. The personnel performing the IGSCC volumetric inspections will be qualified for such inspections by a formal program approved by the NRC.

Inspection Schedules

The inspection frequencies in this augmented program conform to the NRC staff positions provided in Generic Letter 88-01. The frequency of inspection depends on the IGSCC category that the weld is assigned to. The inspection frequencies are as follows:

IGSCC Category	Inspection Extent and Schedule
A	25% every 10 years (at least 12% in 6 years)
B	50% every 10 years (at least 25% in 6 years)
C	All within next 2 refueling cycles and then all every 10 years (at least 50% in 6 years)
D	All every 2 refueling cycles
E	50% next refueling outage, then all every 2 refueling cycles
F	All every refueling outage
G	All next refueling outage
RWCU outside containment	10% sample per outage

The IGSCC category assigned depends on such factors as whether stress improvement is performed, whether cracks are known to exist in the weld, whether the weld is reinforced by overlay, corrosion resistant cladding has been approved, what the base and weld material are, and whether the weld has been UT inspected utilizing the inspection methods and personnel indicated in the Generic Letter. Since some of these factors can change, the IGSCC category assigned to a particular weld is also subject to change.

Weld Selection

Where the augmented program required examination of a sample of applicable welds, the size and content of the sample was determined from the total population of circumferential butt welds subject to the program requirements.

The selection of welds for examination under this augmented program has been coordinated with the selection of welds for examination under the ISI Program, (i.e. if a weld requiring augmented examination is selected for ISI Exam, it was also selected for augmented examination). The examination requirements of both the ISI Program and the Augmented Program are therefore satisfied simultaneously, to the extent that those requirements overlap (i.e., a single volumetric examination performed to satisfy all augmented requirements, and the voumetric examination requirements of the ISI Program). This selection philosophy has been reviewed and deemed to yield a representative sample of the welds requiring the augmented examinations.

Augmented Program Tables (AUG-1) for PBAPS 2 & 3 list, by system, the total population of welds subject to examination under this augmented program. Specifically, these tables identify the weld by identification number, the ASME Section XI drawing depicting the weld, the IGSCC Examination Category assigned to the weld, the inspection method planned for the weld (if selected), if the weld has been selected for the ISI examination, and finally an indiction of whether the weld is selected for augmented examination. Notes may also be provided as necessary.

Sample Expansion

If one or more Category A, B, C, or D welds are found to be cracked, or if additional cracks or significant crack growth is discovered in a Category E weld during the interval, a sample expansion plan will be invoked. The sample expansion plan utilized will be as put forth in the Staff Position on Sample Expansion of NRC Generic Letter 88-01, including Supplement 1.

NRC Notification

If any flaws are identified which do not meet the acceptance criteria for continued operation (referenced below under flaw evaluation), the NRC will be duly notified of the disposition of the affected flaws. NRC approval of the disposition for each flaw exceeding the criteria will be obtained before operation is resumed. All communication with the NRC will comply with the requirements of the PECO Energy Corporate ISI/IST Administrative Manual.

Flaw Evaluation

Flaws exceeding the acceptance criteria of IWB-3500 of ASME Section XI will be evaluated, then either repaired, replaced, or deemed acceptable for continued operation. Repairs or replacements will be documented in the Owners Report for Repairs and Replacements as required by ASME Section XI. Evaluations of flaws for continued operation will be performed in accordance with the criteria in IWB-3600 of ASME Section XI. For aspects of flaw evaluation which are not contained in IWB-3600, the requirements in NUREG-0313 Revision 2 will be used in conjunction with IWB-3600.

The above referenced criteria for acceptance and evaluation are found in the 1986 Edition of ASME Section XI.

AUGMENTED INSPECTION PROGRAM - 2: NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking

I. SCOPE

This augmented inspection program (AUG-2) defines the mandatory inspection requirements of NRC NUREG-0619 applicable to the PBAPS Units 2 & 3 Feedwater nozzles/spargers.

Inspections associated with the Control Rod Drive Return Line (CRDRL) nozzle (N9)/piping system are not required at PBAPS 2 & 3. The CRDRL nozzles (one per unit) have been cut and capped and the CRDRL eliminated. Augmented examinations per NUREG-0619 are not applicable.

Inspection requirements, as detailed in this document, are exclusive of those ASME Section XI inservice inspection requirements for the Feedwater nozzles/spargers and the CRDRL nozzle; however, where possible, individual examinations performed may be used to satisfy both requirements (See ISI Program Tables for common components).

II. REFERENCES

A. NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking (November 1980) with Generic Letter 81-11 (February 20, 1981).

B. PECo letter of January 21, 1981, J. W. Gallagher to Darrell G. Eisenhut (NRC).

C. PECo letter of September 29, 1983, J. W. Gallagher to Darrell G. Eisenhut (NRC).

III. GENERAL

In order to facilitate early detection of the initiation of feedwater nozzle thermal fatigue cracking and thereby limit crack growth within the bounds of approved repair methods, NUREG-0619 requires the implementation of a plant specific inspection program in accordance with Section 4.3 of the NUREG.

The PBAPS 2 & 3 reactor pressure vessels have six (6) feedwater nozzles. In accordance with General Electric Company recommendations intended to minimize the probability of thermal fatigue crack initiation and growth, the PBAPS 2 & 3 feedwater nozzles have undergone modifications to remove the nozzle cladding and replace the original feedwater spargers with improved design "triple sleeve spargers" on all nozzles. These modifications were accomplished in Spring 1980 for Unit #2 and Spring 1981 for Unit #3. The routine inspection program required by Table 2 of the NUREG for the PBAPS 2 & 3 specific nozzle configuration is detailed in Table B-2-1 and Section IV of this document.

IV. FEEDWATER NOZZLE INSPECTION PROGRAM

The PBAPS 2 & 3 inspection program requirements, based on the "triple-sleeve spargers with two piston-ring seals, clad removed" configuration is illustrated below:

ROUTINE INSPECTION INTERVALS

	Inspection Intervals* - Refueling Cycles (or Startup/Shutdown Cycles)		
	UT	Inspection of Sparger	Visual Routine PT
PBAPS 2 & 3	2	4	9 (or 135)

* The inspection interval began Spring 1980 and Spring 1981 for Unit 2 and Unit 3 respectively.

Ultrasonic (UT) examinations shall be performed on all feedwater nozzle to safe end welds, nozzle bores and inside blend radii once every two (2) refueling cycles. These examinations shall be performed to the extent shown in Figure B-2-1 utilizing ultrasonic (UT) examination techniques designed to optimize detection of small thermal fatigue cracks given the specific feedwater nozzle forging configuration.

Visual examination of the feedwater spargers shall be performed once every four (4) refueling cycles. This examination shall include the entire sparger with special attention given to the junction point of the sparger arms and the flow nozzles (Figure B-2-2).

Routine dye-penetrant (PT) examinations shall be performed the lesser of once every nine (9) refueling cycles or upon achieving 135 startup/shutdown cycles.[1] A complete routine PT consists of PT examination of accessible portions of the nozzle bore and inner radius of all feedwater nozzles (sparger intact).

[1] A startup/shutdown cycle is defined as a reactor thermal power increase from nominally zero, and subsequent return to zero, which produces both pressure and temperature changes and involves the flow of any amount of cold feedwater through the feedwater nozzles, including scrams to low-pressure hot standby and conventional startup/shutdowns.

In light of the difficulties associated with routine PT examinations - radiological environment, access provisions - PECO Energy is continuing to monitor advances in ultrasonic examination techniques which may facilitate elimination of the requirement for PT examination completely.

V. INSPECTION RESULTS

If upon completion of the required ultrasonic examinations, indications are discovered, the indications shall be dispositioned as follows:

A. Ultrasonic indications in the nozzle to safe end weld shall be evaluated per ASME Section XI,

B. Recordable ultrasonic indications, in any nozzle, interpreted to be cracked shall necessitate a follow up penetrant examination (PT) of the entire affected nozzle (sparger removed) and the accessible portions of the remaining nozzles,

C. Confirmation of cracking by penetrant examination (PT) shall require removal of all remaining feedwater spargers and subsequent complete PT of all nozzles, and

D. All nozzle cracks shall be repaired using approved repair plans.

Visual examination test results shall be evaluated in accordance with ASME Section XI.

Cracking discovered during routine penetrant examinations shall be dispositioned as follows:

A. The sparger(s) of the affected nozzle(s), and all remaining spargers shall be removed, and the entire nozzle bore and inner radius of all nozzles penetrant (PT) examined, and

B. All nozzle cracks shall be repaired using approved repair plans.

VI. REPORTS/RECORDS

Within six (6) months of completing an outage during which an inspection (UT, PT or VT) was performed in accordance with NUREG-0619, a detailed report discussing the inspection shall be submitted to the Regional Director, Inspection and Enforcement with copies to the Director, Inspection and Enforcement, and the Director, Nuclear Reactor Regulation. The report shall include the following information:

A. Number of startup/shutdown cycles since the previous inspection and the total number of cycles,

B. Summary of methods used and results of previous inspections, including maximum crack depth and previous number of cracks detected/repaired.

C. Description of system/operational changes that should be considered in predicting future crack initiation and growth, and

D. A detailed discussion of inspection results.

All records associated with the subject inspections shall be maintained in accordance with ASME Section XI and plant procedures.

NOTE: Inspections, as required by this augmented program, are typically performed during a normal refueling outage in which routine ASME Section XI inservice inspections (ISI) are also performed. ASME Section XI requires that a summary report be filed, within 90 days of completion of the inservice inspection, with jurisdictional enforcement and regulatory authorities. Due to the similar nature of these activities, reports as required by this augmented program may be submitted in conjunction with the ISI summary report provided the reporting requirements of this augmented program are met.

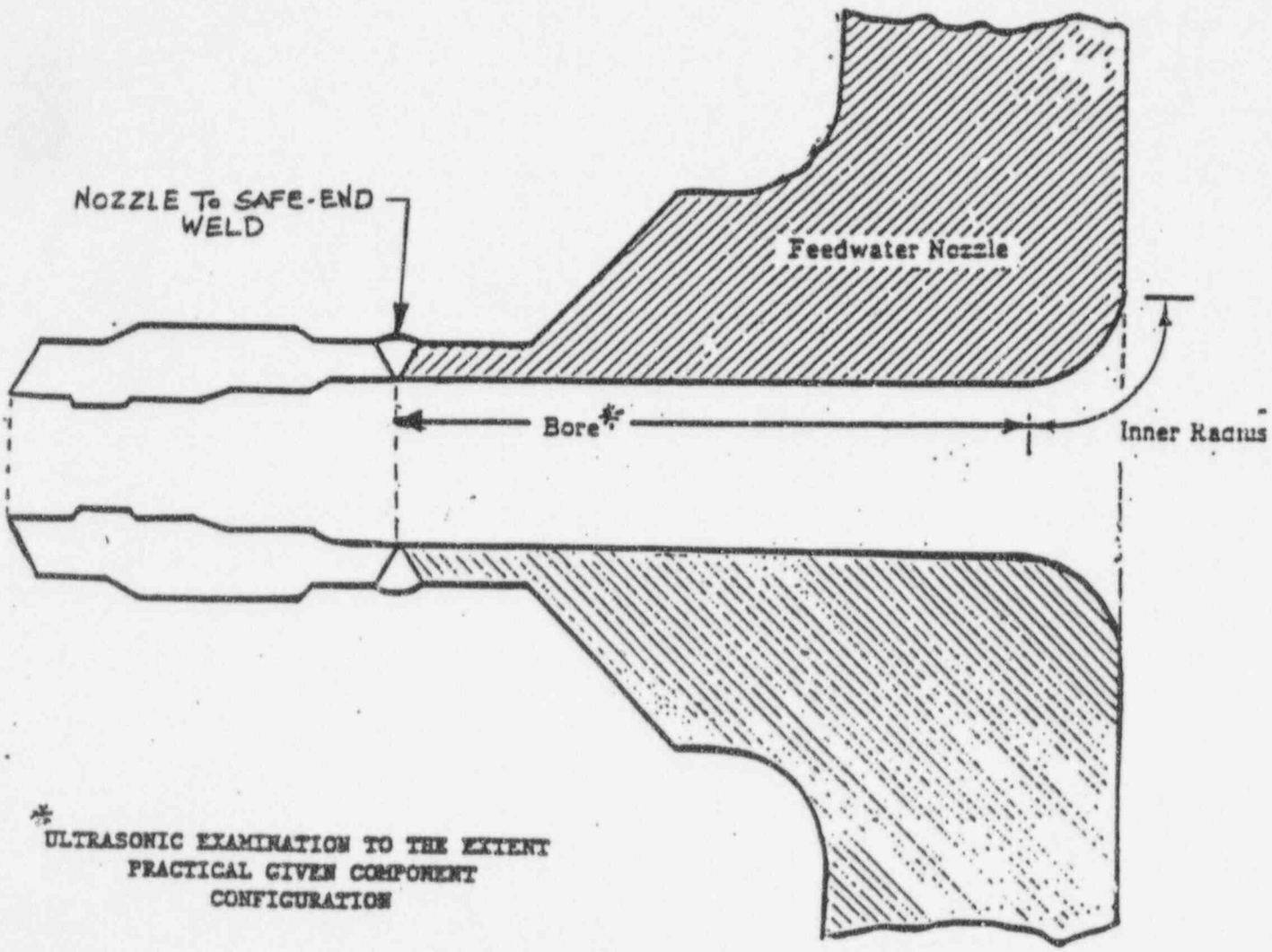
TABLE B-2-1
AUGMENTED EXAMINATION PROGRAM - 2

Exam Area Identification Number	Figure Number	NDE Method	Inspection Interval (No. of Refueling Cycles)	Notes
N4A Noz to Safe End Weld	B-2-1	UT	2	
N4A Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4A Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4A Sparger	B-2-2	VT	4	
N4B Noz to Safe End Weld	B-2-1	UT	2	
N4B Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4B Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4B Sparger	B-2-2	VT	4	
N4C Noz to Safe End Weld	B-2-1	UT	2	
N4C Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4C Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4C Sparger	B-2-2	VT	4	
N4D Noz to Safe End Weld	B-2-1	UT	2	

TABLE B-2-1
AUGMENTED EXAMINATION PROGRAM - 2

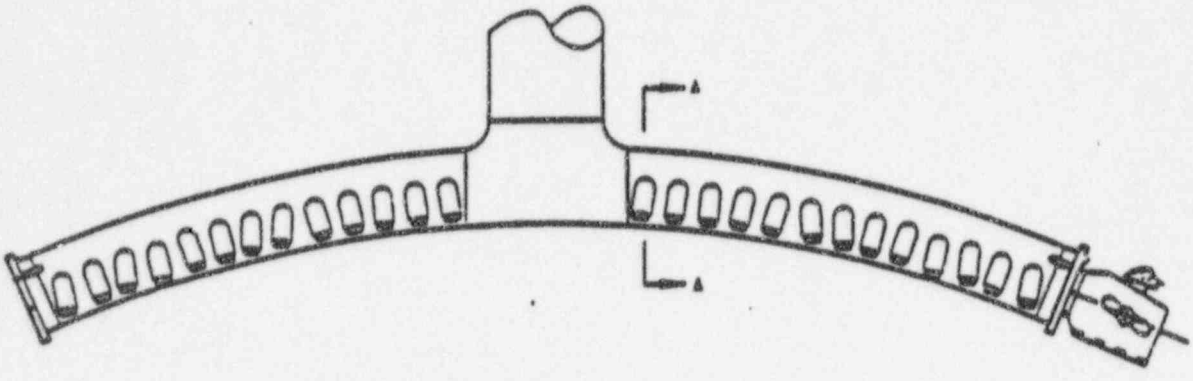
Exam Area Identification Number	Figure Number	NDE Method	Inspection Interval (No. of Refueling Cycles)	Notes
N4D Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4D Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4D Sparger	B-2-2	VT	4	
N4E Noz to Safe End Weld	B-2-1	UT	2	
N4E Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4E Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4E Sparger	B-2-2	VT	4	
N4F Noz to Safe End Weld	B-2-1	UT	2	
N4F Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4F Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4F Sparger	B-2-2	VT	4	

Figure B-2-1
Feedwater Nozzle
Extent of Examination



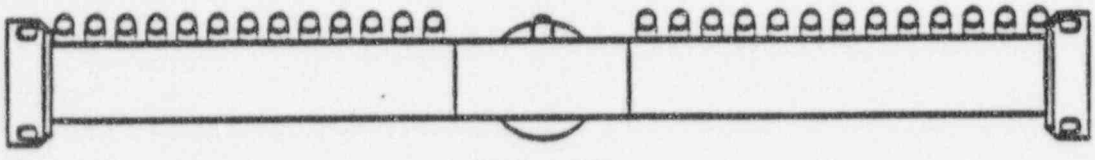
* ULTRASONIC EXAMINATION TO THE EXTENT PRACTICAL GIVEN COMPONENT CONFIGURATION

Figure B-2-2
Feedwater Sparger



PLAN VIEW

END BRACKET SHOWN ONE END ONLY



END VIEW

SECTION A-A

AUGMENTED INSPECTION PROGRAM - 3: IE Bulletin No. 80-13, Cracking in Core Spray Spargers

I. SCOPE

This augmented inspection program (AUG-3) defines the mandatory inspection requirements of NRC IE Bulletin 80-13 applicable to the PBAPS 2 & 3 Core Spray Sparger and Core Spray supply header piping.

Inspection requirements, as detailed in this document, are exclusive of those ASME Section XI inservice inspection requirements for the Core Spray spargers/supply header piping; however, where possible, individual examinations performed may be used to satisfy both requirements. (See ISI Program Tables for common components).

II. REFERENCES

A. IE Bulletin No. 80-13, Cracking in Core Spray Spargers, dated May 12, 1980.

B. PECo letter of June 13, 1980, S. L. Daltroff to Boyce H. Grier (NRC).

C. General Electric Company SIL No. 289, Core Spray Visual Inspection Revision 0, dated February 1979 and including Revision 1, Supplement 1, Rev. 1 dated March 15, 1989.

D. PECO Energy NCR PB 93-00754, Core Spray Pipe in RPV with 3 inch Linear Indication, dated 10/25/93.

III. GENERAL

Instances of intergranular stress corrosion cracking (IGSCC) in Core Spray spargers have been reported in IE Bulletin 80-13. The key contributors to IGSCC are plant specific, however; stresses in the stainless steel spargers from cold work and sensitization during fabrication and installation, coupled with service in the BWR environment, are all considered prime factors.

In addition to the sparger piping, other welds on the "T-box" (just inside of the RPV nozzle in the Core Spray header (supply piping) have been identified as susceptible to cracking (Reference C).

Failure of either of these critical RPV internal components could result in poor cooling distribution and/or reduced flow to the core during activation of the Core Spray system. For this reason, IE Bulletin 80-13 mandates routine inspections of the subject components as detailed in Table B-3-1 and Section IV of this document.

IV. CORE SPRAY SPARGER/PIPING INSPECTION PROGRAM

Visual examination of the PBAPS 2 & 3 Core Spray spargers and supply header piping shall be performed at each refueling outage. The inspection area shall include:

A. All spargers and piping within the shroud,

Failure of either of these critical RPV internal components could result in poor cooling distribution and/or reduced flow to the core during activation of the Core Spray system. For this reason, IE Bulletin 80-13 mandates routine inspections of the subject components as detailed in Table B-3-1 and Section IV of this document.

IV. CORE SPRAY SPARGER/PIPING INSPECTION PROGRAM

Visual examination of the PBAPS 2 & 3 Core Spray spargers and supply header piping shall be performed at each refueling outage. The inspection area shall include:

A. All spargers and piping within the shroud,

B. All supply header piping from the RPV inlet nozzle to the RPV shroud, and

C. The "T-box" front cover plate welds.

Due to RPV conditions during a normal refueling outage, the required visual examinations are performed utilizing a remote underwater TV camera. Adequate resolution to satisfy the IE Bulletin shall be demonstrated by insitu viewing of 0.001 in. (1 mil) diameter fine wires.

V. INSPECTION RESULTS

All relevant conditions identified during the required examinations of this augmented program shall be recorded , characterized, and evaluated as to type of defect, location and extent. Supplementary examinations, where practical, may be performed to aid in evaluation of the indications.

All cracks shall be reported to the Director - NRC Region I within 24 hours of identification.

VI. REPORTS/RECORDS

In the event of identified cracks, an evaluation report shall be submitted to NRC NRR for review and approval prior to return to operation.

A detailed report of the results of the examinations and corrective actions taken (if any) shall be submitted to the Director - NRC Region I (Copy to NRC Office of I & E, Washington D.C.).

All records associated with the subject examinations shall be maintained in accordance with ASME Section XI and plant procedures.

NOTE: Inspections, as required by this augmented program, are typically performed during a normal refueling outage in which routine ASME Section XI inservice inspections (ISI) are also performed. ASME Section XI requires that a summary report be filed, within 90 days of completion of the inservice inspection, with jurisdictional enforcement and regulatory authorities. Due to the similar nature of these activities, reports as required by this augmented program may be submitted in conjunction with the ISI summary report provided the notification requirements of this augmented program are met (e.g. new or additional cracks found).

TABLE B-3-1
AUGMENTED EXAMINATION PROGRAM - 3

Exam Area Identification Number	NDE Method	Examination Frequency	Notes
'A' CS Sparger	VT*	Every Refueling Outage	CS Piping within the shroud
'B' CS Sparger	VT*	Every Refueling Outage	CS Piping within the shroud
'C' CS Sparger	VT*	Every Refueling Outage	CS Piping within the shroud
'D' CS Sparger	VT*	Every Refueling Outage	CS Piping within the shroud
'A&C' CS Supply Header Piping	VT*	Every Refueling Outage	From N5B nozzle to shroud entrance
'B&D' CS Supply Header Piping	VT*	Every Refueling Outage	From N5A nozzle to shroud entrance
'T-box' from cover plate welds	VT*	Every Refueling Outage	

* Visual examination with demonstrated resolution to detect in situ 0.001 diameter fine wires.

AUGMENTED INSPECTION PROGRAM - 4: NUREG/CR-3052, Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure

I. SCOPE

This augmented inspection program (AUG-4) defines the recommended inspection requirements of NRC NUREG/CR-3052 applicable to the PBAPS 2 & 3 jet pump hold-down beam assemblies.

II. REFERENCES

A. NUREG/CR-3052, Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure, November, 1984.

B. IE Bulletin No. 80-07, BWR Jet Pump Assembly Failure, dated April 4, 1980, and including Supplement No. 1 dated May 13, 1980.

C. General Electric Company, SIL No. 330, Jet Pump Beam Cracks, June 9, 1980.

D. PECo letter of May 2, 1980, S. L. Daltroff to Boyce W. Grier (NRC).

E. PECo letter of May 7, 1980, S. L. Daltroff to Boyce W. Grier (NRC).

III. GENERAL

The occurrence of BWR jet pump hold-down beam cracking and/or failures at several domestic BWRs resulted in the issuance of NRC IE Bulletin 80-07, which mandated both visual and ultrasonic inspection of the jet pump hold-down beam assemblies at operating BWRs, including PBAPS 2 & 3. Intergranular stress corrosion cracking (IGSCC) has been identified as the failure mechanism of the beams.

There are twenty (20) jet pump hold-down beams per unit at PBAPS. As a required action of IEB 80-07, all of the "original BWR/4" hold-down beams installed on PBAPS 2 & 3 were subsequently visually and ultrasonically inspected for evidence of lack of integrity of the hold-down beams due to IGSCC. Ultrasonic examinations on PBAPS #3 revealed one (1) beam with confirmed cracking; inspections on PBAPS #2 determined all beams intact.

General Electric Company's preferred resolution to the problem was the design and manufacture of an improved jet pump hold-down beam with a new heat treatment. This improved beam coupled with installation at a reduced preload is expected to have a significantly increased service life. In 1984 (Unit #2) and 1988 (Unit #3), all original hold-down beams at PBAPS 2 & 3 were replaced with the "improved BWR/4 beam design with improved heat treatment" and 25 kips (vs. 30) preload.

IV. INSPECTION PROGRAM

Installation of new BWR/4 beams with the new heat treatment and reduced preload on PBAPS 2 & 3 satisfies the requirements of IEB 80-07. As such, the bulletin may be considered closed and there are no further requirements for nondestructive examination of the beams. However, per NUREG/CR-3052, due to lack of plant experience with the new design beam, it is recommended that ultrasonic examination of all jet pump hold-down beams be performed once every ten (10) years. Note: Ten (10) years means ten (10) years of service above 200° F, and not ten (10) calendar years.

	INSPECTION FREQUENCY
PBAPS #2 JET PUMP HOLD-DOWN BEAMS JP #1 THROUGH JP #10 (20 TOTAL)	UT once every 10 years following installation of the new beam.[1]
PBAPS #3 JET PUMP HOLD-DOWN BEAMS JP #1 THROUGH JP #10 (20 TOTAL)	UT once every 10 years following installation of the new beam.[2,3]

1) The PBAPS #2 new beams were installed August of 1984.
2) The PBAPS #3 new beams were installed August of 1988.
3) Beam #6 on PBAPS #3 was installed in Spring, 1981, to replace the original beam with confirmed IGSCC.

Ultrasonic examinations shall be performed with technique intended for the detection of IGSCC in the given configuration.

V. INSPECTION RESULTS

Ultrasonic indications identified during the required examinations of this augmented program shall be recorded, characterized, and evaluated as to type of defect, location and extent.

Per General Electric Company recommendations, beams having crack indications should be considered for replacement.

VI. RECORDS/REPORTS

All records/reports shall be in accordance with ASME Section XI and plant procedures.

NOTE: Inspections, as required by this augmented program, are typically performed during a normal refueling outage in which routine ASME Section XI inservice inspections (ISI) are also performed. ASME Section XI requires that a summary report be filed, within 90 days of completion of the inservice inspection, with jurisdictional enforcement and regulatory authorities. Due to the similar nature of these activities, reports as required by this augmented program may be submitted in conjunction with the ISI summary report.

AUGMENTED INSPECTION PROGRAM 5: Snubber Examination and Test Program (Technical Specification Snubbers)

NOTE: This Augmented Program is planned for implementation after adoption of Improved Technical Specifications.

I. SCOPE

This augmented inspection program (AUG-5) defines the mandatory examination and testing requirements for snubbers. This program has been prepared as a complete replacement for the Surveillance Requirements of PBAPS 2 & 3 Technical Specification 3/4.11.D.

All snubbers installed on the reactor coolant system and all other safety related systems are subject to the requirements of this augmented inspection program. Snubbers installed on nonsafety related systems are also within the scope of this program and may be excluded only if their failure or failure of the system on which they are installed would have no adverse effect on any safety related system.

Examination and testing requirements of this augmented inspection program apply to the snubber assembly which includes the snubber body and attachments out to and including the load pins and their retainers (Figure B-5-1). Snubber support components beyond this defined space are outside of the scope of this augmented inspection program.

A complete listing of all snubbers within the scope of this augmented inspection program is provided in the Augmented Program (AUG-5) Tables.

II. REFERENCES

A. ANSI/ASME Operations and Maintenance Standard OM-1987 with OMc-1990 Addenda, Part 4 (including additional industry/committee studies).

B. PBAPS 2 & 3 Technical Specification 3/4.11.D Snubbers

III. DEFINITIONS

A. Activation - the parameter that verifies restraining action.

B. Application Induced Failure - failures resulting from environmental conditions or application of the snubber for which it has not been designed or qualified.

C. Breakaway Force - the minimum applied force required to initiate extension or retraction of the snubber.

D. Defined Test Plan Group - a population of snubbers having similar design or application characteristics selected for testing in accordance with the 10 percent or 37 testing sample plan.

E. Design or Manufacturing Failure - failures resulting from a potential defect in manufacturing or design that give cause to suspect other similar snubbers. This includes failures of any snubber(s) that fails to withstand the environment or application for which it was designed.

F. Drag Force - the force required to maintain the snubber movement at a constant velocity prior to activation.

G. Equipment Dynamic Restraint (Snubber) - a device which provides restraint to a component or system during a sudden application of forces but allows essentially free motion during thermal movement.

H. Examination Group - a composition of snubbers which have been selected to be examined.

I. Examination - the performance of visual observations for impaired functional ability due to physical damage, leakage, corrosion or degradation from environmental or operating conditions.

J. Failure Mode Group - a composition of snubbers whose failure and potential for the same failure is similar.

K. Inaccessible Snubbers - those snubbers that are in a high radiation area or other conditions that would render it impractical for the snubbers to be examined under normal plant operating conditions without exposing plant personnel to undue hazards.

L. Isolated Failure - the nature of the failure does not lend other snubbers to be suspect. For example, failures resulting from damage during installation or shutdown (i.e., dropping equipment or tools on the snubber, missing pins, etc.).

M. Maintenance - replacement of parts, adjustments, and similar actions which do not change the design of the snubber, taken to prevent deficiencies in the function of a snubber.

N. Maintenance, Repair, Installation Induced Failures - failures which result from damage during maintenance, repair, or installation activities, the nature of which lends other snubbers to be suspect.

O. Mechanical Snubbers - devices in which load is transmitted entirely through mechanical components.

P. Modification - alteration in the design of a snubber to improve its suitability for a given environment or application

Q. Normal Operating Conditions - operating conditions during reactor startup, operating at power, hot standby, reactor cooldown to cold shutdown.

R. Operability Testing - measurement of parameters that verify snubber operability.

S. Operating Temperature - the temperature of the environment surrounding a snubber at its installed plant location during the phase of plant operation for which the snubber is required.

T. Qualitative Testing - that testing performed to establish the functioning of a parameter without determining the specific measure of the parameter, similar to go/no-go gauging.

U. Quantitative Testing - that testing performed to establish the specific measure or the limit of the functioning of a parameter, such as that required to establish that a parameter is functioning within a specified range.

V. Release Rate - the rate of the axial snubber movement under a specified load after activation of the snubber took place.

W. Repair - replacement of parts and similar actions which do not change the design of the snubber, taken to correct deficiencies in the function of a snubber.

X. Replacement Snubber - any snubber other than the snubber immediately previously installed at the location.

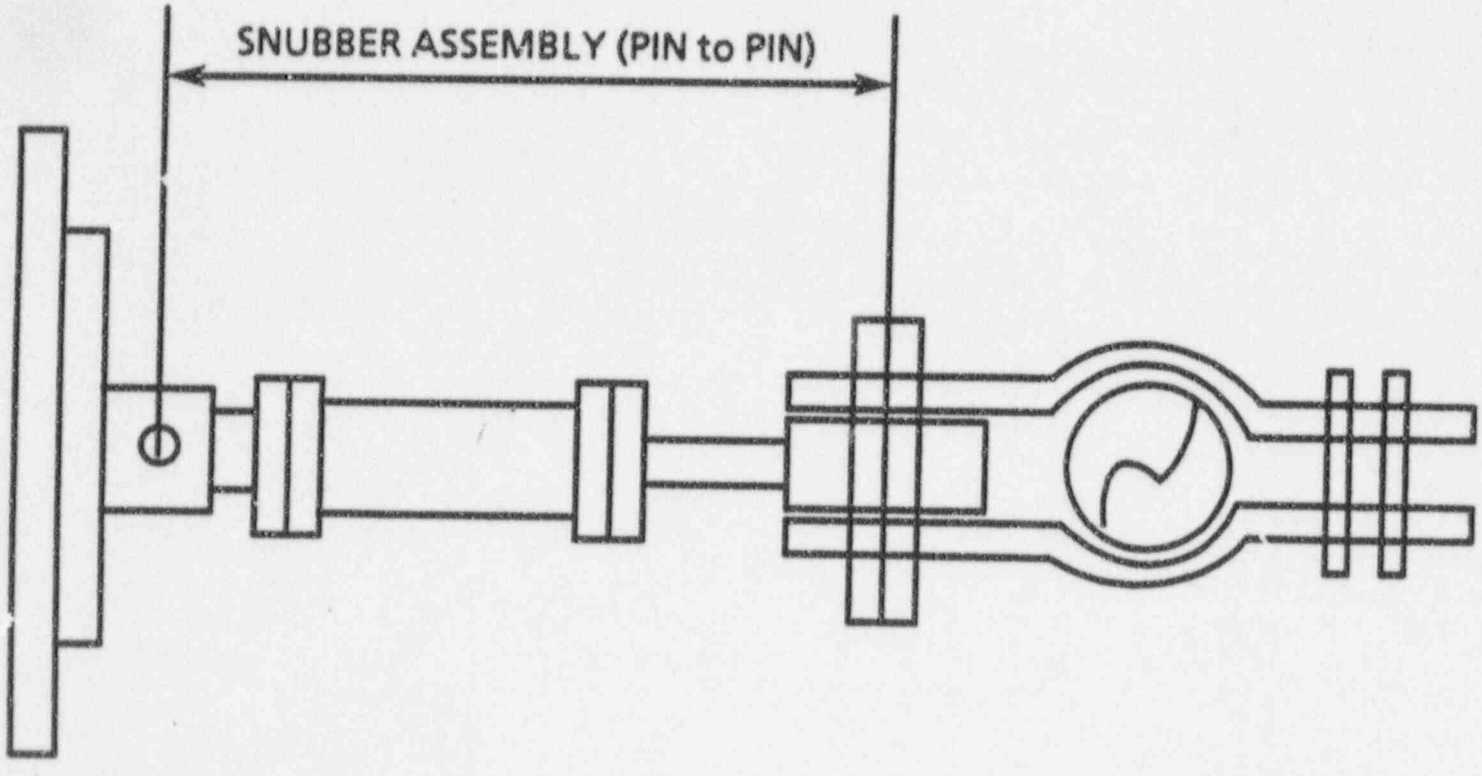
Y. Swing Clearance - the movement envelope within which the snubber must operate without restriction, from the cold installed position to the hot operating position.

Z. Test Temperature - the temperature of the environment surrounding the snubber at the time of the test.

AA. Unacceptable Snubbers - those snubbers which do not meet examination or testing requirements.

AB. Unexplained Failure - failures that cannot be categorized as design or manufacturing, maintenance, repair, installation, application induced, or isolated. This includes all failures for which the cause of the failure cannot be determined.

Figure B-5-1
Snubber Scope
of
Examination/Testing



IV. GENERAL SNUBBER EXAMINATION AND TESTING REQUIREMENTS

Snubbers are installed on safety and nonsafety related systems at PBAPS 2 & 3 to ensure the continued structural integrity of the reactor coolant system and other safety related systems following a seismic or other event initiating dynamic loads. As such, assurance of the ability of these snubbers to perform as designed through examination and testing is imperative.

Requirements for examination and testing of snubbers are addressed by regulatory and industry groups in plant Technical Specifications, ASME Section XI, ANSI, OM-1987 with OMc-1990 Addenda and INPO good practices. This augmented program, prepared by PECO Energy, is intended to provide a comprehensive program which demonstrates the operability of applicable PBAPS 2 & 3 snubbers and effectively addresses both regulatory and industry concerns regarding snubber examination and testing.

This augmented program constitutes the "Surveillance Requirements" section of plant Technical Specification 3/4.11.D. Requirements of Technical Specification 3/4.11.D, other than surveillance requirements, still apply.

A. Responsibility

PECO Energy, as owner of PBAPS 2 & 3, is responsible for the preparation and implementation of this program including:

a) Implementation of the requirements of this program in accordance with site administrative procedures and the Quality Assurance Program.

b) Qualification of personnel performing the examinations and tests.

c) Preparation of all necessary written procedures for complying with the requirements of this program.

d) Collection and retention of all design and operating information necessary for the performance of the examination and testing program. This information shall be available for use during implementation of the program.

B. Procedures

Examinations, tests, and maintenance or repair activities shall be performed in accordance with written procedures.

C. Examination and Test Results

The results of all examination and testing shall be documented and shall include as a minimum:

a) Manufacturer's model number, serial number, type, unique location identification and/or PECO Energy identification of the snubber, as applicable.

b) Pertinent examination and test data.

c) Identification and disposition of nonconformances.

d) Information to identify the test/examination performed, procedure used, and date.

e) Test equipment used.

f) Acceptability of test/examination results.

g) Identification of examination and test personnel.

D. Personnel Qualifications

Test Personnel who are required to witness, perform, and/or evaluate the snubber testing shall be qualified in accordance with site administrative procedures. Examination personnel performing and evaluating visual examinations shall be qualified for VT-3 and VT-4 visual examination in accordance with ASME Section XI 1980 Edition, up to and including the Winter 1981 Addenda (1980W81), or PECO Energy approved equivalent.

E. Instrumentation and Test Equipment

Instrumentation and test equipment used to verify snubber performance shall have the range and accuracy necessary to demonstrate conformance to specific examination or test requirements.

All instruments and test equipment used in performing the examination and testing program shall be calibrated and controlled in accordance with site administrative procedures.

F. Snubber Maintenance or Repair

Snubbers within the scope of this program shall not be subjected to maintenance or repair prior to examination and/or testing specifically for the purpose of meeting the examination and/or testing requirements. The preventative or corrective actions required by the PBAPS Quality Assurance Program shall supercede this requirement.

G. Post Maintenance Examination and Testing

Maintenance activities which can alter the snubber's intended function shall be evaluated by considering the effects of the maintenance on the snubber's ability to meet the examination and testing acceptance criteria. Snubbers which undergo maintenance activities which could alter the snubber's ability to perform its intended function shall be examined and tested in accordance with the applicable requirements of Section V of this appendix. The requirements selected shall ensure that the function(s) which may have been affected are verified by the examination or tests to be acceptable.

The site administrative procedures governing maintenance activities shall address these requirements.

H. Snubber Repair, Replacement, or Modification

All snubbers within the scope of this program shall be repaired, replaced or modified in accordance with ASME Section XI and site administrative procedures.

Repair activities which can alter the snubber's intended function shall be evaluated by considering the effects of the repair on the snubber's ability to meet the examination and testing acceptance criteria. Snubbers which undergo repair activities which could alter the snubber's ability to perform its intended function shall be examined and tested in accordance with the applicable requirements of Section V of this appendix.

Replacement or modified snubbers shall be visually examined in accordance with the requirements of Section V of this appendix.

Visual examinations or operability testing, as may be required above, shall be addressed in site administrative procedures governing ASME Section XI repair/replacement activities.

I. Deletion of Unacceptable Snubbers

When unacceptable snubbers are deleted (based on analysis of the affected piping system), the deleted snubber(s) shall, nevertheless, be considered in its respective failure mode group; and the effect of the corrective action taken, for the balance of the failure mode group, shall apply. For example, for the purposes of the applicable corrective action, the deletion of the snubber may be considered the same as replacement with a snubber qualified for the application.

J. Transient Dynamic Event

If a transient dynamic event occurs which may affect operability, the affected system(s) and associated snubbers shall be reviewed and any appropriate corrective action taken. Any corrective actions taken are independent of the examination and testing requirements of this program.

K. Supported Component(s)/System Evaluation

An engineering evaluation shall be performed of component(s) and/or system(s) on which an unacceptable snubber is installed for possible damage to the supported system and/or component.

V. SNUBBER EXAMINATION AND TESTING PROGRAM

Each snubber within the scope of this augmented program shall be demonstrated operable by performance of the program requirements as detailed in this Section.

Certain snubbers may be waived in part or totally from the requirements of this program (on a case-by-case basis), provided technical justification for the deviation be filed with regulatory authorities prior to implementation of the deviation.

A. Visual Examination

Visual examination for operational readiness is required for snubbers with the frequency of reexamination being determined by the number of unacceptable snubbers within a group and the corrective action taken.

Visual examination shall be performed to identify physical damage, leakage, corrosion, or degradation from environmental exposure or operating conditions. External features which may indicate operability of the snubber shall be examined. An examination checklist shall be prepared for this purpose.

The initial visual examinations performed in accordance with this augmented program shall be implemented during the first refueling outage following regulatory acceptance of this program.

1) Examination Documentation

The following documentation is necessary to support implementation and verification of the visual examinations:

a) Examination procedures and checklists verifying examination and as-found conditions.

b) Examination records.

c) Thermal movement inspection records.

d) Records of nonconformance and corrective actions that are required.

2) Snubber Categorization

Snubbers may be categorized and grouped as accessible and inaccessible; these groups may be considered separately for the purpose of visual examination. Determination of accessible/inaccessible snubber groups and plans for separate or joint application of program requirements by group shall be made and documented prior to initiating examinations for a given examination interval. Once determined, groups shall be used throughout the examination interval and shall not be changed.

3) Examination Sample Size

The initial and all subsequent visual examinations shall include all (100%) of the snubbers of all groups as may have been established in 2) above.

4) Examination Frequency

The initial inservice examination of all snubbers shall be started not less than two months after attaining 5% reactor power operation and shall be completed within 12 calendar months after attaining 5% reactor power operation. Subsequent examination intervals shall be as follows:

(a) The second inservice examination shall be conducted at the first refueling outage. No schedule change in accordance with Table B-5-1 is required.

(b) The third inservice examination shall be conducted at the second refueling outage.

(c) Subsequent examination intervals shall be in accordance with Table B-5-1.

5) Outage-Based Visual Examinations

Table B-5-1, Outage-Based Visual Examination Table, provides the permissible number of inoperable snubbers allowed, for various snubber populations or groups, to continue with the normal examination frequency schedule. In addition, Table B-5-1 details all corrective actions to be taken and provides examination frequency adjustments to be made, based on the number of unacceptable snubbers found during the visual examination.

TABLE B-5-1
REFUELING OUTAGE-BASED VISUAL EXAMINATION TABLE

Population or Group (Note 1)	NUMBER OF UNACCEPTABLE SNUBBERS		
	Column A For Extended Interval (Notes 2 and 3)	Column B Maximum for Same as Previous Interval (Notes 2 and 4)	Column C For Interval Reduction by 1/3 (Notes 2, 5, 6)
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
1000	29	56	109
1500	48	91	173

NOTE 1: Interpolation between population or group sizes and the number of unacceptable snubbers is permissible. Use the next lower integer found for the permissible number of unacceptable snubbers.

NOTE 2: The basic interval shall be the normal fuel cycle up to 24 months. The examination interval may be as great as twice the fuel cycle (note 3) or as small as 1/3 of the fuel cycle (notes 5(b) and 6). The maximum (previous interval) value used to determine the next examination interval shall be one normal fuel cycle. The examination intervals may vary by ± 25 percent to coincide with the actual outage.

NOTE 3: If the number of unacceptable snubbers is equal to or less than the value in column A, then the next examination interval may be increased to twice the past examination interval, i.e., the next exam according to the former interval may be skipped. When the former interval is the refueling cycle, the snubbers may be examined only every other refueling cycle interval so long as the results of the visual examination meet the requirements of column A. The snubbers that are installed at locations where the snubbers were unacceptable at the previous examination shall be examined during the skipped refueling outage.

NOTE 4: If the number of unacceptable snubbers exceeds the value in column A, but is equal to or less than the number in column B, then the next visual examination shall be conducted at the same interval as the immediately preceding interval. When the former interval is the refueling cycle the next interval is the current refueling cycle.

NOTE 5: If the number of unacceptable snubbers exceeds the number in column B, but is equal to or less than the value in column C, then one of the following shall apply:

(a) A review and evaluation to justify continued use of the snubbers shall be performed. The previous examination interval may then be used. When the former interval is the refueling cycle the next interval is the current refueling cycle, OR

(b) The next examination interval shall be decreased by one-third of the previous examination interval or, in accordance with the interpolation between columns B and C, in proportion to the exact number of unacceptable snubbers.

NOTE 6: If the number of unacceptable snubbers exceeds the value in column C, then the corrective actions and justifications of Note 5a shall be performed and the examination interval shall be decreased to one-third of the previous interval.

6) Visual Examination Acceptance Criteria

Visual examinations shall verify conformance of the snubber installation to the following requirements:

a) Must Restrain Movement.

Snubbers shall be installed such that when activated, piping/component movement is restrained. Visual observation of loose fasteners, corroded or deformed members, or detection of disconnected components or other conditions that might interfere with the proper restraint of movement requires evaluation. Snubbers which are determined to be incapable of restraining movement shall be considered unacceptable.

b) Must Permit Thermal Movement.

Snubbers shall be installed in such condition that thermal movement of the piping/component is not restricted to the extent that unacceptable overstressing could develop. Observed binding, misalignment, and/or deformation may be indicative of such a situation, and shall be evaluated. Snubber installations determined to excessively restrict piping/component thermal movement shall be considered unacceptable.

c) Design-Specific Observations.

Snubbers shall be free of defects that may be generic to particular designs, as may be detected by visual examination. Visual examination anomalies which indicate potential impaired operability of the snubber(s) may be resolved by operability testing in accordance with the Section V, Paragraph A.7 of this appendix.

7) Operability Test Evaluation

Any snubber(s) found to be unacceptable as a result of visual examination may be operability tested in accordance with the requirements of Section V, Paragraph B. of this appendix. Results may be used to evaluate the snubber as acceptable, provided that testing can show the unacceptable condition did not affect operability.

B. Operability Testing

Operability testing for operational readiness is required to be performed on representative samples of snubbers, based on the sampling plans provided herein. The number of snubbers to be tested is determined by the sampling plan chosen and the corrective actions prescribed by that sampling plan. Additional samples taken, based on the number of unacceptable snubbers found, is also determined by the specific sampling plan chosen.

Testing, as required by this augmented program, shall be implemented during the first refueling outage following regulatory acceptance of this program.

1) Testing Documentation

The following documentation is necessary to support implementation and verification of operability testing:

a) Operability testing procedures.

b) Previous test records.

c) Nonconformance results, evaluations, and corrective actions.

d) Defined test plan grouping.

2) Operability Testing Requirements

The following general requirements apply to all operability testing performed:

a) Operability testing loads

Snubbers shall be tested at a load sufficient to verify the operating parameters specified in Section V, Paragraph B.5, of this appendix. Testing at less than rated load must be correlated to operability parameters at rated load.

b) Test correction factors

Differences may exist between the installed operating conditions and the conditions under which a snubber is tested. In such cases, correction factors shall be established and test results shall be correlated to operating conditions as appropriate.

c) Test-as-found.

Operability testing should be performed on snubbers in their "as-found" condition, to the fullest extent practical, for all snubber parameters to be tested.

d) Test restrictions.

Testing methods utilized shall not alter the condition of the snubber such that the test results no longer represent snubber pararneters prior to testing.

e) In situ testing.

Where desirable, in situ operability testing (i.e., testing with the snubber installed in its permanent location) may be utilized provided test methods and equipment have been approved by PECO Energy.

f) Bench testing.

Operability testing may be performed by removal of the snubber and bench testing, provided test methods and equipment have been approved by PECO Energy. Following reinstallation of the snubber, a visual examination in accordance with the applicable requirements of Section V, Paragraph A of this appendix, shall be performed.

g) Subcomponent testing.

Where snubber physical size, test equipment limitations, or snubber inaccessibility prevent the use of either in situ testing or bench testing, the snubber subcomponents shall be tested and reassembled in accordance with PECO Energy approved procedures.

h) Correlation of indirect measurements.

Testing methods may be used which measure parameters indirectly or parameters other than those specified, if those results can be correlated to the specified parameters, through established methods.

i) Parallel and multiple installations.

The snubbers of parallel and/or multiple installations shall be identified and counted individually.

j) Fractional sample sizes

All fractional sample sizes shall be rounded up to the next integer.

3) Qualitative Testing.

Qualitative testing may be used in lieu of quantitative measurements in meeting the operability test acceptance criteria of this document, following review and approval of this method, by regulatory authorities. Sufficient data, based upon service history or life cycle testing, shall be obtained to demonstrate the ability of the parameter in question to be within specification over the life of the snubber (e.g. demonstration that activation takes place without measurement of the activation level). A test report shall be prepared for each snubber exempted from quantitative operability testing requirements. The test report shall verify the parameter was within specifications to allow exemption of the snubber from quantitative testing of the parameter.

4) Operability Testing Acceptance Criteria

Operability testing shall verify conformance to the following requirements:

a) The force that will initiate motion (breakaway force), the force that will maintain low velocity (drag force), or both, as required by the test procedure, are within specified limits, both in tension and in compression.

b) Activation is within the specified range of time, velocity, or acceleration in both tension and compression.

c) Release rate, where applicable, is within the specified range in tension and compression. For units specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be demonstrated.

5) Operability Testing Failure Evaluation

Snubbers that do not meet the operability testing acceptance criteria for quantitative testing or qualitative testing shall be evaluated to determine the cause of failure, using test failure mode groups.

a) Test failure mode groups

Unacceptable snubber(s) shall be categorized into test failure mode group(s). Test failure mode group(s) shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode. The following failure modes shall be used:

1) Design, manufacturing
2) Application induced.
3) Maintenance, repair, installation.
4) Isolated.
5) Unexplained.

b) Test failure mode group boundaries

Once a test failure mode group has been established, any snubber(s) in that test failure mode group will not be part of the defined test plan groups from which the snubber(s) originated except as noted in (c) below. The new test failure mode group will remain as defined until corrective action has been completed.

Note that for the 37 testing sample plan, established failure mode groups once separated from the defined test plan group(s), are referred to as "independent" test failure mode groups.

c) Snubbers in more than one test failure mode group

In the event that a snubber(s) becomes included in more than one test failure mode group, it shall be counted in each failure mode group in which it is unacceptable and shall be subject to the corrective action of each test failure mode group.

d) Additional failure mode group review

Once the operability test requirements are satisfied for a given defined test plan group, then any additional failure mode group review or testing shall not require any subsequent testing on the defined test plan group.

6) Defined Test Plan Groups.

Defined test plan groups shall be determined prior to initiating testing. These groups shall encompass all snubbers and shall be based on similarities of design or application. That is, snubbers may be grouped by size, type, design, application, or other means as determined by engineering evaluation.

7) Operability Testing Interval

Testing in accordance with the selected sampling plan shall be performed each refueling outage for each defined test plan group.

8) Operability Testing Sampling Plan Selection.

Testing shall be conducted for each defined test plan group using one of the following sampling plans:

a) 10 percent testing sample plan
b) 37 testing sample plan

The plan to be used for each defined testing plan group of snubbers shall be selected before testing begins for the test interval. Once selected, the plan shall be used throughout the test interval for that defined test plan group and any failure mode group that is determined from the original defined test plan group.

9) Operability Testing Corrective Action and Continued Testing

Snubbers that do not meet the operability testing acceptance criteria for quantitative testing or qualitative testing shall be subject to corrective action(s), with its indicated impact on continued testing. Selection of the corrective action shall be governed by the sampling plan which is used. Any maintenance, repairs, replacements or modifications shall meet the requirements of this program.

10) The 10 Percent Testing Sample Plan

When the 10 percent testing sample plan is chosen for a defined test group, the following criteria shall apply:

a) Initial test sample lot size and composition for a test interval.

For the first sample lot tested, a representative/random sample of 10 percent of the snubbers in the defined test plan group shall be selected. As far as practical, the sample selected shall include the various designs, configurations, operating environments, range of sizes, capacity of snubbers, etc. The first sample lots tested shall be a composite based on the ratio of each particular category to the total number of snubbers in the defined test plan group. Sample lot selection from the representative categories of snubbers shall be random.

b) Additional test(s) lot size in the same test interval.

For any snubber(s) determined to be unacceptable as a result of testing, an additional sample of at least 1/2 the size of the initial sample lot shall be tested until the total number tested is equal to the initial sample size multiplied by the factor, 1 + C/2, where C is the total number of snubbers found to be unacceptable; or all snubbers in the failure mode group have been tested. (The testing of additional samples by this criteria is also required for snubbers determined to be unacceptable in any additional test lot.)

c) Additional test lots composition in the same test interval.

As far as is practical, the additional samples shall include:

(1) Snubbers of the same manufacturer's design.

(2) Snubbers immediately adjacent to those found unacceptable.

(3) Snubbers from the same piping system.

(4) Snubbers from other piping systems that have similar operating conditions such as temperature, humidity, vibration, and radiation.

(5) Snubbers which are previously untested.

d) Subsequent test interval population selection.

For subsequent refueling outages, each representative sample shall be selected in accordance with a), b), and c) above, from the total population of the defined test plan group.

e) Sample plan corrective action.

The 10 percent sample plan corrective actions are dependent upon the assigned failure mode group as follows:

Design, manufacturing, maintenance, repair, installation and application induced test failure modes

1) All snubbers in a test failure mode group shall be replaced or modified in accordance with Section IV, Paragraph H of this document, and categorized as acceptable.

OR

2) The unacceptable snubbers in the test failure mode group shall be replaced, or repaired to the original qualified condition. The number of unacceptable snubbers shall determine the additional test lots of Section V, Paragraph B.10.b.

OR

3) The unacceptable snubbers in an application induced test failure mode group shall be replaced or repaired to an acceptable condition. All snubbers in this group shall be categorized as acceptable provided the environment or applications are compatible with the design parameters.

Isolated test failure mode

The unacceptable snubbers in this test failure mode group shall be replaced or repaired in accordance with Section IV, Paragraph H of this appendix and categorized as acceptable.

Unexplained test failure mode

The unacceptable snubbers in this test failure mode group shall be replaced or repaired in accordance with Section IV, Paragraph H of this appendix. The number of unacceptable snubber(s) shall determine the additional testing lots in accordance with Section V, Paragraph B.10.B.

13) The 37 Testing Sample Plan

When the 37 testing sample plan is chosen for a defined test group, the following criteria shall apply:

a) Initial sample size and composition.

The initial sample shall consist of 37 snubbers selected randomly for each defined test group which utilizes the 37 testing sample plan.

b) Additional defined test plan group testing

For any snubber(s) determined to be unacceptable as a result of testing, additional samples shall be selected such that the following test plan equation is satisfied (Figure B-5-2):

$$N \geq 36.49 + 18.18\,C \quad \text{where}$$

N = Total number of snubbers tested which were selected from the defined test plan group

and

C = Total number of unacceptable snubbers found in the defined test plan group (excluding those in independent test failure mode groups) plus one for each independent test failure mode group.

Additional samples shall be selected in a random manner from the remaining population of the defined test plan group. Snubbers in test failure mode groups shall be separated and should not be included in the additional sample(s).

c) Independent failure mode group testing

Once a test failure mode group has been established, it shall be separated for continued testing apart from the defined test plan group. It is then identified as an independent test failure mode group.

For an independent test failure mode group, the number of unacceptable snubbers which define the test failure mode group shall determine the additional testing in the test failure mode group in accordance with the following equation (Figure B-5-2):

$$N \geq 36.49 + 18.18\,C \quad \text{where}$$

N = Initial defined test plan lot of 37 tested plus all those selected and tested from the independent test failure mode group.

and

C = Total number of unacceptable snubbers in the independent test failure mode group.

In addition, the following criteria shall apply to additional testing in an independent test failure mode group:

1) Snubbers are selected in a random manner from the independent test failure mode group.

2) Any additional unacceptable snubbers found in the independent test failure mode group shall be counted for continued testing only for that independent test failure mode group.

3) Testing completion is in accordance with the above equation in c) above.

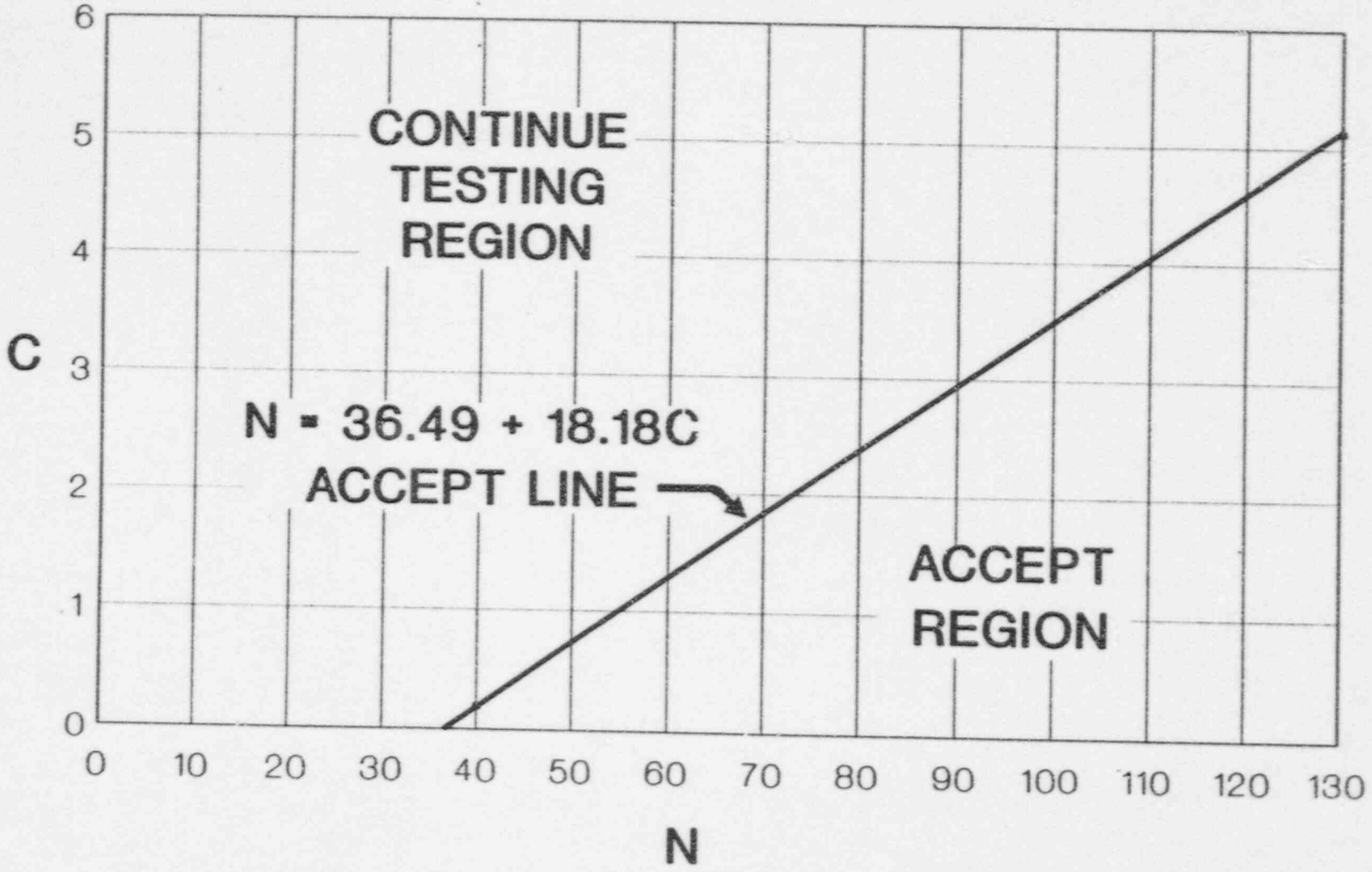
d) The 37 testing sample plan corrective action

The following corrective action shall apply:

1) All unacceptable snubbers in the defined test plan group shall be replaced or repaired in accordance with Section IV, Paragraph H of this appendix to the original qualified condition. These unacceptable snubbers shall remain categorized as unacceptable for the purpose of additional testing per the 37 testing sample plan, Section V.B.13.b of this appendix.

2) The unacceptable snubber(s) in a test failure mode group shall be replaced or repaired in accordance with Section IV, Paragraph H of this appendix to the original qualified condition. These unacceptable snubbers shall be used in determining the requirements for additional testing per the 37 testing sample plan, Section V.B.13.c of this appendix.

FIGURE B-5-2
THE 37 TESTING SAMPLE PLAN



VI. SERVICE LIFE MONITORING

The service life of all snubbers shall be monitored to ensure that the service life is not exceeded between augmented examination/testing intervals.
The maximum expected service life for various seals, springs, and other critical parts shall be extended of shortened based on monitored test results and failure history. Critical parts shall be replaced so that the maximum service life will not be exceeded during a period when the snubber is required to be operable. Replacements shall meet the requirements of Section IV, Paragraph H of this appendix.

VII. REPORTS/RECORDS

All reports/records associated with the examinations/testing of this augmented program shall be prepared/maintained in accordance with ASME Section XI and site administrative procedures.

Records of service life monitoring shall be maintained in accordance with PBAPS Technical Specification record retention requirements.

Summary reports detailing the results of examinations/testing as required by this augmented examination program shall be included in the ISI Summary Report.

AUGMENTED INSPECTION PROGRAM - 6: SIL No. 409, Incore Dry Tube Cracks

I. SCOPE

This augmented inspection program (AUG-6) defines the specific examination requirements of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 409, as applicable to PBAPS 2 & 3. This SIL provides information/ recommendations relative to cracks found in BWR Intermediate Range Monitor (IRM) and Source Range Monitor (SRM) instrumentation dry tubes.

Examination requirements, as detailed in this document, are exclusive of any ASME Section XI Inservice Inspection requirements for the identified components within the scope of this document.

II. REFERENCE

A. GE SIL No. 409, Incore Dry Tube Cracks, Revision 1, Category 2, July 31, 1986.

B. MEMO R. W. Gropp to File, dated 12/6/88; NRC Bulletin No. 88-09, "Thimble Tube Thinning in Westinghouse Reactors."

III. GENERAL

Examinations of IRM/SRM dry tubes at several BWRs have resulted in cracking and/or crack indications observed in a number of IRM/SRM instrumentation dry tubes. All of the observed cracks are within the top two (2) feet of the dry tube assembly, primarily in the perforated tube adjacent to either the weld between the tube and the guide plug or the weld between the tube and the primary pressure boundary.

The cracking is considered to be caused by a combination of crevice corrosion cracking and irradiation assisted stress corrosion cracking (IASCC), while crack initiation time is strongly dependent on BWR water chemistry (i.e. water conductivity).

The PBAPS 2 & 3 IRM/SRM instrumentation dry tubes are the original BWR/2-6 design and as such are susceptible to the cracking described. Crack initiation time and growth rate for the PBAPS 2 & 3 configuration is dependant on time in use, water quality, and loading variations (e.g., flow induced vibration, bumping during fuel movements).

IV. EXAMINATION PROGRAM

There are four (4) SRM and eight (8) IRM dry tube assemblies in each PBAPS 2 & 3 reactor pressure vessel. Visual examination (VT-1) of the top two (2) feet of these dry tubes is recommended in accordance with Table B-6-1.

V. EXAMINATION RESULTS

Visual examination results shall be documented/dispositioned in accordance with ASME Section XI.

VI. REPORTS/RECORDS

All reports/records associated with the examinations of this augmented program shall be prepared/maintained in accordance with ASME Section XI and plant procedures.

TABLE B-6-1
INCORE DRY TUBE
RECOMMENDED INSPECTION PROGRAM

	Water Conductivity	
	Meets EPRI Guidelines[1]	Does Not Meet EPRI Guidelines[1]
PBAPS 2 & 3 SRM/IRM Dry Tubes	4/2[2,3]	2/1[2,3]

1. EPRI water conductivity guidelines appear in EPRI NP 3589 SR LD for the cumulative service of dry tubes.

2. X/Y - Visual examination should be performed during the "Xth" refueling outage after dry tube installation. Subsequent visual examinations should be performed when accessible.

3. The SRM/IRM dry tubes are located between the Top Guide and Core Plate and are not accessible during a normal refueling outage. Removal of an adjacent fuel cell is required to provide access for remote visual examination.

AUGMENTED INSPECTION PROGRAM - 7: SIL No. 474 Steam Dryer Drain Channel Cracking

I. SCOPE

This augmented inspection program (AUG-7) defines the specific examination recommendations of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 474, as applicable to PBAPS 2 & 3. This SIL reports the occurrence of cracking in the drain channel to steam dryer skirt attachment welds and the related GE examination recommendations.

II. REFERENCES

A. GE SIL No. 474, Steam Dryer Drain Channel Cracking, October 26, 1988.

III. GENERAL

The PBAPS 2 & 3 steam dryers are not safety related components; their function is to improve the quality of the steam before it leaves the reactor vessel. The steam dryer drain channels channel water runoff from the dryer back into the reactor pressure vessel. Cracking has been discovered at several BWR/4, 5 and 6 plants in the drain channel to dryer skirt attachment welds, both the horizontal and vertical welds. GE analysis indicates that crack initiation was due to high cycle fatigue.

The subject cracking is not a safety concern; however, if extreme cracking would occur, steam quality would become severly degraded and could potentially damage balance of plant components. Failed drain channels could result in loose parts and potentially damage RPV internal components. As such, augmented examination is recommended to ensure steam dryer reliability.

IV. EXAMINATION REQUIREMENTS

Visual (VT-1) examination of the PBAPS 2 & 3 steam dryer drain channel attachment welds is recommended every refueling outage.

V. EXAMINATION RESULTS

Examination results generated from this augmented inspection program shall be recorded and evaluated in accordance with applicable plant procedures.

Any cracking detected shall be evaluated for repair to preclude any further crack growth.

VI. REPORTS/RECORDS

All reports/records associated with the examinations of this augmented program shall be prepared/maintained in accordance with ASME Section XI and plant procedures.

AUGMENTED INSPECTION PROGRAM - 8: SIL No. 462 Shroud Support Access Hole Cover Cracks

I. SCOPE

This augmented inspection program (AUG-8) defines the specific examination recommendations of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 462, as applicable to PBAPS 2, and 3. This SIL addresses the intergranular stress corrosion cracking (IGSCC) of the shroud support access hole covers and the GE recommended actions regarding susceptibility/routine examination.

II. REFERENCES

A. GE SIL No. 462, Shroud Support Access hole Cover Cracks, Supplement 3.

III. GENERAL

There are two (2) access holes in the shroud support plate which are utilized for access to the lower plenum during construction and are subsequently closed by welded access hole covers. As reported in SIL No. 462, cracking in the access hole cover plate attachment weld has been detected in a BWR/4. The cracking occurred in the heat affected zone of the creviced alloy 600 access hole cover plate and is attributed to crevice accelerated IGSCC.

While the PBAPS 3 access hole covers were cut out and replaced with bolted in covers, PBAPS 2 retains the original, welded design, access hole covers. The modification of the Unit 3 covers was the result of circumferential cracking which was discovered in the heat affected zone of the weld.The UT examination that detected the circumferential cracking was not sensitive for detection of radial cracking which has also been found in these welds. Because the tooling to ultrasonically examine these areas for the purpose of detecting radial cracking has not been developed, an alternative method of examination will be used to detect such cracking. Therefore augmented examinations are recommended for both PBAPS units.

IV. EXAMINATION REQUIREMENTS

PBAPS 2 configuration-
Beginning with the ninth refueling outage (2RO9), a visual VT-1 examination will be performed on each of the two covers. This examination will concentrate on the weld which attaches the cover to the shroud support. The examination will be conducted to detect either circumferential or radial cracking around these welds. These VT-1 examinations will be repeated every other refueling outage until UT tooling is available to be used to examine for radial cracking.
Beginning with the tenth refueling outage (2RO10), a UT examination will be conducted on the weld which attaches each of the access hole covers to the shroud support. This UT examination will be conducted to detect circumferential cracking in the welds. When appropriate tooling is available, this UT examination can be expanded to detect radial cracking as well as the circumferential cracking.

PBAPS 3 configuration-
Since the Unit 3 covers have been replaced with bolted designs, UT examination of the welds is impractical without removing the bolted cover. Additionally, UT examination is not as imperative since the modified design yields reduced residual stresses in this area. Since radial cracking could still be concern, a visual(VT-1) examination will be performed during the ninth refueling outage (3RO9), to extent practical. This examination will be conducted around the perimeter of the bolted hatch cover, with close scrutiny in the areas where the shroud support is welded to the shroud cylinder and the vessel wall. This examination may be repeated every other refueling, as determined by the station.

Note that both access hole covers have been included for routine visual (VT-3) examination in accordance with the ISI program for Code Examination Category B-N-1. This AUG-8 program involves additional requirements to those of the ISI Program.

If cracking is detected visually, a remote UT examination for defect characterization and sizing will be performed.

In summary, an Ultrasonic Examination (UT) of the Unit 2 access hole covers will be performed every other outage beginning with the tenth refueling outage (2R10). Visual VT-1 examinations will be performed every other outage, beginning with the ninth refueling outage (2RO9). This will result in inspections each outage by alternating techniques (i.e. visual (VT) and ultrasonic (UT)). A visual VT-1 examination will be conducted on the Unit 3 access hole covers during the ninth refueling outage (3RO9).

Review of plant water chemistry and/or the incidence of IGSCC in other RPV internal components may necessitate a revised frequency of this examination.

V. EXAMINATION RESULTS

Examination results generated from this augmented inspection program shall be recorded and evaluated in accordance with applicable plant procedures.

VI. REPORTS/RECORDS

All reports/records associated with the examinations of this augmented program shall be prepared/maintained in accordance with ASME Section XI and plant procedures.

AUGMENTED INSPECTION PROGRAM - 9: Examination of the Reactor Pressure Vessel Core Shroud Welds

I. SCOPE

This augmented inspection program (AUG-9) defines the examinations applicable to PBAPS 2 & 3 Core Shroud. This program is based on the Boiling Water Reactor and Vessel Internals Project (BWR-ViP) recommendations contained in the "BWR Core Shroud Inspection and Flaw Evaluation Guidelines". This BWR-VIP document addresses the occurrence of cracking in the Reactor Pressure Vessel core support shroud welds, and recommends actions for detection and evaluation of such cracking.

Examination requirements, as detailed in this document, are exclusive of those ASME Section XI Inservice Inspection requirements for the subject areas.

II. REFERENCES

A. NRC Information Notice 93-79, Core Shroud Cracking at Beltline Region Welds in Boiling Water Reactors.

B. NRC Generic Letter 94-03, Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors, dated 7/25/94.

C. BWR-VIP Guidelines - BWR Core Shroud Inspection and Flaw Evaluation Guidelines, (G E Nuclear Energy Document, GE-NE-523-113-0894, Rev. 1, Dated April 21, 1995).

D. BWR-VIP Core Shroud NDE Uncertainty & Procedure Standard, dated November 21, 1994.

E. Evaluation and Screening Criteria for the Peach Bottom Unit-3 Shroud Indications, GENE-523-141-1093. Rev. 1, dated 12/03/93.

F. Evaluation and Screening Criteria for the Peach Bottom Unit-2 Shroud, GENE-523-176-1293, dated 12/13/93.

G. NCR PB-93-00743, Rev. 1, Unit 3 core shroud indications, 3R09.

H. NCR PB-94-00374, Rev. 0, Unit 2 core shroud indications, 2R10.

J. Screening Criteria and Flaw Evaluation Methodology for the Peach Bottom Unit-3 Shroud, GENE-523-A076-0895, dated August 1995.

III. GENERAL

Due to the frequency of occurrence, and the unpredictability of expecting cracking location, the NRC issued Generic Letter 94-03 (Reference B). Through this GL, the NRC is seeking expanded shroud weld examinations. The extent of examinations and the scheduling of initial examinations is dependant on the susceptibility of a plant's shroud welds. The factors contributing to susceptibility are identified in Reference C, along with recommendations for extent of examinations. This document was developed under the direction of the Boiling Water Reactor Vessel and Internals Project. Together, these two basis documents form the source of

this Augmented Inspection Program, and have superseded the recommendations of GE Service Information Letter No. 572.

The PBAPS 2 & 3 Core Shroud assemblies were fabricated by the Rotterdam Drydock Co. LTD., Rotterdam, Holland. Figure 9.1 illustrates the general configuration of the shroud, as well as weld locations within the shroud assembly. Because of the materials of fabrication, and the extent and nature of hot operating service these shrouds have experienced, the susceptibility to shroud weld cracking is fairly high. Accordingly, recommendations for comprehensive examination of all horizontal shroud welds are applicable.

Shroud weld examinations may be conducted using Enhanced visual examination techniques or Ultrasonic testing (UT) techniques. Additional examination techniques are currently being pursued. Currently, UT is the preferred technique.

IV. EXAMINATION PROGRAM

For plants with high carbon Type 304 stainless steel shrouds with six (6) years or more of power operation and low early life water quality, the VIP recommends examination of the accessible areas of the Heat Affected Zone of all horizontal seam welds. (The PBAPS 2 & 3 shrouds are fabricated from high carbon content plate and low carbon content forged rings, see Figure 9.1). Reexamination schedules are dependent on the extent of initial examinations completed per weld, as well as the results of these examinations.

PBAPS Unit 3 performed initial Shroud examinations during Refueling Outage (3R09) in 10/93. The examinations utilized the Enhanced VT-1 technique, and included the entire ID length of the H-3 and H-4 welds; along with portions of welds H-1, H-2, H-3, H-5, H-6, and H-7 from the OD. These examinations resulted in indications observed adjacent to the H3 and H4 welds. Accordingly, Shroud examinations will again be performed at the next refueling outage of PBAPS 3 (3R10), utilizing similar techniques as performed during the refueling outage 2R10, as described below. Results of 3R10 shroud examinations will be evaluated utilizing Reference J.

PBAPS Unit 2 performed initial Shroud examinations during Refueling Outage (2R10) in 10/94. These examinations utilized the UT examination technique, and included comprehensive (i.e. all accessible length) examinations of welds H-2, H-3, H-4, and H-5. Welds H-1, H-6, and H-7 received UT examination of portions of the weld length due to access limitations. These examinations identified some indications at a number of the shroud welds. These indications were evaluated and disposition per Reference F. Reexamination of welds H-1, H-6, and H-7, which had limited initial examinations, will be conducted during the next refueling outage. The remaining shroud welds will be reexamined at the second refueling outage following initial examinations.

V. EXAMINATION RESULTS

All as found indications shall be evaluated in accordance with Reference C and ASME Section XI.

All indications detected using the enhanced VT-1 technique shall be considered through-wall indications for initial evaluation purposes.

VI. REPORTS/RECORDS

Reporting and record-keeping shall be in conjunction with the ASME Section XI Program requirements.

REACTOR PRESSURE VESSEL - SHROUD
PEACH BOTTOM ATOMIC POWER STATION
UNIT 2 & 3

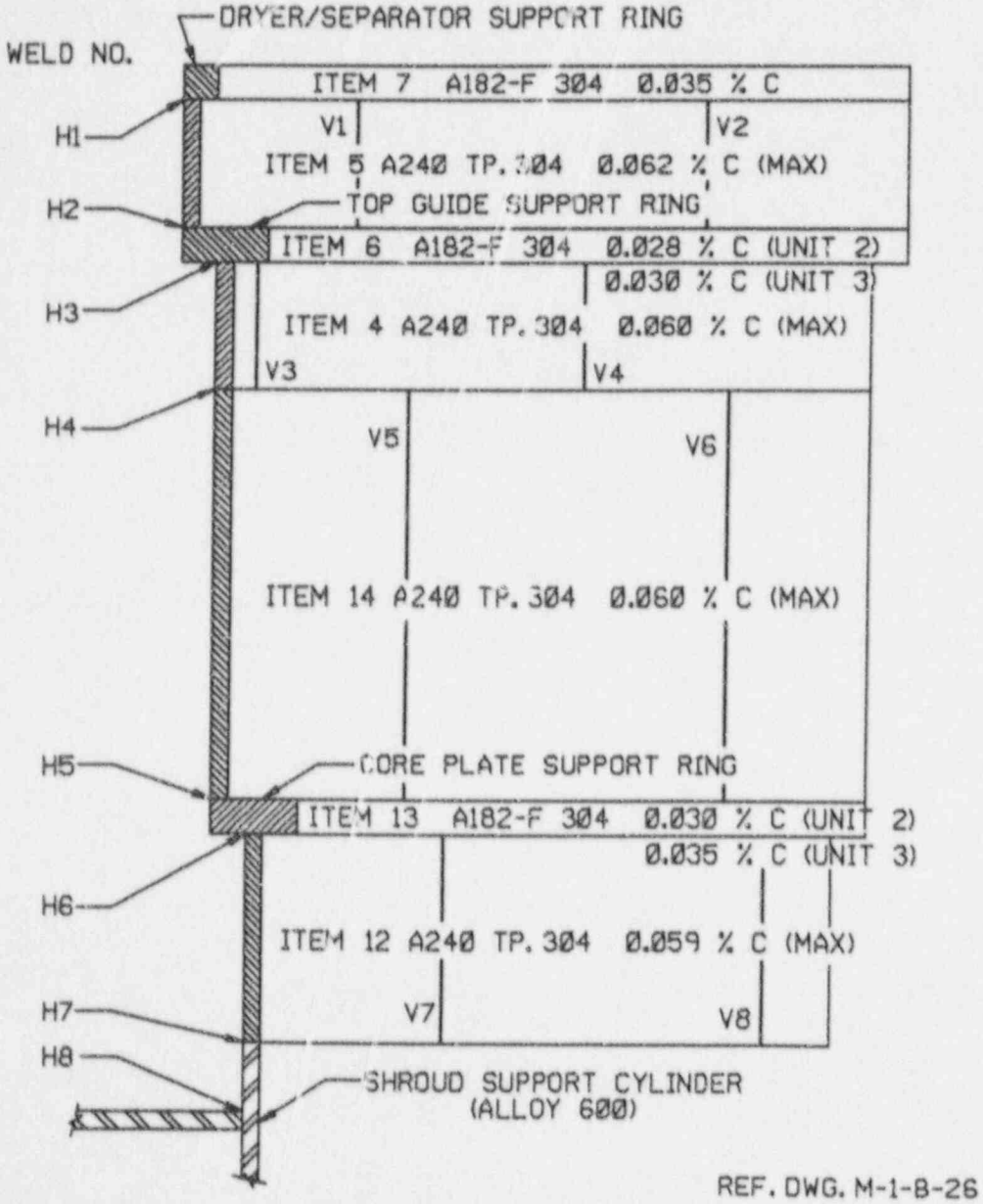


Figure 9.1

AUGMENTED INSPECTION PROGRAM - 10: SIL No. 554, Top Guide Cracking
SIL No. 588, Rev. 1, Top Guide and Core Plate Cracking

I. SCOPE

This augmented inspection program (AUG-10) defines the specific examination recommendations of General Electric Company (GE) Nuclear Services Information Letters (SILs) No. 554 and 588, Rev. 1, as applicable to PBAPS 2 & 3. These SILs address Top Guide and Core Plate cracking and the GE recommended actions regarding susceptibility/routine examination.

II. REFERENCES

A. GE SIL No. 554, Top Guide Cracking, April 6, 1993.

B. GE RICSIL No. 059, Top Guide Crack Indications, May 31, 1991.

C. GE SIL No. 588, Rev. 1, Top Guide and Core Plate Cracking, May, 18, 1995.

III. GENERAL

Cracking has been identified in the Top Guide beams of a GE BWR/2 reactor. As a result, General Electric Co. issued both RICSIL No. 059 and SIL No. 554. These Information Letters recommend examination of the Top Guide "egg crate" beams, if the fluence level at the Top Guide is above $1x10^{21}$ neutrons per square centimeter. Invessel Visual Inspections (IVVI) are recommended for grid locations which are accessible due to fuel and blade guide removal.

Cracking has also been identified in the Top Guide and Core Plate rim welds in a non-GE BWR, located outside the United States. As a result, GE issued SIL 588 on February 17, 1995, and later revised this SIL on May 18, 1995. This SIL recommends visual examinations of a sample of the Top Guide and Core Plate hold down devices, during one of the next two refueling outages, for plants without Top Guide and Core Plate wedges. Since the PBAPS, Unit 2 & 3 core structures do not incorporate wedges at the Top Guide or Core Plate, the recommended examinations are applicable.

IV. EXAMINATION PROGRAM

SIL 554 recommended Visual examinations have been performed at PBAPS 2 & 3, starting with the PBAPS 3 Ninth Refueling Outage (3R09) and PBAPS 2 Tenth Refueling Outage (2R10). Visual examinations should be performed on a sampling of grid locations where fuel and blade guides have been removed. The video camera should be positioned below the beams and aimed up toward the bottom of the beams. If cracking is detected visually, an increased sampling of examinations should be performed.

SIL 588 recommended Visual examinations will be implemented beginning with the PBAPS, Unit 3 Tenth Refueling Outage (3R10), and the PBAPS, Unit 2 Eleventh Refueling Outage (2R11). These examinations will include Visual (VT-3) examinations of the Top Guide "Aligners", and a sample of the Core Plate "Hold Down Bolt"- locking devices. The extent of the examinations of the Top Guide Aligners will be sufficient to assure integrity of the devices to transfer loads from the Top Guide to the Shroud. The extent of examination of the Core Plate hold down bolts will include verification that the bolt locking devices are in place.

PBAPS, Unit 2 & 3 has four (4) aligners which engage the Top Guide to the top guide support ring of the shroud, and 34 Core Plate Hold Down Bolts. These components are tabulated on the Augmented Inspection Program 10 Tables, (AUG-10 Tables). All four Top Guide Aligners will be examined within the next two refueling outages. Examinations beyond the next two refueling outages will include one (1) aligner examination every other refueling outage. Examinations of the Core Plate Hold Down Bolt Retainers will be performed on a sample basis. The examinations will be performed on a sample of the fuel cell locations where fuel and blade guides have been removed. The examinations will be scheduled each refueling outage.

V. EXAMINATION RESULTS

Examination results generated from this augmented inspection program shall be recorded and evaluated in accordance with applicable plant procedures.

VI. REPORTS/RECORDS

All reports/records associated with the examinations of this augmented program shall be prepared and maintained in accordance with ASME Section XI and plant procedures.

APPENDIX C - TABLE OF CONTENTS
REFERENCE DRAWINGS

ASME Section XI ISI Boundary Drawings

Drawing Number(Sheet(s))	Title
ISI-303 (1,3)	Main Steam, Bypass & Crossaround
ISI-304 (1,2)	Turbine & Extraction Steam
ISI-308 (1,2,3,4)	Feedwater & Feed Pumps (Sheet 1, 3 Augmented only)
ISI-309 (1,2)	Condensate Storage (Augmented only)
ISI-315 (1,2,3,4,5)	Emergency Service Water and High Pressure Service Water
ISI-330 (1)	Emergency Cooling System
ISI-331 (1,3)	Off-Gas Recombiner System
ISI-351 (1,2,3,4)	Nuclear Boiler
ISI-352 (1,2,3,4)	Nuclear Boiler Vessel Instrumentation
ISI-353 (1,2,3,4)	Reactor Recirculation Pump System
ISI-354 (1,2)	Reactor Water Clean-Up System
ISI-356 (1,2)	CRD Hydraulic System - Part A
ISI-357 (1,2)	CRD Hydraulic System - Part B
ISI-358 (1,2)	Standby Liquid Control System
ISI-359 (1,2)	Reactor Core Isolation Cooling System
ISI-360 (1,2)	RCIC Pump Turbine Details
ISI-361 (1,2,3,4)	Residual Heat Removal System
ISI-362 (1,2)	Core Spray Cooling System
ISI-363 (1,2)	Fuel Pool Cooling and Cleanup System
ISI-365 (1,2)	High Pressure Coolant Injection System
ISI-366 (1,4)	HPCI Pump Turbine Details
ISI-367 (1,2)	Containment Atmospheric Control System
ISI-372 (1,2)	Containment Atmosphere Dilution System

ASME Section XI Isometric & Component Drawings
PBAPS Unit 2 & Common

System	Isometric Drawing	Component Drawing
Core Spray	DCN-14-MI-203-5-A	
	DCN-14-MI-203-5-B	
	GB-14-MI-202-2-A	
	GB-14-MI-202-2-B	
	GB-14-MI-202-2-C	
	GB-14-MI-202-2-D	
	GB-14-MI-203-3-A	
	GB-14-MI-203-3-B	
	GB-14-MI-203-4-A	
	GB-14-MI-203-4-B	
	HB-14-MI-201-1-A	
	HB-14-MI-201-1-B	
	HB-14-MI-201-1-C	
	HB-14-MI-201-1-D	
	HC-27-MI-201-1 (AUG. R&R)	
Emergency Cooling Water (Unit 2, 3 and Common)	GB-48-MI-001-2	
	GB-48-MI-001-3	
	HB-48-MI-001-1	
	HB-48-MI-001-3	
	HB-48-MI-001-4	
	HB-48-MI-001-5	
Emergency Service Water	HB-33-MI-201-1	
	HB-33-MI-201-2	
	HB-33-MI-201-3	
	HB-33-MI-201-4	
	HB-33-MI-201-5	
	HB-33-MI-201-6	
	HB-33-MI-201-7	
	HB-33-MI-201-8	
	HB-33-MI-201-9	
	HB-33-MI-201-10	
	HB-33-MI-201-12	
	HBC-33-MI-201-13	
	HBC-33-MI-201-14	
	HBC-33-MI-201-15	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 2 & Common

System	Isometric Drawing	Component Drawing
ESW (Cont)	HBC-33-MI-201-16 HBC-33-MI-201-17 HBC-33-MI-201-18 HBC-33-MI-201-19 HBC-33-MI-201-20 HBC-33-MI-201-21 HBC-33-MI-201-22 HBC-33-MI-201-23 HBC-33-MI-201-24 HBC-33-MI-201-25 HBC-33-MI-201-26 HBC-33-MI-201-27 HBC-33-MI-201-28 HBC-33-MI-201-29 HBC-33-MI-201-30 HBC-33-MI-201-31 HBC-33-MI-201-32	
Feedwater	DDN-06-MI-201-2-A DDN-06-MI-201-2-B DD-06-MI-201-1 (AUG. R&R)	
High Pressure Coolant Injection	DBN-23-MI-203-6 DBN-23-MI-203-7 DDN-23-MI-202-2 DDN-23-MI-202-3 DDN-23-MI-202-4 DDN-23-MI-202-5 HB-23-MI-201-1 (CL. 2 & AUG. R&R) HB-23-MI-204-8	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 2 & Common

System	Isometric Drawing	Component Drawing
High Pressure Service Water	GB-32-MI-201-1	
	GB-32-MI-201-2	
	GB-32-MI-201-3	
	GB-32-MI-201-4-A	
	GB-32-MI-201-4-B	
	GB-32-MI-201-5-A	
	GB-32-MI-201-5-B	
	GB-32-MI-202-6-A	
	GB-32-MI-202-6-B	
	GB-32-MI-202-7	
Main Recirculation	RCS-02-MI-201-1-A	ISI-2-02-1
	RCS-02-MI-201-1-B	ISI-2-02-2
Main Steam	DBN-01-MI-201-1-A	
	DBN-01-MI-201-1-B	
	DBN-01-MI-201-1-C	
	DBN-01-MI-201-1-D	
	DB-01-MI-201-2-A	
	DB-01-MI-201-2-B	
	DB-01-MI-201-2-C	
	DB-01-MI-201-2-D	
	DB-01-MI-221-3	
	DB-01-MI-221-4 (AUG. R&R)	
	DB-01-MI-222-5-A	
	DB-01-MI-222-5-B	
Main Steam Relief Valve	GG-01-MI-271-A	
	GG-01-MI-271-B	
	GG-01-MI-271-C	
	GG-01-MI-271-D	
	GG-01-MI-271-E	
	GG-01-MI-271-F	
	GG-01-MI-271-G	
	GG-01-MI-271-H	
	GG-01-MI-271-J	
	GG-01-MI-271-K	
	GG-01-MI-271-L	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 2 & Common

System	Isometric Drawing	Component Drawing
Reactor Core Isolation Cooling	DDN-13-MI-201-1	
Reactor Drain	DCN-04-MI-201-2 DDN-04-MI-201-1	
Reactor Pressure Vessel	RCS-02-MI-201-1-A RCS-02-MI-201-1-B	ISI-2-RV-01 ISI-203-RV-02 ISI-203-RV-03 ISI-203-RV-04 ISI-2-RV-05 ISI-203-RV-06 ISI-203-RV-07 ISI-203-RV-08 ISI-203-RV-09 ISI-203-RV-10 ISI-203-RV-11 ISI-203-RV-12 ISI-203-RV-13 ISI-203-RV-14 ISI-203-RV-15 ISI-203-RV-16 ISI-203-RV-17 ISI-203-RV-18 ISI-203-RV-19 ISI-203-RV-20 ISI-203-RV-21 ISI-203-RV-22 ISI-203-RV-23 ISI-203-RV-24
Reactor Water Clean-up	DCA-12-MI-201-1 DCA-12-MI-203-3 (Class 1 and AUG. R&R) DE-12-MI-202-2 DE-12-MI-203-4 (AUG. 1) DE-12-MI-203-5 (AUG. 1) DE-12-MI-203-6 (AUG. 1)	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 2 & Common

System	Isometric Drawing	Component Drawing
Residual Heat Removal	DCN-10-MI-206-15	ISI-2-10-1
	DCN-10-MI-207-16	ISI-2-10-2
	DDN-10-MI-203-8-A	
	DDN-10-MI-203-8-B	
	DE-10-MI-203-9-A	
	DE-10-MI-203-9-B	
	GB-10-MI-202-3-A	
	GB-10-MI-202-3-B	
	GB-10-MI-202-3-C	
	GB-10-MI-202-3-D	
	GB-10-MI-202-4-A	
	GB-10-MI-202-4-B	
	GB-10-MI-202-4-C	
	GB-10-MI-202-4-D	
	GB-10-MI-203-5-B	
	GB-10-MI-203-6-B	
	GB-10-MI-203-7-A	
	GB-10-MI-203-7-B	
	GB-10-MI-204-10-A	
	GB-10-MI-204-10-B	
	GB-10-MI-204-11-A	
	GB-10-MI-204-11-B	
	GB-10-MI-205-12-A	
	GB-10-MI-205-13-A	
	GB-10-MI-205-13-B	
	GB-10-MI-206-14	
	HB-10-MI-201-1-A	
	HB-10-MI-201-1-B	
	HB-10-MI-201-1-C	
	HB-10-MI-201-1-D	
	HB-10-MI-201-2-A	
	HB-10-MI-201-2-C	
	HB-10-MI-201-2-D	
	HB-10-MI-207-17	
Scram Discharge Volume	CS-03-MI-201-1-A	
	CS-03-MI-201-1-B	
	CS-03-MI-201-2-A	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 3

System	Isometric Drawing	Component Drawing
Core Spray	DCN-14-MI-303-4-A DCN-14-MI-303-4-B GB-14-MI-302-2-A GB-14-MI-302-2-B GB-14-MI-302-2-C GB-14-MI-302-2-D GB-14-MI-303-3-A GB-14-MI-303-3-B HB-14-MI-301-1-A HB-14-MI-301-1-B HB-14-MI-301-1-C HB-14-MI-301-1-D HCR-27-MI-301-1 (AUG. R&R) HCR-27-MI-301-2 (AUG. R&R)	
Emergency Cooling Water	See Unit 2 and Common	
Emergency Service Water	HB-33-MI-301-1 HB-33-MI-301-2 HB-33-MI-301-3 HB-33-MI-301-4 HB-33-MI-301-5 HB-33-MI-301-6 HB-33-MI-301-7 HBC-33-MI-301-8 HBC-33-MI-301-9 HBC-33-MI-301-10 HBC-33-MI-301-11 HBC-33-MI-301-12 HBC-33-MI-301-13 HBC-33-MI-301-14 HBC-33-MI-301-15 HBC-33-MI-302-16 HBC-33-MI-302-17 HBC-33-MI-302-18 HBC-33-MI-302-19	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 3

System	Isometric Drawing	Component Drawing
ESW (Cont)	HBC-33-MI-302-20	
	HBC-33-MI-302-21	
	HBC-33-MI-302-22	
	HBC-33-MI-302-23	
	HBC-33-MI-302-24	
Feedwater	DDN-06-MI-301-2-A	
	DDN-06-MI-301-2-B	
	DD-06-MI-301-1	
	(AUG. R&R)	
High Pressure Coolant Injection	DBN-23-MI-303-5	
	DBN-23-MI-303-6	
	DBN-23-MI-303-7	
	DDN-23-MI-302-2	
	DDN-23-MI-302-3	
	DDN-23-MI-302-4	
	HB-23-MI-301-1	
	(CL. 2 & AUG. R&R)	
	HB-23-MI-304-8	
High Pressure Service Water	GB-32-MI-301-1	
	GB-32-MI-301-2	
	GB-32-MI-301-3	
	GB-32-MI-301-4	
	GB-32-MI-301-5-A	
	GB-32-MI-301-5-B	
	GB-32-MI-301-6-A	
	GB-32-MI-301-6-B	
	GB-32-MI-302-7-A	
	GB-32-MI-302-7-B	
	GB-32-MI-302-8	
Main Recirculation	RCS-02-MI-301-1-A	ISI-3-02-1
	RCS-02-MI-301-1-B	ISI-3-02-2

ASME Section XI Isometric & Component Drawings
PBAPS Unit 3

System	Isometric Drawing	Component Drawing
Main Steam	DBN-01-MI-301-1-A DBN-01-MI-301-1-B DBN-01-MI-301-1-C DBN-01-MI-301-1-D DB-01-MI-301-2-A DB-01-MI-301-2-B DB-01-MI-301-2-C DB-01-MI-301-2-D DB-01-MI-321-3 DB-01-MI-321-4 (AUG. R&R) DB-01-MI-322-5-A DB-01-MI-322-5-B	
Main Steam Relief Valve	GG-01-MI-371-A GG-01-MI-371-B GG-01-MI-371-C GG-01-MI-371-D GG-01-MI-371-E GG-01-MI-371-F GG-01-MI-371-G GG-01-MI-371-H GG-01-MI-371-J GG-01-MI-371-K GG-01-MI-371-L	
Reactor Core Isolation Cooling	DDN-13-MI-301-1	
Reactor Drain	DCN-04-MI-301-2 DDN-04-MI-301-1	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 3

System	Isometric Drawing	Component Drawing
Reactor Pressure Vessel	RCS-02-MI-301-1-A RCS-02-MI-301-1-B	ISI-3-RV-01 ISI-203-RV-02 ISI-203-RV-03 ISI-203-RV-04 ISI-3-RV-05 ISI-203-RV-06 ISI-203-RV-07 ISI-203-RV-08 ISI-203-RV-09 ISI-203-RV-10 ISI-203-RV-11 ISI-203-RV-12 ISI-203-RV-13 ISI-203-RV-14 ISI-203-RV-15 ISI-203-RV-16 ISI-203-RV-17 ISI-203-RV-18 ISI-203-RV-19 ISI-203-RV-20 ISI-203-RV-21 ISI-203-RV-22 ISI-203-RV-23 ISI-203-RV-24 ISI-3-RV-50 (later) ISI-3-RV-51 (later) ISI-3-RV-52 (later)
Reactor Water Clean-up	DCA-12-MI-301-1 DCA-12-MI-303-3 (Class 1 and AUG. R&R) DE-12-MI-302-2 DE-12-MI-303-4 (AUG. 1) DE-12-MI-303-5 (AUG. 1) DE-12-MI-303-6 (AUG. 1)	

ASME Section XI Isometric & Component Drawings
PBAPS Unit 3

System	Isometric Drawing	Component Drawing
Residual Heat Removal	DCA-10-MI-303-9-A	ISI-3-10-1
	DCA-10-MI-303-9-B	ISI-3-10-2
	DCA-10-MI-306-13	
	DDN-10-MI-303-8-A	
	DDN-10-MI-303-8-B	
	GB-10-MI-302-3-A	
	GB-10-MI-302-3-B	
	GB-10-MI-302-3-C	
	GB-10-MI-302-3-D	
	GB-10-MI-302-4-A	
	GB-10-MI-302-4-B	
	GB-10-MI-302-4-C	
	GB-10-MI-302-4-D	
	GB-10-MI-303-5-A	
	GB-10-MI-303-5-B	
	GB-10-MI-303-6-A	
	GB-10-MI-303-7-A	
	GB-10-MI-303-7-B	
	GB-10-MI-304-10-A	
	GB-10-MI-304-10-B	
	GB-10-MI-304-11-A	
	GB-10-MI-304-11-B	
	GB-10-MI-305-12-A	
	GB-10-MI-305-12-B	
	HB-10-MI-301-1-A	
	HB-10-MI-301-1-B	
	HB-10-MI-301-1-C	
	HB-10-MI-301-1-D	
	HB-10-MI-301-2-A	
	HB-10-MI-301-2-C	
	HB-10-MI-301-2-D	
	HB-10-MI-306-14	
Scram Discharge Volume	CS-03-MI-301-1-A	
	CS-03-MI-301-1-B	

ASME Section XI ISI Calibration Block Drawings

Drawing Number	Title
CBD-1	ASME Section XI UT Calibration Block for Peach Bottom APS Units No. 2 & 3
CBD-1A	ASME Section XI UT Calibration Block for 26" Main Steam
CBD-2A	ASME Section XI UT Calibration Block for 24" Pipe
CBD-3	ASME Section XI UT Calibration Block for 12" Feedwater Riser
CBD-4	ASME Section XI UT Calibration Block for 6" Head Spray
CBD-5A	ASME Section XI UT Calibration Block for 6" Reactor Water Cleanup
CBD-6A	ASME Section XI UT Calibration Block for 6" Main Steam Safety and Relief
CBD-7A	ASME Section XI UT Calibration Block for 10" High Pressure Coolant Injection
CBD-8	ASME Section XI UT Calibration Block for 14" High Pressure Coolant Injection
CBD-8A	ASME Section XI UT Calibration Block for 14" High Pressure Coolant Injection
CBD-9A	ASME Section XI UT Calibration Block for 28" Main Recirc. Suction & Discharge
CBD-10	ASME Section XI UT Calibration Block for 4" RWCU Main Recirculation Bypass, CRD
CBD-10A	ASME Section XI UT Calibration Block for 4" RWCU Main Recirculation Bypass, CRD
CBD-12	ASME Section XI UT Calibration Block for 12" Core Spray
CBD-13A	ASME Section XI UT Calibration Block for 20" Feedwater (block not used)
CBD-13C	ASME Section XI UT Calibration Block for 20" Feedwater
CBD-14A	ASME Section XI UT Calibration Block for 22" Main Recirculation Manifold
CBD-15	ASME Section XI UT Calibration Block for 14" Feedwater Riser
CBD-16A	ASME Section XI UT Calibration Block for 12" Feedwater Riser
CBD-17	ASME Section XI UT Calibration Block for 4.5 Pipe
CBD-18A	ASME Section XI UT Calibration Block for 12" Main Recirc. Nozzle-To-Safe End
CBD-19A	ASME Section XI UT Calibration Block for 12" Main Recirc. Safe End-to-Nozzle
CBD-20A	ASME Section XI UT Calibration Block for 3P 1-1/2" Flat Pipe
CBD-21	ASME Section XI UT Calibration Block for 5.125 CRD Safe End
CBD-22	ASME Section XI UT Calibration Block for RPV Nut
CBD-24	ASME Section XI UT Calibration Block for Closure Head Thickness
CBD-25	ASME Section XI UT Calibraiton Block for 6" Pipe
CBD-26	ASME Section XI UT Calibration Block for 12" Pipe
CBD-27	ASME Section XI UT Calibration Block for 4" Pipe
CBD-28	ASME Section XI UT Calibration Block for 26" Pipe
CBD-29	ASME Section XI UT Calibration Block for 20" Pipe
CBD-30	ASME Section XI UT Calibration Block for 24" Pipe
CBD-31	ASME Section XI UT Calibration Block for 24" Pipe
CBD-32	ASME Section XI UT Calibration Block for 24" Pipe
CBD-33A	ASME Section XI UT Calibration Block for 20" Pipe
CBD-34	ASME Section XI UT Calibration Block for 10" Pipe
CBD-35	ASME Section XI UT Calibration Block for 6" SS Pipe
CBD-36	ASME Section XI UT Calibration Block for 12" Pipe
CBD-38	ASME Section XI UT Calibration Block for OD Inner Radius
CBD-39	ASME Section XI UT Calibration Block for Clad Vessel

ASME Section XI ISI Calibration Block Drawings

Drawing Number	Title
CBD-41	ASME Section XI UT Calibration Block for Nozzle Cap
CBD-42	ASME Section XI UT Calibration Block for Pump Stud
CBD-43	ASME Section XI UT Calibration Block for Stabilizer Bracket
CBD-44	ASME Section XI UT Calibration Block for Pump Nut
CBD-45	ASME Section XI UT Calibration Block for Nut
CBD-46	ASME Section XI UT Calibration Block for Stud
CBD-47	ASME Section XI UT Calibration Block for PRV Closure Head
CBD-48	ASME Section XI UT Calibration Block for RPV Stud
CBD-49	ASME Section XI UT Calibration Block for 10" Pipe
CBD-50	ASME Section XI UT Calibration Block for 6" SS Pipe
CBD-51	ASME Section XI UT Calibration Block for 6" CS Pipe
CBD-52	ASME Section XI UT Calibration Block for 20" SS Pipe
CBD-53	ASME Section XI UT Calibration Block for 20" CS Pipe
CBD-54	ASME Section XI UT Calibration Block for 24" SS Pipe
CBD-55	ASME Section XI UT Calibration Block for 24" CS Pipe
CBD-56	ASME Section XI UT Calibration Block for 12" SCH 100 Pipe
CBD-57	ASME Section XI UT Calibration Block for 22" Pipe
CBD-58	ASME Section XI UT Calibration Block for 28" Pipe
CBD-59	ASME Section XI UT Calibration Block for 28" Pipe
CBD-60	ASME Section XI UT Calibration Block for 30" Pipe
CBD-61	ASME Section XI UT Calibration Block for 24" SCH 120 CS Pipe
CBD-62	ASME Section XI UT Calibration Block for 3/4" CS Plate
CBD-62A	ASME Section XI UT Calibration Block for SS 12" Clad Overlay (02-19-60)
CBD-64	ASME Section XI UT Calibration Block for Jet Pump Seal
CBD-65	ASME Section XI UT Calibration Block for 20" Pipe
CBD-65A	ASME Section XI UT Calibration Block for 4" Pipe
CBD-66	ASME Section XI UT Calibration Block for 4" RWCU Pipe
CBD-67	ASME Section XI UT Calibration Block for Clad Core Spray (3-453)
CBD-67A	ASME Section XI UT Calibration Block for Core Spray Nozzle to Safe End
CBD-68	ASME Section XI UT Calibration Block for Vessel (12-CS-5)
CBD-69	ASME Section XI UT Calibration Block for SS 22" Overlay (8-46) (Block not used)
CBD-70	ASME Section XI UT Calibration Block for SS 20" Overlay (3-46) (Block not used)
CBD-71	ASME Section XI UT Calibration Block for Jet Pump Overlay)9-08-47)

1.0 INTRODUCTION

This document provides background information and engineering justification for the revised second 10 year interval Inservice Inspection (ISI) ASME Section XI ISI Boundary Drawings for PECO Energy's Peach Bottom Atomic Power Stations Unit 2 and 3 (PBAPS 2 & 3). This information may be used as a basis for the classification of systems added or changed by modifications. In addition, it establishes a clear reference point when accessing subsequent changes in Regulatory and Code requirements and their effect on the ISI Program boundaries and exemptions.

The basis for the ISI classifications (Class 1, 2, and 3) are Regulatory Guide 1.26, 10CFR50.55a, and 10CFR50.2(v). Included within this document are discussions on each ISI classification including specific system boundaries, PECO Energy position in regard to these boundaries and exemptions applied to the specific systems. In addition, systems important to safety, which are not addressed in Regulatory Guide 1.26 are discussed.

ASME Section XI Inservice Testing (IST) of pumps and valves is specifically excluded from the scope of this document. In addition, the exemptions stated are for NDE only and are not applicable to system pressure testing requirements.

2. CLASS 1 (QUALITY GROUP A)

2.1 Boundary Definition

Class 1 generally includes piping and components that are part of the reactor coolant pressure boundary defined in 10CFR50.2(v). The extent that systems which are part of or connected to the reactor coolant pressure boundary, are classified Class 1 equivalent for inservice inspection is provided in 10CFR50.55a(e). For PBAPS, the following describes the Class 1 system boundaries:

a. The Reactor Coolant System including Feedwater and Main Steam piping up to and including the outermost containment isolation valve (CIV).

b. Piping and components connected to the Reactor Coolant System up to and including any of the following:

- The outermost CIV, for systems penetrating the primary containment.
- The second of two normally closed valves for systems that do not penetrate the primary containment. If either or both of these valves are capable of automatic closure, they may be normally open.
- The excess flow check valve for instrument lines penetrating the primary containment.
- The reactor coolant system safety and relief valves.

Specific PBAPS 2 & 3 systems boundaries and exemptions are provided in Table 2.1-1.

TABLE 2.1-1
CLASS 1 BOUNDARIES AND EXEMPTIONS

System #	Drawing(s)	System Name	Boundary	Exemptions
1	M-351	Main Steam	From the reactor up to and including the outboard CIV.	Branch connections ≤3"NPS.
2	M-353	Reactor Recirculation	Entire system.	Branch connections ≤1.5" NPS.
4	M-353, 354	Reactor Drain	From the reactor vessel to the connection with the RWCU inlet header.	Drain piping ≤2" made inaccessible by CRDs.
4	M-351	Reactor Vents	From the Reactor Vessel to the second normally closed isolation valve on each of the two flow paths.	Entire system since all piping is ≤3" NPS.
4	M-351, 352, 353	Nuclear Boiler Vessel Instrumentation	From the reactor vessel to the excess flow check valves.	Entire system since all piping is ≤1.5" NPS.
5	M-351	Feedwater	From and including the outboard CIV's to the reactor vessel.	Branch connections ≤1.5" NPS.

TABLE 2.1-1
CLASS 1 BOUNDARIES AND EXEMPTIONS

System #	Drawing(s)	System Name	Boundary	Exemptions
10	M-361	Residual Heat Removal	1. From and including the low pressure injection outboard CIV to the reactor vessel. 2. Shutdown cooling suction from the Reactor Recirculation System conncetion up to and including the outboard CIV. 3. Shutdown cooling return from the Reactor Recirculation System conncetion up to and including the outboard CIV.	Branch conncetion ≤1.5" NPS.
11	M-351	Standby Liquid Control	From and including the outboard containment check valve to the reactor.	Entire Class 1 portion, since all piping is ≤1.5" NPS.

TABLE 2.1-1
CLASS 1 BOUNDARIES AND EXEMPTIONS

System #	Drawing(s)	System Name	Boundary	Exemptions
12	M-354	Reactor Water Cleanup (RWCU)	RWCU inlet line from the reactor up to and including the outboard CIV. RWCU return line from and including the outboard CIV to the feedwater header.	Branch connections ≤1.5" NPS.
13	M-359	Reactor Core Isolation Cooling (RCIC)	RCIC turbine steam supply from the Main Steam header up to and including the outboard CIV. RCIC pump discharge header from and including the outboard CIV to the Feedwater connection.	RCIC turbine steam supply is all exempt since the piping is ≤3" NPS. Discharge header branch connections ≤1.5" NPS.
14	M-362	Core Spray	Core spray discharge piping from and including the outboard CIV to the reactor.	Branch conncetion ≤1.5" NPS.

TABLE 2.1-1
CLASS 1 BOUNDARIES AND EXEMPTIONS

System #	Drawing(s)	System Name	Boundary	Exemptions
23	M-366	High Pressure Coolant Injection (HPCI)	HPCI turbine steam supply from the Main Steam header up to and including outboard CIV. HPCI pump discharge header from and including the outboard CIV to the Feedwater header inlet.	Steam supply piping branch connections ≤3" NPS. HPCI pump discharge header branch connections ≤1.5" NPS.

3.0 CLASS 2 (QUALITY GROUP B)

3.1 Boundary Definition

Class 2 boundaries for PBAPS 2 & 3 were determined in accordance with C.1 of Regulatory Guide 1.26, Rev. 3. Regulatory Guide 1.26 specifies that the boundaries for Class 2 systems include the portions of the system required to accomplish the specific safety function and connected piping up to and including the first valve (including safety or relief valve) that is either normally closed or capable of automatic closure when the safety function is required. PBAPS 2 & 3 has taken the following positions with regard to these boundaries:

a. For instrument lines connected to Class 2 piping or components the boundary shall be at the instrument root valve.

b. Valves that are normally open and are equipped with remote manual actuators are considered an acceptable boundary valve.

c. Main steam piping branch connections ≤2.5" NPS are not classified.

General Design Criterion 2 of Appendix A to 10CFR Part 50 requires that nuclear power plant structures, systems, and components important to safety, to be designed to withstand the effects of earthquakes without loss of capability to perform their safety function. Regulatory Guide 1.29 classifies these systems as Seismic Category I. Because systems and components classified in either Quality Group B or C by Regulatory Guide 1.26 are important to safety, they must also be Seismic Category I. However, Regulatory Guide 1.29 specifically excludes Main Steam piping downstream of the outboard CIV that is ≤2.5" NPS from Seismic I categorization. Consequently, since this piping is not Seismic I, it should not be Quality Group B or C. Therefore, PBAPS 2 & 3 Main Steam piping downstream of the outboard CIV that is ≤2.5" NPS is not classed for Seismic I purposes.

3.2 PBAPS 2 & 3 Class 2 Systems

Regulatory Guide 1.26 requires that systems or portions of systems that perform the following safety functions shall be Class 2:

a. Emergency Core Cooling

b. Post Accident Containment Removal

c. Post Accident Fission Product Removal

d. Reactor Shutdown

e. Residual Heat Removal

In addition, Main Steam piping downstream of the outboard CIV and up to but not including the turbine stop and bypass valves shall be Class 2.

Specific Class 2 PBAPS 2 & 3 systems and their safety function are provided in Table 3.2-1. Boundaries and exemptions for these systems are provided in Table 3.2-2.

TABLE 3.2-1
CLASS 2 SYSTEMS

SYSTEM	FUNCTION
Main Steam (MS)	Specifically identified in R.G. 1.26
Control Rod Drive Hydraulic (CRD)	Reactor Shutdown
Containment Atmosphere	Post Accident Fission
Control (CAC)	Product Removal
Residual Heat Removal (RHR)	Emergency Core Cooling, Post Accident Containment Heat Removal Residual Heat Removal
Standby Liquid Control (SLC)	Reactor Shutdown
Reactor Core Isolation Cooling (RCIC)	Residual Heat Removal
Core Spray (CS)	Emergency Core Cooling
High Pressure Coolant Injection (HPCI)	Emergency Core Cooling
Containment Atmosphere Dilution (CAD)	Connected to containment and Torus Spray piping

TABLE 3.2-2
CLASS 2 BOUNDARIES AND EXEMPTIONS

System	Drawing(s)	System Name	Boundary	Exemptions
1	M-304, 303, 351	Main Steam	From outboard CIV up to but not including the turbine stop and bypass valves. Branch connections ≤2.5" NPS are unclassed.	All piping and components <4" NPS.
3	M-356, 357	Control Rod Drive Hydraulic	Scran supply and exhaust headers including the scram discharge volume. The scran discharge volume vent and drain piping to the first isolation valves. This classification is consistent with the GE classification that has been accepted by the NRC in NUREG-0803.	All piping and components <4" NPS.
9	M-367	Containment Atmosphere Control	From penetrations N-26 and N-219 to the Standby Gas Treatment System connection.	All piping and components operate at less than 200 F and 275 PSIG, therefore, are exempt.

TABLE 3.2-2
CLASS 2 BOUNDARIES AND EXEMPTIONS

System	Drawing(s)	System Name	Boundary	Exemptions
10	M-361	Residual Heat Removal	Entire system with the exception of the portion which is Class 1.	1. Piping and components beyond the last shut off valve that do not contain water during normal operation. 2. Piping and components <4" NPS.
11	M-358	Standby Liquid Control	The entire system, excluding the test tank and associated piping, up to the outboard containment check valve.	All piping and components since NPS is <4".

TABLE 3.2-2
CLASS 2 BOUNDARIES AND EXEMPTIONS

System	Drawing(s)	System Name	Boundary	Exemptions
13	M-359, 360	Reactor Core Isolation Cooling	1. Steam supply line from the outboard containment isolation valve up to but not including the turbine throttle valve. 2. Turbine exhaust piping from the turbine to the suppression pool including associated drains up to but including the barometric condensate. 3. Water piping from suppression pool through the pump to the outboard containment isolation on the the discharge header including minimum flow piping and lube oil cooler piping.	This system is not an emergency core cooling system and it does not operate during normal reactor operation, therefore, all piping and components are exempt.

TABLE 3.2-2
CLASS 2 BOUNDARIES AND EXEMPTIONS

14	M-362	Core Spray	Entire system with the exception of the portion which is Class 1.	1. Piping and components beyond the last shut offvalve that do not contain water during normal operation. 2. Piping and components ≤4" NPS.

TABLE 3.2-2
CLASS 2 BOUNDARIES AND EXEMPTIONS

System	Drawing(s)	System Name	Boundary	Exemptions
23	M-365, 366	High Pressure Coolant Injection	1. Steam supply line from the outboard containment isolation valve up to but not including the turbine throttle valve. 2. Turbine exhaust piping from the turbine to the suppression pool including associated drains up to but not including the barometric condenser. 3. Water piping from the suppression pool through the pump to the outboard containment isolation on the discharge header including minimum flow piping and lube oil cooler piping.	1. Piping and components beyond the last shut off valve that do not contain water during normal operations. 2. Piping and components ≤4" NPS.

TABLE 3.2-2
CLASS 2 BOUNDARIES AND EXEMPTIONS

System	Drawing(s)	System Name	Boundary	Exemptions
52	M-372	Containment Atmosphere Dilution	From the connection with the RHR containment spray header up to and including the first isolation valve.	All piping and components operate at less than 200 F and 275 PSIG, therefore, are exempt.

4.0 CLASS 3 (Quality Group C)

4.1 Boundary Definition

Class 3 boundaries for PBAPS 2 & 3 were determined in accordance with C.2 of Regulatory Guide 1.26, Rev. 3. Regulatory Guide 1.26 specifies that the boundaries for Class 3 systems include the portions of the system required to accomplish the specific safety function and connected piping up to and including the first valve (including safety or relief valve) that is either normally closed or capable of automatic closure when the safety function is required. PBAPS 2 & 3 has taken the following positions with regard to these boundaries:

a. For instrument lines connected to Class 3 piping or components the boundary shall be at the instrument root valve.

b. Valves that are normally open and are equipped with remote manual actuators are considered an acceptable boundary valve.

4.2 PBAPS 2 & 3 Class 3 Systems

Regulatory Guide 1.26 requires that systems or portions of systems that perform the following safety functions shall be Class 3. The following are the safety functions applicable to PBAPS 2 & 3.

a. Cooling water systems that are designed foe:

1. Emergency Core Cooling
2. Post Accident Containment Heat Removal
3. Post Accident Containment Atmosphere Cleanup
4. Primary and Secondary Residual Heat Removal from Reactor and Spent Fuel Storage Pools.

b. Cooling and seal water systems for diesels and control room.

c. Systems or portions of systems with a safety function that are connected to the reactor coolant pressure boundary and are capable of being isolated from the boundary during all modes of reactor operation by two valves, each of which is either normally closed or capable of automatic closure. Since 10CFR50.2(v) considers the primary relief valve as an adequate reactor coolant boundary, the relief valve discharge lines are Class 3.

Specific PBAPS 2 & 3 systems and their safety functions are provided in Table 4.2-1. Boundaries and exemptions for these systems are provided in Table 4.2-2.

TABLE 4.2-1
CLASS 3 SYSTEMS

System	Function
Main Steam (MS)	Connected to reactor coolant pressure boundary. Functions to direct Main Steam relief valve discharge to suppression pool.
Fuel Pool Cooling and Cleanup (FPC)	The Residual Heat Removal System provides primary cooling via RHRHX and secondary (make-up for water lsot during pool boil off) safety related residual heat removal for reactor and spent fuel pools, however, portions of the FPC piping are necessary to connect the RHR system to the pool.
High Pressure Service Water (HPSW)	Provides cooling water for ECCS and Post Accident Containment Heat removal.
Emergency Service Water (ESW)	Provides cooling for Emergency Diesel Generators and ECCS room coolers.
Emergency Cooling Water (ECW)	Provides backup to ESW.

TABLE 4.2-2
CLASS 3 BOUNDARIES AND EXEMPTIONS

System #	Drawing(s)	System Name	Boundary	Exemptions
19	M-363	Fuel Pool Cooling and Cleanup	Portions of the system necessary to provide the RHR system with a suction and discharge to the spent fuel and refueling pools.	All piping and components operate at less than 200 F and 275 PSIG, therefore, are exempt.
32	M-315, 330	High Pressure Service Water	Entire System.	1. Piping and components ≤4" NPS.
33	M-315, 330	Emergency Service Water	Entire System.	1. Piping and components ≤4 NPS. 2. Piping and components beyond the last shut off valve on return lines to pond are subject to less than 200 F and 275 PSIG and are no longer in support of ECCS, therefore, are exempt.
48	M-315	Emergency Cooling Water	Entire System.	Piping and components ≤4" NPS.

5.0 Systems Not Address In Reg. Guide 1.26

Section D of Reg. Guide 1.26 mentions systems not covered by the guide that should be tested to quality standards commensurate with the safety function performed. PBAPS 2 & 3 has evaluated these and other systems not covered by Reg. Guide 1.26 and has determined that the surveillance testing presently being performed satisfies this requirement. Table 5.0-1 contains a listing of the systems evaluated and a brief discussion on how they are tested.

TABLE 5.0-1

System	Discussion
Non-safety systems that penetrated the primary containment.	This piping is not addressed in Reg. Guide 1.26, and due to the vintage of PBAPS 2 & 3, these lines were not constructed as Class 2 lines. These systems were evaluated and it was determined that if they were designated Class 2 for ISI purposes, they would all be exempt, and, therefore, only pressure testing would be required. Because the only safety function of these lines is to maintain containment integrity, it was determined that the Appendix J, Type A & C testing would ensure the capability of this piping to perform its safety function. Therfore, this piping is not classed for ISI.
Instrument Nitrogen	Provides makeup nitrogen to ADS accumulators. Integrity of the system is constantly monitored by flow indication per UFSAR 7.3.4.7.15.
Diesel Starting Air and Fuel Oil Transfer	Starting Air is necessary for diesel starting and the Fuel Oil Transfer System is necessary for long term operation of the diesels. The diesels are tested extensively by Tech. Specs. In particular, Tech. Spec. 4.9.A.1 ensures the integrity of these systems.
MSIV Accumulators	The accumulators are installed to assist in the closure of the MSIV. There is a controversy as to whether or not the accumulators are needed in order for the MSIV to stroke in the required time. If it is determined that the accumulators are needed, then an inservice test to stroke the MSIV will be performed with the make up to the accumulators isolated,thus, the inservice test will verify the integrity of the accumulator. If it is determined that the accumulators are not needed, then the accumulator has no safety function. In either case, the accumulators are not classed for ISI purposes.

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ASME SECTION XI
ISI PROGRAM
Position Paper
No. PSC-92-003
Supersedes Position Statement IPS # 87-002

Subject: This ISI program position provides guidance for the implementation of specific component support examination requirements of the ASME Section XI Code.

Reference: This position is for use in conjunction with the 1980 Edition of ASME Section XI, through the 1986 Edition.

Applicability: This position applies to all component supports which are within the jurisdiction of the Section XI Code. It pertains to nonintegrally attached supports which have bolted or other mechanical connections buried beneath the component insulation.

Discussion: ASME Section XI (subparagraph IWF-1300(e)) allows the component support visual examination boundary to extend from the surface of the component insulation, provided the nonintegrally attached support either carries the weight of the component or serves as a structural restraint in compression. This rule assumes that loss of integrity of the bolting or other mechanical connection buried beneath the insulation, and not accessible for visual examination, will become obvious on the external surface of the insulation. Therefore, the subject component support must be carrying the weight of the component at all times.

Position: If a component support required to be examined, is a nonintegrally attached support, and contains a mechanical connection which is buried beneath the component insulation, the insulation need not be removed provided the support carries the weight of the component (either in tension or compression), or acts as a restraint in compression during normal plant operations (per design calculations). Snubbers do not qualify for this position, since they do not carry the weight of the component.

If the bolted or other mechanical connection of a nonintegrally attached support is able to be examined without removing the insulation, then this position does not apply, since the insulation does not need to be removed.

Examples: Component supports which qualify for use of this position paper.
-spring hangers
-rod hangers
-spring supports
-vertically oriented struts (above or below component)
-frame supports or restraints (containing bolted or other mechanical connections) which bear the weight of the component
-restraints acting in compression during normal operations

Component supports which do not qualify for use of this position paper.
-snubbers
-horizontal struts (not acting in compression)

Summary:

1. Component supports must carry the weight of the component (in tension or compression) or act as a restraint in compression during normal operations to qualify for this position paper.

2. Snubbers do not qualify for this position paper.

3. If the mechanical connection is not buried within the component insulation, then the insulation need not be removed.

Reference:

1. ASME Section XI Interpretation No. IN92-010, dated March 10, 1992.

2. ASME Section XI Interpretation No. IN92-006B, dated March 10, 1992.

3. ASME Section XI Position Statement IPS# 87-002, dated November 28, 1988.

ASME SECTION XI
ISI PROGRAM
Position Paper
No. PSC-92-004
Supersedes Position Statement IPS # 91-001

Subject: This ISI program position provides guidance for the implementation of specific component support examination requirements of the ASME Section XI Code.

Reference: This position may be used in conjunction with the 1980 Edition of ASME Section XI, through the 1986 Edition. It may also be used in conjunction with the Limerick (LGS) 1 & 2 component supports examination program conducted in accordance with LGS Relief Request RR-09.

Applicability: This position may be applied to all component supports which are within the jurisdiction of the station ISI or alternate ISI Program (LGS) for component supports examination. It shall not be applicable to the examination and testing programs for snubbers, which are conducted in accordance with the plant Technical Specifications.

Discussion: ASME Section XI, subparagraph IWF-2430(a) requires additional examinations of component supports, if the results of regularly scheduled ISI examinations of component supports require corrective measures in accordance with the provisions of IWF-3000. Paragraph IWF-3122 provides four methods for acceptance of the results of examinations: IWF-3122.1 Acceptance by Examination; IWF-3122.2 Acceptance by Repair; IWF-3122.3 Acceptance by Replacement; and IWF-3122.4 Acceptance by Evaluation or Test.

Component support examination results which do not satisfy first-line screening or acceptance criteria, do not automatically require repair or replacement as described in subparagraphs IWF-3122.2 and IWF-3122.3 respectively. Generally, such unacceptable component supports may be found acceptable for continued/intended service via evaluation or test, as described in subparagraph IWF-3122.4. This acceptance by evaluation or test is not considered a corrective measure.

Occasionally, component support examination results found acceptable by evaluation or test may still require some minor rework of the support, often to avoid making unnecessary changes to the applicable design documents. Such rework, after the support has been determined to be acceptable for continued/intended service, is also not considered a corrective measure.

Position: Component supports found acceptable for continued/intended service[1] by evaluation or test (even though examination results deviate from screening/acceptance criteria), are not considered supports requiring corrective measures as referenced in IWF-2430a. Accordingly, additional examinations need not be performed. Additionally, minor rework of a component support after it's acceptance for continued service by evaluation or test, is also not considered a corrective measure, and does not require additional examinations to be performed.

Component supports found unacceptable for continued/intended service after evaluation or test do require additional examinations to be performed. Likewise, component supports requiring automatic rework, repair, or replacement as a result of examination results, will also require additional examinations to be performed.

1. For the purpose of this position paper, "continued/intended service" is defined as a condition within the design basis of the component, and the condition will not compromise the long term use of the component.

Examples:

A variable spring hanger has an as-found spring load setting which deviates from the design drawing specified setting by more than the tolerance allowed in the examination procedure. After evaluation, the as-found load setting is determined to be acceptable for intended and continued service, however the design drawing setting would then have to be revised. In lieu of revising the design drawings, the variable spring hanger is field adjusted (reworked) to the design load setting. This situation would not require additional examinations to be performed.

Examination of a variable spring hanger reveals that the spring can load scale (provided for measuring load setting) is missing. Subsequent evaluation of linear measurements recorded, indicate that the as-found spring position represents an acceptable load setting, and the support is acceptable for its intended service. Minor rework is conducted however, to attach a new load scale to the spring can. Additional examinations of IWF-2430a are not required in this situation.

Examination of a rigid sway strut reveals a completely cracked weld between the strut body and the extension tube. Evaluation (if conducted) reveal that the support would not fulfill its intended function in a tension mode. Repair of the support is required. Additional examinations are required in this situation.

Summary:

1. Component supports with unacceptable examination results which are found to be acceptable for continued/intended service by evaluation or test, do not require the examination of additional supports.

2. Minor rework performed on component supports found acceptable for continued/intended service need not be considered corrective measures. Additional examinations do not need to be performed.

Reference:

1. ASME Section XI Interpretation No. XI-1-86-30 dated April 30, 1986.

2. ASME Section XI Position Statement IPS# 91-001, dated December 30, 1991.