PHILADELPHIA ELECTRIC COMPANY

Limerick Generating Station
Unit 1

INSERVICE INSPECTION (ISI) PROGRAM

FIRST TEN YEAR INTERVAL

VOLUME 1 OF 2

Gilbert/Commonwealth, Inc.
ENGINEERS/CONSULTANTS Reading, PA

M-20682 Rev. 6/88
Doctype 601

NUCLEAR SAFETY-RELATED

SPECIFICATION FOR

LIMERICK GENERATING STATION UNIT 1 & COMMON

INSERVICE INSPECTION PROGRAM

FIRST INTERVAL

REV. NO.	DATE	REASON FOR ISSUE	LEAD: ORIGINATOR	LEAD: REVIEWER	LEAD: APPROVALS	NON-LEAD (S): RESP	NON-LEAD (S): REVIEWER	NON-LEAD (S): APPROVALS	QA	PM APPROVAL
1	10/4/91	General Revision for reconciliation of completed exams first three outages	R.F. Lanning	K.C. Carlson	D.Mc...	N/A			H.C. ... 10/4/91	N/A
0	7/3/90	Issued for use following completion of third refueling outage. Supercedes Specification 8031-P500 and P501.	R.F. Lanning	K.C. Carlson	D.Mc...				[illegible]	

NUCLEAR ENGINEERING DEPT.

SPECIFICATION FOR...

Specification for Limerick Generating Station Unit 1 & Common Inservice Inspection Program, First Interval

NO. NE-42

Rev. No. 1

Page 1 of 81

UNCONTROLLED COPY

LIMERICK GENERATING STATION
UNIT 1 & COMMON

INSERVICE INSPECTION PROGRAM
FIRST INTERVAL

SUMMARY OF REVISION 1

The primary purpose of this revision is to incorporate the impact of the reconciliation of examinations completed under the original First Interval ISI Program (Spec P-500), with the overall first interval ASME Section XI requirements of the updated program.

A majority of the changes have occurred in the ISI Program Tables. The changes reflect adjustment made to the selection of components for examination for the purpose of identifying only those examinations required for the remainder of the interval. (Rev. O reflected a complete ten year program without consideration of examinations completed during the first three refueling outages).

Additional elements of the revision include:

1. **Addition of Appendix D "Component Selection Criteria".**

   This appendix provides guidance to both station and NESD personnel for performing selection of components for examination, and monitoring progress or adherence to program commitments.

2. **Addition of a portion of the RWCU System to the AUG-1 Inspection Program, volumetric examination scope.**

   This addition was required by the USNRC Safety Evaluation of the LGS-1 Generic Letter 88-01 response and initiated by EWR A-0002908.

3. **Deletion of Relief Request RR-11.**

   This deletion was precipitated by USNRC rejection of the corresponding relief request for LGS-2 ISI Program. Its content will be re-evaluated following results of applicable examinations attempted during 1RO4.

4. **Revision to content of Relief Request RR-12**

   This relief request was revised due to updating of Regulatory Guide 1.147, which adopted 2 of the Code Cases previously listed as this Relief Request. Additionally new Code Cases were added to the Relief Request.

5. **Revision to content of Relief Request RR-13**

   Deleted portions of this relief request addressing Class 2 inservice and functional testing due to clarification of Code intent received from recent ASME Section XI Code inquiry. Added P & ID references where applicable.

6. **Revision to PECo position on extent of required examinations for Class 1 & 2 integral attachment welds. (Code Category B-K-1 and C-C)**

7. **Correction of miscellaneous typographical errors and adjustment to format or presentation of various program elements.**

8. **Addition of Attachment 1, "Examination Reconciliation Report"**

   This attachment identifies the extent of the first interval examination requirements which were satisfied during the first three refueling outages, utilizing the original ISI Program Specification P-500.

TABLE OF CONTENTS

1.0 Introduction

- 1.1 Reference Documents
- 1.2 Definitions
- 1.3 Abbreviations
- 1.4 Codes and Standards

2.0 Regulatory Requirements

- 2.1 Classification of Components
- 2.2 ASME Section XI
- 2.3 Exemptions
- 2.4 Augmented Requirements
- 2.5 Additional Bases
- 2.6 ASME Section XI Drawings
- 2.7 System Identification

3.0 Inservice Inspection Program

- 3.1 Responsibility
- 3.2 Records
- 3.3 Methods of Examination
- 3.4 Repair and Replacement
- 3.5 Examinations - General
- 3.6 Relief Requests
- 3.7 Evaluation of Examination Results
- 3.8 Reports

4.0 Reactor Pressure Vessel (RPV) Examinations

- 4.1 Pressure-Retaining Welds in Reactor Vessel (Category B-A)
- 4.2 Full Penetration Welds of Nozzles in Vessels - Inspection Program B (Category B-D)
- 4.3 Pressure-Retaining Partial Penetration Welds in Vessels (Category B-E)
- 4.4 Pressure-Retaining Dissimilar Metal Welds (Category B-F)
- 4.5 Pressure-Retaining Bolting Greater than 2" Diameter (Category B-G-1)
- 4.6 Pressure-Retaining Bolting, 2" and Less in Diameter (Category B-G-2)
- 4.7 Intergral Attachments for Vessels (Category B-H)
- 4.8 Interior of Reactor Vessel (Category B-N-1) and Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels (Catcogry B-N-2)
- 4.9 Pressure-Retaining Welds in Control Rod Housings (Category B-O)
- 4.10 All Pressure Retaining Components (Category B-P)

5.0 Class 1 Welds, Bolting, and Component Examinations (Excluding the RPV)

- 5.1 Pressure Retaining Dissimilar Metal Welds (Category B-F)
- 5.2 Pressure-Retaining Bolting Greater Than 2" in Diameter (Category B-G-1)
- 5.3 Pressure-Retaining Bolting 2" and Less in Diameter (Category B-G-2)
- 5.4 Pressure-Retaining Welds in Piping (Category B-J)
- 5.5 Integral Attachments for Piping, Pumps, and Valves (Category B-K-1)
- 5.6 Pressure-Retaining Welds in Pump Casings (Category B-L-1)

5.7 Pump Casings (Category B-L-2)
5.8 Pressure-Retaining Welds in Valve Bodies (Category B-M-1)
5.9 Valve Bodies (Category B-M-2)
5.10 All Pressure Retaining Components (Category B-P)

6.0 Class 2 Welds, Bolting, and Component Examinations

6.1 Pressure Retaining Welds in Pressure Vessels (Category C-A)
6.2 Pressure Retaining Nozzle Welds in Vessels (Category C-B)
6.3 Integral Attachments for Vessels, Piping, Pumps and Valves (Category C-C)
6.4 Pressure Retaining Bolting Greater than 2" in Diameter (Category C-D)
6.5 Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping (Category C-F-1)
6.6 Pressure Retaining Welds in Carbon or Low Alloy Steel Piping (Category C-F-2)
6.7 Pressure Retaining Welds in Pumps and Valves (Category C-G)
6.8 All Pressure Retaining Components (Category C-H)

7.0 Class 3 Component Examinations

7.1 Systems in Support of Reactor Shutdown Function (Category D-A)

7.2 Systems in Support of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal (Category D-B)

7.3 Systems in Support of Residual Heat Removal from Spent Fuel Storage Pool (Category D-C)

8.0 Pressure Testing

8.1 Class 1 Pressure Test Program
8.2 Class 2 Pressure Test Program
8.3 Class 3 Pressure Test Program

9.0 Class 1, 2, and 3 Component Supports

9.1 General
9.2 Exemptions
9.3 Examination Requirements

10.0 ISI Program Table

10.1 ISI Program Table Fields Description
10.2 Augmented Program-1 Table Fields Description
10.3 Augmented Program-13 and 14 Table Fields Description

Appendices

Appendix A Relief Requests
Appendix B Augmented Requirements
Appendix C Reference Drawings
Appendix D Componenet Selection Criteria

<u>Attachments</u>

Attachment 1 - Examination Reconciliation Report

<u>Tables</u>

LGS Unit 1 Inservice Inspection Program Tables
LGS Unit 1 Augmented Program-1 Tables
LGS Unit 1 Augmented Program-2 Tables
LGS Unit 1 Augmented Program-3 Tables
LGS Unit 1 Augmented Program-4 Tables
LGS Unit 1 Augmented Program-5 Tables
LGS Unit 1 Augmented Program-6 Tables (Program Completed)
LGS Unit 1 Augmented Program-7 Tables
LGS Unit 1 Augmented Program-8 Tables
LGS Unit 1 Augmented Program-9 Tables
LGS Unit 1 Augmented Program-10 Tables
LGS Unit 1 Augmented Program-11 Tables
LGS Unit 1 Augmented Program-12 Tables
LGS Unit 1 Augmented Program-13 Tables
LGS Unit 1 Augmented Program-14 Tables

1.0 INTRODUCTION

This document contains the Inservice Inspection (ISI) Program for the second and third inspection periods of the first inspection interval of the Limerick Generating Station Unit 1 (LGS 1), a 1100 MWe BWR Plant, as required by Title 10, Code of Federal Regulations, Part 50 (10CFR50), Section 50.55a, "Codes and Standards." This Program has been updated to incorporate changes necessitated by modifications, repairs, and/or replacements to systems, components, and/or welds since the commencement of commercial operation. This program update also reflects the impact of examinations completed during the first three (3) refueling outages. As allowed by 10CFR50.55a(g)(4), this updated Program is in compliance, to the extent practical, with the latest approved Code Rules (Ref. Section 2.2). It details the technical basis of the program and provides an overall description of the activities planned to fulfill the ISI requirements for nuclear power plant 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 LGS 1, during the first inspection interval.

The first inspection interval for LGS 1 began concurrent with the start of commercial operation on February 1, 1986, and will end 10 years from this date. This updated program becomes effective at the completion of the third refueling outage. The examination requirements for the first inspection period were in accordance with Specification 8031-P-500/501. These examinations were satisfied during the first and second refueling outages. Examinations completed during the third refueling outage, in accordance with Specification 8031-P-500/501, were credited toward the requirements of the second inspection period.

The ISI Program consists of two parts: the 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, and listings of the ASME Section XI Drawings including: boundary drawings, isometric drawings, equipment drawings, and calibration block drawings. The tables section includes the ISI Program Tables and Augmented Inspection Program Tables. The ISI Program Tables contain an itemized listing of all nonexempt components, within the Class 1, 2 and 3 boundaries, depicted on the ASME Section XI Boundary P&ID's. The tables included for augmented programs identify the components within that specific augmented program scope.

1.1 REFERENCE DOCUMENTS

1.1.1 Generic Letter 88-01, NRC position on IGSCC in BWR Austenitic Stainless Steel Piping, dated January 25, 1988.

1.1.2 LGS 1 responses to NRC Generic Let. - 88-01, dated August 2, 1988, April 28, 1989, May 30, 1989, September 11, 1989 and June 8, 1990.

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

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

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

1.1.6 NGAP NA03I003, PECo Corporate ASME Section XI Administrative Manual.

1.1.7 LGS 1 & 2 Updated Final Safety Analysis Report (UFSAR).

1.1.8 LGS 1 Technical Specifications, Appendix "A" to License No. NPF-39.

1.1.9 NED Specification number ML-008, LGS 1 & 2 Pump and Valve Inservice Testing Program, First Ten Year Interval.

1.1.10 NUREG - 0800, LWR Edition - Standard Review Plan.

1.1.11 General Electric Company SIL No. 117, Recommendation For UT Inservice Examination of Welded Austenitic Piping.

1.1.12 General Electric Company SIL No. 409, Incore Dry Tube Cracks.

1.1.13 General Electric Company SIL No. 420, Inspection of Jet Pump Sensing Lines.

1.1.14 General Electric Company SIL No. 455, Recommendation for Additional ISI of Alloy 182 Nozzle Weldments.

1.1.15 Calculation 8031-M-MISC-41, Rev. 0, ISI Exemption Diameters.

1.1.16 VP-8031-M-246B-123-3, Report 6, CRD Housing Weld Exclusion Evaluation.

1.1.17 NED Specification M-679, ASME Section XI Repair and Replacement Programs at PBAPS 2 & 3 and LGS 1 & 2.

1.1.18 Regulatory Guide 1.147, Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1, Revision 8, Nov. 1990

1.1.19 General Electric Company SIL No. 433, Shroud Head Bolt Cracks.

1.1.20 General Electric Company SIL No. 462, Shroud Support Access Hole Cover Cracks.

1.1.21 General Electric Company SIL No. 474, Steam Dryer Drain Channel Cracking.

1.1.22 Limerick Generating Station, Unit #1 and Common Plant Summary Report No. 1, No. 2, and No. 3.

1.1.23 NUREG/CR-3052, Closeout of I.E. Bulletin 80-07: BWR Jet Pump Assembly Failure.

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/recommended 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 **Enforcement Authority** - The State of Pennsylvania, empowered to enact and enforce Boiler and Pressure Vessel Code Legislation.

1.2.8 **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.

1.2.9 **Form NIS-2, Owners' Report for Repairs or Replacements** - An ASME form used to document the results of repair or replacement activities. It will be submitted as part of the ISI Summary Report at the end of each refueling outage.

1.2.10 **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.

1.2.11 **Inservice Inspection Summary Report** - The report that is prepared at the completion of each refueling outage as specified in ASME Section XI.

1.2.12 **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.

1.2.13 **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.

1.2.14 **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.

1.2.15 **ISI Program Document** - The site/unit specific document (including applicable drawings) which addresses the overall ISI requirements during a ten year interval.

1.2.16 **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.

1.2.17 **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.

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

1.2.19 **Nominal Operating Pressure** - For Class 1 systems, it is the system pressure under normal steady state full power operating conditions, as governed by the UFSAR.

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 Corporate ASME Section XI Administrative Manual** - 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 manual, 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 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 Program** - 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 **Random Selections** - Random selections pertain to those selections of components for examination made purely at random and not based on any Code required parameter(s), such as component size, configuration, stress, etc. Random selection is used primarily when more than one component fulfills all selection criteria used to define which component was to be selected.

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 would be impractical to be examined or tested in accordance with ASME Section XI requirements. It includes the reason these requirements are impractical to meet and technical justification for performing an alternative to the requirements.

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

1.2.29 **Snubber** - A dynamic restraint device utilized in certain component supports. Snubbers can be hydraulic or mechanical.

1.2.30 **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.

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

1.2.32 **Structural Discontinuity Welds** - Includes circumferential weld joints at pipe to vessel nozzle, pipe to valve body, pipe to pump casing, pipe to fittings, and pipe branch connections.

1.2.33 **Terminal End Welds** - Circumferential welds at the extremities of pipe runs that connect the piping to structures or components which act as a rigid restraint or provide at least two directions of restraint to piping thermal movement; or circumferential welds in piping within 3 pipe diameters of the centerline of rigid pipe anchors.

1.3 ABBREVIATIONS

1.3.1 ALARA - As Low As Reasonably Achievable

1.3.2 ANII - Authorized Nuclear Inservice Inspector

1.3.3 ANS - American National Standard

1.3.4 ANSI - American National Standards Institute

1.3.5 ASME - American Society of Mechanical Engineers

1.3.6 ASNT - American Society for Nondestructive Testing

1.3.7 AUG - Augmented Examination Program

1.3.8 BWR - Boiling Water Reactor

1.3.9 DISG - Examine one of a group when disassembled

1.3.10 DISS - Examine when disassembled

1.3.11 E1P - Examined first period

1.3.12 EOI - End of interval

1.3.13 ID - Interval distribution

1.3.14 IGSCC - Intergranular Stress Corrosion Cracking

1.3.15 ISI - Inservice inspection

1.3.16 ISO - Isometric

1.3.17	IST	-	Inservice testing
1.3.18	LGS	-	Limerick Generating Station
1.3.19	MT	-	Magnetic particle testing
1.3.20	NDE	-	Nondestructive examination
1.3.21	NPS	-	Nominal pipe size
1.3.22	NRC	-	United States Nuclear Regulatory Commission
1.3.23	PECo	-	Philadelphia Electric Company
1.3.24	P&ID	-	Piping and Instrument Diagram
1.3.25	PT	-	Liquid penetrant testing
1.3.26	RO	-	Examine at 1st refueling outage, and subsequent refueling outages at approximately 3 year intervals.
1.3.27	RPV	-	Reactor pressure vessel
1.3.28	R&R	-	Repair and replacement
1.3.29	RR	-	Relief request
1.3.30	RT	-	Radiographic testing
1.3.31	SIL	-	Service and Information Letter (GE)
1.3.32	t	-	Pipe wall thickness
1.3.33	UT	-	Ultrasonic testing

1.3.34 VT - Visual testing

1.3.35 P1, P2, P3 - First period, second period, third period

1.3.36 74S75 - 1974 Edition thru and including the Summer 1975 Addenda

1.3.37 80W81 - 1980 Edition thru and including the Winter 1981 Addenda

1.4 CODES AND STANDARDS

1.4.1 Title 10, Code of Federal Regulations, Part 50 (10CFR50), Section 50.55a, "Codes and Standards."

1.4.2 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section V, "Nondestructive Examination", 1986 Edition.

1.4.3 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: "Rules for Inservice Inspection of Nuclear Power Plant Components," 1974 Edition thru and including the Summer 1975 Addenda.

1.4.4 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 thru and including the Winter 1981 Addenda.

1.4.5 American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, Division 1: "Rules for Inservice Inspection of Nuclear Power Plant Components", 1986 Edition.

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

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

1.4.8 ANSI N45.2.6, 1978, Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants.

1.4.9 Regulatory Guide 1.58, Revision 1 - Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel.

1.4.10 Regulatory Guide 1.65, Revision 0 - Materials and Inspection for Reactor Vessel Closure Studs.

1.4.11 Regulatory Guide 1.147, Revision [illegible] - Inservice [illegible] Case Acceptability, ASME Section XI, Division 1.

1.4.12 Regulatory Guide 1.150, Revision 1 - Alternate Method Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination.

2.0 REGULATORY REQUIREMENTS

2.1 CLASSIFICATION OF COMPONENTS

In accordance with 10CFR50.55a, 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 and other commitments made in the FSAR for Class 2 and 3 systems. System safety functions are consistent with Revision 58 of the FSAR. Color coded ASME Section XI Boundary P&ID's referenced in this Program identify the classification of systems/components.

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.

2.2 ASME SECTION XI

In accordance with 10CFR50.55a(g)(4), this program is in compliance, to the extent practical, with the applicable requirements of the 1986 Edition of ASME Section XI. Although the basic plant design is not totally consistent with the examination requirements of later Codes, every attempt has been made to obtain maximum compliance. This program identifies the areas for which compliance cannot be achieved, with proposed alternative methods to obtain reasonable assurance of system integrity.

An alternative to the use of the 1986 Code is found in the area of Class 1 pipe welds as discussed in the following section:

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 1986 Edition of Section XI. This position utilizes the later Code directions and represents a more practical approach for determining examination method and associated acceptance criteria.

The following summarizes the approach taken for Class 1 pipe welds:

Exemptions

- The 1986 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 1986 ASME Section XI. (See Section 3.5.3.1)

Examination Method

- The 1986 Section XI, IWB-2500-1 Tables are used for determining the type of NDE applied to these welds.

2.2.2 Non-applicability of Subsection IWE

Subsection IWE (Class MC Components) 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, 10CFR, Part 50, Appendix J, is being performed at LGS 1 to verify the integrity of the containment. Repair, modification, or replacements of ASME Class MC components shall be in accordance with Specification M-679 (Reference 1.1.17). Leakage test following repair, modification, or replacement shall be in accordance with Article 2000 of Code Case N-236-1.

2.2.3 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 1.1.9.

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 examination requirements (except VT-2) of the Code. The specific Code exemptions which have been applied to the LGS 1 ISI Program are detailed in the following:

2.3.1 Class 1 Exemptions

Discussion: The Class 1 exemptions used in this ISI Program are taken directly from the 1986 Edition of Section XI, 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 LGS 1, this exemption is applicable to components and piping less than 1.39" inside diameter (I.D.) for water service, and less than 2.78" I.D. for steam service. (See Reference 1.1.15)

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 1986 Edition of Section XI, Article IWC-1220.

2.3.2.1 Exemptions Used for Components Within Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) Systems:

1. Vessels, piping, pumps, valves, and other components and their supports that are 4" NPS and smaller.

2. Component connections 4" NPS and smaller (including nozzles, socket fittings, and other connections) and their supports in vessels, piping, pumps, valves, and other components of any size.

3. 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.

2.3.2.2 Exemptions Used for Components Within Systems Other Than RHR, ECC, and CHR Systems:

1. Vessels, piping, pumps, valves, and other components and their supports 4" NPS and smaller.

2. Component connections 4" NPS and smaller (including nozzles, socket fittings, and other connections) and their supports in vessels, piping, pumps, valves, and other components of any size.

3. Vessels, piping, pumps, valves, other components, and component connections (and their supports) of any size in systems or portions of systems that operate (when the system function is required) at a pressure equal to or less than 275 psig and at a temperature equal to or less than 200°F.

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.

2.3.2.3 Exemptions for Concrete Encased Components:

1. Piping support members and piping support components that are encased in concrete.

2.3.3 Class 3 Exemptions

Discussion: The Class 3 exemptions are taken from the 1986 Edition of Section XI, Article 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, ...

   Position: Included in this exemption are non-pipe components for which neither the cumulative I. D. inlet nor cumulative I. D. 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 and 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 LGS 1 augmented inspection 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.

The augmented examination requirements for the first inspection period were in accordance with Specification 8031-P-501.

2.5 ADDITIONAL BASES

In addition to published Code rules, ASME Section XI Code Cases may be used in formulating the bases of the ISI program. Code Cases are periodically published by the ASME to either clarify the intent of existing Code requirements or to provide timely rules and requirements for circumstances not covered by existing Code rules. Table 2.5-1 lists the Code Cases which have been adopted for use by this LGS 1 ISI Program.
USNRC Regulatory Guide 1.147 (reference 1.1.18) lists the Code Cases that are generally acceptable to the NRC for ISI implementation. These "approved" Code Cases are indicated

as such in Table 2.5-1. Code Cases which have not yet been endorsed by the NRC in Regulatory Guide 1.147 have also been adopted by this ISI Program. These Code Cases are also annotated in Table 2.5-1. Per footnote 6 of 10CFR50.55a, request for authorization and justification of use of these Code Cases is found in Relief Request RR-12 (Appendix A).

Table 2.5-1

Code Cases Applicable to the ISI Program

Code Case Number	Title	Approved by USNRC Reg. Guide 1.147
N-236-1	Repair and Replacement of Class MC Vessels	Yes (See Note 1)
N-307-1	Revised Ultrasonic Examination Volume for Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1, when the examinations are conducted from the center-drilled hole	Yes
N-379	Alternative Rules for Repairs, Replacements, or Modifications	Yes
N-406	Alternate Rules for Replacement	Yes
N-416	Alternate Rules for Hydrostatic Testing of Repair or Replacement of Class 2 Piping	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-460	Alternative Examination Coverage for Class 1 and Class 2 Welds	Yes
N-461	Alternate Rules for Piping Calibration Block Thickness	Yes
N-479-1	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test	No (See Note 2)
N-495	Hydrostatic Testing of Relief Valves	No (See Note 2)

NOTES: (1) Limited to Article 2000 for Leakage Test following repairs, modifications, or replacements.

(2) This Code Case has not been endorsed for use by the NRC in Reg. Guide 1.147. See Relief Request RR-12 for justification of its use in this program.

2.6 ASME SECTION XI DRAWINGS

The ASME Section XI Drawings define the boundary and/or detail the extent of systems and/or components subject to the rules of ASME Section XI. Additionally, they depict calibration standards used to implement the required examination programs. An index of all ASME Section XI Drawings (excluding component support drawings) is contained in Appendix C.

2.6.1 ASME Section XI Boundary P&ID's

The ASME Section XI Boundary P&ID's are drawings 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, these drawings indicate portions of systems which are outside the ASME Section XI boundaries but subject to the LGS 1 ASME Section XI Repair and Replacement Program.

2.6.2 ASME Section XI Isometric Drawings

The ASME Section XI Isometric Drawings are specially prepared drawings which are derived from design isometric drawings. They depict the ASME Class 1 and 2 systems, and identify the components (welds, supports, etc.), subject to examination, within these systems. Class 3 components subject to ISI examinations may be found on the fabrication isometric (design) drawings. Unique ASME Section XI Isometrics do not exist for Class 3 components.

2.6.3 ASME Section XI Component Drawings

The ASME Section XI Component Drawings are specially prepared detailed drawings of components, which identify specific areas of these components (bolts, welds, supports, surface areas), which are subject to examination in accordance with Section XI rules.

2.6.4 ASME Section XI Calibration Block Drawings

The ASME Section XI 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 ASME Section XI 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.

2.7 SYSTEM IDENTIFICATION

Classification boundaries are as identified on the ASME Section XI Boundary P&ID's listed in Appendix C. The following is a list of the systems contained in the ISI Program including their acronym.

Acronym	Title
RPV	Reactor Pressure Vessel
CRD	Control Rod Drive
CS	Core Spray
ESW	Emergency Service Water
FW	Feedwater
HPCI	High Pressure Coolant Injection
MS	Main Steam
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHR SW	Residual Heat Removal Service Water
RPV APP	Reactor Pressure Vessel Appurtenances
RR	Reactor Recirculation
RWCU	Reactor Water Clean Up
SLC	Standby Liquid Control

3.0 INSERVICE INSPECTION PROGRAM

3.1 RESPONSIBILITY

As owner of LGS 1, Philadelphia Electric Company (PECo) bears the overall responsibility for the performance of ISI. The required nondestructive examinations ma, be performed by PECo or a qualified examination vendor. The results and evaluation of the examinations, performed by NDE vendors, will be reported to PECo, 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 using 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 of the Code which defines three 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 locate evidence of leakage from pressure retaining components, or abnormal leakage from components with or without leakage collection systems as required during the conduct of system pressure or functional test.

(3) VT-3 examinations shall be conducted to determine the general mechanical and structural condition of components and their supports, such as the verification of clearances, settings, physical displacements, loose or missing parts, debris, corrosion, wear, erosion, or the loss of integrity at bolted or welded connections. The VT-3 examination shall include examinations for conditions that could affect operability or functional adequacy of snubbers, and constant load and spring type supports. For component supports and component interiors, the examination may be performed remotely with or without optical aids to verify the structural integrity of the component.

A combination of the VT-3 and VT-4 visual examination methods contained in the 80W81 ASME Section XI are considered to be equivilant to the VT-3 method described in the 1986 Edition. Also, examination personnel certified for both VT-3 and VT-4 in accordance with the earlier Code Editions are fully qualified to perform the 1986 Code, VT-3 examinations. Based on the above, it is PECo's position that the VT-3 visual examinations required by this Program shall be performed by personnel certified for either: both VT-3 and VT-4 in accordance with 80W81 Edition of ASME Section XI, or VT-3 in accordance with the 86 Edition of ASME Section XI. The examinations shall be conducted utilizing current, approved procedures for both the VT-3 and VT-4 visual examination methods which contain the examination attributes specified in item 3 above. This position will provide for an examination and documentation equal to that required by the 86 Code.

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 a liquid penetrant (PT) method 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 acceptable volumetric methods are radiographic (RT) and ultrasonic (UT) examination. The UT method is primarily used for the planned examinations in this program, however RT is used, as applicable, on certain components.

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 Boundary P&ID's will be performed in accordance with the Repair and Replacement Program, (Reference 1.1.17).

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 specific Class 1, 2 and 3 components require examination during the second and third inspection periods of the first 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. Therefore, these sections describe how PECo plans to implement the requirements of subsection IWB, IWC, IWD, and IWF of the Code, for LGS 1.

3.5.1 **Examination and Test Requirements**

Examination and test requirements for Class 1, 2, and 3 components will be in accordance with ASME Section XI, 1986 Edition, Tables IWB-, IWC-, and IWD-2500-1, for the specific Examination Category and Item Number.

3.5.2 **Acceptance Standards**

Acceptance standards for Class 1, 2, and 3 components will be in accordance with ASME Section XI, 1986 Edition, Tables IWB-, IWC-, and IWD-2500-1, for the specific Examination Category and Item Number.

3.5.3 **Selection Basis**

For a given population, items selected for ISI examination as identified in the Program Tables represents the minimum required items to be examined during the second and third inspection periods, to satisfy the Code requirements. Alternate selections may be made, provided the minimum quantity of Code required examinations is not reduced and code required selection criteria is not violated. Additionally, if system modifications result in an increase to the component population, the sampling criteria, as described herein, with considerations to ALARA and access, shall be used to select any required additional component examinations.

3.5.3.1 **Class 1 Welds**

The extent of examination for Class 1 piping welds (Category B-J) is in accordance with the 74S75 Edition of ASME Section XI. A representative sample of 25% of Class 1 piping welds, prorated by system, has been selected for examination during the first interval. The sample includes terminal ends connected to vessels and other terminal ends and weld joints connected to other components where stress levels exceed either of the following limits

1. Primary plus secondary stress intensity range of 2.4Sm
2. Cumulative usage factor (U) of 0.4

Longitudinal welds intersecting any of the selected circumferential welds, are also scheduled to be examined. Dissimilar metal Class 1 welds have been assigned to Code Category B-F, and shall be examined in accordance with the 1986 Code Rules for that Category.

3.5.3.2 **Class 2 Welds**

Selection of ISI Class 2 pressure retaining welds is in accordance with the rules of the 1986 Edition of ASME Section XI for the Examination Categories:

C-F-1 Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping, and

C-F-2 Pressure Retaining Welds in Carbon or Low Alloy Steel Piping

As such, the following rules are applied:

1) The welds selected for examination include 7.5%, but not less than 28 welds, of all austenitic stainless steel or high alloy welds for C-F-1, and all carbon and low alloy steel welds for C-F-2, not exempt by IWC-1220. Further, selection of welds for examination are subject to the following criteria:

   a) The examinations shall be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt austenitic stainless steel or high alloy welds for C-F-1 and carbon or low alloy welds for C-F-2, for each system;

   b) Within a system, the examinations shall be distributed among terminal ends and structural discontinuities prorated, to the degree practicable, on the number of terminal ends and structural discontinuities in each system; and

   c) Within each system, examinations shall be distributed between line sizes prorated to the degree practicable.

2) Class 2 dissimiliar metal welds are not specifically addressed in the Category C-F-1 or C-F-2 rules. For the purposes of this program, all dissimilar metal welds have been included in Category C-F-1 and all will be selected for examination.

3.5.3.3 **Multi-Component Concept**

For Class 1, 2, and 3 components of similar design, size, function, and service; certain categories of examinations may be performed on only one of these multiple 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 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 Tables by listing the specific multi-component group number in the notes column of the table. Therefore, for those Code examination categories to which the multi-component concept applies, only one component (or the equivilent of one component), in a group of components, which have the same multi-component group number, will be selected for examination.

3.5.4 **Implementation**

In accordance with ASME Section XI, IWA-2430, all portions of the ISI Program conform to Inspection Program B of IWA-2432. Program B defines the inspection interval as ten years. Accordingly the LGS 1 first inspection interval is scheduled to end on January 31, 1996. All Code required examinations identified in this ISI Program must be completed by this date, unless the interval is extended in accordance with IWA-2430(d) and/or IWA-2430(e).

Inspection Program B of the Code further divides the inspection interval into three periods. The duration of the 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 ten year interval does not exceed one year. The first period requirements were satisfied at the completion of refueling outage No. 2, which occurred on May 19, 1989. This program reflects the examinations scheduled to be performed during the remainder of the second and the third inspection periods.

In addition to completing all Code required examinations by the end of the interval, Section XI requires 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).

Required examinations within this program shall be implemented in accordance with the interval distribution defined in the above table, unless otherwise stated. Exceptions to implementation by interval distribution for certain examinations and/or categories of examinations are provided in the Code and are as follows:

- Certain examinations may only be conducted during a refueling outage. These examinations will be noted as RO-1/3Y in the scheduling requirements column of the ISI Tables, and shall be performed at the 1st refueling outage and at subsequent refueling outages at approximately 3 year intervals.

- Examinations which must be conducted during a specific period. These examinations will be noted as P1 and/or P2 and/or P3, 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 the particular component is disassembled, or disassembly of other components provides access to a normally inaccessible component. 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.

3.5.5 Successive Examinations

For Class 1 and 2 components, should component examination results require evaluation of flaw indications in accordance with IWB-3000/IWC-3000, and the component is analytically accepted for continued service, then the areas containing such flaw indications or relevant conditions will be scheduled in the ISI Program for successive examinations in accordance with IWB-2420 and IWC-2420 for Class 1 and 2, respectively.

3.5.6 Additional Examinations

For Class 1 and 2 components where examinations reveal indications which exceed the Code acceptance standards, examinations will be extended to include additional examinations in accordance with IWB-2430 and IWC-2430 for Class 1 and Class 2, respectively.

3.6 RELIEF REQUESTS

In cases where the Section XI requirements have been determined to be impractical to comply with, [illegible] Requests have been prepared in accordance with 10CFR50.55a(g)(5)(iii).

All requests for relief from the examination 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-YZ

Where:

RR = Relief Request

YZ = 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.

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, Article IWA-3100. If criteria is not specified in Section XI, the evaluation will utilize the criteria of the original Construction Code as allowed by IWA-3100(b).

3.8 REPORTS

Inservice inspection summary reports for Class 1, 2, and 3 pressure retaining components and their supports will be prepared at the completion of each inspection conducted during a refueling outage. All examinations and tests conducted since the preceding summary report shall be included.

The summary report will be prepared in accordance with IWA-6220, and will include the following as applicable:

1) Numbers assigned to the components by the State, Municipality, or Province;

2) National Board Numbers assigned to the components by the manufacturer;

3) Name of the components and descriptions, including size, capacity, material, location, and drawings to aid identification;

4) Name and address of manufacturers;

5) Manufacturer's component identification numbers;

6) Date of completion of the examination, test, replacement, or repair;

7) Name of ANII who witnessed or otherwise verified the examinations, tests, replacements, or repairs, and the Inspector's employer and business address, when required;

8) Abstract of examinations, tests, replacements, or repairs performed; conditions recorded; and corrective measures recommended or taken;

9) Signature of ANII, when required;

10) Owner's Report for Inservice Inspections, Form NIS-1, and Owner's Report for Repairs or Replacements, Form NIS-2.

The subject Inservice Inspection Summary Report will be filed with enforcement and regulatory authorities within 90 days of completion of the examinations conducted during the outage.

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 REACTOR VESSEL (CATEGORY B-A)

Item B1.10 - Shell Welds: See items B1.11 and B1.12 for specific types of welds subject to examination.

Item B1.11 - Circumferential

Item B1.12 - Longitudinal

Scope of Examination - Essentially 100% of the weld length of all circumferential and longitudinal shell welds.

Examination Schedule - End of Interval (EOI)

Discussion - Complete examination of all reactor vessel shell welds is not practical due to plant design. Relief for specific Category B-A welds is requested in Relief Request RR-01.

Item B1.20 - Head Welds: See items B1.21 and B1.22 for specific types of welds subject to examination.

Item B1.21 - Circumferential

Item B1.22 - Meridional

Scope of Examination - Essentially 100% of the accessible weld length of all circumferential and meridional bottom head welds.

Examination Schedule - End of Interval (EOI) - (Bottom Head Welds only)
Interval Distribution (ID) - (Top Head Welds only)

Discussion - Complete examination of all bottom head circumferential and meridional welds is not practical due to limited access due to control rod drives. The accessible length of these welds shall be examined per Table IWB-2500-1.

Item B1.30 - Shell-to-Flange Weld

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

Examination Schedule:

1. Interval Distribution (ID), or
2. First Period and Third Period (P1, P3)

The examination of the shell-to-flange weld may either be performed in part throughout the inspection interval (i.e. Interval distribution) or during the first and third periods to coincide with the Category B-D nozzle examinations. When the latter option is taken, at least 50% of the weld should be completed by the end of the first period, and the remaining portions completed during the third period.

Discussion - Ultrasonic angle-beam examination of the shell-to-flange weld is not practical from the flange face, and therefore, will be performed from the shell side of the weld only. As provided by IWB-2500-1, straight beam examination techniques from the flange face will be utilized in examination of the shell-to-flange weld.

Item B1.40 - Head-to-Flange Weld

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

Examination Schedule - Interval Distribution (ID)

Discussion - The head-to-flange weld, unlike the other Category B-A welds, requires both a surface and volumetric examination.

Item B1.50 - Repair Welds: See item B1.51 for specific types of repair welds subject to examination.

Item B1.51 - **Beltline Region**

Scope of Examination - All weld repair areas within the Beltline region.

Examination Schedule - End of Interval (EOI)

Discussion - All material (base metal) weld repairs in the beltline region, where repair depth exceeds 10% nominal of the vessel wall shall be examined. If the location of the repair is not positively and accurately known, then the individual shell plate, forging, or shell course containing the repair shall be included in the examination.

Note: As of the date of preparation of this document, there were no repair welds which qualify for these Item Numbers.

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

Note: Inspection Program A is not applicable to the LGS 1 ISI Program.

Reactor Vessel

Item B3.90 - **Nozzle-to-Vessel Welds**

Item B3.100 - **Nozzle Inside Radius Section**

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

Examination Schedule:

1. 1st Period (P1) - At least 25% but not more than 50% of the nozzles (both exams) shall be examined by the end of the first inspection period.

2. 2nd Period (P2) - See 3rd Period.

3. 3rd Period (P3) - The remainder of nozzles, not examined during the first period, shall be completed by the end of the 3rd Period, (i.e. the end of the inspection interval).

Note: Exam schedule for the above is indicated in the ISI Program Table as P1,3

Discussion - For nozzles greater than ten (10) inches nominal diameter, PECo has elected to extend the nozzle inside radius examination volume beyond ASME Code requirements. See Augmented Inspection Program-8 (AUG-8).

4.3 PRESSURE RETAINING PARTIAL PENETRATION WELDS IN VESSELS (CATEGORY B-E)

Item B4.10 - Partial Penetration Welds: See items B4.11, B4.12, and B4.13 for specific items subject to examination.

Item B4.11 - Vessel Nozzles

Item B4.12 - Control Rod Drive Nozzles

Item B4.13 - Instrumentation Nozzles

Discussion - See Section 8.1, Class 1 Pressure Test Program.

4.4 PRESSURE RETAINING DISSIMILAR METAL WELDS (CATEGORY B-F)

Note: Category B-F welds will not be listed on the ISI Program Tables of the Reactor Pressure Vessel. Instead, all Category B-F welds will be identified on the ISI Program Tables of the system containing the subject weld. If a system does not exist, the welds will be listed under the title "RPV Appurtenances" (RPV-APP).

Reactor Vessel

Item B5.10 - NPS 4 or Larger Nozzle-to-Safe End Butt Welds

Item B5.20 - Less Than NPS 4 Nozzle-to-Safe End 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. First Period. Third Period (P1,3) - Reactor vessel nozzle safe end welds may be examined coincident with the vessel nozzle weld examinations required by Category B-D. See Paragraph 4.2.

Discussion - There are dissimilar metal welds between the low alloy nozzle forgings and the piping system on all nozzles except those on the Main Steam and Feedwater Systems, and Head Spray and Vent lines.

Reactor Vessel

Item B5.30 - Nozzle-to-Safe End Socket Welds

Not applicable to LGS 1. There are no Reactor Vessel nozzle-to-safe end dissimilar metal socket welds.

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

Reactor Vessel

Item B6.10 - Closure Head Nu.s

Item B6.20 - Closure Studs, n place

Item B6.30 - Closure Studs when removed

Item B6.40 - Threads in Flange

Item B6.50 - **Closure Washers, Bushings**

Scope of Examination - All closure head nuts (B6.10), studs (B6.20, B6.30), threads in flange stud holes (B6.40), closure washers (B6.50). There are no bushings currently used in the Reactor vessel flange at LGS 1. Threads in flange stud holes only require examination in the event the connections are disassembled.

Examination Schedule - Each of the following:

1. Interval Distribution (ID) - Closure head nuts, studs (in place) and washers.

2. Disassembly (DISS) - Closure head studs require both surface and volumetric examination when the studs are removed. Threads in base material of flanges are required to be examined only upon dissassembly.

4.6 PRESSURE-RETAINING BOLTING, 2" AND LESS IN DIAMETER (CATEGORY B-G-2)

Reactor Vessel

Item B7.10 - **Bolts, Studs, and Nuts**

Scope of Examination - All bolts, studs, and nuts.

Examination Schedule - Internal Distribution (ID).

Discussion - Bolting may be examined in place under tension, when the connection is disassembled, or when the bolting is removed.

CRD Housings

Item B7.80 - **Bolts, Studs, and Nuts**

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

Examination Schedule - Only examined when disassembled (DISS).

4.7 INTEGRAL ATTACHMENTS FOR VESSELS (Category B-H)

Reactor Vessel

Item B8.10 - **Integrally Welded Attachments**

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

Examination Schedule - Interval Distribution (ID)

Discussion - The examination method for Category B-H is volumetric or surface, as applicable. Typically a volumetric examination of the integral attachment weld configurations is not practical; however, for the specific configuration illustrated in Figure IWB-2500-14, a volumetric examination may be performed in lieu of the surface examination.

4.8 INTERIOR OF REACTOR VESSEL (CATEGORY B-N-1) AND INTEGRALLY WELDED CORE SUPPORT STRUCTURES AND INTERIOR ATTACHMENTS TO REACTOR VESSELS (CATEGORY B-N-2)

Reactor Vessel

Item B13.10 - **Vessel Interior**

Reactor Vessel (BWR)

Item B13.20 - **Interior Attachments Within Beltline Region**

Item B13.30 - **Interior Attachments Beyond Beltline Region**

Item B13.40 - **Core Support Structure**

Scope of Examination - All accessible areas above and below the core of the vessel shell interior surfaces and critical internal components (B13.10), vessel interior attachment welds (B13.20, B13.30) and core support structure surfaces (B13.40).

Examination Schedule - Each of the following:

1. Refueling Outages (RO-1/3Y) - All vessel interior areas 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, B13.30) and the Core Support Structure (B13.40) only.

4.9 PRESSURE RETAINING WELDS IN CONTROL ROD HOUSINGS (CATEGORY B-O)

Reactor Vessel

Item B14.10 - Welds in CRD Housing

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

Discussion - Welds in the peripheral CRD housings are exempted from examination per IWB-1220(a). See reference 1.1.16 for calculation/justification.

4.10 ALL PRESSURE RETAINING COMPONENTS (CATEGORY B-P)

Discussion - See Section 8.1, Class 1 Pressure Test Program.

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. Examination categories 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, (i.e. Exam Categories B-B and B-Q)

5.1 PRESSURE RETAINING DISSIMILAR METAL WELDS (CATEGORY B-F)

Note: Category B-F welds will not be listed on the ISI Program Tables of the Reactor Pressure Vessel. Instead, all Category B-F welds will be identified on the ISI Program Tables of the system containing the subject weld. If a system does not exist, the welds will be listed under the title "RPV Appurtenances" (RPV-APP).

Piping

Item B5.130 - NPS 4 or Larger Dissimilar Metal Butt Welds

Item B5.140 - Less Than NPS 4 Dissimilar Metal Butt Welds

Item B5.150 - Dissimilar Metal Socket 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" IN DIAMETER (CATEGORY B-G-1)

<u>Piping</u>

<u>Item B6.150</u> - Bolts and Studs

<u>Item B6.160</u> - Flange Surface when connection disassembled

<u>Item B6.170</u> - Nuts, Bushings, and Washers

<u>Valves</u>

<u>Item B6.210</u> - Bolts and Studs

<u>Item B6.220</u> - Flange Surface when connection disassembled

<u>Item B6.230</u> - Nuts, Bushings, and Washers

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

<u>Pumps</u>

<u>Item B6.180</u> - Bolts and Studs

<u>Item B6.190</u> - Flange Surface when connection disassembled

<u>Item B6.200</u> - Nuts, Bushings, and Washers

Scope of Examination - All studs, bolts, nuts, and washers. Should the flanged connection be disassembled, the threads in flange stud holes and 1" annular surface of the flange surrounding stud or bolt shall be examined. There are no bushings currently used in these bolted connections at LGS 1.

The examinations of this category may be limited to the bolting of the pump selected for examination under category B-L-2

Examination Schedule:

1. Examine one in a group when disassembled (DISG) - Threads in flange stud holes and flange surfaces only; and
2. Interval Distribution (ID) - Bolts, studs, and nuts.

Discussion - The Reactor Recirculation Pumps are the only Class 1 pumps. In accordance with the multi-component concept, examinations of bolts, studs and nuts will be performed on only one pump on Unit 1. Bolting may be examined in place under tension, when the connection is disassembled, or when the bolting is removed. Examination of threads in flange stud holes and flange surfaces will be performed whenever the pump is disassembled.

5.3 PRESSURE-RETAINING BOLTING, 2" AND LESS IN DIAMETER (CATEGORY B-G-2)

Pumps

Item B7.60 - Bolts, Studs, and Nuts

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

Piping

Item B7.50 - Bolts, Studs, and Nuts

Valves

Item B7.70 - Bolts, Studs, and Nuts

Scope of examination - All bolts, studs, and nuts in nonexempt Class 1 piping and in certain selected Class 1 valves.

That is, for valve bolting, studs and nuts, examinations are limited to the valves selected for examination under Category B-M-2 (i.e., one valve within 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)

5.4 PRESSU... ETAINING WELDS IN PIPING (CATEGORY B-J)

Item B9.10 - NPS 4 or Larger: See items B9.11 and B9.12 for specific types of welds subject to examination.

Item B9.11 - Circumferential Welds

Item B9.12 - Longitudinal Welds

Item B9.20 - Less than NPS 4: See items B9.21 and B9.22 for specific types of welds subject to examination.

Item B9.21 - Circumferential Welds

Item B9.22 - Longitudinal Welds

Item B9.30 - Branch Pipe Connection Welds: See items B9.31 and B9.32 for specific types of welds subject to examination.

Item B9.31 - NPS 4 or Larger

Item B9.32 - Less than NPS 4

Item B9.40 - Socket Welds

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 (1) 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 additional welds.

Note: All Class 1, dissimilar metal ... been designated as Code Category B-F welds and theref... for examination in accordance with the rules of Cat... 5.1).

5.5 INTEGRAL ATTACHMENTS FOR PIPING, PUMPS, AND VALVES (CATEGORY B-K-1)

Valves

Item B10.30 - Integrally Welded Attachments

Not applicable to LGS 1. There are no integral attachments to Class 1 valves in the plant design.

Piping

Item B10.10 - Integrally Welded Attachments

Pumps

Item B10.20 - Integrally Welded Attachments

Scope of Examination - 25% of all integrally welded attachments to piping required to be examined under Examination Category B-J and the welded attachments to pumps associated with this piping that meet the following conditions

(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 5/8 in. or greater; and

Note: The base material design thickness is the thickness of the plate or other material product form from which the integral attachment was fabricated. For tubular stanchions, the base material design thickness is the nominal wall thickness of the tubular stanchion.

(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.

Examination Schedule - Interval Distribution (ID)

Discussion - 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, Table IWB-2500-1, Category B-K-1, Note (4).

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

<u>Pumps</u>

<u>Item B12.10</u> - Pump Casing Welds

Not applicable to LGS 1. There are no pressure-retaining welds in Class 1 pump casings.

5.7 PUMP CASINGS (CATEGORY B-L-2)

<u>Pumps</u>

<u>Item B12.20</u> - Pump Casings

Scope of Examination - Multi-component concept is applicable. Examinations are limited to the interior surface of one pump in each group of pumps performing similiar functions within the system.

Examination Schedule - DISG per Relief Request

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 reasons per Relief Request RR-02.

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

Valves

Item B12.30 - Valves, Less Than NPS 4, Valve Body Welds

Item B12.40 - Valves NPS 4 or Larger, Valve Body Welds

Not applicable to LGS 1. There are no valve body welds.

5.9 VALVE BODIES (CATEGORY B-M-2)

Item B12.50 - Valve Body, Exceeding NPS 4

Scope of Examination - Multi-component concept is applicable. 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 per Relief Request

Discussion - The VT-3 examination of the internal surfaces of one valve body from each multi-component group of valves will be performed if any valve from the group is disassembled for maintenance purposes, per Relief Request RR-03.

5.10 ALL PRESSURE RETAINING COMPONENTS (CATEGORY B-P)

Discussion - See Section 8.1, Class 1 Pressure Test Program.

6.0 <u>CLASS 2 WELDS, BOLTING, AND COMPONENT EXAMINATIONS</u>

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

<u>Item C1.30</u> - Tubesheet to Shell Welds

Not applicable to LGS 1. There are no welds of this type utilized at LGS.

<u>Item C1.10</u> - Shell Circumferential Welds

<u>Item C1.20</u> - Head 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 and head-to-shell circumferential welds. The 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-06. 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)

<u>Item C2.10</u> - Nozzles in Vessels ≤1/2 in. Nominal Thickness: See Item C2.11 for specific area subject to examination

<u>Item C2.11</u> - Nozzle-to-Shell (or Head) Weld

<u>Item C2.30</u> - Nozzle With Reinforcing Plate in Vessels > 1/2 in. Nominal Thickness: See Items C2.31, C2.32, and C2.33 for specific area subject to examination

<u>Item C2.31</u> - Reinforcing Plate Welds to Nozzle and Vessel

<u>Item C2.32</u> - Nozzle-to-Shell (or Head) Welds When Inside of Vessel is Accessible

<u>Item C2.33</u> - Nozzle-to-Shell (or Head) Welds When Inside of Vessel is Inaccessible

Not applicable to LGS 1. Plant design does not utilize nozzles of these types.

<u>Item C2.20</u> - Nozzles Without Reinforcing Plate in Vessels > 1/2 in. Nominal Thickness: See Items C2.21 and C2.22 for specific area subject to examination

<u>Item C2.21</u> - Nozzle-to-Shell (or Head) Weld

<u>Item C2.22</u> - Nozzle Inside Radius Section

Scope of Examination - All nozzles integrally welded or cast to vessels which are connected to piping examined under Examination Category C-F-1 or C-F-2. Examinations shall include nozzle-to-shell (or head) weld and the nozzle inside radius section. The multi-component concept is applicable.

Examination Schedule - Interval Distribution (ID)

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

<u>Valves</u>

<u>Item C3.40</u> - Integrally Welded Attachments

Not applicable to LGS 1. There are no integral attachments to Class 2 valves.

<u>Pressure Vessels</u>

<u>Item C3.10</u> - Integrally Welded Attachments

<u>Piping</u>

<u>Item C3.20</u> - Integrally Welded Attachments

<u>Pumps</u>

<u>Item C3.30</u> - Integrally Welded Attachments

Scope of Examination - 25% of all integral attachments to vessels, piping and pumps required to be examined under Examination Categories C-F-1, C-F-2, and C-G, that meet the following conditions:

(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
Note: The base material design thickness is the thickness of the plate or other material product form from which the integral attachment was fabricated. For tubular stanchions, the base material design thickness is the nominal wall thickness of the tubular stanchion.

(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.

The multi-component concept shall be applied to vessels only.

Examination Schedule - Interval Distribution (ID)

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

This category is not applicable to LGS 1. Plant design does not utilize pressure retaining bolting greater than 2 inches in diameter on Class 2 systems.

6.5 PRESSURE RETAINING WELDS IN AUSTENITIC STAINLESS STEEL OR HIGH ALLOY PIPING (CATEGORY C-F-1)

Item C5.20 - Piping Welds > 1/5 in. Nominal Wall Thickness for Piping ≥NPS 2 and ≤NPS 4: See items C5.21 and C5.22 for specific types of welds subject to examination

Item C5.21 - Circumferential Weld

Item C5.22 - Longitudinal Weld

Not applicable to LGS 1 since piping ≤4" is exempt for BWR Plants.

Item C5.30 - Socket Welds

Not applicable to LGS 1. Plant design does not include socket welds greater than 4 inches NPS.

Item C5.10 - Piping Welds ≥3/8 in. Nominal Wall Thickness for Piping > NPS 4: See items C5.11 and C5.12 for specific types of welds subject to examination.

Item C5.11 - Circumferential Weld

Item C5.12 - Longitudinal Weld

Item C5.40 - Pipe Branch Connections of Branch Piping ≥NPS 2: See items C5.41 and C5.42 for specific types of welds subject to examination

Item C5.41 - Circumferential Weld

Item C5.42 - **Longitudinal Weld**

NOTE: Branch connections ≥ NPS 2 and ≤ NPS 4 are not applicable to LGS 1 since they are exempt for BWR Plants.

Scope of Examination - 7.5%, but not less than 28 circumferential pipe welds and branch connection welds (≥3/8 in. nominal wall thickness for piping > 4" NPS) located on nonexempt piping. All longitudinal pipe welds intersecting any of the selected circumferential and branch connection welds shall also be examined for a length of at least 2.5t. The examination shall be distributed among the Class 2 systems, prorated on the number of nonexempt welds in each system. Examinations shall further be distributed and prorated on the number of terminal ends and structural discontinuities in each system and prorated between line sizes.

Examination Schedule - Interval Distribution (ID)

6.6 PRESSURE RETAINING WELDS IN CARBON OR LOW ALLOY STEEL PIPING (CATEGORY C-F-2)

Item C5.60 - **Piping Welds > 1/5 in. Nominal Wall Thickness for Piping ≥NPS 2 and ≤NPS 4: See items C5.61 and C5.62 for specific types of welds subject to examination**

Item C5.61 - **Circumferential Weld**

Item C5.62 - **Longitudinal Weld**

Not applicable to LGS 1 since piping ≤4" NPS is exempt for BWR Plants.

Item C5.70 - **Socket Welds**

Not applicable to LGS 1. Plant design does not include socket welds greater than 4 inches NPS.

Item C5.50 - **Piping Welds ≥3/8 in. Nominal Wall Thickness for Piping > NPS 4: See items C5.51 and C5.52 for specific types of welds subject to examination**

<u>Item C5.51</u> - Circumferential Weld

<u>Item C5.52</u> - Longitudinal Weld

<u>Item C5.80</u> - Pipe Branch Connections of Branch Piping ≥NPS 2: See items C5.81 and C5.82 for specific types of welds subject to examination

NOTE: Branch connections ≥ NPS 2 and ≤ NPS 4 are not applicable to LGS 1 since they are exempt for BWR Plants.

<u>Item C5.81</u> - Circumferential Weld

<u>Item C5.82</u> - Longitudinal Weld

Scope of Examination - 7.5%, but not less than 28 circumferential pipe welds and branch connection welds (≥3/8 in. nominal wall thickness for piping >4 in. NPS) located on nonexempt piping. All longitudinal pipe welds intersecting any of the selected circumferential and branch connection welds shall also be examined for a length of at least 2.5t. The examinations shall be distributed among the Class 2 systems, prorated on the number of nonexempt welds in each system. Examinations shall be further distributed and prorated on the number of terminal ends and structural discontinuities in each system and prorated between line sizes.

Examination Schedule - Interval Distribution (ID)

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

<u>Valves</u>

<u>Item C6.20</u> - Valve Body Welds

Not applicable to LGS 1. Plant design does not use Class 2 valves with pressure retaining valve body welds.

Pumps

Item C6.10 - Pump Casing Welds

Scope of Examination - Examination of 100% of the pressure retaining welds in pump casings in each piping run examined under Category C-F-1 and C-F-2. The multi component concept is applicable.

Examination Schedule - Interval Distribution (ID)

Discussion - Examinations shall be conducted as documented in Relief Request RR-07.

6.8 ALL PRESSURE RETAINING COMPONENTS (CATEGORY C-H)

Discussion - See Section 8.2, Class 2 Pressure Test Program.

7.0 CLASS 3 COMPONENT EXAMINATIONS

7.1 SYSTEMS IN SUPPORT OF REACTOR SHUTDOWN FUNCTION (CATEGORY D-A)

Item D1.50 - **Integral Attachment - Constant Load Type Supports**

Item D1.60 - **Integral Attachment - Shock Absorbers**

Not applicable to LGS Unit 1. Plant design does not utilize these types of component supports in Class 3 systems.

Item D1.10 - **Pressure Retaining Components**

See Section 8.3, Class 3 Pressure Test Program.

Item D1.20 - **Integral Attachment - Component Supports and Restraints**

Item D1.30 - **Integral Attachment - Mechanical and Hydraulic Snubbers**

Item D1.40 - **Integral Attachment - Spring Type Supports**

The selection basis for these Item Numbers is addressed in Section 9.0, Component Supports, Paragraph 9.3.6.

7.2 SYSTEMS IN SUPPORT OF EMERGENCY CORE COOLING, CONTAINMENT HEAT REMOVAL, ATMOSPHERE CLEANUP, AND REACTOR RESIDUAL HEAT REMOVAL (CATEGORY D-B)

Item D2.50 - **Integral Attachment - Constant Load Type Supports**

Item D2.60 - **Integral Attachment - Shock Absorbers**

Not applicable to LGS Unit 1. Plant design does not utilize these types of component supports in Class 3 systems.

<u>Item D2.10</u> - Pressure Retaining Components

See Section 8.3, See Class 3 Pressure Test Program.

<u>Item D2.20</u> - Integral Attachment - Component Supports and Restraints

<u>Item D2.30</u> - Integral Attachment - Mechanical and Hydraulic Snubbers

<u>Item D2.40</u> - Integral Attachment - Spring Type Supports

The selection basis for these Item Numbers is addressed in Section 9.0, Component Supports, Paragraph 9.3.6.

7.3 SYSTEMS IN SUPPORT OF RESIDUAL HEAT REMOVAL FROM SPENT FUEL STORAGE POOL (CATEGORY D-C)

Item D3.50 - Integral Attachment - Constant Load Type Support

Item D3.60 - Integral Attachment - Shock Absorbers

Not applicable to LGS Unit 1. Plant design does not utilize these types of component supports in Class 3 systems.

Item D3.10 - Pressure Retaining Components

See Section 8.3, Class 3 Pressure Test Program.

Item D3.20 - Integral Attachment - Component Supports and Restraints

Item D3.30 - Integral Attachment - Mechanical and Hydraulic Snubbers

Item D3.40 - Integral Attachment - Spring Type Supports

The selection basis for these Item Numbers is addressed in Section 9.0, Component Supports, Paragraph 9.3.6.

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.

8.1 CLASS 1 PRESSURE TEST PROGRAM

The Class 1 Pressure Test Program will be conducted in accordance with IWA-, and IWB-5000.

8.1.1 Pressure Retaining Partial Penetration Welds In Vessels (Table IWB-2500-1, Category B-E)

Item B4.10 - Partial Penetration W... - See items B4.11, B4.12, and B4.13 for specific areas subject to examination.

Item B4.11 - Vessel Nozzles

Item B4.12 - Control Rod Drive Nozzles

Item B4.13 - Instrumentation Nozzles

Scope of Examination - Visually examine 25% of all nozzles within each of the above Items.

Examination Schedule - End of Interval (EOI), concurrent with system hydrostatic test.

Discussion - A VT-2 examination will be conducted for evidence of leakage of partial penetration welds in the RPV.

8.1.2 All Pressure Retaining Components (Table IWB-2500-1, Category B-P)

Heat Exchangers:

Item B15.40 - Pressure Retaining Boundary (System Leakage Test)

Item B15.41 - Pressure Retaining Boundary (System Hydrostatic Test)

Not applicable to LGS 1. LGS 1 does not utilize Class 1 Heat Exchangers applicable to these Items.

Reactor Vessel:

Item B15.10 - Pressure Retaining Boundary (System Leakage Test)

Item B15.11 - Pressure Retaining Boundary (System Hydrostatic Test)

Piping:

Item B15.50 - Pressure Retaining Boundary (System Leakage Test)

Item B15.51 - Pressure Retaining Boundary (System Hydrostatic Test)

Pumps:

Item B15.60 - Pressure Retaining Boundary (System Leakage Test)

Item B15.61 - Pressure Retaining Boundary (System Hydrostatic Test)

Valves:

Item B15.70 - Pressure Retaining Boundary (System Leakage Test)

Item B15.71 - Pressure Retaining Boundary (System Hydrostatic Test)

Scope of Examination - All Class 1 piping, pumps, valves, and the reactor vessel (including nozzles and safe ends) shall be examined, as applicable, concurrent with a leakage test and a hydrostatic test. Alternative test methods may be used as described in Section XI, Article IWA-5000.

Examination Schedule

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

2. End of Interval (EOI) - Examination concurrent with a hydrostatic test required to be performed at or near the end of interval.

8.1.2.1 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) at 100% rated reactor power. The exempt and non-exempt Class 1 systems, or portions thereof, subject to a system leakage test are shown on the ASME Section XI Boundary P&ID's.

Note: Nominal operating pressure corresponding to 100% rated reactor power is 1020 psia as specified in the LGS UFSAR, Figure 5.1-1.

8.1.2.2 System Hydrostatic Test

Class 1 components will be subjected to a system hydrostatic test of IWB-5222 at or near the end of the inspection interval. The exempt and non-exempt Class 1 systems, or portion, thereof, subject to a system hydrostatic test are shown on the ASME Section XI Boundary P&ID's. Test temperature and pressure will be in accordance with Article IWB-5000.

8.2 CLASS 2 PRESSURE TEST PROGRAM

The Class 2 Pressure Test Program will be conducted in accordance with IWA- and IWC-5000.

8.2.1 All Pressure Retaining Components (Table IWC-2500-1 Category C-H)

Pressure Vessels:

Item C7.10 - Pressure Retaining Components (System Inservice or Functional Test)

Item C7.20 - Pressure Retaining Components (System Hydrostatic Test)

Piping:

Item C7.30 - Pressure Retaining Components (System Inservice or Functional Test)

Item C7.40 - Pressure Retaining Components (System Hydrostatic Test)

Pumps:

Item C7.50 - Pressure Retaining Components (System Inservice or Functional Test)

Item C7.60 - Pressure Retaining Components (System Hydrostatic Test)

Valves:

Item C7.70 - Pressure Retaining Components (System Inservice or Functional Test)

Item C7.80 - Pressure Retaining Components (System Hydrostatic Test)

Scope of Examination - All Class 2 pressure vessels, piping (other than open ended portions of systems), pumps, and valves shall be examined, as applicable, concurrent with both inservice or functional tests and the hydrostatic test. Alternative test methods may be used, as described in Section XI, IWA- and IWC-5000.

Examination Schedule

1. 1st Period (P1) - An examination was performed during the first inspection period concurrent with an inservice or functional test.

2. 2nd Period (P2) - Examination concurrent with an inservice, functional or hydrostatic test.

3. 3rd Period (P3) - Examination concurrent with an inservice, functional or hydrostatic test.

Note: An inservice or functional test is required each period, however, these system pressure tests as defined in IWC-5221 need not be performed in the period that the system hydrostatic test of IWC-5222 is performed. A hydrostatic test must be performed at least once during the ten year interval, either in the second or third period. A system hydrostatic test is acceptable in lieu of the system inservice or functional test.

8.2.1.1 System Inservice or Functional Test

Class 2 components will be subject to the system inservice or functional test requirements of IWC-5221. The exempt and non-exempt Class 2 systems or portions thereof, subject to an inservice or functional test are shown on the ASME Section XI Boundary P&ID's. Specific pressurization boundaries (i.e. test examination boundaries) are dependent on system configuration during normal service or system/component functional testing.

The inservice operating pressure is the actual pressure achieved during acceptable system operation and will be used as the test pressure for the system inservice pressure test. The nominal operating pressure achieved during Tech Spec surveillance testing (for functional test) should be used as the test pressure for the system functional pressure test.

8.2.1.2 System Hydrostatic Test

Class 2 components will be subject to the system hydrostatic test requirements of IWC-5222. The exempt and non-exempt Class 2 systems, or portions, thereof, subject to a hydrostatic test are shown on the ASME Section XI Boundary P&ID's. Test temperatures and pressure will be in accordance with Article IWC-5000.

8.3 CLASS 3 PRESSURE TEST PROGRAM

The Class 3 Pressure Test Program will be conducted in accordance with IWA- and IWD-5000.

8.3.1 Systems In Support Of Reactor Shutdown Function (Table IWD-2500-1, Category D-A)

Item D1.10 - Pressure Retaining Components (System Inservice or Functional Test and Hydrostatic Test)

Systems In Support Of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal (Table IWD-2500-1, Category D-B)

Item D2.10 - Pressure Retaining Components (System Inservice or Functional Test and Hydrostatic Test)

Systems In Support Of Residual Heat Removal From Spent Fuel Storage Pool (Table IWD-2500-1, Category D-C)

Item D3.10 - Pressure Retaining Components (System Inservice or Functional Test and Hydrostatic T

Scope of Examination - All Class 3 pressure vessels, piping, pumps, and valves shall be examined, as applicable, concurrent with both inservice or functional tests and the hydrostatic test. Alternative test methods may be used, as described in Section XI, IWA- and IWD-5000.

Examination Schedule

1. 1st Period - An examination was performed during the first inspection period concurrent with an inservice or functional test.

2. 2nd Period - Examination concurrent with an inservice, functional or hydrostatic test.

3. 3rd Period - Examination concurrent with an inservice, functional or hydrostatic test.

Note: An inservice or functional test is required each period, however, these system pressure tests as defined in IWD-5221 need not be performed in the period that the system hydrostatic test of IWD-5223 is performed. A hydrostatic test must be performed at least once during the ten year interval, either in the second or third period. A system hydrostatic test is acceptable in lieu of the system inservice or functional test.

8.3.1.1 System Inservice or Functional Test

Class 3 components will be subjected to the system inservice or functional test requirements specified in IWD-5200. The exempt and non-exempt Class 3 systems, or portions thereof, subject to an inservice or functional test are shown on the ASME Section XI Boundary P&ID's. Specific pressurization boundaries (i.e. test examination boundaries) are dependent on system configuration during normal service or system/component functional testing.

The inservice operating pressure is the actual pressure achieved during acceptable system operation and will be used as the test pressure for the system inservice pressure test. The nominal operating pressure achieved during Tech Spec surveillance testing (for functional tests) shall be used as the test pressure for the system functional pressure test.

8.3.1.2 System Hydrostatic Test

Class 3 components will be subject to a system hydrostatic test per IWD-5223. The exempt and non-exempt Class 3 systems, or portions thereof, subject to a system hydrostatic test are shown on the ASME Section XI Boundary P&ID's. Test temperatures and pressures will be in accordance with Article IWD-5000.

9.0 CLASS 1, 2 AND 3 COMPONENT SUPPORTS

9.1 GENERAL

The ISI Program for component supports has been developed in accordance with the requirements of Subsection IWF of the 1986 Edition of Section XI and Relief Request No. RR-09. Details of the ISI Program for component supports are identified in this section.

All non-exempt component supports, within the ASME Section XI boundaries, are listed in the ISI Tables and shown on the ASME Section XI or Fabrication Isometric Drawings. This includes those non-exempt component supports containing snubbers, although only those portions excluding the pin to pin snubber assembly of these supports are subject to the examination requirements of this ASME Section XI ISI Program (See Figure 9.1-1). The snubber assemblies are subject to the examination and testing requirements of the LGS 1 Technical Specifications as discussed in Relief Request RR-04. The existing technical specification requirements will be replaced with the examination and testing requirements contained in Augmented Inspection Program-13 (AUG-13). This replacement will only occur after NRC acceptance of AUG-13 and NRC issuance of an amendment to facility operating license NPF-39 for LGS 1 to incorporate the changes to be proposed by PECo in a technical specification change request in accordance with 10CFR50.90.

Requests for relief from Section XI requirements are contained in Appendix A. Augmented inspection programs are in Appendix B.

FIGURE 9.1-1

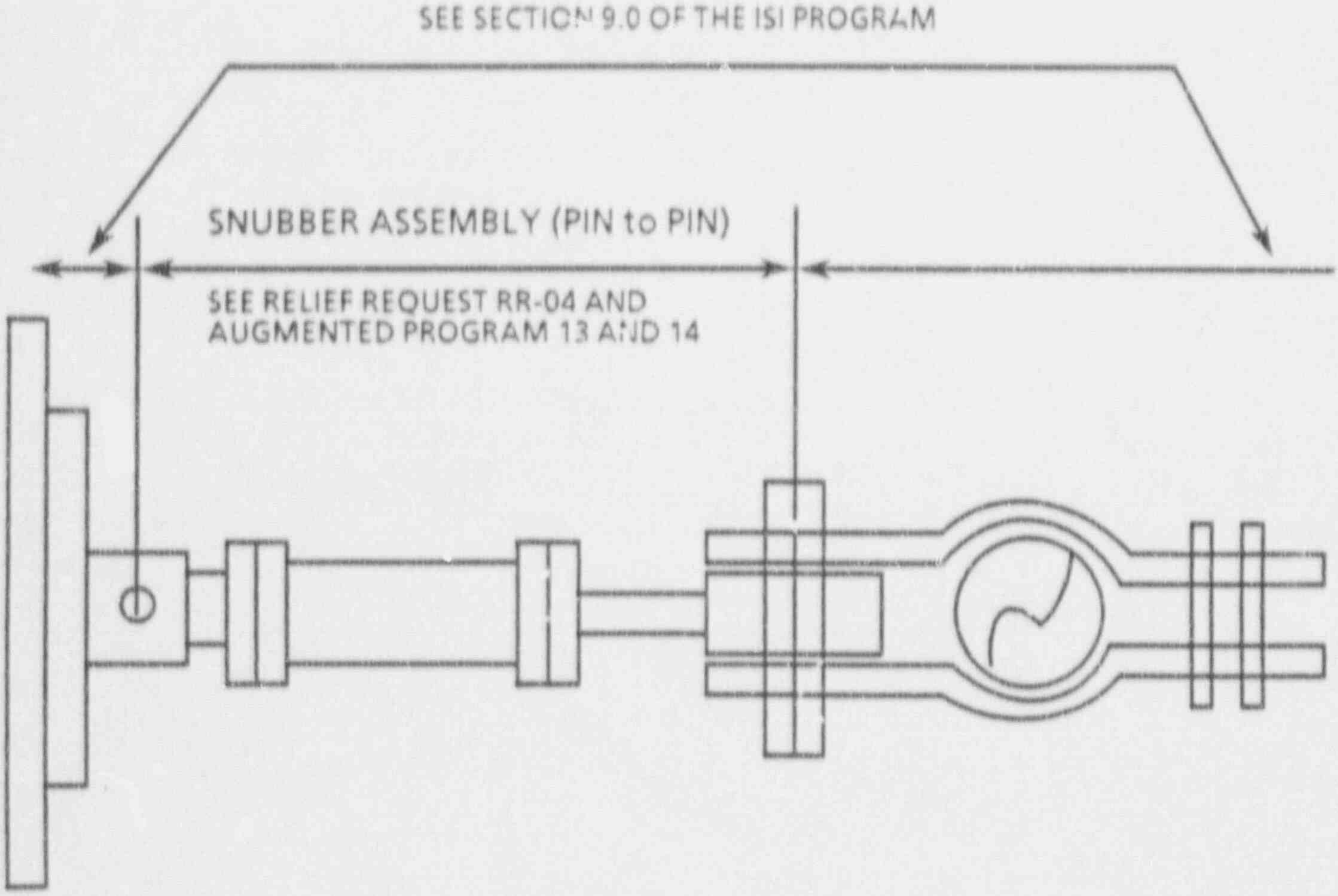


FIGURE 9.1-1

9.2 EXEMPTIONS

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

9.3 EXAMINATION REQUIREMENTS

9.3.1 Examination Categories

The 1986 Edition of 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 Examination Category noted as F-A, Supports. In addition, the Category is subdivided into four (4) Item Numbers as identified on Table 9.3-1.

TABLE 9.3-1

EXAMINATION CATEGORY F-A,

SUPPORTS

Item No.	Support Type	Examination Method [2]	Extent of Examination
F1.10	Class 1 Piping Supports	Visual, VT-3	25% of Class 1 [1]
F1.20	Class 2 Piping Supports	Visual, VT-3	15% of Class 2 [1]
F1.30	Class 3 Piping Supports	Visual, VT-3	10% of Class 3 [1]
F1.40	Supports Other Than Piping Supports (Class 1, 2, 3)	Visual, VT-3	100% of the supports [3]

NOTES:

(1) The total percentage sample shall be comprised of supports from each system where the individual sample sizes are proportional to the total number of non-exempt supports of each type and function within each system.

(2) Acceptance standards shall be in accordance with ASME Section XI, 1986 Edition, IWA-3410.

(3) For multiple components other than piping within a system of similar design, function and service, the support of only one of the multiple components are required to be examined.

9.3.2 **Extent of Examination**

The extent of examination of piping supports, as defined in Relief Request RR-9, shall be a sampling as follows:

Class 1 piping supports	25% of the nonexempt population
Class 2 piping supports	15% of the nonexempt population
Class 3 piping supports	10% of the nonexempt population

The extent of examination of supports other than piping supports will be 100% of the nonexempt population utilizing the multiple component concept.

9.3.3 **Examination Boundaries**

The component support examination boundaries shall be in accordance with the 1986 Edition of ASME Section XI, IWF-1300 as depicted on the Component Support Design Drawing and Bill of Material List.

9.3.4 **Examination Methods**

All component support examinations will be performed utilizing the VT-3 visual examination method in accordance with Section 3.3.1.

9.3.5 **Selection Criteria**

Selection of specific piping supports to fill the sample population shall consider the piping support "type" as a primary factor. All LGS-1 piping supports have been assigned to the following functional types:

- Anchor
- Mechanical Snubber
- Rigid
- Variable

Accordingly, the specific piping supports, selected to fill the sample population, shall be distributed within each class by system and type, proportional to the number of supports of each type within each system.

Selection of supports other than piping supports shall utilize the multiple component concept. For multiple components, other than piping, within a system of similar design, function and service; the supports of only one of the components will be selected for examination.

9.3.6 **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.

9.3.7 **Additional Examinations**

a) When the results of a selected piping support examination require corrective measures in accordance with IWF-3000, examinations shall be extended to include examination of the piping supports immediately adjacent (regardless of classification) to the nonconforming support, and additional piping supports of the same type within the system, equal in number to those scheduled for examination during the current inspection period.

b) If the examinations of (a) require corrective actions, then the remaining piping supports of the affected type, within the affected system, shall be examined.

c) If the examinations of (b) require corrective actions, the examinations shall be extended to include all nonexempt piping supports potentially subject to the same failure mode(s) which required correction in (a) and (b). These examinations shall be extended to other system piping supports should the failure mode(s) be non-system related.

d) Examinations shall be extended to include exempt piping supports should the examinations of (c) require corrective actions. Exempt piping supports shall be selected for additional examinations if the exempt supports are potentially subject to the same failure mode(s) as detected above.

e) When the results of a selected non-piping support examinations require corrective measures in accordance with IWF-3000, the rules of IWF-2430 of the 1986 Edition of ASME Section XI shall be followed.

9.3.8 <u>Examination Implementation</u>

All component support examinations and Class 3 integral attachment examinations will be in accordance with Interval Distribution (ID) scheduling.

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 LGS 1 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

PRINTED: MM/DD/YY

LIMERICK GENERATING STATION UNIT 1 AND COMMON
INSERVICE INSPECTION PROGRAM TABLES

PAGE: NNN

SYSTEM: (1) CLASS: (2) DRAWING: (5)

SECTION XI EXAM CAT & ITEM NUMBER	EXAMINATION AREA ID LINE/EQUIP NUMBER & WELD NUMBER	EXAMINATION AREA DESCRIPTION	ISI EXAMINATION METHOD	FIGURE NUMBER	ISI SELECTED	SCHEDULING REQUIREMENTS	ISI RELIEF REQUEST	AUGMENTED PROGRAM	ISI NOTES	LAST UPDATE
(4)	(5)/(5a)	(6)	(7)	(7a)	(9)	(9)	(10)	(11)	(12)	(13)

SYSTEM: (1) CLASS: (2) DRAWING: (5)

(1) System - The system name

(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.

(5a) Line/Equip. Number & Weld Number - The pipe line number and spool number or the equipment number associated with the examination area; and the construction weld number description if applicable.

(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) Figure 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 first 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:

P1	-	Examine during 1st Period
P2	-	Examine during 2nd Period
P3	-	Examine during 3rd Period
P1, 3	-	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
P1,2,3	-	Examine each period
RO-ALL	-	Examine each refueling outage
RO-X(y)	-	Examine every (y) refueling outage
RO-1/3y	-	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.

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

(11) Augmented Program - If a plus sign (+) is indicated next to the Exam Cat., 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 3.5.3.3, the specific multi-group will be specified in this column.

(13) Last Update - A date 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.

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

LIMERICK GENERATING STATION
AUG-XX, AUGMENTED PROGRAM

PAGE NNNN

EXAMINATION AREA ID NUMBER	CLASS	SYSTEM	P&ID	ISOMETRIC DRAWING REFERENCE	ISI SELECTED	AUG PROGRAMS	AUG-XX SELECTED	AUG-XX EXAM METHOD	ISI/XI CATEGORY	AUG-XX EXAM FREQUENCY	AUG-XX NOTES	LAST UPDATE
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)

AUG-XX REPORT (15)

AUGMENTED PROGRAM TITLE (1)

(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) P&ID - The P&ID reference drawing applicable to the component.

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

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

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

(9) 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.

(10) 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.

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

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

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

(14) Last Update - A date 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.

(15) 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

The relief requests identified with an asterisk (*) were previously submitted as part of Specification 8031-P-500. These relief requests were approved by the USNRC.

RELIEF REQUEST NO.	EXAMINATION CATEGORY		ITEM NO.	
RR-01	B-A	Pressure retaining welds in reactor vessel	B1.11	Shell welds (Circumferential)
			B1.12	Shell welds (Longitudinal)
			B1.21	Head welds (Circumferential)
			B1.22	Head welds (Meridional)
RR-02	B-L-2	Pump casings	B12.20	Pump casing (Internal surfaces)
*RR-03	B-M-2	Valve bodies	B12.50	Valve body, exceeding NPS 4 (Internal surfaces)
RR-04	F-C	Component standard supports	F3.50	Spring type supports, constant load type supports, shock absorbers, hydraulic and mechanical type snubbers
*RR-05	C-C	Integral attachments for vessels, piping, pumps, and valves	C3.10	Integrally welded attachments (Pressure vessels)
			C3.20	Integrally welded attachments (Piping)
			C3.30	Integrally welded attachments (Pumps)

APPENDIX A - TABLE OF CONTENTS (CONT'D)

RELIEF REQUEST

RELIEF REQUEST NO.	EXAMINATION CATEGORY		ITEM NO.	
*RR-06	C-A	Pressure retaining welds in pressure vessels	C1.10	Shell circumferential welds
*RR-07	C-G	Pressure retaining welds in pumps and valves	C6.10	Pump casing welds
*RR-08	B-D	Full penetration welds of nozzles in vessels (Inspection program B)	B3.90	Nozzle to vessel welds (Reactor vessel)
RR-09	F-A	Plate and shell type supports	F1.10	Mechanical connections to pressure retaining components and building structure
			F1.20	Weld connections to building structure
			F1.30	Weld and mechanical connections at intermediate joints in multiconnected integral and non-integral supports.
			F1.40	Component displacement settings of guides and stops, misalignment of supports, assembly of support items.
	F-B	Linear type supports	F2.10	Mechanical connections to pressure retaining components and building structure

APPENDIX A - TABLE OF CONTENTS (CONT'D)

RELIEF REQUEST

RELIEF REQUEST NO.	EXAMINATION CATEGORY		ITEM NO.	
RR-09 (Cont'd)			F2.20	Weld connections to building structure
			F2.30	Weld and mechanical connections at intermediate joints in multiconnected integral and non-integral supports
			F2.40	Component displacement settings of guides and stops, misalignment of supports, assembly of support items
	F-C	Component standard supports	F3.10	Mechanical connections to pressure retaining components and building structure
			F3.20	Weld connections to building structure
			F3.30	Weld and mechanical connections at intermediate joints in multiconnected integral and non-integral supports
			F3.40	Component displacement settings of guides and stops, misalignment of supports, assembly of support items
			F3.50	Spring type supports, constant load type supports, shock absorbers, hydraulic and mechanical type snubbers
*RR-10	B-F	Pressure retaining dissimilar metal welds	B5.130	NPS 4 or larger dissimilar metal butt welds (Piping)
RR-11		Reserved for Future Use		
RR-12				ASME Code Case(s) Authorization Request

APPENDIX A - TABLE OF CONTENTS (CONT'D)

RELIEF REQUEST

RELIEF REQUEST NO.	EXAMINATION CATEGORY			ITEM NO.
RR-13	C-H	All Pressure Retaining Components		**Pressure Vessels**
			C7.10	Pressure Retaining Components
			C7.20	Pressure Retaining Components
				Piping
			C7.30	Pressure Retaining Components
			C7.40	Pressure Retaining Components
				Pumps
			C7.50	Pressure Retaining Components
			C7.60	Pressure Retaining Components
				Valves
			C7.70	Pressure Retaining Components
			C7.80	Pressure Retaining Components
	D-A.	Systems in Support of Reactor Shutdown Function	D1.10	Pressure Retaining Components
	D-B.	Systems in Support of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal	D2.10	Pressure Retaining Components
	D-C.	Systems in Support of Residual Heat Removal From Spent Fuel Storage Pool	D3.10	Pressure Retaining Components
RR-14				Augmented Examination Programs

RELIEF REQUEST NO. RR-01

I. IDENTIFICATION OF COMPONENTS

Class 1 pressure retaining circumferential and longitudinal shell welds in the reactor pressure vessel, Examination Category B-A, Item Numbers B1.11 and B1.12 respectively.

Class 1 pressure retaining circumferential and meridional welds in the reactor pressure vessel bottom head, Examination Category B-A, Item Numbers B1.21 and B1.22 respectively.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1986 Edition, Examination Category B-A requires a volumetric examination of essentially 100% of the weld length of all circumferential and longitudinal shell welds and all circumferential and meridional bottom head welds during the first inservice inspection interval. Examinations shall be performed in accordance with Figures IWB-2500-1, 2, and 3 (as applicable) and the nondestructive examination requirements of ASME Section V.

Relief is requested from complete examination of the Examination Category B-A welds listed in Table RR-01-1. Complete Code examination of these welds is not practical due to limitations imposed by reactor pressure vessel design.

III. BASIS FOR RELIEF

Complete examination of the subject welds is not practical due to scanning limitations and access restrictions from various RPV appurtenances (such as adjacent RPV nozzles and attachments, the biological shield wall, and control rod drive housings).

The circumferential and longitudinal shell welds are examined using automated ultrasonic examination techniques to the maximum extent practical. Supplemental manual examinations may yield increases in examination coverage; however, these increases come at a cost of increased personnel radiation exposure. Therefore, due to ALARA considerations,

RELIEF REQUEST NO. RR-01 (CONTD.)

supplemental manual ultrasonic examinations are not being considered to augment examination coverage.

Manual ultrasonic examination of the bottom head welds are performed to the maximum extent practical.

Any significant improvement in automated or manual examination coverage cannot be achieved without major plant redesign.

IV. <u>ALTERNATE PROVISIONS</u>

No alternate provisions are practical for the subject weld examinations. All of the welds are subject to the VT-2 examination requirements of Examination Category B-P.

In addition, examination of the remaining Examination Category B-A accessible welds, which are similar in design/service, provide adequate assurance of RPV pressure boundary integrity.

RELIEF REQUEST NO. RR-01 (CONTD.)

TABLE RR-01-1
EXAMINATION CATEGORY B-A
INCOMPLETE EXAMINATIONS

Component Identification	Description	Limiting Condition	Examination %Complete[1]
AA	Shell circumferential	N1A, B, N8A, B	89.4%
AC	Shell circumferential	N17A, B, C, D	89.2%
AE	Shell circumferential	N12A, B, C, D, vessel nameplate	88.3%
BA	Shell longitudinal	N2K	85.65%
BB	Shell longitudinal	N2C	85.65%
BC	Shell longitudinal	N1B, N2F nozzles	85.2%
BF	Shell longitudinal	N17B	76.0%
BG	Shell longitudinal	N11A	79.3%
BK	Shell longitudinal	Biological shield bracket	49.0%
BM	Shell longitudinal	Biological shield bracket	47.9%
BN	Shell longitudinal	Refueling bellows skirt	74.5%
BP	Shell longitudinal	Refueling bellows skirt	75.1%

RELIEF REQUEST NO. RR-01 (CONTD.)

TABLE RR-01-1 (CONTD.)

Component Identification	Description	Limiting Condition	Examination %Complete[1]
DA	Bottom head meridional	Skirt attachment weld	84.3%
DB	Bottom head meridional	Skirt attachment weld	84.3%
DC	Bottom head meridional	Skirt attachment weld	84.3%
DD	Bottom head meridional	Skirt attachment weld	84.3%
DE	Bottom head meridional	Skirt attachment weld	84.3%
DF	Bottom head meridional	Skirt attachment weld	84.3%

1 Percentages listed quantify approximate extent of compliance with Code requirements, and do not represent totally unexamined volume.

RELIEF REQUEST NO. RR-02

I. IDENTIFICATION OF COMPONENTS

Reactor Recirculation Pumps, 1AP-201 and 1BP-201, 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 1986 Edition, Examination 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 first 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.

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 LGS 1 constitutes a maintenance task of major proportions measured both in terms of manhours and associated personnel exposure.

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. In consideration of this situation, the 1989 Edition of Section XI requires a VT-3 examination only if the pump is disassembled for maintenance, repair or volumetric examination.

RELIEF REQUEST NO. RR-02 (CONTD.)

IV. ALTERNATE PROVISIONS

VT-3 visual examinations will be performed on the accessible 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.

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

RELIEF REQUEST NO. RR-03

I. IDENTIFICATION OF COMPONENTS

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 1986 Edition, Examination 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, and manufacturing method and that perform similar functions in the system, once during the first 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.

III. BASIS FOR RELIEF

The requirement to disassemble 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. Other valves would require the installation of plugs in associated system piping. Personnel exposure to perform disassembly of any of the valves is also a major consideration.

Industry experience with both cast and forged valve bodies in this application has been favorable; disassembly solely for additional assurance of structural integrity is not warranted. In consideration of this situation, the 1989 Edition of Section XI requires a VT-3

RELIEF REQUEST NO. RR-03 (CONTD.)

examination only if the valve is disassembled for maintenance, repair, or volumetric examination.

IV. ALTERNATE PROVISIONS

If, in the course of plant maintenance activities, the internal surfaces of the body of a Category B-M-2 valve, within any of the valve groupings, becomes accessible, then, a VT-3 visual examination will be performed on that valve to meet the ASME Section XI examination requirements for that grouping.

Class 1 valves, where no maintenance has been done, are also subject to VT-2 visual examination requirements of Examination Category B-P. This examination provides added assurance of pressure boundary structural integrity.

RELIEF REQUEST NO. RR-04

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, 1986 Edition Examination Category F-C requires a VT-3 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 LGS-1 Technical Specification requirements.

III. BASIS FOR RELIEF

Implementation of both the aformentioned Code requirements and requirements contained in the LGS-1 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 3/4.7.4, is comprehensive and meets the intent of ASME Section XI examination and testing.

RELIEF REQUEST NO. RR-04

IV. ALTERNATE PROVISIONS

The examination and testing of snubber assemblies shall be performed in accordance with Technical Specification 3/4.7.4. in lieu of the aforementioned Code examination and testing requirements. Following the issuance of a license amendment revising the LGS-1 Technical Specifications to incorporate the examination and testing requirements of Augmented Inspection Program-13 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 3/4.7.4 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 and replacements; and their associated 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-05

I. IDENTIFICATION OF COMPONENTS

Class 2 integrally welded attachments for vessels, piping, and pumps, Examination Category C-C, Item Numbers C3.10, C3.20, and C3.30.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1986 Edition, Examination Category C-C requires a surface examination of 100% of required areas of each welded attachment to vessels and pumps during the first inservice inspection interval. In the case of multiple vessels, only the integrally welded attachments of one (1) vessel in a group of vessels of similar design and service (or the equivalent of one vessel) need be examined. Examinations shall be performed in accordance with Figure IWC-2500-5 and the nondestructive examination requirements of ASME Section V.

Relief is requested from complete examination of the integrally welded attachments listed in Table RR-05-1 due to plant/component design.

III. BASIS FOR RELIEF

The affected welds are individually detailed in Table RR-05-1. All welds will be examined to the maximum extent practical. Increased examination coverage is not possible without undue hardship, such as a plant modification.

IV. ALTERNATE PROVISIONS

No alternate provisions are presented for these examinations. The piping, vessel, and pump pressure boundaries are subject to routine visual examinations during pressure testing in accordance with examination Category C-H.

RELIEF REQUEST NO. RR-05 (CONTD.)

TABLE RR-05-1

Examination Area ID Number	Description/ System	Basis for Relief	Examination % Complete
RHR-HXA-1-A RHR-HXA-1-B RHR-HXA-1-C RHR-HXA-1-D	Heat Exchanger Tie Down Bracket Attachment Welds/RHR	Examination of the interior welds on the tie down brackets is limited due to insertion of the tie down anchor plates; the outside welds are completely accessible. Examinations are limited on both RHR Heat Exchangers.	0% of the interior welds
RHR-HXA-2-A RHR-HXA-2-B RHR-HXA-2-C RHR-HXA-2-D	Heat Exchanger Mounting Support Attachments Welds/RHR	Examination of the outside attachment welds is limited by the supporting I beam. The inside welds are completely accessible. Examinations are limited on both RHR Heat Exchangers.	75% of the outside welds
RC-P-PS1 RC-P-PS2 RC-P-PS3 RC-P-PS4	Pump Mounting Support Attachment Welds/RCIC	Examination of the bottom portion of the mounting support attachment welds is limited due to proximity to the pump pedestal.	85%
EBB-129-H005 (IA)	Clamp/HPCI	Examination restricted due to permanent plant structures.	70%
GBB-119-H002(IA)	Lugs/RHR	Examination restricted due to permanent plant structures.	70%

RELIEF REQUEST NO. RR-06

I. IDENTIFICATION OF COMPONENTS

Class 2 Residual Heat Removal (RHR) heat exchanger pressure retaining shell circumferential welds; Examination Category C-A, Item Number C1.10.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1986 Edition, Examination Category C-A requires volumetric examination of 100% of the pressure retaining shell circumferential welds at gross structural discontinuities of one (1) heat exchanger (or the equivalent of one heat exchanger) during the first inservice inspection interval. Examinations shall be performed in accordance with Figure IWC-2500-1 and the nondestructive examination requirements of ASME Section V. Relief is requested from complete examination of the shell to flange weld due to limited access resulting from component design.

III. BASIS FOR RELIEF

Complete ultrasonic examination of the shell to flange weld (on either heat exchanger) is limited due to access restrictions from the flange bolting. Bolting protruding through the vessel flange prohibits completion of the required ultrasonic scanning parallel to the weld. Transverse scans can be performed from the shell side of the weld, thereby providing approximately 87.5% coverage of the Code required volume. Disassembly of the flange mechanical connection, to facilitate complete examination, is not practical, and represents significant hardship in exchange for minimal benefit.

IV. ALTERNATE PROVISIONS

No alternate examinations are proposed for the subject weld. Ultrasonic examination shall be performed to the maximum extent practical.

RELIEF REQUEST NO. RR-07

I. IDENTIFICATION OF COMPONENTS

Class 2 Residual Heat Removal (RHR) pumps, 1AP-202, 1BP-202, 1CP-202 and 1DP-202, pressure retaining pump casing welds, Examination Category C-G, Item Number C6.10.

Class 2 Core Spray pumps, 1AP-206, 1BP-206, 1CP-206, 1DP-206, pressure retaining pump casing welds, Examination Category C-G, Item Number C6.10.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1986 Edition, Examination Category C-G requires surface examination of 100% of pressure retaining pump casing welds of one (1) pump in each group of multiple pumps (of similar design, size, function, service), during the first inservice inspection interval. Examinations shall be performed in accordance with Figure IWC-2500-8 and the nondestructive examination requirements of ASME Section V.

Welds on each of the RHR and Core Spray pumps (four (4) on Core Spray, four (4) on RHR) are encased in concrete and are totally inaccessible for surface examination. Relief is requested from examination of inaccessible pressure retaining pump casing welds on the RHR and Core Spray pumps due to plant/component design.

III. BASIS FOR RELIEF

Due to the design of the subject pumps, access to the affected welds can only be achieved through disassembly of the pump, removal of the pump internals, and the required surface examinations performed from the inside surface of the welds. This effort, in the absence of any other necessary pump maintenance, represents a significant hardship in terms of manhours spent and personnel exposure, without a compensating increase in plant safety.

The remaining accessible casing welds in each of one (1) RHR and one (1) Core Spray pump will be examined to ASME Section XI requirements. In addition, all pumps are subject to the visual examination requirements of Examination Category C-H and the

RELIEF REQUEST NO. RR-07 (CONTD.)

functional test requirements of Section IWP, thereby, providing assurance of pump structural integrity.

IV. ALTERNATE PROVISIONS

In the event any or all of the subject welds become accessible upon disassembly of any one (1) of the pumps, the welds will be surface examined from the inside surface, to meet ASME Section XI requirements for that particular pump group. Alternatively, in support of PECo's ALARA program, a visual examination (VT-1) may be performed in lieu of a surface examination. The examination method will be determined by PECo based on radiation environment data at the time access is enabled.

RELIEF REQUEST NO. RR-08

I. IDENTIFICATION OF COMPONENTS

Class 1 full penetration welds of nozzles 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 1986 Edition, Code Category B-D requires a volumetric examination of all reactor pressure vessel nozzle to vessel welds during the first inservice inspection interval. The examinations shall be performed in accordance with the examination requirements of Figure IWB-2500-7(b) and the nondestructive examination requirements of ASME Section V.

Relief is requested from complete examination of the nozzle to vessel welds listed in Table RR-08-1 due to access limitations imposed by reactor pressure vessel design and/or component configuration.

III. BASIS FOR RELIEF

The LGS 1 reactor pressure vessel has thirty four (34) nozzles, the welds of which require volumetric (ultrasonic) examination per Code Examination Category B-D. Due to the nozzle forging configuration, portions of the Code required examination volume cannot be completely examined. The curvature of the blend radius of the nozzle forging is such that ultrasonic scanning of the weld is interrupted due to loss of contact of the ultrasonic search unit. This limitation affects both transverse and parallel scanning of the Code required examination volume.

In support of ALARA, 28 of the 34 nozzle to vessel welds are examined utilizing remote automatic ultrasonic tehniques. These techniques however, further limit the examination coverage due to scanning limitations caused by scanner design.
Table RR-08-1 lists the LGS 1 nozzle to vessel welds and quantifies the effect of nozzle configuration on Code required examination coverage.

RELIEF REQUEST NO. RR-08 (CONTD.)

In addition to component configuration certain nozzle to vessel weld examinations are further limited by reactor pressure vessel design obstructions (such as, RPV appurtenances). These welds are also detailed in Table RR-08-1.

Examination coverage as indicated in Table RR-08-1 is to the maximum extent feasible for the given configuration. Also, for all nozzle configurations, except N4D, the critical inner 25% of the nozzle thickness was effectively examined with both 45 and 60 degree beam angles.

IV. <u>ALTERNATE PROVISIONS</u>

No alternate provisions are practical for the subject welds. Examinations are performed to the maximum extent feasible.

RELIEF REQUEST NO. RR-08 (CONTD.)

TABLE RR-08-1
CODE EXAMINATION CATEGORY B-D
EXAMINATION COVERAGE

Nozzle ID[1]	Description	Percentage of Volume Examined Due to Nozzle Configuration: Transverse[2] Scans		Parallel[3] Scans	Percentage of Nozzle Circumference Examined/ Nature of Limitation
N1A, B	Recirculation Outlet	Fully Examined	79.29	50	
		Partially Examined	6.80		
		Unexamined	13.91		
N2A-H, J, K	Recirculation Inlet	Fully Examined	77.55	50	
		Partially Examined	7.80		
		Unexamined	14.65		
N3A, B, C, D	Main Steam	Fully Examined	73.26	50	
		Partially Examined	6.30		
		Unexamined	20.44		
N4A, B, C, E, F	Feedwater	Fully Examined	77.55	50	
		Partially Examined	7.80		
		Unexamined	14.65		
N4D	Feedwater	Fully Examined	77.55	50	88.9 Nozzle N11B
		Partially Examined	7.80		
		Unexamined	14.65		
N5A, B	Core Spray	Fully Examined	77.55	50	
		Partially Examined	7.80		
		Unexamined	14.65		
N6A, B	Head Spray	Fully Examined	72.36	50	
		Partially Examined	9.67		
		Unexamined	17.97		

RELIEF REQUEST NO. RR-08 (CONTD.)

TABLE RR-08-1 (CONTD.)
CODE EXAMINATION CATEGORY B-D
EXAMINATION COVERAGE

Nozzle ID[1]	Description	Percentage of Volume Examined Due to Nozzle Configuration: Transverse[2] Scans		Parallel[3] Scans	Percentage of Nozzle Circumference Examined/ Nature of Limitation
N7	Head Vent	Fully Examined	76.24	50	
		Partially Examined	7.27		
		Unexamined	16.49		
N8 A, B	Jet Pump Instrument	Fully Examined	78.22	50	
		Partially Examined	7.65		
		Unexamined	14.13		
N9	CRD	Fully Examined	78.22	50	
		Partially Examined	7.65		
		Unexamined	14.13		
N17 A, B, C, D	RHR	Fully Examined	77.55	50	
		Partially Examined	7.80		
		Unexamined	14.65		

NOTES:

1. Unless otherwise noted, data provided is generic to all nozzles of a given identification number. Where the restriction varied, data is provided for the worst case.

2. The following applies to all nozzle transverse scans:

   a) Fully examined - the percent of the Code required volume that is able to be examined utilizing both the 45 and 60 degree beam angles.

   b) Partially examined - the percent of the Code required volume that is able to be examined by the 60 degree beam angle only.

   c) Unexamined - the percent of the Code required volume that was unable to be examined by either the 45 or 60 degree beam angle.

3. Parallel scans could not be performed on the nozzle side of all the welds.

RELIEF REQUEST NO. RR-09

I. IDENTIFICATION OF COMPONENTS

Class 1, 2, and 3 component supports in piping, Examination Categories F-A, F-B, and F-C, Item Numbers F1.10-F1.40, F2.10-F2.40, and F3.10-F3.50.

Component supports other than piping supports are outside of the scope of this relief request.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1986 Edition, Paragraph IWF-2510 requires that component supports selected for examination be the supports of those components that are required to be examined under IWB, IWC, and IWD during the first inspection interval. These component supports shall be examined in accordance with Table IWF-2500-1.

ASME Section XI 1986 Edition, Paragraph IWF-2430 details the steps to be taken should additional examinations be required as a result of component support examinations requiring corrective actions per IWF-3000.

Relief is requested from utilization of the IWF-2510 rules for component support selection, and from the IWF-2430 rules for additional examination.

The Code does not provide specific guidance for component support selection and therefore, user interpretation of the rules, as written, may not meet the intent of the Code. In addition, the rules for additional examinations are general and can not effectively compliment the selection basis, nor target specific failure modes.

III. BASIS FOR RELIEF

While IWF-2510 implies that component supports be selected for examination, specific criteria for this selection has not been provided. Interpretation of these requirements is inconsistent and may vary by Code Category of the supported component. One approach

RELIEF REQUEST NO. RR-09 (CONTD.)

utilized, is to apply the selection criteria of the component where the support is located (e.g. C-F-1/C-F-2 selection rules used to select Class 2 piping supports). This approach may provide for adequate sampling of the support population; however, selection by this approach yields different selection basis for different categories of components, and is cumbersome to apply and track. Other approaches may be used; however, these selections may or may not meet the intent of the Code.

Also, the current provisions in the Code for additional examinations are random and may or may not target a potential failure mode to a specific support population. Enhancement of the component support selection basis should also include a complementary plan for selection of additional examinations.

The ASME Code has recognized the need for a more definitive selection basis for component supports and as such, has issued Code Case N-491. The sampling plan discussed herein parallels this code case.

IV. ALTERNATE PROVISIONS

The sampling plan described in Attachment 1 will be utilized for selection of component supports for examination in lieu of paragraphs IWF-2510 and IWF-2430.

RELIEF REQUEST NO. RR-09 (CONTD.)

Attachment 1

Class 1, 2, and 3 Piping Supports

Sampling Plan

SCOPE

The requirements of this sampling plan are applicable to nonexempt Class 1, 2, and 3 component supports in piping. Component supports other than piping supports, such as equipment supports, are outside of the scope of this sampling plan.

GENERAL

The sampling plan is based on selection of a specified percentage of the nonexempt population of component supports; the exact percentage determined by the Class of the component support.

Within the population, each individual component support is categorized by a support type which identifies its function (e.g. anchor).

The required number of component support selections shall be distributed within each class by system and type, proportional to the number of supports of each type within each system.

RELIEF REQUEST NO. RR-09 (CONTD.)

Attachment 1 (cont'd.)

SPECIFIC

The specific details of the sampling plan to be applied to LGS 1 components supports is as follows:

1) The extent of examination is determined by the Class of the component support:

Class 1	25% of the nonexempt population
Class 2	15% of the nonexempt population
Class 3	10% of the nonexempt population

2) Component supports are assigned to one of the following functional types:

ANCHOR
MECHANICAL SNUBBER
RIGID
VARIABLE

3) In applying the sampling plan, the required percentage of component supports are selected by type in each system. That is, 25% of all Class 1 anchors in system XYZ are selected, 25% of all Class 1 component supports containing snubbers are selected, and so on. Likewise, 15% of all Class 2 anchors are selected, etc. In addition, no less than one component support of each type will be selected (provided supports of that type exist in the system).

4) The required number of component supports will be examined over the inservice inspection interval and will be distributed throughout the interval in accordance with Inspection Program B, as follows:

	Minimum examinations completed, %	Maximum examinations credited, %
First Period	16	34
Second period	50	67
Third period	100	100

RELIEF REQUEST NO. RR-09 (CONTD.)

Attachment 1 (cont'd.)

5) Should additional examinations be required, per IWF-2430, the following rules shall apply:

a) When the results of a selected component support examination require corrective measures in accordance with IWF-3000, examinations shall be extended to include examination of the supports immediately adjacent to the nonconforming support, and additional supports of the same type within the system, equal in number to those scheduled for examination during the current inspection period.

b) If the examinations of (a) require corrective actions, then the remaining component supports of the affected type, within the affected system, shall be examined.

c) If the examinations of (b) require corrective actions, the examinations shall be extended to include all nonexempt supports potentially subject to the same failure mode(s) which required correction in (a) and (b). These examinations shall be extended to other system component supports should the failure mode(s) be non-system related.

(d) Examinations shall be extended to include exempt supports should the examinations of (c) require corrective actions. Exempt supports shall be selected for additional examinations if the exempt supports are potentially subject to the same failure mode(s) as detected above.

RELIEF REQUEST NO. RR-10

I. IDENTIFICATION OF COMPONENTS

Class 1 pressure retaining dissimilar metal welds. Examination Category B-F, Item Number B5.130.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1986 Edition, Examination Category B-F requires a volumetric and surface examination of all piping dissimilar metal butt welds, NPS 4 or larger, during the first inservice inspection interval. Examinations shall be in accordance with figure IWB-2500-8 and the nondestructive examination requirements of ASME Section XI, Appendix III.

Relief is requested from complete volumetric examination of the Examination Category B-F components listed in Table RR-10-1. Complete volumetric examination of these welds is not practical due to component configuration and/or plant design.

III. BASIS FOR RELIEF

Complete examination of the required examination volume of Figure IWB-2500-8 is not practical utilizing current ultrasonic examination techniques. Nonparallel surfaces within the required axial scan path on certain valves and fittings limit complete examination of the base material adjacent to weld.

A complete ultrasonic examination scanning parallel to the weld and a complete surface examination can be performed on the affected welds. Axial scanning of the weld and required volume will be performed to the maximum extent practical.

Partial ultrasonic examination coupled with complete surface examination and routine visual examination in accordance with Examination Category B-P provide adequate assurance of piping pressure boundary structural integrity.

RELIEF REQUEST NO. RR-10 (CONTD.)

IV. ALTERNATE PROVISIONS

No alternate examination provisions are practical for the subject welds. Existing ultrasonic examination coverage is adequate such that use of alternate volumetric examination techniques (i.e. radiography) offers no improvements in examination effectiveness.

RELIEF REQUEST NO. RR-10 (CONTD.)

TABLE RR-10-1
EXAMINATION CATEGORY B-F
COMPONENTS REQUIRING RELIEF

Examination Area ID Number	Description/ System	Examination % Complete
RHA 013	Valve to Flued Head/RHR	85%
RHB 013	Valve to Flued Head/RHR	85%
RHC 013	Valve to Flued Head/RHR	85%
RHD 013	Valve to Flued Head/RHR	85%
CSA 015	Valve to Flued Head/CS	85%

RELIEF REQUEST NO. RR-11

NOTE:

Reserved for future use

RELIEF REQUEST NO. RR-12

I. SCOPE

This relief request is applicable to those ASME Code Case(s) adopted for use in this ISI Program which have not been specifically endorsed for use by the USNRC in Regulatory Guide 1.147 (reference 1.1.18).

II. DISCUSSION

Code Cases are periodically published by the ASME for the purpose of either clarifying the intent of Code rules or for providing rules and regulations for circumstances which are not currently covered by existing Code rules but need to be addressed in a timely manner. Use of these non-mandatory Code Cases for inservice inspection is subject to USNRC acceptance of the Code Case(s); Regulatory Guide 1.147 lists those Codes 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 requested pursuant to 10CFR50.55a.

The purpose of this relief request is to request authorization of the adoption of specific Code Cases for implementation in the LGS 1 ISI Program.

III. CODE CASE(S) REQUIRING AUTHORIZATION

The following Code Case(s) require specific authorization for use in the LGS 1 ISI Program:

A. N-479-1 Boiling Water Reactor (BWR) Main Steam Hydrostatic Test

The Class 2 portion of the Main Steam system is incapable of being isolated from the Class 1 portion for purposes of performing a hydrostatic test. Use of this Code Case allows testing to the alternative rules of IWB-5222 (Class 1), which is most practical in this situation.

RELIEF REQUEST NO. RR-12 (CONTD.)

B. N-495 Hydrostatic Testing of Relief Valves

Under potential hydrostatic testing conditions of Class 2 or 3 components, gagging of relief valves, subject to the hydrostatic test pressure, may not be practical or possible. Use of this Code Case will allow removal of such valves to be conducted under a consistent set of rules while still accomplishing all code intended pressure tests.

IV. ALTERNATE PROVISIONS

The alternative rules of the Code Case(s) in III above shall be implemented in the LGS 1 ISI Program for the first inservice inspection interval.

V. BASIS FOR RELIEF

The Code Case(s) discussed in III above represent technically acceptable alternative rules to ASME Section XI Code rules. The fact that the Code Case(s) have 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) are relatively recent and it is expected that these Code Case(s) will be accepted in a subsequent revision of the Regulatory guide.

Adoption of these alternative rules provides an acceptable level of quality and safety and does not compromise the adequacy of the LGS 1 ISI Program in meeting the intent of ASME Section XI.

RELIEF REQUEST NO. RR-13

I. IDENTIFICATION OF COMPONENTS

Class 2 (exempt and non-exempt) pressure retaining components within the pressure retaining boundary of pressure vessels, piping, pumps, and valves, Examination Category C-H, Item Numbers C7.10 through C7.80 inclusive.

Class 3 (exempt and non-exempt) pressure retaining components within the pressure retaining boundary, Examination Categories D-A, D-B, and D-C, Item Number D1.10, D2.10, and D3.10, respectively.

The specific Class 2 and 3 components covered by this relief request are detailed in Table(s) RR-13-1.1 through RR-13-1.9.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI 1986 Edition, Examination Category C-H requires the pressure retaining components within each system boundary be subject to the system pressure tests of IWC-5000 and visually (VT-2) examined.

ASME Section XI 1986 Edition, Examination Categories D-A, D-B, and D-C require the pressure retaining components within each system boundary be subject to the system pressure tests of IWD-5000 and visually (VT-2) examined.

The required system pressure tests shall be performed during the first inservice inspection interval in accordance with Table IWC-2500-1 or Table IWD-2500-1, as applicable.

Relief is requested from meeting the subject pressure test requirements for the specific components listed in Table RR-13-1.1 through RR-13-1.9 due to hardship imposed by plant design and/or redundant testing. Individual test requirements requiring relief are as detailed in the Tables.

RELIEF REQUEST NO. RR-13 (CONTD.)

III. BASIS FOR RELIEF

Pressure testing in accordance with some or all of the requirements of IWC-5000 or IWD-5000, as applicable, for the affected components is impractical due to plant/system design and/or redundant test requirements as detailed in Table(s) RR-13-1.1 through RR-13-1.9.

In all cases, plant modification to facilitate the required testing represents undue hardship and/or alternate testing provides adequate assurance of pressure boundary integrity.

IV. ALTERNATE PROVISIONS

Any alternate test provisions, where practical, are as proposed in Table(s) RR-13-1.1 through RR-13-1.9.

RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.1

I. Identification of Components

Class 2 Service Air piping, HBB-166 between and including valves 15-1139 and 15-1140. (Ref. P & ID: ISI-M-15, Sht 15)

II. Code Requirement From Which Relief Is Requested

IWC-5221, System pressure test during system functional/inservice tests and, IWC-5222, System hydrostatic test

III. Basis For Relief

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

During normal plant operation, Service Air Header pressure is approximately 100-110 psig. HBB-166 is isolated from the Service Air header by normally closed valves 15-1138 and 15-1139 outside containment and 15-1140 and 15-1212 inside containment.

Although Local Leak Rate tests use a lower pressure (44 psig) than normal Service Air pressure, they offer the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests and the ten year hydrostatic test.

2) LLRTs have the ability to quantify leakage which is not feasible with VT-2 inspections on air systems.

3) LLRTs conservatively test some unclassified piping and includes through valve leakage which would not be identified in a VT-2 inspection.

RELIEF REQUEST NO. RR-13 (CONTD.)

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakages. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance would be performed, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.2

I. Identification of Components

Class 3 Nuclear Boiler Vessel instrumentation tubing to drywell pressure instrumentation outboard of HV-42-147A, B, C, and D. (Ref P & ID: ISI-M-42 Sht 1)

II. Code Requirement From Which Relief Is Requested

IWD-5221, System Inservice Test and
IWD-5223, System Hydrostatic Test

III. Basis For Relief

Normal Drywell pressure is less than 1 psig. The pressurizing fluid is nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than 1 psig driving pressure would be inconclusive.

LGS Technical Specifications require channel checks every 12 hours to verify drywell pressure instrumentation operability. This is performed by verifying proper pressure readings. A significant tubing leak will cause an improper reading, and will be corrected and retested. Piping and components are pressurized during the Integrated Leak Rate Test (ILRT) and inspected for leakage.

IV. ALTERNATE PROVISIONS

LGS Technical Specification operability checks and ILRT inspections provide assurance of component integrity and will be utilized to satisfy ASME Section XI requirements.

RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.3

I. <u>Identification of Components</u>

Class 2 RCIC Turbine Exhaust Vacuum Breaker lines HBB-101 and HBB-145 (3/4", 3") between and including valves HV-49-1F084, HV-49-1F080, HV-49-1F060 and 49-1F001. (Ref. P & ID: ISI-M-49, Sht 1)

Class 2 RCIC Vacuum Pump Exhaust to Suppression Pool, HBB-150 (3/4", 2", between 49-1F028 and HV-49-1F002, 49-1038 and 49-1F055.

II. <u>Code Requirement From Which Relief Is Requested</u>

IWC-5221, System pressure test during system functional/inservice tests and,
IWC-5222, System hydrostatic test

III. <u>Basis For Relief</u>

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a periodic system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests and the ten year hydrostatic test.

2) LLRTs have the ability to quantify leakage which is not feasible with VT-2 inspections on this essentially gas-filled piping.

3) LLRTs conservatively include through valve leakage which would not be identified in a VT-2 inspection.

RELIEF REQUEST NO. RR-13 (CONTD.)

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakages. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.4

I. Identification of Components

Class 2 HPCI Turbine Exhaust Vacuum Breaker lines HBB-108 and HBB-144 (3/4", 4") between and including valves HV-55-1F095, HV-55-1F093, HV-55-1F072, and 55-1F021. (Ref P & ID: ISI-M-55, Sht 1)

II. Code Requirement From Which Relief Is Requested

IWC-5221, System pressure test during system function/inservice tests and, IWC-5222, System hydrostatic test.

III. Basis For Relief

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

During LLRTs, the subject piping is pressurized to 44 psig, a substantially higher pressure than that developed during a system functional test. As such, the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests or the ten year hydrostatic test.

2) LLRTs have the ability to quantify leakage which is not feasible with VT-2 inspection on this essentially gas-filled piping.

3) LLRTs conservatively include through valve leakage which would not be identified in a VT-2 inspection.

IWC-5210(b) allows for air tests which permit location and detection of through-wall leakages. In the event the LLRT fails to meet its acceptance criteria, further testing would

RELIEF REQUEST NO. RR-13 (CONTD.)

be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.5

I. Identification of Components

Class 3 Containment Atmospheric Control tubing to suppression pool pressure instrumentation outboard of SV-57-101. (Ref P & ID: ISI-M-57, Sht1, ISI-M-52, Sht 1)

II. Code Requirement From Which Relief Is Requested

IWD-5221, System Inservice Test and
IWD-5223, System Hydrostatic Test.

III. Basis For Relief

Normal suppression pool pressure is less than 1 psig. The pressurizing fluid is nitrogen gas. A VT-2 inspection looking for a nitrogen gas leak with less than 1 psig driving pressure would be inconclusive.

LGS Technical Specifications require monitoring suppression pool pressure every 12 hours to verify suppression pool pressure instrumentation operability. This is performed by verifying a proper pressure reading. A significant tubing leak will give an improper reading, and will be corrected and retested. Also, the instrument and line will be pressurized during ILRT and inspection for leakage.

IV. ALTERNATE PROVISIONS

LGS Technical Specification suppression pool instrumentation operability checks and ILRT inspections provide assurance of component integrity and will be utilized to satisfy ASME Section XI requirements.

RELIEF REQUEST NO. RR-13 (CONT'D.)

Table RR-13-1.6

I. Identification of Components

Class 2 Post-LOCA Recombiner piping HBB-128 and HBB-127 between and including "A" Recombiner and valves HV-57-161 and HV-57-162, and HBB-126 and HBB-124 between and including "B" recombiner and valves HV-57-163 and HV-57-164. (Ref P & ID: ISI-M-57, Sht 1 & 2)

II. Code Requirement From Which Relief Is Requested

IWC-5221, System pressure test during system functional/inservice tests and,
IWC-5222, System hydrostatic test

III. Basis For Relief

System Contaminated Pipe Inspection (CPI) meets the intent of the ASME require[illegible].

During normal plant operation, this piping is isolated and not pressurized. During CPI testing associated with the Leak Reduction Program (FSAR 6.2.8), this piping is pressurized to 44 psig. CPIs for this system are performed similar to 10CFR50 Appendix J Local Leak Rate Testing and, as such, offer the following advantages over system pressure tests:

1) CPIs are performed more frequently than periodic system functional tests and the ten year hydrostatic tests.

2) CPIs have the ability to quantify leakage which is not feasible with a VT-2 inspection on this air filled piping.

3) CPIs conservatively include through valve leakage which would not be identified in a VT-2 inspection.

RELIEF REQUEST NO. RR-13 (CONTD.)

IWC-5120(b) allows for air tests which permit location and detection of through-wall leakages. In the event the CPI fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

System Contaminated Pipe Inspection (CPI) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.7

I. Identification of Components

Class 2 Containment Atmospheric Control piping as illustrated in figures RR-13-1.7a, b.

II. Code Requirement From Which Relief Is Requested

IWC-5221, System pressure test during system functional/inservice tests and,
IWC-5222, System hydrostatic test.

III. Basis For Relief

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

The LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests.

2) LLRTs have the ability to quantify leakage which is not feasible with VT-2 inspection on this essentially gas-filled piping.

3) LLRTs conservatively include through valve leakage which would not be identified in a VT-2 inspection.

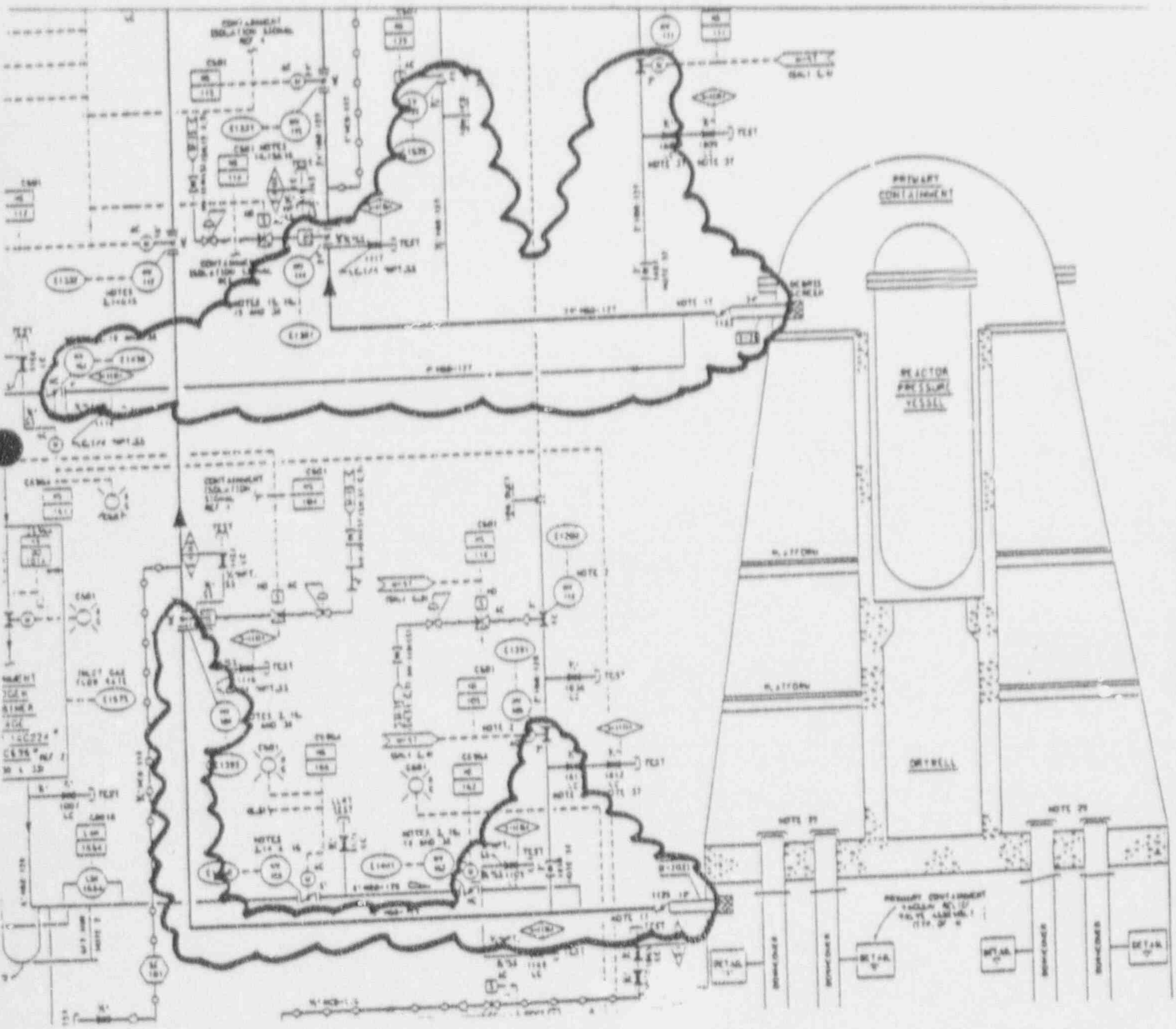
IWC-5210(b) allows for air tests which permit location and detection of through-wall leakages. In the event the LLRT fails to meets its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-13 (CONTD.)

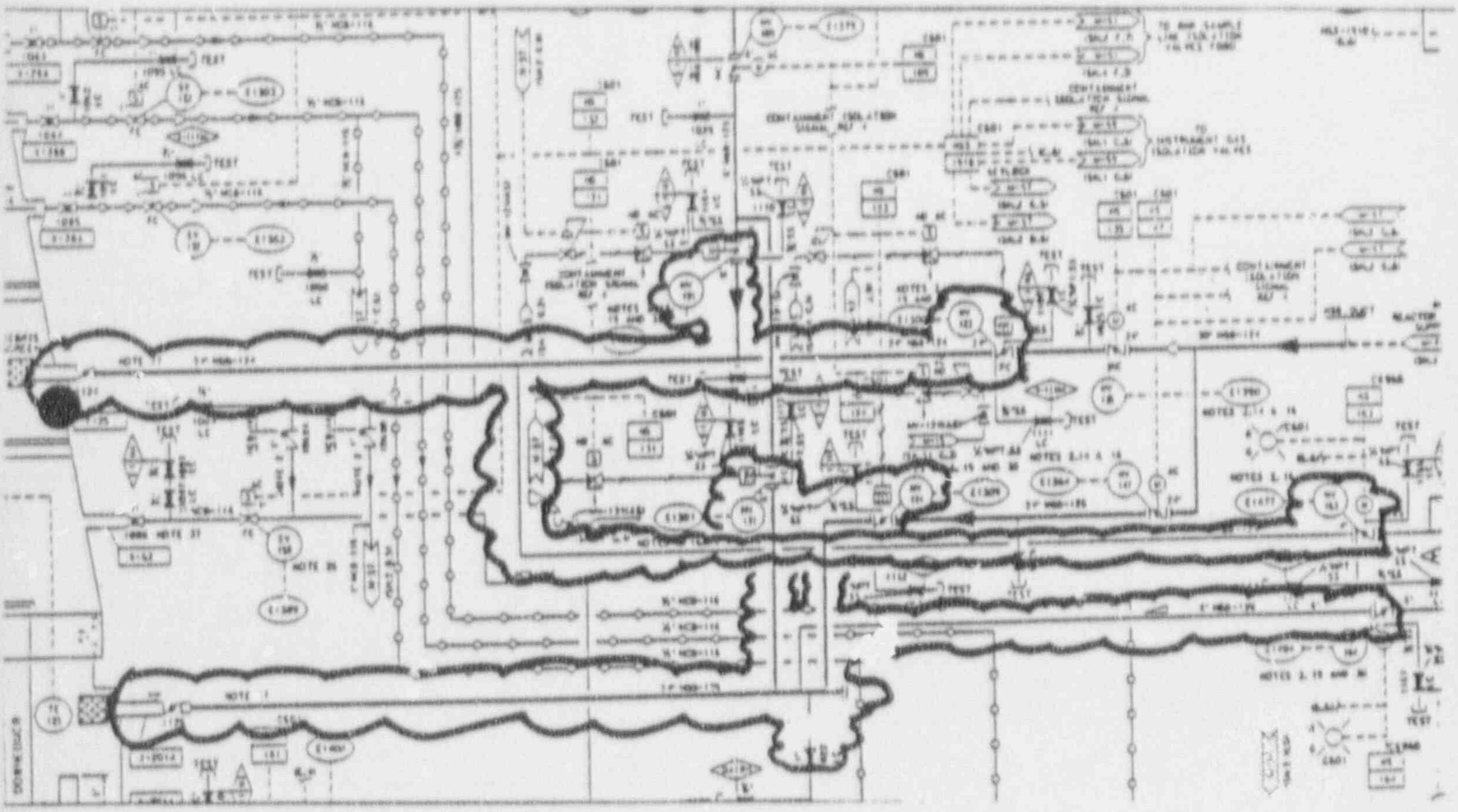
Figure RR-13-1.7a
(Ref P & ID: ISI-M-57, Sht 2)



RELIEF REQUEST NO. RR-13 (CONTD.)

Figure RR-13-1.7b

(Ref P & ID: ISI-M-57, Sht 1)



RELIEF REQUEST NO. RR-13 (CONTD.)

Table RR-13-1.8

I. Identification of Components

Class 2 Primary Containment Electrical Penetration tubing and test valves associated with 24 primary containment electrical penetrations as follows:

TEST VALVE NOS.	PENETRATION NO.
60-125-1A,B	1X100A
60-125-2A,B	1X100B
60-125-3A,B	1X100C
60-125-4A,B	1X100D
60-125-5A,B	1X101A
60-125-6A,B	1X101B
60-125-7A,B	1X101C
60-125-8A,B	1X101D
60-125-9A,B	1X103A
60-125-10A,B	1X103B
60-125-11A,B	1X104A
60-125-12A,B	1X104B (UNIT 1)
60-125-13A,B	1X104C
60-125-14A,B	1X104D (UNIT 1)
60-125-15A,B	1X105A
60-125-16A,B	1X105B
60-125-17A,B	1X105C
60-125-18A,B	1X105D
60-125-19A,B	1X105E
60-125-20A,B	1X106A
60-125-21A,B	1X106B
60-125-22A,B	1X106C
60-125-23A,B	1X222
60-125-24A,B	1X230A

RELIEF REQUEST NO. RR-13 (CONTD.)

II. Code Requirement From Which Relief Is Requested

IWC-5221, System pressure test during system functional/inservice tests and,
IWC-5222, System hydrostatic test.

III. Basis For Relief

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

This tubing is normally charged to 0-15 psig with nitrogen gas. Besides pressurizing to a substantially higher pressure (44 psig), the LLRT offers the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests and the ten year hydrostatic test.

2) LLRTs have the ability to quantify leakage which is not feasible with VT-2 inspection on this essentially gas filled tubing.

3) LLRTs conservatively include through valve leakage which would not be identified in a VT-2 inspection.

IWC-5012(b) allows for use of nitrogen gas as the pressurizing medium. In the event the LLRT fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Appendix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-13 (CONT'D.)

Table RR-13-1.9

I. Identification of Components

Class 2, Primary Containment Leak Testing lines HCB-122 between and including valves 60-1050, 60-1057, and 60-1058; HCB-122 between and including valves 60-1051, 60-1070, and 60-1071; and HCB-122 between and including valves 60-1052, 60-1073, and 60-1074. (Ref P & ID: ISI-M-60, Sht 1)

II. Code Requirement From Which Relief Is Requested

IWC-5221, System pressure test during system functional/inservice tests and, IWC-5222, System hydrostatic test.

III. Basis For Relief

10CFR50 Appendix J Local Leak Rate Testing (LLRT) meets the intent of the ASME requirement.

During normal plant operation, this piping is not pressurized and is isolated by locked valves. During the ILRT the piping is pressurized to 44 psig. This piping is also pressurized during LLRTs. LLRTs offer the following advantages over system pressure tests:

1) LLRTs are performed more frequently than periodic system functional tests.

2) LLRTs have the ability to quantify leakage which is not feasible with a VT-2 inspection on this air filled piping.

3) LLRTs conservatively include through valve leakage which would not be identified in a VT-2 inspection.

RELIEF REQUEST NO. RR-13 (CONTD.)

IWC-5210(b) allows fo: ~ 's which permit location and detection of through-wall leakages. In the event the , ' .T fails to meet its acceptance criteria, further testing would be performed to determine the location of the leaks, appropriate corrective maintenance, and an appropriate retest would be performed.

IV. ALTERNATE PROVISIONS

10CFR50 Ap; :ndix J Local Leak Rate Testing (LLRT) will be utilized to meet the ASME Section XI IWC-5000 pressure testing requirements.

RELIEF REQUEST NO. RR-14

I. IDENTIFICATION OF COMPONENTS

The LGS-1 ISI program includes component examination requirements in addition to the ISI requirements of ASME Section XI. These augmented examination requirements originate from a variety of sources - regulatory, industry, etc. - however, like ISI examinations, situations may exist which preclude complete examination in accordance with augmented program requirements. (See Appendix B). As such, relief from these requirements is requested herein.

Specific components affected by this relief request are detailed in Table RR-14-1.

II. REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Specific augmented requirements from which relief is requested is identified in Table RR-14-1. Program details are found in Appendix B.

III. BASIS FOR RELIEF

The specific basis for relief is as detailed in Table RR-14-1.

IV. ALTERNATE PROVISIONS

Any alternate examination/testing, where practical, is detailed in Table RR-14-1.

RELIEF REQUEST NO. RR-14 (CONTD.)

Table RR-14-1
Augmented Examination
Components Requiring Relief

Examination Area ID Number	Augmented Examination Program No.	Type of Examination	Basis of Relief	Examination % Complete
RC-131 (RCIC, flued head to valve)	AUG-5	Volumetric (UT)	Component configuration precludes complete examination, complete surface exam performed for ISI	85%

APPENDIX "B" TABLE OF CONTENTS
AUGMENTED PROGRAMS

Some of the augmented programs listed herein are new with the issuance of this program, while others have been implemented since the start of commercial operation as addressed in Specification 8031-P-501. In addition, some were initiated during the first inspection period but were never formalized into Specification 8031-P-501. In all cases, the ten year requirements specified for some of these augmented programs will be satisfied by the conclusion of the first ten-year ISI interval.

APPENDIX	AUGMENTED PROGRAM	DESCRIPTION
B-1	AUG-1	NRC Generic Letter 88-01, Intergranular Stress Corrosion Cracking
B-2	AUG-2	NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking
B-3	AUG-3	IE Bulletin No. 80-13, Cracking in Core Spray Spargers
B-4	AUG-4	NUREG/CR-3052, Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure
B-5	AUG-5	USNRC Mechanical Engineering Branch (MEB) Technical Position MEB 3-1 (NUREG-0800, "No Break" Boundaries)
B-6	AUG-6	Outboard Feedwater Check Valves HV-41-2F074A and B (Program Complete)
B-7	AUG-7	SIL No. 455, Recommendation for Additional ISI of Alloy 182 Nozzle Weldments
B-8	AUG-8	Extended Examination Volume for Code Category B-D
B-9	AUG-9	Examination of the RPV Closure Head Lifting Lugs
B-10	AUG-10	Non-Q Reactor Pressure Vessel Internal Components (FSAR Table 3.2-1)
B-11	AUG-11	SIL No. 409, Incore Dry Tube Cracks
B-12	AUG-12	SIL No. 420, Inspection of Jet Pump Sensing Lines

APPENDIX "B" TABLE OF CONTENTS (Cont'd)

AUGMENTED PROGRAMS

APPENDIX	AUGMENTED PROGRAM	DESCRIPTION
B-13	AUG-13	Snubber Examination and Testing Program (Technical Specification Snubbers)
B-14	AUG-14	Snubber Examination Program (BOP Snubbers)
B-15	AUG-15	SIL No. 433, Shroud Head Bolt Cracks
B-16	AUG-16	SIL No. 462, Shroud Support Access Hole Cover Cracks
B-17	AUG-17	SIL No. 474, Steam Dryer Drain Channel Cracking
B-18	AUG-18	RHR Heat Exchanger Pressure Retaining Bolting
B-19	AUG-19	Weld Centerline Marking

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

I. SCOPE

This augmented inspection program (AUG-1) defines the activities conducted during inservice inspection at LGS 1, pursuant to the examination requirements of NRC Generic Letter 88-01. This program addresses only those requirements dealing with periodic examination. Specific PECo commitments concerning all of the aspects of NRC Generic Letter 88-01 are contained in the PECo responses to the letter, reference 1.1.2.

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 1.1.3. The applicable requirements of the Generic Letter are summarized below.

A. DESCRIPTION OF NRC GENERIC LETTER 88-01 CRITERIA USED TO DETERMINE THE EXTENT OF LIMERICK 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 Core Isolation Cooling System

The NRC Generic Letter also applies to reactor vessel attachments and appurtenances. The following reactor vessel attachments and appurtenances have portions which are within the scope of NRC Generic Letter 88-01:

- Jet Pump Instrumentation System
- Reactor Vessel Stainless Steel Safe Ends

B. SCOPE OF COMPONENTS WITHIN THIS AUGMENTED PROGRAM

Reactor Recirculation System (Loops A & B)

Reference: LGS 1
P&ID ISI-M-43, sht. 1

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 Pump suction nozzles.
- 28" NPS Reactor Recirculation Pumps A and B discharge piping, from the weld to the Recirculation Pump discharge nozzles, through the

22" NPS headers and including the 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 B pump suction, and the welds connecting the 12" NPS RHR piping to the A and B pump discharge.

Residual Heat Removal System

Reference: LGS 1
P&ID's ISI-M-51, sht. 1 and 3

Scope:

- 20" NPS RHR supply piping, from the connection at the B loop Reactor Recirculation Pump suction line, up to normally closed inboard containment isolation valve 51-1F077 (ref: line number DCA-105).

- 12" NPS RHR return piping, from valves HV-51-1F050A and B, to the Reactor Recirculation Pump A and B discharge piping (ref: line number DCA-104).

- 12" NPS RHR LPCI injection, from valves 51-1F065A, B, C, and D, to the RPV and including the RPV nozzle N17 safe-end to pipe welds (ref: line number DCA-318).

Core Spray System

Reference: LGS 1
P&ID ISI-M-52, sht. 1

Scope:

- 12" NPS Core Spray Sparger supply piping, from inboard valve 52-1F007A and B, up to and including the 10" NPS RPV N5 nozzle safe-end to pipe welds (ref: line number DCA-319, 320).

Reactor Water Clean-Up System

Reference: LGS 1
P&ID ISI-M-44, sht. 1 and 2

Scope:

- 6" NPS RWCU pump suction piping inside containment, including the connection at the Reactor Recirculation suction line and primary containment penetration X-14 (ref: line number DCA-101).

- 6" NPS RWCU pump suction piping outside of containment (ref: line number DCB-102 and DCC-103). See Note 1.

- 4" RWCU discharge piping, from the 4" x 3" reducers in the RWCU pump discharge header, to the tube side inlet of the Regenerative Heat exchanger (ref: line number DCC-101). See Note 1.

- RWCU piping from the tube side outlet of the Regenerative heat exchanger to the tube side inlets of the Non-Regenerative heat exchangers (ref: line number DCC-102). See Note 1.

- RWCU return piping from the shell side outlet of the Regenerative heat exchanger to RWCU valve HV-44-1F039 (ref: line number DCC-104 and ECC-105). See Note 1.

Note 1: RWCU system piping welds outside primary containment, (ref. line Nos. DCC-101,-102,-103,-104 and ECC-105) are not subject to NDE per ASME Section XI. Accordingly, provisions have not been made to accomodate such NDE. In consideration of this and other factors, examinations required by the augmented program, will be conducted on a sampling basis only. A representative sample of 5% of the total population of piping welds, within the above described boundaries, will be examined at each refueling outage (beginning with 1RO4) during the first inspection interval.

Reactor Core Isolation Cooling System

Reference: LGS 1
P&ID ISI-M-49 sht. 1

Scope:

- The welds at the pipe connection to the stainless steel flow element FE-49-N016 (ref: line number DBA-107).

Jet Pump Instrumentation System

Reference: LGS 1
P&ID ISI-M-42, sht. 1

Scope:

- The circumferential welds greater than 4" NPS between the RPV nozzle N8 safe-end to safe-end extension, and the safe-end extension to the jet pump instrumentation penetration seal.

Reactor Vessel Stainless Steel/Inconel Safe Ends

The RPV attachments and appurtenances within the scope of this response are limited to stainless steel/inconel safe-ends attached to RPV nozzles.

Reference: LGS 1

P&ID ISI-M-41, sht. 1

P&ID ISI-M-42, sht. 1

P&ID ISI-M-43, sht. 1

Scope:

- The stainless steel/inconel safe-ends attached to RPV nozzles N1, N2, N5, N8, N9, and N17. (Safe-ends for the N5 and N17 nozzles are inconel)

Note: Safe-end attachment to RPV nozzles N1, N2, N5, and N17 have been previously identified within the scope description of the systems associated with these connections.

II. REFERENCES

A. Generic Letter 88-01, NRC position on IGSCC in BWR Austenitic Stainless Steel Piping, dated January 25, 1988.

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

III. GENERAL

NRC Generic Letter 88-01 requires that each pressure retaining circumferential butt weld, that is within scope , 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 examination 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 examination schedules.

IV. EXAMINATION PROGRAM

A. Examination Methods and Personnel

PECo is committed to complying with the NRC Staff positions on examination methods and personnel as delineated in NRC Generic Letter 88-01. The examination method to be performed will be the ultrasonic (UT) type volumetric method. For UT examinable ASME Class 1 and 2 welds, the IGSCC examinations will be performed in accordance with the requirements contained in the 1986 Edition of ASME Section XI for the ASME class of the weldment. For UT examinable 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 examinations will be qualified for such examinations by a formal program approved by the NRC.

B. Examination Schedules

The examination frequencies in this augmented program conform to the NRC staff positions provided in Generic Letter 88-01. With exception of the RWCU system outside containment, the frequency of examination depends on the IGSCC category that the weld is assigned to. The examination frequencies are as follows:

IGSCC Category	Examination 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

All in RWCU outside containment 5% 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.
- If corrosion resistant cladding has been approved.
- What the base and weld materials are.
- Whether the weld has been UT examined utilizing methods and personnel as stipulated in the Generic Letter.

Since some of these factors can change, the IGSCC category assigned to a particular weld is also subject to change.

C. 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 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 Inservice Examination, 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 volumetric 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.

The total population of welds subject to examination under this augmented program are identified in the Aug-1 Program tables which are included in the tables section of this document. 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 examination method planned for the weld (if selected), if the weld has been selected for the ISI examination, and finally an indication of whether the weld is selected for augmented examination. Notes may also be provided as necessary.

V. EXAMINATION RESULTS

A. Sample Expansion

If one or more Category A, B, or C 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.

B. 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.

VI. REPORTS/RECORDS

A. NRC Notification

If any flaws are identified which do not meet the acceptance criteria for continued operation (referenced above 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 Corporate ASME Section XI Administrative Manual.

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 examination requirements of NRC NUREG-0619 applicable to the LGS Unit 1 Feedwater nozzles/spargers.

Augmented examinations associated with the Control Rod Drive Ret .n Line (CRDRL) nozzle (N9)/piping system are not required at LGS 1. The CRDRL nozzle (one nozzle) has been cut and capped and the CRDRL eliminated. Augmented examinations per NUREG-0619 are not applicable.

Examination 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 September 2, 1982, J. S. Kemper to Darrell G. Eisenhut (USNRC).

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 LGS 1 reactor pressure vessel has six (6) feedwater nozzles. In accordance with General Electric Company recommendations intended to minimize the probability of thermal fatigue crack initiation and growth, and based on extensive analysis of the feedwater nozzle/sparger problem, LGS 1 was designed with the triple sleeve sparger with two piston-ring seals. Installation of the recommended design spargers coupled with unclad feedwater nozzles meets NUREG-0619 requirements for implementation on plants then undergoing licensing review. The routine examination program required by Table 2 of the NUREG for the LGS 1 specific nozzle configuration is detailed in Table B-2-1 and Section IV of this document.

IV. FEEDWATER NOZZLE AUGMENTED INSPECTION PROGRAM

The LGS 1 examination program requirements, based on the "triple sleeve spargers with two piston-ring seals, clad removed" configuration, are defined below. Examination frequency shall be based on the following:

AUG-2 INSPECTION INTERVALS

	Inspection Intervals* - Refueling Cycles (or Startup/Shutdown Cycles)		
	UT	Visual Examination of Sparger	PT
LGS 1	2	4	9 (or 135)

* The inspection interval begins upon commercial operation; however, accummulated startup/shutdown cycles during startup and testing (prior to commercial operation) must be accounted for.

Ultrasonic (UT) examinations shall be performed on all feedwater nozzle safe ends, bores and inside bend radii once every two (2) refueling cycles. These examinations shall be performed on the components shown in Figures B-2-1 and B-2-2 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-2-3).

Liquid-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 PT consists of PT examination of accessible portions of the nozzle bore and inner radius of all feedwater nozzles (sparger intact).

In light of the difficulties associated with PT examinations (radiological environment, access provisions, etc.), PECo is continuing to monitor advances in ultrasonic examination techniques which may facilitate elimination of the requirement for PT examination completely.

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.

V. EXAMINATION RESULTS

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

A. Ultrasonic indications in the safe end shall be evaluated per ASME Section XI.

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

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

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

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

C. Cracking discovered during liquid penetrant examination shall be dispositioned as follows:

1. The sparger(s) of the affected nozzle(s), and [illegible]aining spargers shall be removed, and the entire nozzle bore and in[illegible]us of all nozzles liquid penetrant (PT) examined, and

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

VI. <u>REPORTS/RECORDS</u>

Within six (6) months of completing an outage during which an examination (UT, PT or VT) was performed in accordance with NUREG-0619, a detailed report discussing the examination shall be submitted to the Nuclear Regulatory Commission in accordance with 10CFR 50.4. The report shall include the following information:

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

B. Summary of methods used and results of previous examinations, 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,

D. A detailed discussion of examination results, and

E. Information regarding results of (on line) leakage monitoring, as applicable.

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

NOTE: Examinations, as required by this augmented program, are typically performed during a normal refueling outage in which scheduled ASME Section XI examinations are also performed. ASME Section XI requires that a summary report be filed, within 90 days of completion of the inservice examination, 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 INSPECTION PROGRAM - 2

Exam Area Identification Number	Figure Number	NDE Method	Inspection Interval (No. of Refueling Cycles)	Notes
N4A Noz Safe End	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-3	4	
N4B Noz Safe End	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-3	4	
N4C Noz Safe End	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-3	4	
N4D Noz Safe End	B-2-1	UT	2	
N4D Noz Bore	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)

TABLE B-2-1 (CONT'D)
AUGMENTED INSPECTION PROGRAM - 2

Exam Area Identification Number	Figure Number	NDE Method	Inspection Interval (No. of Refueling Cycles)	Notes
N4D Noz Inner Radius	B-2-1	UT	2	
	B-2-1	PT	9	(or 135 Startup/Shutdowns)
N4D Sparger	B-2-2	VT-3	4	
N4E Noz Safe End	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-3	4	
N4F Noz Safe End	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-3	4	

Figure B-2-1
Feedwater Nozzle/Safe End

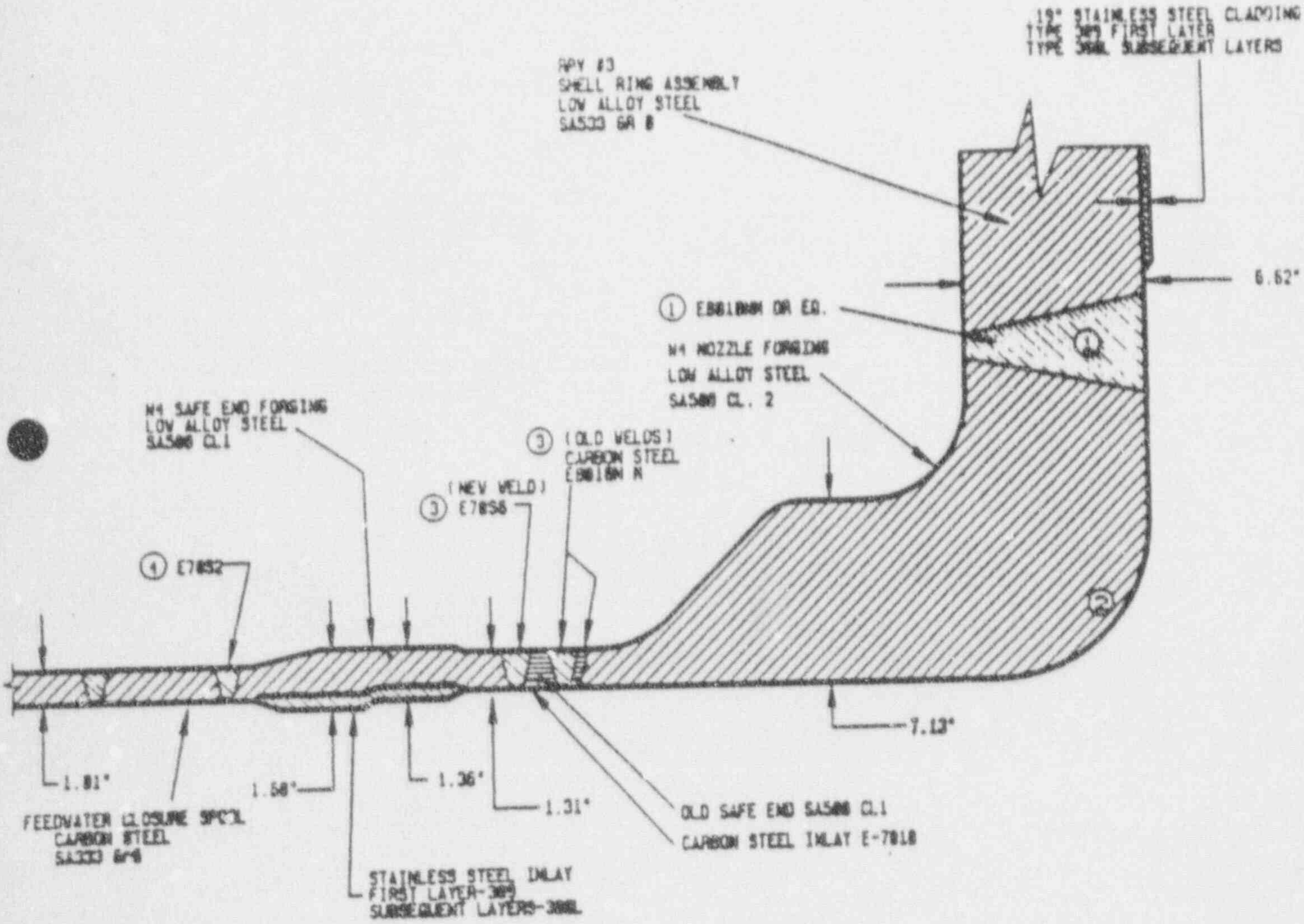
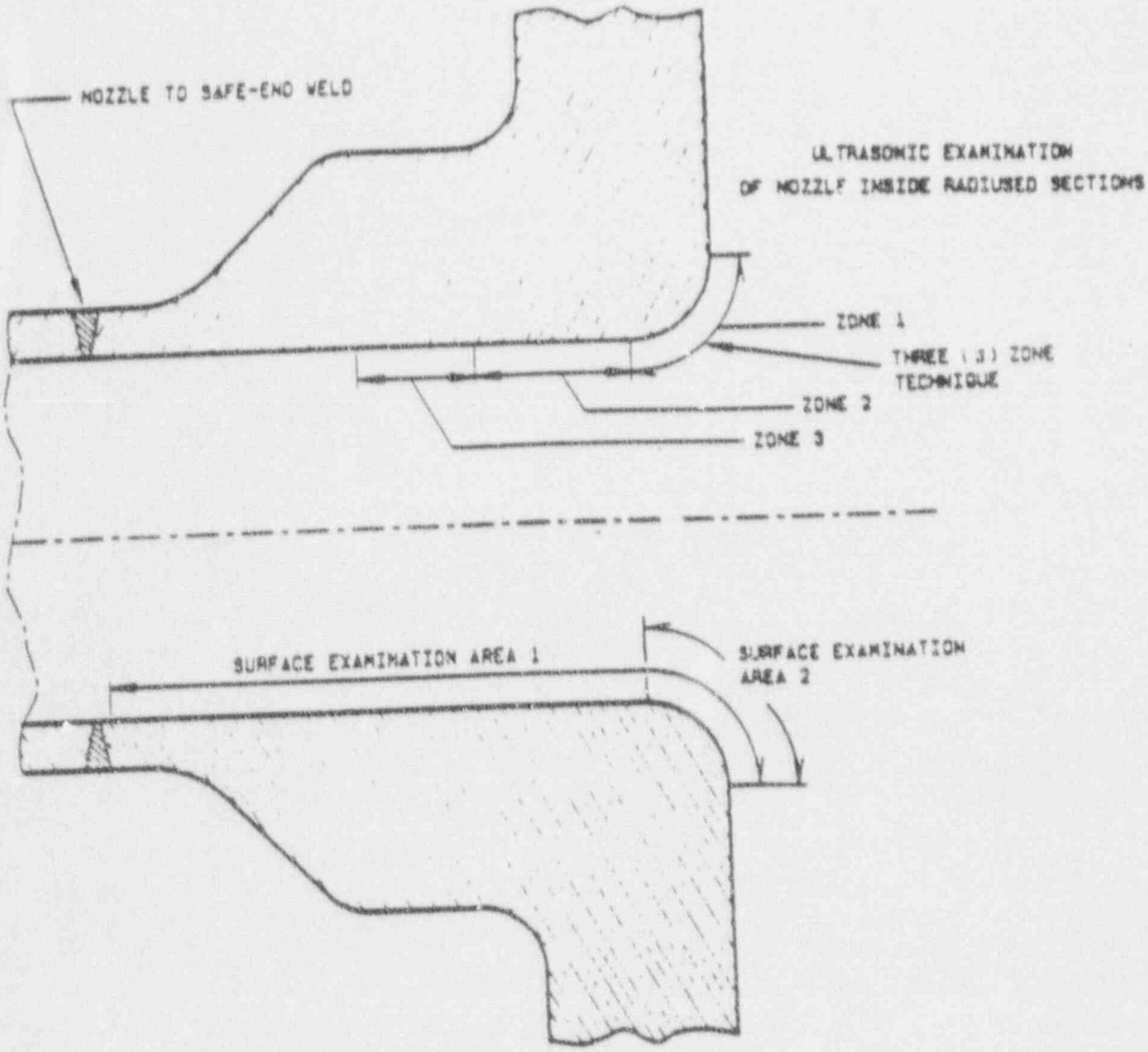


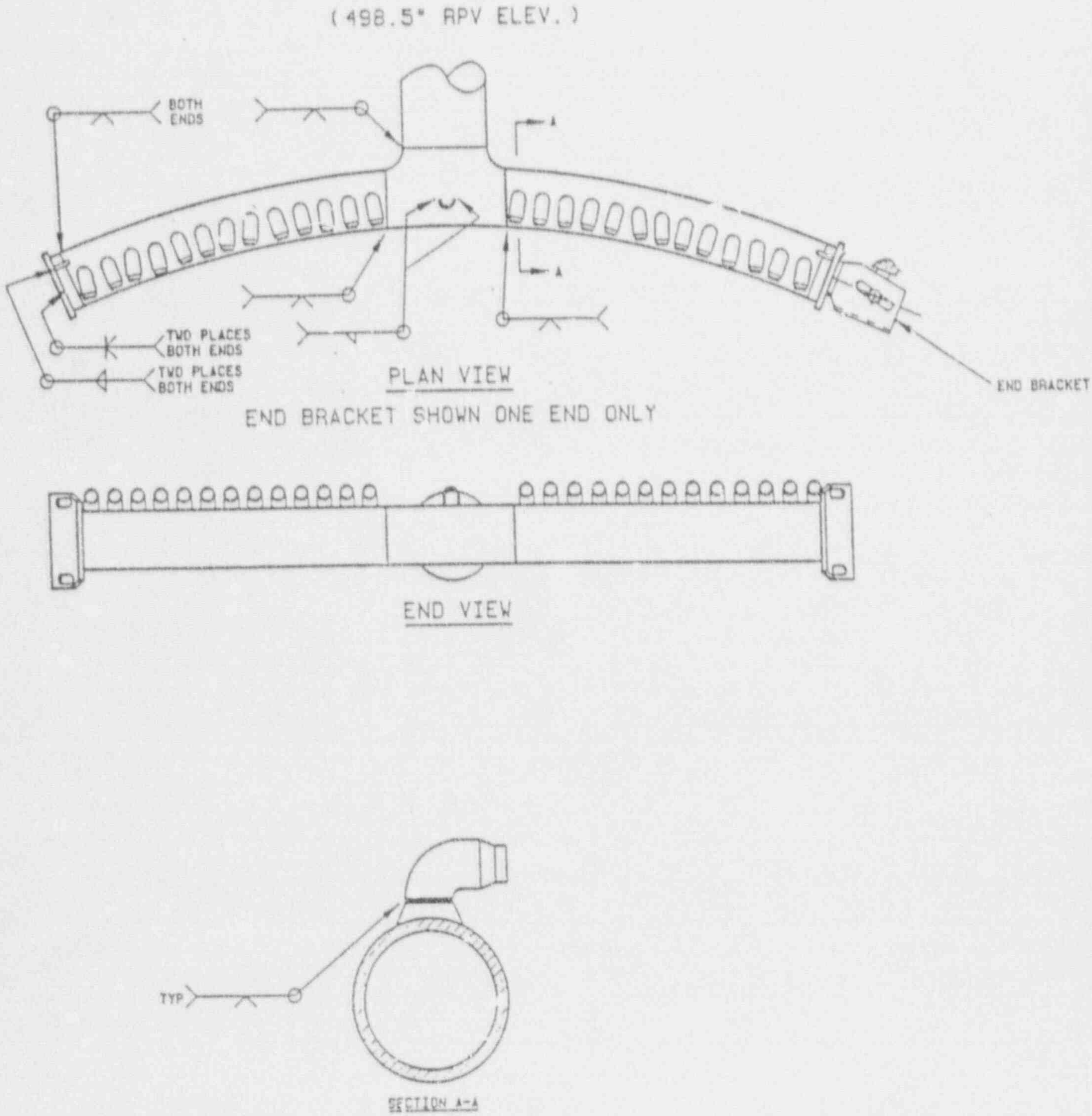
Figure B-2-2
Feedwater Nozzle/Safe End
Extent of Examination



AREA 1 FEEDWATER NOZZLE IF SPARGERS ARE REMOVED

AREA 2 FEEDWATER NOZZLE IF SPARGERS ARE INSTALLED.

Figure B-2-3
Feedwater Sparger



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 examination requirements of NRC IE Bulletin 80-13 applicable to the LGS 1 Core Spray Sparger and Core Spray supply header piping.

Examination 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 April 4, 1980 transmitted to PECo from Boyce H. Grier 4/4/80 for information. No written response required.

B. 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.

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.

Also, 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 B).

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, routine examinations of the subject components are required as detailed in Table B-3-1 and Section IV of this document.

IV. CORE SPRAY SPARGER/PIPING AUGMENTED INSPECTION PROGRAM

Visual examination of the LGS 1 Core Spray spargers and supply header piping (see Figure B-3-1) 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,

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

D. Accessible areas of the "T-box" to thermal sleeve weld.

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. EXAMINATION 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.

The Director - NRC Region I shall be notified within 24 hours of identification of all relevant conditions evaluated to be cracks.

VI. REPORTS/RECORDS

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

Upon completion of visual examinations, as required by IE Bulletin 80-13, a detailed report of the results of the examinations and corrective actions taken (if any) shall be submitted to the Nuclear Regulatory Commission in accordance with 10CFR 50.4.

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

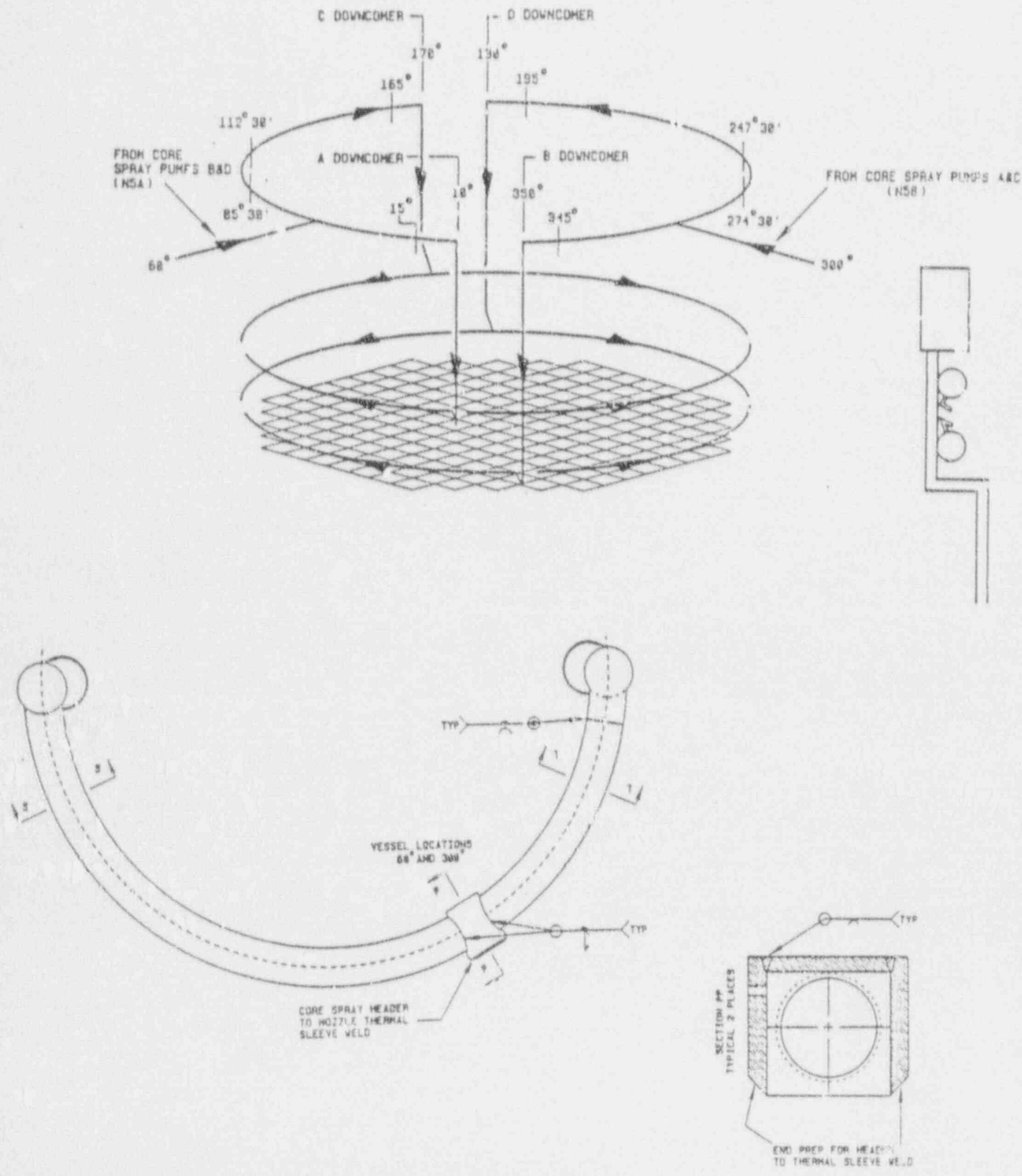
NOTE: Examinations, as required by this augmented program, are typically performed during a normal refueling outage in which scheduled ASME Section XI examinations are also performed. ASME Section XI requires that a summary report be filed, within 90 days of completion of the inservice inspection, with 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-3-1
AUGMENTED INSPECTION 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 entr.ıce
'T-box' front cover plate welds	VT*	Every Refueling Outage	
'T-box' to thermal sleeve weld	VT*	Every Refueling Outage	Accessible areas

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

Figure B-3-1
Core Spray
<u>Headers, Spargers, and 'T-box'</u>



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 examination requirements of NRC NUREG/CR-3052 applicable to the LGS 1 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.

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 examination of the jet pump hold-down beam assemblies at operating BWRs. Intergranular stress corrosion cracking (IGSCC) has been identified as the failure mechanism of the beams.

The General Electric Company (GE) has developed two design improvements intended to increase beam resistance to IGSCC thereby increasing the service life of both the existing original beams and replacement beams:

a) Original BWR/4-6 beams with reduced preload

This design improvement involves a reduction of installed preload from 30 kips to 25 kips. This improvement is expected by GE to yield an increase in crack initiation time from 19 to >40 years.

b) Replacement BWR/4-6 beams with improved heat treatment and reduced preload. GE has developed an improved heat treatment - high temperature annealing and aging - which when utilized with the current BWR/4-6 design and reduced preload, is expected to provide significantly increased resistance to IGSCC and >40 year service life.

This improvement is considered the appropriate "correction" of the beam problem.

The LGS 1 jet pump hold down beams are the original design; however, the installed preload has been reduced to 25 kips in accordance with a) above.

IV. EXAMINATION PROGRAM

Given the current LGS 1 beam design, augmented examinations are required in accordance with the following:

	INSPECTION FREQUENCY
LGS 1 JET PUMP HOLD-DOWN BEAMS JP#1 THROUGH JP#10	Initial UT at 5 years[1,2]; subsequent UT at each refueling outage.
Replacement beam design with improved heat treatment and reduced (25kip) preload.[2]	UT once every 10 years following installation of the new beam.

1. Initial UT to be performed after 5 years, assuming 80% reactor availability. Adjustments may be made based on operating history.

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

3. This inspection schedule applies to replacement beams once installed. Although the replacement beams design represents the appropriate corrective action to the beam cracking problem, sufficient operating experience is not yet available; therefore ultrasonic examination of any replacement beams is recommended once every ISI inspection interval.

V. EXAMINATION 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: Examinations, as required by this augmented program, are typically performed during a normal refueling outage in which scheduled ASME Section XI examinations are also performed. ASME Section XI requires that a summary report be filed, within 9[illegible] [illegible] of completion of the inservice inspection, with jurisdictional enforceme[illegible] 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

USNRC Mechanical Engineering Branch (MEB) Technical Position MEB 3-1 (NUREG 0800) "No Break" Boundaries.

I. SCOPE

This augmented inspection program (AUG-5) defines the mandatory examination requirements of NRC Mechanical Engineering Branch Technical Position MEB 3-1 (NUREG 0800) applicable to LGS 1 high energy piping between containment isolation valves and the first outboard restraint for which no breaks are postulated. Referred to as "no break" boundaries in this program.

Examination requirements, as detailed in this document, are exclusive of those ASME Section XI inservice inspection requirements for the identified portions of systems listed in Table B-5-1. However, where possible, individual examinations performed may be used to satisy both requirements. (See ISI Program Tables for common components).

II. REFERENCE

A. NRC Mechanical Engineering Branch Technical Position MEB 3-1 (NUREG 0800).

III. GENERAL

The above reference prescribes that cracks or breaks need not be postulated for containment isolation piping provided that certain stress criteria are met and all pipe welds are volumetrically examined during each inservice inspection interval.

IV. SCOPE OF EXAMINATIONS

100% of all circumferential and longitudinal welds within the boundaries described in Table B-5-1 shall be volumetrically examined. The specific welds within these boundaries are listed in the ISI Program Tables with appropriate reference to this Augmented Inspection Program (AUG-5).

V. FREQUENCY OF EXAMINATIONS

Examinations shall be performed once each inspection interval - Interval Distribution (ID).

VI. DISCUSSION

Examinations of Class 1 welds shall be in accordance with Subsection IWB of ASME Section XI. Examinations of Class 2 and 3 welds, and non-classed welds shall be in accordance with Subsection IWC of ASME Section XI.

TABLE B-5-1

"NO BREAK" BOUNDARIES

SYSTEM	DESCRIPTION	ISI P&ID
Main Steam	From the upstream pipe-to-elbow weld on the first elbow upstream of the inboard isolation valves HV-41-1F022A, B, C, D thru penetrations X-7A, B, C, D and outboard isolation valves HV-41-1F028A, B, C, D to the downstream pipe-to-elbow weld on the first downstream elbow.	ISI-M-41
Feedwater	From the downstream pipe-to-valve weld on inboard check valves 41-1F010A, B thru penetration X-9A, B and the first two outboard check valves HV-41-1F074A, B and HV-41-1F032A, B upstream to and including the first weld outside the reactor building. This includes 16" branch lines DBB-103 and 104 downstream to valves HV-41-109A, B including the upstream pipe-to-valve weld and the 8" DBB-103 branch line up to and including the upstream pipe to-valve weld on valve 55-1058.	ISI-M-41 ISI-M-55
HPCI	From the upstream pipe-to-tee weld, upstream of inboard isolation valve HV-55-1F002 thru penetration X-11 and outboard isolation valve HV-55-1F003, downstream to and including the upstream pipe-to-elbow weld on the third outboard elbow.	ISI-M-55

TABLE B-5-1 (CONT'D)

"NO BREAK" BOUNDARIES

SYSTEM	DESCRIPTION	ISI P&ID
RWCU	From and including the pipe-to-elbow upstream weld on the second upstream elbow thru inboard isolation valve HV-44-1F001, penetration X-14, outboard isolation valve HV-44-1F004 to and including the downstream elbow-to-pipe weld on the first elbow downstream of valve HV-44-1F040.	ISI-M-44
RCIC	From and including the downstream elbow-to-pipe weld on the second inboard elbow thru inboard isolation valve HV-49-1F007, downstream thru penetration X-10 and outboard isolation valve HV-49-1F008, to and including the pipe to pipe weld downstream of the third elbow	ISI-M-49

AUGMENTED INSPECTION PROGRAM - 6: Outboard Feedwater Check Valves HV-41-1F074A &B

I. SCOPE

This augmented inspection program (AUG-6) defines the examination requirements to assure that the materials of fabrication of the 24" Feedwater check valves HV-41-1F074A and B provide an acceptable margin of safety, relative to fracture toughness of the reactor containment pressure boundary applicable to LGS 1.

Examination requirements, as detailed in this document, are exclusive of those ASME Section XI inservice inspection requirements for the identified components within the scope of this document.

II. REFERENCE

10CFR 50, Appendix A, General Design Criteria (GDC) 51.

III. GENERAL

General Design Criteria (GDC) 51, "Fracture Prevention of Containment Pressure Boundary", requires that under operating, maintenance, testing, and postulated accident conditions, (1) the ferritic materials of the containment pressure boundary behave in a non-brittle manner and (2) the probability of rapidly propagating fracture is minimized.

IV. EXAMINATION REQUIREMENTS

100% surface examination of both the internal and external valve body surfaces on valves HV-41-1F074A and B.

V. EXAMINATION FREQUENCY

These augmented examinations are only required to be performed once. They have been completed during the first refueling outage. Therefore, this program has been satisfied and is considered closed.

AUGMENTED INSPECTION PROGRAM - 7: SIL No. 455, Recommendation for Additional ISI of Alloy 182 Nozzle Weldments

I. SCOPE

This augmented inspection program (AUG-7) defines the specific examination requirements of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 455, as applicable to LGS 1. This SIL addresses the occurrence of and recommended actions for detection of intergranular stress corrosion cracking (IGSCC) in alloy 182 RPV nozzle to safe end weldments.

Examination requirements, as detailed in this document, are exclusive of those ASME Section XI Inservice Inspection requirements for the subject welds; however, where possible, individual examinations performed may be used to satisfy both requirements (See ISI Program Tables for common components).

II. REFERENCES

A. GE SIL No. 455, Recommendation for Additional ISI of Alloy 182 Nozzle Weldments, Revision 1, Supplement 1, Category 1, June 23, 1989.

B. NUREG-0313, Revision 2, "Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping."

C. Augmented Inspection Program-1: NRC Generic Letter 88-01, Intergranular Stress Corrosion Cracking, (AUG-1).

D. GE SIL No. 117, Recommendation for UT Inservice Examination of Welded Austentic Piping.

III. GENERAL

Recent ultrasonic examinations (UT) of Alloy 182 RPV nozzle to safe end welds (i.e. welds designs which incorporate alloy 182 welds and/or weld butters) at several BWR facilities have resulted in the detection of cracking which appears to have initiated as IGSCC in the alloy 182 weld butter, and has in many cases, propagated into the low alloy steel of the RPV nozzle.

LGS 1 has several RPV nozzle to safe end welds which incorporate alloy 182 as either weld material, weld buttering or both. These welds are detailed in Table B-7-1.

IV. EXAMINATION PROGRAM

The minimum examination requirements for the subject welds are in accordance with NRC NUREG-0313, AUG-1 (References B, C), and ASME Section XI. Briefly, this means that the subject welds fall within the scope of NRC NUREG-0313 and the AUG-1 program and as such are subject to the personnel, procedure, and examination frequency, etc. requirements of these mandatory documents. Also, the subject welds are within the scope of ASME Section XI and are subject to the requirements of Examination Category B-F.

In addition to the above, GE SIL No. 455 recommends further actions be taken to ensure early detection of insipient cracking. These are summarized below:

1) 45 degree and 60-degree refracted longitudinal waves shall be used in UT detection and sizing in both alloy 182 weld material and nozzle base material.

   a) Exams should be performed at gain levels such that "ID roll" signals are approximately 10% FSH.

   b) Suspect indications should be further investigated using a 45 degree shear wave for evidence of cracking in the nozzle base material.

2) Automated UT techniques are recommended. However, manual UT is acceptable where automated techniques are not practical.

   a) UT techniques should be qualified.

b) Realistic mock-ups of the weld configuration should be used for equipment calibration.

c) Special attention should be given to scanning technique/screen observation w'.en manual techniques are employed.

3) Where practical, examination scanning of the weld should be increased to include alloy 182 weld butters which extend back into the nozzle bore.

The PECo UT procedures meet the additional requirements of GE SIL No. 455.

V. EXAMINATION RESULTS

All examination results shall be evaluated in accordance with NUREG-0313, AUG-1 (References B, C) and ASME Section XI.

VI. REPORTS/RECORDS

Reporting and record-keeping requirements shall be in accordance with NUREG-0313, AUG-1, and ASME Section XI.

Table B-7-1
LGS 1
RPV Nozzle to Safe End
Alloy 182 Weldments

Examination Area Identification	Examination Area Description[1]	Remarks
VRR-1RS-1A N1A	Recirc Outlet	Alloy 182 weld/weld butter
VRR-1RS-1B N1B	Recirc Outlet	Alloy 182 weld/weld butter
VRR-1RD-1B N2A	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1B N2B	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1B N2C	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1B N2D	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1B N2E	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1A N2F	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1A N2G	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1A N2H	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1A N2J	Recirc Inlet	Alloy 182 weld/weld butter
VRR-1RD-1A N2K	Recirc Inlet	Alloy 182 weld/weld butter
DCA-319-1 N5A	Core Spray	Alloy 182 weld butter
DCA 320-1 N5B	Core Spray	Alloy 182 weld butter
RPV-1IN N8A	Jet Pump Instrumentation	Alloy 182 weld/weld butter
RPV-1IN N8B	Jet Pump Instrumentation	Alloy 182 weld/weld butter
RPV-1IN N9	[illegible]D Return/nozzle to cap	Alloy 182 w[illegible] weld butter
DCA-318-2 N17A	LPCI	Alloy 182 weld butter
DCA-318-1 N17B	LPCI	Alloy 182 weld butter
DCA-318-3 N17C	LPCI	Alloy 182 weld butter
DCA-318-4 N17D	LPCI	Alloy 182 weld butter

1. Unless otherwise noted, all welds listed are nozzle to safe end welds.

AUGMENTED INSPECTION PROGRAM - 8: Extended Examination Volume for Code Category B-D

I. SCOPE

This augmented inspection program (AUG-8) defines the PECo mandatory examination requirements applicable to the LGS-1 RPV nozzle inside radius examination for nozzles greater than ten (10) inches nominal diameter.

Examination requirements, as detailed in this document, are exclusive of those ASME Section XI inservice inspection requirements for the RPV nozzle inside radius; however for the specific nozzles affected, the basic difference is an increase in the ASME Section XI examination volume; therefore, examinations performed may be used to satisfy both requirements. (See ISI Program Tables for common components). The RPV Feedwater nozzles are excluded from the scope of this augmented program. See AUG-2 for program requirements for these nozzles.

II. REFERENCES

A. ASME Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1986 Edition.

III. GENERAL

ASME Section XI Code Examination Category B-D requires a volumetric examination of the nozzle inside radius sections of full penetration welded nozzles in the reactor pressure vessel. The Code required examination volume applicable to the LGS 1 nozzles, is illustrated in Figure B-8-1 (a).

In response to NRC NUREG-0619 (AUG-2), enhancements to ultrasonic examination techniques for improved nozzle inside radius/nozzle bore area examination have been developed. These techniques, coupled with an increased examination volume over that required for ASME Section XI, have been utilized routinely in the detection of thermal fatigue cracking in BWR feedwater nozzles.

In order to provide added assurance of the RPV nozzle structural integrity, PECo has, at their option, upgraded the inservice inspection requirements for all full penetration welded nozzles greater than ten (10) inches, to include examination techniques and examination volumes similar to those utilized for the Feedwater nozzles.

IV. INSPECTION PROGRAM

The specific RPV nozzles affected by this augmented program are listed in Table B-8-1. The augmented examination volume for these nozzles is illustrated in Figure B-8-1 (b).

The ultrasonic examinations shall be performed in accordance with PECo approved procedures.

V. EXAMINATION RESULTS

Ultrasonic indications identified during the required examinations of this augmented program shall be recorded and evaluated in accordance with the applicable ASME Section XI requirements.

VI. REPORTS/RECORDS

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

Note: Examinations, as required by this augmented program, are typically performed during a normal refueling outage in which scheduled ASME Section XI examinations 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.

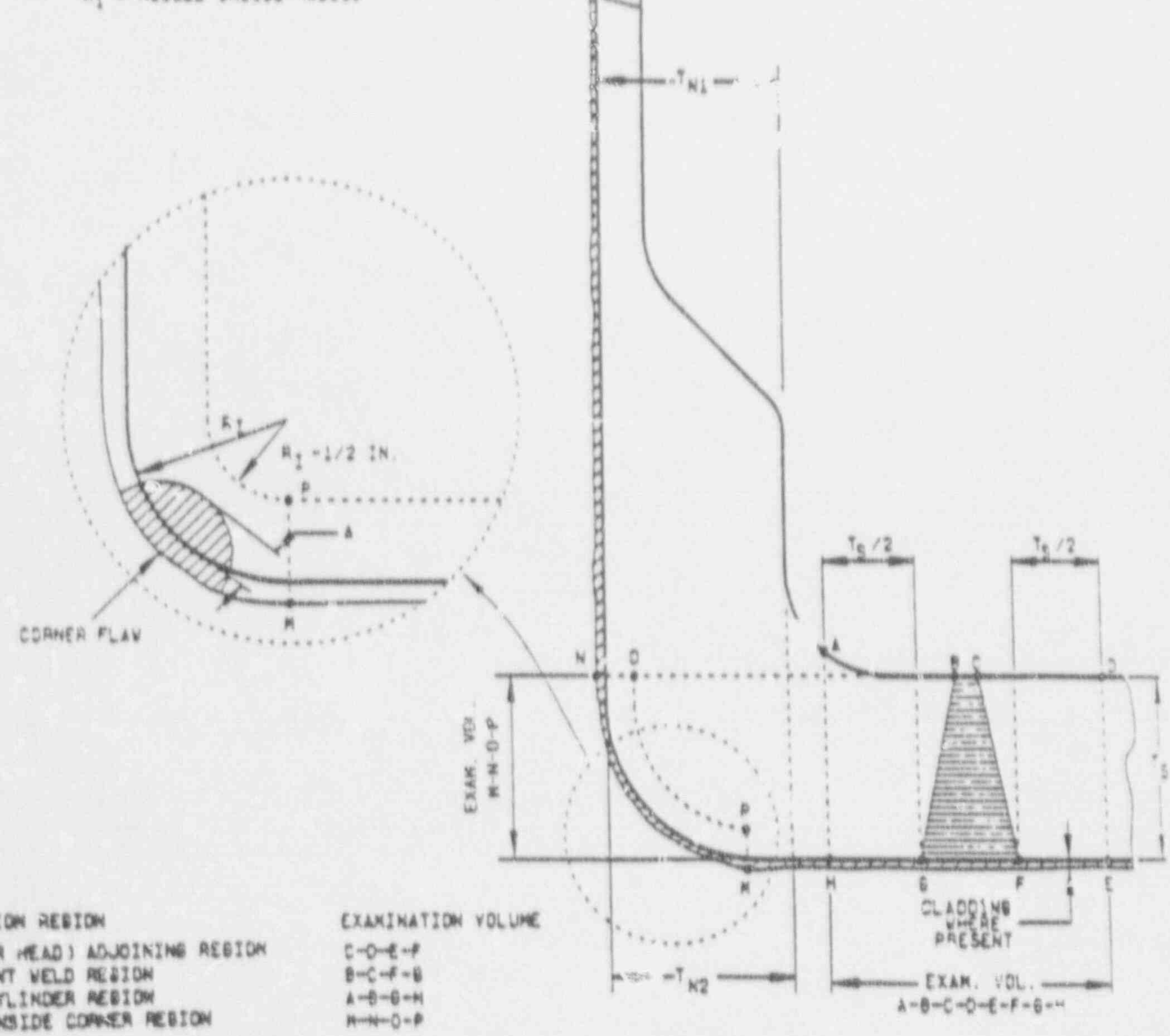
Table B-8-1
AUG-8 Components

Examination Area Identification	Examination Area Description/Nominal Diameter
N1A-IR	Recirculation Outlet/Nozzle Inside Radius/28"
N1B-IR	Recirculation Outlet/Nozzle Inside Radius/28"
N2A-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2B-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2C-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2D-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2E-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2F-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2G-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2H-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2J-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N2K-IR	Recirculation Inlet/Nozzle Inside Radius/12"
N3A-IR	Main Steam/Nozzle Inside Radius/26"
N3B-IR	Main Steam/Nozzle Inside Radius/26"
N3C-IR	Main Steam/Nozzle Inside Radius/26"
N3D-IR	Main Steam/Nozzle Inside Radius/26"
N5A-IR	Core Spray/Nozzle Inside Radius/12"
N5B-IR	Core Spray/Nozzle Inside Radius/12"
N17A	LPCI/Nozzle Inside Radius/12"
N17B	LPCI/Nozzle Inside Radius/12"
N17C	LPCI/Nozzle Inside Radius/12"
N17D	LPCI/Nozzle Inside Radius/12"

Figure B-8-2(a)

Figure B-8-1(a)
Increased Examination
of
Category B-D
Nozzle Inside Radius
Sections

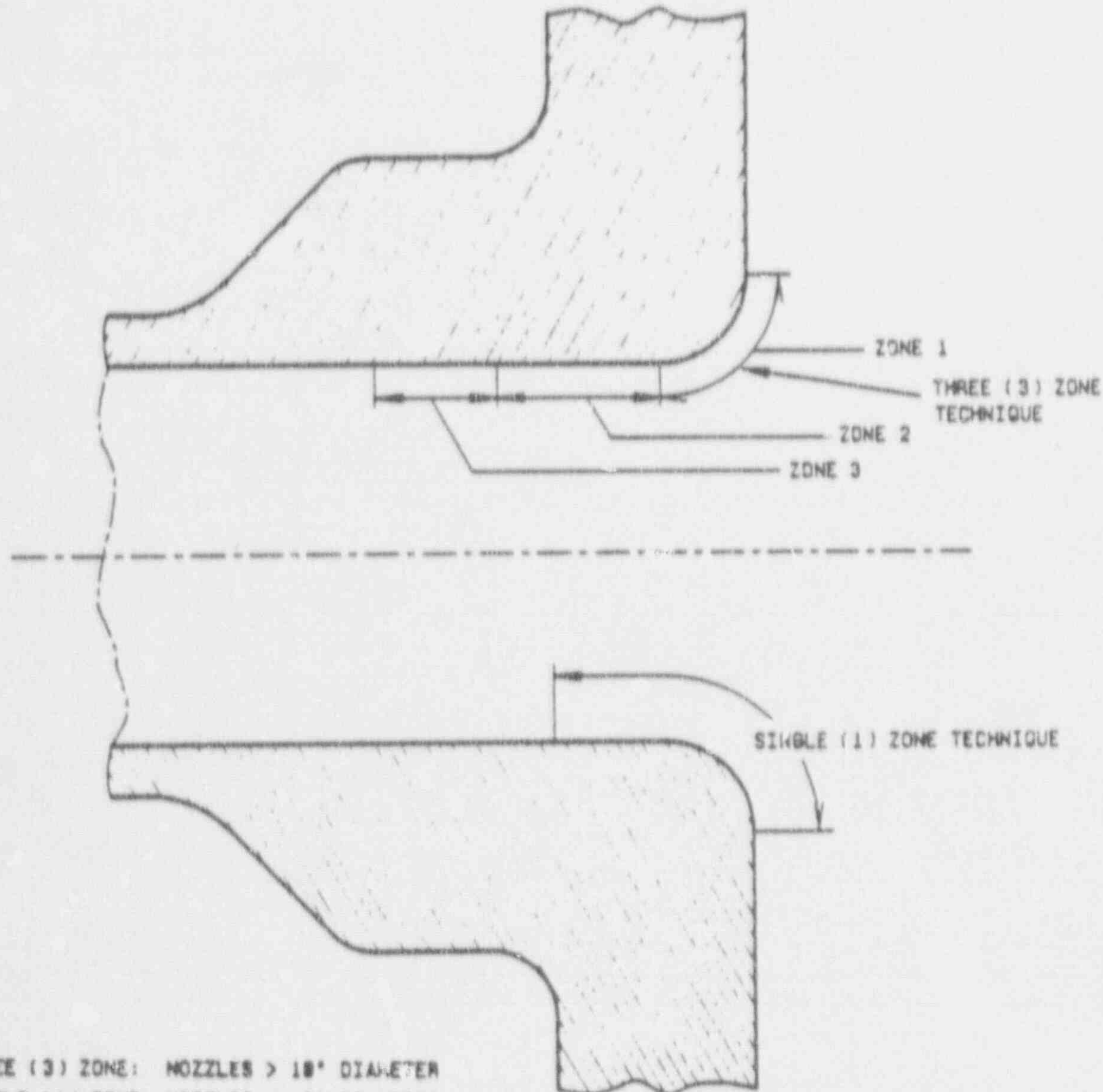
NOTES:
T_{N1}, T_{N2} = NOZZLE WALL THICKNESS
T_S = SHELL (OR HEAD) THICKNESS
R_i = NOZZLE INSIDE RADIUS



EXAMINATION REGION	EXAMINATION VOLUME
SHELL (OR HEAD) ADJOINING REGION	C-D-E-F
ATTACHMENT WELD REGION	B-C-F-G
NOZZLE CYLINDER REGION	A-B-G-H
NOZZLE INSIDE CORNER REGION	M-N-O-P

Section XI Examination Volume

Figure B-8-1(b)
Increased Examination
of
Category B-D
Nozzle Inside Radius
Sections



THREE (3) ZONE: NOZZLES > 10" DIAMETER
SINGLE (1) ZONE: NOZZLES ≤ 10" DIAMETER

Augmented Examination Volume

AUGMENTED INSPECTION PROGRAM - 9: Examination of the RPV Closure Head Lifting Lugs

I. SCOPE

This augmented inspection program (AUG-9) defines the specific examination requirements for the RPV closure head lifting lugs, as applicable to LGS 1.

II. REFERENCES

None

III. GENERAL

ASME Section XI Code Examination Category B-H, Integral Attachments for Vessels, requires a surface examination of LGS 2 RPV integral attachments. Code Table IWB-2500-1, Note (1) limits integral attachment examinations to those attachments that meet the following conditions:

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 5/8 in. or greater; and

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

Per the above criteria, the RPV closure head lifting lugs are excluded from the examination requirements of Code Category B-H.

IV. EXAMINATION PROGRAM

There are four (4) closure head lifting lugs on the LGS 1 RPV. Due to the importance of the closure head lifting lugs to refueling operations, and the relative magnitude of weight they are required to carry, PECo has determined that routine nondestructive examination of the lug attachment welds is in order.

As such, the closure head lifting lugs have been optionally upgraded to Code Category B-H components and therefore, will be examined in accordance with the rules of ASME Section XI.

V. EXAMINATION RESULTS

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

VI. REPORTS/RECORDS

Reporting and record-keeping requirements shall be in accordance with ASME Section XI.

AUGMENTED INSPECTION PROGRAM - 10: Non-Q Reactor Pressure Vessel Internal Components (FSAR Table 3.2-1)

I. SCOPE

This augmented inspection program (AUG-10) defines the examination requirements applicable to certain LGS 1 reactor pressure vessel internal components, as committed to in the LGS FSAR Table 3.2-1.

Examination requirements, as detailed in this document, are exclusive of those ASME Section XI inservice inspection requirements for the identified components within the scope of this document.

II. REFERENCE

A. Limerick Generating Station Final Safety Analysis Report (FSAR)

III. GENERAL

ASME Section XI, 1986 Edition, Examination Category B-N-1, requires a visual examination, VT-3, of areas/spaces above and below the reactor core that are made accessible for examination by removal of components during normal refueling outages. This requirement, as interpreted by PECo, includes not only the accessible areas/spaces in the reactor pressure vessel itself, but also, those safety related and/or Q-listed reactor pressure vessel internal components which occupy that space. The reactor internals, whose safety function requires conformance to 10CFR50, Appendix B, quality standards are summarized in Table 3.2-1 of the FSAR, and, as such, are included as Examination Category B-N-1 components in the LGS 1 ISI Program.

Per note (62) of Table 3.2-1, certain reactor internal components are not safety related, Q-listed, or subject to 10CFR50, Appendix B. However, PECo, recognizing the importance of these components, has committed to including the subject components for examination in the LGS 1 ISI Program.

IV. EXAMINATION PROGRAM

Per note (62) of the FSAR Table 3.2-1, the following components are not safety related, not Q-listed and not under 10CFR50, Appendix B:

a) steam dryer,
b) shroud head and steam separator assembly,
c) in-core guide tubes/guide tube stabilizers,
d) differential pressure and liquid control lines inside the RPV (excluding those portions that are part of the reactor coolant pressure boundary and are Q-listed),
e) fuel orifices,
f) feedwater spargers,
g) jet pump instrument lines, and
h) surveillance specimen holders.

These components, per this augmented inspection program, are included for examination in the LGS 1 ISI Program, and are subject to the requirements of ASME Section XI, 1986 Edition, Table IWB-2500-1, Examination Category B-N-1.

V. EXAMINATION RESULTS

All examination results shall be evaluated/dispositioned in accordance with the rules of ASME Section XI.

VI. REPORTS/RECORDS

All records/reports shall be prepared/maintained in accordance with the rules of ASME Section XI and plant procedures.

AUGMENTED INSPECTION PROGRAM - 11: SIL No. 409, Incore Dry Tube Cracks

I. SCOPE

This augmented inspection program (AUG-11) defines the specific examination requirements of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 409, as applicable to LGS 1. 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.

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 he dry tube assembly, primarily in the perforated tube adjacent to either the weld betwee he tube and the guide plug or the weld between the tube and the primary pressure boundary. (See ISI drawing XI-BN-5, Page 1)

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 LGS 1 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 LGS 1 configuration are dependant on time in use, water quality, and loading variations (e.g., flow induced vibration, bumping during fuel movements). Recommended visual examinations shall be in accordance with Section IV.

IV. EXAMINATION PROGRAM

There are four (4) SRM and eight (8) IRM dry tube assemblies in the LGS 1 reactor pressure vessel. Visual examination (VT-1) of the top two (2) feet of these dry tubes is recommended in accordance with Table B-11-1.

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-11-1

INCORE DRY TUBE

RECOMMENDED INSPECTION PROGRAM

	Water conductivity	
	Meets EPRI Guidelines[1]	Does Not Meet EPRI Guidelines[2]
LGS 1 SRM/IRM Dry Tubes	4/2[2,3,4]	2/1[2,3,5]

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 every "Yth" refueling outage.

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.

4. The SRM/IRM dry tubes are ASME Section XI B-N-1 components and are required to be examined when accessible. Access permitting, the Code frequency of examination meets or exceeds the requirements of this augmented program. However, this program requires a VT-1 examination be performed in lieu of a VT-3.

5. The SRM/IRM dry tubes are ASME Section XI B-N-1 components and are required to be examined when accessible. The requirements for subsequent examinations, given water quality, are more restrictive than that required by the Code. Consideration should be given to flow induced vibrations, bumping during fuel movements and time since last visual examination in scheduling these components for examination.

AUGMENTED INSPECTION PROGRAM - 12: SIL No. 420, Inspection of Jet Pump Sensing Lines

I. SCOPE

This augmented inspection program (AUG-12) defines the specific examination requirements of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 420, as applicable to LGS 1. This SIL provides information/ recommendations relative to jet pump sensing line failures.

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. REFERENCES

A. GE SIL No. 420, Inspection of Jet Pump Sensing Lines, Category 1, March 28, 1985.

B. Augmented Examination Program - 10, Non-Q Reactor Pressure Vessel Internal Components (FSAR Table 3.2-1), Appendix B-10 this document

III. GENERAL

Failure of jet pump sensing lines and sensing line support brackets have occurred in BWRs from fatigue caused by vibration. While the jet pump instrumentation lines inside the reactor pressure vessel at the jet pumps and shroud annulus are non Q listed, these lines are critical to plant operation for jet pump flow measurement, core flow measurement and indirect indication of jet pump integrity.

Routine visual examination of the instrumentation lines and support brackets for evidence of vibration induced failure, i.e. loss of integrity of support brackets, is recommended to preclude operating problems caused by impending sensing line failure.

IV. EXAMINATION PROGRAM

Per Augmented Inspection Program -10, visual examinations of all jet pump instrumentation lines will be performed in accordance with the requirements of ASME Section XI Examination Category B-N-1. As such, the requirements of this augmented program will be satisfied.

In performing the visual examination (VT-3) as required above, special attention should be given to the following:

a) welds between the support brackets and the vertical run on the sensing line, and

b) the sensing lines on the jet pumps closest to the recirculation outlet nozzles (*i.e.* the LGS 1 outlet nozzles are at 0° to 180° vessel azimuth; therefore, examinations should concentrate on jet pumps 1, 2, 9, 10, 11, 12, 19 and 20).

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.

AUGMENTED INSPECTION PROGRAM 13: Snubber Examination and Test Program (Technical Specification Snubbers)

I. SCOPE

This augmented inspection program (AUG-13) defines the mandatory examination and testing requirements for snubbers. This program has been prepared as a complete replacement for the Surveillance Requirements of LGS 1 Technical Specification 3/4.7.4.

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-13-1). 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-13) Tables.

II. REFERENCES

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

B. LGS 1 Technical Specification 3/4.7.4 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 condition.

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.

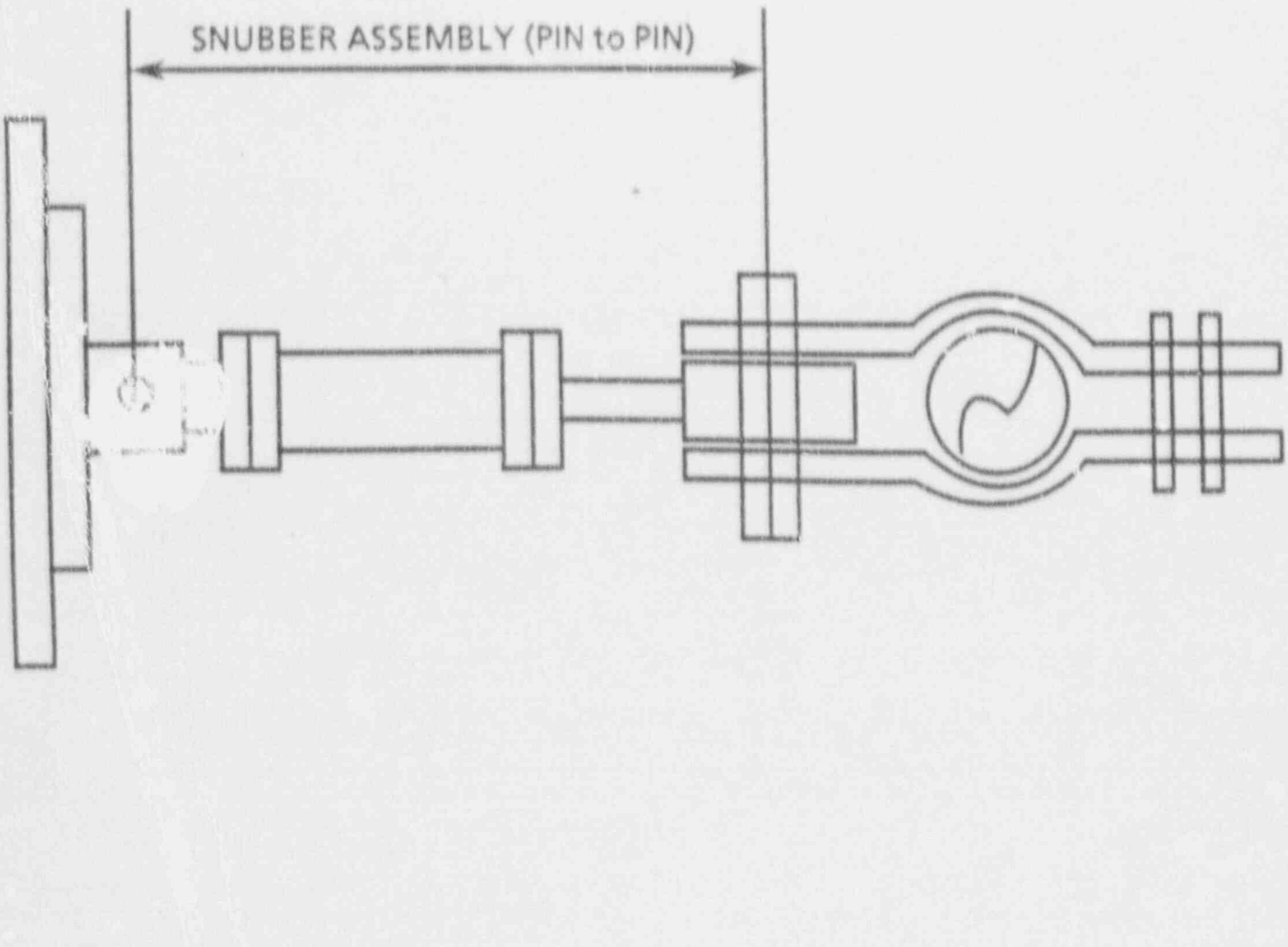
AB. Unexplained Failure - failures that cannot be categorized as design or manufacturing, maintenance, repair, installation, application induced, or isolated. This includes all failures for which the cause of the failure cannot be determined.

Figure B-13-1

Snubber Scope

of

Examination/Testing



IV. GENERAL SNUBBER EXAMINATION AND TESTING REQUIREMENTS

Snubbers are installed on safety and nonsafety related systems at LGS 1 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, is intended to provide a comprehensive program which demonstrates the operability of applicable LGS 1 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 3/4.7.4. Requirements of Technical Specification 3/4.7.4, other than surveillance requirements, still apply.

A. Responsibility

PECo, as owner of LGS 1, 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 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. Inspection personnel performing and evaluating visual examinations shall be qualified for VT- 3 visual examination in accordance with ASME Section XI 1986 Edition or PECo 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 LGS 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 number of snubbers and 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-13-1 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-13-1.

5) Outage-Based Visual Examinations

Table B-13-1, Outage-Based Visual Examination Table, provides the permissible number of unacceptable snubbers allowed, for various snubber populations or groups, to continue with the normal examination frequency schedule. In addition, Table B-13-1 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-13-1

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.4, 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 parameters 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.

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. 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 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.

[illegible]) 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 [illegible] 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 requir 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.

12) 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-13-2):

$$N \geq 36.49 + 18.18\,C \quad \text{where}$$

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-13-2):

$$N \geq 36.49 + 18.18\,C \quad \text{where}$$

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 equation in c) above.

d) The 37 testing sample plan corrective action

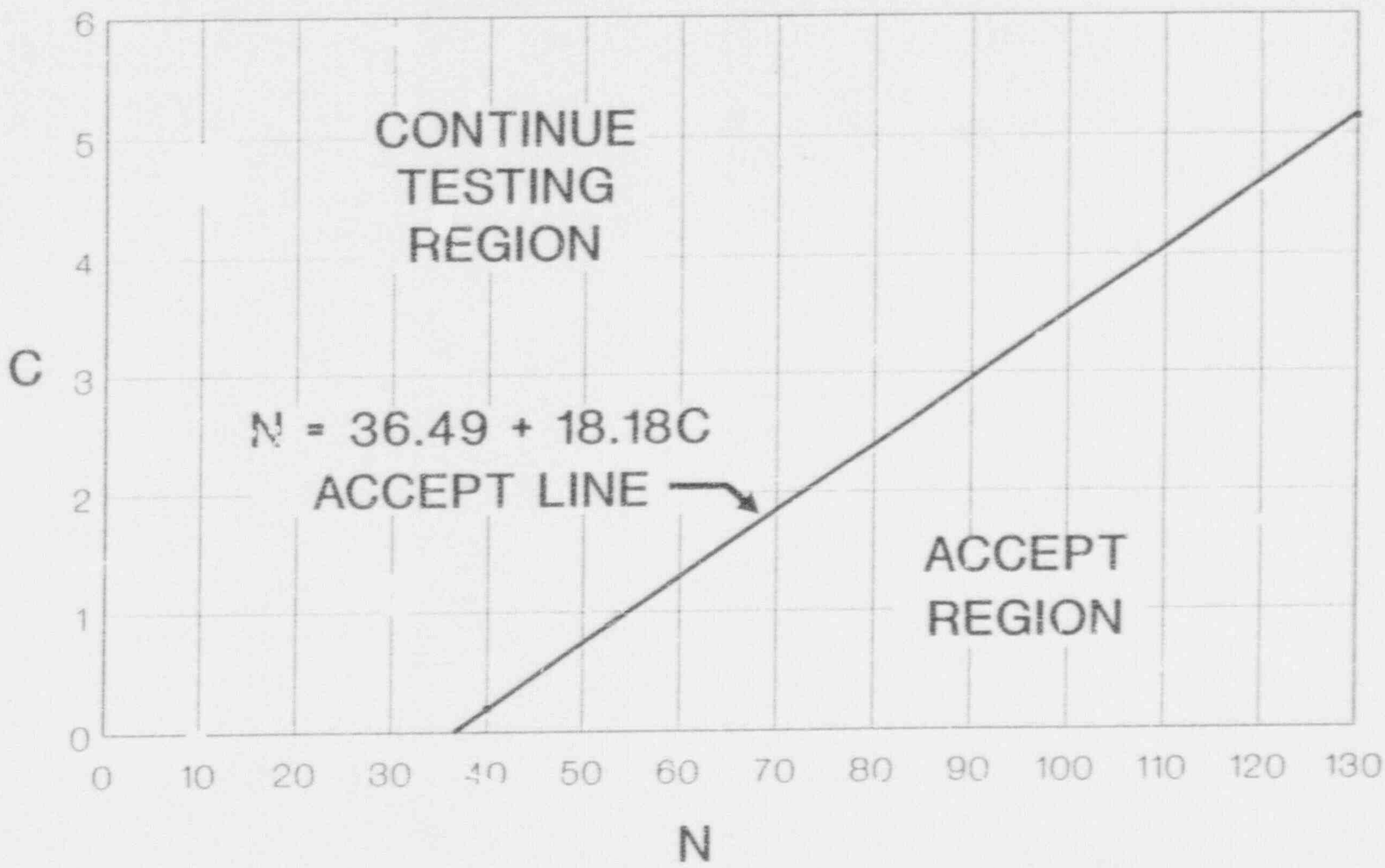
The following corrective action shall apply:

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-13-2
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 LGS Technical Specification 6.10.3.

Details of examinations and tests conducted under this program need not be included in the ASME Section XI Summary Report and NIS-1 Forms are not required. An abstract of examinations completed may be provided in the Summary Report. NIS-2 forms shall be included in the Summary Report for any Section XI repairs or replacements performed on the snubbers within the scope of this program.

AUGMENTED INSPECTION PROGRAM - 14: Snubbers Examination Program (BOP Snubbers)

I. SCOPE

This augmented inspection program (AUG-14) defines the PECo examination requirements for snubbers installed on non-safety related systems which are not subject to the examination and testing requirements of Technical Specification 3/4.7.4.

The examination 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-14-1). 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-14) Tables.

II. REFERENCES

A. None

III. GENERAL

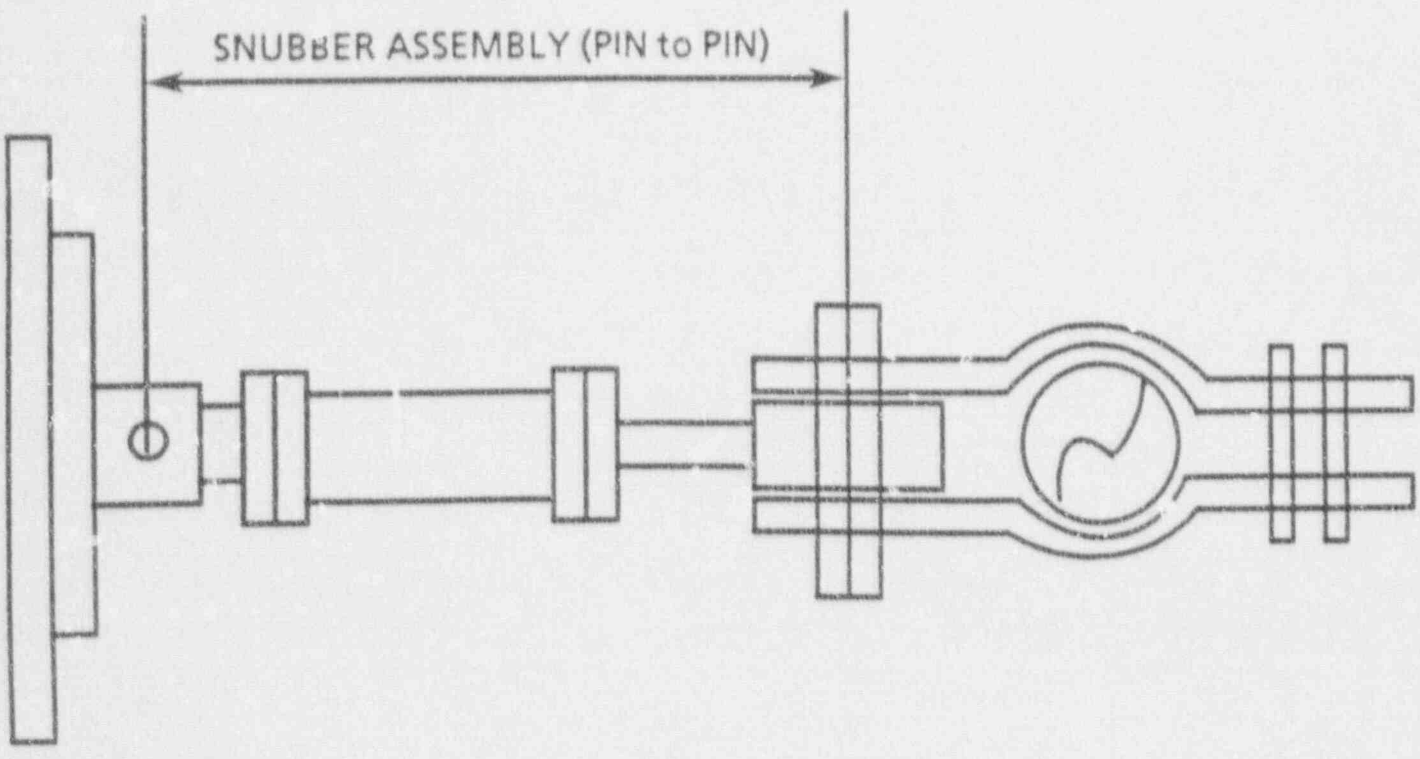
Snubbers installed on nonsafety related systems whose failure or failure of the system on which they are installed would have no adverse effect on any safety related system are excluded from the examination and testing requirements of Technical Specification 3/4.7.4. However, at LGS 1, all snubber assemblies (both safety related and non-safety related) were procured and installed to the quality standards of safety related snubbers. As such, it is PECo's plan to continue to maintain all snubbers assemblies to quality standards. Therefore, the purpose of this augmented inspection program is to provide examination requirements necessary for continued assurance of the quality of the subject non-Technical Specification snubbers.

Figure B-14-1

Snubber Scope

of

Examination



IV. EXAMINATION REQUIREMENTS

All (100%) of the snubbers within the scope of this augmented inspection program shall be visually examined.

The visual examination, performed to assess the general mechanical and structural condition of the snubber, shall identify any physical damage, leakage, corrosion, or degradation from environmental exposure or operating conditions. In addition, the snubber shall be visually examined for operability. Snubber physical (attributes) features which indicate functional adequacy or could affect snubber operability shall also be visually examined.

Examinations shall be performed every other refueling outage; or at approximately three year intervals, for those snubbers not examined during refueling outages.

Examinations shall be performed utilizing procedures and personnel qualified in accordance with the ISI Program (see Section 3.3.1).

V. EXAMINATION RESULTS

Visual examination results shall be documented and evaluated in accordance with ISI Program requirements. In addition, the snubber installation shall be evaluated for conformance 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 B of Appendix B-13.

Snubbers evaluated as unacceptable shall be unacceptable for service until such time as the snubber is deemed acceptable via repair, replacement, engineering evaluation or operability test. Note that the discovery of an unacceptable snubber per this augmented program does not initiate additional examinations, nor does the total number of unacceptable snubbers impact examinations and testing of Augmented Program (AUG-13), (Technical Specification 3/4.7.4) snubber assemblies.

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 site administrative procedures.

AUGMENTED INSPECTION PROGRAM - 15: SIL No. 433
Shroud Head Bolt Cracks

I. SCOPE

This augmented inspection program (AUG-15) defines the specific examination recommendations of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 433, as applicable to LGS 1. This SIL addresses the occurrence of intergranular stress corrosion cracking (IGSCC) of RPV shroud head bolting and the GE recommended actions in light of this problem.

Any shroud head bolts which have been replaced with the new design (BWR/6) bolt are outside of the scope of this augmented inspection program.

II. REFERENCES

A. GE SIL No. 433, Shroud Head Bolt Cracks, February 7, 1986.

B. PECo memorandum dated 3/7/90, T. A. Shea to distribution, RE: Clarification of the ISI Coordination Group's Position on RPV Inservice Inspection Issues.

III. GENERAL

Shroud head bolt cracking has been observed at several BWR facilities. This cracking, which occurs in the Ni Cr Fe Alloy 600 shaft in a creviced region, has been confirmed to be crevice accelerated IGSCC. Crack initiation and growth rate are dependent on time in use, loading, and particularly, on water quality.

While failure of the shroud head bolt(s) is not a safety concern, loss of bolt integrity may potentially damage reactor internals and/or balance of plant equipment; therefore, augmented examination of the LGS 1 shroud head bolting is recommended.

Note that the GE design "replacement" shroud head bolt incorporates modifications to eliminate the collar crevice and utilizes a more IGCSS resistant material; augmented examination of any replacement shroud head bolts is not required.

IV. EXAMINATION REQUIREMENTS

Straight beam ultrasonic examination of all LGS 1 original design shroud head bolts shall be performed every other refueling outage. The UT procedure utilized shall be capable of detecting IGSCC in the given bolt configuration. Ultrasonic examinations are conducted with the subject bolts in place on the shroud head/separator, following removal of the assembly and storage in the equipment storage pool.

V. EXAMINATION RESULTS

All failed bolts, and bolting evaluated as cracked, shall be considered for replacement with the new design replacement bolts.

If cracked bolts cannot be replaced or if bolt status is indeterminate, an engineering evaluation shall be performed to assess safety concerns and potential risk of damage to other plant equipment.

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 - 16

SIL No. 462 Shroud Support Access Hole Cover Cracks

I. SCOPE

This augmented inspection program (AUG-16) defines the specific examination recommendations of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 462, as applicable to LGS 1. 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 1, February 22, 1989.

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 LGS 1 design eliminated the creviced Alloy 600 plate configuration on both access hole covers, the existing design retained a crevice in the 316L stainless steel cover plate in one (1) access hole cover. Although 316L in itself is considered a IGSCC resistant material, the creviced weld configuration adversely affects this designs' overall susceptibility to IGSCC. As such, augmented examination is recommended.

IV. XAMINATION REQUIREMENTS

IGSCC in the LGS 1 configuration, should it occur, is not expected to occur early in plant operation. Therefore, augmented visual (VT-1) examination of the 180° azimuth shroud access hole cover, as recommended by GE, should be performed during the plant's tenth year of operation.

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; satisfaction of this AUG-16 program involves upgrading the visual examination for the 180° cover from VT-3 to VT-1 during the final refueling outage of the first inservice inspection interval.

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 procedu...

AUGMENTED INSPECTION PROGRAM - 17: SIL No. 474 Steam Dryer Drain Channel Cracking

I. SCOPE

This augmented inspection program (AUG-17) defines the specific examination recommendations of General Electric Company (GE) Nuclear Services Information Letter (SIL) No. 474, as applicable to LGS 1. 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.

B. PECo memorandum dated 3/7/90, T. A. Shea to distribution, RE: Clarification of the ISI Coordination Group's Position on RPV Inservice Inspection Issues.

III. GENERAL

The LGS 1 steam dryer is not a safety related component; its 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 LGS 1 steam dryer drain channel attachment welds is recommended every refueling outage.

Note that the steam dryer has been included for routine visual (VT-3) examination in accordance with the AUG-10 program. Examinations, as required by this AUG-17 program, represent an increase in both examination sensitivity and frequency for select areas of the steam dryer.

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 - 18 — RHR Heat Exchanger Pressure Retaining Bolting

I. SCOPE

This augmented inspection program (AUG-18) defines the examinations required on the RHR heat exchanger bolting, as committed to during the LGS-1 Preservice Inspection (PSI) program.

II. REFERENCES

A. NUREG-0991, Safety Evaluation Report related to the operation of Limerick Generating Station, Units 1 and 2, Supplement 5.

B. Limerick Generating Station, Unit #1, Preservice Inspection Relief Request #28.

III. GENERAL

Code Examination Category C-D of the ASME Section XI Code governing the LGS-1 PSI activities required a visual and a surface or volumetric examination of RHR heat exchanger pressure retaining bolting exceeding one (1) inch in diameter. Per PSI relief request #28, relief was requested (and granted) from performing the required examination due to the already sufficient evidence of structural integrity afforded by shop and field Construction Code examination and testing. In addition, PECo committed to performing a visual examination of the subject bolting during the LGS-1 first inservice inspection interval. Since the governing ISI Code no longer requires the examination of Class 2 bolting two (2) inches and under (other than pressure testing), an augmented inspection program to cover this commitment is required.

IV. EXAMINATION REQUIREMENTS

Once during the LGS-1 first inservice inspection interval, all Class-2 pressure retaining (flange) bolting (1-1/8" diameter) of one (1) RHR Heat Exchanger will be visually (VT-1) examined. This examination may be performed with the bolting in place or when the joint is disassembled, at PECo discretion.

V. EXAMINATION RESULTS

Examination results generated from this augmented inspection program shall be recorded and evaluated in accordance with ASME Section XI and 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 - 19: Weld Centerline Markings

I. SCOPE

This augmented program (AUG-19) defines the actions committed to by PECo in response to an NRC open item regarding LGS-1 weld centerline marking.

This AUG-19 program applies to full penetration butt welds within the scope of this ISI Program of which ultrasonic examination (UT) is the specified method of examination. That is, this program applies to Class 1 and 2 welds selected for ISI UT examination during the first inservice inspection interval. In addition, any full penetration butt weld, regardless of Class, requiring ultrasonic examination by any augmented inspection program (e.g. AUG-1), or welds requiring ultrasonic examination as a result of additional samples taken following unacceptable ISI examination, shall be subject to this AUG-19 program.

II. REFERENCES

A. PECo letter J. S. Kemper to R. W. Starostecki (USN dated August 30, 1984, Open Items Report for PECo Limerick Generating Station, Unit 1.

III GENERAL

During the preservice inspection (PSI) activities on LGS 1, USNRC Region , identified an open item regarding the lack of weld centerline marking on some welds subject to PSI ultrasonic examination (UT). In response to this item, PECo committed to implement a program during the first inservice inspection interval to remedy this situation. As such, this AUG-19 program is established to provide adequate weld centerline marking of welds previously not marked during PSI. Note that many welds have already been marked. Therefore, the purpose of this program is to verify whether adequate markings exist and to provide weld centerline marking in those cases where markings are lacking.

IV. AUG-19 PROGRAM

Prior to performing ultrasonic examination of welds within the scope of this program, the weld centerline marking shall be checked and reworked, as needed, in accordance with the following requirements:

"The weld crown shall be measured and the dimensions recorded. Reference marks shall be permanently stamped or vibro-etched on each side of the weld in the base metal of the component outside the examination area. The marks shall be placed in adjacent pairs, approximately three inches from the weld centerline in four locations around the circumference, 90 degrees apart, and shall be completed before weld preparation. Where three inches of access is not available on the base metal because of geometric limitations, the location shall be at the nearest practical distance provided that the marks are placed at equal distances from the weld centerline."

Weld marking shall be performed in accordance with plant procedures.

V. EXAMINATION RESULTS

Not applicable.

VI. REPORTS/RECORDS

Not applicable.

1

IMAGE EVALUATION
TEST TARGET (MT-3)

150mm

6"

1

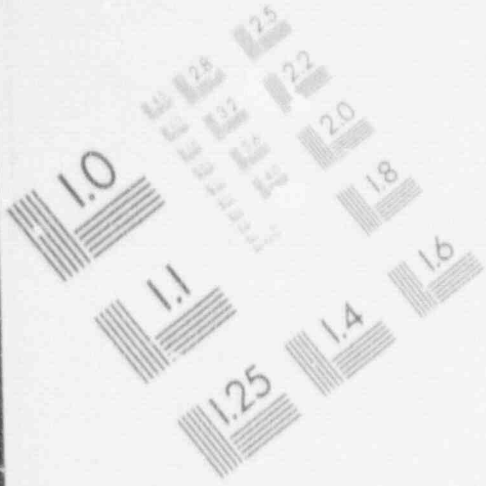
IMAGE EVALUATION
TEST TARGET (MT-3)

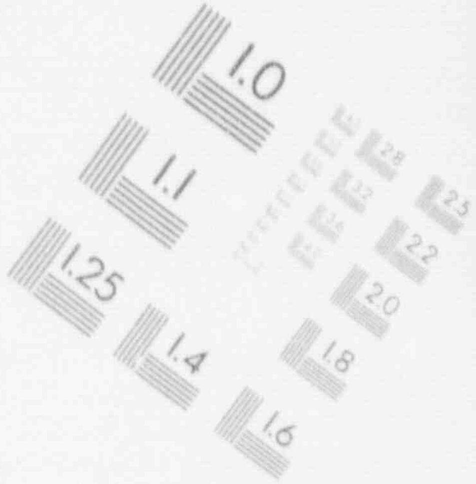
150mm

6"

1

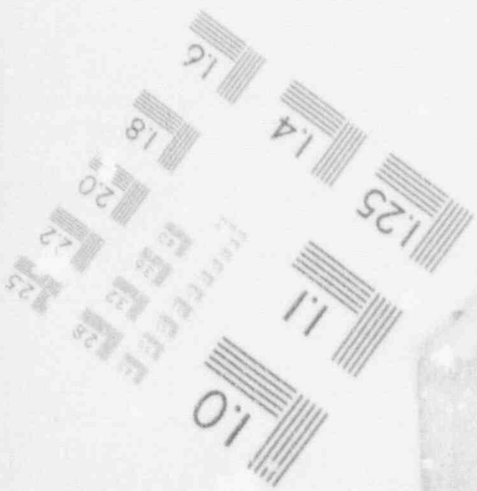
IMAGE EVALUATION TEST TARGET (MT-3)

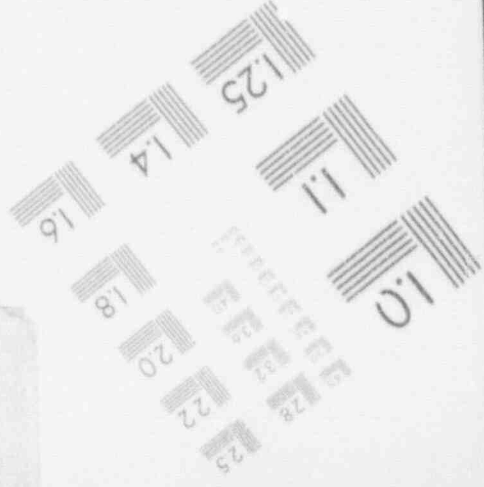




150mm

6″





APPENDIX C - TABLE OF CONTENTS
REFERENCE DRAWINGS

List of ASME Section XI Boundary P&ID's

List of ASME Section XI Class 1 and 2 Isometrics

List of ISI Drawings - Reactor Building Reactor Pressure Vessel, and RPV Appurtenances

List of ASME Class 3 Fabrication Isometric Drawings (component supports and integral attachments)

List of ASME Section XI Calibration Blocks

ASME Section XI Boundary P&ID's

P&ID Number	System Name
ISI-M-01, Sh. 1	Main Steam
ISI-M-08, Sh. 1	Condensate & Refueling Water Storage
ISI-M-11, Sh. 1,2,3,4	Emergency Service Water
ISI-M-12	RHR Service Water
ISI-M-13, Sh. 1	Reactor Enclosure Cooling Water
ISI-M-15, Sh. 15	Compressed Air (Service Air)
ISI-M-20, Sh. 3,4,5,6	Fuel & Diesel Oil Storage and Transfer
ISI-M-26, Sh. 1,2,4	Plant Process Radiation Monitoring
ISI-M-40, Sh. 1	MSIV Leakage Control System
ISI-M-41, Sh. 1,2	Nuclear Boiler
ISI-M-42, Sh. 1	Nuclear Boiler Vessel Instrumentation
ISI-M-43, Sh. 1,2	Reactor Recirculation Pump
ISI-M-44, Sh. 1,2	Reactor Water Clean-up
ISI-M-45, Sh. 1	Clean Up Filter Demineralizer
ISI-M-46, Sh. 1	Control Rod Drive Hydraulic - Part A
ISI-M-47, Sh. 1	Control Rod Drive Hydraulic - Part B
ISI-M-48, Sh. 1	Stand by Liquid Control
ISI-M-49, Sh. 1	Reactor Core Isolation Cooling
ISI-M-50, Sh. 1	RCIC Pump Turbine
ISI-M-51, Sh. 1,2,3,4	Residual Heat Removal
ISI-M-52, Sh. 1,2	Core Spray
ISI-M-53, Sh. 1,2	Fuel Pool Cooling and Clean-up
ISI-M-55, Sh. 1	High Pressure Coolant Injection
ISI-M-56, Sh. 1	HPCI Pump Turbine
ISI-M-57, Sh. 1,2,3	Containment Atmospheric Control
ISI-M-59, Sh. 1,2	Primary Containment Instrument Gas
ISI-M-60, Sh. 1	Primary Containment Leak Testing
ISI-M-61, Sh. 1	Liquid Radwaste Collection
ISI-M-87, Sh. 4,5	Drywell Chilled Water
ISI-M-90, Sh. 1,2	Containment Enclosure Chilled Water

ASME Section XI Class 1 and 2 ISI Isometrics

Part A: M-10383, Sheets 1 through 141, comprised of the following listed Figure numbers.

System	Class 1	Class 2
Residual Heat Removal	01-01	01-02
	01-101	01-102
	01-04	01-03
	01-104	01-103
	01-07A	01-03A
	01-107A	01-103A
	01-09A	01-05
	01-109A	01-105
	01-11	01-06
	01-111	01-106
		01-06A
		01-106A
		01-07
		01-107
		01-08
		01-108
		01-09
		01-109
		01-10
		01-110
		01-12
		01-112
		01-13
		01-113
		01-14
		01-114
		01-16
		01-116
		01-17
		01-117
		01-20
		01-22
		01-122
		01-23
		01-123
		01-26
		01-126
High Pressure Coolant Injection	02-01	02-01A
	02-101	02-101A
		02-02
		02-102
		02-03
		02-103
		02-04
		02-104

ASME Section XI CLass 1 and 2 ISI Isometrics (Cont'd)

System	Class 1	Class 2
High Pressure Coolant Injection (cont'd)		02-05
		02-105
		02-06
		02-106
		02-07
		02-107
		02-08
		02-108
		02-09
		02-109
Main Steam	03-01	03-03
	03-101	03-103
	03-02	03-05
	03-04	03-105
	03-104	03-06
		03-106
Core Spray	04-01	04-02
	04-101	04-102
	04-04	04-03
	04-104	04-103
		04-05
		04-105
		04-06
		04-106
		04-07
		04-107
		04-08
Feedwater	05-01	05-02
	05-101	05-102
	05-03	05-04
	05-103	05-104
		05-05 (Class 4, Augmented only)
		05-06 (Class 4, Augmented only)
Reactor Core Isolation Cooling	06-01	06-02
	06-101	06-102
		06-03
		06-103
		06-04

ASME Section XI Class 1 and 2 ISI Isometrics (Cont'd)

System	Class 1	Class 2
Reactor Recirculation	07-01	
	07-101	
	07-02	
	07-102	
	07-03	
	07-103	
	07-04	
	07-104	
Reactor Water Clean Up	08-01	
	08-101	
	08-02 (includes Non-Classed piping)	
	08-102	
	08-03	
	08-103	
	08-04	
	08-104	
	08-05 (Augmented only)	
	08-06 (Augmented only)	
	08-07 (Augmented only)	
	08-08 (Augmented only)	
Control Rod Drive		09-01
		09-101
		09-02
		09-102
Standby Liquid Control	11-01	
	11-101	
	11-02	
	11-102	
	11-03	
	11-103	
RPV Vent	12-01	

ASME Section XI Class 1 and 2 ISI Isometrics (Cont'd)

Part B: RPV App. and Component Isometrics

System	Class 1	Class 2
RPV App	XI-RPV-1IN	
Recirc. Pumps	XI-1P-201	
RHR Pumps		XI-1P-202
RHR Heat Exchangers		XI-1E-205 Page 1
RCIC Pump		XI-10P-203
HPCI Pumps		XI-10P-204
Core Spray Pumps		XI-1P-206

ISI Drawing - Reactor Building
Reactor Pressure Vessel
and RPV Appurtenances

XI-BA-1 - Page 1
XI-BA-2 - Page 1
XI-BA-3 - Page 1
XI-BA-4 - Page 1
XI-BA-5 - Page 1
XI-BA-6 - Page 1
XI-BA-7 - Page 1

XI-BD-1 - Page 1
XI-BD-2 - Page 1
XI-BD-3 - Page 1

XI-BE-1 - Page 1
XI-BE-2 - Page 1
XI-BE-3 - Page 1
XI-BE-4 - Page 1
XI-BE-5 - Page 1

XI-BF - Page 1
XI-BF-1 - Page 1
XI-BF-2 - Page 1
XI-BF-3 - Page 1
XI-BF-4 - Page 1
XI-BF-5 - Page 1
XI-BF-6 - Page 1
XI-BF-7 - Page 1
XI-BF-8 - Page 1
XI-BF-9 - Page 1
XI-BF-17- Page 1
XI-BG - Page 1
XI-BH-1 - Page 1
XI-BH-1 - Page 2
XI-BH-2 - Page 1
XI-BH-3 - Page 1
XI-BH-4 - Page 1

XI-BN - Page 1

XI-BN-1 - Page 1
XI-BN-1 - Page 2
XI-BN-1 - Page 3
XI-BN-2 - Page 1
XI-BN-2 - Page 2
XI-BN-2 - Page 3
XI-BN-3 - Page 1
XI-BN-3 - Page 2
XI-BN-4 - Page 1

ISI Drawing - Reactor Building
Reactor Pressure Vessel
and RPV appurtenances (Cont'd)

XI-BN-4 - Page 2
XI-BN-4 - Page 3
XI-BN-4 - Page 4
XI-BN-4 - Page 5
XI-BN-4 - Page 6
XI-BN-4 - Page 7
XI-BN-5 - Page 1
XI-BN-5 - Page 2
XI-BN-6 - Page 1
XI-BN-6 - Page 2
XI-BN-6 - Page 3
XI-BN-7 - Page 1
XI-BN-7 - Page 2
XI-BN-7 - Page 3
XI-BN-7 - Page 4
XI-BN-8 - Page 1
XI-BN-8 - Page 2
XI-BN-8 - Page 3
XI-BN-8 - Page 4
XI-BN-8 - Page 5
XI-BN-8 - Page 6
XI-BN-8 - Page 7
XI-BN-9 - Page 1
XI-BN-9 - Page 2
XI-BN-10 - Page 1
XI-BN-11 - Page 1
XI-BN-11 - Page 2
XI-BN-12 - Page 1
XI-BN-12 - Page 2
XI-BN-13 - Page 1
XI-BN-14 - Page 1
XI-BNN - Page 1
XI-FA-1 - Page 1
XI-FA-1 - Pag
XI-FA-2 - Page 1
XI-FA-2 - Page 2
XI-FA-2 - Page 3
XI-RPV-1 - Page 1
XI-RPV-1 - Page 2
XI-RPV-1 - Page 3
XI-RPV-1 - Page 4

ASME Class 3 Fabrication ISometric Drawings
(for component supports and integral attcahments)

The following are the fabrication isometric drawings (or portions as described in parenthisis) used in the preparation of the ISI tables for non-exempt Class 3 component supports and integral attachments to the pressure boundary.

System	Drawing Number
Emergency Service Water	HBC-081-01
	HBC-081-02
	HBC-082-01
	HBC-082-02
	HBC-082-03
	HBC-083-01
	HBC-083-02
	HBC-084-01
	HBC-084-02
	HBC-138-01
	HBC-138-02
	HBC-138-03
	HBC-143-01
	HBC-143-02
	HBC-143-03
	HBC-147-01
	HBC-147-02
	HBC-147-03
	HBC-152-01
	HBC-152-02
	HBC-152-03
	HBC-158-01
	HBC-159-01
	HBC-166-01
	HBC-192-01
	HBC-192-02
	HBC-192-03
	HBC-192-04
	HBC-193-01
	HBC-193-02
	HBC-193-03
	HBC-193-04
	HBC-194-01
	HBC-194-02
	HBC-194-03
	HBC-194-04
	HBC-195-01
	HBC-195-02
	HBC-195-03
	HBC-195-04
	HBC-238-01 (ends at Unit 2 Boundary)

ASME Class 3 Fabrication Isometric Drawings
(for component supports and integral attachments) (Cont'd)

System	Drawing Number
Emergency Service Water (Continued)	HBC-243-01 (except from FW51 to FW3)
	HBC-247-02
	HBC-252-01 (except from FW50 to Unit 1/Unit 2 tie-in)
	HBC-266-01
	HBC-270-01
	HBC-292-01 (ends at Unit 2 N-5 Boundary) (2 Shts)
	HBC-292-02 (ends at Unit 2 N-5 Boundary) (2 Shts)
	HBC-292-03 (ends at Unit 2 N-5 Boundary) (2 Shts)
	HBC-292-04 (ends at Unit 2 N-5 Boundary) (2 Shts)
	HBC-293-01 (ends at Unit 2 N-5 Boundary)
	HBC-293-02 (ends at Unit 2 N-5 Boundary)
	HBC-293-03 (ends at Unit 2 N-5 Boundary)
	HBC-293-04 (ends at Unit 2 N-5 Boundary)
Main Steam	GBC-101-01
	GBC-101-02
	GBC-101-03
	GBC-101-04
	GBC-101-05
	GBC-101-06
	GBC-101-07
	GBC-101-08
	GBC-101-09
	GBC-101-10
	GBC-101-11
	GBC-101-12
	GBC-101-13
	GBC-101-14
	GBC-116-01
	GBC-116-02
	GBC-116-03
	GBC-116-04
	GBC-116-05
	GBC-116-06
	GBC-116-07
	GBC-116-08
	GBC-116-09
	GBC-116-10
	GBC-116-11
	GBC-116-12
	GBC-116-13
	GBC-116-14

ASME Class 3 Fabrication ISometric Drawings
(for component supports and integral attachments)(Cont'd)

System	Drawing Number
RHR Service Water	GBC-102-01
	GBC-103-01
	GBC-104-01
	GBC-106-01
	GBC-110-01
	HBC-091-01
	HBC-091-02
	HBC-091-03
	HBC-091-04
	HBC-091-05
	HBC-091-06
	HBC-091-07
	HBC-091-08
	HBC-091-09
	HBC-091-10
	HBC-091-11
	HBC-091-12
	HBC-091-13
	HBC-091-14
	HBC-091-15
	HBC-091-16
	HBC-091-17
	HBC-091-18
	HBC-091-19
	HBC-180-01
	HBC-181-01
	HBC-182-01
	HBC-183-01
	HBC-280-01 (except from FW1 to Unit 1/Unit 2 tie-in)
	HBC-282-01 (except form Unit1/Unit 2 tie-in to HBC-282-2)
	HBC-507-01
	HBC-507-02
	HBC-507-03
	HBC-507-04
	HBC-507-05
	HBC-507-06
	HBC-507-07
	HBC-507-08
	HBC-507-09
	HBC-507-10
	HBC-507-11
	HBC-507-12
	HBC-507-13

ASME Class 3 Fabrication Isometric Drawings
(for component supports and integral attachments) (Cont'd)

System	Drawing Number
RHR Service Water (Continued)	HBC-507-14
	HBC-507-15
	HBC-507-16
	HBC-507-17
	HBC-507-18
	HBC-508-01
	HBC-508-02
	HBC-509-01
	HBC-509-02
	HBC-537-01

ASME Section XI ISI Calibration Blocks

Cal. Block #	Material	Bechtel/Vendor Dwg. Print #(8031-)
LIM-28-2.72-SS316	SA358T316L	M-246A-256
LIM-28-1.285-SS316	SA403WP316	M-246A-256
LIM-28-1.076-SS316	SA358T316	M-246A-256
LIM-26-1.013-CS	SA106GrC	M-246A-256
LIM-26-.928-CS	SA106GrC	M-246A-60
LIM-24-1.812-CS-F	SA350LF2	M-246A-256
LIM-24-1.812-CS	SA106GrB	M-246A-60
LIM-22-1.22-CS	SA234WPB	M-246A-256
LIM-22-1.009-SS316	SA358T316	M-246A-207
LIM-20-1.031-CS	SA333Gr6	M-246A-60
LIM-20-1.031-SS	SA403WP304-W	M-246A-256
LIM-20-.903-SS316	SA358T316L	M-246A-258
LIM-20-.840-SS316NG	SA376T316NG	P-151-54
LIM-20-.733-SS	SA376T304	M-246A-260
LIM-20-.375-CS	SA106GrB	M-246A-61
LIM-18-.938-CS	SA106GrB	M-246A-260
LIM-16-1.219-CS	SA106GrC	M-246A-60
LIM-14-1.093-CS	SA106GrB	M-246A-256
LIM-14-.937-CS	SA106GrB	M-246A-258
LIM-14-.750-CS	SA106GrB	M-246A-260
LIM-12-.843-CS	SA106GrB	M-246A-258
LIM-12-.843-SS316	SA358T316L	M-246A-258
LIM-12-.688-CS	SA333Gr6	M-246A-258
LIM-12-.688-SS	SA312T304	M-246A-260
LIM-12-.688-SS316	SA358T316L	M-246A-258
LIM-12-.688-SS316NG	SA376T316NG	P-151-54
LIM-10-.843-CS	SA106GrB	M-246A-258
LIM-10-.718-CS	SA106GrB	M-246A-258
LIM-10-.593-CS	SA106GrB	M-246A-258
LIM-10-.593-SS316	SA358T316L	M-246A-258
LIM-8-.906-CS	SA106GrB	M-246A-258
LIM-8-.719-CS	SA106GrB	M-246A-246
LIM-8-.594-CS	SA106GrB	M-246A-246
LIM-6-.562-CS	SA106GrB	M-246A-253
LIM-6-.432-CS	SA106GrB	M-246A-61
LIM-6-.432-SS	SA376T304	M-246A-61
LIM-6-.432-SS316	SA312T316L	M-246A-155
LIM-4-.437-CS	SA106GrB	M-246A-155
LIM-4-.337-CS	SA106GrB	M-246A-61
LIM-4-.337-SS304	SA312T304	M-246A-208
LIM-3-.438-CS	SA106GrB	M-246A-230
LIM-SP-515-CS	SA515Gr70	M-246A-194
LIM-SP-350-CS	SA350LF2	M-246A-194

ASME Section XI Calibration Blocks (Cont'd)

Cal. Block #	Material	Bechtel/Vendor Dwg. Print * (8031-)
LIM-SP-333-CS	SA333Gr68	M-246A-194
LIM-SP-182-SS316	SA182F316	M-246A-232
LIM-SP-181-CS	SA181Gr2	M-246A-194
LIM-SP-105-CS	SA105Gr2	M-246A-194
LIM-3-STUD-CS	SA540 B-24Cl.2	M-246A-218
LIM-1.00-P	SA516-Gr70	M-246A-210
LIM-F-1.18-CS	SA516-Gr70	M-246A-211
LIM-F-.812-CS	SA516-Gr70	M-246A-210
LIM-RHR-HT-EX-IR	SA105-CL2	XI-1E-205 Page 2
LIM-28-SS-O'LAY	SA312Gr304	FSC-265-14
LIM-22-SS-O'LAY	SA312Gr304	FSC-265-14
LIM-20-SS-O'LAY	SA312Gr304	FSC-265-14

For Calibration Blocks utilized in the examination of RPV nozzle and safe ends (code category B-F, B-J), refer to vendor print M-246B-2.

APPENDIX D
COMPONENT SELECTION CRITERIA

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Scope

2.0 GENERAL

2.1 Multiple Component Concept

2.2 Selection Optimization

3.0 LGS-1 ISI COMPONENT SELECTION BASIS

3.1 Class 1 Code Examination Categories
3.2 Class 2 Code Examination Categories
3.3 Class 3 Code Examination Categories
3.4 Class 1, 2, and 3 Component Supports

4.0 LGS-1 AUGMENTED INSPECTION PROGRAM SELECTION BASIS

4.1 Augmented Inspection Program-1: "NRC Generic Letter 88-01, Intergranular Stress Corrosion Cracking"

4.2 Augmented Inspection Program-2: "NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking"

4.3 Augmented Inspection Program-3: "IE Bulletin No. 80-13, Cracking in Core Spray Spargers"

4.4 Augmented Inspection Program-4: "NUREG/CR-3052, Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure"

4.5 Augmented Inspection Program-5: "USNRC Mechanical Engineering Branch (MEB) Technical Position MEB 3-1 (NUREG 0800) No Break Boundaries"

4.6 Augmented Inspection Program-6: "Outboard Feedwater Check Valves HV-41-1F074A and B"

4.7 Augmented Inspection Program-7: "SIL No. 455, Recommendation for Additional ISI of Alloy 182 Nozzle Weldments"

4.8 Augmented Inspection Program-8: "Extended Examination Volume for Code Category B-D"

4.9 Augmented Inspection Program-9: "Examination of the RPV Closure Head Lifting Lugs"

4.10 Augmented Inspection Program-10: "Non-Q Reactor Pressure Vessel Internal Components (FSAR Table 3.2-1)"

TABLE OF CONTENTS (continued)

4.11 Augmented Inspection Program-11: "SIL No. 409, Incore Dry Tube Cracks"

4.12 Augmented Inspection Program-12: "SIL No. 420, Inspection of Jet Pump Sensing Lines"

4.13 Augmented Inspection Program-13: "Snubber Examination and Test Program (Technical Specification Snubbers)"

4.14 Augmented Inspection Program-14: "Snubber Examination Program (BOP Snubbers)"

4.15 Augmented Inspection Program-15: "SIL No. 433, Shroud Head Bolt Cracks"

4.16 Augmented Inspection Program-16: "SIL No. 462, Shroud Support Access Hole Cover Cracks"

4.17 Augmented Inspection Program-17: "SIL No. 474, Steam Dryer Drain Channel Cracking"

4.18 Augmented Inspection Program-18: "RHR Heat Exchanger Pressure Retaining Bolting"

4.19 Augmented Inspection Program-19: "Weld Centerline Markings"

ATTACHMENTS

Attachment A - Multiple Component Groups
Attachment B - Examination Category B-J Weld Selection Tables
Attachment C - Examination Categories C-F-1/C-F-2 Weld Selection Tables
Attachment D - Component Support Selection Tables (Piping)

1.0 INTRODUCTION

The purpose of this document is to provide a detailed description of the technical basis utilized in the initial selection of Class 1, 2, and 3, components and their supports for ASME Section XI ISI examination during the first inservice inspection interval at LGS 1.

This technical basis shall also be considered at any time throughout the first inservice inspection interval when a revision to the ISI Program or ISI Program Tables may affect the selection basis, and thereby necessitate the addition (or deletion) of components selected for examination, for the remainder of the inservice inspection interval.

1.1 SCOPE

Included in the scope of this document are the selection bases for all LGS nonexempt Class 1, 2, and 3 components and their supports subject to the nondestructive and visual examination requirements of ASME Section XI (the Code). Specifically excluded from discussion in this document are components subject to VT-2 visual examination during system pressure testing.

Additionally, this document specifies the selection criteria applicable to each Augmented Inspection Program included in this Specification.

2.0 GENERAL

The Code provides mandatory rules and requirements for the inservice inspection of Class 1, 2, and 3 components and their supports. Included in these Code requirements are rules for the selection of specific components for examination (i.e. not all components subject to Code requirements require examination during the first interval.) This document addresses these Code rules, as they apply to LGS 1, and provides the specific selection basis utilized for all LGS 1 nonexempt components and their supports.

The selection bases documented in Attachments B, C, and D represents the initial component selections for the first inservice inspection interval. However, throughout this first interval, changes in plant configuration resulting from plant repairs, replacements, or modifications, and revisions to the ISI Program are cause to review these selection bases, to ensure continued conformance to Code requirements. This document is intended to clearly provide the information necessary to support the initial ISI component selections and to allow evaluation of the effect of plant changes, ISI Program revisions or other situations which may impact ISI Program commitments.

These selection bases represent the minimum number of component selections necessary to satisfy the Code requirements. When performing calculations to determine examination sample size, fractional numbers shall be rounded off to the nearest whole number. In the event that proration calculations indicate essentially zero selections, a minimum of one (1) selection shall be made. When, due to good engineering judgement, selections made are in excess of Code requirements, it is so noted in the selection basis.

2.1 MULTIPLE COMPONENT CONCEPT

The multiple component concept is used frequently in the selection of components in a variety of Code Examination Categories. Basically, for a group of like components (i.e., multiple components), typically equipment, of similar design and performing a similar function; the Code requires examination of at least one component from the group of these multiple components. Where the multiple component concept is applied for selections in this document, it is so noted under the appropriate Code Examination Category. Each group of components established is assigned a group number for purposes of identification of the group. A complete listing of all multiple component group numbers may be found in Attachment A of this Appendix.

2.2 SELECTION OPTIMIZATION

Sometimes, especially in the cases of Class 1 and 2 welds, augmented examinations are required which duplicate the Code examination methods required for that same component. Where possible, selections shall be made to optimize examinations performed, yet still meet the selection requirements of the Code.

3.0 LGS 1 ISI COMPONENT SELECTION BASIS

Information presented in this document is organized by component Class and Code Examination Category (as found in Table IWX-2500-1 of the Code); Class 1, 2, and 3 component supports are discussed separately. The specific selection criteria applies to all components within the Code Examination Category unless otherwise stated. All categories are discussed as follows:

3.1 Class 1 Code Examination Categories
3.2 Class 2 Code Examination Categories
3.3 Class 3 Code Examination Categories
3.4 Class 1, 2, and 3 Component Supports (piping and equipment)

3.1 CLASS 1 CODE EXAMINATION CATEGORIES

3.1.1 Examination Category B-A, Pressure Retaining Welds in Reactor Vessel

In accordance with Table IWB-2500-1, all Class 1 components subject to the requirements of Code Examination Category B-A shall be selected for examination.

3.1.2 Examination Category B-D, Full Penetration Welds of Nozzles in Vessel

In accordance with Table IWB-2500-1, all Class 1 components subject to the requirements of Code Examination Category B-D shall be selected for examination during the first inservice inspection interval.

3.1.3 Examination Category B-E, Pressure Retaining Partial Penetration Welds in Vessels

In accordance with Table IWB-2500-1, twenty five percent (25%) of all partial penetration welds in the reactor pressure vessel nozzles, control rod drive nozzles, and vessel instrumentation nozzles shall be selected for examination. Selections shall be evenly distributed among the different types of partial penetration welds, by selecting twenty five percent (25%) by Code Item Number. The following represents the initial selection by Code Item Number.

Item Number	Population	Number Selected
B4.11	1	1
B4.12	370	94
B4.13	65	17
	TOTAL	112

3.1.4 <u>Examination Category B-F, Pressure Retaining Dissimiler Metal Welds</u>

In accordance with Table IWB-2500-1, all Class 1 components subject to the requirements of Code Examination Category B-F shall be selected for examination.

3.1.5 <u>Examination Category B-G-1, Pressure Retaining Bolting, Greater Than 2 in. In Diameter</u>

3.1.5.1 **Reactor Vessel, Item Numbers B6.10 through B6.50 inclusive**

In accordance with Table IWB-2500-1, all Class 1 components within the subject item numbers shall be selected for examination.

3.1.5.2 **Pumps, Item Numbers B6.180 through B6.200 inclusive**

Selection of the Reactor Recirculation pump bolting shall be in accordance with Table IWB-2500-1, Note 3, "For ... pumps, ... examinations are limited to components selected for examination under Examination Categories B-L-2". Referring to Examination Category B-L-2, Pump Casings, the multiple component concept applies and examinations are limited to one (1) of two (2) Reactor Recirculation pumps. The Reactor Recirculation pumps are multiple component group number 20.

3.1.6 <u>Examination Category B-G-2, Pressure Retaining Bolting, 2 in. and Less in Diameter</u>

3.1.6.1 **Piping, CRD Housings Item Numbers B7.50 and B7.80, respectively**

In accordance with Table IWB-2500-1, all Class 1 bolting in piping in Code Examination Category B-J shall be selected for examination.

Since CRD housing bolting is only required to be examined when a housing is disassembled, selection of individual housings for examination is not practical. All CRD housings are considered selected; however, examinations are only required in the event the housings are disassembled.

3.1.6.2 **Valves, Item Number B7.70**

Selection of Class 1 valve bolting (2 in. and less in diameter) shall be in accordance with Table IWB 2500-1, Note 2, "For ... valves, examinations are limited to components selected for examination under Examination Categories ... B-M-2." Referring to Examination Category B-M-2, Valve Bodies, the multiple component concept applies and examinations are limited to one (1) valve in a multiple component group. See Examination Category B-M-2 (Section 3.1.11) and Attachment A of this Appendix for further discussion of valve groupings.

Note: While all Category B-M-2 valves are noted as "selected" in the ISI Tables, only one valve from each of the multi-component groups needs to be examined if any valves within the group are disassembled for maintenance or other reasons, per Relief Request RR-03. Since disassembly is not a prerequesite for Category B-G-2 examinations, one valve from each of the multi-component groups has been selected at random for the B-G-2 examination.

3.1.7 **Examination Category B-H, Integral Attachments for Vessels**

In accordance with Table IWB-2500-1, all reactor vessel integrally welded attachments subject to the requirements of Code Examination Category B-H shall be selected for examination.

3.1.8 **Examination Category B-J, Pressure Retaining Welds In Piping**

The extent (percentage) of Class 1, Category B-J welds selected for examination shall be in accordance with the 1974 Edition with Summer 1975 Addenda of ASME Section XI, except for Section XI, except for dissimilar metal welds which are assigned to Code Category B-F. The welds selected for examination shall consist of a 25% representative sample of each system distributed among the line sizes and shall include circumferential, branch connection, and socket welds not exempted by IWB-1220. The examination sample shall be selected from terminal ends connected to vessels and other terminal ends and weld joints connected to other components where stress levels exceed either of the following limits.

1. Primary plus secondary stress intensity range of 2.4 Sm
2. Cumulative usage factor (u) of 0.4

A portion of the longitudinal welds intersecting any of the selected circumferential welds shall also be examined.

See Attachment B for specific weld totals.

3.1.9 <u>Examination Category B-K-1, Integral Attachments For Piping, Pumps, And Valves</u>

Selection of Class 1 integrally welded attachments for piping and pumps shall be in accordance with Table IWB-2500-1, Note 3, "Examinations include the welded attachments of piping required to be examined by Examination Category B-J and the welded attachments to associated pumps integral to such piping." This note is interpreted as requiring examination of 25% of integrally welded attachments on all nonexempt Class 1 piping and Reactor Recirculation pumps.

3.1.10 <u>Examination Category B-L-2, Pump Casings</u>

Selection of Class 1 Reactor Recirculation pump casings for examination shall be in accordance with Table IWB-2500-1, Note 1, "Examinations are limited to at least one pump in each group of pumps performing similar functions in the system, as modified by Relief Request RR-02. The multiple component concept applies and examinations are limited to one (1) of two (2) Reactor Recirculation pumps. The Reactor Recirculation pumps are multiple component group number 20.

3.1.11 <u>Examination Category B-M-2, Valve Bodies</u>

Selection of Class 1 valve bodies subject to the requirements of Examination Category B-M-2 shall be in accordance with Table IWB-2500-1, Note 3, "Examinations are limited to at least one valve within each group of valves that are of the same size, constructional design (such as globe, gate, or check valves) and manufacturing method, and that perform similar functions in the system (such as containment isolation and system overpressure protection)," as modified by Relief Request RR-03. The multiple component concept applies and eighteen (18) valve groupings have been established (See Attachment A for details of valve groupings). Examinations are limited to one (1) valve per group and only if disassembled for maintenance or other reasons.

Note: While all category B-M-2 valves are noted as "selected" in the ISI Tables, only one valve from each of the multi-component groups needs to be examined if any valves within the group are disassembled for maintenance or other reasons: per Relief Request RR-03.

3.1.12 <u>Examination Category B-N-1, Interior Of Reactor Vessel</u>

In accordance with Table IWB-2500-1, Note 1, all areas made accessible for examination by removal of components during normal refueling outages shall be selected for examination at the specified frequency. That is, selection of components is a function of accessibility of the affected components, therefore, all components are selected on the condition that they need only be examined should favorable access conditions prevail.

3.1.13 <u>Examination Category B-N-2, Integrally Welded Core Support Structures And Interior Attachments To Reactor Vessels</u>

In accordance with Table IWB-2500-1, all components subject to the requirements of Examination Category B-N-2 shall be selected for examination. As was the case for Examination Category B-N-1, certain components may not be accessible during a normal refueling outage and, therefore, examinations are only required should favorable access conditions prevail.

3.2 CLASS 2 CODE EXAMINATION CATEGORIES

3.2.1 Examination Category C-A, Pressure Retaining Welds In Pressure Vessels

Selection of Examination Category C-A welds in the Residual Heat Removal (RHR) heat exchangers shall be in accordance with IWC-2500-1, Note 3, "In the case of multiple vessels of similar design, size, and service (such as ... heat exchangers), the required examinations may be limited to one vessel or distributed among the vessels." Therefore, the multiple component concept applies and examinations are distributed among the two (2) RHR heat exchangers. The RHR heat exchangers are multiple component group number 23.

3.2.2 Examination Category C-B, Pressure Retaining Nozzle Welds In Vessels

Selection of Examination Category C-B welds in the RHR heat exchangers shall be in accordance with IWC-2500-1, Note 4, "In the case of multiple vessels of similar design, size, and service (such as heat exchangers), the required examinations may be limited to one vessel or distributed among the vessels.". Therefore the multiple component concept applies and examinations are distributed among the two (2) RHR heat exchangers. The RHR heat exchangers are multiple component group number 23.

3.2.3 Examination Category C-C, Integral Attachments For Vessels, Piping, Pumps, And Valves

3.2.3.1 Pressure Vessels, Item Number C3.10

Selection of Examination Category C-C integrally welded attachments shall be in accordance with IWC-2500-1, Note 2, ... Where multiple vessels are provided with a number of similar attachments, the examination of the attachments may be distributed among the vessels." Therefore the multiple component concept applies and examinations are distributed among the two (2) RHR heat exchangers. The RHR heat exchangers are multiple component group number 23.

3.2.3.2 **Piping, Item Number C3.20**

Selection of Examination Category C-C integrally welded attachments in piping shall be in accordance with IWC-2500-1, Note 4, "Limited to attachments of those components required to be examined under Examination Categories C-F ... This note is interpreted as requiring examination of 25% of integrally welded attachments on all nonexempt Examination Category C-F-1 and C-F-2 Class 2 piping.

3.2.3.3 **Pumps, Item Number C3.30**

Selection of Examination Category C-C integrally welded attachments on pumps shall be in accordance with IWC-2500-1, Note 4, "Limited to attachments of those components required to be examined under Examination Categories ... C-G." This note is interpreted as requiring examination of 25% of integrally welded attachments on all nonexempt Examination Category C-G pumps selected for examination. See Examination Category C-G (Section 3.2.6)

3.2.4 **Examination Category C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel Or High Alloy Piping**

Selection of Examination Category C-F-1 pressure retaining welds shall be in accordance with IWC-2500-1, Note 2:
"The welds selected for examination shall include 7.5%, but not less than 28 welds, of all austenitic stainless steel of high alloy welds not exempted by IWC-1220. (Some welds not exempted by IWC-1220 are not required to be nondestructively examined per Examination Category C-F-1 as a result of wall thickness. These welds, however, shall be included in the total weld count to which the 7.5% sampling rate is applied.) The examinations shall be distributed as follows:

(a) the examinations shall be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt austenitic stainless steel or high alloy welds in each system (i.e., if a system contains 30% of the nonexempt welds, then 30% of the nondestructive examinations required by Examination Category C-F-1 shall be performed on that system);

(b) within a system, the examinations shall be distributed among terminal ends and structural discontinuities .. prorated, to the degree practicable, on the number of nonexempt terminal ends and structural discontinuities in that system; and

(c) within each system, examinations shall be distributed between line sizes prorated to the degree practicable."

As used herein, the term "to the degree practicable" shall mean within a count of one (1), however the total Code Category examination sample size shall not be less than 7.5%, or 28 welds, whichever is greater. If the total population subject to examination is less than or equal to 28 welds, then the total population shall be selected for examination. In systems which include terminal ends, a minimum of one (1) terminal end shall be selected, even in the event that proration indicates less than one (1) selection.

Currently there are less than 28 LGS 1 welds in Examination Category C-F-1, therefore, all welds shall be selected for examination. Attachment C of this document contains a tabular listing of Examination Category C-F-1 weld totals.

3.2.5 <u>Examination Category C-F-2, Pressure Retaining Welds In Carbon Or Low Alloy Steel Piping</u>

Selection of Examination Category C-F-2 pressure retaining welds shall be in accordance with IWC-2500-1, Note 2:

"The welds selected for examination shall include 7.5%, but not less than 28 welds, of all carbon and low alloy steel welds not exempted by IWC-1220. (Some welds not exempted by IWC-1220 are not required to be nondestructively examined per Examination Category C-F-2 as a result of wall thickness. These welds, however, shall be included in the total weld count to which the 7.5% sampling rate is applied.) The examinations shall be distributed as follows:

(a) the examinations shall be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt carbon and low alloy steel welds in each system (i.e., if a system contains 30% of the nonexempt welds, then 30%

of the nondestructive examinations required by Examination Category C-F-2 shall be performed on that system);

(b) within a system, the examinations shall be distributed among terminal ends and structural discontinuities... prorated, to the degree practicable, on the number of nonexempt terminal ends and structural discontinuities in that system; and

(c) within each system, examinations shall be distributed between line sizes prorated to the degree practicable."

As used herein, the term "to the degree practicable" shall mean within a count of one (1), however the total Code Category examination sample size shall not be less than 7.5%, or 28 welds, whichever is greater. If the total population subject to examination is less than or equal to 28 welds, then the total population shall be selected for examination. In systems which include terminal ends, a minimum of one (1) terminal end shall be selected, even in the event that proration indicates less than one (1) selection.

Attachment C of this document contains tables which illustrate all prorations as required by (a), (b), and (c) above for all Examination Category C-F-2 welds. These prorations indicate the total number, type, and nominal pipe size of welds needed to be selected within each system.

3.2.6 **Examination Category C-G, Pressure Retaining Welds In Pumps And Valves**

For the RCIC pump, in accordance with IWC-2500, all Examination Category C-G pump casing welds shall be examined.
Selection of Class 2 Core Spray and RHR pressure retaining pump casing welds shall be in accordance with IWC-2500, Note 1, "In case of multiple pumps ... of similar design, size, function, and service in a system, the examination of only one pump and one valve among each group of multiple pumps ... is required." Therefore, for the four (4) Core Spray and the four (4) RHR pumps, the multiple component concept applies and only one (1) pump in each group is selected for examination. The Core Spray pumps are multiple component group number 21; the RHR pumps are multiple component group number 22.

3.3 CLASS 3 CODE EXAMINATION CATEGORIES

3.3.1 Examination Category D-A, Systems In Support of Reactor Shutdown Function

3.3.1.1 Integral Attachments for Piping, Item Numbers D1.20 through D1.40 Inclusive

Integral Attachments are listed in Table IWD-2500-1 for examination by the type of support associated with the integral attachment. Table IWD-2500-1 does not, however, provide guidance for selection of piping integral attachments for examination, as may be found for Class 1 and 2 piping integral attachments. Note 3 of Table IWD-2500-1 discusses multiple component integral attachments; "the integral attachments selected for examination shall correspond to those component supports selected...". Paralleling this for piping integral attachments, selection of Examination Category D-A piping integral attachments corresponds to those component supports selected per IWF. That is, if a selected Class 3 component support has associated integral attachments, then the integral attachment shall also be selected for examination.

3.3.2 Examination Category D-B, Systems In Support of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal

3.3.2.1 Integral Attachments for Piping, Item Numbers D2.20 through D2.40 Inclusive

Integral attachments are listed in Table IWD-2500-1 for examination by the type of support associated with the integral attachment. Table IWD-2500-1 does not, however provide guidance for selection of piping integral attachments for examination, as may be found for Class 1 and 2 piping integral attachments. Note 3 of Table IWD-2500-1 discusses multiple component integral attachments; "the integral attachments selected for examination shall correspond to those component supports selected ...". Paralleling this for piping integral attachments, selection of Examination Category D-B piping integral attachments corresponds to those component supports selected per IWF. That is, if a selected Class 3 component support has associated integral attachments, then the integral attachments shall also be selected for examination.

3.3.3 Examination Category D-C, Systems In Support of Residual Heat Removal from Spent Fuel Storage Pool

3.3.3.1 **Integral Attachments for Piping, Item Numbers D3.20 through D3.40 Inclusive**

Integral attachments are listed in Table IWD-2500-1 for examination by the type of support associated with the integral attachment. Table IWD-2500-1 does not, however, provide guidance for selection of piping integral attachments, as may be found for Class 1 and 2 piping integral attachments. Note 3 of Table IWD-2500-1 discusses selection of multiple component integral attachments: "the integral attachments selected for examination shall correspond to those component supports selected ...". Paralleling this for piping integral attachments, selections of Examination Category piping integral attachments corresponds to those component supports selected per IWF. That is, if a selected Class 3 component support has associated integral attachments, then the integral attachments shall also be selected for examination.

3.4 **CLASS 1, 2 and 3 COMPONENT SUPPORT**

3.4.1 Non-piping Component Supports

Non-piping component supports shall be selected for examination in accordance with IWF-2510:

"(a) Component supports selected for examination shall be the supports of those components that are required to be examined under IWB, IWC,IWD.

(b) 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."

Basically, for those non-piping components which are not a part of a multiple component group (e.g., RPV, RCIC pump, HPCI pumps), all supports are selected for examination. Where the multiple component concept applies, (e.g., Reactor Recirculation pumps (group 20), Core Spray pumps (group 21), RHR pumps (group 22), RHR heat exchangers (group 23)), the supports of only one of the components in each group is selected for examination.

3.4.2 **Piping Component Supports**

Selection of piping component supports is in accordance with Relief Request No. RR 09 of NE-42. This relief request details a sampling plan approach to component support selection as follows:

(a) The total number of supports required to be selected for examination is determined by the ASME Section XI classification of the support, (i.e., Class 1, 2, or 3).

Class 1	25% of the nonexempt population
Class 2	15% of the nonexempt population
Class 3	10% of the nonexempt population

(b) All supports are assigned to one of the following types - Anchor, Mechanical Snubber, Rigid, and Variable.

(c) Selections shall be distributed among the required number of supports determined in (a) above by system and type, prorated by the number of supports of each type within each system.

Attachment D illustrates the specific LGS 1 support populations and sampling plan prorations resulting in the total number and types of supports selected in each system.

4.0 **LGS 1 AUGMENTED INSPECTION PROGRAM SELECTION BASIS**

The selection basis for each Augmented Inspection Program is specified herein.

4.1 **AUGMENTED INSPECTION PROGRAM-I: "NRC GENERIC LETTER 88-01, INTERGRANULAR STRESS CORROSION CRACKING"**

The extent of examination required for this Program is determined by the assigned IGSCC Category. There are seven (7) categories (i.e. A, B, C, D, E, F, and G), of which only Categories A and B require a selection process. The remaining categories (i.e. C, D, E, F, and G) require examination of 100% of their respective populations. In accordance with the USNRC staff position stated in Generic Letter 88-01, a 25% sample of the Category A and a 50% sample of the Category B weld populations shall be selected for examination. The welds selected for examination shall be distributed among the systems applicable to this program. The selections shall be coordinated and optimized with the selections of welds for examination under the ISI Program. (i.e. if a weld requiring augmented examination is selected for ISI examination, it is also selected for augmented examination). This selection philosophy has been deemed to yield a representative sample of the welds requiring the augmented examination.

Add ...ally, augmented examinations are required by the program for a portion of the RWC... system located outside the containment isolation boundry. The extent of exami... on of this unclassified portion of the system is required to be a 5% sample per outage, for the remainder of the first inspection interval; increasing to a 10% sample per outage during the second inspection interval. This sampling program is required to begin at the fourth refueling outage.

4.2 **AUGMENTED INSPECTION PROGRAM-2: "NUREG-0619, BWR FEEDWATER NOZZLE AND CONTROL ROD DRIVE RETURN LINE NOZZLE CRACKING"**

Selection criteria is not applicable, 100% of the population requires examination.

4.3 **AUGMENTED INSPECTION PROGRAM-3: "IE BULLETIN NO. 80-13, CRACKING IN CORE SPRAY SPARGERS"**

Selection criteria is not applicable, 100% of the population requires examination.

4.4 **AUGMENTED INSPECTION PROGRAM-4: "NUREG/CR-3052, CLOSEOUT OF IE BULLETIN 80-07: BWR JET PUMP ASSEMBLY FAILURE"**

Selection criteria is not applicable, 100% of the population requires examination.

4.5 AUGMENTED INSPECTION PROGRAM-5: "USNRC MECHANICAL ENGINEERING BRANCH (MEB) TECHNICAL POSITION MEB 3-1 (NUREG 0800) NO BREAK BOUNDARIES"

Selection criteria is not applicable, 100% of the population requires examination.

4.6 AUGMENTED INSPECTION PROGRAM-6: "OUTBOARD FEEDWATER CHECK VALVES HV-41-1F074A AND B"

Program complete.

4.7 AUGMENTED INSPECTION PROGRAM-7: "SIL NO. 455, RECOMMENDATION FOR ADDITIONAL ISI OF ALLOY 182 NOZZLE WELDMENTS"

Selection criteria is not applicable, 100% of the population requires examination.

4.8 AUGMENTED INSPECTION PROGRAM-8: "EXTENDED EXAMINATION VOLUME FOR CODE CATEGORY B-D"

Selection criteria is not applicable, 100% of the population requires examination.

4.9 AUGMENTED INSPECTION PROGRAM-9: "EXAMINATION OF THE RPV CLOSURE HEAD LIFTING LUGS"

Selection criteria is not applicable, 100% of the population requires examination.

4.10 AUGMENTED INSPECTION PROGRAM-10: "NON-Q REACTOR PRESSURE VESSEL INTERNAL COMPONENTS (FSAR TABLE 3.2-1)"

Selection criteria is not applicable, 100% of the population requires examination.

4.11 AUGMENTED INSPECTION PROGRAM-11: "SIL NO. 409, INCORE DRY TUBE CRACKS"

Selection criteria is not applicable, 100% of the population requires examination.

4.12 AUGMENTED INSPECTION PROGRAM-12: "SIL NO. 420, INSPECTION OF JET PUMP SENSING LINES"

Selection criteria is not applicable, 100% of the population requires examination.

4.13 AUGMENTED INSPECTION PROGRAM-13: "SNUBBER EXAMINATION AND TEST PROGRAM (TECHNICAL SPECIFICATION SNUBBERS)"

Selection criteria is not applicable to the examination of snubbers since 100% of the population requires examination. Operability testing of snubbers shall be performed on a representative sample of snubbers, based on either the 10 percent testing sample plan or the 37 testing sample plan. Defined test plan groups shall be established encompassing all snubbers within the scope of this program by the LGS Maintenance ISI Group. They shall also select the sample plan to be used before testing begins for the test interval and that plan shall be used throughout the test interval. Specific criteria for establishing the defined test plan groups and selecting representative and random samples from within the groups is contained within the Augmented Inspection Program-13 text.

4.14 AUGMENTED INSPECTION PROGRAM-14: "SNUBBER EXAMINATION PROGRAM (BOP SNUBBERS)"

Selection criteria is not applicable, 100% of the population requires examination.

4.15 AUGMENTED INSPECTION PROGRAM-15: "SIL NO. 433, SHROUD HEAD BOLT CRACKS"

Selection criteria is not applicable, 100% of the population requires examination.

4.16 AUGMENTED INSPECTION PROGRAM-16: "SIL NO. 462, SHROUD SUPPORT ACCESS HOLE COVER CRACKS"

Selection criteria is not applicable, program applies to Access Hole Cover at azimuth 180^0 only.

4.17 AUGMENTED INSPECTION PROGRAM-17: "SIL NO. 474, STEAM DRYER DRAIN CHANNEL CRACKING"

Selection criteria is not applicable, 100% of attachment welds requires examination.

4.18 AUGMENTED INSPECTION PROGRAM-18: "RHR HEAT EXCHANGER PRESSURE RETAINING BOLTING"

100% of the Class 2 pressure retaining (flange) bolting (1-1/8" diameter) of one (1) RHR Heat Exchanger shall be selected for examination.

4.19 AUGMENTED INSPECTION PROGRAM-19: "WELD CENTERLINE MARKINGS"

Selection criteria is not applicable, applies to all circumferential butt welds selected for UT Examination during the first inspection interval which were not marked during Preservice Inspection.

ATTACHMENT A
MULTIPLE COMPONENT GROUPS

Specification
NE-42, Rev.1
LGS-1
ISI Program
Appendix D
Attachment A
Page 2 of 3

ATTACHMENT A
MULTIPLE COMPONENT GROUPS

VALVE GROUP	VALVE NUMBER	ISI FIGURE #	VENDOR	VENDOR PRINT #	VALVE SIZE & TYPE	MATERIAL
1	HV-41-1F022A,B,C,D	03-01, 04	Atwood & Morrill	M1-B21-F022-C9.2	26" Globe	SA-216WCB (Cast)
	HV-41-1F028A,B,C,D	03-01, 04	Atwood & Morrill	M1-B21-F028-C7.2	26" Globe	SA-216WCB (Cast)
2	PSV-41-2F013A,B, C,D,E,F,G,H,J,K,L,M,N,S	03-01, 04	Target Rock	M1-B21-F013-B2.1	6"x10" Relief	SA-105 (Forged)
3	HV-41-1F011A,B	05-01, 03	Anchor Darling	P-105A-1	24" Gate	SA-352LCB (Cast)
4	41-1F010A,B	05-01, 03	Atwood & Morrill	P-105B-1	24" Check	SA-352LCB (Cast)
	HV-41-1F074A,B	05-01, 03	Atwood & Morrill	P-116-1	24" Check	SA-352LCB (Cast)
5	HV-43-1F023A,B	07-01, 02	Lunkenheimer	M1-B32-F023-B-1.4A	28" Gate	SA-351CF8M (Cast)
	HV-43-1F031A,B	07-01, 02	Lunkenheimer	M1-B32-F031-B-1.4	28" Gate	SA-351CF8M (Cast)
6	HV-44-1F001	08-02	Anchor Darling	P-107A-69	6" Globe	SA-351CF8M (Cast)
	HV-44-1F004	08-02	Anchor Darling	P-107A-69	6" Globe	SA-351CF8M (Cast)
7a	44-1F027	08-02	Anchor Darling	P-107A-87	6" Gate	SA-351CF8M (Cast)
7b	HV-44-1F100	08-04	Velan	P-107B-6	6" Gate	SA-182-F316 (Forged)
7c	HV-C-44-1F105	..-02	Anchor Darling	P-107A-69	6" Globe	SA-351CF8M (Cast)
8	51-1F060A,B	01-01, 04	Anchor Darling	P-107A-86	12" Gate	SA-351CF8M (Cast)
	51-1F077	01-11	Anchor Darling	P-107A-1	20" Gate	SA-351CF8M (Cast)
	HV-51-1F017A,B,C,D	01-02, 05, 07, 09	Anchor Darling	M1-E11-F017-C-2.6BC	12" Gate	SA-352LCB (Cast)
9	HV-51-1F015A,B	01-05, 05	Anchor Darling	M1-E11-F015-C-2.2	12"Globe	SA-351CF8M (Cast)
11	HV-51-1F041A,B,C,D	01-01, 04, 07, 09	Atwood & Morrill	M1-E11-F041-B-3.3	12" Check	SA-352LCB (Cast)
	HV-51-1F050A,B	01-01, 04	Atwood & Morrill	M1-E11-F050-B-1.2	12" Check	SA-352CF8M (Cast)
12	51-1F065A,B,C,D	01-01, 04, 07, 09	Velan	P-107B-1	12" Gate	SA-182F316 (Forged)
	HV-51-1F008	01-11	Velan	P-107B-57	20" Gate	SA-182F316 (Forged)
	HV-51-1F009	01-11	Velan	P-107B-57	20" Gate	SA-182F316 (Forged)
13	HV-52-108	04-04	Anchor	P-107A-19	12" Check	SA-351CF8M (Cast)
14	HV-52-1F005	04-01	Anchor Darling	M1-E21-F005-B-2.3	12" Gate	SA-352LCB (Cast)
15	HV-52-1F006A,B	04-01, 04	Atwood & Morrill	M1-E21-F006-B-2.3	12" Check	SA-352LCB (Cast)
16	52-1F007A,B	04-01, 04	Velan	P-107B-1	12" Gate	SA-182F316 (Forged)
17	HV-55-1F002	02-01	Anchoring Darling	P-104C-34	10" Globe	SA-216WCB (Cast)
	HV-55-1F003	02-01	Anchoring Darling	P-104C-34	10" Globe	SA-216WCB (Cast)
18	Reserved for future use					
19	Reserved for future use					

Note 1: Valve grouping per Specification 8031-P-502, Table 2A.

ATTACHMENT A
MULTIPLE COMPONENT GROUPS

EQUIPMENT

Equipment Group	Equipment Number	Description
4	1AP-201 1BP-201	Reactor Recirculation Pumps
21	1AP-206 1BP-206 1CP-206 1DP-206	Core Spray Pumps
22	1AP-202 1BP-202 1CP-202 1DP-202	RHR Pumps
23	1AE-205 1BE-205	RHR Heat Exchangers

ATTACHMENT B
EXAMINATION CATEGORY B-J
WELD SELECTION TABLES

PRINTED: 07/08/91

LIMERICK UNIT 1 & COMMON- ISI PROGRAM
WELD SELECTION SUMMARY
EXAMINATION CATEGORY: B-J

SYSTEM	TOTAL WELDS	25 % OF TOTAL	TOTAL B9.11	TOTAL B9.21	TOTAL B9.31	TOTAL B9.32	TOTAL B9.40	TOTAL TE (VESSEL) WELDS	TE (VESSEL) WELDS EXCEEDING STRESS OR USAGE	OTHER WELDS EXCEEDING STRESS OR USAGE	TOTAL TE (VESSEL) WELDS ISI SELECTED	TOTAL OTHER WELDS ISI SELECTED
CS	31	7.75	31	0	0	0	0	0	0	21	0	8
FW	90	22.50	89	0	1	0	0	6	0	50	2	25
HPCI	23	5.75	23	0	0	0	0	0	0	5	0	6
MS	107	26.75	88	0	18	1	0	4	0	28	1	27
RCIC	26	6.50	16	10	0	0	0	0	0	1	0	7
RHR	103	25.75	102	0	1	0	0	0	0	69	0	26
RPV-APP	27	6.75	11	5	0	0	11	15	0	0	7	0
RR	111	27.75	83	12	8	2	6	12	0	41	6	22
RWCU	126	31.50	77	38	0	5	6	0	0	46	0	32
SLC	64	16.00	0	2	0	0	62	0	0	60	0	16
	708	177.00	520	67	28	8	85	35	0	321	16	169

ATTACHMENT C
EXAMINATION CATEGORY C-F-1/C-F-2
WELD SELECTION TABLES

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
WELD SELECTION / TABULATION SUMMARY - PART 1
EXAMINATION CATEGORY: C-F-1

GRAND TOTAL NUMBER OF WELDS: 16

PERCENT TO BE EXAMINED: x 7.5 %

OVERALL SAMPLE SIZE: 16 (NOT LESS THAN 28 OR DO 100 %)

SYSTEM NAME	TOTAL WELDS	PERCENT OF GRAND TOTAL	SYSTEM SAMPLE SIZE	SYSTEM TOTAL TE'S	SYSTEM TOTAL SD'S	TE % OF TOTAL TE + SD	SD % OF TOTAL TE + SD	TE REQ'D SAMPLE	SD REQ'D SAMPLE	OTHER REQ'D SAMPLE	TE'S SELECTED	SD'S SELECTED	OTHER SELECTED
CS	1	6.25%	1.00	0	0	0.00%	0.00%	0	0	1	0	0	1
RHR	13	81.25%	13.00	0	8	0.00%	100.00%	0	8	0	0	8	0
RWCU	2	12.50%	2.00	0	2	0.00%	100.00%	0	2	0	0	2	0
	16	100.00%	16.00										

NOTES:

1.) Since the total number of welds requiring examination is less than or equal to 28, then a minimum of 28 non-exempt welds (or the total population) are subject to the rules of Code Examination Category C-F-1, and are selected.

2.) Code Examination Category C-F-1 includes all non-exempt Class 2 austenitic stainless steel, high alloy, and dissimilar metal welds.

3.) The C-F-1 weld counts for total population, overall and system sample size include welds not required to be examined per C-F-1 rules. (i.e. piping welds < 3/8" nominal wall.) All other weld counts include only those welds subject to examination.

PRINTED: 07/08/91

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
WELD SELECTION/TABULATION SUMMARY - PART 2
EXAMINATION CATAGORY: C-F-1

SYSTEM	LINESIZE..........	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	30"	SYSTEM TOTALS	TOTAL LINESIZES
CS	TOTAL WELDS.......	0	0	0	1	0	0	0	0	0	0	0	0	1	1
	TOTAL SELECTED...	0	0	0	1	0	0	0	0	0	0	0	0	1	
RHR	TOTAL WELDS.......	1	0	0	2	0	0	0	1	4	0	0	0	8	4
	TOTAL SELECTED...	1	0	0	2	0	0	0	1	4	0	0	0	8	
RWCU	TOTAL WELDS.......	2	0	0	0	0	0	0	0	0	0	0	0	2	1
	TOTAL SELECTED...	2	0	0	0	0	0	0	0	0	0	0	0	2	

GRAND TOTAL WELDS...... 11
GRAND TOTAL SELECTED.. 11

NOTES: 1.) The C-F-1 weld counts contain only those non-exempt Class 2 austenitic stainless steel, high alloy, or dissimilar metal welds subject to examination per C-F-1 rules. (i.e. does not include piping welds < 3/8" nominal wall.)

PRINTED: 09/27/91

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
WELD SELECTION / TABULATION SUMMARY - PART 1
EXAMINATION CATEGORY: C-F-2

GRAND TOTAL NUMBER OF WELDS: 1588

PERCENT TO BE EXAMINED: x 7.5 %

OVERALL SAMPLE SIZE: 119 (NOT LESS THAN 28 OR DO 100 %)

SYSTEM NAME	TOTAL WELDS	PERCENT OF GRAND TOTAL	SYSTEM SAMPLE SIZE	SYSTEM TOTAL TE'S	SYSTEM TOTAL SD'S	TE % OF TOTAL TE + SD	SD % OF TOTAL TE + SD	TE REQ'D SAMPLE	SD REQ'D SAMPLE	TE'S SELECTED	SD'S SELECTED
CRD	53	3.34%	3.98	0	43	0.00%	100.00%	0	4	0	4
CS	243	15.30%	18.23	9	173	4.95%	95.05%	1	17	1	17
FW	28	1.76%	2.10	0	28	0.00%	100.00%	0	2	0	2
HPCI	204	12.85%	15.30	6	181	3.21%	96.79%	0	15	1	15
MS	142	8.94%	10.65	0	108	0.00%	100.00%	0	11	0	13
RCIC	129	8.12%	9.68	2	83	2.35%	97.65%	0	9	1	9
RHR	789	49.69%	59.18	16	504	3.08%	96.92%	2	57	2	58
	1588	100.00%	119.10								

NOTES:

1.) Class 2 dissimilar metal welds are included in Code Examination Category C-F-1, and are not included in the C-F-2 weld count.

2.) The C-F-2 weld counts include all non-exempt Class 2 carbon steel/low alloy welds including those welds not required to be examined per C-F-2 rules. (i.e. piping welds < 3/8" nominal wall.)

3.) In systems where terminal ends are available for selection, at least one (1) terminal end shall be selected, even in the event the proration indicates essentially zero selections.

PRINTED: 07/08/91

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
WELD SELECTION/TABULATION SUMMARY - PART 2
EXAMINATION CATAGORY: C-F-2

SYSTEM	LINESIZE..........	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	30"	SYSTEM TOTALS	TOTAL LINESIZES
CRD	TOTAL WELDS.......	0	45	8	0	0	0	0	0	0	0	0	0	53	2
	TOTAL SELECTED...	0	3	1	0	0	0	0	0	0	0	0	0	4	
CS	TOTAL WELDS.......	1	0	0	61	56	87	0	0	0	0	0	0	205	4
	TOTAL SELECTED...	1	0	0	5	5	7	0	0	0	0	0	0	18	
FW	TOTAL WELDS.......	1	13	0	0	0	8	0	0	0	6	0	0	28	4
	TOTAL SELECTED...	0	1	0	0	0	1	0	0	0	0	0	0	2	
HPCI	TOTAL WELDS.......	0	37	13	57	51	26	1	19	0	0	0	0	204	7
	TOTAL SELECTED...	0	2	2	4	4	2	0	2	0	0	0	0	16	
MS	TOTAL WELDS.......	24	3	0	0	20	0	10	0	0	0	85	0	142	5
	TOTAL SELECTED...	2	1	0	0	2	0	1	0	0	0	7	0	13	
RCIC	TOTAL WELDS.......	101	0	0	0	0	0	0	0	0	0	0	0	101	1
	TOTAL SELECTED...	10	0	0	0	0	0	0	0	0	0	0	0	10	
RHR	TOTAL WELDS.......	5	4	0	15	16	57	346	53	1	72	0	24	593	10
	TOTAL SELECTED...	1	1	0	1	2	6	34	5	1	7	0	2	60	

GRAND TOTAL WELDS...... 1326
GRAND TOTAL SELECTED.. 123

NOTES: 1.) The C-F-2 weld counts contain only those non-exempt Class 2 carbon steel/low alloy welds subject to examination per C-F-2 rules. (i.e. does not include piping welds < 3/8" nominal wall.)

ATTACHMENT D
COMPONENT SUPPORT
SELECTION TABLES

(PIPING)

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
PIPE SUPPORT SELECTION SUMMARY

			ANCHORS	MECHANICAL SNUBBERS	RIGID RESTRAINTS	VARIABLE SUPPORTS	GRAND TOTAL
CLASS 1	[illegible]	SYSTEM TOTALS......	2	12	0	4	18
		SELECTION TOTALS...	1	3	0	1	5
CLASS 1	FW	SYSTEM TOTALS......	2	42	0	18	62
		SELECTION TOTALS...	1	10	0	4	15
CLASS 1	HPCI	SYSTEM TOTALS......	1	11	0	3	15
		SELECTION TOTALS...	1	3	0	1	5
CLASS 1	MS	SYSTEM TOTALS......	4	34	4	10	52
		SELECTION TOTALS...	1	9	1	3	14
CLASS 1	RCIC	SYSTEM TOTALS......	1	16	3	4	24
		SELECTION TOTALS...	1	4	1	1	7
CLASS 1	RHR	SYSTEM TOTALS......	7	50	3	24	84
		SELECTION TOTALS...	2	12	1	6	21
CLASS 1	RR	SYSTEM TOTALS......	0	37	6	14	57
		SELECTION TOTALS...	0	9	2	4	15
CLASS 1	RWCU	SYSTEM TOTALS......	2	48	21	11	82
		SELECTION TOTALS...	1	12	5	2	20
CLASS 1	SLC	SYSTEM TOTALS......	2	5	38	1	46
		SELECTION TOTALS...	1	1	9	1	12
TOTAL FOR ALL CLASS 1		SYSTEMS...	21	255	75	89	440
		SELECTION TOTALS...	9	63	19	23	114

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
PIPE SUPPORT SELECTION SUMMARY

		ANCHORS	MECHANICAL SNUBBERS	RIGID RESTRAINTS	VARIABLE SUPPORTS	GRAND TOTAL
CLASS 2 CRD	SYSTEM TOTALS.......	0	0	35	0	35
	SELECTION TOTALS...	0	0	6	0	6
CLASS 2 CS	SYSTEM TOTALS.......	2	31	49	25	107
	SELECTION TOTALS...	1	5	7	3	16
CLASS 2 FW	SYSTEM TOTALS.......	0	0	3	0	3
	SELECTION TOTALS...	0	0	1	0	1
CLASS 2 HPCI	SYSTEM TOTALS.......	6	30	44	14	94
	SELECTION TOTALS...	1	6	6	2	15
CLASS 2 MS	SYSTEM TOTALS.......	0	21	67	5	93
	SELECTION TOTALS...	0	3	10	1	14
CLASS 2 RCIC	SYSTEM TOTALS.......	2	16	44	7	69
	SELECTION TOTALS...	1	2	7	1	11
CLASS 2 RHR	SYSTEM TOTALS.......	12	163	152	74	401
	SELECTION TOTALS...	1	24	23	11	59
TOTAL FOR ALL CLASS 2	SYSTEMS...	22	261	394	125	802
	SELECTION TOTALS...	4	40	60	18	122

LIMERICK UNIT 1 & COMMON - ISI PROGRAM
PIPE SUPPORT SELECTION SUMMARY

		ANCHORS	MECHANICAL SNUBBERS	RIGID RESTRAINTS	VARIABLE SUPPORTS	GRAND TOTAL
CLASS 3 ESW	SYSTEM TOTALS......	43	7	288	9	347
	SELECTION TOTALS...	4	1	29	1	35
CLASS 3 MS	SYSTEM TOTALS......	39	121	47	49	256
	SELECTION TOTALS...	3	12	5	5	25
CLASS 3 RHR SW	SYSTEM TOTALS......	7	16	396	14	433
	SELECTION TOTALS...	1	2	45	2	50
TOTAL FOR ALL CLASS 3	SYSTEMS...	89	144	731	72	1036
	SELECTION TOTALS...	8	15	79	8	110

ATTACHMENT I

EXAMINATION RECONCILIATION REPORT

Limerick Generating Station - Unit 1

Inservice Inspection Program

First Ten Year Inspection Interval

Code Edition Upgrade

1980/W81 to 1986

EXAMINATION RECONCILIATION REPORT

Prepared By:

Gilbert/Commonwealth, Inc.

LIMERICK GENERATING STATION - UNIT 1
Inservice Inspection Program
First Ten Year Inspection Interval
Code Edition Upgrade, 1980/W81 To 1986
EXAMINATION RECONCILIATION REPORT

I. INTRODUCTION

Gilbert/Commonwealth, Inc. has been tasked by Philadelphia Electric Company with upgrading the Limerick Generating Station, Unit 1, First Ten Year Interval, Inservice Inspection Program from the ASME Section XI 1980 Edition with Addenda thru Winter 1981 (1980/W81), to the 1986 Edition.

Since this is a midterm program upgrade, the establishment of an effective cutoff point for the closing of the 1980/W81 Program and the start of the 1986 Program was required. PECO has determined that the 1980/W81 Program would be implemented through the third refueling outage, which is the first outage in the second inspection period. Therefore, implementation of the 1986 Program (Specification NE-42) would commence with the completion of the third refueling outage.

II. PURPOSE

The inspection requirements of the 1986 Edition of ASME Section XI differ from that of the 1980/W81 Edition/Addenda, therefore a "reconciliation" of the completed portion of the 1980/W81 Program must be established and subsequently applied as credit towards the completion of the 1986 Program.

III. DISCUSSION

When the 1986 ISI Program was initially prepared, selection of components for examination was made in accordance with the 1986 Code selection guidance for the entire first interval, thus providing a base ISI Program.

This "Reconciliation Report" was then generated to establish the extent of completion credit to be applied from the 1980/W81 Program to the 1986 Program. This document is prepared and compiled for each applicable Code Category, and provides the necessary details and calculations needed to identify the credit applied to the 1986 Program.

The approach taken for the reconciliation of examinations completed under the 1980/W81 Program is as follows:

A. Each Code Category was reconciled individually by calculating the percentage of examinations completed under the 1980/W81 Program relative to the 1980/W81 Code required examination population.

   1. The calculated completion percentages (credits) were limited to the maximum allowable credit percentages as discussed in the 1980/W81 Code (eg. Table IWB-2412-1). Any examinations in excess of the maximum allowables were not used towards the credit applied to the 1986 Program.

2. Deleted components (ie. due to removal during plant modifications) were not considered when calculating the 1980/W81 Program completion percentages even though some of these components may have been examined prior to deletion. These deleted components will have little or no impact on the results of the reconciliation.

B. The completion percentages were then applied to the examination populations of the 1986 Program to determine the number of examinations that may be credited as completed. From this, the remaining number of examinations to be scheduled for the balance of the interval, in accordance with the 1986 Program, was determined.

C. The examinations identified as a credit towards the 1986 Program were then appropriately identified in the 1986 Program database. This resulted in changes to the selection of components for examination. A revision to the 1986 ISI Program (Specification NE-42) will be issued to reflect these changes in selection of components for examination resulting from this reconciliation.

IV. CONCLUSION

Results of the reconciliation have shown that the 1980/W81 Program has met or exceeded the requirements of the 1980/W81 ASME Section XI Code for the first inspection period (first two refueling outages). Additionally, the third refueling outage (first outage of the second period) has been conducted under the 1980/W81 Program, and therefore will contribute towards satisfying the requirements of the second period, which will be completed in accordance with the 1986 Program.

V. ATTACHMENTS

Attachment A - Reconciliation Summary Table

Attachment B - Reconciliation Document

LIMERICK GENERATING STATION - UNIT 1
Inservice Inspection Program
First Ten Year Inspection Interval
Code Edition Upgrade, 1980/W81 To 1986
RECONCILIATION OF COMPLETED EXAMINATIONS - SUMMARY TABLE

CODE CATEGORY (80/W81)	PERCENT COMPLETE (80/W81)	CODE CATEGORY (1986)	PERCENT REMAINING (1986)	EXAMS REMAINING (1986)	REMARKS
B-A	24.98%	B-A	75.02%	42.01	
B-D	50%	B-D	50%	34	
B-E	200%	B-E	25%	3rd Prd During Hydro	80/W81 - Owner option to examine 100% each period.
B-F B-F	56% 46%	B-F B-F	44% 54%	14 14	Items B5.10 & B5.20 only. Items B5.130 & B5.140 only.
B-G-1	34.20%	B-G-1	65.80%	200	Remaining exams inclusive of 50 closure bolting sets.
B-G-1	N/A	B-G-1	100%	16	Remaining exams inclusive of 16 pump casing studs & nuts. (None req'd 80/W81 Program)
B-G-2	44.83%	B-G-2	55.17%	48	Remaining exams inclusive of 7 multi groups for B7.70
B-H	53.33%	B-H	46.67%	4.67	
B-J	53.66%	B-J	46.34%	87	
B-K-1	20%	B-K-1	80%	4	
B-L-2	N/A	B-L-2	N/A	N/A	There were no exams required per 80/W81 Program. Reference Relief Request RR-02 for 1986 Program exam requirements. (Examine when disassembled for maintenance.)
B-M-2	N/A	B-M-2	N/A	N/A	19 exams completed per Relief Request 2.13.1 under 80/W81 Program. Reference Relief Req RR-03 for 1986 Program. (Examine when disassembled for maintenance.)
B-N-1	198%	B-N-1	102%	59	1 exam remaining 2nd period, 58 exams remaining 3rd period
B-N-2	178%	B-N-2	0% 100%	0 58	Code requirements satisfied. Owner option to reexamine all
C-A	50%	C-A	50%	2	
C-B	50%	C-B	50%	2	
C-C	37.14%	C-C	65.52%	19	Variance in percentage is due to reduced 86 exam population

LIMERICK GENERATING STATION - UNIT 1
Inservice Inspection Program
First Ten Year Inspection Interval
Code Edition Upgrade, 1980/W81 To 1986
RECONCILIATION OF COMPLETED EXAMINATIONS - SUMMARY TABLE

CODE CATEGORY (80/W81)	PERCENT COMPLETE (80/W81)	CODE CATEGORY (1986)	PERCENT REMAINING (1986)	EXAMS REMAINING (1986)	REMARKS
C-F	48.13%	C-F-1 C-F-2	81.80% 50.40%	9 61	The differences in percent complete versus percent remaining is due to the formation of two categories in the 1986 Code and the basis for determining exam population.
C-G	44.40%	C-G	50%	4	Variance in percentages is due to a reduced 1986 exam population.
D-A,B,C	47.94%	D-A,B,C	52.06%	5	
F-A	58.95% 41.94%	F-A F-A	41.05% 58.06%	144 18	Piping supports Equipment supports

NON-ASME AUGMENTED PROGRAMS	PERCENT COMPLETE (80/W81)	PERCENT REMAINING (1986)	EXAMS REMAINING (1986)	REMARKS
AUG-01 - CAT A (IGSCC)	100%	0.00%	0	Examination requirements for Category "A" welds have been completed for the first interval.

LIMERICK GENERATING STATION - UNIT 1
Inservice Inspection Program
First Ten Year Inspection Interval
Code Edition Upgrade, 1980/W81 To 1986
RECONCILIATION OF COMPLETED EXAMINATIONS

I. CATEGORY B-A

A. 1980/W81 PROGRAM

100% of the non-exempt Category B-A welds are required to be examined during the interval. The examinations in this Category may be deferred to the end of the inspection interval, therefore the completion requirements from Table IWB-2412-1 do not apply.

Category B-A Non-Exempt Population by Code Item Number

Total for Item B1.11 = 10
Total for Item B1.12 = 26
Total for Item B1.21 = 4
Total for Item B1.22 = 13
Total for Item B1.30 = 2
Total for Item B1.40 = 1
Total population = 56

Since partial examinations are allowed and deferral is permissible for all of these Code Items, partial examinations are counted to the extent that they were completed (ie. completion of one third of an examination counts as .33 examinations completed).

Examinations Completed Under The 1980/W81 Program - 1st Period

Item B1.11

A total of 1 examination was completed (100%), and 1 examination was partially completed (33%) during the first period.

Completion total = 1.33 examinations

Item B1.12

A total of 6 examinations were completed (100%) during the first period.

Completion total = 6 examinations

Item B1.21

A total of 4 examinations were partially completed (33% each) during the first period.

Completion total = 1.33 examinations

Item B1.22

A total of 4 examinations were completed (100%), and 1 examination was partially completed (50%) during the first period.

Completion total = 4.5 examinations

Item B1.30

A total of 1 examination was partially completed (50%) during the first period. 1 examination was deferred to the 3rd period (in accordance with footnote 5 of Table IWB-2500-1).

Completion total = 0.5 examinations

Item B1.40

A total of 1 examination was partially completed (33%) during the first period.

Completion total = 0.33 examinations

A grand total of 13.9? examinations were completed during the first period (24.98% of 56). Therefore, 24.98% of the required examinations shall be credited as complete under the 1980/W81 Program, and the full credit applied to the 1986 Program.

Examinations Completed Under The 1980/W81 Program - 2nd Period

To date, no examinations within this Category have been performed during the second period.

B. 1986 PROGRAM

100% of the non-exempt Category B-A welds are required to be examined during the interval. The examinations in this Category may be deferred to the end of the inspection interval, therefore the completion requirements of Table IWB-2412-1 do not apply.

The weld populations and Code examination requirements are identical to those for the 1980/W81 Program. Therefore, since Code requirements were met under the 1980/W81 Program, they are also met under [illegible] Program.

There are a tota[illegible] exams remaining to be completed during the first interval under the 1986 Program. The cur[illegible]nt schedule shows 18.49 examinations to be completed during the second period and the remainder during the third period. This schedule satisfies the 1986 Program, therefore no adjustments are necessary.

II. CATEGORY B-D

A. 1980/W81 PROGRAM

100% of the non-exempt Category B-D welds are required to be examined during the interval. Inspection program "B" examination completion requirements are given in the notes of Table IWB-2500-1, and are specific for Category B-D.

Category B-D Non-Exempt Population by Code Item Number

Total for Item B3.90 = 34
Total for Item B3.100 = 34
Total population = 68

Code Required Examinations - 1st Period

Minimum examinations required = 25% of 68 = 17 examinations
Maximum examinations allowed (credited) = 50% of 68 = 34 examinations

Code Required Examinations - 2nd and 3rd Periods (By end of interval)

Minimum examinations required = 100% of 68 = 68 examinations by end of interval

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 17 examinations for Item B3.90, and 17 examinations for Item B3.100 were completed during the first period.

A grand total of 34 examinations were completed during the first period, which is within the percentage requirements of Inspection Program "B". Therefore, full credit of 34 examinations (50%) shall be applied to the 1986 Program.

Examinations Completed Under 1980/W81 Program - 2nd Period

To date, no examinations within this Code Category have been performed during the second period.

B. 1986 PROGRAM

100% of the non-exempt Category B-D welds are required to be examined during the interval. Inspection program "B" examination completion requirements are given in the notes of Table IWB-2500-1, and are specific for Category B-D.

The weld populations and Code examination requirements are identical to those for the 1980/W81 Program. The remainder of nozzles, not examined during the first period, shall be completed by the end of the third period. Since Code requirements were met under the 1980/W81 Program, they are also met under the 1986 Program.

The current schedule will provide for an additional 22 examinations to be completed during the second period, and the remaining 12 during the third period No scheduling adjustments will be necessary.

III. CATEGORY B-E

A. 1980/W81 PROGRAM

25% of the non-exempt Category B-E welds are required by Code to be examined during the first inspection interval. PECO has elected as an "Owners Option" to examine 100% of these welds each inspection period. This option exceeds the existing Code requirements by providing a more conservative examination coverage, therefore Code intent is considered satisfied.

Category B-E Non-Exempt Population by Code Item Number

Total for Item B4.11 = 1
Total for Item B4.12 = 2 (Inclusive of 370 components)
Total for Item B4.13 = 11 (Inclusive of 65 components)
Total population = 14 (Inclusive of 436 components)

Examinations Completed Under 1980/W81 Program - 1st and 2nd Periods

100% of the weld population was examined during the 2nd refueling outage (1st period) and again during the 3rd refueling outage (2nd period). Examination requirements for the first and second periods are credited as completed under the 1980/W81 Program.

B. 1986 PROGRAM

Examination requirements are the same as in the 1980/W81 Program except that examinations must be conducted during the system hydrostatic test, which must be conducted at or near the end of the inspection interval.

The 1986 Program examination requirements have not been satisfied since the examinations performed under the 1980/W81 Program were not done during system hydrostatic testing. Therefore, 25% of the Category B-E weld population must be selected for examination at or near the end of the inspection interval, during system hydrostatic testing.

100% of the weld population is currently scheduled for examination during the third period. Therefore, adjustments will be necessary to schedule only the components selected for examination.

IV. CATEGORY B-F

A. 1980/W81 PROGRAM

100% of the non-exempt Category B-F welds are required to be examined during the interval.

Category B-F Non-Exempt Population by Code Item Number

Total for Item B5.10 = 21
Total for Item B5.20 = 11
Total for Item B5.130 = 25
Total for Item B5.140 = 1
Total population = 58

Code Required Examinations - 1st Period

Inspection Program "B" examination completion requirements apply only to Category Items B5.130 and B5.140. Footnote 2 to Table IWB-2500-1 for Category B-F, which is applicable to Item Numbers B5.10 and B5.20, states that these examinations may be performed coincident with the reactor vessel nozzle examinations of Code Category B-D. Footnote 2 to Table IWB-2500-1 for Category B-D states that at least 25% but not more than 50% (credited) of the nozzles shall be examined by the end of the first inspection period, and the remainder by the end of the third inspection period. This allows examination of up to 50% of Category Items B5.10 and B5.20 in the first period.

Examinations Completed Under 1980/W81 Program - 1st and 2nd Periods

Category B-F Population Subject To Footnote 2

There are a total of 32 Category B-F non-exempt welds to which footnote 2 applies. 14 of these welds were examined during the first period (43%). Another 4 welds were examined during the third refueling outage which are credited as completed during the second period. Therefore an aggregate total of 18 examinations (56% of the population subject to footnote 2) may be credited as completed under the 1980/W81 Program.

Category B-F Population Subject To Inspection Program "B"

There are 26 welds remaining in Category B-F which are subject to the examination completion requirements specified in Inspection Program "B" (at least 16% but not more than 34% credited in the first period). 8 of these were examined during the first period (30%), and 4 have been examined during the second period for an aggregate total of 12 examinations (46%) completed and credited to the 1980/W81 Program.

B. 1986 PROGRAM

100% of the non-exempt Category B-F welds are required to be examined during the interval.

Category B-F Population Subject to Footnote 2 of Table IWB-2500-1

Total for Item B5.10 = 21
Total for Item B5.20 = 11
Grand total = 32

Completed 1st period (1980/W81) = 14 (43% credited)
Completed 2nd period (1980/W81) = 4 (13% credited)
Total completed to date (1980/W81) = 18 (56% credited)

Total remaining to be Examined under the 1986 Program = 14

Current scheduling of the remaining 14 welds, indicates 6 welds are to be examined during the second period, and 8 welds are to be examined during the third period. No scheduling adjustments are necessary.

Category B-F Population Subject to Inspection Program "B"

Total for Item B5.130 = 25
Total for Item B5.140 = 1
Grand total = 26

Completed 1st period (1980/W81) = 8 (31% credited)
Completed 2nd period (1980/W81) = 4 (15% credited)
Total completed to date (1980/W81) = 12 (46% credited)

Total remaining to be examined under the 1986 Program = 14

Current scheduling of the remaining 14 welds, indicates 2 welds are to be examined during the second period, and 12 welds are to be examined during the third period. This schedule will result in a 53% completion by the end of the second period which is within the allowable percentage range for Inspection Program "B" (minimum 50% and maximum 67%). It is recommended that the scheduling be adjusted to examine 5 of the remaining 14 welds during the second period which would provide for a total completion credit of 65%. The balance of 9 welds should then be scheduled for the third period.

V. CATEGORY B-G-1

A. 1980/W81 PROGRAM

The 1980/W81 Program requires 100% examination of Code Item Numbers B6.10, B6.20, B6.40, and B6.50. Examination of Item B6.30 is only required when the closure studs are removed. Examination of Items B6.180, B6.190, & B6.200 are limited to the bolting on components selected for examination under Category B-L-1. Since there are no components within Examination Category B-L-1 at LGS Unit 1, these three Item Numbers do not apply.

Deferral of examinations to the end of the inspection interval is permitted for all applicable Code Item Numbers within Examination Category B-G-1. Therefore the completion requirements of table IWB-2412-1 do not apply.

Category B-G-1 Non-Exempt Population By Code Item Number

Total for Item B6.10 = 1 (Inclusive of 76 closure head nuts)
Total for Item B6.20 = 1 (Inclusive of 76 closure studs, in place)
Total for Item B6.30 = 1 (Inclusive of 76 closure studs, when removed)
Total for Item B6.40 = 1 (Inclusive of 76 locations, threads in flange)
Total for Item B6.50 = 1 (Inclusive of 76 closure washers)
Total population = 5 (Inclusive of 380 individual items)

Examination population = 4 (304 individual items, excluding Item B6.30 - done when disassembled)

Examinations Completed Under 1980/W81 Program - 1st Period

Total for Item B6.10 = 26 of 76 (34.2%)
Total for Item B6.20 = 26 of 76 (34.2%)
Total for Item B6.40 = 26 of 76 (34.2%)
Total for Item B6.50 = 26 of 76 (34.2%)
Total examined = 104 of 304 (34.2%)

There were no examinations performed for Item B6.30 during the first period.

Examinations Completed Under 1980/W81 Program - 2nd Period

To date, no examinations within this Code Category have been performed during the second period.

B. 1986 PROGRAM

The 1986 Program requires 100% examination of Code Item Numbers B6.10, B6.20, B6.40, and B6.50. Examination of Item B6.30 is only required when the closure studs are removed. The 1986 Program also requires 100% examination of Code Items B6.180 and B6.200. Examination of Code item B6.190 is required when the connection is disassembled. The requirement to examine Items B6.180, B6.190, and B6.200 is the result of a change in the Code which requires examination of bolting on components selected for examination under Category B-L-2 instead of B-L-1.

The completion requirements of Table IWB-2412-1 do not apply since footnote 5 to Table IWB-2500-1 for examination Category B-G-1 allows deferral of the examinations to the end of the inspection interval.

Category B-G-1 Non-Exempt Population By Code Item Number

Total for Item B6.10 = 1 (Inclusive of 76 closure head nuts)
Total for Item B6.20 = 1 (Inclusive of 76 closure studs, in place)
Total for Item B6.30 = 1 (Inclusive of 76 closure studs, when removed)
Total for Item B6.40 = 1 (Inclusive of 76 locations, threads in flange)
Total for Item B6.50 = 1 (Inclusive of 76 closure washers)
Total for Item B6.180 = 2 (Inclusive of 32 pump casing studs - 16 per pump)
Total for Item B6.190 = 2 (Pump casing flange surface - 1 per pump when disassembled)
Total for Item B6.200 = 2 (Inclusive of 32 pump casing nuts - 16 per pump)
Total population = 11

The 34.2% completion credit (104 examinations) from the 1980/W81 Program is applied only to Item Numbers B6.10, B6.20, B6.40, and B6.50. Since deferral of examinations to the end of the interval is permitted, and the remaining 200 examinations are scheduled, no scheduling adjustments are required for these Item Numbers.

Since Code Item Numbers B6.180 and B6.200 were not required to be examined under the 1980/W81 Program, 100% of the required examinations (1 pump per multi-component group) must be performed in accordance with the 1986 Program. The 2 Reactor Recirculation pumps are the only Class 1 pumps having pressure retaining bolting greater than 2 inches at LGS-1, and are listed as multi-component group number 20.

An adjustment to the schedule will be necessary to schedule the examination of 1 pump for Items B6.180 and B6.200. Since deferral to the end of the interval is allowed, these examinations should be scheduled for the third period.

VI. CATEGORY B-G-2

A. 1980/W81 PROGRAM

The examination population for Code Category B-G-2 was determined from the requirements of the 1980/W81 ASME Section XI and Code Case N-426. The 1980/W81 Program requires examination of 100% of applicable Item Numbers. The Inspection Program "B" examination completion requirements of Table IWB-2412-1 only apply to Code Item Numbers B7.10 and B7.50 since Item Number B7.80 is only required to be examined when the component is disassembled, and Item Number B7.70 only applies to components selected for examination under code category B-M-2, per Code Case N-426. No Category B-M-2 components were selected per Relief Request 2.13.1. There are no components applicable to Item Number B7.60 at LGS-1.

Category B-G-2 Non-Exempt Population By Code Item Number

Total for Item B7.10 = 58 (Includes bolting sets for 55 incore housing flanges, and 3 nozzle flanges)
Total for Item B7.50 = 19
Total for Item B7.70 = 46 (Includes 10 valve multi-component groups)
Total for Item B7.80 = 1 (Includes bolting sets for 185 CRD housing flanges when disassembled)

Total required examination population = 87 (58 B7.10 + 19 B7.50 + 10 B7.70 groups)

The multi-component groups for Item B7.70 are: 1, 2, 4, 5, 8, 9, 11, 13, 14, 15.

Examinations Completed Under 1980/W81 Program - 1st Period

Total for Item B7.10 = 19 (Includes bolting sets for 18 incore housing flanges, and 1 nozzle flange)
Total for Item B7.50 = 1
Total for Item B7.70 = 0

Total examined period 1 = 20 of 87 (22.99% completion percentage)

The 22.99% completion credit for the first period is within the Code minimum of 16% and maximum allowed credit of 34%, therefore first period examination requirements have been satisfied.

Examinations Completed Under 1980/W81 Program - 2nd Period

Total for Item B7.10 = 1 (Includes bolting sets for 1 nozzle flange)
Total for Item B7.50 = 15
Total for Item B7.70 = 20 (Includes 3 of 10 multi-component groups - 1, 2, & 4)

Total examined period 2 = 19 of 87 (1 B7.10 + 15 B7.50 + 3 B7.70 groups)

A grand total of 39 (44.83%) of the 87 required Category B-G-2 examinations have been conducted under and credited to the 1980/W81 Program.

B. 1986 PROGRAM

The 1986 Program requires examination of 100% of Code Item Numbers B7.10 and B7.50. For Code Item Number B7.70, examinations are to be performed on at least one valve within each group of valves that are of the same size, constructional design, manufacturing method, and that perform similar functions in the system, and they are selected for examination under Category B-M-2. While all Category B-M-2 valves have been selected for potential examination (if disassembled) in the 1986 Program, only one valve from each group of similar valves has been selected for examination under Item Number B7.70. The Inspection Program "B" completion requirements contained in Table IWB-2412-1 apply to the above Item Numbers. Code Item Number B7.80 is only required to be examined when disassembled and therefore is not factored into the completion percentages.

Category B-G-2 Non-Exempt Population By Code Item Number

Total for Item B7.10 = 58 (Includes bolting sets for 55 incore housing flanges, and 3 nozzle flanges)
Total for Item B7.50 = 19
Total for Item B7.70 = 46 (Includes 10 valve multi-component groups)
Total for Item B7.80 = 1 (Includes bolting sets for 185 CRD housing flanges when disassembled)

Total required examination population = 87 (58 B7.10 + 19 B7.50 + 10 B7.70 groups)

The 10 multi-component groups for Item B7.70 are: 1, 2, 4, 5, 8, 9, 11, 13, 14, 15.

Since the required examination population for the 1986 Program is the same as the 1980/W81 Program, full credit is given for all 39 examinations credited as completed under the 1980/W81 Program. The total examinations remaining to be examined under the 1986 Program is 48.

The remaining multi-component groups for Item B7.70 are: 5, 8, 9, 11, 13, 14, 15.

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 87 = 43 examinations
Maximum examination allowed (credited) = 67% of 87 = 58 examinations

There are 48 examinations remaining to be completed under the 1986 Program of which 18 are scheduled for the second period, 22 are scheduled for the third period, and 8 which are not currently scheduled. The current schedule will provide 57 of the 58 maximum allowable completion for the second period, therefore all remaining unscheduled exams should be scheduled for the third period.

Category B-G-2 Population Subject to Examination if Disassembled

Total for Item B7.80 = 1 (Inclusive of 8 bolts on each of 185 CRD housing flanges.)

Examination population = 1 (Includes 1480 bolting sets)

VII. CATEGORY B-H

A. 1980/W81 PROGRAM

100% of the non-exempt Category B-H welds are required to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

Category B-H Non-Exempt Population By Code Item Number

Total for Item B8.10 = 10

Examinations of the Skirt Knuckle to RPV Weld (CG), and the RPV Weld Buildup (FR) are performed as three partial examinations in conjunction with other examinations within the same azimuth vicinity. These examinations are therefore counted based on the extent that they were completed (ie. One third completion of an examination counts as .33 examinations completed).

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 10 = 1.6 examinations
Maximum examinations allowed (credited) = 34% of 10 = 3.4 examinations

Code Required Examinations - 2nd Period
Minimum examinations required = 50% of 10 = 5.0 examinations
Maximum examinations allowed (credited) = 67% of 10 = 6.7 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

Welds CG and FR were only credited for half of the scheduled one third examination. Therefore, a total of 2.33 examinations (23.3% of 10) were credited as completed during the first period. This meets the percentage requirements for the first period.

Examinations Completed Under 1980/W81 Program - 2nd Period

A total of 3 examinations (30% of 10) were completed during the third refueling outage which are credited to the second period. The combined total of completed examinations for the first and second periods is 5.33 examinations (53.3% of 10). This meets the percentage requirements for the second period.

Since the percentage requirements for both the first and second periods have been met, full credit of 5.33 examinations (53.3%) shall be applied to the 1986 Program.

B. 1986 PROGRAM

The examination requirements and examination populations are identical to that of the 1980/W81 Program. Since the completion requirements of Inspection Program "B" were met under the 1980/W81 program, they are also met under the 1986 Program.

There are 4.67 examinations (46.7%) remaining to be completed during the first interval under the 1986 Program. Since only 16.67% of the examinations for welds CG and FR were credited as complete (top side only), the remaining backside examinations for the first one third of these welds shall be completed during the second period, along with the second third of these examinations. Therefore, the existing schedule for the remaining examinations under Category B-H indicates 0.99 examinations to be completed during the rest of the second period, for a total of 6.33 completed examinations (63.33% of 10). The remaining 3.67 examinations are scheduled to be completed during the third period.

VIII. CATEGORY B-J

A. 1980/W81 PROGRAM

The extent of examination was determined from the 1980/W81 Program based on PECO's interpretation of Code Category B-J footnotes to Table IWB-2500-1 as follows:

1. All terminal ends in each pipe or branch run connected to vessels.

2. All terminal ends and joints in each pipe or branch run connected to other components where the stress levels exceed both of the following limits under loads associated with specific events and operational conditions:

    a. Primary plus secondary stress intensity range of 2.4 Sm for ferritic and austenitic steel; and,

    b. Cumulative usage factor U of 0.4.

3. Additional piping welds so that the total number of circumferential butt welds (or branch connections or socket welds) selected for examination equals 25% of the circumferential butt welds (or branch connections or socket welds) in the reactor coolant piping system.

Category B-J Non-Exempt Population By Code Item Number

Total for Item B9.11	=	520
Total for Item B9.21	=	69
Total for Item B9.31	=	28
Total for Item B9.32	=	8
Total for Item B9.40	=	85
Total population	=	710
Percent required	=	x25%
Required to examine	=	178 (Plus associated longitudinal welds)

There are a total of 290 longitudinal welds for Item Number B9.12 that are associated with the circumferential welds (Items B9.11, and Category B-F). The longitudinal welds are not considered in the calculations for the examination populations, however they are selected and scheduled for examination coincident with the selected circumferential welds.

The total number of non-exempt circumferential welds classified as Code mandatory (meeting items 1 & 2 above) is 52. This equates to 7.3% of the total non-exempt circumferential butt weld population of 710. Therefore the Code required examination population was established as 25% of the non-exempt circumferential weld population, (ie. 178 components).

It should be noted that the 1980/W81 Program indicates that a total of 241 Category B-J non-exempt circumferential welds were scheduled to be examined during the first interval. Since the examination population was intended to be a 25% sample, the examination population of 241 is artificially high.

Three explanations collectively account for the disparity in the population of required examinations (ie. 178 required, versus 241 scheduled, which is 33.9% of 710)

1. Selections were made based on 25% of the weld population within each system and applicable Code Item Number and all fractional percentages were rounded up. (Approximately 4 welds)

2. Welds required to be examined in accordance with the NUREG-0800 Augmented Program (not required for ASME XI) were included in the total population of Code required examinations (ie. 241). (Approximately 10 welds)

3. All (100%) of Category B-J welds from the RPV ISI Program document, prepared by G.E., were scheduled for examination. These scheduled welds were not considered when the piping database welds were selected to fill out the 25% sample. (Approximately 49 welds)

Inspection program "B", as defined in ASME Section XI, specifies that a minimum of 16% of the examination population be completed in the first period and the maximum percentage credited shall not exceed 34%. These percentages should apply to the 178 (25%) examination population and not the 241 examination population found in the 1980/W81 Program.

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 178 = 29 examinations
Maximum examinations allowed (credited) = 34% of 178 = 60 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 178 = 89 examinations
Maximum examinations allowed (credited) = 67% of 178 = 119 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 97 (54.5% of 178) Category B-J non-exempt circumferential welds and associated longitudinal welds were examined during the first period, which exceeds the maximum allowed credit (ie. 34%) by 37 examinations. Therefore 34% (60 circumferential weld examinations and associated longitudinal weld examinations) will be credited to the first period.

Examinations Completed Under 1980/W81 Program - 2nd Period

A total of 35 (19.66% of 178) Category B-J non-exempt circumferential welds and associated longitudinal welds were examined during the third refueling outage which are credited to the second period of the first inspection interval.

Total Category B-J Circumferential Welds Credited to the 1980/W81 Program

1st period: 60 examinations (34% of 178)
2nd period: 35 examinations (19.66% of 178)

Total percentage credited against 1980/W81 Program = 53.66%

F. 1986 PROGRAM

As allowed by 10CFR50.55a(b)(2)(ii), the optional use of the 1974/S75 Code has been elected to establish the extent of examination for Category B-J non-exempt circumferential weld examination population at 25%.

Category B-J Non-Exempt Population By Code Item Number

Total for Item B9.11	=	520	
Total for Item B9.21	=	69	
Total for Item B9.31	=	28	
Total for Item B9.32	=	8	
Total for Item B9.40	=	85	
Grand total B-J	=	710	
Percent required	=	x25%	
Required to examine	=	178	
		+ 7	(Due to rounding up of fractional numbers)*
Total to examine	=	185	(Plus associated longitudinal welds)

* Note: Weld selections are based on a 25% representative sample of each system and distributed among the line sizes.

There are a total of 290 longitudinal welds for Item Number B9.12 that are associated with the circumferential welds (Items B9.11, and Category B-F). The longitudinal welds are not considered in the calculations for the examination populations, however they are selected and scheduled for examination coincident with the selected circumferential welds.

34% of the 185 weld examination population (ie. 62 examinations) can be credited as completed during the first period under the 1980/W81 Program. Credit for 19.66% of the 185 weld examination population (ie. 36 examinations) may be credited as completed during the second period under the 1980/W81 Program. Therefore 98 examinations should be credited as completed to date.

This leaves a total of 87 welds (plus associated longitudinal welds) to be examined in accordance with the 1986 Program.

Recommended Scheduling Adjustments For The Remainin Examination Population

2nd period = 25 examinations
3rd period = 62 examinations
Total = 87 examinations (1986 Program)

The above recommended scheduling will provide for a second period completion credit of 67% as allowed by ASME Sect. on XI, Table IWB-2412-1 for Inspection Program "B".

IX. CATEGORY B-K-1

A. 1980/W81 PROGRAM

In accordance with the 1980/W81 Program and PECO's Position Statement IPS# 88-001, 25% of the non-exempt Category B-K-1 integral attachment welds are to be examined during the first interval. Inspection program "B" examination completion percentages are applicable for this Category.

Category B-K-1 Non-Exempt Population By Code Item Number

Total for Item B10.10 = 9
Total for Item B10.20 = 8
Total population = 17
Percent required = 25%
Required to examine = 5

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 5 = 1 examinations
Maximum examinations allowed (credited) = 34% of 5 = 1 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 5 = 3 examinations
Maximum examinations allowed (credited) = 67% of 5 = 3 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 1 examination (20% of 5) was completed during the first period. This meets the percentage requirements for the first period under the 1980/W81 Program.

Examinations Completed Under 1980/W81 Program - 2nd Period

There were no examinations completed during the third refueling outage which would be credited to the second period.

Total completed examinations = 1 (20% of 5)

B. 1986 PROGRAM

The examination philosophy is the same for this Category under the 1986 Program, therefore 25% of the non-exempt Category B-K-1 weld population are required to be examined during the interval. The required completion percentages of Inspection Program "B" are applicable to this Category.

Category B-K-1 Non-Exempt Population By Code Item Number

Total for Item B10.10 = 9
Total for Item B10.20 = 8
Total population = 17
Percent required = 25%
Required to examine = 5

The calculated 20% completion credit obtained under the 1980/W81 Program shall then be applied to the 1986 Program examination population, resulting in credit for 1 completed examination (20% of 5).

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 5 = 3 examinations
Maximum examinations allowed (credited) = 67% of 5 = 3 examinations

There are 4 examinations remaining to be completed during the first interval under the 1986 Program. The current schedule shows 2 examinations scheduled for the second period and the remaining 2 examinations scheduled for the third period. Therefore, no adjustments are necessary.

X. CATEGORY B-L-2

A. 1980/W81 PROGRAM

There were no components identified in the 1980/W81 Program for Code Category B-L-2 (Item Number B12.20). This was based on Item Number B12.20 reference to footnote 1 which states: "Examinations are limited to welds in at least one pump in each group of pumps performing similar functions in the system, e.g., Recirculating Coolant Pumps." The design of the LGS Unit 1 pumps does not utilize welds in the pump casing.

B. 1986 PROGRAM

For the 1986 Program, footnote 1 of Table IWB-2500-1 was clarified. Therefore, two pumps are now identified as Code Category B-L-2, and the Code requires examination of the internal surfaces of at least one pump in each group of similar pumps during the inspection interval.

Category B-L-2 Non-Exempt Population By Code Item Number

Total for Item B12.20 = 2 (Includes 2 Reactor Recirculation pumps - group 20)

Required to examine = 1 (1 pump in each group of similar pumps)

Note: These examinations will be conducted in accordance with Relief Request RR-02. (ie. Whenever disassembled for maintenance)

XI. CATEGORY B-M-2

A. 1980/W81 PROGRAM

For the 1980/W81 Program, PECO has requested relief (RR# 2.13.1) from the examination requirements of Code Category B-M-2, Item Number B12.50 (Visual examination of Class 1 valve internal surfaces) due to impracticality of the Code requirements (The requirement to disassemble Class 1 valves solely for the purpose of performing a visual examination of the internal surfaces is impractical). If, in the course of plant maintenance activities, the internal surfaces of a Category B-M-2 valve, within any of the valve groupings, becomes accessible, then a VT-3 examination will be performed on that valve to meet the ASME Section XI requirements for that grouping. Therefore, the completion requirements of Table IWB-2412-1 do not apply.

Category B-M-2 Non-Exempt Population By Code Item Number

There are a total of 68 valves identified as Code Category B-M-2 (Item Number B12.50). These represent 19 multi-component groups.

Examinations Completed Under 1980/W81 Program - 1st and 2nd Periods

21 examinations have been completed under the 1980/W81 Program. This represents 4 of the 19 multi-component groups (Groups 1, 2, 4, and 8).

B. 1986 PROGRAM

For the 1986 Program, there are a total of 66 valves identified as Code Category B-M-2 (Item Number B12.50). Two valves (51-1F019 and HV-51-1F022), and subsequently multi-component group 10, have been deleted due to modification 5658. Therefore, these 66 valves represent 18 multi-component groups. The Code requires examination of the internal surfaces of at least one valve in each group during the inspection interval.

The 4 multi-component groups completed under the 1980/W81 Program (groups 1, 2, 4, and 8) are credited as complete for the 1986 Program

The multi-component groups remaining are: 3, 5, 6, 7A, 7B, 7C, 9, 11, 12, 13, 14, 15, 16, and 17.

Note: These examinations (1 valve from each group) will be conducted in accordance with Relief Request RR-03 (ie. Whenever disassembled for maintenance).

XII. CATEGORY B-N-1

A. 1980/W81 PROGRAM

In accordance with the 1980/W81 Edition of Section XI, all accessible Category B-N-1 (Item B13.10) components are to be examined during the 1st refueling outage and subsequent refueling outages at approximately 3 year intervals. Examination completion requirements of Table IWB-2412-1 do not apply since all required examinations are to be performed approximately once each period.

Category B-N-1 Non-Exempt Population By Code Item Number

There are a total of 66 Category B-N-1 components at LGS-1. 8 components listed under Item B13.10 are required to be examined only when they are removed or disassembled for maintenance or modifications.

Total required examination population = 58 (Excludes 8 components done only when disassembled.)

Examinations Completed Under 1980/W81 Program - 1st Period

Total required examinations completed = 58 (100%)

Examinations Completed Under 1980/W81 Program - 2nd Period

Total required examinations completed = 57 (98.27%)

B. 1986 PROGRAM

For the 1986 Program, the examination requirements and examination populations are identical to that of the 1980/W81 Program. Therefore, since the 1980/W81 Program requirements were met, 100% of the completed examinations shall be credited towards the 1986 Program.

1 required examination not completed during the 3rd refueling outage for credit during the 2nd period is scheduled to be completed during the remainder of the 2nd period. All required examinations are also scheduled for the 3rd period, therefore no scheduling adjustments are required.

XIII. CATEGORY B-N-2

A. 1980/W81 PROGRAM

In accordance with the 1980/W81 Edition of Section XI, Code Category B-N-2, Item Numbers B13.20, B13.21 and B13.22, all accessible interior attachment welds and surfaces of the core support structure are required to be examined once during the inspection interval. Deferral of these examinations to the end of the interval is permissible, therefore the completion requirements specified in Table IWB-2412-1 do not apply.

Category B-N-2 Non-Exempt Population By Code Item Number

Total for Item B13.20 = 20
Total for Item B13.21 = 34
Total for Item B13.22 = 20
Total population = 74

2 of the 34 Item B13.21 components and 18 of the 20 B13.22 components are accessible only when the components are disassembled for maintenance or modification activities. These areas will be examined if disassembled but are not factored into the total completion percentage.

Total accessible examination areas = 54

Examinations Completed Under 1980/W81 Program - 1st Period

Total examinations completed = 42 of 54 (77.78%)

Examinations Completed Under 1980/W81 Program - 2nd Period

Total examinations completed = 54 of 54 (100%)

Since the total accessible examination population was examined during the 3rd refueling outage (2nd period) and 77.78% examined during the 1st period, which exceeds code requirements, 100% credit shall be applied to the 1986 Program.

B. 1986 PROGRAM

The examination requirements for the 1986 Program are identical to those of the 1980/W81 Program, however the Code Item Number classifications have changed for Items B13.21 and B13.22 to B13.30 and B13.40 respectively.

Category B-N-2 Non-Exempt Population By Code Item Number

Total for Item B13.20 = 20
Total for Item B13.30 = 38
Total for Item B13.40 = 20
Total population = 78

2 of the 38 Item B13.30 components and 18 of the 20 B13.40 components are accessible only when the components are disassembled for maintenance or modification activities. These areas will be examined if disassembled but are not factored into the total completion percentage.

Note: There are an additional 4 accessible examination areas for Item B13.30 in the 1986 Program. These 4 areas were listed as FSAR commitments in the 1980/W81 Program, and examined accordingly.

Total accessible examination areas = 58

The examination requirements of the 1986 Program have been satisfied since 100% of the accessible examination population has been credited as completed during the 3rd refueling outage under the 1980/W81 Program (2nd period). As an "Owners Option", PECO has scheduled these examination to be performed again during the 3rd period concurrently with the examinations required for Code Category B-N-1. This option far exceeds minimum Code requirements and no scheduling adjustments are required.

XIV. CATEGORY C-A

A. 1980/W81 PROGRAM

For the 1980/W81 Program, 100% of the equivalent of one RHR heat exchanger's welds are to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

Category C-A Non-Exempt Population By Code Item Number

Total for Item C1.10 = 6 (Includes two RHR heat exchanger vessels)
Total for Item C1.20 = 2 (Includes two RHR heat exchanger vessels)
Total population = 8

Required to Examine = 4 examinations (Equivalent of 1 vessel)

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 4 = 1 examinations
Maximum examinations allowed (credited) = 34% of 4 = 1 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 4 = 2 examinations
Maximum examinations allowed (credited) = 67% of 4 = 2 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 1 examination (25% of 4) was completed during the first period. This meets the percentage requirements for the first period under the 1980/W81 Program.

Examinations Completed Under 1980/W81 Program - 2nd Period

A total of 1 examination (25% of 4) was completed during the third refueling outage which is credited to the second period.

The combined total of 2 examinations (50% of 4) are credited as completed under the 1980/W81 Program.

B. 1986 PROGRAM

For the 1986 Program, 100% of the equivalent of one RHR heat exchanger's welds are to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

The Code examination requirements and the required examination population is the same in the 1986 Program as that of the 1980/W81 Program, therefore since the requirements were met under the 1980/W81 Program, they are met under the 1986 Program. The existing schedule shows the 2 remaining examinations to be completed during the third period. No scheduling adjustments are necessary.

XV. CATEGORY C-B

A. 1980/W81 PROGRAM

For the 1980/W81 Program, 100% of the equivalent of one RHR heat exchanger's nozzle welds are to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

Category C-B Non-Exempt Population By Code Item Number

Total for Item C2.21 = 4 (Includes two RHR heat exchanger vessels)
Total for Item C2.22 = 4 (Includes two RHR heat exchanger vessels)
Total population = 8

Required to Examine = 4 examinations (Equivalent of 1 vessel)

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 4 = 1 examinations
Maximum examinations allowed (credited) = 34% of 4 = 1 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 4 = 2 examinations
Maximum examinations allowed (credited) = 67% of 4 = 2 examinations

Due to the physical proximity and relationship of Examination Category C-B Item Numbers C2.21 (Nozzle to shell welds) and C2.22 (Nozzle inside radius section), it is PECO's position that these examinations should be scheduled and conducted concurrently. Since the examination population of both Item Numbers combined is small (4 examinations), compliance with the Code specified completion percentages is impractical, therefore the guidelines of Table IWB-2500-1 for Category B-D, Items B3.150 and B3.160 and footnote 2 are used. At least 25% but not more than 50% (credited) of the nozzles shall be examined by the end of the first period, and the remainder by the end of the inspection interval.

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 2 examinations (50% of 4) were completed during the first period.

Examinations Completed Under 1980/W81 Program - 2nd Period

No examinations were completed or scheduled to be completed during the second period.

The combined total of 2 examinations (50% of 4) are credited as completed under the 1980/W81 Program.

B. 1986 PROGRAM

For the 1986 Program, 100% of the equivalent of one RHR heat exchanger's nozzle welds are to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

The Code examination requirements and the required examination population is the same in the 1986 Program as that of the 1980/W81 Program. Therefore, since the examination requirements were met under the 1980/W81 Program, they are met for the 1986 Program. The existing schedule shows the remaining 2 examinations to be completed during the third period. No scheduling adjustments are necessary.

XVI. CATEGORY C-C

A. 1980/W81 PROGRAM

In accordance with the 1980/W81 Program and PECO's Position Statement IPS# 88-01, 25% of the total non-exempt Code Category C-C Item Numbers C3.20 and C3.30 integral attachment welds are to be examined during the first inspection interval. For Code Item Number C3.10, 100% of the equivalent of one RHR heat exchanger's integral attachment welds are to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

Category C-C Non-Exempt Population By Code Item Number

Total for Item C3.10 = 16 (Includes 2 RHR heat exchanger vessels)
Required to examine = 8 (Equivalent of 1 vessel)

Total for Item C3.20 = 87
Total for Item C3.30 = 4
Total population = 91
Percent required = 25%
Required to examine = 23
+ 4 (Due to proration by system & rounding up)
Examination population = 27

Total Category C-C examination population = (8+27) = 35 examinations

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 35 = 6 examinations
Maximum examinations allowed (credited) = 34% of 35 = 11 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 35 = 18 examinations
Maximum examinations allowed (credited) = 67% of 35 = 23 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 9 examinations (25.7% of 35) were completed during the first period. This meets the percentage requirements for the first period under the 1980/W81 Program.

Examinations Completed Under 1980/W81 Program - 2nd Period

A total of 4 examinations (11.4% of 35) were completed during the third refueling outage which are credited to the second period.

The combined total of 13 examinations (37.14% of 35) are credited as completed under the 1980/W81 Program.

B. 1986 PROGRAM

For the 1986 Program, 25% of the total non-exempt population of Category Items C3.20 and C3.30 integral attachment welds are to be examined during the interval. For Item C3.10, 100% of the equivalent of one RHR vessel's integral attachment welds are to be examined during the interval. Inspection program "B" examination completion requirements are applicable for this Category.

Category C-C Non-Exempt Population By Code Item Number

Total for Item C3.10 = 16 (Includes two RHR heat exchanger vessels)
Required to examine = 8 (Equivalent of 1 vessel)

Total for Item C3.20 = 78 (Less than 1980/W81 due to change in code requirements)
Total for Item C3.30 = 4
Total population = 82
Percent required = 25%
Required to examine = 21

Total required examination population = (8+21) = 29 examinations

The 1980/W81 Program completion credit of 37.14% when applied to the 1986 Program required examination population, results in credit for 10 examinations, leaving a total of 19 examinations remaining to be completed in accordance with the 1986 Program.

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 29 = 15 examinations
Maximum examinations allowed (credited) = 67% of 29 = 19 examinations

The current schedule shows 5 examinations scheduled for completion during the second period which is within the requirements of inspection program "B". In order to attain the maximum Code allowed completion credit for the second period (67%), the examination schedule should be adjusted to schedule 9 examinations for the second period. The balance of 10 examinations should be scheduled for the third period.

XVII. CATEGORY C-F

A. 1980/W81 PROGRAM

As allowed by 10CFR50.55a(b)(2)(iv), the optional use of the 1974/S75 Code was elected to establish the extent of examination for Category C-F non-exempt circumferential welds, as summarized below.

The examinations shall be divided among the number of components in each of the multiple streams of a system which perform the same (or redundant) functions, such that the total examinations completed over the systems service lifetime will be equivalent to having performed 100% of the required examinations in one of the multiple streams of the system. Systems or portions of systems with a single stream shall be examined such that 100% of the required examinations of the components will be completed over the systems service lifetime. Where the multiple streams have an unequal number of areas subject to examination, the average will be used.

Category C-F Non-Exempt Population By Code Item Number

Total for Item C5.11 = 1187
Total for Item C5.12 = 24 (Longitudinal welds)
Total for Item C5.21 = 440
Total for Item C5.22 = 94 (Longitudinal welds)
Total for Item C5.31 = 15

Total non-exempt circumferential weld population = 1642

The Limerick Unit 1, Class 2 Weld Selection Document and the ISIC database indicate that the non-exempt circumferential weld population requiring examination for the first inspection interval is 241 welds (plus applicable longitudinal welds). Inspection program "B" examination completion requirements are applicable to this Category.

Code Required Examinations 1st Period

Minimum examinations required = 16% of 241 = 39 examinations
Maximum examinations allowed (credited) = 34% of 241 = 81 examinations

Code Required Examinations 2nd Period

Minimum examinations required = 50% of 241 = 121 examinations
Maximum examinations allowed (credited) = 67% of 241 = 161 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

78 of 241 = 32.36% (Credited)

Examinations Completed Under 1980/W81 Program - 2nd Period

38 of 241 = 15.77% (Credited)

Total examinations completed and credited to the 1980/W81 Program = 116 (48.13% of 241) plus applicable longitudinal welds.

B. 1986 PROGRAM

Class 2 pressure retaining piping welds classified as Code Category C-F in the 1980/W81 Code have been subdivided in the 1986 Code into two Categories, C-F-1 for pressure retaining welds in austenitic stainless steel or high alloy piping, and C-F-2 for pressure retaining welds in carbon or low alloy steel piping. The extent of examination is based on 1986 Code rules, where the examination population is based on a 7.5 percent sample of the non-exempt circumferential weld population and prorated among the systems and line sizes. Since piping > NPS 4 and < 3/8 inch nominal wall is considered non-exempt piping, and no Category Item Number applies to this piping, these circumferential welds were identified as Item Number "N/A", and counted in the total non-exempt populations to which the 7.5 percent sample was applied.

Category C-F-1 Non-Exempt Population By Code Item Number

Total for Item C5.11 = 11
Total for Item "N/A" = 5 (Thin wall piping - < 3/8 wall)

Total C-F-1 non-exempt circumferential weld population = 16

<u>Category C-F-2 Non-Exempt Population By Code Item Number</u>

Total for Item C5.51 = 1309
Total for Item C5.52 = 124 (Longitudinal)
Total for Item C5.81 = 17
Total for Item "N/A" = 262 (Thin wall piping - < 3/8 wall)

Total C-F-2 non-exempt <u>circumferential</u> weld population = 1588

Since the 1980/W81 Program addressed only one Code Category, the percentage of completed examinations credited to the 1986 Program will be applied to the combined total of Categories C-F-1 and C-F-2 circumferential weld populations requiring examination.

<u>1986 Program Examination Population</u>

Total Category C-F-1 requiring examination = 11
Total Category C-F-2 requiring examination = <u>123</u>
Combined total requiring examination = 134

Note: The C-F-1 circumferential weld population requiring examination is 100% of Item Number C5.11 since the Code requires 7.5% of the non-exempt population but not less than 28, and the thin wall piping is not required to be examined.

The C-F-2 circumferential weld population requiring examination is equal to 7.5% of 1588 plus an additional 4 welds due to proration by system, and selection of at least 1 terminal end if available within a given system, even if the required sample percentage for terminal ends is essentially zero.

<u>Completed Examination Credited To The 1986 Program (Combined Categories)</u>

1st Period: 3[illegible] of 134 = 43 (Examinations credited)
2nd Period: [illegible]% of 134 = <u>21</u> (Examinations credited)
Grand total: [illegible]6.13% of 134 = 64 (Examinations credited)

<u>Distribution Of Credited Examinations To Applicable 1986 Examination Categories</u>

1st Period: C-F-1 = 2 Examinations credited
C-F-2 = <u>41</u> Examinations credited
43 Total examinations credited 1st Period

2nd Period: C-F-1 = 0 Examinations credited
C-F-2 = <u>21</u> Examinations credited
21 Total examinations credited 2nd Period

Based on the above distribution of the 1980/W81 Program credited examinations, the following breakdown is provided to show the examinations completed and remaining for each Code Category.

<u>Category C-F-1</u>

<u>Code Required Examinations - 1st Period</u>

Minimum examinations required = 16% of 11 = 2 examinations
Maximum examinations allowed (credited) = 34% of 11 = 3 examinations

Actual Examinations Credited = 2 (18.2% of 11)

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 11 = 6 examinations
Maximum examinations allowed (credited) = 67% of 11 = 7 examinations

There were no welds equivalent to C-F-1 examined during the second period under the 1980/W81 Program. Total percent credited to date is 18.2%. Remaining to complete is 81.8%. To attain the maximum allowed completion credit for the second period (67%), 5 of the remaining 9 examinations should be scheduled for the second period and 4 examinations scheduled for the third period. Note, a minimum of 4 examinations must be scheduled for the 2nd period to achieve the minimum 50% requirement.

Category C-F-2

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 123 = 19 examinations
Maximum examinations allowed (credited) = 34% of 123 = 41 examinations

Actual examinations credited = 41 (33.3% of 123)

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 123 = 61 examinations
Maximum examinations allowed (credited) = 67% of 123 = 82 examinations

Actual examinations credited = 21 (17.1% of 123)
Total examinations credited = (41+21)=62 (50.4% of 123)

To attain the maximum allowed completion credit of 82 examinations for the second period (67% of 123), 20 of the remaining 61 examinations should be scheduled for the second period and 41 examinations scheduled for the third period.

XVIII. CATEGORY C-G

A. 1980/W81 PROGRAM

For the 1980/W81 Program, 100% of the Category C-G welds, subject to multiple component group selection, are required to be examined during the interval. Relief from examination of the embedded pump casing welds for the RHR and Core Spray pumps was granted due to inaccessibility. These welds however will be examined if the pumps are disassembled. Inspection program "B" examination completion requirements are applicable for this Category.

Category C-G Non-Exempt Population By Code Item Number

Total for Item C6.10 = 59
Total having relief = -32
Total remaining = 27

The 27 remaining welds are then grouped as follows:

CS = 3 welds on each of 4 pumps = 12 total

RCIC = 3 welds on 1 pump = 3 total

RHR = 3 welds on each of 4 pumps = 12 total

The Code requires 100% examination of the equivalent of 1 pump in each group of pumps of similar design, size, function, and service in a system. Therefore 3 welds on the equivalent of 1 pump for each of the Core Spray & RHR Systems plus all three welds on the RCIC pump for a grand total of 9 examinations are required to be completed during the interval.

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 9 = 2 examinations
Maximum examinations allowed (credited) = 34% of 9 = 3 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 9 = 5 examinations
Maximum examinations allowed (credited) = 67% of 9 = 6 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 2 examinations (22.2% of 9) were completed during the first period. This meets the requirements of Inspection Program "B" for the first period.

Examinations Completed Under 1980/W81 Program - 2nd Period

A total of 2 examinations (22.2% of 9) were completed during the third refueling outage which are credited to the second period.

The combined total of 4 examinations (44.4% of 9) are credited as completed under the 1980/W81 Program.

B. 1986 PROGRAM

For the 1986 Program, the examination requirements are the same as for the 1980/W81 Program. One weld on the RCIC pump (RRC-P-SWS2) has been determined to be exempt and therefore deleted from the 1986 Program.

Total examinations required = 8

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 8 = 4 examinations
Maximum examinations allowed (credited) = 67% of 8 = 5 examinations

A total of 4 examinations (50% of 8) have been completed to date which meets the requirements for period 2 under the 1986 Program.

There are 4 examinations remaining to be completed in the first interval under the 1986 Program. 3 of these examinations are already scheduled for the third period and 1 is not currently scheduled. Since the requirements for period 2 have been met, the remaining unscheduled examination should be scheduled for the third period to complete the interval requirements.

XIX. CATEGORY D-A,B,C

A. 1980/W81 PROGRAM

For the 1980/W81 Program, the population of integral attachments subject to examination was based on the total number of non-exempt component supports selected for examination under Code Category F-A, which had integral attachments. Inspection program "B" examination completion requirements are applicable for this Category.

Category D-A,B,C Examination Population

Total examination population = 73

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 73 = 12 examinations
Maximum examinations allowed (credited) = 34% of 73 = 24 examinations

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 73 = 37 examinations
Maximum examinations allowed (credited) = 67% of 73 = 48 examinations

Examinations Completed Under 1980/W81 Program - 1st Period

A total of 27 examinations (36.98% of 73) were completed during the first period. This exceeds the maximum allowed credited examinations by 3, therefore only the maximum of 24 examinations (34%) will be credited as completed under the 1980/W81 Program.

Examinations Completed Under 1980/W81 Program - 2nd Period

A total of 11 examinations (15.06% of 73) were completed during the third refueling outage which are credited to the second period.

The combined total of 35 (24+11) examinations (47.94% of 73) are credited as completed under the 1980/W81 Program.

B. 1986 PROGRAM

For the 1986 Program, the examination population is also based on the total number of non-exempt component supports selected for examination under Code Category F-A, which have integral attachments. Inspection program "B" examination completion requirements are applicable for this Category.

Total required examinations = 9

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 9 = 5 examinations
Maximum examinations allowed (credited) = 67% of 9 = 6 examinations

A total completion credit of 47.94% is applied to the 1986 Program examination population.

Total credited examinations = 4

Total examinations remaining = 5

Of the 5 remaining examinations, a minimum of 1 (maximum of 2) must be scheduled for completion during the second period, and the balance scheduled during the third period.

XX. CATEGORY F-A

A. 1980/W81 PROGRAM

In accordance with the 1980/W81 Program, all component supports (ie. Class 1, 2, and 3) were combined into one Category; Code Category F-A,B,C, Item Number F0.00. The total non-exempt component support population and the total examination population was determined from the ISIC database. The selection of supports requiring examination was made in accordance with the 1980/W81 ASME Section XI, Sub-Article IWF-2510. Note: Since the 1986 Program requires 100% of the equipment supports to be examined during the interval (except in the case of multiple components), the reconciliation of the equipment supports is calculated separately.

1. **Piping Supports:**

Total non-exempt piping support population = 2442
Total piping support examination population = 1347

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 1347 = 216 examinations
Maximum examinations allowed (credited) = 34% of 1347 = 457 examinations

Examinations Completed Under The 1980/W81 Program - 1st Period

A total of 458 examinations were completed in the first period which is 1 examination greater than the maximum allowed. Therefore, the maximum of 34% (457 examinations) can be credited for the first period of the 1980/W81 Program.

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 1347 = 674 examinations
Maximum examinations allowed (credited) = 67% of 1347 = 902 examinations

Examinations Completed Under The 1980/W81 Program - 2nd Period

A total of 337 examinations were completed during the third refueling outage which can all be credited to the second period as completed under the 1980/W81 Program.

Examinations Credited To 1980/W81 Program

1st period: 457 of 1347 = 33.93%
2nd period: 337 of 1347 = 25.02%

Total 1980/W81 Program: 794 of 1347 = 58.95% Completion credit

2. **Equipment Supports:**

Total non-exempt equipment support population = 55
Total equipment support examination population = 31

Code Required Examinations - 1st Period

Minimum examinations required = 16% of 31 = 5 examinations
Maximum examinations allowed (credited) = 34% of 31 = 10 examinations

A total of 12 examinations were completed in the first period which is 2 examinations greater than the maximum allowed. Therefore, the maximum of 34% (10 examinations) can be credited for the first period of the 1980/W81 Program.

Code Required Examinations - 2nd Period

Minimum examinations required = 50% of 31 = 16 examinations
Maximum examinations allowed (credited) = 67% of 31 = 20 examinations

A total of 3 examinations were completed during the third refueling outage which can be credited to the second period as completed under the 1980/W81 Program.

Examinations Credited to 1980/W81 Program

1st Period: 10 of 31 = 34%
2nd Period: 3 of 31 = 9.7%

Total 1980/W81 Program: 13 of 31 = 41.94% Completion credit

B. 1986 PROGRAM

In accordance with the 1986 Program, all component supports have been classified as Code Category F-A; Item Numbers F1.10, F1.20, and F1.30 for Class 1, 2, and 3 piping supports, and F1.40 for equipment supports. Determination of examination population is based on a sampling of the total population of each applicable Code Item Number as follows:

F1.10 = 25% of the total population of Class 1 piping supports.
F1.20 = 15% of the total population of Class 2 piping supports.
F1.30 = 10% of the total population of Class 3 piping supports.
F1.40 = 100% of the total population of equipment supports.

Category F-A Non-Exempt Population By Code Item Number

Total for Item F1.10 = 440
Total for Item F1.20 = 800
Total for Item F1.30 = 1036
Total for Item F1.40 = 55

Category F-A Non-Exempt Examination Population By Code Item Number

Total for Item F1.10 = 114 (25% of 440)
Total for Item F1.20 = 122 (15% of 800)
Total for Item F1.30 = 110 (10% of 1036)
Total for Item F1.40 = 31 (100% of 31)

Note: The actual examination populations for piping supports are slightly higher than the required percentages since a minimum of one support of each type in each system was selected where calculated percentages were greater than zero but less than one.

The examination population for Item F1.40 (equipment supports) includes the supports of only one component where there are multiple components within a system of similar design, function and service.

1. **Piping Supports**

The 1980/W81 Program credited examination completion percentage for piping supports (58.95%) has been applied to each of the following 3 Item Numbers to determine the actual number of examinations that may be credited as completed under the 1986 Program.

Item Number F1.10 Completed Examination Reconciliation

Examination population.. 114
1980/W81 credited examinations (58.95% of 114)...... 67
Examinations remaining (1986 Program).................... 47

Maximum allowed credit 2nd period (67% of 114) = 76

To attain the maximum allowed completion percentage of 67% for the second period, 9 of the remaining 47 examinations should be scheduled for the second period, and the other 38 examinations scheduled for the third period.

Item Number F1.20 Completed Examination Reconciliation

Examination population.. 122
1980/W81 credited examinations (58.95% of 122)...... 71
Examinations remaining (1986 Program).................... 51

Maximum allowed credit 2nd period (67% of 122) = 81

To attain the maximum allowed completion percentage of 67% for the second period, 10 of the remaining 51 examinations should be scheduled for the second period, and the other 41 examinations scheduled for the third period.

Item Number F1.30 Completed Examination Reconciliation

Examination population.. 110
1980/W81 credited examinations (58.95% of 110)...... 64
Examinations remaining (1986 Program).................... 46

Maximum allowed credit 2nd period (67% of 110) = 73

To attain the maximum allowed completion percentage of 67% for the second period, 9 of the remaining 46 examinations should be scheduled for the second period, and the other 37 examinations scheduled for the third period.

2. Equipment Supports

The 1980/W81 Program credited examination completion percentage for equipment supports (41.94%) has been applied to Item Number F1.40 examination population to determine the actual number of examinations that may be credited as completed under the 1986 Program.

Item Number F1.40 Completed Examination Reconciliation

Examination population	31
1980/W81 credited examinations (41.94% of 31)	13
Examinations remaining (1986 Program)	18

Maximum allowed credit 2nd period (67% of 31) = 20

To attain the maximum allowed completion percentage of 67% for the second period, 7 of the remaining 18 examinations should be scheduled for the second period, and the other 11 examinations scheduled for the third period.

XXI. AUG-01, GENERIC LETTER 88-01 EXAMINATION PROGRAM

While this augmented examination program is not directly affected by the Edition of ASME Section XI used for the ISI Program, it does require examination of various categories of welds, some on a sampling basis. At LGS-1, Category "A" is the only applicable Category of welds requiring such sampling (ie. 25% of the total population in 10 years, and at least 16% in 6 years).

The examinations required by this program are conducted to detect the presence of indications caused by intergranular stress corrosion cracking (IGSCC). Examinations have been conducted at LGS-1 to detect IGSCC during each of the first three refueling outages. While the examinations conducted during the first outage were in accordance with NUREG 0313, Rev.1 (Prior to Generic Letter 88-01), the examination personnel and techniques used are acceptable to the Generic Letter and Rev.2 of the NUREG. Therefore, all IGSCC examinations conducted to date are considered to satisfy the requirements of Generic Letter 88-01 and can be credited toward the completion of the AUG-01 Program.

Category "A" Generic Letter 88-01 Weld Population

Total population = 163

Examinations required = 25% of 163 = 41

Examinations Completed To Date

First outage = 9
Second outage = 20
Third outage = 13

Total examinations completed to date = 42

Examination requirements by Generic Letter 88-01 are considered complete. It should be noted however, that ongoing examinations of applicable welds, required by the ASME Section XI ISI Program will be conducted with the personnel and techniques required by the Generic Letter. Therefore, examination of applicable piping for IGSCC will continue inherently for the rest of the ten year interval.