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MAY 3 1 2005

U.S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
RECONCILIATION OF THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION (ISI) PROGRAM PLAN FOR SUSQUEHANNA SES UNITS 1 AND 2
PLA-5905

Docket Nos. 50-387 and 50-388

In accordance with the provisions of 10 CFR 50.55a, PPL Susquehanna, LLC is submitting its reconciliation of the Second 10-Year Interval Inspection (ISI) Program Plan. The ISI Program Plan Revision 2 revises existing Relief Requests Nos. RR-04, RR-05, RR-06, and RR-09 to include additional components due to incomplete examinations. New Relief Request No. RR-32 has been added due to incomplete examinations of supports.

If you have any questions regarding this submittal, please contact Mr. C. T. Coddington at (610) 774-4019.

B. T. McKinney

Attachment: Revision 2 to the Inservice Inspection Program Plan for the Second Inservice Inspection Interval

cc: NRC Region I
Mr. A. J. Blamey, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Project Manager
Mr. R. Janati, DEP/BRP

A047

ISI TECH. DOC. NO.: ISI-T-106.0/206.0
SSES UNIT NO.: 1/2

INSERVICE INSPECTION TECHNICAL DOCUMENT FOR SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 AND 2

INSERVICE INSPECTION PROGRAM PLAN

FOR

THE SECOND INSERVICE INSPECTION INTERVAL

SUSQUEHANNA STEAM ELECTRIC STATION
PPL SUSQUEHANNA, LLC
BERWICK, PENNSYLVANIA

REV.	DATE	DESCRIPTION	PREPARED BY	REVIEWED BY	REVIEWED BY	APPROVED BY
2	05/27/05	Reconciliation of the Second 10-Year Interval	Approval Signatures on Original Document			
1	01/12/02	Changes due to Re-Baseline Program "See Page 2"				
0	03/23/94	Initial issue of composite ISI-T-106.0/206.0 (Unit 1/2) document for the second inservice inspection interval				

Title: INSERVICE INSPECTION PROGRAM PLAN FOR SECOND INTERVAL

Summary of Changes

1) Added NRC approved Relief Requests

2) Added status of relief requests that were denied, withdrawn or not submitted.

3) Revised Relief Request No. RR-04

4) Revised Relief Request No. RR-05

5) Revised Relief Request No. RR-06

6) Revised Relief Request No. RR-09

7) Revised Figures 10.1-1 and 10.2-1

8) Added Relief Request No. RR-32

9) Incorporated ISI Technical Document Change Notice No. 6

10) Incorporated ISI Technical Document Change Notice No. 7

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1.0 INTRODUCTION

This document details the Inservice Inspection Program for PPL Susquehanna, LLC (SSES), Units 1 and 2, updated for the second 120-month inservice inspection interval. In accordance with U. S. Nuclear Regulatory Commission rules and regulations, the operating license for a boiling water-cooled nuclear power facility is subject to certain conditions mandated in 10 CFR 50.55a(g)(4). As such, throughout the service life of SSES Units 1 and 2, nuclear power plant components - including supports - which are classified as ASME Code Class 1, Class 2, and Class 3, are required to meet the inservice inspection requirements[1] of the governing ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." The purpose of this document is to detail the essential parameters, which define the SSES Units 1 and 2 Inservice Inspection Program and, therefore, provide a basis for compliance of this ISI Program with the mandated rules and regulations.

The second inservice inspection interval for both SSES Units 1 and 2 will commence concurrently on June 1, 1994. To effect parallel SSES Unit 1 and 2 second inservice inspection intervals, PPL had chosen to alter the Unit 1 and Unit 2 first inservice inspection intervals to result in the mutual end date of June 1, 1994 (Reference 1.3.3.2). In accordance with IWA-2400(c)[2], an inservice inspection interval may be extended or decreased by as much as one year, within the limitation that the adjustment does not effect the pattern of successive inspection intervals by more than one year. Accordingly, the Unit 1 first inspection interval was extended from its original completion date of June 8, 1993 to June 1, 1994; the Unit 2 first inspection interval was shortened from its original completion date of February 12, 1995 to June 1, 1994.

In accordance with 10 CFR 50.55a paragraphs (g)(4) and (g)(5)(i), prior to the start of the inservice inspection interval, the inservice inspection program must be revised to incorporate Code editions and addenda as referenced in 10 CFR 50.55a(b)(2). Per 10 CFR 50.55a(g)(4)(ii), the governing Code for subsequent inservice inspection intervals is the latest edition and addenda of the Code incorporated by reference in the regulations (i.e., 10 CFR 50.55a(b)(2)) 12 months prior to the start of the inservice inspection interval. Given a June 1, 1994 start-of-interval date, the latest referenced Code is the 1989 Edition of ASME Section XI. As such, the governing ASME Section XI Code of record, updated for the second inservice inspection interval ISI Program for SSES Units 1 and 2, is the 1989 Edition. This ISI Program has been prepared in accordance with, and complies with, the 1989 Edition of the ASME Section XI Code, hereinafter, simply referred to as the Code. All references in this document to the Code, e.g., Examination Categories, Item Numbers, etc., refer to the 1989 Edition of the Code unless specifically stated otherwise.

Where warranted, certain alternative requirements to the rules and requirements of the 1989 Code have been adopted by this ISI Program. These alternative requirements, proposed in accordance with 10 CFR 50.55a(a)(3), are summarized below:

- The 1989 Code with the 1990 Addenda, Subsection IWF, will be utilized for the rules and requirements governing the examination of Class 1, 2, and 3 component supports;

[1] Except design and access provisions.
[2] 1980 Edition of ASME Section XI, Winter 1980 Addenda for Unit 1 and Winter 1981 Addenda for Unit 2.

- The alternative rules of ASME Code Case N-509 will be utilized for the examination of Class 1, 2, and 3 integrally welded attachments;
- Paragraphs IWB-2430, IWC-2430, and IWD-2430 from the 1992 Edition of the Code will be utilized for rules regarding Additional Examinations; and,
- The 1992 Edition ASME Section XI, 1992 Addenda, is utilized for IWE/IWL, primary containment
- The alternative rules of ASME Code Case N-524 will be utilized for the examination of longitudinal welds in Class 1 and 2 piping.
- 1995 ASME Section XI, Appendix VIII, will be utilized for performance demonstration for ultrasonic examination systems.

These programmatic departures are discussed and justified further in 5.0.

1.1 SCOPE

The ISI Program established herein for the second inservice inspection interval applies to both SSES Units 1 and 2, unless specifically stated otherwise.

SSES Units 1 and 2 Class 1, 2, and 3 components subject to the rules and requirements of Code Subsections IWA, IWB, IWC, IWD, IWF and IWE/IWL are included within the scope of this document. In addition, discussion of the Augmented Inservice Inspection Program, established to satisfy augmented examination requirements for the second inservice inspection interval, is also included.

Inspection of the Primary Containment Structure (ASME Subsection IWE/IWL) is covered in Procedure ISI-T-1000, "Primary Containment Inservice Inspection Program."

Inservice testing of pumps and valves, Subsections IWP and IWV of the Code, respectively, Articles IWX-4000 and IWX-7000 regarding repairs and replacements, Article IWF-5000 on inservice inspection of snubbers, and Articles IWX-5000, System Pressure Tests, are also outside of the scope of this document.

1.2 BACKGROUND

The Susquehanna Steam Electric Station consists of two units, each unit a General Electric Boiling Water Reactor (BWR/4) with a 1100 MWe nominal rating.

The first inservice inspection interval for SSES Unit 1 commenced on June 8, 1983 - coincident with unit commercial operation - and ends on June 1, 1994. The first inservice inspection interval periods ensued as follows:

1st Period	June 8, 1983 to June 8, 1986
2nd Period	June 9, 1986 to June 8, 1990
3rd Period	June 9, 1990 to June 1, 1994

The Code of record for the Unit 1 first inservice inspection interval was the 1980 Edition, Winter 1980 Addenda of ASME Section XI.

The first inservice inspection interval for SSES Unit 2 commenced on February 12, 1985 - coincident with unit commercial operation - and ends on June 1, 1994. The ensuing Unit 2 first inspection interval periods were as follows:

1st Period	February 12, 1985 to June 25, 1988
2nd Period	June 26, 1988 to February 12, 1992
3rd Period	February 13, 1992 to June 1, 1994

The Code of record for the Unit 2 first inservice inspection interval was the 1980 Edition, Winter 1981 Addenda of ASME Section XI.

1.3 APPLICABLE DOCUMENTS

1.3.1 Regulatory Documents

1.3.1.1 10 CFR 50, Code of Federal Regulations, Title 10, Part 50 as revised by Federal Register, Vol. 57, No. 152 dated August 6, 1992, pages 34673 through 34676.

1.3.1.2 Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants," Revision 3, February 1976.

1.3.1.3 Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability," Revision 10, July,1993.

1.3.1.4 Regulatory Guide 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," Revision 1 (Alternate Method), for all Non-Appendix VIII Welds.

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

1.3.1.6 NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," November 1980.

1.3.1.7 NUREG-0800, Standard Review Plan For The Review Of Safety Analysis Reports For Nuclear Power Plants; Section 3.2.2, System Quality Group Classification

1.3.1.8 NUREG-0803, "Integrity of BWR Scram Discharge Piping," August 1981.

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

1.3.1.10 I.E. Bulletin 80-07, "BWR Jet Pump Assembly Failure," April 4, 1980.

1.3.1.11 Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," January 25, 1988.

1.3.2 Codes and Standards

1.3.2.1 ASME Codes

1.3.2.1.1 American Society of Mechanical Engineers, Section V, "Nondestructive Examination," 1989 Edition.

1.3.2.1.2 American Society of Mechanical Engineers, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Division 1, 1989 Edition.

1.3.2.1.3 ASME, Section XI, 1992 Edition, 1992 Addenda.

1.3.2.1.4 American Society of Mechanical Engineers, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Appendix VIII, 1995 Edition with 1996 Addenda.

1.3.2.2 ASME Code Cases

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

1.3.2.2.2 Code Case N-335-1, Rules for Ultrasonic Examination of Similar and Dissimilar Metal Piping Welds.

1.3.2.2.3 Code Case N-458, Magnetic Particle Examination of Coated Materials.

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

1.3.2.2.5 Code Case N-461, Alternative Rules for Piping Calibration Block Thickness.

1.3.2.2.6 Code Case N-463-1, Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2.

1.3.2.2.7 Code Case N-489, Alternative Rules for Level III NDE Qualification Examinations.

1.3.2.2.8 Code Case N-494, Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2.

1.3.2.2.9 Code Case N-509, Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments.

1.3.2.2.10 Code Case N-524, Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping.

1.3.2.2.11 Code Case N-552, Alternate Methods - Qualification for Nozzle Inside Radius Section from the Outside Surface, Section XI, Division 1.

1.3.2.3 ASME Nonmandatory Appendices

1.3.2.3.1 ASME Section XI Nonmandatory Appendix C, Evaluation Of Flaws In Austenitic Piping.

1.3.2.3.2 ASME Section XI Nonmandatory Appendix F, Preparation of Inspection Plans.

1.3.2.4 American Society for Nondestructive Testing

1.3.2.4.1 CP-189, Personnel Qualification and Certification in Nondestructive Testing.

1.3.3 PPL/Miscellaneous Documents

1.3.3.1 SSES Final Safety Analysis Report (FSAR)

1.3.3.2 PP&L letter PLA-3746, H. W. Keiser (PP&L) to C. L. Miller (USNRC), dated April 9, 1992 (RE: Revision to the ten-year Inservice Inspection interval)

1.3.3.3 PP&L letter PLA-4011, R. G. Byram (PP&L) to C. L. Miller (USNRC), dated September 7, 1993 (RE: Response to Requests for Additional Information Dated 2/11/93 and 5/20/93 on First 10-Year Inservice Inspection (ISI) Program Plan)

1.3.3.4 ISI-T-119.0/219.0, Inservice Inspection Technical Document for System Pressure Testing Program

1.3.3.5 PP&L Letter PLA-4295, R.G. Byram (PP&L) to USNRC dated March 31, 1995.

1.3.3.6 PPL Letter PLA-5245, R.G. Byram to USNRC dated October 23, 2000, proposed Relief Request No. RR-19 to the 2nd 10-yr. ISI Program.

1.3.3.7 PPL Letters PLA-5250 and 5270, R.G. Byram to USNRC, dated 11/2/00 and 1/16/01, respectively, proposed (and revised proposal) Relief Request No. RR-21 to the 2nd 10-yr. ISI Program.

1.3.3.8 PPL Letter PLA-5251, R.G. Byram to USNRC, proposed Relief Request No. RR-22 to the 2nd 10-yr. ISI Program.

1.3.3.9 PPL Letters PLA-5312 and 5344 R.G. Byram to USNRC, dated 6/5/01 and 6/25/01 respectively, proposed (and supplemental) Relief Request No. RR-23 to the 2nd 10-yr. ISI Program.

1.3.3.10 PPL Engineering Work Request (EWR) No. 458517, dated March 12, 2003, PPL ISI's Position Regarding ASME Section XI Component Support VT-3 Exams That Identify Loose Lock/Jam Nuts.

1.4 DEFINITIONS

Inservice Inspection Program definitions are as per Article IWA-9000, Glossary of ASME Section XI.

1.5 ABBREVIATIONS AND ACRONYMS

ANII	Authorized Nuclear Inservice Inspector
ASME	American Society of Mechanical Engineers
FSAR	Final Safety Analysis Report
ISI	Inservice Inspection
NRC	Nuclear Regulatory Commission
PPL	PPL Susquehanna, LLC
SSES	Susquehanna Steam Electric Station
10 CFR 50	Title 10, Code of Federal Regulations, Part 50

2.0 GENERAL REQUIREMENTS

2.1 RESPONSIBILITIES

2.1.1 Owner

The PPL Susquehanna LLC, (PPL), as the organization legally responsible for the operation, maintenance, safety, and power generation of SSES Units 1 and 2, is designated as Owner of this ISI Program. As such, PPL is responsible for the preparation, maintenance, and implementation of this ISI Program in accordance with IWA-1400 of the Code.

PPL, as Owner, is also responsible for contracting for the services of an Authorized Inspection Agency and for providing adequate access for the Authorized Nuclear Inservice Inspector (ANII) to perform the necessary inspection services (IWA-2130).

2.1.2 Inspection Agencies

The Authorized Inspection Agency, and the ANII, have been empowered by the jurisdictional enforcement authority to verify that examinations performed in accordance with this ISI Program are done so in accordance with the rules and requirements of the Code. The duties of the ANII are defined in paragraph IWA-2110 of the Code.

2.2 SCOPE OF INSERVICE INSPECTION

2.2.1 Classification of Systems, Portions of Systems, and/or Components

Application of Code rules to systems and components is facilitated by the assignment of safety or quality group classifications. That is, in accordance with paragraph IWA-1320, Articles IWB, IWC, and IWD rules apply to systems and components classified as Class 1, 2, and 3, respectively. SSES Units 1 and 2 plant systems, portions of systems, and/or components, such as vessels, pumps, valves, piping systems, etc., have been reviewed for classification and subsequent inclusion in this ISI Program. Guidance for establishing the SSES Units 1 and 2 ISI classifications has been taken from:

- 10 CFR 50.2(v),
- Regulatory Guide 1.26,
- NUREG 0800, Section 3.2.2, and
- SSES FSAR.

Systems and components within the reactor coolant pressure boundary and, water and steam containing systems and components important to safety have been classified as Class 1, 2, or 3. SSES systems, portions of systems, or components, within the ISI boundaries, which have been constructed to a classification higher than the minimum class established in the component design specifications, have been classified for inservice inspection in accordance with the overall system classification or the minimum design classification. Likewise, the ISI classification of non-safety systems, portions of systems, or components, optionally constructed to a safety classification, have not been affected by the upgraded safety classification.

ISI classification of systems, portions of systems, and/or components are illustrated on the SSES Unit 1 and Unit 2 ISI Boundary Classification Drawings (See 2.11.1).

2.2.2 System Boundaries Subject to Inservice Inspection

System boundaries have been established to identify the extent to which the rules and requirements of the Code need to be applied. Systems and components within these established boundaries are subject to governing Code rules.

SSES Units 1 and 2 systems within the scope of this ISI Program are those systems or portions of those systems, which are considered important to safety. Guidance for establishing the boundaries of this ISI Program has been taken from:

- 10 CFR 50.2(v),
- Regulatory Guide 1.26,
- NUREG 0800, Section 3.2.2,
- the SSES FSAR, and the
- Plant design P&IDs.

The ISI Program boundaries, as well as the system and component classifications, are illustrated on the SSES Unit 1 and Unit 2 ISI Boundary Classification Drawings (See 2.11.1).

2.3 QUALIFICATION OF NONDESTRUCTIVE EXAMINATION PERSONNEL

Personnel performing all nondestructive examinations (NDE), as required by this ISI Program, will be qualified and certified using a written practice prepared in accordance with CP189, Subarticle IWA-2300 of the Code, and PPL written practice.

Training, qualification, and certification of ultrasonic examination personnel shall also comply with the requirements specified in Code Mandatory Appendix VII, Qualification of Nondestructive Examination Personnel for Ultrasonic Examination, add Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems."

2.4 EXAMINATION EQUIPMENT AND PROCEDURES

2.4.1 Calibration Standards

Calibration of ultrasonic examination equipment will be accomplished utilizing the calibration standards listed in Appendix A. Additional standards, as approved by PPL, may be designed and fabricated, as needed.

2.4.2 Examination Procedures

Nondestructive examinations, as required by this ISI Program, will be performed in accordance with written, qualified procedures. A listing of the NDE procedures available for use during the SSES Units 1 and 2 second inservice inspection interval is included as Appendix B to this ISI Program. These procedures, PPL-approved equivalent procedures, or other PPL-approved procedures not necessarily included in this listing, may be utilized, as needed.

2.4.3 Performance Demonstration Initiative (PDI)

The Performance Demonstration Initiative (PDI) shall be used for the Qualification of Ultrasonic Testing Procedures for ASME Section XI examinations.

2.5 PRESERVICE EXAMINATIONS

Preservice examinations of SSES Units 1 and 2 components will be performed during the second inservice inspection interval following component repair, replacement, or corrective measures, in order to establish a new preservice record. Preservice examinations will also be performed following modifications or the addition of new systems, portions of systems, or components within the scope of this ISI Program.

2.6 INSERVICE EXAMINATIONS

2.6.1 Inspection Schedule

Components required to be examined during the second inservice inspection interval will be scheduled for examination predominately during plant refueling outages and/or extended maintenance outages. However, where practical, some examinations may be performed during plant operation.

2.6.1.1 Inspection Program B

The inservice examinations performed during the first inservice inspection interval were completed in accordance with the scheduling requirements of Inspection Program B. In accordance with Paragraph IWA-2432, the second inservice inspection interval will extend for ten (10) years following the end of the first inservice inspection interval. The inservice examinations required by IWB, and IWC, and the examination of component supports and integral attachments during the second inservice inspection interval, will also be completed in accordance with the scheduling requirements of Inspection Program B.

Inspection Program B establishes the distribution and duration of the three inservice inspection periods within the second inservice inspection interval. However, the Code allows individual inspection periods to be decreased or extended by as much as one year to enable an inspection to coincide with a plant outage - provided the adjustment does not alter the original pattern of intervals by more than one year. In order to create a more favorable distribution of scheduled refueling outages for the second inservice inspection interval - similar to the distribution of outages which occurred during the first inservice inspection interval - PPL has shortened the second inspection period by six months. Accordingly, the third inspection period was lengthened by six months, resulting in two refueling outages in both the first and second inspection periods, and three refueling outages in the third inspection period. This change has absolutely no affect on the overall inservice inspection interval sequence or duration.

Lastly, Inspection Program B establishes the distribution of examinations (minimum and maximum examinations credited) to be performed throughout the interval. This distribution will be applied by Examination Category.

Inspection Program B requirements are as illustrated in Figure 2.6.

Figure 2.6 - 1
Units 1 and 2 Inspection Program B

Inspection Interval	Inspection Period	Minimum Examinations Completed, %	Maximum Examinations Credited, %
2nd 6/1/94 - 6/1/04	1st (3 years) 6/1/94 - 6/1/97	16	34
	2nd (3.5 years) 6/2/97 - 1/1/01	50	67
	3rd (3.5 years) 1/2/01 - 6/1/04	100	100

Inspection Program B applies to all Code Examination Categories unless otherwise specified in Tables IWX-2500-1, (e.g., where deferral of inspection to end of interval is permissible, examination is only required in the event of component disassembly, or alternate examination frequencies are specified, etc.)

2.6.1.2 Successive Examinations

The Code utilizes the term "successive examinations" to address two unique, unrelated events - the sequence of examination of the same component from one inservice inspection interval to the next successive inservice inspection interval and the sequence of reexamination of the same component (in addition to the routine examination) during the next or successive inservice inspection periods, precipitated by the discovery of an unacceptable flaw. Both situations are addressed here.

To the extent practical, the sequence of SSES Unit 1 and Unit 2 component examinations established during the first inservice inspection interval will be repeated during the second inservice inspection interval. However, situations, such as extreme changes in Code examination requirements, use of alternative examination requirements, and/or consideration of overriding concerns such as ALARA, may preclude scheduling of nondestructive examinations in strict accordance with successive examination requirements. Component nondestructive examinations will be scheduled in accordance with these requirements on a case-by-case basis. Where successive inspection scheduling is not practical, it shall be noted herein.

Successive examination requirements will also be invoked in the event flaw indications, in SSES Unit 1 and 2 Class 1 and 2 components, are evaluated as acceptable for continued service based on performance

of an analytical evaluation. In this case, the area containing the flaw will be scheduled for re-examinations during the next three successive periods in accordance with Paragraph IWB-2420 for Class 1 components or during the next successive period in accordance with IWC-2420 for Class 2 components.

SSES Units 1 and 2 Class 1, 2, and 3 component supports, whose examinations result in unacceptable conditions requiring corrective measures, will be subject to successive re-examinations in accordance with Paragraph IWF-2420 of the 1990 Addenda of the Code (See 5.3). That is, component supports whose examinations reveal conditions unacceptable for continued service, thereby requiring corrective action, will be re-examined during the next inspection period.

Successive inspection requirements for SSES Units 1 and 2 Class 1, 2, and 3 integral attachments will be as per Code Case N-509 (See 5.1). For Class 1 integral attachments, whose scheduled examinations reveal flaw indications which are evaluated as acceptable for continued service based on performance of an analytical evaluation, the rules of paragraph IWB-2420 will be applied; for Class 2 and 3 integral attachments, the rules of IWC-2420 will be applied. However, when unacceptable flaw indications are revealed during (unscheduled) examinations required as a result of identified component support deformation, PPL will perform and document an evaluation to ascertain the necessity of successive re-examinations of the flawed integral attachment(s).

Following completion of the required successive examination(s) for all affected SSES Units 1 and 2 components, the examination schedules for those components containing flaw indications which have remained unchanged, and/or component supports requiring no further correction, will revert back to the original routine examination schedule.

2.6.1.3 Additional Examinations

SSES Units 1 and 2 Class 1, 2, and 3, component examinations (excluding VT-2 visual examinations), performed in accordance with the routine examination requirements of this ISI Program, which reveal flaw indications which exceed the prescribed acceptance standards, will be extended to include additional examinations.

Per 5.2, requirements governing the performance of additional examinations of IWB, IWC, and IWD components - including integral attachments - and IWF component supports have been upgraded in this ISI Program to the requirements found in Paragraphs IWB-2430, IWC-2430, IWD-2430, and IWF-2430 of the 1992 Edition of the Code.

Additional examinations are not required following unacceptable VT-2 visual examinations during system pressure testing.

2.7 EXAMINATION REQUIREMENTS

SSES Units 1 and 2 Class 1, 2, and 3 components within the scope of this ISI Program will be examined in accordance with the related requirements specified in Tables IWB-2500-1, IWC-2500-1, and IWD-2500-1, respectively[3]. Component supports will be examined in accordance with the related requirements found in Table IWF-2500-1 of the 1990 Addenda of the Code (See 5.3); integral attachments will be examined in accordance with Code Case N-509 (See 5.1). The applicable IWX-2500-1 tables were utilized by this ISI Program to define all the parameters/information necessary for implementation of the SSES Unit 1 and Unit 2 component-by-component examination plans, including some or all of the following:

- Examination Categories and the type of components to be included within the category,
- Item Numbers and a breakdown of the types of parts to be examined within the Examination Category,
- Examination Requirement Figures,
- Examination methods,
- Examination acceptance standards,
- Extent of examination (including selection criteria, if any),
- Frequency of examinations, and
- Scheduling of examinations.

2.7.1 Methods

The three types of examination methods to be utilized during inservice inspections in accordance with this ISI Program are visual (VT-1, VT-2, VT-3), surface, and volumetric. The examination method to be utilized in examination of specific SSES Units 1 and 2 Class 1, 2, and 3 components, or groups of components (except integral attachments), correspond with those specified in Tables IWX-2500-1 of the Code. Class 1, 2, and 3 component support examination methods comply with those specified in Table IWF-2500-1 of the 1990 Addenda of the Code (See 5.3); integral attachment examination methods are defined in Code Case N-509 (See 5.1).

A variety of examination techniques are available for accomplishing examinations specifying the visual, surface, or volumetric examination method. The technique(s) specified for examination of SSES Units 1 and 2 components were determined based on a variety of SSES-specific factors, such as:

- component design,
- component material specification,
- component physical access, and
- ALARA considerations.

[3] Except for Examination Categories B-H, B0K01, C-C, D-B, Items D2.20 thru D2.60, and D-C, Items D3.20 thru D3.60.

2.7.1.1 Visual Examination

Visual examination types specified for use in this ISI Program are VT-1, VT-2, and VT-3. These examinations are defined in IWA-2210, and are summarized below:

VT-1 visual examinations will be conducted on designated SSES Units 1 and 2 components to determine the condition of the part, component, or surface examined. Such conditions include cracks, wear, corrosion, erosion, or physical damage on the surfaces of the parts or components.

VT-1 visual examinations will be performed by both direct and remote visual examination techniques, per IWA-2211.

VT-2 visual examinations will be conducted on designated SSES Units 1 and 2 components 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 testing. VT-2 visual examinations will be conducted in accordance with IWA-5240.

VT-3 visual examinations will be conducted on designated SSES Units 1 and 2 components, and component supports, to determine general mechanical and structural conditions, including aspects such as:

- the verification of clearances/settings,
- physical displacements,
- loose or missing parts, (see Note (1))
- debris,
- corrosion,
- wear,
- erosion, or
- the loss of integrity at bolted or welded connections.

Note (1): PPL's position, per EWR 458517, dated March 12, 2003 (Applicable Document 1.3.3.6), concerning the use of lock or jam nuts on component supports, is that lock or jam nuts are installed secondary to the primary nut and are not considered to be a principal structural component of the fastener. Provided the main nut is still intact and tight, the presence of a loose lock/jam nut is not in itself an unacceptable condition warranting a visual examination failure declaration nor additional examinations per ASME Code, Section X), IWF-3200.

The VT-3 visual examinations will also include examinations for conditions that could affect operability or functional adequacy of snubbers and constant load and spring-type supports. Examinations

addressing these conditions were formerly designated as VT-4 in the SSES Unit 1 and Unit 2 first inservice inspection interval program. The VT-3 visual examination specified for the second inservice interval includes both the VT-3 and VT-4 visual examination techniques (as referenced in the 80W80/80W81 ASME Section XI Code) performed during the first inservice inspection interval.

VT-3 visual examinations will be performed either by direct or remote visual examination techniques, per IWA-2211.

2.7.1.2 Surface Examination

Surface examinations will be performed on designated SSES Units 1 and 2 component surfaces to detect the presence of surface cracks or discontinuities. Surface examination techniques specified for use in this ISI Program are either magnetic particle (MT) or liquid penetrant (LP or PT), depending on surface conditions, material specification, and component accessibility.

Magnetic particle examinations will be conducted in accordance with the NDE requirements of Article 7 of ASME Section V (Reference 1.3.2.1.1). Liquid penetrant examinations will be conducted in accordance with the NDE requirements of Article 6 of ASME Section V.

2.7.1.3 Volumetric Examination

Volumetric examinations will be performed on designated SSES Units 1 and 2 components to detect the presence of discontinuities throughout the Code required volume of component material. Volumetric examination techniques available for use in this ISI Program are either radiographic (RT) or ultrasonic (UT). Ultrasonic examination techniques are the preferred volumetric examination techniques for SSES Units 1 and 2 components. Radiographic examination techniques are not specified for volumetric examination of any SSES Unit 1 or 2 components scheduled per this ISI Program; however, radiography is a permissible volumetric examination technique and may be considered, as needed.

Ultrasonic examinations will be conducted in accordance with the NDE requirements of mandatory Appendix I of the Code. Radiography examinations shall be conducted in accordance with the NDE requirements of Article 2 of ASME Section V (Reference 1.3.2.1.1).

2.7.1.4 Alternative Examination Methods

In accordance with IWA-2240, alternative examination methods, a combination of examination methods, or newly developed examination techniques may be substituted for the methods specified in the Code. Alternative examination methods implemented in accordance with this

ISI Program will be utilized following demonstration to the satisfaction of the ANII, that the results exhibited by the alternative examination method are equivalent or superior to those of the Code specified method.

2.7.1.5 Supplemental Examinations

To assist in the evaluation of examinations of SSES Units 1 and 2 components required by this ISI Program - particularly, those examinations, which detect flaws or the evidence of flaws - other examination methods and techniques, in addition to those specified in the Code, may be employed. These supplemental examinations may serve to:

- confirm the existence of a flaw or flaws,
- characterize the size, shape, orientation, and nature of the flaw(s), or
- declare a component as acceptable for continued service following an acceptable supplemental examination.

2.7.2 Extent of Examination

Extent of examination refers to the boundaries within which the examination requirements of the Code are to be applied, such as the number and type of components selected for examination, and including, the surfaces, areas, or volumes, within the selected components where the specified NDE methods are to be directed. The extent of examination of SSES Units 1 and 2 Class 1 and 2 components have been established in accordance with Tables IWB-2500-1 and IWC-2500-1 of the Code; Table IWF-2500-1 of the 1990 Addenda establishes the extent of examination for Class 1, 2, and 3 component supports (See 5.3). Code Case N-509 (See 5.1) provides the extent of examination for Class 1, 2, and 3 integral attachments.

2.7.2.1 Selection of Components For Examination

All SSES Units 1 and 2 components within the scope of this ISI Program are subject to Code requirements; however, the Code employs specific "selection criteria," such that for many Code Examination Categories and Item Numbers, only those components which meet this criteria are selected and required to be routinely nondestructively examined in accordance with Code rules.

The specific criteria, utilized in selection of SSES Units 1 and 2 components for examination during the second inservice inspection interval, is addressed in 6.0, 7.0, and 8.0 of this ISI Program. A quantitative summary of total components and selected components (by Examination Category) is also provided in these sections. Note, however, that the totals and selection tallies provided represent the initial component selections for the second inservice inspection interval. Throughout the interval, changes in plant configuration

resulting from plant repairs, replacements, or modifications, and/or revisions to the ISI Program, may alter the component totals. Selection tallies will be altered accordingly to ensure continued conformance to Code requirements.

2.7.2.2 Multiple-Component Concept

Multiple components, as defined in this ISI Program, refers to a grouping of like components based on similarities in design parameters, and/or function within their respective system. The "multiple-component concept" is used frequently in the selection of nonpiping components in a variety of Code Examination Categories. Basically, for a multiple-component group (i.e., 1 multiple nonpiping components, such as valves, pumps, heat exchangers, etc.), the Code allows for selection of only one component from the group of these multiple components for examination.

Where the multiple-component concept is applied for selections of SSES Units 1 and 2 components, it is so noted under the appropriate Code Examination Category/Item Number in 6.0, 7.0, and 8.0 of this ISI Program. Appendix C contains a complete identification and listing of all SSES Units 1 and 2 multiple-component groups.

2.7.2.3 Examination Requirements Figures

The required surfaces, areas, or volumes, within the selected SSES Units 1 and 2 components and component supports, where the specified NDE methods are to be directed are illustrated by the Examination Requirements Figures IWB-2500-1 through 18, IWC-2500-1 through 13, IWD-2500-1, and IWF-1300-1, as referenced in Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, and IWF-2500-1 (1990 Addenda), respectively. These figures will be utilized to determine the extent to which nondestructive examination methods need to be applied to ensure adequate examination coverage. Surfaces, areas, or volumes of which 100% of the Code required surfaces, areas, or volumes cannot be completely examined in accordance with the Examination Requirements Figures will be documented as to the cause and percentage of reduced examination coverage.

Examinations with greater than 90% examination coverage will be acceptable in accordance with Code Case N-460.

Examinations with less than (90.1%) examination coverage will be evaluated for:

alternative examination methods/techniques, alternative component selections, preparation of a relief request to justify acceptance of the reduction in coverage.

2.7.2.3.1 ASME Code Case N-460

Reduced examination coverage of SSES Units 1 and 2 Class 1 and 2 welds will be evaluated in accordance with ASME Code Case N-460, adopted by this ISI Program (See 4.0). In accordance with Code Case N-460, reduced examination coverage of Class 1 and 2 welds, due to interference by another component or part geometry, may be accepted, provided the reduction in coverage is less than 10%. SSES Units 1 and 2 Class 1 and 2 weld examinations in which the examination coverage exceeds 90% of the required surfaces, areas, or volumes will be considered acceptable and "essentially 100%."

2.8 EXAMINATION EVALUATION

Flaws detected during ISI examinations or preservice examinations following repairs or replacement of SSES Units 1 and 2 Class 1, 2, and 3, components and component supports, will be characterized and evaluated in accordance with the standards for examination evaluation in Article IWX-3000 of the Code.

Evaluation of flaws will include comparison of the examination results with:

- the recorded results of preservice examinations and prior inservice examinations (if any), and
- the applicable Code examination acceptance standards (See 2.9).

Verified changes of known flaws from prior examinations shall be recorded in accordance with the Code.

SSES Units 1 and 2 Class 1, 2, and 3 component examination results which exceed the specified acceptance standards may be evaluated as acceptable for continued service by analytical evaluation. Analytical evaluation of flaws will be conducted in accordance with IWB-3600, IWC-3600, IWD-3000 and/or Code Cases N-463-1 and N-494, as appropriate. In accordance with IWF-3122.3 (1990 Addenda), component supports which do not meet acceptance standards may also be analyzed to substantiate the supports' integrity for its intended service.

2.9 EXAMINATION ACCEPTANCE STANDARDS

Nondestructive examinations performed on SSES Units 1 and 2 components will be evaluated by comparison of the examination results with examination acceptance standards, typically provided in the Code Articles IWX-3000.' Acceptance standards to be utilized are as referenced in Tables IWX-2500-1 for Class 1, 2, and 3 components; component support acceptance standards are as referenced in Table IWF-2500-1 from the 1990 Addenda of the Code (See 5.3), and integral attachment acceptance standards are as referenced in Code Case N-509 (See 5.1).

Where acceptance standards for a particular component are not available in the Code, flaws detected may be evaluated in accordance with acceptance

standards applicable to the construction of the component, such as ASME Section III or the component design specifications. Flaw disposition in this manner will be fully documented, and is subject to review by jurisdictional regulatory and enforcement authorities.

SSES Units 1 and 2 Class 1, 2, and 3 components whose examinations reveal flaw indications which exceed the specified acceptance standards or exhibit unacceptable conditions shall be unacceptable for continued service until the unacceptable condition is rectified or evaluated as acceptable for continued service in accordance with the Code.

2.10 SYSTEM PRESSURE TESTING REQUIREMENTS

SSES Units 1 and 2 Class 1, 2, and 3 pressure retaining components within the scope of this ISI Program shall be subject to the system pressure testing requirements of Articles IWX-5000 of the Code. Details of the System Pressure Testing Program are outside of the scope of this document. The SSES Units 1 and 2 system pressure testing program requirements are contained in ISI technical document ISI-T-119.0/219.0 (1.3.3.4). SSES-specific examination requirements, schedules, Relief Requests, etc., are contained therein.

2.11 ISI DRAWINGS

The ISI drawings are a collection of SSES plant-specific drawings designed to facilitate implementation and documentation of this ISI Program. The ISI drawings consist of the:

ISI Classification and Boundary Identification drawings,
Weld/Hanger/Component Identification drawings, and the
System Pressure Testing drawings.

The ISI drawings, intended solely for inservice inspection, have been prepared from the SSES plant design drawings, and are controlled and maintained as ISI records. Separate drawings have been prepared for Unit 1 and Unit 2.

2.11.1 ISI Classification and Boundary Identification Drawings

The systems or portions of systems subject to the examination and testing requirements[4] of the ISI Program for SSES Unit 1 and Unit 2, and the associated Class 1, 2, and 3 boundaries, are documented on coded piping and instrument diagrams (P&IDs) - the ISI Classification Boundary Drawings.

[4] Inservice testing of pumps and valves is specifically excluded from the scope of both this document and the ISI Classification Boundary Drawings; however, system pressure testing is performed in accordance with boundaries and classifications established on the ISI Classification Boundary Drawings.

These drawings graphically:

establish the SSES Units 1 and 2 boundaries within which the ASME Section XI rules are applied;
define the ISI classification (Class 1, 2, or 3) assigned to systems/components within the ISI boundaries; and
illustrate specific systems/components within the ISI boundaries which are exempt from certain Section XI requirements via Code-allowed exemptions.

A listing of the ISI Classification and Boundary Identification Drawings may be found in Appendix D.

2.11.2 Weld/Hanger/Component Identification Drawings

The weld, hanger, and component identification drawings are three individual sets of drawings prepared from the SSES plant design drawings to locate, and uniquely identify, all non-exempt welds, supports, and equipment within the scope of the ISI Program boundaries.

The weld identification drawings, modeled after the SSES piping fabrication isometrics, illustrate the location of all nonexempt circumferential and longitudinal butt welds, socket welds, and branch connection welds within the scope of the ISI Program. Unique ISI identification numbers for each weld on the drawing are also provided. The weld identification numbers are utilized for documentation of Code nondestructive examinations, and also, assist in providing traceability to records of previous nondestructive examinations of the welds, both PSI/ISI and during plant construction.

The hanger identification drawings are a composite of the SSES piping fabrication isometrics, hanger detail drawings, and the piping stress isometrics. These drawings locate all nonexempt supports in piping within the scope of this ISI Program. Also, the drawings provide unique ISI identification numbers, necessary for implementation of Code nondestructive examinations and traceability to records of previous nondestructive examinations (e.g., PSI/ISI and plant construction). In addition, the hanger identification isometrics also locate and uniquely identify all nonexempt integrally welded attachments associated with the illustrated component supports.

The component detail drawings illustrate all nonexempt welds, supports, bolting, and integral attachments on major SSES plant equipment (e.g., the RPV, heat exchangers, pumps, etc.) within the scope of the ISI Program. These drawings have been compiled from the equipment supplier's design drawings and records. As with the weld and hanger identification isometrics, all ISI components are located and uniquely identified.

Tables listing the ISI Weld, Hanger, and Component Identification Drawings may be found in Appendix D.

2.11.3 System Pressure Testing Drawings

The system pressure testing drawings, prepared from the SSES ISI Classification and Boundary Identification Drawings, graphically define the pressurization and VT-2 visual examination boundaries within a system or portion of system subject to a given system pressure test. The system pressure test drawings include system functional/inservice test drawings, hydrostatic test drawings, and Class 1 leak test drawings.

These drawings are intended to be utilized in conjunction with the SSES System Pressure Testing Program (1.3.3.4) and plant implementing procedures to perform the testing. The drawings are also used in documenting the nondestructive examinations.

2.12 RECORDS AND REPORTS

2.12.1 ISI Database

In order to ease the monumental task of managing the data necessary to define and implement the SSES Unit 1 and Unit 2 ISI Programs, individual databases residing within the PPL corporate main frame computer are utilized. The ISI Pro-Manager database are, in essence, the ISI Program. Within these databases, a complete listing of all nonexempt components within the ISI Program scope, are maintained. Also included are all of the related Code requirements pertinent to each of the components. Moreover, the ISI Pro-Manager database is used to schedule and track nondestructive examinations, and continuously maintain a historical record of previous ISI examinations.

The ISI database is a controlled access database and is maintained as-built for components within the ISI boundaries.

2.12.2 Inservice Inspection Outage Summary Report

Following the completion of an inservice inspection conducted during a SSES Unit 1 or 2 plant refueling and inspection outage, PPL will prepare the "Inservice Inspection Outage Summary Report" in accordance with the applicable requirements of Article IWA-6000. Note however, in addition to the Code requirements, the scope of the subject report has been optionally expanded by PPL to provide more comprehensive outage reporting including such areas as:

Class 3 component examinations,
R-1 Forms, regarding repairs to ASME Section I, IV, or VIII components,
Augmented inservice inspections,
Technical Specification snubber functional testing, and
Erosion/Corrosion nondestructive examinations.

As such, the SSES "Inservice Inspection Outage Summary Report" will, typically, address the following:

Piping and Components examinations,
Reactor Pressure Vessel Internal examinations,
Reactor Pressure Vessel External examinations,
System Pressure tests,
Snubber Functional tests,
Snubber Visual examinations,
Erosion/Corrosion examinations, and
ASME repairs and replacements, including Forms NIS-2 and R-1.

The "Inservice Inspection Outage Summary Report" will be submitted along with Form NIS-1, "Owners Report for Inservice Inspections," found in Mandatory Appendix II of the Code.

The "Inservice Inspection Outage Summary Report" will be submitted within 90 days of completion of the inservice inspection conducted during a SSES plant refueling outage. For purposes of determining the start of the 90-day cycle, completion of the inservice inspection is considered to coincide with breaker closure. The summary report, as submitted, will include all examinations, tests, repairs, and replacements performed since the preceding summary report.

3.0 EXEMPTIONS AND POSITION STATEMENTS

3.1 CODE ALLOWED EXEMPTIONS

The Code rules and requirements allow certain Class 1, 2, and 3 components or portions of components (and/or their component supports), which meet certain conditions specified in the Code, to be exempt from the examination requirements[5] of the Code. The specific Code Exempted piping systems, portions of systems, and/or components are graphically illustrated on the ISI drawings (See 2.11.1).

3.1.1 Class 1 (IWB) Exemptions

Class 1 exemptions are taken directly from the Code, per Paragraph IWB-1220. SSES Units 1 and 2 Class 1 components, within the scope of this ISI Program, and which meet the following conditions, have been exempted from the Code examination requirements (except VT-2) of Subarticle IWB-2500:

3.1.1.1 SSES Units 1 and 2 components that are connected to the reactor coolant system and are part of the reactor coolant pressure boundary and, that are of such a size and shape such that upon postulated rupture, the resulting flow of coolant from the reactor coolant system under normal operating conditions is within the capacity of makeup systems which are operable from on-site emergency power are

[5] Volumetric, surface, and visual (VT-1, VT-3) examination requirements except visual VT-2. No pressure retaining components are exempt from visual VT-2 examination during system pressure testing, exemptions which have been applied to this ISI Program are detailed below.

exempted from the volumetric and surface examination requirements of IWB-2500.

The maximum size reactor coolant system or reactor coolant pressure boundary line break that can be made-up by the SSES Unit 1 or Unit 2 makeup systems (powered by on-site emergency power) are:

- 1.5 NPS [calculated - 1.41 inches (i.d.)] for water lines, and
- 3 NPS [calculated - 2.82 inches (i.d.)] for steam lines.

3.1.1.2 SSES Units 1 and 2 piping of NPS 1 and smaller.

3.1.1.3 SSES Units 1 and 2 components and their connections in piping - one inlet pipe and one outlet pipe - each of which is NPS 1 and smaller.

3.1.1.4 SSES Units 1 and 2 reactor pressure vessel (bottom) head connections and associated piping, NPS 2 and smaller, made inaccessible by control rod drive penetrations.

3.1.2 Class 2 (IWC) Exemptions

Class 2 exemptions are taken directly from the Code, per Paragraph IWC-1220. Components within Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) Systems (or portions of systems) may be exempted in accordance with the exemptions provided in Paragraph IWC-1221. Components within systems (or portions of systems) other than RHR, ECC, and CHR systems may be exempted in accordance with the exemptions provided in Paragraph IWC-1222.

SSES Units 1 and 2 Class 2 components, within the scope of this ISI Program, and which meet the following conditions, have been exempted from the Code examination requirements (except VT-2) of Subarticle IWC-2500:

3.1.2.1 Components within SSES Units 1 and 2 Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) Systems

- Vessels, piping, pumps, valves, and other components NPS 4 and smaller,
- Component connections NPS 4 and smaller (including nozzles, socket fittings, and other connections) in vessels, piping, pumps, valves, and other components of any size,
- Piping and other components of any size beyond the last shutoff valve in open-ended portions of systems that do not contain water during normal plant operating conditions.

3.1.2.2 Components within SSES Units 1 and 2 Systems (or Portions of Systems) other than RHR, ECC, and CHR Systems

- Vessels, piping, pumps, valves, and other components NPS 4 and smaller,
- Component connections NPS 4 and smaller (including nozzles, socket fittings, and other connections) in vessels, piping, pumps, valves, and other components of any size,
- Vessels, piping, pumps, valves, other components, and component connections 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,
- Piping and other components of any size beyond the last shutoff valve in open-ended portions of systems that do not contain water during normal plant operating conditions.

3.1.2.3 SSES Units 1 and 2 piping support members and piping support components (in all Class 2 systems within the scope of this ISI Program) that are encased in concrete shall also be considered exempt.

3.1.3 Class 3 (IWD) Exemptions

See 3.1.5, Class 1, 2, and 3 Integral Attachments Exemptions

3.1.4 Class 1, 2, and 3 Component Support Exemptions

In accordance with 5.3, SSES Units 1 and 2 Class 1, 2, and 3 component supports are subject to the examination requirements of Subsection IWF of the 1990 Addenda of the Code. Per Paragraph IWF-1230 of the 1990 Addenda, component supports (piping and non-piping), connected to SSES Units 1 and 2 Class 1, 2, and 3 components exempted from examination in accordance with IWB-1220, IWC-1220, and IWD-1220, shall be considered exempt from the requirements of Subarticle IWF-2500.

3.1.5 Class 1, 2, and 3 Integral Attachments Exemptions

SSES Units 1 and 2 integral attachments to Class 1, 2, and 3 components within the scope of this ISI Program, are subject to the alternative examination requirements, including the exemption criteria, found in Code Case N-509 (See 5.1).

3.1.5.1 Integral attachments of Class 1 and 2 components exempted in accordance with IWB-1220 and IWC-1220, shall also be considered exempt from the alternative examination requirements of Code Case N-509.

3.1.5.2 Class 3 integral attachment exemptions are taken directly from the Code, Paragraph IWD-1220. SSES Units 1 and 2 Class 3 integral attachments within the scope of this ISI Program, and which meet the following conditions, have been exempted from the alternative examination requirements of Code Case N-509:

SSES Units 1 and 2 Class 3 integral attachments of supports and restraints to components that are NPS 4 and smaller within the system boundaries of Examination Categories D-B and D-C[6] of Table IWD-2500-1 shall be exempt from VT-1 visual examination.

SSES Units 1 and 2 Class 3 integral attachments of supports and restraints to components that exceed NPS 4 within the system boundaries of Examination Categories D-B and D-C[6] of Table IWD-2500-1 shall be exempt from VT-1 visual examination provided:

- 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
- the components operate at a pressure of 275 psig or less and at a temperature of 200°F or less.

3.2 PPL POSITION STATEMENTS AND CLARIFICATIONS

In some cases, certain Code rules and requirements, in PPL's opinion, are subject to interpretation and, therefore, require further clarification on their use. The following "Position Statements and Clarifications" have been included to discuss/clarify PPL's interpretation and intended application of the subject Code rules in this ISI Program.

3.2.1 Redundant Examination Requirements - Examination Categories B-F and B-J

3.2.1.1 Class 1 Pressure Retaining Dissimilar Metal Piping Welds

The Code contains redundant requirements for the examination of Class 1 pressure retaining dissimilar metal piping welds. That is, both Examination Categories B-F and B-J require examination of all "dissimilar metal welds between combinations of:

(a) carbon or low alloy steels to high alloy steels
(b) carbon or low alloy steels to high nickel alloys
(c) high alloy steels to high nickel alloys"

In order to avoid duplication of examinations and/or dual accounting of these welds due to these redundant requirements, it is PPL's intention to examine all Class 1 dissimilar metal piping welds within the scope of this ISI Program, in accordance with Examination Category B-J.

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[6] Examination Category D-A of the 1989 Code is not applicable to SSES Units 1 and 2. However, Examination Category D-A is utilized in Code Case N-509 in the examination of Class 3 integral attachments.

This position is substantiated by changes found in Table IWB-2500-1 of the 1989 Addenda to the Code:

- The scope of Examination Category B-F was revised to include only "pressure retaining dissimilar metal welds in vessel nozzles." Item Numbers B5.130, B5.140, and B5.150 have been deleted.

- The Examination Category B-J Notes require examinations of "all dissimilar metal welds not covered under Category B-F," i.e., dissimilar metal piping welds.

The related examination requirements for these components (i.e., Examination Requirements/Figure No., Examination Method, Acceptance Standard, and Extent and Frequency of Examination) are the same regardless of Examination Category. This interpretation only affects the programmatic accounting for these welds.

3.2.1.2 Terminal End to Reactor Pressure Vessel Welds

Table IWB-2500-1, Examination Category B-J, Note (1), requires examination of all pressure retaining piping welds at terminal ends in each pipe or branch run connected to vessels. In this ISI Program, the terminal end weld to the SSES Units 1 and 2 reactor pressure vessels is considered to be the RPV nozzle-to-piping run weld (e.g., nozzle-to-safe end, nozzle-to-flange, etc.). Seventeen of the 30 terminal end nozzle-to-piping run welds are dissimilar metal welds, and are also subject to the examination requirements of Examination Category B-F.

In order to avoid duplication of examinations and/or dual accounting of these welds due to these redundant requirements, it is PPL's intention to examine all Class 1 dissimilar metal welds in vessel nozzles in accordance with Examination Category B-F. All terminal end to vessels welds not included in Examination Category B-F will be examined in accordance with Examination Category B-J.

The related examination requirements for these components (i.e., Examination Requirements/Figure No., Examination Method, Acceptance Standard, and Extent and Frequency of Examination) are the same regardless of Examination Category. This interpretation only affects the programmatic accounting for these welds.

3.2.2 Class 2/3 Nonpiping Component Exemptions

In applying the Code rules of Subparagraphs IWC-1221(a) and IWC-1222(a) regarding exemption of Class 2 components - particularly non-piping components and equipment - Footnote 2 to Paragraphs IWC-1221(a)(1) and IWC-1222(a)(1) of the 1989 Addenda of the Code was used for guidance. SSES Units 1 and 2 Class 2 non-piping component exemptions are interpreted as follows:

- Vessels, pumps, and valves and their connections in piping NPS 4 and smaller will be considered exempt from the examination requirements of Subarticle IWC-2500. In piping is defined as having a cumulative inlet and a cumulative outlet pipe cross-sectional area neither of which exceeds the nominal NPS 4 OD cross-sectional area.

- The OD for NPS 4 pipe is 4.5"; therefore, the sum of the actual cross-sectional areas of the inlet or outlet piping may not exceed $\pi(4.5/2)^2$ or 15.9 in.^{2} for the component to be considered exempt.

Likewise, Class 3 integral attachments of components - vessels, pumps, and valves - and their connections in piping, having a cumulative inlet and a cumulative outlet pipe cross-sectional area neither of which exceeds the NPS 4 nominal OD cross-sectional area, shall be exempted from the VT-1 visual examination requirements of Code Case N-509.

For the purpose of applying this criteria, it is assumed that the intention of the Code is to accumulate the cross-sectional areas of primary fluid system piping to/from a given component. That is, equipment vents and drains will not be accumulated with the system inlet or outlet cross-sectional areas.

3.2.3 Class 2 Dissimilar Metal Pressure Retaining Piping Welds

In accordance with ASME Code Interpretation XI-1-89-57, Class 2 dissimilar metal pressure retaining welds will be included in Examination Category C-F-1, "Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping."

3.2.4 Successive Inspections - First Interval verses Second Interval

In accordance with Paragraphs IWB-2420 and IWC-2420, the sequence of component examinations established during the first inservice inspection interval shall, to the extent practical, be repeated during the second inservice inspection interval. As such, to facilitate conformance with Code requirements, the following guidelines will be applied when scheduling examinations for the second inservice inspection interval:

- Examinations will be scheduled for the same period, (i.e., an examination performed during the first period of the first inservice inspection interval will be scheduled for the first period of the second inservice inspection interval).

- The scheduling requirements of Inspection Program B (IWB-2412 and IWC-2412) are interpreted to take precedence over IWB-2420 and IWC-2420. In certain instances, it is impractical to satisfy both the requirements of Inspection Program B and successive inspection requirements for all components within an Examination Category.

- With the exception of Examination Category B-A (3.2.4.1), the requirements of IWB-2420 and IWC-2420 will take precedence over Table IWX-2500-1 notes which allow an examination to be deferred to the end of the interval.

- The requirements of IWB-2420 and IWC-2420 may not be practical for those Examination Categories where the selection criteria has changed dramatically from the first inservice inspection interval to the second inservice inspection interval (e.g., Examination Category C-F verses C-F-1/C-F-2). That is, all components may not be reselected thereby, making it impractical to repeat the examination sequence, and also, conform to Inspection Program B requirements. In this case, scheduling will be handled on a case-by-case basis, and Inspection Program B requirements will be given first consideration.

- ALARA considerations may override successive examination scheduling when doing so is considered to result in reduced personnel radiation exposure.

3.2.4.1 Successive Inspections of Examination Category B-A Components

Successive inspection scheduling of SSES Units 1 and 2 Examination Category B-A components in accordance with Paragraph IWB-2420 is not reasonable in that it does not represent the most efficient means of performing these examinations. Inservice inspection implementation experience gained throughout the first inservice inspection interval has confirmed that although all the necessary first interval examinations were completed in compliance with the Code, greater attention to scheduling of these examinations would make more efficient use of resources, minimize costs, and reduce overall personnel radiation exposure. Due to the specialized technologies and equipment utilized in performing these examinations, flexible planning of examinations is essential. Per Table IWB-2500-1, Examination Category B-A, Item Numbers B1.10, B1.11, B1.12, B1.20, B1.21, and B1.22, deferral of inspection of these components to the end of the interval is permissible. It is PPL's interpretation that deferral to the end of the interval is allowed by the Code, and the subject components will be scheduled accordingly. However, in keeping with the intent of Paragraph IWB-2420, Examination Category B-A examinations will be scheduled such that individual component examinations will not exceed two consecutive periods between successive examinations.

3.2.5 Reexamination of Components Initially Selected for Examination during the First Inservice Inspection Interval

In many Examination Categories throughout Table IWC-2500-1, a note stating that the components "selected for the initial examination shall be reexamined over the service lifetime of the component." This requirement is interpreted to be applicable only for those Examination Categories where the Code examination requirements of the first inservice inspection interval remained essentially unchanged in the 1989 Code. As such, components selected for examination during the first inservice inspection interval will be reselected for examination during the second inservice inspection interval. This requirement is interpreted to overrule other selection options found in the Tables which otherwise might allow selection of various previously unexamined components.

Examination Categories in which examination requirements have changed significantly from the first inservice inspection interval are considered excluded from this requirement.

Note, this interpretation also applies to Note 2 of Table IWB-2500-1, Examination Category B-J, and Note 4 of Table IWF-2500-1, Examination Category F-A of the 1990 Addenda.

3.2.6 Selection of Examination Category B-J Pressure Retaining Welds in accordance with Note (1) of Table IWB-2500-1

Note (1) of Table IWB-2500-1, Examination Category B-J details the extent of examination of circumferential, branch connection, and socket welds in Class 1 piping. Note (1)(d) states that examinations shall include "additional piping welds so that the total number of ... welds ... selected for examination equals 25% of the ... welds ...." This note is interpreted by this ISI Program to require selection of a maximum of 25% of the total nonexempt Examination Category B-J welds. Welds within this 25% tally will be selected in accordance with the criteria specified in Note (1).

3.2.7 Compliance with IWC-2412 for Examination Categories C-A and C-B

Paragraph IWC-2412 (Inspection Program B) requires that examinations be distributed throughout the interval such that no more than approximately one third of the total examinations (per Examination Category) are completed by the end of the first period, two thirds by the end of the second period, and the remainder completed during the third period. Due to the small number of components in Examination Categories C-A and C-B, it is impractical to adhere strictly to the requirements of IWC-2412. That is, there are only two components requiring examination in Examination Category C-A. Due to the proximity of the nozzle-to-shell weld and the nozzle inside radius examinations, there are, also, essentially two examination volumes in Examination Category C-B; these examinations are typically performed concurrently.

Examinations within these categories will be scheduled such that component examinations are completed during different periods of the interval (e.g., the first period and the third period). This scheduling is considered to meet the intent of IWC-2412.

3.2.8 Examination of RPV Integrally Welded Attachments in accordance with Code Case N-509

Table 2500-1, Examination Category B-K, of Code Case N-509 (See 5.1), lacks clear definition of the extent of examination of integrally welded attachments to the SSES Units 1 and 2 reactor pressure vessels (Item No. B10.10). Note (4) of Table 2500-1 states "in the case of multiple vessels, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination." The SSES reactor pressure vessel is not a multiple component; however, lacking other specific guidance, Note (4) is interpreted in this ISI Program to require selection of one integrally welded attachment per RPV.

3.2.9 Categorization of IWF Examination Category F-A Item Numbers

In accordance with Note (1) of Table IWF-2500-1, Examination Category F-A of the 1990 Addenda, Item Numbers "shall be categorized to identify support types by component support function." It is PPL interpretation that this note is applicable to piping supports only. That is, this note need not be applied to nonpiping (equipment) supports.

Unlike piping supports, selection of nonpiping supports is not based on proration by support type; the categorization by type of nonpiping supports is of no particular use and complicates the program. In this ISI Program, all nonpiping supports will simply be included in Item Number F1.40.

4.0 ASME CODE CASES

The ASME periodically publishes Code Cases to ASME Section XI. These Code Cases are issued primarily to provide alternative rules to existing Code rules, or to provide timely rules and requirements for circumstances not covered by existing Code rules. Adoption of various pertinent Code Cases allows an ISI program the advantages of these alternative rules/clarifications prior to their later integration into subsequent Code editions and addenda.

All Code Cases intended to be used during the inservice inspection interval must be identified in the ISI program and are subject to acceptance by the jurisdictional regulatory and enforcement authorities.

The Code Cases to be used during the SSES Units 1 and 2 second inservice inspection interval are identified in 4.1 and 4.2, below.

Any new and/or revised Code Cases published by the ASME throughout the course of the second inservice inspection interval may be evaluated for future inclusion into this ISI Program.

4.1 ASME CODE CASES ENDORSED BY USNRC REGULATORY GUIDE 1.147

In order to facilitate acceptance of published Code Cases, USNRC Regulatory Guide 1.147 periodically provides an updated listing of the ASME Section XI Code Cases that are generally acceptable to the NRC for implementation in an ISI program. The Code Cases adopted by this ISI Program which have been endorsed by the USNRC in Regulatory Guide 1.147 are listed as follows:

- 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;
- N-335-1, Rules for Ultrasonic Examination of Similar and Dissimilar Metal Piping Welds;
- N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds;
- N-461, Alternative Rules for Piping Calibration Block Thickness[7];
- N-463-1, Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2;
- N-458, Magnetic Particle Examination of Coated Materials;
- N-489, Alternative Rules for Level III NDE Qualification Examinations; and
- N-494, Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2.

4.2 ASME CODE CASES NOT ENDORSED BY USNRC REGULATORY GUIDE 1.147

Code Cases not endorsed by the latest revision of USNRC Regulatory Guide 1.147 may be included in this ISI Program. In accordance with footnote 6 of 10 CFR 50.55a, these Code Cases may be considered for use and may be authorized by the NRC upon request. Pursuant to 10 CFR 50.55a(a)(3), petition for appropriate use of these Code Cases, along with justification supporting their use, is provided in 5.1.

Code Cases adopted for use by this ISI Program, which are not endorsed by USNRC Regulatory Guide 1.147, are listed as follows:

- N-509, Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments, and
- N-524, Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping.

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[7] Code Case N461 is subject to the following condition: thickness measurements and weld joint contour of the pipe/component must be known and used by the inspector who conducts the UT Examination.

5.0 ALTERNATIVE INSERVICE INSPECTION PROGRAM REQUIREMENTS

In accordance with 10 CFR 50.55a paragraphs (b)(2) and (g)(4)(ii), inservice inspections of SSES Units 1 and 2 components during the second inservice inspection interval shall meet the requirements set forth in the 1989 Edition of the Code and 1995 Section XI for Appendix VIII. Per 10 CFR 50.55 2(a)(3), alternative requirements to those specified (or portions of those specified) may be used, when authorized[8], provided:

- the proposed alternatives would provide an acceptable level of quality and safety, or
- compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Alternative inservice inspection requirements to be utilized in this ISI Program during the second inservice inspection interval, which are considered by PPL to be equivalent to (or better than) those prescribed by the governing Code, or are not covered by the governing Code, are included for discussion in this section.

Alternative inservice inspection requirements proposed by PPL in lieu of Code requirements which constitute hardship or unusual difficulty, are addressed in this ISI Program by relief request (See 10.0).

5.1 UNENDORSED ASME CODE CASES

Use of ASME Code Cases are subject to acceptance by the jurisdictional regulatory and enforcement authorities. In order to facilitate acceptance of published Code Cases, USNRC Regulatory Guide 1.147 periodically provides an updated listing of the ASME Section XI Code Cases that upon review by the USNRC, are generally acceptable for implementation in an ISI program.

All Code Cases intended to be used during the second inservice inspection interval have been identified in this ISI program in 4.0. Some of these Code Cases are not currently endorsed by the latest revision of USNRC Regulatory Guide 1.147. In accordance with footnote 6 of 10 CFR 50.55a, other Code Cases may be considered for use, and may be authorized by the USNRC upon request. Per 10 CFR 50.55a(a)(3), appropriate use of the alternative inservice inspection requirements found in the following Code Cases is proposed by this ISI Program:

- N-509, Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments, and
- N-524, Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping.

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[8] Alternative requirements proposed in accordance with 10 CFR 50.55a(a)(3) must be authorized by the Director of the Office of Nuclear Reactor Regulation. Inclusion of proposed alternative requirements in this ISI Program submittal to the USNRC is considered petition for appropriate use of the designated alternative requirements.

Code Cases N-509 and N-524 offer alternative examination requirements for Class 1, 2, and 3 integrally welded attachments and Class 1 and 2 piping longitudinal welds, respectively. Both of these Code Cases received extensive consideration by the ASME, and were provided in the interest of optimization of inservice inspection examinations. While implementation of the governing Code requirements in these areas does not represent significant hardship, the extent of

examinations prescribed far exceeded the levels necessary to support continued plant quality and safety. Overall inservice inspection experience has shown good serviceability of these components, with little evidence of failure. Both of these Code Cases offer significant reductions in the extent of inservice inspection examinations while continuing to provide acceptable levels of plant quality and safety.

Code Case N-509 references, and stipulates, the concurrent use of Subsection IWF of the 1990 Addenda for the examination of component supports. This is because the selection of integrally welded attachments for examination is contingent upon component support selections. Per 5.3, to ensure appropriate use of Code Case N-509, the requirements of Subsection IWF of the 1990 Addenda have been adopted by this ISI Program. In addition, to ensure adequate sampling of integrally welded attachments, selection of component supports will, optionally, be prorated by the number of integrally attached component supports by Class.

Both Code Cases N-509 and N-524 have only been recently approved by ASME. These Code Cases were not in effect and available for review and inclusion in the latest issue of Regulatory Guide 1.147. Endorsement of these Code Cases is anticipated in a future revision of the Regulatory Guide.

5.2 INSERVICE INSPECTION REQUIREMENTS FOR ADDITIONAL EXAMINATIONS

In accordance with 10 CFR 50.55a paragraphs (g)(4) and (g)(5)(i), prior to the start of the inservice inspection interval, the inservice inspection program must be revised/updated. Per 10 CFR 50.55a(g)(4)(ii), the governing Code for subsequent inservice inspection intervals is the latest edition and addenda of the Code incorporated by reference in the regulations (i.e., 10 CFR 50.55a(b)(2)) 12 months prior to the start of the inservice inspection interval. Given a SSES Units 1 and 2 June 1, 1994 start-of-interval date, the governing ASME Section XI Code of record, updated for the second inservice inspection interval ISI Program, is the 1989 Edition.

In compliance with the Code, SSES Units 1 and 2 Class 1, 2, and 3 components and component supports, whose examinations reveal flaws or relevant conditions which exceed the specified acceptance standards are subject to additional examinations. Implementation of the Code rules governing additional examinations does not represent a significant hardship; however, the Additional Examinations rules found in the 1989 Code are considered to be somewhat random and difficult to quantify. The Additional Examinations rules found in the 1992 Edition of the Code offer an enlightened, clearer approach to additional examinations.

The 1992 Edition of the Code has not yet been incorporated into 10 CFR 50.55a by reference in 10 CFR 50.55a(b)(2). In accordance with 10 CFR 50.55a(a)(3), PPL

proposes the appropriate use of the alternative inservice inspection requirements of Paragraphs IWB-2430, IWC-2430, IWD-2430, and IWF-2430 of the 1992 Edition of the Code for rules governing the implementation of Additional Examinations of SSES Units 1 and 2 Class 1, 2, and 3 components (and component supports). These alternative requirements are to be invoked in lieu of the requirements found in the 1989 Edition of the Code (or 1990 Addenda for component supports).

The 1992 Code rules attempt to clarify the quantity of additional examinations required, while also allowing for the additional sample(s) to target components of similar materials and service, and subject to similar flaws, conditions, and failure modes, as opposed to a random sampling of "like" components. That is, once a flaw mechanism or relevant condition is characterized, this information may be utilized to identify engineered samples of other components to interrogate for similar flaws or relevant conditions. This approach is more in line with the methodology PPL has, and will continue to utilize to disposition nonconforming conditions, and in no way compromises the level of plant quality and safety.

When it becomes necessary to invoke the rules for Additional Examinations, the alternative requirements found in Paragraphs IWB-2430, IWC-2430, IWD-2430, and IWF-2430 of the 1992 Edition of the Code will be used for additional examination of SSES Units 1 and 2 Class 1, 2, and 3 components and component supports.

5.3 INSERVICE INSPECTION REQUIREMENTS FOR COMPONENT SUPPORTS

In accordance with 10 CFR 50.55a paragraphs (g)(4) and (g)(5)(i), prior to the start of the inservice inspection interval, the inservice inspection program must be revised/updated. Per 10 CFR 50.55a(g)(4)(ii), the governing Code for subsequent inservice inspection intervals is the latest edition and addenda of the Code incorporated by reference in the regulations (i.e., 10 CFR 50.55a(b)(2)) 12 months prior to the start of the inservice inspection interval. Given a SSES Units 1 and 2 June 1, 1994 start-of-interval date, the governing ASME Section XI Code of record, updated for the second inservice inspection interval ISI Program, is the 1989 Edition.

In accordance with 10 CFR 50.55a(a)(3), PPL proposes the appropriate use of Subsection IWF of 1990 Addenda to the 1989 Edition for rules for examination of SSES Units 1 and 2 Class 1, 2, and 3 component supports in lieu of Subsection IWF of the 1989 Edition of the Code.

Implementation of the examination requirements for component supports found in the governing Code do not represent a significant hardship; the requirements are, however, considered to be cumbersome and difficult to implement. Item Numbers found in Table IWF-2500-1, may require a single support to be dissected into various "sub-components" for examination. Given the quantity of supports typically found in a nuclear power facility, the task of managing support examinations would become quite massive. Subsection IWF of the 1990 Addenda of the Code, however, offers alternative, simplified rules for examination of Class 1, 2, and 3 component supports resulting in a more effective, more easily managed component support inspection program.

The 1990 Addenda has not yet been incorporated into 10 CFR 50.55a by reference in 10 CFR 50.55a(b)(2). However, the rules found in Subsection IWF of the 1990 Addenda

reflect incorporation of the alternative examination requirements for Class 1, 2, and 3 component supports found in ASME Code Case N-491, "Alternative Rules for Examination of Class 1, 2, 3, and MC Component Supports of Light-Water Cooled Power Plants." Code Case N-491 is considered acceptable for use per Regulatory Guide 1.147. Code Case N-491, and likewise Subsection IWF (1990 Addenda), effectively provides simplified rules for selection and examination of Class 1, 2, and 3 component support while maintaining acceptable levels of plant quality and safety.

In addition, this ISI Program has adopted the alternative rules for examination of Class 1, 2, and 3 integrally welded attachments found in Code Case N-509, "Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments" (See 5.1). Code Case N-509 references, and requires the concurrent use of, Subsection IWF of the 1990 Addenda.

Subsection IWF of the 1989 Edition of the Code with the 1990 Addenda will be used for rules for examination of SSES Units 1 and 2 Class 1, 2, and 3 component supports in lieu of Subsection IWF of the 1989 Edition of the Code.

6.0 INSERVICE INSPECTION PROGRAM - WELDS AND COMPONENTS

This section herein summarizes the Code requirements applicable to SSES Units 1 and 2 Class 1, 2, and 3 welds and components. Code Examination Categories and/or Item Numbers not applicable to SSES Units 1 and 2 have been intentionally excluded.

6.1 CLASS 1 COMPONENTS

6.1.1 Reactor Pressure Vessel and RPV Components

The SSES Units 1 and 2 Reactor Pressure Vessel, and Class 1 components associated with the reactor pressure vessels, are discussed herein exclusive of the remaining Class 1 components. For purposes of this ISI program, the RPV boundary includes the reactor pressure vessel and all appurtenances to the reactor pressure vessels out to, and including, the nozzle-to-safe end welds and the flanged connections to the RPV top head.

6.1.1.1 Examination Category B-A, Pressure-Retaining Welds in Reactor Vessel

Note, 10 CFR 50.55a(g)(6)(ii)(A) requires augmented examination of reactor vessel Examination Category B-A welds. Discussion of SSES Units 1 and 2 compliance with these regulations is found in 9.0, Augmented Inservice Inspection Program.

6.1.1.1.1 Shell Welds, Item Numbers B1.10, B1.11, and B1.12

In accordance with Table IWB-2500-1, Examination Category B-A, essentially 100% of the weld length of <u>all</u> SSES Units 1 and 2 circumferential and longitudinal reactor vessel shell welds will be volumetrically (UT) examined during the second inservice inspection interval.

Examinations of the reactor vessel shell welds may be deferred to the end of the interval (See 3.2.4.1).

6.1.1.1.2 Head Welds, Item Numbers B1.20, B1.21, and B1.22

In accordance with Table IWB-2500-1, Examination Category B-A, essentially 100% of the accessible weld length of all SSES Units 1 and 2 reactor vessel circumferential and meridional head welds will be volumetrically (UT) examined during the second inservice inspection interval. Examinations of the reactor vessel head welds may be deferred to the end of the interval (See 3.2.4.1).

6.1.1.1.3 Shell-to-Flange Weld, Item Number B1.30

In accordance with Table IWB-2500-1, Examination Category B-A, essentially 100% of the weld length of each of the SSES Unit 1 and 2 reactor vessel shell-to-flange welds will be volumetrically (UT) examined during the second inservice inspection interval. The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B and also, where practical, will be scheduled to parallel the sequence of examinations established during the first interval.

6.1.1.1.4 Head-to-Flange Weld, Item Number B1.40

In accordance with Table IWB-2500-1, Examination Category B-A, essentially 100% of the weld length of each of the SSES Unit 1 and 2 reactor vessel head-to-flange welds will be volumetrically (UT) and surface (MT) examined during the second inservice inspection interval. The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B and also, where practical, will be scheduled to parallel the sequence of examinations established during the first interval.

6.1.1.1.5 Beltline Region Repair Welds, Item Numbers B1.50 and B1.51

To date, there are no SSES Units 1 or 2 beltline region repair welds requiring examination in accordance with Table IWB-2500-1.

6.1.1.1.6 Examination Category B-A Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B1.10 Shell Welds	B1.11 Circumferential	5 (5)	5 (5)	Deferral of inspection to the end of the interval permissible	RR-4
	B1.12 Longitudinal	13 (13)	13 (13)	Deferral of inspection to the end of the interval permissible	RR-4
B1.20 Head Welds	B1.21 Circumferential	2 (2)	2 (2)	Deferral of inspection to the end of the interval permissible	N/A
	B1.22 Meridional	14 (14)	14 (14)	Deferral of inspection to the end of the interval permissible	RR-4
B1.30 Shell-to-Flange Weld		1 (1)	1 (1)	Inspection Program B	N/A
B1.40 Head-to-Flange Weld		1 (1)	1 (1)	Inspection Program B	RR-4
B1.50 Repair Welds	B1.51 Beltline Region	N/A	N/A	N/A	N/A

6.1.1.2 Examination Category B-D, Full-Penetration Welds of Nozzles in Vessels - Inspection Program B

6.1.1.2.1 Reactor Vessel Nozzle-to-Vessel Welds, Item Number B3.90

In accordance with Table IWB-2500-1, Examination Category B-D, all SSES Units 1 and 2 reactor vessel full penetration nozzle-to-vessel welds will be volumetrically (UT) examined during the second inservice inspection interval. The required examinations will be completed such that at least 25%, but not more than 50%, of the nozzles

will be examined by the end of the first inservice inspection period. The remaining examinations will be completed by the end of the interval. Individual weld examinations, where practical, will be scheduled to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.1.2.2 Reactor Vessel Nozzle Inside Radius Section, Item Number B3.100

In accordance with Table IWB-2500-1, Examination Category B-D, all SSES Units 1 and 2 reactor vessel nozzle inside radius sections (of nozzles to be examined per 6.1.1.2.1) will be volumetrically (UT) examined during the second inservice inspection interval. The required examinations will be completed such that at least 25%, but not more than 50%, of the nozzles will be examined by the end of the first inspection period. The remaining examinations will be completed by the end of the interval. Individual nozzle inside radius examinations will typically be completed coincident with the nozzle-to-vessel weld examinations of 6.1.1.2.1.

6.1.1.2.3 Examination Category B-D Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B3.90 Reactor Vessel Nozzle-to-Vessel Welds	30 (30)	30 (30)	25 - 50% first period 50 - 100% by the end of the third period	RR-2
B3.100 Reactor Vessel Nozzle Inside Radius Section	30 (30)	30 (30)	25 - 50% first period 50 - 100% by the end of the third period	N/A

6.1.1.3 Examination Category B-E, Pressure Retaining Partial Penetration Welds In Vessels

6.1.1.3.1 Partial Penetration Welds - Vessel Nozzles, Control Rod Drive Nozzles, and Instrumentation Nozzles, Item Numbers B4.11, B4.12, and B4.13, respectively

In accordance with Table IWB-2500-1, Examination Category B-E, 25% of all SSES Units 1 and 2 partial penetration welds will be visually VT-2 examined during the second inservice inspection interval Class 1 system hydrostatic test conducted in accordance with the System Pressure Test Program (See 1.3.3.4). Partial penetration welds from among control rod drive, vessel, and vessel instrumentation nozzles will be selected for examination. Selections will be distributed among the different types of partial penetration welds by selecting 25% by Item Number.

6.1.1.3.2 Examination Category B-E Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B4.10 Partial Penetration Welds	B4.11 Vessel Nozzles	3 (3)	1 (1)	Examinations concurrent with Class 1 system pressure test (See 1.3.3.4)	N/A
	B4.12 Control Rod Drive Nozzles	185 (185)	46 (46)	Examinations concurrent with Class 1 system pressure test (See 1.3.3.4)	N/A
	B4.13 Instrumentation Nozzles	61 (61)	15 (15)	Examinations concurrent with Class 1 system pressure test (See 1.3.3.4)	N/A

6.1.1.4 Examination Category B-F, Pressure Retaining Dissimilar Metal Welds (in Vessel Nozzles)

6.1.1.4.1 Reactor Vessel Nozzle-to-Safe End Butt Welds - NPS 4 or Larger, Item Number B5.10

In accordance with Table IWB-2500-1, Examination Category B-F, all SSES Units 1 and 2 reactor vessel nozzle-to-safe end dissimilar metal welds - NPS 4 or larger - will be volumetrically (UT) and surface (PT) examined during the second inservice inspection interval. The required

examinations will be performed coincident with the vessel nozzle examinations of Examination Category B-D (6.1.1.2)

6.1.1.4.1.a Reactor Vessel Nozzle-to-safe End Dissimilar Metal Butt Welds - less than NPS 4, Item B5.140

In accordance with Table IWB-2500-1, Examination Category B-F, all SSES Units 1 and 2 reactor Vessel nozzle-to-safe end dissimilar metal welds - less than NPS 4 - will be surface (PT) examined during the second inservice inspection interval and will be performed coincident with the vessel nozzle Examinations of Examination Category B-D (6.1.1.2).

6.1.1.4.2 RPV Examination Category B-F Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B5.10 Reactor Vessel Nozzle-to-Safe End Butt Welds NPS 4 or Larger	17 (17)	17 (17)	Examine coincident with Examination Category B-D examinations	N/A
B5.140 Reactor Vessel Nozzle-to-Safe End Dissimilar Metal Welds Less Than NPS 4	6 (6)	6 (6)	Examine coincident With Examination Category B-D examinations	N/A

6.1.1.5 Examination Category B-G-1, Pressure Retaining Bolting, Greater Than 2 in. In Diameter

6.1.1.5.1 Reactor Vessel Closure Head Nuts, Item Number B6.10

In accordance with Table IWB-2500-1 Examination Category B-G-1, all SSES Units 1 and 2 reactor vessel closure head nuts will receive a surface (MT) examination during the second inservice inspection interval. The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412,

Inspection Program B. Deferral of examinations to the end of the interval, previously allowed during the first inservice inspection interval, is not allowed during the second inservice inspection interval. Therefore, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval is not practical.

6.1.1.5.2 Reactor Vessel Closure Studs, in place, Item Number B6.20

In accordance with Table IWB-2500-1, Examination Category B-G-1, reactor vessel studs may be examined either in place (under tension), when the connection is disassembled, or when the studs are removed. All SSES Units 1 and 2 reactor vessel studs will be examined during the second inservice inspection interval. When the stud(s) are to be examined in place, a volumetric (UT) examination will be performed. Examination of reactor vessel studs, in place, will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Deferral of examinations to the end of the interval, previously allowed during the first inservice inspection interval, is not allowed during the second inservice inspection interval. Therefore, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval is not practical.

6.1.1.5.3 Reactor Vessel Closure Studs, when removed, Item Number B6.30

In accordance with Table IWB-2500-1, Examination Category B-G-1, reactor vessel studs may be examined either in place (under tension), when the connection is disassembled, or when the studs are removed. All SSES Units 1 and 2 reactor vessel studs will be examined during the second inservice inspection interval. In the event a stud(s) is removed, both volumetric (UT) and surface (MT) examinations will be performed. Surface examination of reactor vessel studs will be completed only in the event the stud(s) are removed from the flange. Based on experience from the first inservice inspection interval, at least four (4) studs will normally be removed to facilitate refueling activities.

6.1.1.5.4 Reactor Vessel Threads in Flange, Item Number B6.40

In accordance with Table IWB-2500-1, Examination Category B-G-1, the threads in SSES Units 1 and 2 reactor vessel flange stud holes will be examined volumetrically

(UT) during the second inservice inspection interval. The required examinations will be completed only in the event the connections are disassembled.

6.1.1.5.5 Reactor Vessel Closure Washers, Bushings, Item Number B6.50

In accordance with Table IWB-2500-1, Examination Category B-G-1, the SSES Units 1 and 2 reactor vessel stud closure washers and bushings will be visually VT-1 examined during the second inservice inspection interval. Examinations of all the closure washer surfaces will be accomplished in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Deferral of examinations to the end of the interval, previously allowed during the first inservice inspection interval, is not allowed during the second inservice inspection interval. Therefore, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval is not practical. The required examinations of the bushings will be accomplished only in the event the connections are disassembled.

6.1.1.5.5.a Dual-Diameter Boiling (Step Studs), Item Number B6.210

To compensate for damage to a bolting hole that occurred when removing bolting from Main Steam Isolation Valves (MSIVs), the damaged hole was enlarged and re-threaded to accept a large diameter bolt. A corresponding sized hole was not made in the valve cover. To allow closure of the cover, provide for proper anchorage of the bolt and maintain the ability for a pressure-retaining boundary, a dual diameter bolt was created. The larger diameter portion of the bolt (greater than 2 inches) is threaded into the valve body and acts as an anchor point. The smaller diameter portion of the bolt (2 inches or less) goes through the valve cover, has the tensioning nut placed on it, and acts as part of the pressure retaining boundary. Since the bolt is dual diameter, its inspection requirements are covered by two different Code Categories. For bolting >2", Code Category B-G-1 requires a volumetric examination of the bolt. For bolting $\leq$ 2", Code Category B-G-2 requires a VT-1 visual

examination of the bolt. At this time, PPL has elected to inspect this type of bolting under the more stringent B-G-1 requirements.

6.1.1.5.6 RPV Examination Category B-G-1 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B6.10 Reactor Vessel Closure Head Nuts	76 (76)	76 (76)	Inspection Program B	N/A
B6.20 Reactor Vessel Closure Studs, in place	76 (76)	76 (76)	Inspection Program B	N/A
B6.30 Reactor Vessel Closure Studs, when removed	76 (76)	76 (76)	Only when and if removed	N/A
B6.40 Reactor Vessel Threads in Flange	76 (76)	76 (76)	Only when and if connection is disassembled	N/A
B6.50 Reactor Vessel Closure Washers, Bushings	76 (76)	76 (76)	Inspection Program B	N/A
B6.2.10 Dual-Diameter Bolting (Step Studs)	1 (7)	1 (7)	Inspection Program B	N/A

6.1.1.6 Examination Category B-G-2, Pressure Retaining Bolting, 2 in. and Less In Diameter

6.1.1.6.1 Reactor Vessel Bolts, Studs, and Nuts, Item Number B7.10

In accordance with Table IWB-2500-1, Examination Category B-G-2, all SSES Units 1 and 2 reactor vessel bolts, studs, and nuts, 2 inches and under, will be visually VT-1 examined during the second inservice inspection interval. The required examinations may be performed with the bolting in place (under tension), when the connection is disassembled, or when the bolting is removed. Bolting examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B and, where practical, will

be scheduled to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.1.6.2 CRD Housings Bolts, Studs, and Nuts, Item Number B7.80

In accordance with Table IWB-2500-1, Examination Category B-G-2, SSES Units 1 and 2 CRD housing bolting will be visually VT-1 examined when, and if, disassembled.

6.1.1.6.3 RPV Examination Category B-G-2 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
B7.10 Reactor Vessel Bolts, Studs, and Nuts	3 (3)	3 (3)	Inspection Program B	N/A
B7.80 CRD Housings Bolts, Studs, and Nuts	185 (185)	185 (185)	Examine only when, and if, the connection is disassembled	RR-7

(1) Tallies given indicate the number of flanged (bolted) connections, not the number of bolts.

6.1.1.7 Examination Category B-H, Integral Attachments For Vessels

6.1.1.7.1 Reactor Vessel Integrally Welded Attachments, Item Number B8.10

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category B-K

6.1.1.8 Examination Category B-J, Pressure Retaining Welds In Piping

Examination Category B-J pressure retaining piping welds associated with the SSES Units 1 and 2 reactor vessels are discussed in conjunction with the Class 1 piping welds in 6.1.2.4.

6.1.1.9 Examination Category B-N-1, Interior Of Reactor Vessel

Note, in addition to the reactor vessel interior components examined in accordance with Examination Category B-N-1, a variety of reactor vessel internal components have been included for examination in the Augmented Inservice Inspection Program (See 9.0).

6.1.1.9.1 Reactor Vessel Interior, Item Number B13.10

In accordance with Table IWB-2500-1, Examination Category B-N-1, SSES Units 1 and 2 reactor vessel interior areas made accessible for examination by removal of components during normal refueling outages will be visually VT-3 examined each period during the second inservice inspection interval.

6.1.1.9.2 Examination Category B-N-1 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
Item Number B13.10 Reactor Vessel Interior	11 (11)	11 (11)	Examine each inspection period	N/A

(1) The number shown represents individual reactor vessel interior areas designated for examination.

6.1.1.10 Examination Category B-N-2, Integrally Welded Core Support Structures and Interior Attachments To Reactor Vessels

6.1.1.10.1 Reactor Vessel (BWR) Interior Attachments Within Beltline Region, Item Number B13.20

In accordance with Table IWB-2500-1, Examination Category B-N-2, all accessible SSES Units 1 and 2 reactor vessel interior attachment welds will be examined during the second inservice inspection interval. Attachments within the RPV beltline region (vessel elevation 216.31" to 366.31") will be visually VT-1 examined. The Code permits these examinations to be deferred to the end of the interval. Since scheduling of B-N-2 components depends heavily on RPV internals access provisions during a given outage, it is not practical to schedule individual weld examinations to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.1.10.2 Reactor Vessel (BWR) Interior Attachments Beyond Beltline Region, Item Number B13.30

In accordance with Table IWB-2500-1, Examination Category B-N-2, all accessible SSES Units 1 and 2 reactor vessel interior attachments outside of the RPV beltline region[9] will be visually VT-3 examined during the second inservice inspection interval. The Code permits these examinations to be deferred to the end of the interval. Since scheduling of B-N-2 components depends heavily on RPV internals access provisions during a given outage, it is not practical to schedule individual weld examinations to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.1.10.3 Core Support Structure, Item Number B13.40

In accordance with Table IWB-2500-1, Examination Category B-N-2, all accessible surfaces of the SSES Units 1 and 2 core support structures will be visually VT-3 examined during the second inservice inspection interval. The Code permits these examinations to be deferred to the end of the interval. Since scheduling of B-N-2 components depends heavily on RPV internals access provisions during a given outage, it is not practical to schedule individual weld examinations to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.1.10.4 Examination Category B-N-2 Summary

Due to the wide variety and diversity of components represented by Examination Category B-N-2, and the dependance of examination completion on in-vessel access, an examination category summary was considered inconclusive, and therefore, was not included.

[9] The RPV beltline region includes the area from vessel elevation 216.31" through 366.31."

6.1.1.11 Examination Category B-O, Pressure Retaining Welds In Control Rod Housings

6.1.1.11.1 Reactor Vessel Welds in CRD Housing, Item Number B14.10

In accordance with Table IWB-2500-1, Examination Category B-O, all SSES Units 1 and 2 pressure retaining welds of 10% of the peripheral CRD housings (10% of 40 peripheral housings equals 4 housings per unit) will be surface (PT) examined during the second inservice inspection interval. The Code permits these examinations to be deferred to the end of the interval.

6.1.1.11.2 Examination Category B-O Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
Item Number B14.10 Reactor Vessel Welds in CRD Housing	370 (370)	8 (8)	Deferral of examinations to end of interval permissible	RR-8

(1) Number represents total number of CRD housing welds. There are two welds per CRD housing and 185 CRDs per unit.

6.1.2 Class 1 Components (excluding RPV)

6.1.2.1 Examination Category B-F, Pressure Retaining Dissimilar Metal Welds

6.1.2.1.1 Piping Dissimilar Metal Butt Welds - NPS 4 or Larger, Item Number B5.130

Piping Dissimilar Metal Butt Welds Less Than NPS 4, Item Number B5.140

In accordance with 3.2.1.1, all SSES Units 1 and 2 pressure retaining dissimilar metal welds in piping - Item Numbers B5.130 and B5.140 - will be examined in accordance with the requirements of Examination Category B-J (See 6.1.2.4).

6.1.2.2 Examination Category B-G-1, Pressure Retaining Bolting, Greater Than 2 in. In Diameter

6.1.2.2.1 Pump Bolts and Studs Greater Than 2 in. In Diameter Item Number B6.180

In accordance with Table IWB-2500-1, Examination Category B-G-1, SSES Units 1 and 2 pump studs will be volumetrically (UT) examined during the second inservice inspection interval. Per Note 3 (Table IWB-2500-1), "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 pump per multiple-component group. See Appendix C for multiple-component group listings.

The required examinations may be performed with the bolting in place (under tension), when the connection is disassembled, or when the bolting is removed. Bolting examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Deferral of examinations to the end of the interval, previously allowed during the first inservice inspection interval, is not allowed during the second inservice inspection interval. Therefore, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval is not practical.

6.1.2.2.2 Pump Flange Surfaces, Item Number B6.190

In accordance with Table IWB-2500-1, Examination Category B-G-1, SSES Units 1 and 2 pump flange surfaces (1 in. annular surface of flange surrounding each stud) will be visually VT-1 examined when, and if, the flange connection is disassembled. Per Note 3 (Table IWB-2500-1), the required examinations will be limited to one (or the equivalent of one) pump per multiple-component group.

6.1.2.2.3 Pump Nuts, Bushings, and Washers Item Number B6.200

In accordance with Table IWB-2500-1, Examination Category B-G-1, SSES Units 1 and 2 pump nuts, bushings, and washers will be visually VT-1 examined during the second inservice inspection interval. Per Note 3 (Table IWB-2500-1), the required examinations will be limited to nuts, and washers of the pump examined per

Item Number B6.180 (6.1.2.2.1). Examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Deferral of examinations to the end of the interval, previously allowed during the first inservice inspection interval, is not allowed during the second inservice inspection interval. Therefore, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval is not practical.

Bushings will be examined only when, and if, the connections are disassembled; the required examinations will be limited to the bushings of one (or the equivalent of one) pump per multiple-component group.

6.1.2.2.4 Examination Category B-G-1 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination	Examination Schedule	Relief Request
B6.180 Pump Bolts and Studs Greater Than 2 in. In Diameter	32 (32)	16 (16)	Inspection Program B	N/A
B6.190 Pump Flange Surfaces	32 (32)	16 (16)	Examine only in the event the flanged connection is disassembled	N/A
B6.200 Pump Nuts, Bushings, and Washers	32 (32)	16 (16)	Inspection Program B (nuts and washers) Examine only in the event the flanged connection is disassembled (bushings)	N/A

(1) Tallies given represent the number of bolts; 2 pumps per unit, 16 bolts per pump.

6.1.2.3 Examination Category B-G-2, Pressure Retaining Bolting, 2 in. and Less In Diameter

6.1.2.3.1 Piping Bolts, Studs, and Nuts, Item Number B7.50

In accordance with Table IWB-2500-1, Examination Category B-G-2, all SSES Units 1 and 2 piping bolting, 2 inches and under, will be visually VT-1 examined during the second inservice inspection interval. The required examinations may be performed with the bolting in place (under tension), when the connection is disassembled, or when the bolting is removed. Bolting examinations will be

completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B and, where practical, will be scheduled to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.2.3.2 Valves Bolts, Studs, and Nuts, Item Number B7.70

In accordance with Table IWB-2500-1, Examination Category B-G-2, SSES Units 1 and 2 valve pressure retaining bolting, 2 inches and under, will be visually VT-1 examined during the second inservice inspection interval. The required examinations may be performed with the bolting in place (under tension), when the connection is disassembled, or when the bolting is removed. Per Note 2 (Table IWB-2500-1) valve bolting "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 valve in a multiple-component group based on size, constructional design, manufacturing method, and system function. See Appendix C for multiple-component group listings.

Bolting examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B and, where practical, will be scheduled to parallel the sequence of examinations established during the first inservice inspection interval.

6.1.2.3.3 Examination Category B-G-2 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
B7.50 Piping Bolts, Studs, and Nuts	24 (22)	24 (22)	Inspection Program B	N/A
B7.70 Valves Bolts, Studs, and Nuts	36 (36)	7 (7)	Inspection Program B	N/A

(1) Tallies given represent the number of flanged connections, not the total number of bolts.

6.1.2.4 Examination Category B-J, Pressure Retaining Welds In Piping

6.1.2.4.1 Circumferential Welds, NPS 4 or Larger,
Item Numbers B9.10 and B9.11
Circumferential Welds Less Than NPS 4,
Item Numbers B9.20 and B9.21
Branch Pipe Connection Welds, NPS 4 or Larger,
Item Numbers B9.30 and B9.31
Socket Welds, Item Number B9.40

In accordance with Table IWB-2500-1, Examination Category B-J, Class 1 pressure retaining piping welds - circumferential butt welds, branch connection welds, and socket welds - will be volumetrically (UT) and surface (MT or PT) examined or surface examined during the second inservice inspection interval. Specific welds will be selected for examination in accordance with Note (1), and shall include the following:

(a) All terminal ends in each pipe or branch run connected to vessels;

The terminal end weld to the SSES Units 1 and 2 reactor pressure vessels is considered to be the RPV nozzle-to-piping run weld (e.g., nozzle-to-safe end, nozzle-to-flange, etc.). All SSES Units 1 and 2 terminal ends in each pipe or branch run connected to the reactor pressure vessel(s) shall be examined. All similar metal nozzle-to-piping run welds shall be examined in accordance with Examination Category B-J. Dissimilar metal nozzle-to-piping run welds are included in Examination Category B-F, and are, therefore, excluded from Examination Category B-J (See 3.2.1.2).

(b) All terminal ends and joints in each pipe or branch run connected to other components where the stress levels exceed either of the following limits under loads associated with specific seismic events and operational conditions:

(1) primary plus secondary stress intensity range of 2.4Sm for ferritic and austenitic steel, or
(2) cumulative usage factor U of 0.4.

Weld stress and usage factor data for SSES Units 1 and 2 design Class 1 welds is available, and has been compiled for ISI use.

Circumferential butt welds, branch connection welds, and socket welds which exceed either of the established limits will be examined.

Examination Category B-J welds associated with the SSES Units 1 and 2 reactor pressure vessels were not evaluated in accordance with the Note (1)(b) criteria due to lack of the required stress/usage factor data. Of these welds, all but four are already required to be examined in accordance with either Note (1)(a) or (1)(c). A representative sample from these four welds shall be selected for examination in accordance with Note (1)(d).

Examination Category B-J welds which are ASME Section III Class 2 design also, could not be evaluated in accordance with Note (1)(b) standards; these welds were evaluated in accordance with a pipe break stress allowable equal to [0.8(1.2 Sh + Sa)]. SSES Units 1 and 2 Examination Category B-J Class 2 design welds which exceed this stress allowable will be examined.

(c) All dissimilar metal welds between combinations of:

(1) carbon or low alloy steels to high alloy steels,
(2) carbon or low alloy steels to high nickel alloys,
(3) high alloy steels to high nickel alloys

All SSES Units 1 and 2 Class 1 dissimilar metal piping welds (not covered by Examination Category B-F) shall be examined. (See 3.2.1.1).

(d) Additional piping welds so that the total number of circumferential butt welds (or branch connection or socket welds) selected for examination equals 25% of the circumferential butt welds (or branch connection or socket welds) in the reactor coolant piping system. This total does not include welds excluded by IWB-1220.

Additional SSES Units 1 and 2 piping welds will be examined so that the total number of welds to be examined equals a maximum of 25% of the Examination Category B-J nonexempt piping welds in the reactor coolant piping system (See 3.2.6).

Overall Examination Category B-J totals, including reactor vessel and Class 1 piping welds, are as illustrated:

Unit	Total Nonexempt Components	25% of Total Nonexempt Components (1)	Terminal Ends Connected to Vessels	Welds which exceed 2.4 Sm or U = 0.4 (2)(3)	Dissimilar Metal Welds (3)	Random Selections to Make 25% per Note (1)(d)
1	691	173	13	137	7	21
2	681	170	13	125	7	30

(1) Total welds to be examined not to exceed a maximum of 25% of the Examination Category nonexempt welds (See 3.2.6).
(2) Total also includes any Class 2 design welds which exceed applied stress allowables.
(3) Totals include 5 Examination Category B-J dissimilar metal piping welds (both units) where the calculated stresses exceed 2.4 Sm.

Examination Category B-J examinations will be scheduled for completion in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Due to the marked change in the Code rules dealing with examination of Class 1 pressure retaining welds from the first inservice inspection interval to the second (i.e., 74S75 Code verses 1989 Edition), scheduling of second inservice inspection interval required examinations to parallel the sequence established during the first inservice inspection interval is not practical and will be done on a case-by-case basis.

6.1.2.4.2 Longitudinal Welds, NPS 4 or Larger, Item Numbers B9.10 and B9.12

SSES Units 1 and 2 Class 1 longitudinal welds will be examined during the second inservice inspection interval in accordance with the alternative examination requirements found in Code Case N-524 (See 5.1).

Longitudinal weld examinations shall be scheduled for completion concurrent with the intersecting Examination Category B-F or B-J circumferential weld(s).

6.1.2.4.3 Examination Category B-J Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B9.10 NPS 4 or Larger	B9.11 Circumferential Welds	582 (576)	143 (150)	Inspection Program B	RR-5
	B9.12 Longitudinal Welds	234 (186) Note (1)	41 (42) Note (1)	Examine concurrent with the intersecting circumferential weld(s)	N/A
B9.20 Less Than NPS 4	B9.21 Circumferential Welds	28 (14)	13 (2)	Inspection Program B	N/A
B9.30 Branch Pipe Connection Welds	B9.31 NPS 4 or Larger	34 (32)	32 (30)	Inspection Program B	N/A
B9.40 Socket Welds		56 (64)	15(11)	Inspection Program B	N/A

(1) Examination of longitudinal welds will be performed in accordance with Code Case N-524. As such, the totals listed in the table above are tallies of areas/volumes of longitudinal seam welds associated with an intersecting circumferential weld. For example, an elbow fitting has two associated circumferential welds; a single seamed elbow fitting will include two areas/volumes of the longitudinal seam weld subject to examination per Code Case N-524.

6.1.2.5 Examination Category B-K-1, Integral Attachments For Class 1 Piping, Pumps and Valves

6.1.2.5.1 Piping Integrally Welded Attachments, Item Number B10.20

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category B-K

6.1.2.5.2 Pumps Integrally Welded Attachments, Item Number B10.30

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category B-K

6.1.2.6 Examination Category B-L-2, Pump Casings

6.1.2.6.1 Pump Casing, Item Number B12.20

In accordance with Table IWB-2500-1, Examination Category B-L-2, certain SSES Units 1 and 2 Class 1 pump casing internal surfaces are required to be visually VT-3 examined during the second inservice inspection interval. Examination of the internal pressure boundary surfaces will be performed to the extent practicable, and only when, and if, a pump is disassembled for maintenance or repair.

The multiple-component concept applies to Examination Category B-L-2, and the required VT-3 examination may be limited to one pump in a group of pumps performing similar system functions; therefore, should a pump within a multiple-component group be disassembled and become accessible for examination, the completed examination will satisfy the Examination Category B-L-2 examination requirements for the second inservice inspection interval. See Appendix C for multiple-component group listings.

6.1.2.6.2 Examination Category B-L-2 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B12.20 Pump Casing	2 (2)	1 (1)	Examine only when, and if, a pump is disassembled for maintenance or repair	N/A

6.1.2.7 Examination Category B-M-2, Valve Bodies

6.1.2.7.1 Valve Body, Exceeding NPS 4, Item Number B12.50

In accordance with Table IWB-2500-1, Examination Category B-M-2, the internal surfaces of certain SSES Unit 1 and 2 valve bodies exceeding NPS 4 will be visually VT-3 examined during the second inservice inspection interval. Examinations will be performed only in the event a valve is made accessible for examination by disassembly of the valve for maintenance or repair. Examinations will be performed to the extent practicable.

Selection of valves for examination is in accordance with Note 3 (Table IWB-2500-1), "Examinations are limited to

at least one valve in each group of valves that are of the same size, constructional design, and manufacturing method, and that perform similar functions in the system, ..." The multiple-component concept applies, and examinations are limited to one valve in each valve group. Therefore, should a valve within a multiple- component group be disassembled and become accessible for examination, the completed examination will satisfy the Examination Category B-M-2 examination requirements for that group for the second inservice inspection interval. See Appendix C for multiple-component group listings.

6.1.2.7.2 Examination Category B-L-2 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
B12.50 Valve Body, Exceeding NPS 4	57 (57)	12 (14)	Examine only when, and if, a valve is disassembled for maintenance or repair	N/A

6.2 CLASS 2 COMPONENTS

6.2.1 Examination Category C-A, Pressure Retaining Welds In Pressure Vessels

6.2.1.1 Shell Circumferential Welds, Item Number C1.10

In accordance with Table IWC-2500-1, Examination Category C-A, 100% of the weld length of pressure retaining welds at gross structural discontinuities in SSES Units 1 and 2 Class 2 pressure vessels will be volumetrically (UT) examined during the second inservice inspection interval. Per Note (4) of Table IWC-2500-1, the vessel areas selected for examination during the first inservice inspection interval shall be reexamined over the service lifetime of the components. The same welds examined during the first inservice inspection interval will be reexamined during the second inservice inspection interval. Note that the multiple-component concept was applied to selection of welds during the first inservice inspection interval; likewise, the second interval required examinations will be limited to one vessel - or the equivalent of one vessel - in a multiple-component group. See Appendix C for multiple-component group listings.

The required examinations will be completed in accordance with the scheduling requirements of IWC-2412, Inspection Program B, and, where practical, will be scheduled to parallel the sequence of examinations established during the first inservice inspection interval.

6.2.1.2 Head Circumferential Welds, Item Number C1.20

In accordance with Table IWC-2500-1, Examination Category C-A, 100% of the weld length of SSES Units 1 and 2 Class 2 pressure vessel head-to-shell welds will be volumetrically (UT) examined during the second inservice inspection interval. Per Note (4) of Table IWC-2500-1, the vessel areas selected for examination during the first inservice inspection interval shall be reexamined over the service lifetime of the components. The same welds examined during the first inservice inspection interval will be selected for reexamination during the second inservice inspection interval. Note that the multiple-component concept was applied to selection of welds during the first inservice inspection interval; likewise, the second interval required examinations will be limited to one vessel - or the equivalent of one vessel - in a multiple-component group. See Appendix C for multiple-component group listings.

The required examinations will be completed in accordance with the scheduling requirements of IWC-2412, Inspection Program B, and, where practical, will be scheduled for the second inservice inspection interval to parallel the sequence of examinations established during the first inservice inspection interval.

6.2.1.3 Examination Category C-A Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
C1.10 Shell Circumferential Welds	2 (2)	1 (1)	Inspection Program B	N/A
C1.20 Head Circumferential Welds	2 (2)	1 (1)	Inspection Program B	N/A

6.2.2 Examination Category C-B, Pressure Retaining Nozzle Welds In Vessels

6.2.2.1 Nozzle-to-Shell Weld of Nozzles Without Reinforcing Plate in Vessels > ½ in. Nominal Thickness, Item Numbers C2.20 and C2.21

In accordance with Table IWC-2500-1, Examination Category C-B, SSES Units 1 and 2 pressure retaining nozzle-to-shell or nozzle-to-head welds in Class 2 pressure vessels will be surface (MT) and volumetrically (UT) examined during the second inservice inspection interval. This will include vessel nozzles at terminal ends of non-exempt ISI Class 2 piping runs.

Per Note (3) of Table IWC-2500-1, the nozzles selected for examination during the first inservice inspection interval shall be reexamined over the service lifetime of the component. The same nozzle welds examined during the first inservice inspection interval will be selected for reexamination during the second inservice inspection interval. Note that the multiple-component concept was applied to selection of welds during the first inservice inspection interval; likewise, the second interval required examinations will be limited to the nozzles of one vessel - or the equivalent of one vessel - in a multiple-component group. See Appendix C for multiple-component group listings.

The required examinations will be completed during the second inservice inspection interval in accordance with the requirements of IWC-2412, Inspection Program B, and, where practical, will be scheduled to parallel the sequence of examinations established during the first inservice inspection interval.

6.2.2.2 Nozzle Inside Radius Section of Nozzles Without Reinforcing Plate in Vessels > ½ in. Nominal Thickness, Item Numbers C2.20 and C2.22

In accordance with Table IWC-2500-1, Examination Category C-B, all SSES Units 1 and 2 nozzle inside radius sections of nozzles requiring examination in accordance with Item Numbers C2.20 and C2.21, will be volumetrically (UT) examined during the second in-service inspection interval. Like Item Number C2.21, this will include all nozzles at terminal ends of non-exempt ISI Class 2 piping runs.

Per Note (3) of Table IWC-2500-1, the nozzles selected for examination during the first inservice inspection interval shall be reexamined over the service lifetime of the component. The same nozzles examined during the first inservice inspection interval will be selected for reexamination during the second inservice inspection interval. Note that the multiple-component concept was applied to selections during the first inservice inspection interval; likewise, the second interval required examinations will be limited to the nozzles of one vessel - or the equivalent of one vessel - in a multiple-component group. See Appendix C for multiple-component group listings.

The required examinations will be completed in accordance with the requirements of IWC-2412, Inspection Program B, and, where practical, will be scheduled for the second inservice inspection interval to parallel the sequence of examinations established during the first inservice inspection interval.

6.2.2.2.1 Examination Category C-B Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
C2.20 Nozzles Without Reinforcing Plate in Vessels > 1/2 in. Nominal Thickness	C2.21 Nozzle-to-Shell Weld	4 (4)	2 (2)	Inspection Program B	N/A
	C2.22 Nozzle Inside Radius Section	4 (4)	2 (2)	Inspection Program B	N/A

6.2.3 Examination Category C-C, Integral Attachments For Class 2 Vessels and Piping

6.2.3.1 Pressure Vessels Integrally Welded Attachments, Item Number C3.10

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category C-C

6.2.3.2 Piping Integrally Welded Attachments, Item Number C3.20. See 8.0, Inservice Inspection Program – Integral Attachments; Examination Category C-C.

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category C-C

6.2.4 Examination Category C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel Or High Alloy Piping

6.2.4.1 Circumferential Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4, Item Numbers C5.10 and C5.11

In accordance with IWC-2500-1, Examination Category C-F-1, SSES Units 1 and 2 stainless steel circumferential welds in piping greater than or equal to 3/8 in. (0.375") nominal wall thickness will be examined - by both surface (PT) and volumetric (UT) methods - during the second inservice inspection interval.

Selection of Examination Category C-F-1 welds for examination will be in accordance with Note (2) of Table IWC-2500-1, as follows:

- Due to the small population of C-F-1 welds (less than 28), all of the austenitic stainless steel or high-alloy welds not exempted by IWC-1220 will be selected for examination.
- Longitudinal welds are excluded from the total to which the 7.5% sample is applied since they are selected for examination in conjunction with a selected intersecting circumferential weld(s).
- Any Class 2 dissimilar metal welds are included in Category C-F-1 (See 3.2.3).

Due to the marked change in the Code rules dealing with examination of Class 2 pressure retaining welds from the first inservice inspection interval to the second, scheduling of second interval required examinations to parallel the sequence established during the first interval is not practical. Examination Category C-F-1 welds selected for examination during the second inservice inspection interval that were previously examined during the first inservice inspection interval will, where practical, be scheduled for the corresponding period in the second interval; however, the scheduling requirements of Paragraph IWC-2412, Inspection Program B will take precedence.

6.2.4.2 Longitudinal Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4, Item Numbers C5.10 and C5.12

SSES Units 1 and 2 Class 2 longitudinal welds will be examined during the second inservice inspection interval in accordance with the alternative examination requirements found in Code Case N-524 (See 5.1).

Longitudinal weld examinations will be scheduled for completion concurrent with the intersecting Examination Category C-F-1 and C-F-2 circumferential weld(s).

6.2.4.3 Examination Category C-F-1 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
C5.10 Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4	C5.11 Circumferential Weld	11 (13)	11 (13)	Inspection Program B	RR-9
	C5.12 Longitudinal Weld	4 (2) Note (1)	4 (2) Note (1)	Examine concurrent with the intersecting circumferential weld(s)	N/A

(1) Examination of longitudinal welds will be performed in accordance with Code Case N-524. As such, the totals listed in the table above are tallies of areas/volumes of longitudinal seam welds associated with an intersecting circumferential weld. For example, an elbow fitting has two associated circumferential welds; a single seamed elbow fitting will include two areas/volumes of the longitudinal seam weld subject to examination per Code Case N-524.

6.2.5 Examination Category C-F-2, Pressure Retaining Welds in Carbon or Low Alloy Steel Piping

6.2.5.1 Circumferential and Longitudinal Piping Welds and Welds of Branch Connections <3/8 in. Nominal Wall Thickness for Piping > NPS4, Item Numbers C5.00. In the revision from the 1980 Edition of the Section XI to the 1989 Edition, a pipe thickness distinction was made which excluded piping thicknesses of <3/8" in. nominal from the previously required exam requirements. Though excluded from testing requirements, this piping remains C-F-2 piping and must be accounted for. By assigning this piping to a subset of C-F-2 with a PPL item number C5.00, the piping can be counted for and the overall population of the code category calculated.

6.2.5.2 Circumferential Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4, Item Numbers C5.50 and C5.51

Circumferential Welds of Pipe Branch Connections of Branch Piping > NPS 4[10], Item Numbers C5.80 and C5.81

In accordance with IWC-2500-1, Examination Category C-F-2, SSES Units 1 and 2 carbon steel circumferential and branch connection welds in piping greater than or equal to 3/8 in. (0.375") nominal wall thickness will be examined - by both surface (MT or PT) and volumetric (UT) or surface methods - during the second inservice inspection interval.

Selection of Examination Category C-F-2 welds for examination will be in accordance with Note (2) of Table IWC-2500-1, as follows:

- 7.5%, but not less than 28, of all nonexempt carbon steel welds will be selected for examination.
- Welds not exempted by IWC-1220, which are not required to be nondestructively examined per Examination Category C-F-2 (i.e., > NPS 4 piping welds which are < 3/8 nominal wall) are included in the total weld count to which the 7.5% sampling rate is applied.
- Longitudinal welds are excluded from the total to which the 7.5% sample is applied since they are selected for examination in conjunction with a selected intersecting circumferential weld(s).
- Any Class 2 dissimilar metal welds are included in Examination Category C-F-1, not C-F-2 (See 3.2.3).
- The required examinations will be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt carbon or 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 should be performed on that system).
- Within a system, the required examinations will be distributed among terminal ends (TE's) and structural discontinuities (SD's) ... prorated, to the degree practicable, on the number of nonexempt terminal ends and structural discontinuities in that system.
- Within each system, the required examinations will be distributed among lines sizes, prorated to the degree practicable.

Due to the marked change in the Code rules dealing with examination of Class 2 pressure retaining welds from the first inservice inspection interval to the second, scheduling of second inservice inspection interval required examinations to parallel the sequence established during the first inservice inspection interval is not practical. Examination Category C-F-2 welds selected for

[10] Item Number C5.80 of the Code refers to branch piping greater than or equal to NPS2; however, in this program, branch piping NPS 4 and under is exempt.

examination during the second inservice inspection interval that were previously examined during the first inservice inspection interval will, where practical, be scheduled for completion during the corresponding period in the second inservice inspection interval; however, the scheduling requirements of Paragraph IWC-2412, Inspection Program B will take precedence.

6.2.5.3 Longitudinal Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4, Item Numbers C5.50 and C5.52

SSES Units 1 and 2 Class 2 longitudinal welds will be examined during the second inservice inspection interval in accordance with the alternative examination requirements found in Code Case N-524 (See 5.1).

Longitudinal weld examinations will be scheduled for completion concurrent with the intersecting Examination Category C-F-2 circumferential weld(s).

6.2.5.4 Examination Category C-F-2 Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
C5.00 Piping Welds <3/8 in. nominal wall thickness for piping > NPS 4		113 (121)	0	N/A	N/A
C5.50 Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4	C5.51 Circumferential Weld	959 (926)	80 (79)	Inspection Program B	N/A
	C5.52 Longitudinal Weld	2 (0)	0 (0)	Examine concurrent with the intersecting circumferential weld(s)	N/A
C5.80 Pipe Branch Connections of Branch Piping > NPS 4	C5.81 Circumferential Weld	14 (9)	1 (1)	Inspection Program B	N/A

6.2.6 Examination Category C-G, Pressure Retaining Welds In Pumps and Valves

6.2.6.1 Pump Casing Welds, Item Number C6.10

In accordance with Table IWC-2500-1, Examination Category C-G, pressure retaining welds in nonexempt SSES Units 1 and 2 Class 2 pump casings will be surface (PT or MT) examined during the second inservice inspection interval. Per Note (3) of Table IWC-2500-1, the casing welds selected for examination during the first inservice inspection interval shall be reexamined over the service lifetime of the component. The same pump casing welds examined during the first inservice inspection interval will be selected for reexamination during the second inservice inspection interval. Note that the multiple-component concept was applied to selections during the first inservice inspection interval; likewise, the second interval required examinations will be limited to the pump casing welds of one pump in a multiple-component group. See Appendix C for multiple-component group listings.

The required examinations will be completed in accordance with the requirements of IWC-2412, Inspection Program B, and, where practical, will be scheduled for the second inservice inspection interval to parallel the sequence of examinations established during the first inservice inspection interval.

6.2.6.2 Examination Category C-G Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
C6.10 Pump Casing Welds	132 (132)	33 (33)	Inspection Program B	RR-1

6.3 CLASS 3 COMPONENTS

6.3.1 Examination Category D-B, Systems In Support Of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal

6.3.1.1 Integral Attachment - Component Supports and Restraints, Item Number D2.20
Integral Attachment - Mechanical Snubbers, Item Number D2.30
Integral Attachment - Spring Type Supports, Item Number D2.40
Integral Attachment - Constant Load Type Supports, Item Number D2.50

Integral Attachment - Shock Absorbers, Item Number D2.60

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category D-A

6.3.2 Examination Category D-C, Systems in Support of Residual Heat Removal from Spent Fuel Storage Pool

6.3.2.1 Integral Attachment - Component Supports and Restraints, Item Number D3.20
Integral Attachment - Mechanical Snubbers, Item Number D3.30
Integral Attachment - Spring Type Supports, Item Number D3.40
Integral Attachment - Constant Load Type Supports, Item Number D3.50
Integral Attachment - Shock Absorbers, Item Number D3.60

See 8.0, Inservice Inspection Program - Integral Attachments; Examination Category D-A

7.0 INSERVICE INSPECTION PROGRAM - COMPONENT SUPPORTS

This section herein summarizes the examination requirements applicable to SSES Units 1 and 2 Class 1, 2, and 3 component supports. In accordance with 5.3, inservice inspection of SSES Units 1 and 2 Class 1, 2, and 3 component supports during the second inservice inspection interval will be performed in accordance with the examination requirements of Subsection[11] of the 1990 Addenda of ASME Section XI. All references made herein (i.e., Section 7.0) refer to the 1990 Addenda of the Code.

7.1 INSERVICE EXAMINATION - CLASS 1, 2, AND 3 PIPING SUPPORTS

7.1.1 Examination Category F-A, Piping Supports

7.1.1.1 Class 1 Piping Supports, Item Number F1.10

In accordance with IWF-2500-1, Examination Category F-A, 25% of the total SSES Units 1 and 2 nonexempt Class 1 piping supports, shall be VT-3 visually examined during the second inservice inspection interval.

Unit	# of Class 1 Nonexempt Piping Supports	25% of Class 1 Nonexempt Piping Supports
1	263	66
2	254	64

[11] Excluding Articles IWF-4000 (Repair Oricedyres), IWF-5000 (Inservice Inspection Requirements for Snubbers), and IWF-7000 (Replacements).

Subject to change after completion of Re-Baseline Project.

Selection of Examination Category F-A supports for examination will be in accordance with Note (2) of Table IWF-2500-1. The required support sample sizes within each system will be prorated by support type/function based on the total number of nonexempt supports of each type/function in that system. Since selection of Class 1 integral attachments for examination is contingent upon selected supports, where practical, support selections will also be optionally prorated by the number of supports with associated integral attachments in each system.

In accordance with Note (1) of Table IWF-2500-1, Item Numbers will be categorized to identify support types, as illustrated in the summary table of 7.1.1.4. The three support types utilized - Anchor, Rigid, and Spring can.

Examination of supports during the first inservice inspection interval was accomplished by a sampling plan integrated into the ISI Program via relief request. Due to the marked change in the rules dealing with examination of Class 1, 2, and 3 supports from the first inservice inspection interval to the second, scheduling of second inservice inspection interval required examinations to parallel the sequence established during the first inservice inspection interval (IWF-2420 of the 90 Addenda) may not be practical in all cases. Likewise, Note (4) of Table IWF-2500-1 (90 Addenda), regarding re-selection of the same supports from the first inservice inspection interval, is not considered applicable. Therefore, only where practical, supports that were previously examined during the first inservice inspection interval will be considered for re-selection and will be scheduled for the corresponding period in the second inservice inspection interval. Note, however, that other factors, such as the scheduling requirements of Table IWF-2410-2, Inspection Program B, and the presence of associated integral attachments, will take precedence.

7.1.1.2 Class 2 Piping Supports, Item Number F1.20

In accordance with IWF-2500-1, Examination Category F-A, 15% of the total SSES Units 1 and 2 nonexempt Class 2 piping supports, will be VT-3 visually examined during the second inservice inspection interval.

Unit	# of Class 2 Nonexempt Piping Supports	15% of Class 1 Nonexempt Piping Supports
1	578	87
2	617	93

Subject to change after completion of Re-Baseline Project.

Selection of Examination Category F-A supports for examination will be in accordance with Note (2) of Table IWF-2500-1. The required support sample sizes within each system will be prorated by support type/function based on the total number of nonexempt supports of each type/function in that system. Since selection of Class 2 integral attachments for examination are contingent upon selected supports, where practical, support selections will also be optionally prorated by the number of supports with associated integral attachments in each system.

In accordance with Note (1) of Table IWF-2500-1, Item Numbers will be categorized to identify support types, as illustrated in the summary table of 7.1.1.4. The three support types utilized - Anchor, Rigid, and Spring can.

Examination of supports during the first inservice inspection interval was accomplished by a sampling plan integrated into the ISI Program via relief request. Due to the marked change in the rules dealing with examination of Class 1, 2, and 3 supports from the first inservice inspection interval to the second, scheduling of second inservice inspection interval required examinations to parallel the sequence established during the first inservice inspection interval (IWF-2420 of the 90 Addenda) may not be practical in all cases. Likewise, Note (4) of Table IWF-2500-1 (90 Addenda), regarding re-selection of the same supports from the first inservice inspection interval, is not considered applicable. Therefore, only where practical, supports that were previously examined during the first inservice inspection interval will be considered for re-selection and will be scheduled for the corresponding period in the second inservice inspection interval. Note, however, that other factors, such as the scheduling requirements of Table IWF-2410-2, Inspection Program B, and the presence of associated integral attachments, will take precedence.

7.1.1.3 Class 3 Piping Supports, Item Number F1.30

In accordance with IWF-2500-1, Examination Category F-A, 10% of the total SSES Units 1 and 2 nonexempt Class 3 piping supports, will be VT-3 visually examined during the second inservice inspection interval.

Unit	# of Class 3 Nonexempt Piping Supports	10% of Class 1 Nonexempt Piping Supports
1	644	65
2	401	40

Subject to change after completion of Re-Baseline Project.

Selection of Examination Category F-A supports for examination will be in accordance with Note (2) of Table IWF-2500-1. The required support sample sizes within each system will be prorated by support type/function based on the total number of nonexempt supports of each type/function in that system.

In accordance with Note (1) of Table IWF-2500-1, Item Numbers will be categorized to identify support types, as illustrated in the summary table of 7.1.1.4. The three support types utilized - Anchor, Rigid, and Spring.

Examination of supports during the first inservice inspection interval was accomplished by a sampling plan integrated into the ISI Program via relief request. Due to the marked change in the rules dealing with examination of Class 1, 2, and 3 supports from the first inservice inspection interval to the second, scheduling of second inservice inspection interval required examinations to parallel the sequence established during the first inservice inspection interval (IWF-2420 of the 90 Addenda) may not be practical in all cases. Likewise, Note (4) of Table IWF-2500-1 (90 Addenda), regarding re-selection of the same supports from the first inservice inspection interval, is not considered applicable. Therefore, only where practical, supports that were previously examined during the first inservice inspection interval will be considered for re-selection and will be scheduled for the corresponding period in the second inservice inspection interval; however, the scheduling requirements of Table IWF-2410-2, Inspection Program B, will take precedence.

7.1.1.4 Examination Category F-A Summary (Piping Supports)

(NOTE: Unit 2 tallies are in parenthesis)

Item Number		# of Components	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
F1.10 Class 1 Piping Supports	F1.10A Anchor	19 (20)	5 (6)	Table IWF-2410-2 Inspection Program B	N/A
	F1.10R Rigid	46 (53)	11 (13)	Table IWF-2410-2 Inspection Program B	N/A
	F1.10SP Spring	85 (77)	22 (20)	Table IWF-2410-2 Inspection Program B	N/A
F1.20 Class 2 Piping Supports	F1.20A Anchor	26 (29)	4 (5)	Table IWF-2410-2 Inspection Program B	N/A
	F1.20R Rigid	277 (309)	41 (47)	Table IWF-2410-2 Inspection Program B	N/A
	F1.20SP Spring	122 (117)	18 (17)	Table IWF-2410-2 Inspection Program B	N/A
F1.30 Class 3 Piping Supports	F1.30A Anchor	49 (45)	5 (4)	Table IWF-2410-2 Inspection Program B	N/A
	F1.30R Rigid	431 (215)	43 (24)	Table IWF-2410-2 Inspection Program B	N/A
	F1.30SP Spring	94 (72)	10 (7)	Table IWF-2410-2 Inspection Program B	N/A

(1) Class totals may slightly exceed straight percentages due to rounding of numbers during system and support type prorations.

7.2 INSERVICE EXAMINATION - CLASS 1, 2, AND 3 SUPPORTS OTHER THAN PIPING SUPPORTS

7.2.1 Examination Category F-A, Supports Other Than Piping Supports

7.2.1.1 Supports Other Than Piping Supports (Class 1, 2, and 3), Item Number F1.40

In accordance with IWF-2500-1, Examination Category F-A, SSES Units 1 and 2 nonexempt component supports, other than piping supports, will be VT-3 visually examined during the second inservice inspection interval.

The multiple-component concept applies to selection of Examination Category F-A, Item Number F1.40 supports. In accordance with Note (3) of Table IWF-2500-1, the required examinations will be limited to the supports of only one component in each multiple-component group. (See Appendix C for multiple-component group listings) For single components (those components not belonging to a multiple-component group), 100% of the supports associated with that component will be examined.

Note (1) of Table IWF-2500-1 requires Item Numbers be categorized to identify support types; however, unlike piping supports, selection of nonpiping supports is not based on proration by support type. Therefore, all nonpiping supports will simply be included in Item Number F1.40.

Note (4) of Table IWF-2500-1 (90 Addenda), regarding re-selection of the same supports from the first inservice inspection interval, is considered applicable to non-piping supports. Therefore, supports that were previously examined during the first inservice inspection interval will be reselected, and where practical, will be scheduled for the corresponding period in the second interval. Note, however, that Inspection Program B (Table IWF-2410-2) also applies.

7.2.1.2 Examination Category F-A Summary (Supports Other Than Piping Supports)

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components	# of Components Selected for Examination	Examination Schedule	Relief Request
F1.40 Supports Other Than Piping Supports	48 (44)	28 (27)	Table IWF-2410-2 Inspection Program B	N/A

Subject to change after completion of Re-Baseline Project.

7.3 INSERVICE TESTING OF SNUBBERS (IWF-5000)

Inservice testing of snubbers will be accomplished in accordance with the Snubber Program Procedure NEPM-QA-0595. Inservice testing of snubbers is outside of the scope of this document.

8.0 INSERVICE INSPECTION PROGRAM - INTEGRAL ATTACHMENTS

This section herein summarizes the examination requirements applicable to SSES Units 1 and 2 Class 1, 2, and 3 integral attachment welds. Examination of SSES Units 1 and 2 Class 1, 2, and 3 integral attachments during the second inservice inspection interval will be performed in accordance with the alternative examination requirements detailed in Code Case N-509 (See 5.1). Examination Categories and/or Item Numbers not applicable to SSES Units 1 and 2 have been intentionally excluded.

Class 1, 2, and 3 integral attachments subject to the examination requirements of 8.1, 8.2, and 8.3 are limited to those nonexempt integrally welded attachments that meet the following conditions:

- the attachment is on the outside surface of the pressure retaining component,
- the attachment provides component support as defined in NF-1110, and
- 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.

8.1 CLASS 1 INTEGRAL ATTACHMENTS

8.1.1 Examination Category B-K, Integral Attachments For Class 1 Vessels, Piping, Pumps, and Valves

8.1.1.1 Pressure Vessels (RPV) Integrally Welded Attachments, Item Number B10.10

In accordance with Code Case N-509, 100% of the length of one integrally welded attachment to the SSES Units 1 and 2 reactor pressure vessels will be surface examined during the second inservice inspection interval. (See 3.2.8) The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Since the examination requirements of Code Case N-509 differ significantly from the Examination Category B-H requirements of the first inservice inspection interval, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval may not be practical, and will be addressed on a case-by-case basis.

Unscheduled examinations will also be performed in the event component support member deformation is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

8.1.1.2 Piping Integrally Welded Attachments, Item Number B10.20

In accordance with Code Case N-509, a sample of 10% of the SSES Units 1 and 2 piping integrally welded attachments associated with the Class 1 piping supports (7.1.1.1) selected for examination will be surface (MT or PT) examined during the second inservice inspection interval.

The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Since the examination requirements of Code Case N-509 differ significantly from the Examination Category B-K-1 requirements of the first inservice inspection interval, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval may not be practical, and will be addressed on a case-by-case basis.

Unscheduled examinations will also be performed in the event component support member deformation is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

8.1.1.3 Pumps Integrally Welded Attachments, Item Number B10.30

In accordance with Code Case N-509, a sample of 10% of the SSES Units 1 and 2 Class 1 pumps integrally welded attachments associated with component supports selected for examination (7.2.1.1) will be surface (MT or PT) examined during the second inservice inspection interval.

The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWB-2412, Inspection Program B. Since the examination requirements of Code Case N-509 differ significantly from the Examination Category B-K-1 requirements of the first inservice inspection interval, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval may not be practical, and will be addressed on a case-by-case basis.

Unscheduled examinations will also be performed in the event component support member deformation is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

8.1.1.4 Examination Category B-K Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
B10.10 Pressure Vessels Integrally Welded Attachments	9 (9)	1 (1)	Inspection Program B	N/A
B10.20 Piping Integrally Welded Attachments	14 (13)	1 (1)	Inspection Program B	N/A
B10.30 Pumps Integrally Welded Attachments	10 (10)	1 (1)	Inspection Program B	N/A

(1) Numbers given represent the number of supports with associated integral attachments, not the total number of integral attachment welds. That is, N integral attachments indicates all integral attachment welds associated with N supports. A given support may have several associated integral attachment welds.

8.2 CLASS 2 INTEGRAL ATTACHMENTS

8.2.1 Examination Category C-C, Integral Attachments For Class 2 Vessels, Piping, Pumps, and Valves

8.2.1.1 Pressure Vessels Integrally Welded Attachments, Item Number C3.10

In accordance with Code Case N-509, SSES Units 1 and 2 Class 2 pressure vessel integrally welded attachments will be surface (MT or PT) examined during the second inservice inspection interval. The multiple-component concept applies, and per Note (4) of Table 2500-1, only one integrally welded attachment of one of a multiple-component group of pressure vessels will be examined.

The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWC-2412, Inspection Program B. Since the examination requirements of Code Case N-509, differ significantly from the Examination Category C-C requirements of the first inservice inspection interval, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval may not be practical, and will be addressed on a case-by-case basis.

Unscheduled examinations will also be performed in the event component support member deformation is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

8.2.1.2 Piping Integrally Welded Attachments, Item Number C3.20

In accordance with Code Case N-509, a sample of 10% of the SSES Units 1 and 2 piping integrally welded attachments associated with the Class 2 piping supports (7.1.1.2) selected for examination will be surface (MT or PT) examined during the second inservice inspection interval.

The required examinations will be completed in accordance with the scheduling requirements of Paragraph IWC-2412, Inspection Program B. Since the examination requirements of Code Case N-509, differ significantly from the Examination Category C-C requirements of the first inservice inspection interval, scheduling of examinations to parallel the sequence of examinations established during the first inservice inspection interval may not be practical, and will be addressed on a case-by-case basis.

Unscheduled examinations will also be performed in the event component support member deformation is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

8.2.1.3 Examination Category C-C Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
C3.10 Pressure Vessels Integrally Welded Attachments	4 (4)	1 (1)	Inspection Program B	N/A
C3.20 Piping Integrally Welded Attachments	133 (146)	3 (4)	Inspection Program B	N/A

(1) Numbers given represent the number of supports with associated integral attachments, not the total number of integral attachment welds. That is, N integral attachments indicates all integral attachment welds associated with N supports. A given support may have several associated integral attachment welds.

8.3 CLASS 3 INTEGRAL ATTACHMENTS

8.3.1 Examination Category D-A, Integral Attachments For Class 3 Vessels, Piping, Pumps, and Valves

8.3.1.1 Piping Integrally Welded Attachments, Item Number D1.20

In accordance with Code Case N-509, a 10% sample of all nonexempt SSES Units 1 and 2 Class 3 piping integral attachments will be VT-1 visually examined during the second inservice inspection interval. Note (3) of Table IWD 2500-1 requires examinations be limited to those Class 3 systems where corrosive attack of the integral attachments is expected to be prevalent. All SSES Units 1 and 2 Class 3 systems within the ISI scope have been considered equally subject to corrosive attack, therefore, the 10% sample will be applied to all Class 3 nonexempt piping integrally welded attachments. Also, in accordance with Note (3) of Table IWD-2500-1, within the 10% sample, integral attachment selections will be prorated by system.

The required examinations will be scheduled during the interval in accordance with Table IWD-2412-1, Inspection Program B. Previously examined integral attachments selected for examination during the second inservice inspection interval will be scheduled to parallel the sequence of examinations established during the first inservice inspection interval to the extent practical.

Unscheduled examinations will also be performed in the event component support member deformation is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

8.3.1.2 Examination Category D-A Summary

(NOTE: Unit 2 tallies are in parenthesis)

Item Number	# of Components (1)	# of Components Selected for Examination (1)	Examination Schedule	Relief Request
D1.20 Piping Integrally Welded Attachments	124 (94)	12 (9)	Inspection Program B	N/A

(1) Numbers given represent the number of supports with associated integral attachments, not the total number of integral attachment welds. That is, N integral attachments indicates all integral attachment welds associated with N supports. A given support may have several associated integral attachment welds.

9.0 AUGMENTED INSERVICE INSPECTION (ISI) PROGRAM

This section herein briefly describes the SSES Units 1 and 2 Augmented Inservice Inspection Program and the individual "subprograms" which are included therein.

9.1 INTRODUCTION TO THE AUGMENTED ISI PROGRAM

The Code provides rules and requirements for the inservice inspection of systems and components in a nuclear power plant facility. These rules and requirements are intended to provide assurance of the structural and pressure-retaining integrity of nuclear power plant systems and components within the Section XI scope. However, throughout the service life of SSES Units 1 and 2, situations such as regulatory and enforcement authority rulings, industry events, and/or PPL specific concerns, may necessitate "augmented" inservice inspections which are outside of the scope of the Code.

Per 10 CFR 50.55a(g)(6)(ii), the NRC may at any time (via 10 CFR 50, NUREGs, IE Bulletins, Regulatory Guides, etc.) require augmented inservice inspections for systems and components for which added assurance of structural reliability is necessary. Similarly, industry group recommendations, (i.e., General Electric Company SILs, BWR Owners Group, etc.) or PPL specific concerns in response to a plant site event or any other situation, may necessitate examination and/or testing of a system/component to assure continued plant safety and/or reliability. The Augmented Inservice Inspection Program - a program within the overall PPL ISI program - exists to facilitate inspection of SSES critical systems and components in response to these various sources. Augmented inservice inspection requirements are exclusive of any Code inservice inspection requirements for the affected components.

9.2 THE AUGMENTED INSERVICE INSPECTION PROGRAM SUBPROGRAMS

Figure 9.2-1 illustrates the individual "subprograms" which make up the SSES Units 1 and 2 Augmented Inservice Inspection program, and denotes their applicability to the second inservice inspection interval. Since most of subprograms follow an individual subprogram-defined time line - and not necessarily the Code ten year ISI interval - most programs are a continuation from the first inservice inspection interval into the second. Many of these programs do not commence with the start of the second inservice inspection interval, and are not necessarily revised for the second inservice inspection interval; however, any references within these subprograms to the Code shall be updated to the 1989 Edition.

Figure 9.2-1

Augmented Inservice Inspection Program Subprograms

Reference Number	Title	Augmented Program for the First ISI interval?	Augmented Program for the Second ISI interval?	Remarks
AUG-1	FSAR 6.6.8, Augmented Inservice Inspection To Protect Against Postulated Piping Failures	X	X	Augmented program boundaries expanded for the second inservice inspection interval.
AUG-2	NUREG-0313, Technical Report On Material Selection And Processing Guidelines For BWR Coolant Pressure Boundary Piping	X	X	Select Unit 1 Category D welds received MSIP (Mechanical Stress Improvement Process) during the Unit 1 seventh refueling outage in the Fall of 1993; Unit 2 Category D welds are scheduled for MSIP during the sixth refueling outage in the Spring of 1994. Future MSIP is planned for all Category D welds.
AUG-3	NUREG-0619, BWR Feedwater Nozzle And Control Rod Drive Return Line Nozzle Cracking	X	X	PLA-5253 modified UT of FW Nozzles to once every 10 yrs. and eliminated PT exams.
AUG-4	Inconel 182 Weld Butter Cracking (required for Unit 1 only)	X		Augmented program completed during the first ISI interval on Unit 1 only.
AUG-5	BWR Jet Pump Assembly Failure (NUREG/CR-3052)	X	X	All Unit 1 jet pump beams replaced with replacement BWR/4-6 beams with improved heat treatment and reduced preload during Unit 1 seventh refueling outage in the Fall of 1993. The Unit 2 beams were replaced during the Unit 2 sixth refueling outage in the Spring of 1994.

Reference Number	Title	Augmented Program for the First ISI interval?	Augmented Program for the Second ISI interval?	Remarks
AUG-6	Augmented Inservice Inspection Of Reactor Pressure Vessel Internals: Visual Examination	X	X	
AUG-7	Augmented Inservice Inspection Of Reactor Pressure Vessel Internals: Ultrasonic Examination	X	X	
AUG-8	Augmented Inservice Inspection for Vibration Induced Failures	X	X	PPL established program implemented during the third period of the first inservice inspection interval.
AUG-9	BWRVIP In-vessel Inspections		X	Augmented inservice inspection program added to address inspection recommendations of the BWR Vessel and Internals Project (BWRVIP)
N/A	NUREG-0803, Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping	X	X	Augmented examination requirements are satisfied by the ISI Program.
N/A	10 CFR 50.55a(g)(6)(ii)(A), Augmented Examination of Reactor Vessel		X	Second interval ISI program complies with the 1989 Code which incorporates 10 CFR 50 augmented examination requirements.

9.2.1 AUG-1, FSAR 6.6.8, Augmented Inservice Inspection To Protect Against Postulated Piping Failures

The AUG-1 augmented inservice inspection program defines the mandatory examination requirements of SSES FSAR Section 6.6.8 as it applies to SSES Units 1 and 2 "no break zone" piping, (i.e., piping for which no breaks have been postulated).

SSES Units 1 and 2 welds within the boundaries of the AUG-1 program will be examined during the second inservice inspection interval in accordance with FSAR Section 6.6.8, as follows:

UNITS 1 AND 2
AUG-1 INSERVICE INSPECTION PROGRAM
EXAMINATION REQUIREMENTS
FSAR SECTION 6.6.8

Parts Examined	Examination Requirements Figure(s)[1]	Type of Examination[2]	Extent of Examination[2]	Frequency
Circumferential butt welds Longitudinal butt welds	IWB-2500-8	volumetric (UT)	100% of the welds	each ISI inspection interval
Small pipe branch connections	IWB-2500-9,10,11 IWC-2500-9	surface[3] (PT or MT)	100% of the welds	each ISI inspection interval
Socket welds	IWB-2500-8	surface[3] (PT or MT)	100% of the welds	each ISI inspection interval
Welds 1" NPS and smaller	exempt			

NOTES:

1) Examination requirement figures from the governing edition and addenda of ASME Section XI.

2) All examination requirements other than type and extent of examination (e.g., personnel qualifications, records, acceptance standards, etc.) are in accordance with the governing edition and addenda of ASME Section XI.

3) Volumetric examination of branch connections containing weldolets, half-couplings, and socket welds would not be meaningful due to the geometry of the branch connection and the small pipe sizes involved; therefore, surface examination is prescribed in lieu of volumetric examination for these weld configurations.

9.2.2 AUG-2, NUREG-0313, Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping

The AUG-2 augmented inservice inspection program defines the mandatory examination requirements of NRC NUREG-0313, as applicable to SSES Units 1 and 2. SSES Unit 1 and 2 coolant pressure boundary piping made of austenitic stainless steel that is 4" NPS or larger, and contains reactor coolant at a temperature above 200°F during power operation, regardless of code classification, (and including RPV appurtenances 4" NPS and greater), is subject to the requirements of the AUG-2 augmented inservice inspection program.

Intergranular stress corrosion cracking (IGSCC) of austenitic stainless steel piping welds has been a paramount industry/regulatory concern for many years. As a result, many iterations of regulatory inspection requirements have been issued with the underlying intent being to ensure the ongoing integrity and reliability of BWR coolant pressure boundary piping.

In response to these regulatory requirements, many AUG-2 augmented inservice inspections of IGSCC "susceptible" piping welds have been performed on both SSES Units 1 and 2 since commencing commercial operation. Extensive work/studies by both the nuclear industry and the NRC over the years have fine tuned the approach to the IGSCC problem, leading to the NRC staff recommendations currently presented in NUREG-0313, Revision 2.

The AUG-2 program for the second inservice inspection interval is a continuation of the AUG-2 programs previously implemented during the first inservice inspection interval on Units 1 and 2 (i.e., NUREG-0313, Revision 2). And, like the previous programs, the required extent and frequency of inspection are dependent on the assigned examination category based on the degree of susceptibility of the weldment to IGSCC; susceptibility, in turn, being a function of the materials and processes involved in fabrication and treatment of the weldments.

The AUG-2 program, as summarized below, meets the NRC Staff recommendations for inspection of piping for IGSCC found in Section 5.0 of NUREG-0313.

UNITS 1 AND 2
AUG-2 INSERVICE INSPECTION PROGRAM
EXAMINATION REQUIREMENTS
NUREG-0313 REVISION 2

AUG-2 Weld Category	Examination Requirements Figure	Type of Examination	Extent of Examination	Frequency
A[1]	ASME Section XI	UT	ASME Section XI[1]	ASME Section XI[1]
B[2]	ASME Section XI	UT	50% of the welds	once per ten year interval (at least 25% complete in six years)
C[3]	ASME Section XI	UT	100% of the welds	once within two refueling cycles after SI, and once again, per ten year interval (at least 50% complete in six years)
D[4]	ASME Section XI	UT	100% of the welds	every two refueling cycles

NOTES:

1) Category A weldments are those with no known cracks, and that have low probability of incurring IGSCC problems, because they are made entirely of IGSCC resistant materials. Category A weldments require examination of 25% of the welds in ten years with at least 12% in six years. This requirement is satisfied by performance of the routine ASME Section XI ISI requirements for the second inservice inspection interval.
2) Category B weldments are those not made of resistant materials, but have had a SI process (i.e., IHSI, MSIP) performed either before service or within two years of operation. Examinations of 50% of the total Category B welds were completed by the end of the first inservice inspection interval. Likewise, examination of 50% of the welds will be completed during the second inservice inspection interval.
3) Category C weldments are those not made of resistant materials, but have had a SI process (i.e., IHSI, MSIP) performed after two years of operation. Welds to be examined in accordance with Category C includes welds which have been upgraded from Category D due to SI treatment (MSIP). Scheduling of examinations of Category C welds during the second inservice inspection interval will be based on the MSIP completion date.
4) Category D examination requirements applied to former Category C weldments which had not received stress improvement (SI). All category D weldments for SSES have been upgraded to Category C.

AUG-3 INSERVICE INSPECTION PROGRAM
EXAMINATION REQUIREMENTS

Parts Examined	Examination Requirements Figure(s)	Type of Examination	Extent of Examination	Frequency[1]
Nozzle Safe End	Figure C-1	Ultrasonic (UT)	100% of the nozzle safe ends	Once every 10 years
Nozzle Bore	Figure C-1	Ultrasonic (UT)	100% of the nozzle bores	Once every 10 years
Nozzle Inner Radius	Figure C-1	Ultrasonic (UT)	100% of the nozzle inner radii	Once every 10 years
Sparger	Figure C-2	Visual (VT-3)	100% of the spargers	Every four (4) refueling cycles

NOTES:

1) Since the "triple-sleeve" spargers were installed prior to commercial operation, the AUG-3 inspection cycle begin at commercial operation; however, all accumulated startup/shutdown cycles during startup and testing (prior to commercial operation) must be accounted for.

9.2.3 AUG-3, NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking (PLA-5253)

This augmented inservice inspection program (AUG-3) defines the mandatory examination requiremens of NRC-0619 for ***In-vessel examinations only*** that are applicable to SSES Units 1 & 2 Feedwater nozzles and Spargers.

PPL letter PLA-5253 modifies the commitments of letters PLA-807 and PLA-1075 for Ultrasonic inspections of the feedwater nozzles from the AUG-3 program to Section XI requirements of once every 10 years. Furthermore the requirements of the invessel PT examinations are eliminated as long as PPL continues to follow the BWROG's topical report and criteria in the staff's safety evaluation dated June 5th, 1998.

Augmented inservice inspections of NUREG-0619 associated with the Control Rod Drive Return Line (CRDRL) nozzle/piping system are not required at SSES. The CRDRL nozzles on both Units have been cut and capped and the CRDRL eliminated; therefore, no further actions are required.

9.2.4 AUG-5, BWR Jet Pump Assembly Failure (NUREG/CR-3052)

This augmented inservice inspection program (AUG-5) defines the mandatory examination requirements established in response to IE Bulletin 80-07, as described in NUREG/CR-3052, regarding BWR jet pump hold down beam integrity.

In early 1980, a domestic BWR was found to have a failed reactor recirculation jet pump hold down beam and several other cracked beams. Subsequent inspections at other BWR facilities revealed similar cracks - the failure mechanism later diagnosed as intergranular stress corrosion cracking (IGSCC). NRC IE Bulletin 80-07, (later closed out via NRC NUREG/CR-3052), was issued in response to this cracking episode, and mandated both operational surveillances and nondestructive examinations of the jet pump hold down beam assemblies.

Both SSES Units 1 and 2 were under construction when IE Bulletin 80-07 was issued; AUG-5 augmented inservice inspections of the jet pump hold down beams were commenced during the first inservice inspection interval.

The General Electric Company (GE) developed two design improvements intended to increase beam resistance to IGSCC:

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

   This design improvement involves a reduction of installed preload from 30 kips to 25 kips.

b) Replacement BWR/4-6 beam with improved heat treatment and reduced preload.

   An improved heat treatment - high temperature annealing and aging - when utilized with the current BWR/4-6 design and reduced preload, is expected to provide significantly increased resistance to IGSCC.

   The SSES Unit 1 jet pump hold down beams were replaced during the Unit 1 seventh refueling outage in the Fall of 1993. The SSES Unit 2 jet pump hold down beams were replaced during the Unit 2 sixth refueling outage in the Spring of 1994. The replacement BWR/4-6 beams with improved heat treatment were installed at the designated reduced preload.

Given the current SSES Units 1 and 2 beam designs, AUG-5 augmented inservice inspections to be performed during the second inservice inspection interval shall be in accordance with the requirements described below.

UNITS 1 AND 2
AUG-5 INSERVICE INSPECTION PROGRAM
EXAMINATION REQUIREMENTS
NUREG/CR-3052

Beam Design	Type of Examination	Frequency
Units 1 and 2 replacement beams with improved heat treatment and reduced (25 kip) preload	Ultrasonic (UT)	Baseline ultrasonic examination at the time of installation of replacement beams and ultrasonic examination 10 years following installation of replacement beams[1]

NOTES:

1) The Unit 1 beams were replaced during the Unit 1 seventh refueling outage in the Fall of 1993; Unit 2 beams were replaced during the Unit 2 sixth refueling outage (Spring 1994). Although the replacement beam design represents the appropriate corrective action to the beam cracking problem, sufficient operating experience is not yet available; therefore, ultrasonic examination of all replacement beams is required ten years following installation of the replacement beams.

9.2.5 AUG-6, Augmented Inservice Inspection of Reactor Pressure Vessel Internals: Visual Examination

This augmented inservice inspection program (AUG-6) defines the nondestructive examination requirements established by PPL to investigate and visually examine surfaces/areas within the reactor pressure vessel internals where cracking/failures could affect RPV internals reliability and/or safety.

Components to be examined and frequencies of examination vary; AUG-6 examination requirements are based on industry group recommendations, BWR plant experience, and PP&L site experience.

9.2.6 AUG-7, Augmented Inservice Inspection of Reactor Pressure Vessel Internals: Ultrasonic Examination

This augmented inservice inspection program (AUG-7) defines the nondestructive examination requirements established by PPL to investigate and ultrasonically examine components within the reactor pressure vessel internals where cracking/failures could affect RPV internals reliability and/or safety.

Components to be examined and frequencies of examination vary; AUG-7 examination requirements are based on industry group recommendations, BWR plant experience, and PPL site experience.

9.2.7 AUG-8, Augmented Inservice Inspection for Vibration Induced Failures

This augmented inservice inspection program (AUG-8) defines the nondestructive examination requirements established by PPL to investigate and identify areas, throughout SSES Units 1 and 2, where vibration induced cracking/failures could affect plant reliability and/or safety.

AUG-8 examination requirements are based on industry group recommendations, BWR plant experience, and PPL site experience.

9.2.8 AUG-9, BWRVIP In-Vessel Inspections

Increased awareness of the presence of in-vessel component degradation led to the formation of the BWR Vessel and Internals Project (BWRVIP). BWRVIP is an association of BWR utilities focused on the common purpose of investigating and developing effective, acceptable approaches for addressing in-vessel component degradation through improved detection, mitigation, and/or repair techniques. In accordance with the BWRVIP charter, the organization is tasked with providing generic resolution to BWR issues and representing the member utilities in negotiating with regulatory authorities (USNRC) for approval of the groups' recommended actions. PPL, as a member utility of the BWRVIP, has endorsed the objectives prescribed by the BWRVIP.

The inspection recommendations of the BWRVIP for in-vessel components have been incorporated into the ISI Program as Augmented Inservice Inspection Program – 9 (AUG-9). All in-vessel components within the scope of the BWRVIP are included within the scope of the AUG-9 Program.

9.2.9 NUREG-0803, Generic Safety Evaluation Report regarding Integrity of BWR Scram System Piping

NUREG 0803 requires periodic inservice inspection for the scram discharge volume (SDV) of the Control Rod Drive system. The SDV piping at SSES is designed to ASME Section III, Class 2 and is within the scope of the ISI Program. As such, SDV piping components and their supports are subject to the applicable ASME Section XI ISI requirements for Class 2; no additional augmented inservice inspections are required.

9.2.10 10 CFR 50.55a(g)(6)(ii)(A), Augmented Examination of Reactor Vessel

Effective September 8, 1992, 10 CFR 50.55a(g)(6)(ii)(A) required implementation of augmented inservice inspections of reactor vessel shell welds - Item Number B1.10 of Examination Category B-A of the Code. In addition, all previously granted relief requests pertaining to these welds were revoked. The interval in effect on September 8, 1992 was the first inservice inspection interval for both Units 1 and 2. Per the correspondence referenced in

1.3.3.3, the SSES Unit 1 and Unit 2 ISI Programs complied with the regulations for the first inservice inspection interval.

The second inservice inspection interval ISI Program for SSES Units 1 and 2 is prepared in accordance with, and complies with, the 1989 Edition of Section XI of the Code, as referenced in 10 CFR 50.55a(g)(6)(ii)(A)(2). All reactor vessel shell welds will be ultrasonically examined during the second inservice inspection interval with 96% examination coverage (based on total overall weld length), as evidenced by examinations completed during the first inservice inspection interval. This examination coverage will be achieved using ultrasonic examination techniques conducted from the o.d. of the reactor pressure vessel. Reactor pressure vessel shell welds AD (circumferential), B-K and B-M (longitudinal), exhibit limited examination coverage due to permanent physical obstructions. Relief Request RR-4 to this ISI Program (10.0) addresses these welds.

10.0 RELIEF REQUESTS

In implementing the requirements of the Code and this ISI Program during the second inservice inspection interval, circumstances may exist, whereby, a request for relief from Code and/or ISI Program requirements may be necessary. Pursuant to 10 CFR 50.55a(g)(5)(iv), where conformance with an examination requirement of the Code is deemed impractical, details of that determination and a request for relief from Code requirements, shall be submitted to the NRC.

In this ISI Program, and those augmented ISI subprograms which are mandated by the NRC, petitions for relief will be prepared, as needed, in the event:

- that conformance with certain Code or augmented inspection requirements is impractical,
- that certain Code or augmented examinations or tests are impractical to perform (or complete fully) due to limitations in plant design, component geometry and/or materials of construction,
- alternative requirements, such as found in unsanctioned Code Cases or Code editions and addenda, are proposed in lieu of governing Code requirements which represent hardship or unusual difficulty to implement, or
- any situation arises where due to hardship, impracticality, or unusual difficulty, it becomes necessary to deviate from Code requirements and/or ISI Program commitments.

Figures 10.1-1 and 10.1-2, for Unit 1 and Unit 2 respectively, cross reference first inservice inspection interval relief requests to those relief requests currently proposed for the second inservice inspection interval.

10.1 SSES UNIT 1 RELIEF REQUEST MATRIX

Figure 10.1-1

Unit 1
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
1RR-1	N/A	Examination Category B-L-2, Pump casing internal visual examination	Yes
1RR-2	N/A	Examination Category B-M-2, Valve body internal visual examination	Yes
1RR-3	N/A	ISI Class 2 pressure retaining welds in piping	N/A
1RR-4	RR-1	Examination Category C-G, Inaccessible welds in Core Spray and RHR pumps	Yes
1RR-5	N/A	Examination Category B-G-1, Incomplete examination of Recirculation pump stud	Yes
1RR-6	N/A	Volumetric examination of Recirculation system sweepolet/reducer to riser piping welds	Yes
1RR-7	RR-2	Examination Category B-D, Incomplete examination of Feedwater nozzle-to-vessel welds	Yes
1RR-8	N/A	Component support examination sampling plan	Yes
1RR-9	RR-3	Alternative testing requirements for snubbers	Yes
1RR-10	N/A	ISI Class 1 pressure retaining welds in piping	N/A
1RR-11	RR-4	Examination Category B-A, Incomplete examination of RPV shell welds	Yes
1RR-12	RR-4	Examination Category B-A, Incomplete examination of RPV head welds	Yes

Notes:
(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.

Figure 10.1-1 (continued)

Unit 1
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
1RR-13	RR-2	Examination Category B-D, Incomplete examination of nozzle-to-vessel welds	Yes
1RR-14	N/A	Examination Category B-H, Incomplete examination of RPV stabilizer brackets	Yes
1RR-15	N/A (B-F) RR-5 (B-J)	Examination Category B-F and B-J, Incomplete examination of Class 1 piping welds	N/A (B-F) Yes (B-J)
1RR-16	N/A	Examination Category B-K-1, Incomplete examination of Class 1 integral attachments	Yes
1RR-17	N/A	Examination Category C-C, Incomplete examination of Class 2 integral attachments	Yes
1RR-18	N/A	Examination Category C-F, Incomplete examination of Class 2 piping welds	Yes
1RR-19	RR-6	Augmented ISI Program incomplete examinations	Yes
1RR-20	N/A Note 5	System pressure testing relief requests	Yes
1RR-21	N/A	Examination Category C-B, Incomplete examination of RHR heat exchanger nozzle-to-shell weld	N/A
1RR-22	RR-7	Examination Category B-G-2, CRD Housing bolting Additional Examinations	Yes
1RR-23	RR-8	Examination Category B-O, CRD Housing welds	Yes

Notes:

(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.
(5) System pressure testing is outside of the scope of this document.

Figure 10.1-1 (continued)

Unit 1
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
N/A	RR-9	Examination Category C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel or High Alloy Piping	No
N/A	RR-10	Examination Category B-A, Pressure Retaining Welds in Reactor Vessel, Augmented Examinations per 10 CFR 50.55(a)(6)(ii)(A)	No
N/A	RR-11	Augmented ISI Program for NUREG-0619	No
N/A	RR-14	Examination Category IWE, E-D, Examination and Pressure Test Requirements	No
N/A	RR15	Examination Category IWE Class MC, Successive Examinations	No
N/A	RR-16	Examination Category IWE, E-G, Examination and Pressure Test Requirements	No
N/A	RR-18	ASME Section XI, Appendix VIII, Training Requirements	No
N/A	RR-19	Examination Category B-A, Flaw Sizing	No
N/A	RR-21	ASME Section XI, Appendix VIII, Ultrasonic Examinations	No

Notes:

(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.
(5) System pressure testing is outside of the scope of this document.

Figure 10.1-1 (continued)

Unit 1
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
N/A	RR-22	Examination Category B-A, Volumetric Examination of RPV Circumferential Welds	No
N/A	RR-23	Qualification and Certification of NDE Personnel	No
N/A	RR-25	Use of Code Case N-516-2, "Underwater Welding"	No
N/A	RR-26	Use of Procedures, Personnel, and Equipment Qualified to ASME Section XI, Appendix VIII, Supplement 10	No
N/A	RR-27	Examination Category B-F and B-J, Surface Examinations	No
N/A	RR-29	Weld Overlay for N1B Recirculation System Outlet Nozzle	No
N/A	RR-30	Use of Performance Demonstration Initiative (PDI) Program for Implementation of Appendix VIII, Supplement 11 Requirements	No
N/A	RR-31	Weld Overlay for N2J Recirculation System Outlet Nozzle	No
N/A	RR-32	Examination Category F-A, Incomplete Examinations of Supports	No

Notes:

(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.
(5) System pressure testing is outside of the scope of this document.

10.2 SSES UNIT 2 RELIEF REQUEST MATRIX

Figure 10.2-1

Unit 2
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
2RR-1	N/A	Examination Category B-L-2, Pump casing internal visual examination	Yes
2RR-2	N/A	Examination Category B-M-2, Valve body internal visual examination	Yes
2RR-3	N/A	ISI Class 2 pressure retaining welds in piping	N/A
2RR-4	RR-1	Examination Category C-G, Inaccessible welds in Core Spray and RHR pumps	Yes
2RR-5	RR-2	Examination Category B-D, Incomplete examination of Feedwater nozzle-to-vessel welds	Yes
2RR-6	N/A	Component support examination sampling plan	Yes
2RR-7	RR-3	Alternative testing requirements for snubbers	Yes
2RR-8	N/A	ISI Class 1 pressure retaining welds in piping	N/A
2RR-9	RR-4	Examination Category B-A, Incomplete examination of RPV shell welds	Yes
2RR-10	RR-4	Examination Category B-A, Incomplete examination of RPV head welds	Yes
2RR-11	RR-2	Examination Category B-D, Incomplete examination of nozzle-to-vessel welds	Yes
2RR-12	N/A	Examination Category B-H, Incomplete examination of the RPV stabilizer brackets	Yes
2RR-13	N/A (B-F) RR-5 (B-J)	Examination Category B-F and B-J, Incomplete examination of Class 1 piping welds	N/A (B-F) Yes (B-J)

Notes:
(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.

Figure 10.2-1 (continued)

Unit 2
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
2RR-14	N/A	Examination Category B-K-1, Incomplete examination of Class 1 integral attachments	Yes
2RR-15	N/A	Examination Category C-C, Incomplete examination of Class 2 integral attachments	Yes
2RR-16	RR-6	Augmented ISI Program incomplete examinations	Yes
2RR-17	N/A Note (5)	System pressure testing relief request	Yes
2RR-18	N/A	Examination Category C-B, Incomplete examination of RHR heat exchanger nozzle-to-shell weld	N/A
2RR-19	RR-7	Examination Category B-G-2, CRD Housing bolting Additional Examinations	Yes
2RR-20	RR-8	Examination Category B-O, CRD Housing welds	
N/A	RR-9	Examination Category C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel or High Alloy Piping	No
N/A	RR-10	Examination Category B-A, Pressure Retaining Welds in Reactor Vessel, Augmented Examination per 10 CFR 50.55(a)(6)(ii)(A)	No

Notes:
(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.
(5) System pressure testing is outside of the scope of this document.

Figure 10.2-1 (continued)

Unit 2
First ISI Interval Relief Requests
vs.
Second ISI Interval Relief Requests

First Interval Relief Request Number (1)	Second Interval Relief Request Number (1),(2),(3)	Subject	Granted by the NRC for the First ISI Interval? (4)
N/A	RR-11	Augmented ISI Program for NUREG-0619	No
N/A	RR-13	ASME Section XI, IWX-2420, Successive Inspections	No
N/A	RR-14	Examination Category IWE, E-D, Examination and Pressure Test Requirements	No
N/A	RR15	Examination Category IWE Class MC, Successive Examinations	No
N/A	RR-16	Examination Category IWE, E-G, Examination and Pressure Test Requirements	No
N/A	RR-18	ASME Section XI, Appendix VIII, Training Requirements	No
N/A	RR-19	Examination Category B-A, Flaw Sizing	No
N/A	RR-21	ASME Section XI, Appendix VIII, Ultrasonic Examinations	No
N/A	RR-22	Examination Category B-A, Volumetric Examination of RPV Circumferential Welds	No
N/A	RR-23	Qualification and Certification of NDE Personnel	No
N/A	RR-25	Use of Code Case N-516-2, "Underwater Welding"	No
N/A	RR-26	Use of Procedures, Personnel, and Equipment Qualified to ASME Section XI, Appendix VIII, Supplement 10	No
N/A	RR-27	Examination Category B-F and B-J, Surface Examinations	No
N/A	RR-32	Examination Category F-A, Incomplete Examinations of Supports	No

Notes:
(1) N/A indicates that a parallel relief request was/is not required.
(2) Where practical, similar subject relief requests from the first inservice inspection interval that are resubmitted for the second interval are included as a single relief request (e.g., same Examination Category, or type of component).
(3) Separate relief requests (as needed) are included by Code Examination Category.
(4) N/A indicates those relief requests which were not considered necessary, and have, or will be, withdrawn from the final revision of the first inservice inspection interval ISI Program.
(5) System pressure testing is outside of the scope of this document.

10.3 SSES UNITS 1 AND 2 RELIEF REQUESTS - SECOND INSERVICE INSPECTION INTERVAL

All SSES Units 1 and 2 requests for relief for the second inservice inspection interval submitted with this ISI Program, will include the following information, as applicable:

- A unique alphanumeric identifier for the Relief Request,
- Identification of the component(s) for which relief is being requested, including the unit number (Unit 1, Unit 2, or both) and a brief description of the component,
- The ASME Code Class, Examination Category, and Item Number applicable to the component(s),
- The specific requirement(s) from which relief is requested, and/or for which alternative requirements are proposed,
- The basis for relief (e.g., information supporting the determination that the Code requirement is impractical to conform to),
- Where reasonable, a description of the substitute examination(s) or test(s) which will be performed in lieu of the requirements deemed impractical, and
- The schedule for implementation of the proposed (if any) alternate examination(s) or test(s).

RELIEF REQUEST RR-1

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: C-G, Pressure Retaining Welds in Pumps and Valves
C. Code Item Number: C6.10
D. Code Reference: ASME Section XI, 1989 Edition, Table IWC-2500-1

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 each have eight Class 2 pumps with pressure retaining pump casing welds - four (4) Core Spray pumps (Unit 1 1P-206A,B,C,D and Unit 2 2P-206A,B,C,D) and four (4) Residual Heat Removal pumps (Unit 1 1P-202A,B,C,D and Unit 2 2P-202A,B,C,D). The primary function of these pumps is decay heat removal, suppression pool heat removal, and emergency core cooling.

Each of the Residual Heat Removal (RHR) pumps have 17 pressure retaining pump casing welds; the Core Spray (CS) pumps have 16 pressure retaining pump casing welds.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWC-2500-1, Examination Category C-G, Item Number C6.10, requires a surface examination of pump casing welds in accordance with the examination requirements illustrated in Figure IWC-2500-8. Per Note (1), the multiple-component concept applies, and examinations are limited to 100% of the welds of one of four RHR pumps and one of four CS pumps (per unit). Relief is requested from complete surface examination of 9 pressure retaining pump casing welds on one each of the RHR and CS pumps per unit.

IV. BASIS FOR RELIEF

Relief is being requested from complete examination of 9 of 17 RHR pump casing welds (on one pump), and 9 of 16 CS pump casing welds (on one pump) due to component inaccessibility for examination. All eight pumps (per unit) are equally limited.

Three welds, 361-6-7, 361-2-6, and 361-7-8 (See Figure RR-1-1), are located within the pump casing and are not normally accessible without disassembly of the pump and removal of the pump motor.

The remaining six welds (per pump), 359-1-2, 359-2-L2, 359-2-2, 359-2-L1, 359-2-3, and 359-3-7 (See Figure RR-1-1), are located below floor elevation 645'-0" and are totally surrounded by concrete. The pump casing is flooded with water, thereby, completely limiting normal access to these components for examination.

Pump motor removal and/or disassembly of a pump to gain access to these components for surface examination is not practical and represents undue hardship with minimal safety return.

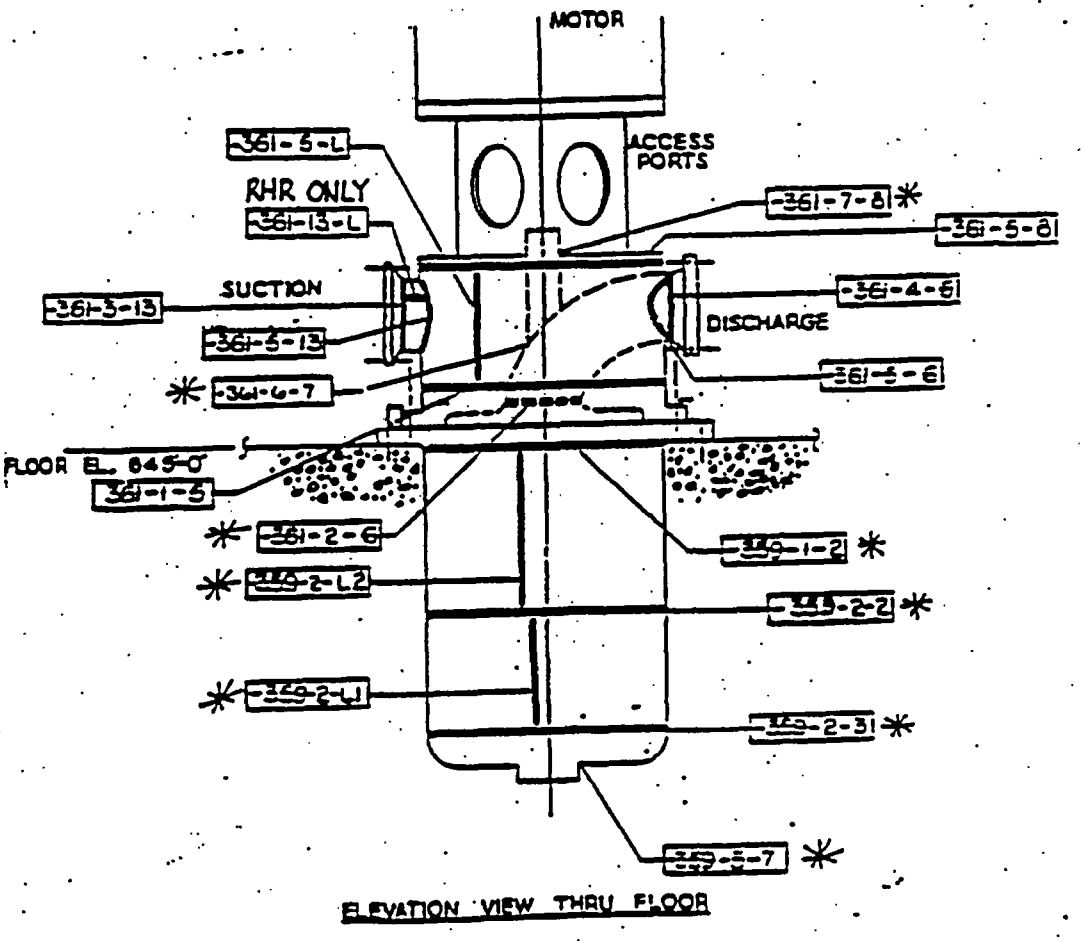
Finally, other required examinations/tests of the pumps will be performed to provide reasonable assurance of structural integrity. The Residual Heat Removal and Core Spray pumps are subject to the functional testing requirements of IWP of the Code; also, the pumps are within the system pressure retaining boundaries of Examination Category C-H and will be periodically VT-2 visually examined during system pressure testing.

V. ALTERNATE PROVISIONS

Should any of the subject welds become accessible for examination due to pump disassembly for repair or maintenance, a visual or surface examination (as deemed appropriate at the time) will be performed to the extent practical.

FIGURE RR-1-1

PUMP CASING WELDS
CORE SPRAY PUMPS (1P-206A,B,C,D AND 2P-206A,B,C,D)
AND
RESIDUAL HEAT REMOVAL PUMPS (1P-202A,B,C,D AND 2P-202A,B,C,D)



* INACCESSIBLE WELDS

RELIEF REQUEST RR-2

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: B-D, Full Penetration Welds of Nozzles in Vessels - Inspection Program B
C. Code Item Number: B3.90
D. Code Reference: ASME Section XI, 1989 Edition, Table IWB-2500-1

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 each have 30 reactor pressure vessel nozzles fabricated with full penetration nozzle-to-vessel shell (or head) welds. These nozzles are as follows:

Nozzle ID	System
N1A,B	Reactor Recirculation
N2A - H,J,K	Reactor Recirculation
N3A - D	Main Steam
N4A - F	Feedwater
N5A,B	Core Spray
N6A,B	Residual Heat Removal - Head Spray
N7	Reactor Pressure Vessel - Head Vent
N8A,B	Reactor Recirculation Instrumentation
N9	Control Rod Drive (capped)

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWB-2500-1, Examination Category B-D, Item Number B3.90, requires volumetric examination of all reactor vessel nozzle-to-vessel welds in accordance with the examination requirements illustrated in Figure IWB-2500-7. Relief is requested from complete examination of all 30 full penetration nozzle-to-vessel welds due to component configuration. In addition, examination of the nozzle-to-vessel welds associated with the N4A and N4D nozzles, is further restricted due to plant design.

IV. BASIS FOR RELIEF

Complete examination of all of the aforementioned SSES Units 1 and 2 Examination Category B-D nozzle-to-vessel welds is not practical due to the nozzle forging configuration. In each case, the radius of curvature of the nozzle forging (the nozzle side of the weld) causes the ultrasonic search unit to lift and lose contact, thereby limiting complete volumetric examination of the Code required examination volume. This examination limitation affects both the transverse and parallel scans of all 30 nozzles. Alternate means, such as small search units and full vee path examinations, were considered, but were found to be ineffective in improving examination coverage.

In support of ALARA considerations, 24 of the 30 nozzle-to-vessel examinations - N1, N2, N3, N4, and N5 - will be performed utilizing remote automated ultrasonic examination equipment. However, the limitation imposed by the nozzle forging configuration is slightly more pronounced with the automated examinations due to the design of the remote scanner apparatus. The percentages presented in Table RR-2-1 for these nozzles are based exclusively on automated examination coverage.

The N6, N7, N8, and N9 nozzle-to-vessel welds will be examined solely by manual ultrasonic examination techniques.

Automatic examinations of two Feedwater nozzle-to-vessel welds - N4A and N4D - are further limited due to plant design obstructions from the N11A and N11B instrumentation nozzles, respectively. A spacing of approximately 4.5 inches between the N4 and the N11 nozzles restricts examination of an arc of approximately 60 degrees (17%) of the affected nozzle-to-vessel welds.

Table RR-2-1 details examination coverage for all the nozzles. These estimates of examination coverage are based on calculations made during preservice examinations of the nozzle-to-vessel welds, and are still considered valid, conservative estimates for the second inservice inspection interval.

V. ALTERNATE PROVISIONS

Examinations will be performed to the maximum extent practicable. High radiation areas preclude the use of supplemental manual examinations; manual examinations yield no appreciable increase in examination coverage. No alternate provisions are proposed.

Table RR-2-1

Nozzle Identification	Limiting Condition	% Complete Examined Volume (1),(2)	% Partial Examined Volume (3)	% Unexamined Volume (4)
N1A,B	Nozzle Forging Configuration	77.29 T 50 P	4.80	17.91 T 50 P
N2A - H,J,K	Nozzle Forging Configuration	75.42 T 50 P	5.67	18.91 T 50 P
N3A - D	Nozzle Forging Configuration	73.26 T 50 P	6.30	20.44 T 50 P
N4B,C,E,F	Nozzle Forging Configuration	75.42 T 50 P	5.67	18.91 T 50 P
N4A,D	Nozzle Forging Configuration and Limited scan path due to N11A,B instrumentation nozzles	62.85 T 50 P	4.73	32.42 T 50 P
N5A,B	Nozzle Forging Configuration	75.42 T 50 P	5.67	18.91 T 50 P
N6A,B	Nozzle Forging Configuration	72.36 T 50 P	9.67	17.97 T 50 P
N7	Nozzle Forging Configuration	76.24 T 50 P	7.27	16.49 T 50 P
N8A,B	Nozzle Forging Configuration	78.22 T 50 P	7.65	14.13 T 50 P
N9	Nozzle Forging Configuration	78.22 T 50 P	7.65	14.13 T 50 P

(1) T indicates "T scan" - 45 and 60 degree beaming angles transverse to the weld.
(2) P indicates "P scan" - 45 and 60 degree beaming angles parallel to the weld.
(3) Partial indicates portion of exam volume partially examined using 60 degree beaming angle only (T scan), i.e., no 45 degree scan possible.
(4) Unexamined volume is that portion of the exam volume that cannot be interrogated by either beaming angle - 45 or 60. P scans of the nozzle side of all the welds cannot be performed, therefore, the unexamined P scan volume is 50% for all nozzle configurations.

RELIEF REQUEST RR-3

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: N/A
C. Code Item Number: N/A
D. Code Reference: Article IWF-5000, Inservice Inspection Requirements For Snubbers

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 Class 1, 2, and 3 mechanical snubbers within the boundaries of this ISI Program.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Article IWF-5000 prescribes rules and requirements for the inservice examination and testing of snubbers. Relief is requested from utilizing the Article IWF-5000 requirements for implementation of inservice inspection of snubbers.

IV. BASIS FOR RELIEF

A comprehensive program for examination and testing of snubbers is implemented at SSES Units 1 and 2 in accordance with SSES plant Technical Specifications. This program meets the intent of the requirements prescribed in Article IWF-5000. Examination and testing of snubbers in accordance with Plant Technical Specification was effectively implemented in lieu of Section XI examinations during the first inservice inspection interval.

V. ALTERNATE PROVISIONS

Throughout the second inservice inspection interval, the snubber examination and testing requirements of SSES plant Technical Specifications will be implemented in lieu of the Code Requirements of Article IWF-5000.

RELIEF REQUEST RR-4

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: B-A, Pressure Retaining Welds in Reactor Vessel
C. Code Item Number(s): B1.11, B1.12, B1.22, and B1.40
D. Code Reference: ASME Section XI, 1989 Edition, Table IWB-2500-1

II. IDENTIFICATION OF COMPONENTS

The SSES Units 1 and 2 reactor vessel pressure retaining welds identified in Table RR-4-1 are the subject of this relief request.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWB-2500-1, Examination Category B-A, Item Numbers B1.11 and B1.12, requires volumetric examination of essentially 100% of the weld length of all circumferential and longitudinal shell welds in accordance with the examination requirements illustrated in Figures IWB-2500-1 and 2, respectively. Relief is requested from complete examination of the affected welds (AD, BK, and BM) due to a plant design obstruction caused by permanent RPV mirror insulation support steel.

Table IWB-2500-1, Examination Category B-A, Item Number B1.22, requires volumetric examination of the accessible length of all meridional head welds in accordance with the examination requirements illustrated in Figure IWB-2500-3. Relief is requested from 100% examination of the affected bottom head meridional welds (DG and DH) due to plant design obstructions caused by the Control Rod Drive housings.

Table IWB-2500-1, Examination Category B-A, Item Number B1.40, requires volumetric and surface examination of essentially 100% of the weld length of the top head to flange weld (AG) in accordance with the examination requirements illustrated in Figure IWB-2500-5. Relief is requested from complete volumetric examination of weld AG due to component geometry. Surface examination of weld AG is not affected.

Table RR-4-1

Component Identification	Description/ Item Number	Limiting Condition	Examination Coverage (%) (1)
AD	Shell circumferential weld/ B1.11	Permanent RPV mirror insulation support steel precludes complete examination	85.6
BK	Shell longitudinal weld/B1.12	Permanent RPV mirror insulation support steel precludes complete examination	81.1
BM	Shell longitudinal weld/B1.12	Permanent RPV mirror insulation support steel precludes complete examination	81.1
DG	Bottom Head meridional weld/ B1.22	Control Rod Drive housings limit access to all but 54 inches of this weld	23.7
DH	Bottom Head meridional weld/ B1.22	Control Rod Drive housings limit access to all but 54 inches of this weld	23.7
AG	Closure head to flange weld/ B1.40	Limited examination due to component (flange) geometry	80 (Vol)
DA	Bottom Head meridional weld/ B1.22	Limited by RPV Skirt	89
DB	Bottom Head meridional weld/ B1.22	Limited by RPV Skirt	89
DC	Bottom Head meridional weld/ B1.22	Limited by RPV Skirt	89
DD	Bottom Head meridional weld/ B1.22	Limited by RPV Skirt	89
DE	Bottom Head meridional weld/ B1.22	Limited by RPV Skirt	89
DF	Bottom Head meridional weld/ B1.22	Limited by RPV Skirt	89
AF (240-360) Shell	Shell to flange weld/B1.30	Thermocouple interference	74

(1) Examination coverage based on actual examination coverage.

IV. BASIS FOR RELIEF

Examinations of the affected welds will be performed to the maximum extent practical.

For Item Numbers B1.11 and B1.12, the limited coverage represents a mere 0.56% of the total reactor vessel shell weld length. The affected welds (AD, BK, and BM) are located outside of the vessel beltline region. Plant design changes to effect greater examination coverage represent extreme hardship without a compensating return in increased plant safety.

For Item Number B1.22 meridional welds, the total examination coverage obtained is the maximum practical due to CRD obstructions. Examination coverage of the head-to-flange weld (Item Number B1.40) is also the maximum practical due to the component configuration.

The reactor pressure vessel pressure retaining welds are subject to VT-2 visual examination during system pressure testing in accordance with the requirements of Examination Category B-P.

V. ALTERNATE PROVISIONS

No alternate provisions are proposed for the subject examinations.

RELIEF REQUEST RR-5

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: B-J, Pressure Retaining Welds in Piping
C. Code Item Number: B9
D. Code Reference: ASME Section XI, 1989 Edition, Table IWB-2500-1

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 Class 1 pressure retaining piping welds listed in Table RR-5-1 are the subject of this relief request.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWB-2500-1, Examination Category B-J, Item Number B9.11, requires a surface and volumetric examination of select circumferential welds in accordance with the examination requirements of Figure IWB-2500-8. Note (1) defines the selection criteria to be utilized in selecting specific welds to be examined. Relief is requested from complete nondestructive examination of certain welds which meet the selection criteria of Note (1) for which a complete examination cannot be performed due to physical plant access restrictions and/or component configuration.

IV. BASIS FOR RELIEF

The Code requires selection of the affected welds for examination; that is, the stress levels at these particular weld locations exceed the limits specified in Note (1)(b)(1). However, based on nondestructive examination data from the first inservice inspection interval, a complete examination of the Code required surfaces and/or volumes cannot be performed on these welds due to physical plant access restrictions and/or geometry of the adjoining components. Relief is requested from complete nondestructive examination of these components.

Given the Examination Category B-J selection criteria as applied to SSES Units 1 and 2, (See 6.1.2.4), many other welds meeting the selection criteria can and will be examined. For most, the limitation affects only the volumetric examination and a complete surface examination can be performed.

All examinations will be completed to the maximum extent practical. The affected welds are also subject to VT-2 visual examination during system pressure testing in accordance with the requirements of Examination Category B-P.

V. ALTERNATE PROVISIONS

No alternate provisions are proposed for the subject examinations.

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
VRRB311-FW-A5	Elbow-pump/ Reactor Recirculation/ Unit 1	Note (1)(b)(1)	RR pump insulation support framework obstructs complete access to the weld	83 (Sur) 83 (Vol)
DLA1011-FW-1	Pipe-Valve/ Feedwater/ Unit 1	Note (1)(b)(1)	Pipe whip restraint limits access to the weld	87 (Sur) 87 (Vol)
DBA2011-FW-50	Valve-Flued Head/ Reactor Water Clean-up/ Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
DCA2101-FW-2	Valve-Flued Head/ Residual Heat Removal/ Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
DLA2031-FW-2	Valve-Flued Head/ Feedwater/ Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
N8A SE-Pen Seal	Safe End – Pen Seal RPV-E Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	81.25 (Vol)
N8B SE-Pen Seal	Safe End – Pen Seal RPV-E Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	81.25 (Vol)
DCA1031-FW-16	Pipe – Pipe Reactor Water Cleanup Unit 1	Note (1)(b)(1)	Support Interference	0 (Vol)
DCA1031-FW-57	Pipe – Pipe Reactor Water Cleanup Unit 1	Note (1)(b)(1)	Support Interference	36 (Vol)
DCA1072-FW-4	Valve – Elbow Core Spray Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA1081-FW-10	Flued Head – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
DCA1091-FW-2	Valve – Flued Head Core Spray Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA1101-FW-8	Elbow – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1101-FW-9	Valve – Pipe Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
DCA1101-FW-10	Pipe – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1101-FW-11	Valve – Tee Residual Heat Removal Unit 1	Note (1)(b)(1)	Interference with valve	0 (Vol)
DCA1102-FW-2	Valve – Flued Head Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1102-FW-8	Elbow – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1102-FW-9	Valve – Pipe Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1102-FW-10	Pipe – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1102-FW-11	Valve – Tee Residual Heat Removal Unit 1	Note (1)(b)(1)	Interference with valve	0 (Vol)
DCA1112-3-A	Pipe – Flange Residual Heat Removal Unit 1	Note (1)(b)(1)	Flange Interference	50 (Vol)
DCA1112-FW-5	Pipe – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA1112-FW-14	Flange – Elbow Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	77.6 (Vol)
DCA1112-FW-18	Elbow – Flange Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
DCA1112-FW-13	Valve – Pipe Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	76.5 (Vol)
DCA1112-FW-16	Pipe – Flange Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	77.6 (Vol)
DCA1112-FW-17	Flange – Pipe Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	81 (Vol)
DCB1021-FW-1	Pipe – Valve Residual Heat Removal Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	47.25 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
DLA1031-FW-4	Valve – Pipe Feedwater Unit 1	Note (1)(b)(1)	Hanger Interference	0 (Vol)
VRRB311-1-A	Pipe – Sweepolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-2-B	Pipe – Weldolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-2-C	Pipe – Tee Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-3-1-H	Pipe Branch – Sweepolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-3-2-B	Pipe Branch – Sweepolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-14-B	Pipe – Weldolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	67 (Vol)
VRRB311-FW-A8	Valve – Elbow Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-FW-A17M	Pipe – Safe End Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-FW-A19M	Pipe – Safe End Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB311-FW-A24	Valve – Weldolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	0 (Vol)
VRRB312-3-B	Pipe – Weldolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	38 (Vol)
VRRB312-3-F	Weldolet – Pipe Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB312-9-1-H	Pipe Branch – Sweepolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	41.7 (Vol)
VRRB312-10-B	Pipe – Weldolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	73 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
VRRB312-10-C	Pipe – Tee Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB312-12-A	Pipe – Weldolet Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB312-FW-B16M	Pipe – Safe End Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB312-FW-B19M	Pipe – Safe End Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB312-FW-B23	Elbow – Valve Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB312-FW-B3	Elbow – Valve Reactor Recirculation Unit 1	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
N8A SE-Pen Seal	Safe End – Pen Seal RPV-E Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
N8B SE-Pen Seal	Safe End – Pen Seal RPV-E Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DBA2011-FW-45	Elbow – Elbow Reactor Water Cleanup Unit 2	Note (1)(b)(1)	Whip Restraint Interference	0 (Vol)
DCA2021-FW-1	Tee- Pipe Reactor Water Cleanup Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	80.11 (Vol)
DCA2022-1-B	Tee – Pipe Reactor Water Cleanup Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA2031-FW-19	Pipe – Pipe Reactor Water Cleanup Unit 2	Note (1)(b)(1)	Hanger Interference	85 (Vol)
DCA2072-FW-4	Valve – Elbow Core Spray Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2081-FW-2	Pipe – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Welded Clamp Interference	0 (Vol)
DCA2081-FW-9	Flued Head – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	77.7 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
DCA2092-FW-2	Valve – Flued Head Core Spray Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2101-FW-8	Elbow – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	78.1 (Vol)
DCA2101-FW-10	Pipe – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	76.4 (Vol)
DCA2102-FW-2	Valve – Flued Head Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	84.5 (Vol)
DCA2102-FW-7	Elbow – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2101-FW-8	Valve – Pipe Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2102-FW-9	Pipe – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2111-FW-2	Valve – Pipe Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA2113-2-A	Pipe – Flange Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2113-FW-9	Pipe – Valve Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2113-FW-10	Valve – Pipe Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2113-FW-11	Pipe – Flange Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCA2113-FW-12	Flange – Elbow Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
DCA2113-FW-13	Flange – Pipe Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DCB2021-FW-2	Valve – Flued Head Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
DCB2021-FW-4	Flued Head – Elbow Residual Heat Removal Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
DLA2011-FW-6	Pipe – Valve Feedwater Unit 2	Note (1)(b)(1)	Whip Restraint Interference	83 (Vol)
DLA2031-FW-6	Pipe – valve Feedwater Unit 2	Note (1)(b)(1)	Whip Restraint Interference	87 (Vol)
DLA2041-FW-1	Valve – Pipe Feedwater Unit 2	Note (1)(b)(1)	Whip Restraint Interference	87 (Vol)
VNBB213-20-F	Pipe – Sweepolet Main Steam Unit 2	Note (1)(b)(1)	Hanger Interference	49.8 (Vol)
VNBB213-20-V	Pipe – Sweepolet Main Steam Unit 2	Note (1)(b)(1)	Hanger Interference	64.4 (Vol)
VNBB213-FW-C-4	Elbow – Valve Main Steam Unit 2	Note (1)(b)(1)	Support Lug Interference	81.9 (Vol)
VNBB213-FW-D-4	Elbow – Valve Main Steam Unit 2	Note (1)(b)(1)	Whip Restraint Interference	86 (Vol)
VNBB214-FW-A-4	Elbow – Valve Main Steam Unit 2	Note (1)(b)(1)	Whip Restraint Interference	85.4 (Vol)
VNBB214-FW-B-4	Elbow – Valve Main Steam Unit 2	Note (1)(b)(1)	Whip Restraint Interference	85. 4 (Vol)
VRRB313-2-B	Weldolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	24.8 (Vol)
VRRB313-3-1-G	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB313-3-2-B	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB313-3-2-C	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB313-3-F	Cross – Pipe Branch Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
VRRB313-14-F	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-3	Elbow – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB313-FW-A-4	Valve – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-5	Elbow – Pump Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	66.3 (Vol)
VRRB313-FW-A-6	Pump – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-7	Pipe – Valve Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	58.3 (Vol)
VRRB313-FW-A-8	Valve – Elbow Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	58.3 (Vol)
VRRB313-FW-A-11	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB313-FW-A-14	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB313-FW-A-19	Pipe – Safe End Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-20	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-23	Elbow – Valve Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-24	Valve – Weldolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB313-FW-A-33	Tee – Valve Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	0 (Vol)
VRRB314-2-A	Tee – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
VRRB314-3-B	Pipe – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Hanger Interference	22 (Vol)
VRRB314-3-G	Pipe – Flange Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB314-9-1-G	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB314-9-1-H	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
VRRB314-9-2-B	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB314-9-2-C	Pipe Branch – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	75 (Vol)
VRRB314-10-B	Pipe – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	0 (Vol)
VRRB314-10-C	Pipe – Tee Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB314-12-A	Pipe – Sweepolet Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	0 (Vol)
VRRB314-FW-B-1	Safe End – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB314-FW-B-4	Valve – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB314-FW-B-5	Elbow – Pump Reactor Recirculation Unit 2	Note (1)(b)(1)	Insulation Lug Interference	69.75 (Vol)
VRRB314-FW-B-7	Pipe – Valve Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB314-FW-B-10	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB314-FW-B-13	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)

Table RR-5-1

Component Identification	Configuration/ System/ Unit	Selection Basis	Limiting Condition	Examination Coverage (%) (1)
VRRB314-FW-B-14	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	50 (Vol)
VRRB314-FW-B-20	Sweepolet – Pipe Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB314-FW-B-23	Elbow – Valve Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	87.5 (Vol)
VRRB314-FW-B-33	Valve – Tee Reactor Recirculation Unit 2	Note (1)(b)(1)	Limited examination access due to component configuration	0 (Vol)

(1) Examination coverage based on actual examination coverage.

RELIEF REQUEST RR-6

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: N/A
C. Code Item Number: N/A
D. Reference: The Augmented Inservice Inspection Program

II. IDENTIFICATION OF COMPONENTS

The SSES Units 1 and 2 components listed in Table RR-6-1, subject to the examination requirements of the Augmented Inservice Inspection Program, are discussed in this relief request. Included in the scope of this relief request are only those limited components subject to augmented inservice inspection requirements mandated by regulatory and enforcement authorities.

III. REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

The SSES Units 1 and 2 Augmented Inservice Inspection Program includes mandatory component examination requirements in addition to the inservice inspection requirements of ASME Section XI. These mandatory augmented examination requirements originate from regulatory direction found in the SSES FSAR, NRC NUREGs, IE Bulletins, etc. (See 9) and each varies with regard to the type of examination and the extent and frequency of examination.

Relief is requested for those components listed in Table RR-6-1 where the governing augmented examination requirements are impractical to implement due to access restrictions, metallurgical constraints, and/or radiological environment.

IV. BASIS FOR RELIEF

Complete examination in accordance with the governing augmented examination requirements is not practical due to the limitations noted in Table RR-6-1. All examinations will be completed to the maximum extent practical.

Table RR-6-1

Component Identification	Configuration/ System/ Unit	Exam Requirement	Limiting Condition	Examination Coverage (%) (1)
DBA1012-FW-6	Pipe-Flued Head/ Reactor Wtr. Clean-up/ Unit 1	FSAR Section 6.6.8	Hanger removal required to facilitate exam; Area survey indicates 18R field; Estimate 801 mhrs in area to complete examination	0 (Vol)
DBB1181-1-A	Pipe-Sweepolet/ Feedwater/ Unit 1	FSAR Section 6.6.8	Access restricted due to welded support	79 (Vol)
DBA2011-FW-50	Pipe-Flued Head/ Reactor Wtr. Clean-up/ Unit 1	FSAR Section 6.6.8	Access restricted due to weld geometry	75 (Vol)
DLA2031-FW-2	Valve-flued Head/ Feedwater/ Unit 2	FSAR Section 6.6.8	Access restricted due to weld geometry	75 (Vol)
DBA2011-FW-23	Elbow-Valve/ Reactor Wtr. Clean-up/ Unit 2	FSAR Section 6.6.8	Examination limited by welded support bracket	35 (Vol)
N4B-IR	Nozzle inner radius/ Feedwater/ Unit 1	NUREG-0619	Biological shield wall restricts access to examination equipment	84.7 (Vol)
N4B-Bore	Nozzle bore/ Feedwater/ Unit 1	NUREG-0619	Biological shield wall restricts access to examination equipment	84.9 (Vol)
N4D-IR	Nozzle inner radius/ Feedwater/ Unit 2	NUREG-0619	Access restricted due to thermocouple pads	83.6 (Vol)
N4D-Bore	Nozzle bore/ Feedwater/ Unit 2	NUREG-0619	Access restricted due to thermocouple pads	84.4 (Vol)
DBB1071-1-B	Elbow-Pipe/ Residual Heat Removal/ Unit 1	NUREG-0313 Category C	Permanent pipe support saddle restricts complete scan	84 (Vol)
DCB1021-FW-2	Valve-Flued Head/ Residual Heat Removal/ Unit 1	NUREG-0313 Category C	Limited access due to component configuration	50 (Vol)
DCB1021-FW-4	Flued Head-Elbow/ Residual Heat Removal/ Unit 1	NUREG-0313 Category C	Welded pipe clamp restricts access to weld	89.4 (Vol)

Table RR-6-1

Component Identification	Configuration/ System/ Unit	Exam Requirement	Limiting Condition	Examination Coverage (%) (1)
DBB2071-FW-3	Pipe-Valve/ Residual Heat Removal/ Unit 2	NUREG-0313 Category C	Limited access due to adjacent pipe support, vent line and component configuration	82.5 (Vol)
DCA2101-FW-2	Valve-Flued Head/ Residual Heat Removal/ Unit 2	NUREG-0313 Category B	Limited examination access due to component configuration	75 (Vol)
DCA1081-FW-12	Valve-Elbow/ Residual Heat Removal/ Unit 1	NUREG-0313 Category C	Limited examination access due to component configuration	50 (Vol)
DCA1101-FW-2	Valve-Flued Head/ Residual Heat Removal/ Unit 1	NUREG-0313 Category B	Valve Interference	0 (Vol)
EBD1143-FW-23	Pipe-Elbow/ Main Steam Unit 1	FSAR Section 6.6.8	Limited examination access due to component configuration	69 (Vol)
N1A NOZ-SE	Nozzle-Safe End/ RPV External Unit 2	NUREG-0313 Category C	Limited examination access due to component configuration	75 (Vol)
N1B NOZ-SE	Nozzle-Safe End/ RPV External Unit 2	NUREG-0313 Category C	Limited examination access due to component configuration	75 (Vol)
DBB2041-FW-16	Pipe-Pipe/ Main Steam/ Unit 2	FSAR Section 6.6.8	Irremovable Scale	0 (Vol)
DBB2041-FW-19	Reducer-Pipe/ Main Steam/ Unit 2	FSAR Section 6.6.8	Irremovable Scale	0 (Vol)
DBB2072-FW-3	Pipe-Valve/ Residual Heat Removal/ Unit 2	NUREG-0313 Category C	Limited examination access due to component configuration	82 (Vol)
DBB2181-1-A	Weldolet-Pipe/ Feedwater/ Unit 2	FSAR Section 6.6.8	Limited examination access due to component configuration	50 (Vol)
DBC2011-FW-42	Elbow-Flange/ Reactor Wtr. Clean-up/ Unit 2	FSAR Section 6.6.8	Water in pipe for radiographic examination	78.6 (Vol)

Table RR-6-1

Component Identification	Configuration/ System/ Unit	Exam Requirement	Limiting Condition	Examination Coverage (%) (1)
DCA2081-FW-11	Valve-Elbow/ Residual Heat Removal/ Unit 2	NUREG-0313 Category C	Limited examination access due to component configuration	50 (Vol)
EBD2141-2A-A	Pipe-Elbow/ Main Steam/ Unit 2	FSAR Section 6.6.8	Welded hanger interference	79 (Vol)
VNBB214-FW-A-4	Elbow-Valve/ Main Steam/ Unit 2	FSAR Section 6.6.8	Whip restraint interference	85.4 (Vol)

(1) Examination coverage based on actual examination coverage.

V. ALTERNATE PROVISIONS

No alternate provisions are proposed for the subject examinations.

RELIEF REQUEST RR-7

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: B-G-2, Pressure Retaining Bolting, 2 in. and Less in Diameter
C. Code Item Number: B7.80
D. Code Reference: ASME Section XI, 1989 Edition, Table IWB-2500-1; ASME Section XI, 1992, Paragraph IWB-2430

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 each have 185 control rod drives. The control rod drive housings, which penetrate the bottom head of the reactor pressure vessel, have a flanged connection, the bolting of which is required to be examined in accordance with Examination Category B-G-2 during the second inservice inspection interval.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWB-2500-1, Examination Category B-G-2, Item Number B7.80, requires a VT-1 visual examination of CRD housing bolting surfaces at any time during the second inservice inspection interval when the housing is disassembled for repair or maintenance. In accordance with paragraph IWB-2430, Additional Examinations, examinations of CRD bolting which reveal flaws or relevant conditions which exceed the acceptance criteria of IWB-3517, shall be extended to include additional bolting examinations during the current outage. Relief is requested from implementing the additional examination requirements of paragraph IWB-2430 following visual examination and detection of cracking on the Control Rod Drive bolt head-to-shank fillet area.

IV. BASIS FOR RELIEF

The ASME Section XI required VT-1 visual examination of the CRD bolting during the first inservice inspection interval detected cracking around the shank on the head-to-shank fillet area of the bolt. Detailed metallurgical analysis of the defects determined the cracking mechanism to be stress corrosion blunted by general corrosion.

Subsequent engineering and metallurgical analysis concluded that the cracking does not compromise plant safety or CRD bolting integrity. Samples of bolting with up to seven years of service life were examined; the deepest cracking was measured at 0.040." Magnified cross-sections of the defects always showed elongated corrosion pits with blunted ends. Crack growth calculations concluded that the cracks grow at a decreasing rate. The analysis indicated that it would take 22 years for the worst-case crack in a single bolt to grow to the minimum required average bolt diameter. However, the longest period of time a bolt will be in service without receiving the Code required visual examination is 12 years. Since Code visual examinations are required only when the drives are disassembled, inspection frequencies coincide with CRD mechanism refurbishment exchange frequency (approximately 24 CRDs per outage/8 bolts per CRD housing). Any cracked bolting will be detected prior to the worst case single bolt failure. In addition,

engineering analysis of the CRD bolted joint indicated that only 3 bolts out of 8 were needed to meet ASME Code margins. Thus adequate safety margins exist even in the event a bolted joint contains potentially cracked bolts.

New design bolts, resistant to this cracking mechanism, are installed during CRD maintenance every outage. It is expected, however, that further visual indications which exceed acceptance criteria will be detected in the original bolting, and additional examinations will continue to be required during the second inservice inspection interval. Performance of the additional examinations whenever rejectable visual indications are detected is not practical, and poses unreasonable plant hardship and radiological hazard with no return in increased plant safety. Engineering and metallurgical analysis performed during the first inservice inspection interval characterized the cracking mechanism, therefore, additional examinations would serve little purpose. As the bolting is replaced with new design bolts, the condition of the original bolting is continuously monitored via ongoing Code VT-1 visual examination coupled with metallurgical and engineering analysis.

V. ALTERNATE PROVISIONS

Plant maintenance practices require all visually rejected bolting to be documented on a plant nonconformance report. A sampling of bolts with cracks in the head-to-shank fillet area undergo subsequent engineering and metallurgical analysis to confirm the results of prior analysis. If the analysis discloses new conditions which have not been evaluated, then additional examinations (to the extent practical) will be performed. Meanwhile, replacement of bolting with new design bolting will continue each outage.

RELIEF REQUEST RR-8

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: B-O, Pressure Retaining Welds in Control Rod Housings
C. Code Item Number: B14.10
D. Code Reference: ASME Section XI, 1989 Edition, Table IWB-2500-1

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 have 185 control rod drive housings per unit; each control rod drive housing is fabricated with two pressure retaining housing welds - the housing-to-flange weld and the housing tube A-to-housing tube B weld. These welds are subject to the examination requirements of Examination Category B-O.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWB-2500-1, Examination Category B-O, Item Number B14.10, requires volumetric or surface examinations, per Figure IWB-2500-18, of the pressure retaining welds of 10% of the peripheral control rod drive housings. SSES Units 1 and 2 have 40 peripheral housings (per unit); therefore, the subject examinations are required of the pressure retaining welds of 4 (peripheral) housings during the second inservice inspection interval. Relief is requested from examination of one weld (per housing) - the housing-to-flange weld - due to plant design access restrictions.

IV. BASIS FOR RELIEF

Relief is requested from examination (surface or volumetric) of the CRD housing-to-flange welds due to numerous plant design obstructions. The CRD position indicator probes, CRD shoot out steel, and CRD flange shields severely limit access to the housing-to-flange welds. In addition, high radiation doses in this area make it impractical to attempt to perform limited examinations in the face of these obstacles. The remaining housing weld is without obstructions and can be completely examined.

The CRD housing welds are within the system pressure retaining boundary of Examination Category B-P. As such, reasonable assurance of the pressure retaining integrity of the flange-to-housing welds is gained through periodic VT-3 visual examination during Class 1 system pressure testing.

V. ALTERNATE PROVISIONS

No alternate provisions are proposed for the subject examinations.

RELIEF REQUEST RR-9

I. RELIEF REQUEST APPLICABILITY

A. Unit: 1 and 2
B. Code Examination Category: C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel Or High Alloy Piping
C. Code Item Number: C5.11
D. Code Reference: ASME Section XI, 1989 Edition, Table IWC-2500-1

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 pressure retaining austenitic stainless steel (or dissimilar metal) welds listed in Table RR-9-1 are the subject of this relief request.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWC-2500-1, Examination Category C-F-1, Item Number C5.11, requires volumetric and surface examination of all[12] circumferential welds in accordance with the examination requirements illustrated in Figure IWC-2500-7. Relief is requested from complete nondestructive examination of the subject welds due to physical plant access restrictions and/or component geometry.

IV. BASIS FOR RELIEF

The Code requires selection of the affected welds for examination. Based on nondestructive examination data from the first inservice inspection interval, complete volumetric examination of the Code required volumes cannot be performed due to physical plant access restrictions and/or geometry of the adjoining components. Relief is requested from complete nondestructive examination of these components.

Examination coverage is greater than 80% for the affected welds and the limitations affect only the volumetric examination; a complete surface examination can be performed. Also, since the affected welds are included for examination in the Augmented Inservice Inspection Program, the welds will be examined more frequently throughout the second inservice inspection interval.

All examinations will be completed to the maximum extent practical. The affected welds are also subject to VT-2 visual examination during system pressure testing in accordance with the requirements of Examination Category C-H.

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[12] Due to the small population of SSES Units 1 and 2 Examination Category C-F-1 welds (i.e., less than 28 per unit), all of the nonexempt austenitic stainless steel (or dissimiliar metal) welds are required to be examined.

Table RR-9-1

Component Identification	Configuration/ System/ Unit	Item Number	Limiting Condition	Examination Coverage (%)
DBB1071-1-B	Elbow-Pipe/ Residual Heat Removal/ Unit 1	C5.11	Permanent pipe support saddle restricts complete scan	84 (Vol)
DBB2071-FW-3	Pipe-Valve/ Residual Heat Removal/ Unit 2	C5.11	Limited access due to adjacent pipe support, vent line, and component configuration	82.5 (Vol)
DCA1101-FW-1	Pipe-Valve/ Residual Heat Removal/ Unit 1	C5.11	Limited access due to hanger interference and configuration	50 (Vol)
DCA1102-FW-1	Pipe-Valve/ Residual Heat Removal/ Unit 1	C5.11	Limited examination access due to component configuration	50 (Vol)
DCB1021-FW-1	Pipe-Valve/ Residual Heat Removal/ Unit 1	C5.11	Limited examination access due to component configuration	50 (Vol)
DCA2091-FW-1	Pipe-Valve/ Core Spray/ Unit 2	C5.11	Limited examination access due to component configuration	50 (Vol)
DCA2092-FW-1	Pipe-Valve/ Core Spray/ Unit 2	C5.11	Limited examination access due to component configuration	50 (Vol)
GBB2171-FW-14	Elbow-Valve/ Residual Heat Removal/ Unit 2	C5.11	Limited examination access due to component configuration	50 (Vol)

(1) Examination coverage based on actual examination coverage.

V. ALTERNATE PROVISIONS

No alternate provisions are proposed for the subject examinations.

RELIEF REQUEST RR-10

I. RELIEF REQUEST APPLICABILITY

A. Unit: 1 and 2
B. Code Examination Category: B-A, Pressure Retaining Welds In Reactor Vessel
C. Code Item Number: C5.11
D. Regulatory Reference: 10CRF50.55(a)(6)(ii)(A) –
Augmented examination of reactor vessel.

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 reactor pressure retaining welds identified in Table RR-10-1 are the subject of this relief request.

Table RR-10-1

Component Identification	Configuration/ System/ Unit	Limiting Condition	Examination Coverage (%)
AD	Shell circumferential weld/B1.11	Permanent RPV mirror insulation support steel precludes complete examination	85.6
BK	Shell longitudinal weld/B1.12	Permanent RPV mirror insulation support steel precludes complete examination	81.1
BM	Shell longitudinal weld/B1.12	Permanent RPV mirror insulation support steel precludes complete examination	81.1

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

10 CRF 50.55(a)(6)(ii)(A(2) require volumetric examination of essentially 100% of the weld length of all circumferential and longitudinal shell welds in accordance with the examination requirements of ASME Section XI, Examination Category B-A, Item B1.10 in Table IWB-2500-1. Relief is requested from complete examination of the affected welds (AD, BK, and BM) due to a plant design obstruction caused by permanent RPV mirror insulation support steel.

Alternative examination techniques were evaluated and it was determined that no additional examination coverage is obtainable. Examination coverage of the subject welds from the RPV interior has been estimated to be approximately 85%. The internal

examinations significantly impact refuel floor activities and resources and offers no commensurate increase in examination coverage or plant safety.

Performance of RPV shell weld examations from the RPV interior is not a prudent approach for Susquehanna. Actual RPV shell weld examination coverage from the RPV exterior is 96% (based on total weld length). Whereas, overall examination coverage from the RPV interior has been estimated to be only 80 – 85%. Thus, supplemental external examinations would be required to maximize overall examination coverage.

Implementing an examination plan which combines internal and external examinations provides no commensurate increase in quality or plant safety. The combined examination approach would result in examination coverage which is essentially equivalent to the external examination coverage. The combined examination approach requires additional resources and radiation dose. The increase in radiation dose results from more supplemental manual external examinations being required to obtain coverage equivalent to the complete external examination.

IV. ALTERNATE PROVISIONS

Examinations of the affected welds will be performed to the maximum extent practical using automated ultrasonic examination techniques from the RPV exterior.

In addition, the reactor pressure vessel pressure retaining welds are subject to VT-2 visual examination during system pressure testing in accordance with the requirements of Examination Category B-P.

V. BASIS FOR RELIEF

Examination of the affected welds will be performed to the maximum extent practical using both automated and manual ultrasonic techniques from the RPV exterior. This is the most prudent examination approach for both Susquehanna reactor pressure vessel welds which still provides an acceptable level of quality and safety.

The (3) RPV welds (AD, BK, BM) with coverage below (90%) are located on the fourth shell course (approximately 171" above the top of the beltline region). The examination restriction is caused by unremovable RPV mirror insulation support steel. Plant design changes to effect greater examination coverage represent extreme hardship without a compensating return in increased plant safety.

The obstruction results in only 16.25 inches of longitudinal weld BK and BM being unexaminable from both sides. This unexamined volume accounts for only .56% of total length of RPV weld. There is no unexamined volume for circumferential weld AD. The obstructed portion of the weld AD can be examined from the other side of the weld.

Since all portions of the (3) welds are above the top active fuel, the volume of weld that has been examined is representative of the weld volume not examined. With 96% overall RPV examination coverage, the inability to examine .56% of the total RPV weld length does not present an increased risk to public health and safety.

To date, the RPV shell welds have been examined twice and no service related flaw indications have been detected. Non-relevant fabrication flaw indications have been detected during both preservice, baseline examinations (PSI) and the first interval inservice examinations (ISI). The location and size of these indications has not changed between the PSI and the ISI examinations. The results from both examinations certify that the RPV shell weld integrity provides for an acceptable level of quality and safety.

Examination coverage has increased significantly between the preservice examination and the inservice examination. Improvements in manipulators and ultrasonic transducer design have resulted in increased coverage with the automated examination equipment. Performance of manual "pick-up" examinations has further enhanced coverage. These examination improvements have resulted in an increase in the quality of the examination and increased assurance of plant safety.

RELIEF REQUEST RR-11

I. RELIEF REQUEST APPLICABILITY

A. UNIT(S): 1 and 2
B. CODE EXAMINATION CATEGORY: N/A
C. CODE ITEM NUMBER: N/A
D. REFERENCE: The Augmented Inservice Inspection Program AUG-3, NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking"

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 RPV feedwater nozzles (N4A, B, C, D, E, and F, six nozzles per unit) subject to the examination requirements of NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking" are the components affected by this relief request.

III. REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

The SSES Units 1 and 2 feedwater nozzles are not clad and incorporate the triple sleeve, double piston ring thermal sleeve design. The augmented inservice inspection requirements for the SSES Units 1 and 2 feedwater nozzles, based on Section 4.3 of NUREG-0619 and the SSES Units 1 and 2 specific nozzle/thermal sleeve configuration, are as illustrated below:

Parts Examined	Type of Examination	Extent of Examination	Frequency
Nozzle Safe End	Ultrasonic (UT)	100% of the nozzle safe ends	every two (2) refueling cycles
Nozzle Bore	Ultrasonic (UT) AND Penetrant (PT)	100% of the nozzle bores 100%of the nozzle bores(one sparger. removed)	Every two (2) refueling cycles every nine (9) refueling cycles OR 135 startup/shutdown cycles

Parts Examined	Type of Examination	Extent of Examination	Frequency
Nozzle Bore	Ultrasonic (UT) AND Penetrant (PT)	100% of the nozzle bores 100%of the nozzle bores(one sparger. removed)	Every two (2) refueling cycles every nine (9) refueling cycles OR 135 startup/shutdown cycles
Sparger	Visual (VT-3)	100% of the spargers	every four (4) refueling cycle

Relief is requested from the aforementioned requirements:

- to eliminate the requirement for penetrant testing (PT) of the feedwater nozzle bore/inner radius every 9th refueling-cycle (or every 135 startup/shutdown cycles), and
- to implement alternate inspection frequencies for ultrasonic examination (UT) of the nozzle safe end, bore, and inner radius.

Relief is requested to implement the alternate inspection requirements of IV. in lieu of the NUREG-0619 inspection requirements.

IV. ALTERNATE INSPECTION REQUIREMENTS

The alternate augmented inservice inspection requirements for the SSES Units 1 and 2 feedwater nozzles are as illustrated below:

Parts Examined	Type of Examination	Extent of Examination	Frequency
Nozzle Safe End	Ultrasonic (UT)	ASME Section XI (Nozzle-Safe End Weld)	ASME Section XI
Nozzle Bore	Ultrasonic (UT)	100% of the nozzle bores (Zone 3)	once every ten years
Nozzle Inner Radius	Ultrasonic (UT)	100% of the nozzle inner radii (Zones 1 6 2)	once every ten years
Sparger	Visual (VT-3)	100% of the spargers	every four (4) refueling cycles

The ten-year interval for examinations in accordance with these alternative examination requirements will commence at plant start up following the outage the last ultrasonic examinations were performed - the 8th refueling and inspection outage (Spring 1995) on Unit 1 and the 6th refueling and inspection outage (Spring 1994) on Unit 2. This will ensure the maximum inspection interval between examinations will not exceed ten years.

Since visual examinations of the feedwater spargers are not affected by this relief request, the inspection schedule already, established for visual examinations will continue independent of the alternate inspection requirements petitioned for herein.

V. BASIS FOR RELIEF

A. BACKGROUND

NUREG-0619 was issued in 1980 by the USNRC to address the problem of feedwater nozzle fatigue cracking experienced by many boiling water reactor plants at that time. The NUREG discussed the cracking mechanism, prescribed fixes and plant system/operational modification recommendations, and established inspection requirements intended to ensure the continued, long term efficacy of the installed fixes. Due to uncertainties associated with the analysis performed and the limited capabilities demonstrated by the available ultrasonic examination systems in this application, the NUREG-required examinations included a combination of nondestructive examination methods to supplement the routine ultrasonic examination of the nozzle areas of concern. SSES Units 1 and 2 were under construction at the time of issuance of NUREG-0619: augmented inservice inspections of the SSES Units 1 and 2 feedwater nozzles in accordance with NUREG-0619 commenced during preservice inspection of both units, and have continued to date.

Today, almost fifteen years after the issuance of NUREG-0619, experience with the prescribed hardware and plant operational fixes has been favorable in mitigating the initiation and propagation of feedwater nozzle cracking. In addition, significant advances in the area of ultrasonic examination technology has provided automated ultrasonic examination systems capable of reliably detecting and sizing fatigue flaws in the feedwater nozzle areas of concern. Given the above, implementation of the alternative inspection requirements described in IV., in lieu of the inspection requirements of NUREG-0619 for SSES Units 1 and 2, is justified and petitioned for herein.

B. BASIS FOR ELIMINATION OF PENETRANT TESTING

Periodic penetrant testing of the feedwater nozzle bore and inner radius was prescribed in NUREG-0619 to account for the lack of confidence in the then "state-of-the-art" ultrasonic examination techniques for detecting fatigue cracking in nozzle configurations. Penetrant testing also served to ensure early detection of any new cracking, thereby limiting crack growth and maintaining adequate

Structural margins to ensure reactor pressure Vessel integrity. However, performance of Penetrant testing of the feedwater nozzle bore/inner radius poses extreme hardship in terms of personnel exposure and extended plant down time since vessel drain down and sparger removal must be accomplished to facilitate penetrant examinations. In addition, feedwater sparger removal, due to the Inherent tight interference fit of the thermal sleeve, may result in damage to the thermal sleeve and/or adjacent vessel components during removal, necessitating costly repairs and extended outage time. With the advent of advanced ultrasonic examination systems capable of detection and sizing of fatigue flaws, performance of penetrant testing is no longer necessary. Continued assurance of feedwater nozzle structural integrity may be effectively assessed solely through ultrasonic inspections: performance of NUREG-required penetrant testing poses undue hardship with little compensating increase in plant safety.

Relief from performance of routine penetrant examination of the feedwater nozzle bore/inner radius at the frequency specified in NUREG-0619 is justified for the following reasons:

- SSES Units 1 and 2 feedwater nozzles are not clad and incorporate the triple sleeve, double piston ring thermal sleeve design. This design, over the years, has been proven effective in mitigation of feedwater nozzle fatigue crack initiation/propagation.

- SSES Units 1 and 2 inspection history has provided no indication of cracking to date.

- Ultrasonic inspection is now a reliable alternate to penetrant testing in assessing feedwater nozzle structural integrity. For the next scheduled ultrasonic inspections of the SSES Units 1 and 2 feedwater nozzles, PP&L is planning to use the GERIS 2000 UT system (GE Reactor Inspection System 2000) with specialized techniques designed specifically for ultrasonic examinations of feedwater nozzles. General Electric report GE-NE-C3100016-01, "GERIS 2000 Ultrasonic Inspection of Feedwater Nozzles," by S.C. Mortenson dated August 23, 1994, describes the GERIS 2000 system's qualified capabilities in detection and sizing.

C. BASIS FOR ALTERNATE ULTRASONIC INSPECTION REQUIREMENTS

Advancements in ultrasonic examination techniques since the issuance of NUREG-0619 now provide for consistent, reliable detection of small flaws in feedwater nozzle configurations. These advancements warrant the use of ultrasonic inspections as the sole, primary means of inspection. In addition, coupled with data from a SSES plant-specific fracture mechanics analysis, the extent and frequency of ultrasonic inspection prescribed by NUREG-0619 may be shown as overly conservative. Relaxation of the ultrasonic inspection requirements is justified based on the following:

- SSES Units 1 and 2 feedwater nozzles are not clad and incorporate the triple sleeve, double piston ring thermal sleeve design. This design, over the years, has proven effective in mitigation of feedwater nozzle fatigue crack initiation/propagation.

- SSES Units 1 and 2 inspection history has provided no indication of cracking to date.

- An SSES plant-specific fracture mechanics analysis, based on utilization of the existing low flow controller and routing of the RWCU system to all feedwater lines, shows that stresses present in the feedwater nozzles will not result in the growth of an initial 0.25 inch crack to greater than 1 inch during the 40-year life of the plant.

- For the next scheduled-ultrasonic inspections of the SSES Units 1 and 2 feedwater nozzles, PP&L is planning to use the GERIS 2000 UT system IGE Reactor Inspection System 2000) with specialized techniques designed specifically for ultrasonic examinations of feedwater nozzles. The GERIS 2000 system's capabilities in detection and sizing have been demonstrated and qualified, and are well documented by GE. Flaw location and depth can be reliably, quantitatively measured, including the 0.25" flaw that was the basis for the SSES plant-specific fracture mechanics evaluation.

RELIEF REQUEST RR-12

Relief Request No. RR-12 was not approved by the NRC.

RELIEF REQUEST RR-13

I. RELIEF REQUEST APPLICABILITY

A. Unit: 2
B. Code Examination Category: N/-A
C. Code Item Number: N/A
D. Regulatory Reference: ASME Section XI, 1989 Edition, IWX-2420, Successive Inspections

II. IDENTIFICATION OF COMPONENTS

This relief request applies to certain SSES Unit 2 Class 1 and 2 components and Class 1, 2 and 3 component supports subject to the requirements of Paragraph IWX-2420(a) of the Code. These components and component supports were selected/examined during the first inservice inspection interval, and are also selected for nondestructive examination during the second inservice inspection interval, thereby invoking the Code requirements for successive inspections.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Paragraph IWX 2420(a) of the Code requires that "the sequence of component examinations established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical." This is interpreted by the ISI program that components selected for examination during the second inservice inspection interval which were previously examined during the first inservice inspection interval (for Code credit) shall be scheduled for examination during the same period of the second interval as the estimation was performed during the first interval. SSES Unit 2 has a number of components scheduled for examination during the second inservice inspection interval which were previously examined during the first inservice inspection interval. For the components listed in this relief request, scheduling of component examination for the second interval to parallel the sequence established during the first interval represents a hardship and/or is impractical to implement. Relief is requested from meeting the requirements of Paragraph IWX-2420(a) of the Code for the components listed. This relief is being sought for scheduling purposes only. The intent of the request is to perform the examinations only on a schedule differing from that prescribed by the Code.

IV. BASIS FOR RELIEF

There are a variety of situations which make the requirements of Paragraph IWX-2420(a) a hardship and/or impractical to implement. These situations are discussed in detail herein.

The fuel cycle for both SSES Units 1 and 2 has been changed from an 18 month fuel cycle to a 24 month fuel cycle beginning with the 9th cycle on Unit 2. This change in fuel cycles affects the established refueling outage sequence outages needed to accomplish required ISI program nondestructive examinations and alters how the refueling outages fall within a particular inservice inspection period. SSES Unit 2 has on less refueling outage

(five refueling outages for the second inservice inspection interval versus six for the first interval) in which to complete the nondestructive examination necessary to satisfy the Unit 2 ISI program commitments. Given anticipated outage duration of 28 to 45 days, an increased inspection workload (as compared to previous outage) may not fit into the allotted inspection windows resulting in costly extended outages. Deviation from the requirement of Paragraph IWX-2420(a) for select components will allow the examination to meet the demands of the second inservice inspection interval and to optimize the examination efficiency. Examination schedules during the first inservice inspection interval were done without the taking into account of successive inspection scheduling. The greater flexibility allowed examinations to be deferred to alternate outage to accommodate for special circumstances such as ALARA/access provision or special outage work planning. These circumstances may no longer exist for the second interval. Also, experience gained during the first interval may indicate that the first interval scheduling was not the most efficient scheduling of examination or resources. For example, it is more efficient to ultrasonically examine several welds of the same pipe size requiring the same site support (scaffolding, insulation removal, etc.) at the same time rather than distributing the welds over several period to parallel the first interval. Note that the first interval scheduling may have been done so as to accommodate a unique set of circumstances that no longer affect the examinations. Deviation from the requirements of Paragraph IWX-2420(a) will allow second interval scheduling of examination take advantage of lessons learned from the first interval and/or make the most efficient use of inspection resources.

By allocating the examinations listed below, we believe that we can significantly reduce personnel radiation exposure associated with performing the exams by as much as 30 man-rem. This reduction can be realized because we are performing these inspections prior to the introduction of hydrogen water chemistry (HWC) to SSES Unit 2. Additionally, cost savings will be realized by reducing by one outage the setup of the GE GERIS inspection system.

Table RR-13-1

Component Identification/ Description	Examination Category/Item Number	Outage Currently Scheduled for Examination During Second Interval/Period (Date)	Date Last Examination Performed Interval/Period (Date)	Outage Relief for Examination During the Second Interval/Period/Date (Examinations have been performed during the Unit 2-8RIO)
Vessel Vertical Weld BD	IWB-2500-1, B-A, B1.12	10RIO/2nd (3/2000)*	4RO/2nd (3/91)	8RO/1st (3/97)
Vessel Vertical Weld BE	IWB-2500-01, B-A, B1.12	10RIO/2nd (3/2000)*	4RO/2nd (3/91)	8RO/1st (3/97)
Vessel Vertical Weld BF	IWB-2500-01, B-A, B1.12	10RIO/2nd (3/2000)*	5RO/3rd (3/91)	8RO/1st (3/97)
Vessel Vertical Weld BN	IWB-2500-01, B-A, B1.12	12RIO/2nd (3/2003):	6RO/3rd (3/94)	8RO/1st (3/97)
Vessel Circumferential Weld AB	IWB-2500-01, B-A, B1.12	10RIO/2nd (3/2000)*	N/A	8RO/1st (3/97)
Vessel Circumferential Weld AC	IWB-2500-01, B-A, B1.11	10RIO/2nd (3/2000)*	N/A	8RO/1st (3/97)
Nozzle N2J	IWB-2500-1, B-D, B3.90,B3.100	10RIO/2nd (3/2000)*	4RO/2nd (3/91)	8RO/1st (3/97)
Nozzle N3A	IWB-2500-1, B-D, B3.90,B3.100	10RIO/2nd (3/2000)*	4RO/2nd (3/91)	8RO/1st (3/97)
Nozzle N3B	IWB-2500-1, B-D, B3.90,B3.100	10RIO/2nd (3/2000)*	4RO/2nd (3/91)	8RO/1st (3/97)
Nozzle N5A	IWB-2500-1, B-D, B3.90,B3.100	9RIO/2nd (9/98)*	5RO/3rd (3/91)	8RO/1st (3/97)
Nozzle N5B	IWB-2500-1, B-D, B3.90,B3.100	9RIO/2nd (9/98)*	5RO/3rd (3/91)	8RO/1st (3/97)

*Note: Scheduling information is based upon an 18 month refueling cycle.
The ISI schedule will be reworked to incorporate the 24-month fuel cycle post-outage.

V. ALTERNATE PROVISIONS

For the components affected by this relief request, scheduling of examination will be allowed to deviate from the requirements of Paragraph IWX-2420(a).

RELIEF REQUEST RR-14

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: IWE, E-D
C. Code Item Number: E5.10 and E5.20
D. Code Reference: ASME, Section XI, 1992 Edition, IWE-2500 (a), Examination and Pressure Test Requirements

II. IDENTIFICATION OF COMPONENTS

This relief request applies to seals and gaskets of ASME Code Class MC components for both Units 1 and 2.

III. REQUIREMENTS FROM WHICH RELIEF ARE REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Subsection IWE, Paragraph 2500(a), Examination Category E-D, Item Numbers E5.10 and E5.20, require seals and gaskets on airlocks, hatches, and other devices to be VT-3 visually examined once each interval to assure leak tight integrity. Relief is requested from performing the VT-3 visual examinations once each interval and permit verification of the leak tight integrity of seals and gaskets with the 10 CFR 50, Appendix J, Primary Containment Leakage Testing Program.

IV. BASIS FOR RELIEF

Visual examination of seals and gaskets require the associated joints to be disassembled and reassembled. For electrical penetrations this would involve a pre-maintenance Appendix J test, verification of adequate cable slack for disassembly, disassembly, removal and examination of the seals and gaskets, joint reassembly, retermination and post maintenance of the cables as necessary, and a post maintenance Appendix J test of the penetration. Mechanical penetrations would be similar except for the slack verification, retermination and testing of the cables. Disassembling and reassembling equipment would risk damage to the equipment, require significant additional man-hours and personnel radiation exposure, without a compensating increase in the level of quality and safety. The 1993 Addenda of Section XI recognizing that joint disassembly is not warranted, now states in Examination Category E-D, Footnote 1, that sealed or gasketed connections need not be disassembled solely for the performance of examinations. This is also clarified in ASME Section XI Interpretation IN 96-28.

V. ALTERNATE PROVISIONS

The leak tight integrity of seals and gaskets will be verified with the 10 CFR 50, Appendix J, Primary Containment Leakage Testing Program.

RELIEF REQUEST RR-15

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: IWE Class MC
C. Code Item Number: N/A
D. Code Reference: ASME, Section XI, 1992 Edition, 1992 Addenda, IWE-2420 (b) and 2420(c), Successive Examinations

II. IDENTIFICATION OF COMPONENTS

This request is applicable to repairs of ASME Code Class MC components for both Units 1 and 2.

III. REQUIREMENTS FROM WHICH RELIEF ARE REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, requires in Paragraph IWE-2420 (b) that repairs of Class MC Components are to be reexamined during the next inspection period. Paragraph IWE-2420(c) further requires that the repaired areas be reexamined in accordance with the augmented examination requirements of Examination Category E-C, for three consecutive periods.

IV. BASIS FOR RELIEF

Relief is requested from performing successive inspections of Class MC repairs in accordance with Paragraphs IWE-2420 (b) and (c).

When a repair restores a component to an acceptable condition, successive examinations are not warranted. The requirements of Class 1, 2, or 3 Components in Paragraphs IWB-2420 (b), IWC-2420 (b), or IWD-2420 (b) do not require a repair to be subjected to successive examinations. Thus, the successive examination requirement for repairs in accordance with IWE-2420 (b) and (c) constitute a burden without a compensating increase in quality or safety. As stated in the NRC/NEI/EPRI meeting notes from H. Asher to G. Bagchi dated January 13, 1998, in Item 7, "The staff believes that the successive examinations are required to monitor the flaws or degradations accepted by engineering evaluation (and not by repair). For repaired flaws evaluated and accepted by the requirements of IWA-4000, the staff does not believe that successive examinations are necessary."

V. ALTERNATE PROVISIONS

Repairs of Class MC Components will be performed in accordance with IWA-4000 without performing successive examinations in accordance with IWE-2420 (b) and (c).

RELIEF REQUEST RR-16

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: IWE E-G
C. Code Item Number: E8.20
D. Code Reference: ASME, Section XI, 1992 Edition, IWE-2500 (a), Examination and Pressure Test Requirements

II. IDENTIFICATION OF COMPONENTS

This relief request applies to bolted connections of ASME Code Class MC components for both Units 1 and 2.

III. REQUIREMENTS FROM WHICH RELIEF ARE REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Examination Category E-G, Item Number E8.20, requires that pressure retaining bolted connections that have not been disassembled and reassembled during the interval, be subjected to a torque/tension test once each interval to assure leak tight integrity. Relief is requested from performing the torque/tension tests once each interval and permit verification of the leak tight integrity of bolted connections with the 10 CFR 50, Appendix J, Primary Containment Leakage Testing Program, Type B tests and a VT-1 visual examination in accordance with Examination Category E-G, Item No. E8.10.

IV. BASIS FOR RELIEF

Performing a torque/tension test requires that the bolted connection be retorqued or retensioned. This activity is considered maintenance and requires a 10 CFR 50, Appendix J, Type B test. The Type B test alone indicates the adequacy of the bolt torque or tension to maintain leakage within acceptable limits. Performance of a Type B leakage test and a visual examination is sufficient to demonstrate that the design function is met. As stated in the NRC/NEI/EPRI meeting notes from H. Asher to G. Bagchi dated January 13, 1998 in Item 8, "For the pressure-unseating bolted connections, it is necessary to confirm that the bolt's pretension is maintained. If their adequacy is verified during Appendix J testing or during routine disassembling and reassembling, the staff believes that additional torque testing as per Table IWE-2500 (E8.20) is not needed."

V. ALTERNATE PROVISIONS

The leak tight integrity of bolted connections that have not been disassembled during the interval will be verified with the 10 CFR 50, Appendix J, Primary Containment Leakage Testing Program, Type B Tests and a VT-1 visual examination of the exposed surfaces in accordance with Examination Category E-G, Item No. E8.10.

RELIEF REQUEST RR-17

Relief Request No. RR-17 was denied.

RELIEF REQUEST RR-18

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

All components subject to ultrasonic examination in accordance with the 1995 Edition and 1996 Addenda of ASME Section XI, Appendix VIII.

II. CODE REQUIREMENTS

The 1995 Edition and 1996 Addenda of ASME Section XI, Subsubarticle VII-4240 requires a minimum of 10 hours of annual training.

10 CFR 50.55a(b)(2)(xiv) requires that all personnel qualified for performing ultrasonic examinations in accordance with Appendix VIII shall receive 8 hours of annual hands-on training on specimens that contain cracks. This training must be completed no earlier than 6 months prior to performing ultrasonic examinations at a licensee's facility.

III. RELIEF REQUESTED

Relief is requested in accordance with 10 CFR 50-55a(a)(3)(i) from the provisions of Subsubarticle VII-4240, Annual Training. These examinations will be performed during the second 10-year inspection interval.

IV. BASIS FOR RELIEF

10 CFR 50.55a was amended in the Federal Register (Volume 64, No. 183 dated September 22, 1999) to require the 1995 Edition, with the 1996 Addenda of Section XI for Appendix VIII qualification requirements. This also imposes the requirements of Appendix VII of the 1995 Edition, with 1996 Addenda of Section XI. This includes Subarticle VII-4240, which requires a minimum of 10 hours of annual training.

10 CFR 50.55a(b)(2)(xiv) requires that all personnel qualified for performing ultrasonic examinations in accordance with Appendix VIII shall receive 8 hours of annual hands-on training on specimens that contain cracks. This training must be completed no earlier than 6 months prior to performing ultrasonic examinations at a licensee's facility.

Paragraph 2.4.1.1.1 in the Federal Register contained the following statement,

"The NRC had determined that this requirement (10 hours of training on an annual basis) was inadequate for two reasons. The first reason was that the training does not require laboratory work and examination of flawed specimens. Signals can be difficult to interpret and, as detailed in the regulatory analysis for this rulemaking, experience and studies indicate that the examiner must practice on a frequent basis to maintain the capability for proper interpretation. The second reason is related to the length of training and its frequency. Studies have shown that an examiner's capability begins to diminish within approximately 6 months if skills are not maintained. Thus, the NRC had determined that 10 hours of annual training is not sufficient practice to maintain skills, and that an examiner must practice on a more frequent basis to maintain proper skill level ... The PDI program has adopted a requirement for 8 hours of training, but it is

required to be hands-on practice. In addition, the training must be taken no earlier than 6 months prior to performing examinations at a licensee's facility. PDI believes that 8 hours will be acceptable relative to an examiner's abilities in this highly specialized skill area because personnel can gain knowledge of new developments, material failure modes, and other pertinent technical topics through other means. Thus, the NRC has decided to adopt in the Final Rule the PDI position on this matter. These changes are reflected in 50.55a(b)(2)(xiv).

Implementation of the requirements contained in ASME Section XI and the Final Rule will result in redundant training programs. The use of the Final Rule requirements in lieu of additional requirements will simplify record keeping, satisfy needs for maintaining skills, and provide an acceptable level of safety.

V. ALTERNATIVE EXAMINATIONS

Annual ultrasonic training shall be conducted in accordance with 10 CFR 50.55a(b)(2)(xiv) in lieu of Section XI, Appendix VII, paragraph VII-4240.

VI. IMPLEMENTATION SCHEDULE

PPL Susquehanna, LLC requests that this relief request be approved by January 15, 2001, in order to support the Unit 2 10th Refuel Outage that is scheduled to begin in March 2001. This relief request will be in effect for the remaining duration of the second 10-year interval of the Inservice Inspection Program for Susquehanna SES Units 1 & 2 (June 1, 2004).

RELIEF REQUEST RR-19

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

ASME Section XI, Class 1, Examination Category B-A, Item No. B1.10 longitudinal and circumferential shell welds and B1.20 Head welds subject to Appendix VIII, Supplement 4, examination.

II. CODE REQUIREMENTS

10 CFR 50.55a(b)(2) was amended to reference Section XI of the Code through the 1995 Edition with the 1996 Addenda (64 FR 51370). ASME Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 4, Subparagraph 3.2(b), length sizing qualification criteria requires that flaw lengths estimated by ultrasonics be the true length - 1/4 inch +1 inch. As amended, 10 CFR 50.55a(b)(2)(xv)(C)(1) requires a depth sizing acceptance criteria of 0.15 inch root mean square (RMS) be used in lieu of the requirements of Subparagraphs 3.2(b) to Supplement 4 to Appendix VII of Section XI of the 1996 Addenda of the Code. Subparagraph 3.2(c) contains addition requirements for statistical parameters.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(a)(3)(i) relief is requested to use a length sizing qualification criteria of 0.75 inch Root Mean Square Error (RMSE) in lieu of subparagraph 3.2(b), and to use the RMSE calculations of 3.2(a) and 3.2(b) in lieu of the statistical parameters of 3.2(c). These examinations will be performed during the second 10-year inspection interval.

IV. BASIS FOR RELIEF

On January 12, 2000, NRC staff, representatives from the Electric Power Research Institute (EPRI) Nondestructive Examination Center, and representatives from the Performance Demonstration Initiative (PDI) participated in a conference call. The discussion during the conference call included the difference between Supplement 4, "Qualification Requirements for the Clad/Basemetal Interface of Reactor Vessel," to Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) in the rule (Federal Register, 64 FR 51370), and the implementation of Supplement 4 by the PDI Program Supplement 4, Subparagraph 3.2(b) imposed a flaw sizing tolerance of -1/4 inch, +1.0 inch of the true length to the performance demonstration qualification criteria. The rule changed Subparagraph 3.2(b) to a depth sizing requirement of 0.15 inch RMS, and the PDI program uses a length sizing tolerance of 0.75 in RMS for paragraph 3.2(b). The NRC staff acknowledged that Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) in the rule was an error and should actually be a length sizing tolerance of 0.75 inch RMS, the same tolerance that was being implemented by the PDI program.

In a public meeting on October 11, 2000 at NRC offices in White Flint, MD, the PDI identified the discrepancy between the Subparagraph 3.2(c) and the PDI program. The NRC agrees that Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) should have excluded Subparagraph 3.2(c) as a requirement.

The U.S. nuclear utilities created the PDI to implement demonstration requirements contained in Appendix VIII. PDI developed a performance demonstration program for qualifying UT techniques. In 1995, the NRC staff performed an assessment of the PDI program and reported that PDI was using a length sizing tolerance of 0.75 inch RMS for reactor pressure vessel performance demonstrations. This criterion was introduced to reduce testmanship (passing the test based on manipulation of results rather than skill). The staff noted in the assessment report dated, March 6, 1996, that the length sizing tolerance was not according to Appendix VIII but did not take exception to PDI's implementation of the 0.75 inch RMS length sizing tolerance. The staff requested that the length sizing difference between PDI and the Code be resolved.

The solution for resolving the differences between the PDI program and the Code was for PDI to participate in development of a Code case that reflected PDI's program. The Code case was presented to ASME for discussion and consensus building. NRC representatives participated in this process. ASME approved the Code case and published it as Code Case N-622, "Ultrasonic Examination of RPV and Piping, Bolts and Studs, Section XI, Division 1."

Operating in parallel with the actions of PDI, the staff incorporated most of Code Case N-622 criteria in the rule published in the Federal Register, 64 FR 51370. Appendix IV to Code Case N-622 contains the proposed alternative sizing criteria, which has been authorized by the staff. The staff agrees that the omission of the length sizing tolerance of 0.75 inch RMS in the rule and the inclusion of the statistical parameters of Paragraph 3.2(c) of Supplement 4 to Appendix VIII was an oversight. The staff will correct the error in an upcoming rule.

V. ALTERNATIVE EXAMINATION

In lieu of the length sizing requirements the ASME Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 4, Subparagraph 3.2(b) a length sizing qualification criteria of 0.75 inch RMSE will be used. The RMSE calculation will be used in lieu of Subparagraph 3.2(c).

VI. IMPLEMENTATION SCHEDULE

PPL Susquehanna, LLC requests this relief request be approved by January 15, 2001, in order to support the Unit 2 10th Refuel Outage that is scheduled to begin in March 2001. This relief will remain in effect for the duration of the second 10-year interval of the Inservice Inspection Program for Susquehanna SES Units 1 & 2 (June 1, 2004).

VII. REFERENCE

1. NRC Assessment of the PDI Program, Jack R. Strosnider, Chief Materials and Chemical Engineering Branch, to Bruce J. Sheffel, Chairman, PDI, March 6, 1996, Table 2, Item 94-005, p34.

2. Meeting Summary, Teleconference between NRC and representatives from PDI, D. G. Naujock, Metallurgist, NDE & Metallurgy Section, to Edmund J. Sullivan, Chief NDE & Metallurgy Section, Chemical Engineering Branch, Division of Engineering, U.S. NRC, March 6, 2000.

3. NRC staff's letter to Mr. T. F. Plunkett, Florida Power and Light Company dated September 23, 1999.

RELIEF REQUEST RR-20

Relief Request RR-20 has been withdrawn.

RELIEF REQUEST RR-21

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

All components subject to ultrasonic examination with Appendix VIII to the 1995 Edition with 1996 Addenda of ASME Section XI.

II. CODE REQUIREMENTS

10 CFR 50.55a(g)(6)(ii)(C) requires implementation of the ASME Code, Section XI, 1995Edition, 1996 Addenda, with an expedited implementation for Appendix VII ultrasonic examinations. The Supplements to Appendix VII of Section XI, Division 1, 1995 Edition with the 1996 Addenda of the ASME Boiler and Pressure Vessel Code must be implemented in accordance with the following schedule: Supplements 1, 2, 3, and 8 – May 22, 2000; Supplements 4 and 6 – November 22, 2000; Supplement 11 – November 22, 2001; and Supplements 5, 7, 10, 12 and 13 – November 22, 2002. Related Subarticle IWA-2300, of the 1995 Edition, 1996 Addenda of ASME Section XI requires qualification of examiners to CP-189 as amended by Division 1.

The 1989 Edition of ASME Section XI, subarticle IWA-2300, defines the qualification requirements for NDE personnel as ASNT SNT-TC-1A, 1984, and the additional requirements of Division 1, including Appendix I.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to continue basing all requirements for initial certification and recertification of ultrasonic examination personnel on the 1989 Edition of Section XI. This includes use of ASNT SNT-TC-1A, 1984, as amended by IWA-2300 and Appendix VII of Section XI, 1989 Edition. These examinations will be performed during the second 10-year inspection interval.

IV. BASIS FOR RELIEF

The 1989 Edition of ASME Section XI, Subarticle IWA-2300, requires qualification of NDE personnel using a written practice prepared in accordance with ASNT SNT-TC-1A, 1984, and the additional requirements of Division 1, including Appendix I.

10 CFR 50.55a was amended in the Federal Register (64 FR 51370) to require the 1995 Edition, with the 1996 Addenda of Section XI, with an expedited implementation schedule for Appendix VIII qualification requirements. This imposed the requirements of Appendix VII of the 1995 Edition, with 1996 Addenda of Section XI. This includes Subarticle IWA-2300, which requires a written practice prepared in accordance with CP-189, 1991, as amended by the requirements of Division 1. Current certifications are not affected, paragraph IWA-2310 in the 1995 Edition with 1996 Addenda states that certifications based on SNT-TC-1A are valid until recertification is required.

This requires development, implementation, and to the extent possible consolidation of a multifaceted written practice, specific to Ultrasonic examination personnel, to address the various requirements contained in SNT-TC-1A and CP-189, as amended by

different Editions and Addenda of Section XI, including IWA-2300 and Appendix VII. The requirements are phased in with implementation dates for certification and recertification requirements of May 22, 2000 for personnel examining piping and bolting, November 22, 2000 for personnel examining RPV welds and clad/basemetal interface, November 22, 2001 for weld overlays, and November 22, 2002 for nozzle and dissimilar metal welds.

Regardless of whether CP-189 or ASNT SNT-TC-1A is the base document used to prepare the written practice, all personnel conducting examinations to Appendix VIII requirements must be qualified in accordance with Appendix VIII and all personnel qualified through the PDI program must be qualified in accordance with Appendix VII. Additionally, for other than Appendix VIII ultrasonic examinations, all NDE examiners, (regardless of the method or except IWE/IWL) will continue to be certified in accordance with a written practice developed in accordance with ASNT SNT-TC-1A for the duration of this interval.

A direct comparison of the implementation requirements for Appendix VIII examinations using the 1984 Edition of SNT-TC-1A as modified by IWA-2300 and Appendix VII of the 1989 Edition of Section XI with the 1991 Edition of CP-189 as modified by IWA-2300 and Appendix VII of the 1995 Edition and 1996 Addenda of Section XI is considered to be unwieldy. Therefore, three less complex comparisons of technically significant items are attached. Qualifications of ultrasonic examination personnel to SNT-TC-1A and the additional requirements of the 1989 Edition of Section XI, including Appendix VII are considered equivalent to Qualification to CP-189 as amended by the 95/96 Edition of Section XI.

In lieu of maintaining redundant, possibly conflicting programs, the proposed alternative of maintaining the current program for qualifications of UT personnel will simplify record keeping, satisfy the need to maintain personnel qualifications, eliminate redundant systems, and provide an acceptable level of quality and safety commensurate with the other NDE disciplines.

V. ALTERNATIVE PROVISIONS

Initial certification and recertification of NDE personnel shall continue to be conducted in accordance with the requirements contained in the 1989 Edition of ASME Section XI. Personnel performing ultrasonic examinations shall also meet the requirements specified in 10 CFR 50.55a as amended by 64 FR 51370 which sets forth the requirements for the qualification of personnel by demonstration. The combination of a written practice based on SNT-TC-1A and a performance based demonstration for personnel performing ultrasonic examination of welds or components will continue to ensure the structural integrity of the systems/components.

VI. APPLICABLE TIME PERIOD

PPL Susquehanna, LLC requests that this relief request be approved by January 31, 2001, in order to support the Unit 2 10th Refuel Outage that is scheduled to begin in March 2001. This relief request will remain in effect until August 31, 2001.

Comparison Summary

1. The first compares IWA-2300 from the 1995 Edition with the 1996 Addenda to the 1989 Edition the major difference is the specification of CP-189 as opposed to SNT-TC-1A:

   While CP-189 is a "standard" while SNT-TC-1A is a "recommended practice," this has no technical impact on the implementation of SNT-TC-1A. The "recommended practices" defined by the use of the word "should" in SNT-TC-1A are treated as requirements by the Susquehanna SES.

2. The second compares Appendix VII to the 95/96 Addenda to the 1989 Edition. There is little technical difference between the 1989 and 95/96 Editions. Both modify CP-189 and SNT-TC-1A as required to comply with Section XI, for example:

   SNT-TC-1A contains simultaneous experience provisions that are not allowed by Appendix VII.

3. The last compares the 1991 Edition of CP-189 with the 1984 Edition of SNT-TC-1A as modified by Appendix VII, the major differences are mitigated by additional requirements contained in Section XI, for example:

   CP-189 requires a "written practical," (procedure preparation), and a "demonstration practical" for Level III personnel performing test or evaluating test results. This has no impact on Appendix VIII personnel, though not required by SNT-TC-1A, Appendix VIII requires a "practical" examination for a qualified examiner regardless of Level.

   CP-189 defines several additional terms such as closed book examination, Documented, Education, Evaluation, Examination, Experience, General examination, Indication, Interpretation, Method, NDT Instructor, Practical examination, Procedure, and test technique. These definitions are consistent with common usage as applied to SNT-TC-1A and Section XI. Where deemed necessary, ASME Section XI has provided compensation. For example, the term "Outside Agency" is included in the 95/96 Edition to compensate because it is included in SNT-TC-1A but not in CP-189, conversely the 1989 Edition defines an NDE instructor that is not included in SNT-TC-1A.

   There are major differences between CP-189 and SNT-TC-1A. However, as illustrated in the comparisons, these are minimized by the moderating effects of the applicable IWA-2300 requirements and especially Appendix VII requirements. Qualifications of ultrasonic examination personnel to SNT-TC-1A and the additional requirements of the 1989 Edition of Section XI, including Appendix VII are considered equivalent to Qualification to CP-189 as amended by the 95/96 Edition of Section XI.

COMPARISON OF THE QUALIFICATION AND CERTIFICATION REQUIREMENTS OF ULTRASONIC EXAMINERS CERTIFIED TO CP-189, 1991, AND SNT-TC-1A, 1984, AS MODIFIED BY IWA AND APPENDIX VII OF 1989 AND 95/96 EDITION OF SECTION XI RESPECTIVELY

Comparison No. 1

Comparison of IWA-2300 from the 1995 Edition with the 1996 Addenda to the 1989 Edition

The following is a summary of pertinent technical aspects of the implementation requirements contained in Subparagraph IWA-2300 to the two Editions of ASME Section XI identified below.

The comparison is complicated because some of the requirements may be Modified or omitted, simply because they are defined in another location or by another document. Several requirements, such as those for limited certification, differ somewhat but the differences are not considered technically relevant and they are not detailed in this technical comparison. These complications are representative of the increased burden when administering more than one program or a program based on varying requirements.

1995 Edition with 1996 Addenda of Section XI	**1989 Edition of Section XI**
IWA-2310 - Written practice is prepared using ANSI/ASNT "Standard" CP-189, 1991 Edition. Certifications based on SNT-TC-1A remain valid until recertification.	IWA-2310 - Written practice is prepared using ASNT "Recommended Practice" SNT-TC-1A, 1984 Edition. Certifications based on earlier editions remain valid until recertification.
IWA-2311 - The written practice shall specify the duties and responsibilities of the Principle Level III.	
IWA-2312 - NDE methods listed in CP-1989 – Similar to 1989 IWA-2311.	IWA-2311 - NDE methods listed in SNT-TC-1A – Similar to 95/96 IWA-2312
IWA-2313 - NDE methods not listed in CP-189 – Similar to 1989 IWA-2312.	IWA-2312 – NDE methods not listed in SNT-TC-1A – Similar to 1989 IWA-2313
IWA-2314 - Level I and II recertified every 3 years, Level III every 5 years by examination per CP-189. ASNT Level III not required.	IWA-2313 - Level I and II recertified every 3 years, Level III every 5 years by examination per SNT-TC-1A.

1995 Edition with 1996 Addenda of Section XI	1989 Edition of Section XI
IWA-2321 - Snellen 20/25 using lower case letters with a known pre-measured height (see IWA-2322). Administered in accordance with a procedure, and by personnel, approved by an NDE Level III designated by the employer.	IWA-2321 - Jaeger number 1 or equivalent, conducted by personnel qualified to conduct the examinations
IWA-2322 - Requires use of 10x magnifier to measure height of letters.	
IWA-2323 - Level III qualifications evaluated by Basic, Method, Specific, and Practical examinations and the Demonstration examination (Level II Practical).	IWA-2322 - Level III qualifications determined by Basic, Method, and Specific examinations per SNT-TC-1A. (Demonstration examination would be required by Section XI, Appendix VIII)
CP-189 General, Specific and Practical examinations administered and graded by a Level III.	IWA-2323 - Level I and II qualifications determined by General and Specific examinations, and a Practical hands-on examination administered by a Level III.
95/96 Appendix VII is similar to 1989 Appendix VII (See detailed comparison following).	IWA-2324 - Defines requirements for administration of examinations. This is Modified by Appendix VII.
IWA-2330 - Level I responsibilities. identical to 1989 IWA-2330.	IWA-2330 - Level I responsibilities. Identical to 95/96 IWA-2330
IWA-2340 - Level III education. Similar to 1989 IWA-2340	IWA-2340 - Level III education. Similar to 95/96 IWA-2340
IWA-2350 - Defines limited certification. Provides more definition than 1989.	IWA – 2350 - Defines limited certification requirements.
IWA-2360 - Allows certification directly to Level II. Defines additional Level III responsibilities.	Appendix VII allows certification directly to Level II. Defines similar Level III responsibilities.
IWA-2370 - Contains experience requirements for Level II candidates.	1989 Appendix VII contains requirements that are more stringent.

Comparison No. 2

Comparison of Appendix VII to the 1995 Edition
with the 1996 Addenda to the 1989 Edition

The following is a summary of pertinent technical aspects of the implementation requirements contained in Subparagraph IWA-2300 to the two Editions of ASME Section XI identified below.

The comparison is complicated because some of the requirements may be modified or omitted, simply because they are defined in another location or by another document. Several requirements, such as those for limited certification, differ somewhat but the differences are not considered technically relevant and they are not detailed in this technical comparison. These complications are representative of the increased burden when administering more than one program or a program based on varying requirements.

95/96 APPENDIX VII	1989 APPENDIX VII
VII-1000 – Scope – Modifies the requirements of IWA-2300 for Ultrasonic examiners	VII-1000 – identical to 95/96
VII-2000 – Qualification Levels – Identifies 5 Qualification Levels as defined in CP-189	VII-2000 – essentially the same. Defines NDE Instructor qualification since it is not included in SNT-TC-1A.
VII-3000 – Written Practice – Defines the Written Practice, including the definition of an "outside agency" as an independent company or a functionally independent organization within the same company.	VII-3000 – identical to 95/96 except "outside agency" is not defined.

95/96 APPENDIX VII	1989 APPENDIX VII
VIII-4000 - Qualification Requirements	
CP-189 contains no simultaneous experience provisions.	Table VII-4110-1 states the simultaneous experience provision of SNT-TC-1A is not applicable.
Paragraph VII-4223 requires previously qualified individuals to meet the requirements for training	Both Appendices in paragraph VII-4300 state that to be considered for examination the Level I, II, and III candidates shall have successfully completed the training required in VII-4200.
Paragraph VII-4240 states that no examination is required for the annual retraining.	
Paragraph VII-4310 (a) states that a random selection process must be controlled by the written practice so no individual takes the same examination more than once.	
Paragraph VII-4310 (b) allows the use of "grading units" to produce a specimen bank for the practical examination.	
Paragraph VII-4330 (a) Level III examinations per IWA-2300, Basic, Method, Specific, Practical, Demonstration, contains rules for Level II practical examination. An Appendix VIII practical is acceptable.	While the 1989 Appendi.x VIII contains no requirements for a practical examination, it would be required for the mandatory Appendix VIII.
Paragraph VII-4330 (b) allows recertification of Level III personnel using only the Method and Specific Examinations	IWA-2313 requires recertification using Basic, Method, and Specific written examinations
Not addressed	VII-6000 – Defines duties of the ANII

Comparison No. 3

Comparison of the 1991 Edition of CP-189 with the
1984 Edition of SNT-TC-1A as Modified by Appendix VII

The following is a summary of pertinent technical aspects of the implementation requirements contained in CP-189, 1991; and SNT-TC-1A, 1984.

Comparisons are not detailed in those areas where CP-189 is modified by the requirements of Appendix VII. Please note that the word "should" typically identifies what is considered a requirement in SNT-TC-1A, while CP-189 typically uses the word "shall." Industry practice is to treat SNT-TC-1A recommendations as requirements. Several paragraphs are identified as similar. This is subjective. For example, while SNT-TC-1A does not specifically require suspension of an examiners certification for a lapsed vision examination, it is considered to be implied, and it is industry practice to do so.

CP-189	SNT-TC-1A
1.0 – Scope – CP-189 is a standard that establishes the minimum requirements.	1.0 – Scope – SNT-TC-1A is a recommended practice establishing guidelines.
2.0 – Definitions – More inclusive (19 terms) and more concise. Some Modified by Appendix VII.	2.0 – Definitions Less inclusive (7 terms)
3.0 - Levels of Qualification	
3.1 – Classification	Modified by Appendix VII
3.2 – Level III	4.3 (3) – Similar to CP-189
3.3 – Level II	4.3 (2) – Similar to CP-189
3.4 – Level I	Modified by Appendix VII
3.5 – Trainee	4.2 – Similar to CP-189
3.6 – NDE Instructor	Modified by Appendix VII

CP-189	SNT-TC-1A
4.0 - Qualification Requirements	
4.1 – Training	Modified by Appendix VII
4.2 – Experience	Modified by Appendix VII
4.3 – Previous Training and Experience	Modified by Appendix VII
4.4 – NDT Instructor	Modified by Appendix VII
4.5 – Outside services	Modified by Appendix VII
5.0 - Qualification and Certification	
5.1 – Procedure	Modified by Appendix VII
5.2 – Procedure requirements	Modified by Appendix VII
5.3 – Approval – "written practice" approved by Level III	Modified by Appendix VII – Requires that "written practice" specify responsibilities.
6.0 - Examinations	
6.1 – Vision	Modified by IWA-2300
6.2 – Level III Examination	Modified by Appendix VII
6.3 – Level I and II Examination	Modified by Appendix VII
6.4 – Administration and grading	Modified by Appendix VII
6.5 – Reexamination	Modified by Appendix VII
6.6 – Administration of Examinations – prohibits one's self or one's subordinate from preparing or administering an exam.	Not specifically addressed

CP-189	SNT-TC-1A
7.0 - Expiration, Suspension, Revocation, and Reinstatement of Employer Certification	
7.1 – Expiration	Similar to CP-189
7.2 – Suspension	Similar to CP-189
7.3 – Revocation	Similar to CP-189
7.4 – Reinstatement	Similar to CP-189
8.0 - Employer Recertification	
8.1 – NDT Level I and II	Modified by Appendix VII
8.2 – NDT Level III	Modified by Appendix VII
9.0 - Records	
9.1 – Responsibility for Documentation	Modified by Appendix VII
9.2 – Contents of Certification Record	Modified by Appendix VII

RELIEF REQUEST RR-22

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

Category B-A, Item No. B1.11 Welds on Units 1 and 2: Weld Ids AA, AB, AC, AD, AE

II. CODE REQUIREMENTS

10 CFR 50.55a(g)(6)(ii)(A)(2) requires volumetric examination of RPV shell welds to be performed completely, once, as an augmented examination requirement. These examinations are required to be performed using the 1989 Edition of the ASME Code Section XI. These examinations are required during the inspection interval when the regulation was approved or the first period of the next inspection interval. For purposes of the augmented examinations the regulation defined "essentially 100 percent" as more than 90 percent of the examination volume of each weld.

III. RELIEF REQUESTED

PPL requests approval of an alternative RPV examination for SSES Units 1 and 2. Approval of this alternative examination is requested in accordance with 10 CFR 50.55a(a)(3)(i) and 10 CFR 50.55a(g)(6)(ii)(A)(5) for permanently excluding volumetric examination of circumferential RPV welds. PPL also requests approval to implement the alternative RPV examination in lieu of the inservice inspection requirements for circumferential welds in the ASME code, Section XI 1989 Edition Table IWB-2500-1, Examination Category B-A, Item No. B1.11 volumetric examination of RPV circumferential welds. The code of record for the second inservice inspection interval is the ASME Code, Section XI, 1989 Edition.

IV. BASIS FOR RELIEF

In Generic Letter 98-05, the NRC stated that the estimated failure frequency of the BWR RPV circumferential welds is well below the acceptable core damage frequency (CDF) and large early release frequency (LERF) criteria discussed in Regulatory Guide 1.174, "An Approach for using Probabilistic Risk Assessment in Risk Informed Decisions On Plant-Specific Changes to the Licensing Basis." Furthermore, the NRC indicated that the estimated frequency of RPV circumferential weld failure bounds the corresponding CDF and LERF that may result from a reactor pressure vessel weld failure. On this basis, the NRC concluded the proposal in the BWRVIP-05 report, as modified by two criteria, was acceptable and that BWR licensees may request permanent relief from the inservice inspection requirements of 10 CFR 50.55a(g) for the volumetric examination of circumferential reactor welds by demonstrating the two criteria discussed below. The generic letter states that licensees still need to perform their required inspections of "essentially 100 percent" of all axial welds.

Generic Letter 98-05 Criterion 1

At the expiration of the license, the circumferential welds will continue to satisfy the limiting conditional failure probability for circumferential welds in the staff's July 28, 1998 safety evaluation (of GL 98-05 Permitted Action).

PPL Response

SSES Units 1 and 2 are defined as ASTM E-185-73, Case "A" plants, since the vessels have a predicted shift in the reference nil-ductility temperature (ΔRT_{NDT}) of less than 100°F and will be exposed to a neutron fluence of less than $5x10^{18}$ n/cm^2 over the design lifetime of the plant. The expected low RPV 1/4T 32 Effective Full Power Years (EFPY) beltline fluence (<<$5x10^{18}$ n/cm^2) results in a low predicted shift in the reference nil-ductility temperature RT_{NDT} (<25°F at 32 EFPY).

The following table illustrates that the SSES Units 1 and 2 reactor pressure vessels have additional conservatism in comparison to Table 2.6-4 for the Limiting Plant-Specific Analyses (32 EFPY) of the NRC's evaluation of BWRVIP-05. The chemistry factor, ΔRT_{NDT}, $RT_{NDT(U)}$ and Mean RT_{NDT} are determined in accordance with the guidelines of Regulatory Guide 1.99, Rev. 2 and ASME Code Section III, NB2300, as applicable.

Parameter Description	SSES Units 1 and 2 Comparative Parameters at 32 EFPY for the Bounding Circumferential Weld Wire Heat/Lot 624263/E 204A27A*	USNRC Limiting Plant Specific Analyses Parameters at 32 EFPY SER Table 2.6-4
Cu, wt%	0.06	0.10
Ni, wt%	0.89	0.99
CF	82	109.5
EOL ID Fluence, $x10^{19}$ n/cm^2	0.078	0.51
ΔRT_{NDT}, °F	24.9	109.5
$RT_{NDT(U)}$	-20	-65
Mean RT_{NDT}, °F	4.9	44.5

*Unit 2 data: Unit 1 data is enveloped by this data.

The chemistry factors for the SSES Units 1 and 2 limiting circumferential welds are lower than the NRC's Limiting Plant-Specific Analyses (32 EFPY) and the End of Life (EOL) fluence is significantly lower than the NRC's limit such that the resulting shift in reference temperature, ΔRT_{NDT}, is bounded by the NRC evaluation of BWRVIP-05 technical bases. Considering the expected shift in $RT_{NDT}(\Delta RT_{NDT})$ is small and the excellent SSES Units 1 and 2 plate and weld chemistry, embrittlement due to fluence effects have a negligible affect on the SSES Units 1 and 2 reactor pressure vessel weld failure probabilities,

which based on the above, are considered bounded by the conditional failure probability, P (F/E), in the NRC's Limiting Plant-Specific Analyses (32 EFPY).

Generic Letter 98-05 Criterion 2

Licensees have implemented operator training and established procedures that limit the frequency of cold over-pressure events to the amount specified in the staff's July 28, 1998 safety evaluation.

PPL Response

PPL has in place procedures which monitor and control reactor temperature and water inventory during all aspects of cold shutdown which would minimize the likelihood of a Low Temperature Over-Pressurization (LTOP) event from occurring. Additionally, these procedures are reinforced through operator training.

The System Leakage Test and the System Hydrostatic Test (as modified by ASME Code Case N-498-1), which have been used at SSES, have sufficient procedural guidance to prevent a cold overpressurization event. The System Leakage Test is performed at the conclusion of each refueling outage, while the System Hydrostatic Test is performed once each ten-year Inspection Interval. Briefings for these tests generally detail the anticipated testing evolution with special emphasis on conservative decision making, plant safety awareness, the process in which the test would be aborted if plant systems responded in an adverse manner, and lessons learned from similar in-house or industry operating experiences. Specific attention is devoted to avoidance of rapid over-pressurization by an inadvertent SCRAM at test pressure (in the manner of Clinton Power Station LER 89-016). Vessel temperature and pressure are required to be monitored throughout these tests to ensure compliance with the Technical Specification 3.4.10 pressure-temperature curve. The procedures for these tests prescribe the designation of a test director (on a shift basis) for the duration of the test who is a single point of accountability, responsible for the coordination of testing from initiation to closure and for maintaining shift management and line management cognizant of the status of the test. Additionally, the Shift Supervisor provides an oversight function during the test.

Additionally, to ensure a controlled, deliberate pressure increase, the rate of pressure increase is administratively limited throughout the performance of the test. If the pressurization rate exceeds this limit, direction is provided to remove the Control Rod Drive (CRD) pumps, which are used for pressurization, from service.

With regard to inadvertent system injection resulting in an LTOP condition, the high pressure make-up systems (High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems, as well as the normal feedwater supply (via the Reactor Feedwater Pumps)) at Susquehanna SES are all steam driven. During reactor cold shutdown conditions, no reactor steam is available for the operation of these systems. Therefore, it is not possible for these systems to contribute to an over-pressure event while the unit is in cold shutdown. Although auxiliary steam is used to test the associated turbines while the plant is shutdown, the pump is uncoupled from the turbine during the actual test which would prevent an LTOP condition.

Procedural control is also in place to respond to an unexpected or unexplained rise in reactor water level which could result from a spurious actuation of an injection system. Actions specified in this procedure include preventing condensate pump injection, securing ECCS system injection, tripping CRD pumps, terminating all other injection sources and lowering RPV level via the RWCU system.

In addition to procedural barriers, Licensed Operator Training is in place which further reduces the possibility of the occurrence of LTOP events. During Initial Licensed Operator Training the following topics are covered: Brittle fracture and vessel thermal stress; Technical Specification training, including Section 3.4.10 "RCS Pressure and Temperature (P/T) Limits"; and Simulator Training of plant heatup and cooldown including performance of surveillance tests which ensure pressure-temperature curve compliance. In addition, operator training has been provided on the expectations for procedural compliance as provided in the operations standards manual.

During plant outages, the work control processes assure that the outage schedule and changes to the schedule receive a thorough shutdown risk assessment review to ensure defense-in-depth is maintained. Work activities are reviewed by Station Management and Operations Management to ensure safe operation and that plant mode can support the scheduled work.

During outages, work is coordinated through the Outage Control Center and the Ops Work Control Center which provides an additional level of Operations oversight. In the Control Room, the Shift Supervisor is required, by procedure, to maintain cognizance of any activity that could potentially affect reactor level or decay heat removal during refueling outages. The Control Room Operators are required to provide positive control of reactor water level within the specified bands, and promptly report when operating outside the specified band, including restoration of actions being taken.

In addition to the above, ongoing review of industry operating plant experiences is conducted to ensure that the PPL procedures consider the impact of actual events, including LTOP events. Appropriate adjustments to the procedures and associated training are then implemented, to preclude similar situations from occurring at Susquehanna SES.

Summary

The BWRVIP-05 report provides the technical basis for eliminating inspection of BWR reactor pressure vessel circumferential shell welds. The BWRVIP-05 report concludes that the probability of failure of the BWR reactor pressure vessel circumferential shell welds is orders of magnitude lower than that of the axial shell welds. Based on an assessment of the materials in the circumferential weld in the beltline of the SSES Unit 2 reactor pressure vessels, the conditional probability of reactor pressure vessel failure should be less than or equal to that estimated in the NRC's analysis. Based on operator training and established procedures that have been implemented, the probability of cold over-pressure transients will limit the frequency of cold over-pressure events to the amounts specified in the NRC's June 30, 1998 safety evaluation.

References

1. NRC Generic Letter 98-05, "Boiling Water Reactor Licensees Use of the BWRVIP-05 Report to Request Relief from Augmented Examination Requirements on Reactor Pressure Vessel Circumferential Shell Welds," dated November 10, 1998.

2. EPRI TR 105697, BWR Vessel and Internals Project, BWR Reactor Pressure Vessel Shell Weld Inspection Recommendations (BWRVIP-05), September 1995.

3. NRC Letter from Gus C. Lainas, Acting Director, Division of Engineering, Office of Nuclear Reactor Regulation, to Carl Terry, BWRVIP chairman, Niagara Mohawk Company, July 28, 1998.

V. ALTERNATIVE EXAMINATIONS

PPL proposes to perform inspections of essentially 100 percent of the longitudinal seam welds in the RPV shell and essentially zero percent of the RPV circumferential seam welds, which will result in partial examination (i.e., approximately two to three percent) of the circumferential welds at their points of intersection with the longitudinal welds. These inspections are being proposed as an alternative to the augmented examinations specified in 10CRFR50.55a(g)(6)(ii)(A)(2) for circumferential welds, as well as an alternative to the inservice inspection requirements for circumferential welds in the ASME Code, Section XI 1989 Edition.

VI. IMPLEMENTATION SCHEDULE

PPL Susquehanna, LLC requests that this relief request be approved by January 15, 2001, in order to support the Unit 2 10th Refuel Outage that is scheduled to begin in March 2001. This relief will remain in effect for the duration of the Second 10 year interval of the Inservice Inspection Program for Susquehanna SES Units 1 and 2 (June 1, 2004).

RELIEF REQUEST RR-23

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

All components subject to nondestructive examinations (NDE) in accordance with the 1989 Edition of ASME Section XI. This relief request will allow the use of CP-189 as amended by Division 1 (hereafter referred to CP-189), instead of ASNT SNT-TC-1A, 1984, as amended by Division 1 (hereafter referred to SNT-TC-1A) for the qualification and certification of NDE personnel.

II. CODE REQUIREMENTS

10 CFR 50.55a(b)(2) requires implementation of the ASME Code, Section XI, to the 1995 Edition, 1996 Addenda. Related Subarticle IWA-2300, of the 1995 Edition, 1996 Addenda of ASME Section XI requires qualification and certification of examiners to CP-189.

The 1989 Edition of ASME Section XI, Subarticle IWA-2300, identifies the qualification and certification requirements for NDE personnel as SNT-TC-1A.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to base all requirements for initial qualification, certification and recertification of NDE examination personnel on Subarticle IWA-2300 of the 1995 Edition, 1996 Addenda of ASME Section XI. Subarticle IWA-2300 of the 1995 Edition, 1996 Addenda requires the use of CP-189. The relief requested is deemed to provide a commensurate level of quality and safety as the existing qualification and certification program, and with other NDE disciplines.

IV. BASIS FOR RELIEF

The 1989 Edition of ASME Section XI, Subarticle IWA-2300, requires qualification and certification of NDE personnel using a written practice prepared in accordance with SNT-TC-1A. 10 CFR 50.55a was amended in the Federal Register in 1999 (64 FR 51370) to require the use of the 1995 Edition, with the 1996 Addenda for Section XI. This imposed the requirements of Subarticle IWA-2300 examinations, which requires a written practice prepared in accordance with CP-189.

The existing Susquehanna SES NDE qualification and certification program utilizes SNT-TC-1A. Relief Request 21 (approved February 16, 2001), requires that Susquehanna SES utilize CP-189, for Ultrasonic examinations, after August 31, 2001. Requiring CP-189 for Ultrasonic examinations, and SNT-TC-1A for other NDE examinations after August 31, 2001, will result in the necessity to maintain redundant, possibly conflicting programs with no increase in the acceptable level of quality and safety commensurate with other NDE disciplines.

Therefore, it is appropriate to base all NDE Section XI, Subarticle IWA-2300 qualification and certification requirements on CP-189 after August 31, 2001. Additionally, CP-189 is required to be implemented for all NDE personnel for the Third 10-Year Interval of the Inservice Inspection Program for the Susquehanna SES Units 1 and 2, beginning in June 2004.

V. ALTERNATIVE PROVISION

Initial qualification and certification of NDE personnel shall be conducted in accordance with the requirements contained in Subarticle IWA-2300 of the 1995 Edition, 1996 Addenda of ASME Section XI, which utilizes the CP-189 qualification and certification program. Personnel performing Subarticle IWA-2300 NDE examinations at the Susquehanna SES shall meet the qualification and certification requirements for NDE personnel as required by CP-189.

VI. APPLICABLE TIME PERIOD

This relief request will remain in effect for the duration of the Second 10-Year Interval of the Inservice Inspection Program for Susquehanna SES Units 1 and 2 (June 1, 2004).

RELIEF REQUEST RR-25

I. SYSTEM/COMPONENT(S) FOR WHICH ALTERNATIVE WILL BE USED

Code Class:	Class 1, 2, 3, and MC
Reference:	ASME, Section XI, IWA-4000
Examination Category:	All
Item Number:	All
Description:	Alternative Requirements to IWA-4000
Component Numbers:	All

II. CODE REQUIREMENT

The 1992 Edition with the 1992 Addenda of ASME Section XI, IWA-4000 provides the requirements for performing repairs and replacements. Specific criteria on performing underwater welding are not addressed.

Pursuant to I0 CFR 50.55a(a)(3)(i), the Susquehanna Steam Electric Station (SES) proposes to implement the provisions of ASME Section XI Code Case N-516-2, "Underwater Welding," which is not yet approved by reference in Regulatory Guide 1.147.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(a)(3)(i) relief is requested to authorize use of Code Case N-516-2.

IV. BASIS FOR ALTERNATIVE

ASME Section XI, IWA-4000 (1992 edition with the 1992 addenda), does not address the requirements for welded repair or installation of replacement items by welding on ASME Class 1, 2, 3 and MC pressure boundary components when welding is performed underwater. To address this issue, ASME Section XI, has issued Code Case N-516-2 "Underwater Welding." Code Case N-516-2 provides welding methods and requirements that may be used when welding for a repair or replacement activity is performed underwater.

Code Case N-516-1 was approved by the ASME Boiler and Pressure Vessel Code Committee on December 31, 1996. Code Case N-516-2 (approved on January 17, 2000) is the reaffirmation of Code Case N-516-1, except for a few minor editorial changes. Code Case N-516-2 is not yet endorsed in the most recent listing of NRC approved code cases provided in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." The original version of the Code Case, N-516, is endorsed in Revision 12 of Regulatory Guide 1.147. However, this version of the subject Code Case is only applicable for use on P-No. 8 and P-No. 4X materials. Revisions 1 and 2 of the Code Case extend the applicability to underwater repairs and replacements made on components made of P-No. 1, carbon steel materials as well. Authorization to use the guidance provided in Revision 2 of the subject Code Case will allow the Susquehanna SES to control the performance of underwater welding

in accordance with an appropriate industry standard that will adequately assure weld integrity.

The Code Case will provide appropriate controls over the welding processes that are needed to implement such repairs, replacements, and modifications in a safe and effective manner. Susquehanna SES therefore regards these requirements as providing an acceptable level of quality and safety.

V. ALTERNATIVE EXAMINATION

Susquehanna SES will use Code Case N-516-2 in its entirety with the following added limitation:

When welding is to be performed on high neutron fluence Class 1 material, then a mockup, using material with similar fluence levels, should be welded to verify that adequate crack prevention measures were used.

VI. IMPLEMENTATION SCHEDULE

PPL Susquehanna, LLC requests this Code Case to be approved by February 15, 2002, to support the Unit 1 12th Refuel Outage that is scheduled to begin in March 2002. This approval will remain in effect for the duration of the second 10-year interval of the Inservice Inspection Program for Susquehanna SES Units 1 & 2 (June 1, 2004).

RELIEF REQUEST RR-26

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

Pressure Retaining Piping Welds subject to examination using procedures, personnel, and equipment qualified to ASME Section XI, Appendix VIII, Supplement 10 criteria.

II. CODE REQUIREMENTS

The following paragraphs or statements are from ASME Section XI, Appendix VIII, Supplement 10 and identify the specific requirements that are included in this request for relief.

Item 1 - Paragraph 1.1(b) states in part - Pipe diameters within a range of 0.9 to 1.5 times a nominal diameter shall be considered equivalent.

Item 2 - Paragraph 1.1(d) states - All flaws in the specimen set shall be cracks.

Item 3 - Paragraph 1.1(d)(1) states - At least 50% of the cracks shall be in austenitic material. At least 50% of the cracks in austenitic material shall be contained wholly in weld or buttering material. At least 10% of the cracks shall be in ferritic material. The remainder of the cracks may be in either austenitic or ferritic material.

Item 4 - Paragraph 1.2(b) states in part - The number of unflawed grading units shall be at least twice the number of flawed grading units.

Item 5 - Paragraph 1.2(c)(1) and 1.3(c) state in part - At least I/3 of the flaws, rounded to the next higher whole number, shall have depths between 10% and 30% of the nominal pipe wall thickness. Paragraph 1.4(b) distribution table requires 20% of the flaws to have depths between 10% and 30%.

Item 6 - Paragraph 2.0 first sentence states - The specimen inside surface and identification shall be concealed from the candidate.

Item 7 - Paragraph 2.2(b) states in part - The regions containing a flaw to be sized shall be identified to the candidate.

Item 8 - Paragraph 2.2(c) states in part - For a separate length-sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate.

Item 9 - Paragraph 2.3(a) states - For the depth sizing test, 80% of the flaws shall be sized at a specific location on the surface of the specimen identified to the candidate.

Item 10 - Paragraph 2.3(b) states - For the remaining flaws, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.

Item 11 - Table VIII-S2-1 provides the false call criteria when the number of unflawed grading units is at least twice the number of flawed grading units.

III. RELIEF REQUESTED

Relief is requested to use the following alternative requirements for implementation of Appendix VIII, Supplement 10 requirements. They will be implemented through the PDI Program.

A copy of the proposed revision to Supplement 10 is attached. It identifies the proposed alternatives and allows them to be viewed in context. It also identifies additional clarifications and enhancements for information. It has been submitted to the ASME Code committee for consideration and as of September 2002 had been approved by the NDE Subcommittee.

IV. BASIS FOR RELIEF

Item 1 - The proposed alternative to Paragraph 1.1(b) states:

"The specimen set shall include the minimum and maximum pipe diameters and thicknesses for which the examination procedure is applicable. Pipe diameters within a range of 1/2 inch (13 mm) of the nominal diameter shall be considered equivalent. Pipe diameters larger than 24 inches (610 mm) shall be considered to be flat. When a range of thicknesses is to be examined, a thickness tolerance of $\pm$25% is acceptable."

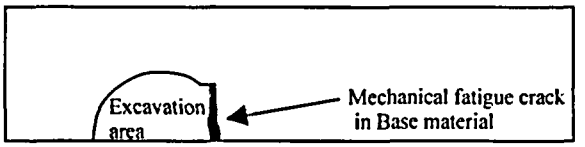
Technical Basis - The change in the minimum pipe diameter tolerance from 0.9 times the diameter to the nominal diameter minus 0.5 inch provides tolerances more in line with industry practice. Though the alternative is less stringent for small pipe diameters they typically have a thinner wall thickness than larger diameter piping. A thinner wall thickness results in shorter sound path distances that reduce the detrimental effects of the curvature. This change maintains consistency between Supplement 10 and the recent revision to Supplement 2.

Item 2 - The proposed alternative to Paragraph 1.1(d) states:

"At least 60% of the flaws shall be cracks, the remainder shall be alternative flaws. Specimens with IGSCC shall be used when available. Alternative flaws, if used, shall provide crack-like reflective characteristics and shall be limited to the case where implantation of cracks produces spurious reflectors that are uncharacteristic of actual flaws. Alternative flaw mechanisms shall have a tip width of less than or equal to 0.002 inch (.05 mm). Note, to avoid confusion the proposed alternative modifies instances of the term "cracks" or "cracking" to the term "flaws" because of the use of alternative flaw mechanisms."

Technical Basis - As illustrated below, implanting a crack requires excavation of the base material on at least one side of the flaw. While this may be satisfactory for ferritic materials, it does not produce a useable axial flaw in austenitic materials because the sound beam, which normally passes only through base material, must now travel through weld material on at least one side, producing an unrealistic flaw response. In addition, it is important to preserve the dendritic structure present in field welds that would otherwise be destroyed by the

implantation process. To resolve these issues, the proposed alternative allows the use of up to 40% fabricated flaws as an alternative flaw mechanism under controlled conditions. The fabricated flaws are isostatically compressed which produces ultrasonic reflective characteristics similar to tight cracks.



Item 3 - The proposed alternative to Paragraph 1.1(d)(1) states:

"At least 80% of the flaws shall be contained wholly in weld or buttering material. At least one and a maximum of 10% of the flaws shall be in ferritic base material. At least one and a maximum of 10% of the flaws shall be in austenitic base material."

Technical Basis - Under the current Code, as few as 25% of the flaws are contained in austenitic weld or buttering material. Recent experience has indicated that flaws contained within the weld are the likely scenarios. The metallurgical structure of austenitic weld material is ultrasonically more challenging than either ferritic or austenitic base material. The proposed alternative is therefore more challenging than the current Code.

Item 4 - The proposed alternative to Paragraph 1.2(b) states:

"Detection sets shall be selected from Table VIII-S10-1. The number of unflawed grading units shall be at least one and a half times the number of flawed grading units."

Technical Basis - Table S-10-1 provides a statistically based ratio between the number of unflawed grading units and the number of flawed grading units. The proposed alternative reduces the ratio to 1.5 times to reduce the number of test samples to a more reasonable number from the human factors perspective. However, the statistical basis used for screening personnel and procedures is still maintained at the same level with competent personnel being successful and less skilled personnel being unsuccessful. The acceptance criteria for the statistical basis are in Table VIII-S10-1.

Item 5 - The proposed alternative to the flaw distribution requirements of Paragraph 1.2(c)(1) (detection) and 1.3(c) (length) is to use the Paragraph 1.4(b) (depth) distribution table (see below) for all qualifications.

Flaw Depth (% Wall Thickness)		*Minimum Number of Flaws*
10-30%	*20%*	
31-60%	*20%*	
61-100%	*20%*	

Technical Basis - The proposed alternative uses the depth sizing distribution for both detection and depth sizing because it provides for a better distribution of flaw sizes within the test set. This distribution allows candidates to perform detection, length, and depth sizing demonstrations simultaneously utilizing the same test set. The requirement that at least 75% of the flaws shall be in the range of 10 to 60% of wall thickness provides an overall distribution tolerance yet the distribution uncertainty decreases the possibilities for testmanship that would be inherent to a uniform distribution. It must be noted that it is possible to achieve the same distribution utilizing the present requirements, but it is preferable to make the criteria consistent.

Item 6 - The proposed alternative to Paragraph 2.0 first sentence states:

"For qualifications from the outside surface, the specimen inside surface and identification shall be concealed from the candidate. When qualifications are performed from the inside surface, the flaw location and specimen identification shall be obscured to maintain a 'blind test.'"

Technical Basis - The current Code requires that the inside surface be concealed from the candidate. This makes qualifications conducted from the inside of the pipe (e.g., PWR nozzle to safe end welds) impractical. The proposed alternative differentiates between ID and OD scanning surfaces, requires that they be conducted separately, and requires that flaws be concealed from the candidate. This is consistent with the recent revision to Supplement 2.

Items 7 and 8 - The proposed alternatives to Paragraph 2.2(b) and 2.2(c) state:

"... containing a flaw to be sized may be identified to the candidate."

Technical Basis - The current Code requires that the regions of each specimen containing a flaw to be length sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region (Note, that length and depth sizing use the term "regions" while detection uses the term "grading units" - the two terms define different concepts and are not intended to be equal or interchangeable). To ensure security of the samples, the proposed alternative modifies the first "shall" to a "may" to allow the test administrator the option of not identifying specifically where a flaw is located. This is consistent with the recent revision to Supplement 2.

Items 9 and 10 - The proposed alternative to Paragraph 2.3(a) and 2.3(b) state:

"... regions of each specimen containing a flaw to be sized may be identified to the candidate."

Technical Basis - The current Code requires that a large number of flaws be sized at a specific location. The proposed alternative changes the "shall" to a "may" which modifies this from a specific area to a more generalized region to ensure security of samples. This is consistent with the recent revision to Supplement 2. It also incorporates terminology from length-sizing for additional clarity.

Item 11 - The proposed alternative modifies the acceptance criteria of Table VIII-S2-1 as follows:

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TABLE VIII-S2-1
PERFORMANCE DEMONSTRATION DETECTION TEST
ACCEPTANCE CRITERIA

Detection Test Acceptance Critera		False Call Test Acceptance Criteria	
No. of Flawed Grading Units	Minimum Detection Criteria	No. of Unflawed Grading Units	Maximum Number of False Calls
~~5~~	~~5~~	~~10~~	~~0~~
~~6~~	~~6~~	~~12~~	~~1~~
~~7~~	~~6~~	~~14~~	~~1~~
~~8~~	~~7~~	~~16~~	~~2~~
~~9~~	~~7~~	~~18~~	~~2~~
10	8	~~20~~ 15	~~3~~ 2
11	9	~~22~~ 17	~~3~~ 3
12	9	~~24~~ 18	~~3~~ 3
13	10	~~26~~ 20	~~4~~ 3
14	10	~~28~~ 21	~~5~~ 3
15	11	~~30~~ 23	~~5~~ 3
16	12	~~32~~ 24	~~6~~ 4
17	12	~~34~~ 26	~~6~~ 4
18	13	~~36~~ 27	~~7~~ 4
19	13	~~38~~ 29	~~7~~ 4
20	14	~~40~~ 30	~~8~~ 5

Technical Basis - The proposed alternative is identified as new Table S-10-1 above. It was modified to reflect the reduced number of unflawed grading units and allowable false calls. As a part of ongoing Code activities, PNNL has reviewed the statistical significance of these revisions and offered the revised Table S-10-1.

V. ALTERNATIVE EXAMINATION

In lieu of the requirements of ASME Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 10, the proposed alternative shall be used. The proposed alternative is described in the enclosure.

VI. JUSTIFICATION FOR GRANTING RELIEF

Pursuant to 10 CFR 50.55a(a)(3)(i), approval is requested to use the proposed alternatives described above in lieu of the ASME Section XI, Appendix VIII, Supplement 10 requirements. Compliance with the proposed alternatives will provide an adequate level of quality and safety for examination of the affected welds.

VII. IMPLEMENTATION SCHEDULE

The alternative program will be applicable to the Second 10-year Inservice Inspection Interval for Susquehanna SES Unit 1.

RELIEF REQUEST RR-27

I. COMPONENTS AFFECTED

Component Numbers: Class 1 piping welds (NPS 4 and larger)
Examination Category: B-F and B-J [N8A and N8B nozzles]
Item Numbers: B5.10 and B9.11

II. APPLICABLE CODE EDITION AND ADDENDA

The Code of record for the second 10-year inservice inspection interval is the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1989 Edition with no Addenda.

III. CODE REQUIREMENTS

ASME Section XI IWB-2500 requires components be examined and pressure tested as specified in Table IWB-2500-1. This table requires a sampling of piping welds (as well as other components) be subjected to various types of non-destructive examinations (NDE) (i.e., volumetric and/or surface examinations) and pressure testing (i.e., visual, VT-2).

IV. REASON FOR REQUEST

ASME Code Case N-663 provides an alternative, which provides an acceptable level of quality and safety. This alternative also reduces dose (1 rem) because required examinations would be reduced.

V. PROPOSED ALTERNATIVE

Pursuant to 10 CFR 50.55a(a)(3)(i), PPL proposes to use ASME Code Case N-663 in its entirety as an alternative to the surface examination requirements of Table IWB-2500-1 for examination categories B-F (NPS 4 and larger) and B-J (NPS 4 and larger).

VI. BASIS FOR PROPOSED ALTERNATIVE

The subject item numbers in ASME Section XI require a volumetric and surface examination on selected piping welds to ensure that generic degradation mechanisms are not active on either the inside diameter (I.D.) or the outside diameter (O.D.). However, these welds were selected using a deterministic set of requirements that are not based upon degradation mechanisms. ASME Code Case N-663 provides an alternative to the current ASME Section XI requirements for defining the number and location of surface examinations for piping components.

The ASME Section XI Task Group on ISI Optimization, Report No. 92-01-01, Evaluation of Inservice Inspection Requirements for Class 1, Category B-J Pressure Retaining Welds in Piping, dated July 1995, concluded, with 50 units responding with a total of 9333 welds inspected, only two (2) welds (0.02%) were found to have flaws detected by

Section XI surface examinations. These flaws were determined to be fabrication-induced.

In parallel with the above, several risk-informed code cases have been developed for use on piping welds (e.g., ASME Code Cases N-560, N-577, and N-578). One of the methods for risk-informed piping examination is through use of Electric Power Research Institute (EPRI) topical report TR-112657, Revision B-A, Revised Risk-Informed Inservice Inspection Evaluation Procedure, approved by NRC safety evaluation dated October 28, 1999. Table 4-1, Summary of Degradation-Specific Inspection Requirements and Examination Methods, of the EPRI report lists the required degradation mechanisms to be evaluated in Class 1, 2, and 3 piping. It identifies the risk-informed examination method required for each of these degradation mechanisms. The only degradation mechanism that requires a surface examination is O.D. chloride cracking. These two initiatives led ASME to investigate the value of surface examinations.

Code Case N-663 incorporated lessons learned from the risk-informed initiatives and industry examination experience into Section XI by requiring that an evaluation be conducted to identify locations, if any, where a surface examination would be of benefit from a generic piping degradation perspective. The results of this evaluation identify where O.D. degradation is most likely to occur by reviewing plant-specific programs and practices and operating experience. If the potential for degradation is identified, Code Case N-663 defines examination techniques, volumes, and frequencies. As such, implementing Code Case N-663 will identify appropriate locations for surface examination, if any, and eliminate the unnecessary examinations. Other ASME Code, Section XI examination requirements (subject to any approved relief requests) for the subject welds, including volumetric examinations and pressure testing, will continue to be performed.

Code Case N-663 was approved by the ASME Boiler and Pressure Vessel Code Committee on September 17, 2002, but has not yet been included in the most recent listing of NRC approved code cases provided in Revision 13 of Regulatory Guide 1.147, Inservice Inspection Code Case Acceptability-ASME Section XI Division 1.

VII. DURATION OF PROPOSED ALTERNATIVE

Approval of the alternative is requested for use during the second 10-year inservice inspection program, or until Code Case N-663 is published in a future version of NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability – ASME Section XI, Division 1," in which case the provisions of the Code Case N-663 conditions and limitations specified in Regulatory Guide 1.147 will be followed.

RELIEF REQUEST RR-28

Relief Request RR-28 was not issued.

RELIEF REQUEST RR-29

I. COMPONENT IDENTIFICATION

A full structural weld overlay repair is proposed for the N1B recirculation system outlet nozzle. The current configuration of this nozzle is described below.

The N1B recirculation outlet nozzle to safe-end configuration consists of a SA336 F8 safe-end welded to a SA 508 Cl 2 nozzle. The end of the nozzle was buttered with Alloy 182 weld deposit and subsequently joined with a weld having an Alloy 82 root and hot passes with Alloy 182 fill.

II. EXAMINATION AND REPAIR REQUIREMENTS

A weld overlay repair has been designed consistent with the requirements of NUREG 0313 Revision 2 (which was implemented by Generic Letter 88-01), ASME Code Case N-504-2, and ASME, Section XI, Paragraph IWB-3640, 1989 Edition with Appendix C (1989 Addenda).

III. WELDER QUALIFICATION AND WELDING PROCEDURES

All welders and welding procedures will be qualified in accordance with ASME Section IX and any special requirements from Section XI or applicable code cases. A manual shielded metal arc weld (SMAW) procedure will be qualified to facilitate localized repairs and to provide a seal weld, prior to depositing the overlay, should the defect be deep enough to be near through-wall or through-wall and leaking. This procedure will make use of SMAW electrodes ENiCrFe-7, UNS W86152, F No. 43, known commercially as Alloy 152. The weld overlay repair will be performed by qualified personnel from WSI. Welding Procedure Specification (WPS 03-08-T-801, Rev. 0) for welding ERNiCrFe-7, UNS N06052, F No. 43 (commercially known as Alloy 52) will be used.

Welding Wire Filler Material

A consumable welding wire highly resistant to intergranular stress corrosion cracking (IGSCC) and interdendritic stress corrosion cracking (IDSCC) was selected for the overlay material. This material, designated UNS N06052 F No. 43 is a nickel-based weld filler material, commonly referred to as Alloy 52, and will be applied using the GTAW (Gas Tungsten Arc Welding) Machine TIG process. Alloy 52 is identified in ASME Section II, Part C as SFA-5.14, ERNiCrFe-7, classification UNS N06052 F No. 43 Filler Material. Alloy 52 contains a nominal 30% Cr that imparts excellent resistance to IGSCC. Where localized repairs are required, Alloy 152 may be used. Alloy 152 is identified in ASME Section II, Part C as SFA-5.11, ENiCrFe-7, classified as UNS W86152. Alloy 152 also contains a nominal 30% Cr that imparts excellent resistance to IGSCC.

Weld Overlay Design

The weld overlay will extend around the full circumference of the safe end to nozzle location in accordance with NUREG 0313 Rev. 2, Code Case N504-2, and Generic Letter 88-01. The overlay length will extend across the projected indication intersection with the outer pipe surface. The design thickness and length will be computed according to guidance provided in ASME Section XI, Code Case N-504-2 and ASME Section XI Paragraph IWB-3640, 1989 Edition with Appendix C (1989 Addenda). The overlay completely covers the defect location and other Alloy 182 susceptible material areas with the highly corrosion resistant Alloy 52 material. A temper bead welding approach will be used for this repair, because it will be necessary to weld on the P3 Group 3 low alloy steel (LAS) nozzle material. ASME Code Case N-638 will be applied because it provides for machine (GTAW) temper bead weld repairs to P3 Group 3 materials at ambient temperature using dissimilar materials and without need for post weld heat treatment. The temper bead approach was selected because temper bead welding supplants the requirement for post weld heat treatment (PWHT) of heat affected zones in welded low alloy steel (LAS) material. Temper bead techniques produce excellent toughness and ductility in heat affected zones of the LAS. This approach provides a comprehensive weld overlay repair, and increases the volume of material under the overlay that can be inspected. The weld overlay length will conform to the guidance of Code Case N-504-2, which satisfies the stress requirements.

Examination Requirements

The examination requirements for the weld overlay repairs are summarized in the following table. Note: No post weld inspections may be performed until after a 48-hour waiting period has elapsed after completing the weld. This is required to be able to identify any possible hydrogen delayed cracking that might occur.

EXAMINATION REQUIREMENTS			
Examination Description	**Method**	**Technique**	**Reference**
Weld and Safe-End Overlay Surface Preparation Exam	PT	Visible Dye	N-504-2
Thickness Measurements	UT	0° Long.	N-504-2
As-Found Exam	Auto UT	45° Ref. Long. 60° Ref. Long. 70° Ref. Long.	IWB-3514
As-Found Sizing	Auto UT	60° Ref. Long. 70° Ref. Long.	IWB-3514
First Weld Overlay Layer Surface Exam	PT	Visible Dye	N-504-2
First Weld Overlay Thickness Checks	UT	0° Long, or Hand Meas.	N-504-2

EXAMINATION REQUIREMENTS			
Examination Description	**Method**	**Technique**	**Reference**
Surface Exam of Nozzle within 1.5 t of Weld overlay	PT	Visible Dye	NB-5350 N-638
Surface Exam of Completed Overlay	PT	Visible Dye	N-504-2
Exam of Completed Overlay for Lack-of-Bond and Thickness	UT	0° Long.	IWB-3514 N-504-2
Volumetric Exam of Nozzle within 1.5 t of Weld Overlay	UT	In accordance with Appendix I. Nozzle geometry may limit this examination.	IWB-3500 N-638
Volumetric Exam of Completed Overlay	UT	Angle beam exam in accordance with qualified P.D.I. procedure implementing Appendix VIII.	IWB-3514 N-504-2
Pre-Service Exam of Completed Overlay and the Outer 25% of the underlying pipe wall to identify the original flaws.	UT	Angle beam exam in accordance with qualified P.D.I. procedure implementing Appendix VIII.	IWB-3514 N-504-2

General Note: The Edition and Addenda for the ASME Section XI acceptance criteria is the 1989 Edition with no Addenda. The weld overlay examinations comply with the recommendations of NUREG-0313, Revision 2, and also with Code Case N-504-2.

There is no ASME Section III Subsection that directly applies to inspection acceptance criteria for weld overlays. NUREG-0313 and Code Case N-504-2 specify an ultrasonic volumetric examination, using methods and personnel qualified through the EPRI NDE Center. Furthermore, NUREG-0313 states that the ultrasonic examinations should be performed in accordance with the requirements of the applicable edition of the ASME Code. The Code of record for the current 10-year in-service inspection interval is the 1989 edition of ASME Section XI with no Addenda. Therefore, the acceptance criteria that will be used for the volumetric examinations will be those of IWB-3514, "Standards for Examination Category B-F, Pressure Retaining Dissimilar Metal Welds, and Examination Category B-J, Pressure Retaining Welds in Piping."

Pressure Testing

The completed repair shall be given a system leakage, in-service or functional test in accordance with ASME Section XI, IWA-5000, provided the system pressure boundary has not been penetrated.

Unusual Difficulty in Meeting Specified Requirements

Preheat and post weld heat treatments (PWHT) are required for welding on P3 Group 3 LAS nozzle material by ASME Section III, Subparagraph NB4622.7. These requirements are impractical without draining the reactor vessel, and may even distort the P3 components involved (nozzle and reactor pressure vessel). To drain the vessel requires a full-core fuel offload. If the vessel were drained, the radiation dose rates around the nozzle would increase significantly, resulting in additional personnel exposure. Therefore, consistent with ALARA practices and prudent utilization of outage personnel, there will be no vessel drain down for this repair. The weld overlays will be completed with water on the inside surface of the nozzles and connected piping. This approach (i.e., no vessel drain down) minimizes fuel movement and thereby enhances nuclear safety.

The alternative, as described below, provides an acceptable level of quality and safety while neither draining the reactor vessel nor applying preheat and post weld heat treatments. Therefore, the alternative alleviates the impracticality of following certain code requirements for this repair activity.

IV. ALTERNATIVE FROM REPAIR REQUIREMENTS

The repair will utilize ASME Code Case N-504-2, "Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping," and Code Case N-638, "Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper bead Technique," with the following exceptions and clarifications.

Clarification of Code Case N-504-2 for Applicability to Nickel-based Austenitic Steel

Code Case N-504-2 was prepared specifically for austenitic stainless steel material. An alternate application to nickel-based austenitic materials (i.e., Alloy 52) is requested due to the specific configuration of the nickel-based austenitic weldment.

Exception to Code Case N-504-2 Paragraph (b)

Code Case N-504-2 paragraph (b) requires that the reinforcement weld metal shall be low carbon (0.035% maximum) austenitic stainless steel. A nickel-based filler is required and Alloy 52 has been selected in place of low carbon austenitic stainless steel.

Exception to Code Case N-504-2 Paragraph (e)

Code Case N-504-2 paragraph (e) requires as-deposited delta ferrite measurements at least a 7.5 FN for the weld reinforcement. These measurements are not to be performed for this overlay, as the nickel filler is a fully austenitic material, containing no ferrite.

Exception to Code Case N-504-2 Paragraph (h)

Code Case N-504-2 paragraph (h) requires a system hydrostatic test of completed repairs if the repaired flaw penetrated the original pressure boundary or if there is any observed indication of the flaw penetrating the pressure boundary during repairs. A system leak test of completed repairs will be used in lieu of a hydrostatic test.
Clarification of Code Case N-638 Applicability

Code Case N-638 shall be applied to the P3 Group 3 LAS nozzle material.

Exception to Code Case N-638 Paragraph 1(a)

Code Case N-638 paragraph 1(a) requires the maximum area of an individual weld based on the finished surface shall be 100 square inches. The area for the temper bead weld in this weld overlay design will be approximately 300 square inches.

V. BASIS FOR THE ALTERNATIVE

Clarification of Code Case N-504-2 for Applicability to Nickel-based Austenitic Steel

The weldment being addressed is austenitic material having a mechanical behavior similar to austenitic stainless steel. The weldment is designed to be highly resistant to IGSCC and is compatible with the existing weldment and base metal materials. Accordingly, this alternative provides an acceptable level of quality and safety. Therefore, Code Case N-504-2 should be interpreted to apply equally to both materials.

Exception to Code Case N-504-2 Paragraph (b)

A consumable welding wire highly resistant to IGSCC was selected for the overlay material. This material, designated UNS N06052 F No. 43 is a nickel-based alloy weld filler material, commonly referred to as Alloy 52, and will be applied using the GTAW process. Alloy 52 contains nominally 30% chromium that imparts excellent corrosion resistance to IGSCC. By comparison, Alloy 82, is identified as an IGSCC resistant material in NUREG 0313 Revision 2 and contains nominally 20% chromium while Alloy 182 has a nominal chromium composition of 15% chromium. Alloy 52 with its high chromium content provides a high level of resistance to IGSCC consistent with the requirements of the code case. Therefore, this alternative provides an acceptable level of quality and safety.

Exception to Code Case N-504-2 Paragraph (e)

The composition of nickel-based Alloy 52 is such that delta ferrite does not form during welding. Ferrite measurement requirements were developed for weld deposits of the 300 series stainless steels that require delta ferrite to develop resistance to IGSCC. Welds of Alloy 52 or Alloy 152 are 100% austenitic and contain no delta ferrite due to the high nickel composition (approximately 60% nickel and low iron content). Alloy 52 with its high chromium content provides a high level of resistance to hot cracking and IGSCC consistent with the purpose for the delta ferrite requirements for stainless steels of the code case. Therefore, this alternative provides an acceptable level of quality and safety.

Exception to Code Case N-504-2 Paragraph (h)

In lieu of the hydrostatic pressure test requirements defined in Code Case N-504-2, the required pressure test shall be performed in accordance with the Second 10-year Interval ISI Program Plan and Code Case N-416-1 with the exception that the volumetric examination performed shall be an ultrasonic examination of the weld overlay.

Clarification of Code Case N-638 Applicability

Code Case N-638 was developed for temper bead applications to similar and dissimilar metals. It permits the use of machine (GTAW) welding at ambient temperature without the use of preheat or PWHT on Class 1, 2, and 3 components.

Temper bead welding methodology is not new. Numerous applications over the past decade have demonstrated the acceptability of temper bead technology in nuclear environments. Temper bead welding achieves heat affected zone (HAZ) tempering and grain refinement without subsequent PWHT. Excellent HAZ toughness and ductility are produced. Use of Code Case N-638 has been accepted in Regulatory Guide 1.147 Revision 13 as providing an acceptable level of quality and safety.

A 48-hour post weld hold prior to acceptance inspection is required by Code Case N-638 and will be done to assure that no delayed cracking occurs.

Exception to Code Case N-638 Paragraph 1(a)

Cold Case N-638 specifies a limit of 100 square inches for a temper bead weld. Because of the diameter of nozzle N1B (30 3/32"), this restriction would limit the weld overlay length to 1-1/16" on the LAS nozzle material. This distance could be justified as adequate axial length to provide for load redistribution from the weld overlay back into the nozzle without violating applicable stress limits of Section III for primary local and bending stresses and secondary peak stresses. However, this axial length will not permit a complete examination of the outer 25% of the nozzle thickness as required by Code Case N-504-2. In order to perform a qualified exam of the required volume, the axial length of the overlay on the LAS nozzle will be extended to 3-1/8," encompassing an area of 300 square inches for the temper bead weld.

CONCLUSION

Weld overlays involve the application of weld metal circumferentially around the pipe in the vicinity of the flawed weld to restore ASME Section XI margins. Weld overlays have been used in the nuclear industry as an acceptable method to repair flawed welds. The use of overlay filler material, which provides excellent resistance to IGSCC, develops an effective barrier to crack extension by corrosion processes.

The piping and other components have been evaluated (to the original ASME design code requirements) for the effects due to shrinkage induced into the system during installation of the overlay. The actual shrinkage will be measured. All required documents will be reconciled to the original design code, and updated to reflect these as-built values.

The design of the overlay for the nozzle safe-end uses methods that are standard in the industry for size determination of pipe-to-pipe overlays. There are no new or different approaches used in this overlay design which are considered first of a kind or inconsistent with previous approaches. The overlay is designed as a full structural overlay in accordance with the recommendation of NUREG-0313 Revision 2, which was implemented by Generic Letter 88-01 and by Code Case N-504-2 and ASME Section XI Paragraph IWB-3640, 1989 Edition with Appendix C (1989 Addenda).

Temper bead techniques, as defined by Code Case N-638, will produce the tough corrosion resistant overlay deposit that meets or exceeds all code requirements for the weld overlay.

PPL concludes that the repair plan is justified and presents an acceptable level of quality and safety to satisfy the requirements of 10 CFR 50.55a(c)(3)(i). Furthermore, this evaluation demonstrates that compliance with the 1989 Edition of ASME Section XI with no addenda (the current Code of record for Susquehanna Unit 1) would result in unusual difficulty without a compensating increase in the level of quality and safety pursuant to 10 CFR 50.55a(c)(3)(ii)

A similar proposed alternative to the requirements of 10 CFR 50.55a(c)(3)(iv) has been approved previously by the NRC for the Duane Arnold Energy Center by NRC letter dated November 19, 1999 and for Nine Mile Point Unit 2 by NRC letter dated March 30, 2000. Also, a similar proposed alternative to the requirements of 10 CFR 50.55a(c)(3)(iv) has been submitted by Pilgrim on October 2, 2003 and by TMI on November 3, 2003,

VI. DURATION OF PROPOSED ALTERNATIVE

The proposed alternative applies to the repairs of RPV nozzle to safe-end weld for the scheduled outage and for the remaining service life of this weld.

RELIEF REQUEST RR-30

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

Class 1, Pressure Retaining Welds in Piping, subject to Appendix VIII, Supplement 11, examination.

II. CODE REQUIREMENTS

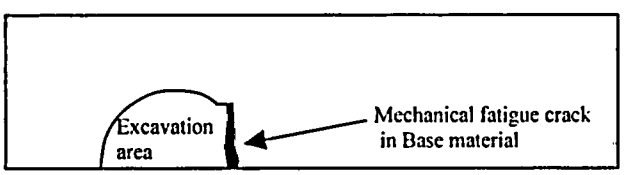
The Code requirements for which relief is requested are all contained within Appendix VIII, Supplement 11. For example, paragraph 1.1(d)(1), requires that all base metal flaws be cracks. Paragraph 1.1(e)(1) requires that at least 20% but less than 40% of the flaws shall be oriented within ±20 degrees of the pipe axial direction. Paragraph 1.1(e)(1) also requires that the rules of IWA-3300 shall be used to determine whether closely spaced flaws should be treated as single or multiple flaws. Paragraph 1.1(e)(2)(a)(1) requires that a base grading unit shall include at least 3 inches of the length of the overlaid weld. Paragraph 1.1(e)(2)(b)(1) requires that an overlay grading unit shall include the overlay material and the base metal-to-overlay interface of at least 6 square inches. The overlay grading unit shall be rectangular, with minimum dimensions of 2 inches. Paragraph 3.2(b) requires that all extensions of base metal cracking into the overlay material by at least 0.1 inch are reported as being intrusions into the overlay material.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(a)(3)(i) relief is requested to use the enclosed Performance Demonstration Initiative (PDI) Program for implementation of Appendix VIII, Supplement 11 requirements.

IV. BASIS FOR RELIEF

Paragraph 1.1(d)(1), requires that all base metal flaws be cracks. As illustrated below, implanting a crack requires excavation of the base material on at least one side of the flaw. While this may be satisfactory for ferritic materials, it does not produce a useable axial flaw in austenitic materials because the sound beam, which normally passes only through base material, must now travel through weld material on at least one side, producing an unrealistic flaw response. To resolve this issue, the PDI program revised this paragraph to allow use of alternative flaw mechanisms under controlled conditions. For example, alternative flaws shall be limited to when implantation of cracks precludes obtaining an effective ultrasonic response, flaws shall be semielliptical with a tip width of less than or equal to 0.002 inches, and at least 70 percent of the flaws in the detection and sizing test shall be cracks and the remainder shall be alternative flaws.



Relief is requested to allow closer spacing of flaws provided they do not interfere with detection or discrimination. The existing specimens used to date for qualification to the Tri-party (NRC/BWROG/EPRI) agreement have a flaw population density greater than allowed by the current Code requirements. These samples have been used successfully for all previous qualifications under the Tri-party agreement program. To facilitate their use and provide continuity from the Tri-party agreement program to Supplement 11, the PDI Program has merged the Tri-party test specimens into their weld overlay program. For example: the requirement for using IWA-3300 for proximity flaw evaluation in paragraph 1.1(e)(1) was excluded, instead indications will be sized based on their individual merits; paragraph 1.1(d)(1) includes the statement that intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the base metal flaws; paragraph 1.1(e)(2)(a)(1) was modified to require that a base metal grading unit include at least 1 inch of the length of the overlaid weld, rather than 3 inches; paragraph 1.1(e)(2)(a)(3) was modified to require sufficient unflawed overlaid weld and base metal to exist on all sides of the grading unit to preclude interfering reflections from adjacent flaws, rather than the 1 inch requirement of Supplement 11; paragraph 1.1(e)(2)(b)(l) was modified to define an overlay fabrication grading unit as including the overlay material and the base metal-to-overlay interface for a length of at least 1 inch, rather than the 6 square inches requirement of Supplement 11; and paragraph 1.1(e)(2)(b)(2) states that overlay fabrication grading units designed to be unflawed shall be separated by unflawed overlay material and unflawed base metal-to-overlay interface for at least 1 inch at both ends, rather than around its entire perimeter.

Additionally, the requirement for axially oriented overlay fabrication flaws in paragraph 1.1(e)(1) was excluded from the PDI Program as an improbable scenario. Weld overlays are typically applied using automated gas tungsten arc welding techniques with the filler metal being applied in a circumferential direction. Because resultant fabrication induced discontinuities would also be expected to have major dimensions oriented in the circumferential direction axial overlay fabrication flaws are unrealistic.

The PDI Program revised paragraph 2.0, allowing the overlay fabrication and base metal flaw tests to be performed separately. The requirement in paragraph 3.2(b) for reporting all extensions of cracking into the overlay is omitted from the PDI Program because it is redundant to the RMS calculations performed in paragraph 3.2(c) and its presence adds confusion and ambiguity to depth sizing as required by paragraph 3.2(c). This also makes the weld overlay program consistent with the Supplement 2 depth sizing criteria.

These changes are contained in Code Case N-653. A comparison between the 1995 Edition and 1996 Addenda of Supplement 11, Code Case N-653, and the PDI Program is enclosed as supporting documentation. The first column identifies the Code requirements, while the second (middle) column identifies the changes made by the Code Case.

There are however some additional changes that were inadvertently omitted from the Code Case. The most important change is paragraph 1.1(e)(2)(a)(1) where the phrase "and base metal on both sides," was inadvertently included in the description of a base metal grading unit. The PDI program intentionally excludes this requirement because

some of the qualification samples include flaws on both sides of the weld. To avoid confusion several instances of the term "cracks" or "cracking" were changed to the term "flaws" because of the use of alternative flaw mechanisms. Additionally, to avoid confusion, the overlay thickness tolerance contained in the last sentence of paragraph 1.1(b), was reworded and the phrase "and the remainder shall be alternative flaws" was added to the next to last sentence in paragraph 1.1(d)(1). Additional editorial changes were made to the PDI program to address an earlier RAI. The above changes are identified by bold print in the third column of the enclosure.

V. ALTERNATIVE EXAMINATION

In lieu of the requirements of ASME Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 11, the PDI Program shall be used.

VI. IMPLEMENTATION SCHEDULE

Approval of the alternative is requested for use during the second 10-year inservice inspection program only.

RELIEF REQUEST RR-31

I. COMPONENT IDENTIFICATION

A full structural weld overlay repair is proposed for the N2J recirculation system inlet nozzle. The current configuration of this nozzle is described below.

The N2J recirculation inlet nozzle to safe-end configuration consists of a type 316L safe-end welded to a SA 508 Cl 2 nozzle. The ends of the safe-end and nozzle were buttered with Alloy 182 weld deposit and subsequently joined with a weld having an Alloy 82 root and hot passes with Alloy 182 fill.

The thickness of the nozzle pipe and original 182 butter are as follows:

Nozzle	1.33 inches
Pipe	1.01 inches
Original 182 butte	See the Sketch in Attachment 1
Final overlay weld	.44 inch

In addition, the thickness of the safe end is the same as the nozzle. The weld overlay was designed assuming a flaw 360 degrees in circumference, 100 % through wall.

The original weld and base metal configuration and the final weld and base metal configuration with the overlay including the final thickness of the overlay are shown in the sketch provided in Attachment 1.

The flaw associated with the N2J recirculation inlet nozzle is located in the weld between the nozzle and the safe-end. It originates in the butter on the safe end side of the nozzle to safe-end weld, and extends to a maximum depth of 0.94 inches from the inside diameter. The thickness of the safe-end at the flaw location is approximately 1.33 inches, and thus, the depth corresponds to approximately 71% through-wall penetration. The flaw runs approximately 12.1 inches in length around the circumference of the safe-end. Since the safe-end is approximately 14.25 inches in diameter at the location of the flaw, the "flaw length to pipe circumference" ratio is approximately 27%.

The ultrasonic data from the flaw has characteristics indicative of a multifaceted and branching indication propagating in a direction consistent with a stress corrosion crack in weld material, which generally follows the dendritic structure of the weld. This type of response is not consistent with the expected responses from a thermal fatigue flaw, which are typically not faceted. The ultrasonic responses from this flaw are also consistent with other IGSCC flaws detected in the industry.

The past examination data reported various types of indications. These results are similar to "Inside Surface Geometry" features discussed in Reference 3. These indications, however, were not required to be reported to the plant for disposition. These were reported simply as notes on the examination data sheets. The level of detail provided from one examination to the other varied with the particular analyst.

The present PDI qualified procedure requires all indications, regardless of amplitude, be evaluated and addressed.

The EPRI report (Attachment 2) contains numerous prints that show the location of the previously reported indications and the newly reported crack. It is believed that the previously reported indications were actually the crack. The crack is believed to have been identified in 2004 and not previously because of the improved and newly qualified techniques used in 2004. Improved data collection and analysis allowed the previously reported indications to be more accurately determined to be the reported crack.

Three major changes have occurred from the previous techniques to the newly qualified techniques:

1) The data analysis software is much improved from previous examinations performed prior to 1999. This new software allows the viewing of the data in numerous, coordinated views (A, B, C and D scans). These views make it easier for the examiner to assure adequate contact and coverage is obtained.
2) The amplifier was changed from a linear to a logarithmic amplifier with a much larger dynamic range. This allows the examiner to view the data with a much larger range of gain levels and reduces chances of saturating the signals or running at a gain level that is too low.
3) Search units used with the present PDI qualified procedure are larger and focused closer to the inside surface of the component than the search units used for previous examinations. This results in greater sensitivity for inside surface breaking flaws.

II. EXAMINATION AND REPAIR REQUIREMENTS

A weld overlay repair has been designed consistent with the requirements of NUREG 0313 Revision 2 (which was implemented by Generic Letter 88-01), ASME Code Case N-504-2, and ASME, Section XI, Paragraph IWB-3640, 1989 Edition with Appendix C (1989 Addenda).

The Code of Record is ASME Section XI 1989 Edition. The present interval is the second. The original code of construction for the reactor vessel nozzle is ASME Code Section III 1968 Edition up to and including 1970 Summer Addenda. The safe end was fabricated and installed to the ASME Code Section III 1974 Edition with the Summer 1974 Addenda.

III. WELDER QUALIFICATION AND WELDING PROCEDURES

All welders and welding procedures will be qualified in accordance with ASME Section IX and any special requirements from Section XI or applicable code cases. A manual shielded metal arc weld (SMAW) procedure will be qualified to facilitate localized repairs and to provide a seal weld, prior to depositing the overlay, should the defect be deep enough to be near through-wall or through-wall and leaking. This procedure will make use of SMAW electrodes ENiCrFe-7, UNS W86152, F No. 43, known commercially as Alloy 152. The weld overlay repair will be performed by qualified personnel from WSI. Welding Procedure Specification (WPS 03-08-T-801, Rev. 1) for welding ERNiCrFe-7, UNS N06052, F No. 43 (commercially known as Alloy 52) will be used.

Welding Wire Filler Material

A consumable welding wire highly resistant to intergranular stress corrosion cracking (IGSCC) and interdendritic stress corrosion cracking (IDSCC) was selected for the overlay material. This material, designated UNS N06052 F No. 43 is a nickel-based weld filler material, commonly referred to as Alloy 52, and will be applied using the GTAW (Gas Tungsten Arc Welding) Machine TIG process. Alloy 52 is identified in ASME Section II, Part C as SFA-5.14, ERNiCrFe-7, classification UNS N06052 F No. 43 Filler Material. Alloy 52 contains a nominal 30% Cr that imparts excellent resistance to IGSCC. Where localized repairs are required, Alloy 152 may be used. Alloy 152 is identified in ASME Section II, Part C as SFA-5.11, ENiCrFe-7, classified as UNS W86152. Alloy 152 also contains a nominal 30% Cr that imparts excellent resistance to IGSCC.

Weld Overlay Design

The weld overlay will extend around the full circumference of the safe end to nozzle location in accordance with NUREG 0313 Rev. 2, Code Case N504-2, and Generic Letter 88-01. The overlay length will extend across the projected indication intersection with the outer pipe surface. The design thickness and length will be computed according to guidance provided in ASME Section XI, Code Case N-504-2 and ASME Section XI Paragraph IWB-3640, 1989 Edition with Appendix C (1989 Addenda). The overlay completely covers the defect location and other Alloy 182 susceptible material areas with the highly corrosion resistant Alloy 52 material. Ten (10) layers of weld material are planned to be applied. The final number of layers will be determined based on the number of layers needed to meet the thickness requirement of the overlay. A temper bead welding approach will be used for this repair, because it will be necessary to weld on the P3 Group 3 low alloy steel (LAS) nozzle material. ASME Code Case N-638 will be applied because it provides for machine (GTAW) temper bead weld repairs to P3 Group 3 materials at ambient temperature using dissimilar materials and without need for post weld heat treatment. The temper bead approach was selected because temper bead welding supplants the requirement for post weld heat treatment (PWHT) of heat affected zones in welded LAS material. Temper bead techniques produce excellent toughness and ductility in heat affected zones of the LAS. This approach provides a comprehensive weld overlay repair, and increases the volume of material under the overlay that can be inspected. The weld overlay length will conform to the guidance of Code Case N-504-2, which satisfies the stress requirements.

Examination Requirements

The examination requirements for the weld overlay repairs are summarized in the following table.

Note: No post weld inspections may be performed until after a 48-hour waiting period has elapsed after completing the weld. This is required to be able to identify any possible hydrogen delayed cracking that might occur.

EXAMINATION REQUIREMENTS			
Examination Description	**Method**	**Technique**	**Reference**
Weld and Safe-End Overlay Surface Preparation Exam	PT	Visible Dye	N-504-2
Thickness Measurements	UT	0° Long.	N-504-2
As-Found Exam	Auto UT	45° Ref. Long. 60° Ref. Long. 70° Ref. Long.	IWB-3514
As-Found Sizing	Auto UT	60° Ref. Long. 70° Ref. Long.	IWB-3514
First Weld Overlay Layer Surface Exam	PT	Visible Dye	N-504-2
First Weld Overlay Thickness Checks	UT	0° Long, or Hand Meas.	N-504-2
Surface Exam of Nozzle within 1.5 t of Weld overlay	PT	Visible Dye	NB-5350 N-638
Surface Exam of Completed Overlay	PT	Visible Dye	N-504-2
Exam of Completed Overlay for Lack-of-Bond and Thickness	UT	0° Long.	IWB-3514 N-504-2
Volumetric Exam of Nozzle within 1.5 t of Weld Overlay	UT	In accordance with Appendix I. Nozzle geometry will limit this examination.	IWB-3500 N-638
Volumetric Exam of Completed Overlay	UT	Angle beam exam in accordance with qualified P.D.I. procedure implementing Appendix VIII.	IWB-3514 N-504-2
Pre-Service Exam of Completed Overlay and the Outer 25% of the underlying pipe wall to identify the original flaws.	UT	Angle beam exam in accordance with qualified P.D.I. procedure implementing Appendix VIII.	IWB-3514 N-504-2

General Note: The Edition and Addenda for the ASME Section XI acceptance criteria is the 1989 Edition with no Addenda. The weld overlay examinations comply with the recommendations of NUREG-0313, Revision 2, and also with Code Case N-504-2.

There is no ASME Section III Subsection that directly applies to inspection acceptance criteria for weld overlays. NUREG-0313 and Code Case N-504-2 specify an ultrasonic volumetric examination, using methods and personnel qualified through the EPRI NDE Center. Furthermore, NUREG-0313 states that the ultrasonic examinations should be performed in accordance with the requirements of the applicable edition of the ASME Code. The Code of record for the current 10-year in-service inspection interval is the 1989 edition of ASME Section XI with no Addenda. Therefore, the acceptance criteria that will be used for the volumetric examinations will be those of IWB-3514, "Standards for Examination Category B-F, Pressure Retaining Dissimilar Metal Welds, and Examination Category B-J, Pressure Retaining Welds in Piping."

Pressure Testing

The completed repair shall be given a system leakage, in-service or functional test in accordance with ASME Section XI, IWA-5000.

Unusual Difficulty in Meeting Specified Requirements

Preheat and post weld heat treatments (PWHT) are required for welding on P3 Group 3 LAS nozzle material by ASME Section III, Subparagraph NB4622.7. These requirements are impractical without draining the reactor vessel, and may even distort the P3 components involved (nozzle and reactor pressure vessel). To drain the vessel requires a full-core fuel offload. If the vessel were drained, the radiation dose rates around the nozzle would increase significantly, resulting in additional personnel exposure. Therefore, consistent with ALARA practices and prudent utilization of outage personnel, there will be no vessel drain down for this repair. The weld overlays will be completed with water on the inside surface of the nozzles and connected piping. This approach (i.e., no vessel drain down) minimizes fuel movement and thereby enhances nuclear safety.

The alternative, as described below, provides an acceptable level of quality and safety while neither draining the reactor vessel nor applying preheat and post weld heat treatments. Therefore, the alternative alleviates the impracticality of following certain code requirements for this repair activity.

IV. ALTERNATIVE FROM REPAIR REQUIREMENTS

The repair will utilize ASME Code Case N-504-2, "Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping," and Code Case N-638, "Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique," with the following exceptions and clarifications.

Clarification of Code Case N-504-2 for Applicability to Nickel-based Austenitic Steel

Code Case N-504-2 was prepared specifically for austenitic stainless steel material. An alternate application to nickel-based austenitic materials (i.e., Alloy 52) is requested due to the specific configuration of the nickel-based austenitic weldment.

Exception to Code Case N-504-2 Paragraph (b)

Code Case N-504-2 paragraph (b) requires that the reinforcement weld metal shall be low carbon (0.035% maximum) austenitic stainless steel. A nickel-based filler is required and Alloy 52 has been selected in place of low carbon austenitic stainless steel.

Exception to Code Case N-504-2 Paragraph (e)

Code Case N-504-2 paragraph (e) requires as-deposited delta ferrite measurements at least a 7.5 FN for the weld reinforcement. These measurements are not to be performed for this overlay, as the nickel filler is a fully austenitic material, containing no ferrite.

Clarification of Code Case N-638 Applicability

Code Case N-638 shall be applied to the P3 Group 3 LAS nozzle material.

Exception to Code Case N-638 Paragraph 1(a)

Code Case N-638 paragraph 1(a) requires the maximum area of an individual weld based on the finished surface shall be 100 square inches. The area for the temper bead weld in this weld overlay design will be approximately 150 square inches.

V. BASIS FOR THE ALTERNATIVE

Clarification of Code Case N-504-2 for Applicability to Nickel-based Austenitic Steel

The weldment being addressed is austenitic material having a mechanical behavior similar to austenitic stainless steel. The weldment is designed to be highly resistant to IGSCC and is compatible with the existing weldment and base metal materials. Accordingly, this alternative provides an acceptable level of quality and safety. Therefore, Code Case N-504-2 should be interpreted to apply equally to both materials.

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A consumable welding wire highly resistant to IGSCC was selected for the overlay material. This material, designated UNS N06052 F No. 43 is a nickel-based alloy weld filler material, commonly referred to as Alloy 52, and will be applied using the GTAW process. Alloy 52 contains nominally 30% chromium that imparts excellent corrosion resistance to IGSCC. By comparison, Alloy 82, is identified as an IGSCC resistant material in NUREG 0313 Revision 2 and contains nominally 20% chromium while Alloy 182 has a nominal chromium composition of 15% chromium. Alloy 52 with its high chromium content provides a high level of resistance to IGSCC consistent with the requirements of the code case. Therefore, this alternative provides an acceptable level of quality and safety.

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Clarification of Code Case N-638 Applicability

Code Case N-638 was developed for temper bead applications to similar and dissimilar metals. It permits the use of machine (GTAW) welding at ambient temperature without the use of preheat or PWHT on Class 1, 2, and 3 components.

Temper bead welding methodology is not new. Numerous applications over the past decade have demonstrated the acceptability of temper bead technology in nuclear environments. Temper bead welding achieves heat affected zone (HAZ) tempering and grain refinement without subsequent PWHT. Excellent HAZ toughness and ductility are produced. Use of Code Case N-638 has been accepted in Regulatory Guide 1.147 Revision 13 as providing an acceptable level of quality and safety.

A 48-hour post weld hold prior to acceptance inspection is required by Code Case N-638 and will be done to assure that no delayed cracking occurs.

Exception to Code Case N-638 Paragraph 1(a)

Code Case N-638 specifies a limit of 100 square inches for a temper bead weld. Because of the diameter of nozzle N2J (14-1/4 inches), this restriction would limit the weld overlay length to 2-1/4 inches on the LAS nozzle material. This distance could be justified as adequate axial length to provide for load redistribution from the weld overlay back into the nozzle without violating applicable stress limits of Section III for primary local and bending stresses and secondary peak stresses. However, this axial length will not permit a complete examination of the outer 25% of the nozzle thickness as required by Code Case N-504-2. In order to perform a qualified exam of the required volume, the axial length of the overlay on the LAS nozzle will be extended to 2-5/8 inches, encompassing an area less than 150 square inches for the temper bead weld.

This weld overlay repair involves temper bead welding on the low alloy steel nozzle to provide load transfer across the weld. The weld overlay design is based on the requirements of ASME Section XI, IWB-3640 and uses the guidance of Code Case N-504-2, for the weld overlay design; and Code Case N-638 for the ambient temperature temper bead welding. One of the requirements of Code Case N-638 is that the weld overlay repair on the low alloy steel surface be limited to 100 in^2. PPL has requested relief from this restriction such that the overlay covers a low alloy steel surface area of about 150 in^2. The reason for the relief is to allow PPL to ultrasonically inspect the area involving the crack region from the nozzle side of the weld as required by Paragraph 4.0(b) of Code Case N-504-2.

Prior History

There have been a large number of temper bead weld overlay repairs applied to nozzle to safe-end welds in the nuclear industry. For the most part, these have involved smaller diameter components, and have generally been able to be performed while meeting the 100 in^2 requirement of Code Case N-638. However, at least two nozzle to safe end welds have exceeded this limit. These include the nozzle to safe end repair at V. C. Summer, where a nozzle butter was applied to a nominal 30 inch diameter, 3-inch thick nozzle using the temper bead process (this repair involved approximately 300 in^2), and to the Three Mile Island surge nozzle, where a weld overlay repair was extended onto the nozzle to vessel blend radius so as to avoid producing a high stress concentration at the toe of the overlay (this repair involved greater than 200 in^2).

Code Considerations

Code Case N-432 has always allowed temper bead welding on low alloy steel nozzles without limiting the temper bead weld surface area to 100 in^2. The two additional conditions required by N-432 that are not required by Code Case N-638 are that the temper bead repair have preheat when applied and that the procedure qualification be performed on the same specification type, grade and class of material as the component being welded in the field. The first of these requirements would present a severe man-rem radiation burden to PPL when performing this repair. The second condition could readily be met. It is principally for the man-rem exposure reason that Code Case N-638 was selected for performing this repair. Code Case N-638 is more restrictive than N-432 when the size of the repair is considered.

The ASME Code committees have recognized that the 100 in^2 restriction on the overlay surface area size is excessive and a draft code case is currently in progress within ASME Section XI to increase the area limit to 500 in^2. The code case currently has the designation RRM 00-04 and attempts to combine the features of Code Cases N-432 and N-638 into a single code case. The supporting analysis for the draft Code Case RRM 00-04 (prepared by EPRI) concluded that residual stresses are not detrimentally changed by increasing the area of the repair for ambient temperature temper bead repairs, and that tempering of the heat affected zone is unaffected by the weld overlay application.

The EPRI report that supports the draft code case RRM 00-04 examined the issue of residual stresses and of cracking associated with the weld overlay application. It concluded that the residual stresses were not detrimentally changed and that the tempering effects of the repair were not affected by the size of the overlay.

The issue of cracking and/or distortion of the weld and base metal were not specifically addressed in the code case development work. Since the girth weld and butter, and the weld overlay are fabricated from austenitic materials, with very high inherent toughness, no cracking is expected to occur due to the shrinkage associated with the weld overlay. With respect to the low alloy steel, as was noted above, many temper bead weld overlays have been applied in the BWR industry to these nozzle to safe end locations. In no instance has there been any reported cracking due to the weld overlay application. The stiffness and high toughness inherent in the low alloy steel nozzle is expected to protect against any cracking and severely limit any distortion that might occur in the low

alloy steel nozzle. PPL will be measuring and evaluating axial shrinkage for impact on the nozzle and safe end materials and piping system in accordance with Code Case N-504-2.

Summary and Conclusions

Significant laboratory testing and field experience have been documented qualifying the temper bead weld overlay repair for safe end to nozzle welds. These efforts and experience have demonstrated that the remedy provides a very high quality, sound repair to these joints. These repairs have included instances where more than a 100 in^2 surface area repair was applied to low alloy steel nozzles without detrimental effects. The 100 in^2 repair limitation has been examined in detail. It has been concluded that it is acceptable to exceed that limit without detrimental effects. As a result, the draft Code Case RRM 00-04 has been prepared by ASME.

The ASME Code has recognized that the 100 in^2 repair limitation is arbitrary and is progressing with a code case to extend the limit to 500 in^2.

The PPL request for this area limit extension is based upon the desire to perform the best baseline UT possible following the weld overlay application.

CONCLUSION

Weld overlays involve the application of weld metal circumferentially around the pipe in the vicinity of the flawed weld to restore ASME Section XI margins. Weld overlays have been used in the nuclear industry as an acceptable method to repair flawed welds. The use of overlay filler material, which provides excellent resistance to IGSCC, develops an effective barrier to crack extension by corrosion processes.

The piping and other components have been evaluated (to the original ASME design code requirements) for the effects due to shrinkage induced into the system during installation of the overlay. The actual shrinkage will be measured. All required documents will be reconciled to the original design code, and updated to reflect these as-built values.

The design of the overlay for the nozzle safe-end uses methods that are standard in the industry for size determination of pipe-to-pipe overlays. There are no new or different approaches used in this overlay design which are considered first of a kind or inconsistent with previous approaches. The overlay is designed as a full structural overlay in accordance with the recommendation of NUREG 0313 Revision 2, which was implemented by Generic Letter 88-01 and by Code Case N-504-2 and ASME Section XI Paragraph IWB-3640, 1989 Edition with Appendix C (1989 Addenda).

Temper bead techniques, as defined by Code Case N-638, will produce the tough corrosion resistant overlay deposit that meets or exceeds all code requirements for the weld overlay.

PPL concludes that the repair plan is justified and presents an acceptable level of quality and safety to satisfy the requirements of 10 CFR 50.55a(c)(3)(i). Furthermore, this evaluation demonstrates that compliance with the 1989 Edition of ASME Section XI with no addenda (the current Code of record for Susquehanna Unit 1) would result in unusual difficulty without a compensating increase in the level of quality and safety pursuant to 10 CFR 50.55a(c)(3)(ii)

A similar proposed alternative to the requirements of 10 CFR 50.55a(c)(3)(iv) has been approved previously by the NRC for the Duane Arnold Energy Center by NRC letter dated November 19, 1999 and for Nine Mile Point Unit 2 by NRC letter dated March 30, 2000. Also, a similar proposed alternative to the requirements of 10 CFR 50.55a(c)(3)(iv) has been submitted by Pilgrim on October 2, 2003 and by TMI on November 3, 2003.

VI. DURATION OF PROPOSED ALTERNATIVE

The proposed alternative applies to the repairs of RPV nozzle to safe-end weld for the scheduled outage and for the remaining service life of this weld.

RELIEF REQUEST RR-32

I. RELIEF REQUEST APPLICABILITY

A. Unit(s): 1 and 2
B. Code Examination Category: F-A
C. Code Item Number(s): F1.20, F1.40
D. Reference: ASME Section XI, 1989 Edition, Table IWF-2500-1

II. IDENTIFICATION OF COMPONENTS

SSES Units 1 and 2 Examination Category F-A supports listed in Table RR-32-1 are the subject of this relief request.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

Table IWF-2500-1, Examination Category F-A, Item Numbers F1.20 and 1.40, requires a visual VT-3 examination of select component supports. Relief is requested from complete non-destructive visual examination of certain component supports which meet the selection criteria for which a complete visual examination cannot be performed due to physical interferences.

IV. BASIS FOR RELIEF

Complete visual examination in accordance with the governing examination requirements is not practical due to the limitations noted in Table RR-32-1. All examinations will be completed to the maximum extent practical.

Table RR-32-1

Component Identification	Description/ System/ Unit	Category/ Item No.	Limiting Condition	Exam Coverage (%)(1)
GBB1012-H26	Rigid Support/Guide/ Core Spray/ Unit 1	F-A/ F1.20	Thermo-Lag Interference	80
ST BRKT SUP-A	Stabilizer Bracket Support/ RPV-External/ Unit 2	F-A/ F1.40	Insulation Bracket Interference	60
ST BRKT SUP-B	Stabilizer Bracket Support/ RPV-External/ Unit 2	F-A/ F1.40	Insulation Bracket Interference	60
(1) Examination coverage based on actual inservice inspection examinations				

APPENDIX A

APPENDIX A

LISTING
OF
ULTRASONIC EXAMINATION CLAIBRATION STANDARDS
EXPECTED TO BE USED DURING THE SECOND ISI INTERVAL

Calibration Block No.	Description	Material Specification	Thickness Actual/Nominal
P-01	2-160-CS	106 B	.330-.401/.344
P-02	3-160-CS	106 B	.430-.450/438
P-03	3-XX1-CS	234 WPB	.622-.667/.65
P-04	4-80-CS	106 B	.335/.337
P-05	4-80S-SS	312 304L	.337/.337
P-06	4-XX1-CS-F	541 CL1	.443/.440
P-07	4-120-CS	106 B	.439-.463/.438
P-08	4-120-SS	312 304L	.480/.438
P-09	4-XX2-CS	234 WPB	.460/.470
P-10	4-160-CS	106 B	.551/.531
P-11	6-40-CS	106 B	.270/.280
P-12	6-80-CS	106 B	.437/.432
P-13	6-80S-SS	376 TP304	.441/.432
P-14	6-.562-SS	403 WP304L	.514/.562
P-15	6-120-CS	106 B	.562/.562
P-16	6-XX1-SS-F	182 F316	.639/.640
P-17	6-XX1-CS-F	541 CL1	.619/.610
P-18	6-160-CS	106 B	.725/.719
P-19	6-.719-CS	105	.720/.719
P-20	8-100-CS	106 B	.601/.594
P-21	8-160-CS	106 B	.885/.906
P-22	10-40-CS	106 B	.356/.365
P-23	10-80-CS	106 B	.614/.594
P-24	10-100-CS	106 B	.711/.719
P-25	10-XX1-CS-F	541 CL1	.675/.600
P-26	10-XX2-SS-F	182 F304L	.793/.700
P-27	10-XX2-CS-F	541 CL1	.832-.842/.780
P-28	10-120-CS	234 WPB	.848/.844
P-29	10-160-CS	106 B	1.085/1.125
P-30	12-STD-CS	106 B	.414/.375
P-31	12-80-CS	333 GR6	.615/.688
P-32	12-80-CS-F	234 WPB	.688-.676/.688
P-33	12-XX1-SS	376 TP304	.703/.613
P-34	12-100-CS	106 B	.846/.844

Calibration Block No.	Description	Material Specification	Thickness Actual/Nominal
P-35	12-XX1-SS-F304	182 F304	.947/.95
P-36	12-XX2-SS-F316	182 F316	.905/.880
P-37	12-.930-SS	312 TP304	.944/.930
P-38	14-STD-CS	106 B	.376/.375
P-39	14-80-CS	106 B	.723/.750
P-40	14-160-CS	106 B	1.5/1.406
P-41	16-.375-CS	333 GR6	.365-.384/.325
P-42	16-STD-CS	106 B	.403/.375
P-43	16-40-CS	333 GR6	.545/.500
P-44	18-STD-CS	106 B	.365/.375
P-45	18-XX1-CS	106 B	.481/.500
P-46	18-60-CS	106 B	.743/.750
P-47	18-100-CS	106 B	1.150/1.156
P-48	20-STD-CS	106 B	.373/.375
P-49	20-XX1-CS	106 B	.509/.500
P-50	20-XX2-CS-F	541 CL1	.513/.520
P-51	20-XX1-CS-F	541 CL1	.675/.600
P-52	20-.650-CS	234 WPB	.650/.650
P-53	20-.88-CS	106 B	.812/.880
P-54	20-80-CS-F	234 WPB	1.038/1.031
P-55	20-80-CS	333 GR6	1.098/1.031
P-56	20-XX1-SS	358 T304(W)	1.140/1.104
P-57	20-1.70-SS	403 WP304	1.697/.170
P-58	22-XX1-SS	240 T304	1.116/1.009
P-59	24-STD-CS	106 B	.390/.375
P-60	24-XX1-CS	333 GR6	.504/.500
P-61	24-.485-CS	234 WPB	.486/.485
P-62	24-40-CS	106 B	.711/.688
P-63	24-.941-CS	106 GF C	.955/.941
P-64	24-XX1-SS	358 CL1 304	1.136/1.317
P-65	24-1.219-CS	333 GR6	1.180/1.219
P-66	24-1.32-SS	106 B	1.193/1.219
P-67	24-1.32-SS	182 F316	1.32/1.32
P-68	24-100-CS	333 GR6	1.525/1.531
P-69	24-1.53-CS	106 B	1.535/1.531
P-70	24-XX1-CS-F	541 CL1	1.73/1.531
P-71	24-1.75-CS	403 WP304	1.741/1.750
P-72	24-1.9-CS-F	420 WPL6	1.910/1.900
P-73	24-160-CS	106 B	2.376/2.344

Calibration Block No.	Description	Material Specification	Thickness Actual/Nominal
P-74	24-SS2-CS	106 B	2.468-2.579/2.344
P-75	26-SS1-CS	106 C	1.053/1.013
P-76	26-SS1-CS-F	234 WPB	1.177-1.185/1.1
P-77	26-XX2-CS	234 WPB	1.224/1.2
P-78	26-XX2-CS-F	105 II	1.395-1.410/1.35
P-79	28-1.076-SS	240 304	1.152/1.076
P-80	28-1.285-SS	240 304	1.385/1.285
P-81	28-1.70-SS	403 WP304	1.698/1.7
P-82	28-2.5-SS	240 304	2.54/2.55
P-83	30-XX2-CS	106 B	.578/.562
P-84	30-XX3-CS	106 B	.83/.82
P-85	F-.75-CS	516 70	.76/.75
P-86	RHR-1.00-CS	516 70	1.18/1.0
P-87	F-1.25-CS	516 70	1.25/1.25
P-88	DAC	516 70	12.437 X 2.125 X 4.5
P-90	3-STUD-CS	For Appendix VIII Testing	N/A
P-91	22-NOZ-1	SA105 GR2	2.326 X 4.375 X 12.625
P-92	SWP-RIS	SA 182 F304/SA 403	N/A
P-93	RIS-SE	376 TP304	.866-.870/.876
P-94	26-1.216-CS	SA514 GR70	1.282/1.216
P-95	22-NOZ-2	SA 350	N/A
P-96	Deleted Block	N/A	N/A
P-97	Tip Block	SA240/340L	1.0
P-98	Depth Block	SA240304L	1.5
P-99	MT 10 lb Test Block	ASTM A3694	0.5
P-100	MT 10 lb Test Block	ASTM A3694	0.5
P-101	MT 10 lb Test Block	ASTM A3694	0.5
P-102	Recirc Pump Stud	540 GRB 24	23.5 x 2.992
P-103	Step Stud	SA540 B23C1.5	2.0 x 2.25
P-104	4" Weld Buildup	SA182 F304	0.715

LISTING
OF
REACTOR PRESSURE VESSEL
ULTRASONIC EXAMINATION CALIBRATION STANDARDS
EXPECTED TO BE USED DURING THE SECOND ISI INTERVAL

Calibration Block No.	Description	Heat Number
1	Vessel Block	B-5063-1
2	Bottom Head Dollar Plate	C9943-1
3	Top Head Side Plate	A9036-1
4	Top Head Vessel	C-3899-2A
5	Vessel Flange	B-5083-1
6	N2 Recirc Inlet Nozzle	L227S
7	N2 Recirc Inlet Nozzle	NX-8927
8	N7 Nozzle (Head Vent)	Q2Q81QT
9	N8 Safe End	L-173S
10	Safe End Cal Standard for RXR, MS, CS	H551
11	N3 Nozzle (Main Steam)	Q2Q86QT
12	N6 (Head Spray)	Q2Q78QT
13	N1 (Recirc Outlet)	213094
14	N5 Safe End to Extension	L-214S
15	N5 Safe End to Extension	NX-7117
16	N1 Safe End	L-238S
17	6" RX Head Closure Stud	83289
18	7" RX Head Closure Stud	83289
19	15" RX Head Closure Stud	83289
20	28" RX Head Closure Stud	83289
21	Feedwater Calibration Transfer Block	52596
22	N2 (Recirc Inlet)/N4 Feedwater	Q2Q84QT
23	N2 Safe End Extension	78158
24	N9 Nozzle	SS-NX7944/CS-718419
25	N2 Inconnel to Safe End	Y6-Y46S
26	Feedwater Nozzle Inner Radius	52596
27	N2 Safe End	224697-CS/77086-SS
28	RX Head Closure Stud (Full Length)	81741
29	N1A, N1B – Unit 1 Nozzle N1A – Unit 2 Nozzle	213094
30	N1B – Unit 2 Nozzle	L-238S
31	RX Flange Thread	SA540-B24
32	Appendix VIII Reactor Head Closure Stud	19626

APPENDIX B

APPENDIX B

LISTING OF NDE PROCEDURES EXPECTED TO BE USED DURING THE SECOND ISI INTERVAL

NDE Procedure Identification	Title
NDE-QP-001	Qualification, Control, and Format of NDE Procedures
NDE-QP-002	Recording of Nondestructive Testing Data
NDE-QP-003	Reference Datum Points and Weld Profiling
NDE-NLP-001	Color Contrast Liquid Penetrant Examination
NDE-MT-001	Wet and Dry MT Examination
NDE-MT-002	Magnetic Particle Examination Dry Powder – Yoke Method
NDE-UT-001	Manual Ultrasonic Examination of Similar and Dissimilar Metal Welds for IGSCC
NDE-UT-002	Manual UT Examination of Ferritic Welds
NDE-UT-003	Ultrasonic Examination of RHR Heat Exchanger Weld and Nozzle Inner Radii
NDE-UT-004	Ultrasonic Planar Flaw Sizing
NDE-UT-005	Manual Ultrasonic Examination of Vent, Drain Line, and other Socket Welds
NDE-UT-006	Manual Ultrasonic Examination of RPV Welds
NDE-UT-007	Ultrasonic Examination of Reactor Recirculation Pump Studs
NDE-UT-008	Ultrasonic Examination of Reactor Vessel Closure Studs
NDE-UT-009	Straight Beam UT Examination of Valve Stems
NDE-UT-010	Manual UT of RPV Flange Stud-Hole Threads
NDE-UT-011	Manual Ultrasonic Examination of Reactor Vessel Welds
NDE-UT-012	Procedure for the Manual Ultrasonic Through Wall and Length Sizing of Ultrasonic Indications in Reactor Pressure Vessel Welds
NDE-UT-014	Ultrasonic Thickness Examination – General
NDE-UT-015	Manual Ultrasonic Examination of Similar and Dissimilar Metal Welds (Non Appendix VIII)
NDE-UT-016	Calibration of Ultrasonic LCO Wave Form Display Digital Thickness Measuring Instruments
NDE-VT-001	Visual Examination – VT-1
NDE-VT-002	Visual Examination – VT-2 (Leakage)
NDE-VT-003	Visual Examination – VT-3 (Mechanical & Structural)
NDE-VT-004	Visual Weld Inspection
NDE-VT-005	Underwater Visual Examination of RPV Internals
NDE-UT-013	Manual Ultrasonic Examination of Dissimilar Metal Piping Welds

APPENDIX C

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

PRESSURE VESSEL MULTIPLE-COMPONENT GROUPS Units 1 and 2				
UNIT	**PRESSURE VESSEL GROUP NUMBER**	**PRESSURE VESSEL IDENTIFICATION NUMBER**	**PRESSURE VESSEL SYSTEM FUNCTION**	**APPLICABLE CODE EXAMINATION CATEGORIES**
1	1PV-001	1E-205A	Residual Heat Removal System Heat Exchangers	C-A, C-B, F-A
		1E-205B		
2	2PV-001	2E-205A	Residual Heat Removal System Heat Exchangers	C-A, C-B, F-A
		2E-205B		

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

PUMP MULTIPLE-COMPONENT GROUPS Unit 1			
PUMP GROUP NUMBER	**PUMP IDENTIFICATION NUMBER**	**PUMP SYSTEM FUNCTION**	**APPLICABLE CODE EXAMINATION CATEGORIES**
1P-001	1P401A	Reactor Recirculation System Pumps	B-G-1, B-L-2, B-K, F-A
	1P401B		
1P-002	1P206A	Core Spray System Pumps	C-G, F-A
	1P206B		
	1P206C		
	1P206D		
1P003	0P-504A	Emergency Service Water System Pumps	F-A
	0P-504B		
	0P-504C		
	0P-504D		
1P004	1P-202A	Residual Heat Removal System Pumps	C-G, F-A
	1P-202B		
	1P-202C		
	1P-202D		
1P005	1P506A	Residual Heat Removal Service Water System Pumps	F-A
	1P506B		

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

PUMP MULTIPLE-COMPONENT GROUPS Unit 2			
PUMP GROUP NUMBER	**PUMP IDENTIFICATION NUMBER**	**PUMP SYSTEM FUNCTION**	**APPLICABLE CODE EXAMINATION CATEGORIES**
2P-001	2P401A	Reactor Recirculation System Pumps	B-G-1, B-L-2, B-K, F-A
	2P401B		
2P-002	2P206A	Core Spray System Pumps	C-G, F-A
	2P206B		
	2P206C		
	2P206D		
2P003	2P-202A	Emergency Service Water System Pumps	C-G, F-A
	2P-202B		
	2P-202C		
	2P-202D		
2P004	2P-506A	Residual Heat Removal System Pumps	F-A
	2P-506B		

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

VALVE MULTIPLE-COMPONENT GROUPS

Unit 1

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
IV-001	HV1F006A	CS	12	CAST	SA351-CF8M	CHECK	CONTAINMENT ISOLATION; RCPB ISOLATION; CORE SPRAY INJECTION
	HV1F006B	CS	12	CAST	SA351-CF8M	CHECK	
IV-002	HV1F005A	CS	12	CAST	SA351-CP8M	GATE	CONTAINMENT ISOLATION; RCPB ISOLATION; CORE SPRAY INJECTION
	HV1F005B	CS	12	CAST	SA351-CP8M	GATE	
IV003	1F007A	CS	12	CAST	SA351 CP8M	GATE	MAINTENANCE (STAINLESS STEEL)
	1F007B	CS	12	CAST	SA351 CP8M	GATE	
IV004	1F010A	FW	24	CAST	SA352-LCB	CHECK	CONTAINMENT ISOLATION; HPCI INJECTION; RCIC INJECTION; REACTOR FW FLOW
	1F010B	FW	24	CAST	SA352-LCB	CHECK	
IV-005	HV141818A	FW	24	CAST	SA352-LCB	CHECK	CONTAINMENT ISOLATION; HPCI INJECTION; RCIC INJECTION; REACTOR FW FLOW
	HV141818B	FW	24	CAST	SA352-LCB	CHECK	
IV-006	HV1F011A	FW	24	CAST	SA35S-LCB	GATE	MAINTENANCE (CARBON STEEL)
	HV1F011B	FW	24	CAST	SA352-LCB	GATE	
IV-007	HV1F002	HPCI	10	CAST	SA216-WCB	GATE	CONTAINMENT ISOLATION; HPCI STEAM SUPPLY
	HV1F003	HPCI	10	CAST	SA216-WCB	GATE	

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

VALVE MULTIPLE-COMPONENT GROUPS

Unit 1

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
IV-008	PS1F013A	MS	6	FORG	A-105 GRADE II	SRV	ADS; RCPB PRESSURE RELIEF; OVER-PRESSURE PROTECTION; ALTERNATE SHUTDOWN COOLING FLOWPATH
	PS1F013B	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013C	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013D	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013E	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013F	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013G	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013H	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013J	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013K	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013L	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013M	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013N	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013P	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013R	MS	6	FORG	A-105 GRADE II	SRV	
	PS1F013S	MS	6	FORG	A-105 GRADE II	SRV	

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

VALVE MULTIPLE-COMPONENT GROUPS

Unit 1

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
IV-009	HV1F022A	MS	26	CAST	SA216-WCB	GLOBE	MAIN STEAM CONTAINMENT ISOLATION; MAIN STEAM FLOW TO TURBINE
	HV1F022B	MS	26	CAST	SA216-WCB	GLOBE	
	HV1F022C	MS	26	CAST	SA216-WCB	GLOBE	
	HV1F022D	MS	26	CAST	SA216-WCB	GLOBE	
	HV1F028A	MS	26	CAST	SA216-WCB	GLOBE	
	HV1F028B	MS	26	CAST	SA216-WCB	GLOBE	
	HV1F028C	MS	26	CAST	SA216-WCB	GLOBE	
	HV1F028D	MS	26	CAST	SA216-WCB	GLOBE	
IV-010	1F019	RHR	6	CAST	SA351-CF8M	CHECK	HEAD SPRAY INJECTION; HEAD SPRAY REVERSE FLOW PROTECTION
IV-011	HV1F022	RHR	6	CAST	SA351-CF8M	GATE	CONTAINMENT ISOLATION; RCPB ISOLATION; HEAD SPRAY ISOLATION

VALVE MULTIPLE-COMPONENT GROUPS

Unit 1

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
IV-012	HV1F023	RHR	6	CAST	SA351-CF8M	GLOBE	CONTAINMENT ISOLATION; RCPB ISOLATION; HEAD SPRAY ISOLATION
IV-013	1F067	RHR	20	CAST	SA351-CF8M	GATE	MAINTENANCE; SHUTDOWN COOLING
IV-014	HV1F008	RHR	20	CAST	SA351-CF8M	GATE	CONTAINMENT ISOLATION; PRESSURE ISOLATION; SHUTDOWN COOLING
	HVF1009	RHR	20	CAST	SA351-CF8M	GATE	
IV-015	HV1F050A	RHR	24	CAST	SA351-CF8M	CHECK	CONTAINMENT ISOLATION; PRESSURE ISOLATION; LPCI INJECTION; SHUTDOWN COOLING
	HV1F050B	RHR	24	CAST	SA351-CF8M	CHECK	
IV-016	1F060A	RHR	24	CAST	SA351-CF8M	GATE	MAINTENANCE (STAINLESS STEEL): SHUTDOWN COOLING
	1F060B	RHR	24	CAST	SA351-CF8M	GATE	
IV-017	HV1F015A	RHR	24	CAST	SA351-CF8M	GATE	CONTAINMENT ISOLATION; PRESSURE ISOLATION; LPCI INJECTION; SHUTDOWN COOLING
	HV1F015B	RHR	24	CAST	SA351-CF8M	GATE	

VALVE MULTIPLE-COMPONENT GROUPS

Unit 1

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
IV-018	HV1F023A	RR	28	CAST	SA351-CF8M	GATE	MAINTENANCE
	HV1F023B	RR	28	CAST	SA351-CF8M	GATE	
	HV1F031A	RR	28	CAST	SA351-CF8M	GATE	
	JV1F031B	RR	28	CAST	SA351-CF8M	GATE	
IV-019	HV1F102	RWCU	6	CAST	SA216-WCB	GLOBE	REACTOR WATER RECIRCULATION ISOLATION
IV-020	HV1F001	RWCU	6	FORG	SA-105 GRADE II	GATE	CONTAINMENT ISOLATION; RWCU SUCTION FROM RR LOOP AND RPV BOTTOM HEAD DRAIN
	HV1F004	RWCU	6	FORG	SA-105 GRADE II	GATE	

APPENDIX C

MULTIPLE-COMPONENT GROUP LISTINGS

VALVE MULTIPLE-COMPONENT GROUPS

Unit 2

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
2V-001	HV2F006A	CS	12	CAST	SA351-CF8M	CHECK	CONTAINMENT ISOLATION; RCPB ISOLATION; CORE SPRAY INJECTION
	HV2F006B	CS	12	CAST	SA351-CF8M	CHECK	
2V-002	HV2F005A	CS	12	CAST	SA351-CP8M	GATE	CONTAINMENT ISOLATION; RCPB ISOLATION; CORE SPRAY INJECTION
	HV2F005B	CS	12	CAST	SA351-CP8M	GATE	
2V003	2F007A	CS	12	CAST	SA351 CP8M	GATE	MAINTENANCE (STAINLESS STEEL)
	2F007B	CS	12	CAST	SA351 CP8M	GATE	
2V004	2F010A	FW	24	CAST	SA352-LCB	CHECK	CONTAINMENT ISOLATION; HPCI INJECTION; RCIC INJECTION; REACTOR FW FLOW
	2F010B	FW	24	CAST	SA352-LCB	CHECK	
2V005	HV141818A	FW	24	CAST	SA352-LCB	CHECK	CONTAINMENT ISOLATION; HPCI INJECTION; RCIC INJECTION; REACTOR FW FLOW
	HV141818B	FW	24	CAST	SA352-LCB	CHECK	
2V006	HV2F011A	FW	24	CAST	SA352-LCB	GATE	MAINTENANCE (CARBON STEEL)
	HV2F011B	FW	24	CAST	SA352-LCB	GATE	
2V007	HV2F002	HPCI	10	CAST	SA216-WCB	GATE	CONTAINMENT ISOLATION; HPCI STEAM SUPPLY
	HV2F003	HPCI	10	CAST	SA216-WCB	GATE	

VALVE MULTIPLE-COMPONENT GROUPS

Unit 2

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
2V008	PSV2F013A	MS	6	FORG	A-105 GRADE II	SRV	ADS; RCPB PRESSURE RELIEF; OVER-PRESSURE PROTECTION; ALTERNATE SHUTDOWN COOLING FLOWPATH
	PSV2F013B	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013C	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013D	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013E	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013F	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013G	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013H	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013J	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013K	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013L	MS	6	FORG	A-105 GRADE II	SRV	

VALVE MULTIPLE-COMPONENT GROUPS

Unit 2

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
2V008 (cont'd.)	PSV2F013M	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013N	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013P	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013R	MS	6	FORG	A-105 GRADE II	SRV	
	PSV2F013S	MS	6	FORG	A-105 GRADE II	SRV	
2V-009	HV2F022A	MS	26	CAST	SA216-WCB	GLOBE	MAIN STEAM CONTAINMENT ISOLATION; MAIN STEAM FLOW TO TURBINE
	HV2F022B	MS	26	CAST	SA216-WCB	GLOBE	
	HV2F022C	MS	26	CAST	SA216-WCB	GLOBE	
	HV2F022D	MS	26	CAST	SA216-WCB	GLOBE	
	HV2F028A	MS	26	CAST	SA216-WCB	GLOBE	

VALVE MULTIPLE-COMPONENT GROUPS

Unit 2

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
2V-009 (cont'd.)	HV2F028B	MS	26	CAST	SA216-WCB	GLOBE	
	HV2F028C	MS	26	CAST	SA216-WCB	GLOBE	
	HV2F028D	MS	26	CAST	SA216-WCB	GLOBE	
2V-010	2F019	RHR	6	CAST	SA351-CF8M	CHECK	HEAD SPRAY INJECTION; HEAD SPRAY REVERSE FLOW PROTECTION
2V-011	HV2F022	RHR	6	CAST	SA351-CF8M	GATE	CONTAINMENT ISOLATION; RCPB ISOLATION; HEAD SPRAY ISOLATION
2V-012	HV2F023	RHR	6	CAST	SA351-CF8M	GLOBE	CONTAINMENT ISOLATION; RCPB ISOLATION; HEAD SPRAY ISOLATION
2V-013	2F067	RHR	20	CAST	SA351-CF8M	GATE	MAINTENANCE; SHUTDOWN COOLING
2V-014	HV2F008	RHR	20	CAST	SA351-CF8M	GATE	CONTAINMENT ISOLATION; PRESSURE ISOLATION; SHUTDOWN COOLING
	HV2F009	RHR	20	CAST	SA351-CF8M	GATE	
2V-015	HV2F050A	RHR	24	CAST	SA351-CF8M	CHECK	CONTAINMENT ISOLATION; PRESSURE ISOLATION; LPCI INJECTION; SHUTDOWN COOLING
	HV2F050B	RHR	4	CAST	SA351-CF8M	CHECK	

VALVE MULTIPLE-COMPONENT GROUPS

Unit 2

(Valve multiple-component groups apply to Code Examination Categories B-G-2 and B-M-2)

VALVE GROUP NO.	VALVE ID NUMBER	SYSTEM	SIZE	BODY MFGR METHOD	BODY MAT'L	VALVE DESIGN	VALVE SYSTEM FUNCTION
2V-016	2F060A	RHR	24	CAST	SA351-CF8M	GATE	MAINTENANCE (STAINLESS STEEL); SHUTDOWN COOLING
	2F060B	RHR	24	CAST	SA351-CF8M	GATE	
2V-017	HV2F015A	RHR	24	CAST	SA351-CF8M	GATE	CONTAINMENT ISOLATION; PRESSURE ISOLATION; LPCI INJECTION; SHUTDOWN COOLING
	HV2F015B	RHR	24	CAST	SA351-CF8M	GATE	
2V-018	HV2F023A	RR	28	CAST	SA351-CF8M	GATE	MAINTENANCE
	HV2F023B	RR	28	CAST	SA351-CF8M	GATE	
	HV2F031A	RR	28	CAST	SA351-CF8M	GATE	
	HV2F031B	RR	28	CAST	SA351-CF8M	GATE	
2V-019	HV2F102	RWCU	6	CAST	SA216-WCB	GLOBE	REACTOR WATER RECIRCULATION ISOLATION
2V-020	HV2F001	RWCU	6	FORG	SA-105 GRADE II	GATE	CONTAINMENT ISOLATION; RWCU SUCTION FROM RR LOOP AND RPV BOTTOM HEAD DRAIN
	HV2F004	RWCU	6	FORG	SA-105 GRADE II	GATE	

APPENDIX D

APPENDIX D

Unit 1
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIDBA101-1	REACTOR WATER CLEAN-UP
ISIDBA101-2	REACTOR WATER CLEAN-UP
ISIDBA102-1	HIGH PRESSURE COOLANT INJECTION
ISIDBA105-1	REACTOR CORE ISOLATION COOLING
ISIDBA108-1	NUCLEAR BOILER
ISIDBA112-1	NUCLEAR BOILER
ISIDBB101-1	MAIN STEAM
ISIDBB102-1	MAIN STEAM
ISIDBB103-1	MAIN STEAM
ISIDBB104-1	MAIN STEAM
ISIDBB105-1	MAIN STEAM
ISIDBB105-2	MAIN STEAM
ISIDBB107-1	RESIDUAL HEAT REMOVAL
ISIDBB107-2	RESIDUAL HEAT REMOVAL
ISIDBB113-1	CORE SPRAY
ISIDBB113-2	CORE SPRAY
ISIDBB114-1	HIGH PRESSURE COOLANT INJECTION
ISIDBB115-1	RESIDUAL HEAT REMOVAL
ISIDBB117-1	HIGH PRESSURE COOLANT INJECTION
ISIDBB118-1	FEEDWATER
ISIDBB119-1	FEEDWATER
ISIDBB120-1	HIGH PRESSURE COOLANT INJECTION
ISIDBB120-2	HIGH PRESSURE COOLANT INJECTION
ISIDBB121-1	REACTOR CORE ISOLATION COOLING
ISIDBB121-2	REACTOR CORE ISOLATION COOLING
ISIDBB121-3	REACTOR CORE ISOLATION COOLING
ISIDBB122-1	REACTOR WATER CLEAN-UP
ISIDBB122-2	REACTOR WATER CLEAN-UP
ISIDBB129-1	MAIN STEAM
ISIDCA102-1	REACTOR WATER CLEAN-UP
ISIDCA102-2	REACTOR WATER CLEAN-UP
ISIDCA103-1	REACTOR WATER CLEAN-UP
ISIDCA107-1	CORE SPRAY
ISIDCA107-2	CORE SPRAY

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIDCA108-1	RESIDUAL HEAT REMOVAL
ISIDCA109-1	CORE SPRAY
ISIDCA109-2	CORE SPRAY
ISIDCA110-1	RESIDUAL HEAT REMOVAL
ISIDCA110-2	RESIDUAL HEAT REMOVAL
ISIDCA111-1	RESIDUAL HEAT REMOVAL
ISIDCA111-2	RESIDUAL HEAT REMOVAL
ISIDCA141-1	REACTOR RECIRCULATION
ISIDCA142-1	REACTOR RECIRCULATION
ISIDCB102-1	RESIDUAL HEAT REMOVAL
ISIDLA101-1	FEEDWATER
ISIDLA102-1	FEEDWATER
ISIDLA103-1	FEEDWATER
ISIDLA104-1	FEEDWATER
ISIDLA104-2	FEEDWATER
ISIDLA104-3	FEEDWATER
ISIDLA104-4	FEEDWATER
ISIEBB102-1	HIGH PRESSURE COOLANT INJECTION
ISIEBB103-1	REACTOR CORE ISOLATION COOLING
ISIGBB101-1	CORE SPRAY
ISIGBB101-2	CORE SPRAY
ISIGBB101-3	CORE SPRAY
ISIGBB101-4	CORE SPRAY
ISIGBB103-1	CORE SPRAY
ISIGBB103-2	CORE SPRAY
ISIGBB104-1	RESIDUAL HEAT REMOVAL
ISIGBB104-2	RESIDUAL HEAT REMOVAL
ISIGBB104-3	RESIDUAL HEAT REMOVAL
ISIGBB104-4	RESIDUAL HEAT REMOVAL
ISIGBB105-1	RESIDUAL HEAT REMOVAL
ISIGBB105-2	RESIDUAL HEAT REMOVAL
ISIGBB106-1	RESIDUAL HEAT REMOVAL
ISIGBB106-2	RESIDUAL HEAT REMOVAL

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIGBB107-1	RESIDUAL HEAT REMOVAL
ISIGBB107-2	RESIDUAL HEAT REMOVAL
ISIGBB108-1	RESIDUAL HEAT REMOVAL
ISIGBB109-1	RESIDUAL HEAT REMOVAL
ISIGBB109-2	RESIDUAL HEAT REMOVAL
ISIGBB112-1	RESIDUAL HEAT REMOVAL
ISIGBB112-2	RESIDUAL HEAT REMOVAL
ISIGBB113-1	RESIDUAL HEAT REMOVAL
ISIGBB115-1	RESIDUAL HEAT REMOVAL
ISIGBB116-1	RESIDUAL HEAT REMOVAL
ISIGBB116-2	RESIDUAL HEAT REMOVAL
ISIGBB117-1	RESIDUAL HEAT REMOVAL
ISIGBB119-1	RESIDUAL HEAT REMOVAL
ISIGBB119-2	RESIDUAL HEAT REMOVAL
ISIHBB101-1	REACTOR CORE ISOLATION COOLING
ISIHBB101-2	REACTOR CORE ISOLATION COOLING
ISIHBB104-1	CORE SPRAY
ISIHBB104-2	CORE SPRAY
ISIHBB107-1	HIGH PRESSURE COOLANT INJECTION
ISIHBB108-1	HIGH PRESSURE COOLANT INJECTION
ISIHBB108-2	HIGH PRESSURE COOLANT INJECTION
ISIHBB109-1	HIGH PRESSURE COOLANT INJECTION
ISIHBB110-1	RESIDUAL HEAT REMOVAL
ISIHBB110-2	RESIDUAL HEAT REMOVAL
ISIHBB110-3	RESIDUAL HEAT REMOVAL
ISIHBB110-4	RESIDUAL HEAT REMOVAL
ISIHBB111-2	RESIDUAL HEAT REMOVAL
ISIHBB120-1	RESIDUAL HEAT REMOVAL
ISIHBB120-2	RESIDUAL HEAT REMOVAL
ISIHBB120-3	RESIDUAL HEAT REMOVAL
ISIHBD185-1	RESIDUAL HEAT REMOVAL
ISIHBD186-1	RESIDUAL HEAT REMOVAL
ISISPDCA102-1	REACTOR RECIRCULATION
ISISPDCA102-2	REACTOR RECIRCULATION
ISISPDCA103-6	REACTOR WATER CLEAN-UP

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISISPDCA106-1	STANDBY LIQUID CONTROL
ISISPDCA106-2	STANDBY LIQUID CONTROL
ISISPDCA106-3	STANDBY LIQUID CONTROL
ISISPDCA106-4	STANDBY LIQUID CONTROL
ISIVBB102-1	CONTROL ROD DRIVE
ISIVBB102-2	CONTROL ROD DRIVE
ISIVHBB21-1	MAIN STEAM
ISIVNBB21-2	MAIN STEAM
ISIVRRB31-1	REACTOR RECIRCULATION
ISIVRRB31-2	REACTOR RECIRCULATION

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIDBA201-1	REACTOR WATER CLEAN-UP
ISIDBA201-2	REACTOR WATER CLEAN-UP
ISIDBA202-1	HIGH PRESSURE COOLANT INJECTION
ISIDBA202-2	HIGH PRESSURE COOLANT INJECTION
ISIDBA205-1	REACTOR CORE ISOLATION COOLING
ISIDBA208-1	NUCLEAR BOILER
ISIDBA212-1	NUCLEAR BOILER
ISIDBB201-1	MAIN STEAM
ISIDBB202-1	MAIN STEAM
ISIDBB203-1	MAIN STEAM
ISIDBB204-1	MAIN STEAM
ISIDBB205-1	MAIN STEAM
ISIDBB205-2	MAIN STEAM
ISIDBB207-1	RESIDUAL HEAT REMOVAL
ISIDBB207-2	RESIDUAL HEAT REMOVAL
ISIDBB213-1	CORE SPRAY
ISIDBB213-2	CORE SPRAY
ISIDBB214-1	HIGH PRESSURE COOLANT INJECTION
ISIDBB215-1	RESIDUAL HEAT REMOVAL
ISIDBB217-1	HIGH PRESS COOLANT INJECTION
ISIDBB218-1	FEEDWATER
ISIDBB219-1	FEEDWATER
ISIDBB220-1	HIGH PRESSURE COOLANT INJECTION
ISIDBB220-2	HIGH PRESSURE COOLANT INJECTION
ISIDBB221-1	REACTOR CORE ISOLATION COOLING
ISIDBB221-2	REACTOR CORE ISOLATION COOLING
ISIDBB221-3	REACTOR CORE ISOLATION COOLING
ISIDBB222-1	REACTOR WATER CLEAN-UP
ISIDBB222-2	REACTOR WATER CLEAN-UP
ISIDBB229-1	MAIN STEAM
ISIDCA202-1	REACTOR WATER CLEAN-UP
ISIDCA202-2	REACTOR WATER CLEAN-UP
ISIDCA203-1	REACTOR WATER CLEAN-UP
ISIDCA207-1	CORE SPRAY
ISIDCA207-2	CORE SPRAY
ISIDCA208-1	RESIDUAL HEAT REMOVAL

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIDCA209-1	CORE SPRAY
ISIDCA209-2	CORE SPRAY
ISIDCA210-1	RESIDUAL HEAT REMOVAL
ISIDCA210-2	RESIDUAL HEAT REMOVAL
ISIDCA211-1	RESIDUAL HEAT REMOVAL
ISIDCA211-2	RESIDUAL HEAT REMOVAL
ISIDCA211-3	RESIDUAL HEAT REMOVAL
ISIDCA241-1	REACTOR RECIRCULATION
ISIDCA242-1	REACTOR RECIRCULATION
ISIDCB202-1	RESIDUAL HEAT REMOVAL
ISIDLA201-1	FEEDWATER
ISIDLA202-1	FEEDWATER
ISIDLA203-1	FEEDWATER
ISIDLA204-1	FEEDWATER
ISIEBB202-1	HIGH PRESSURE COOLANT INJECTION
ISIEBB203-1	REACTOR CORE ISOLATION COOLING
ISIGBB201-1	CORE SPRAY
ISIGBB201-2	CORE SPRAY
ISIGBB201-3	CORE SPRAY
ISIGBB201-4	CORE SPRAY
ISIGBB203-1	CORE SPRAY
ISIGBB203-2	CORE SPRAY
ISIGBB204-1	RESIDUAL HEAT REMOVAL
ISIGBB204-2	RESIDUAL HEAT REMOVAL
ISIGBB204-3	RESIDUAL HEAT REMOVAL
ISIGBB204-4	RESIDUAL HEAT REMOVAL
ISIGBB205-1	RESIDUAL HEAT REMOVAL
ISIGBB205-2	RESIDUAL HEAT REMOVAL
ISIGBB206-1	RESIDUAL HEAT REMOVAL
ISIGBB206-2	RESIDUAL HEAT REMOVAL
ISIGBB207-1	RESIDUAL HEAT REMOVAL
ISIGBB207-2	RESIDUAL HEAT REMOVAL
ISIGBB208-1	RESIDUAL HEAT REMOVAL
ISIGBB209-1	RESIDUAL HEAT REMOVAL
ISIGBB209-2	RESIDUAL HEAT REMOVAL
ISIGBB212-1	RESIDUAL HEAT REMOVAL
ISIGBB212-2	RESIDUAL HEAT REMOVAL

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIGBB213-1	RESIDUAL HEAT REMOVAL
ISIGBB215-1	RESIDUAL HEAT REMOVAL
ISIGBB216-1	RESIDUAL HEAT REMOVAL
ISIGBB216-2	RESIDUAL HEAT REMOVAL
ISIGBB217-1	RESIDUAL HEAT REMOVAL
ISIGBB219-1	RESIDUAL HEAT REMOVAL
ISIGBB219-2	RESIDUAL HEAT REMOVAL
ISIHBB201-1	REACTOR CORE ISOLATION COOLING
ISIHBB201-2	REACTOR CORE ISOLATION COOLING
ISIHBB204-1	CORE SPRAY
ISIHBB204-2	CORE SPRAY
ISIHBB207-1	HIGH PRESSURE COOLANT INJECTION
ISIHBB208-1	HIGH PRESSURE COOLANT INJECTION
ISIHBB208-2	HIGH PRESSURE COOLANT INJECTION
ISIHBB209-1	HIGH PRESSURE COOLANT INJECTION
ISIHBB210-1	RESIDUAL HEAT REMOVAL
ISIHBB210-2	RESIDUAL HEAT REMOVAL
ISIHBB210-3	RESIDUAL HEAT REMOVAL
ISIHBB210-4	RESIDUAL HEAT REMOVAL
ISIHBB211-2	RESIDUAL HEAT REMOVAL
ISIHBB220-1	RESIDUAL HEAT REMOVAL
ISIHBB220-2	RESIDUAL HEAT REMOVAL
ISIHBB220-3	RESIDUAL HEAT REMOVAL
ISIHBB285-1	RESIDUAL HEAT REMOVAL
ISIHBB285-2	RESIDUAL HEAT REMOVAL
ISIHBB286-1	RESIDUAL HEAT REMOVAL
ISISPDCA202-1	REACTOR RECIRCULATION
ISISPDCA202-2	REACTOR RECIRCULATION
ISISPDCA203-3	REACTOR WATER CLEAN-UP
ISISPDCA206-1	STANDBY LIQUID CONTROL
ISISPDCA206-2	STANDBY LIQUID CONTROL
ISISPDCA206-3	STANDBY LIQUID CONTROL
ISISPDCA206-4	STANDBY LIQUID CONTROL
ISISPDCA206-5	STANDBY LIQUID CONTROL
ISIVBB101-1	HIGH PRESSURE COOLANT INJECTION
ISIVBB201-1	HIGH PRESSURE COOLANT INJECTION

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Weld Identification Isometrics

Drawing Number	System
ISIVBB202-1	CONTROL ROD DRIVE
ISIVBB202-2	CONTROL ROD DRIVE
ISIVNB221-1	MAIN STEAM
ISIVNB221-2	MAIN STEAM
ISIVRR231-1	REACTOR RECIRCULATION
ISIVRR231-2	REACTOR RECIRCULATION

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIDBA101-1H	REACTOR WATER CLEAN-UP
ISIDBA101-2H	REACTOR WATER CLEAN-UP
ISIDBA102-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBA105-1H	REACTOR CORE ISOLATION COOLING
ISIDBB101-1H	MAIN STEAM
ISIDBB102-1H	MAIN STEAM
ISIDBB103-1H	MAIN STEAM
ISIDBB104-1H	MAIN STEAM
ISIDBB105-1H	MAIN STEAM
ISIDBB105-2H	MAIN STEAM
ISIDBB107-1H	RESIDUAL HEAT REMOVAL
ISIDBB107-2H	RESIDUAL HEAT REMOVAL
ISIDBB113-1H	CORE SPRAY
ISIDBB113-2H	CORE SPRAY
ISIDBB114-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBB115-1H	RESIDUAL HEAT REMOVAL
ISIDBB118-1H	FEEDWATER
ISIDBB119-1H	FEEDWATER
ISIDBB120-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBB120-2H	HIGH PRESSURE COOLANT INJECTION
ISIDBB121-1H	REACTOR CORE ISOLATION COOLING
ISIDBB121-2H	REACTOR CORE ISOLATION COOLING
ISIDBB122-1H	REACTOR WATER CLEAN-UP
ISIDBB122-2H	REACTOR WATER CLEAN-UP
ISIDBB129-1H	MAIN STEAM
ISIDCA102-1H	REACTOR WATER CLEAN-UP
ISIDCA102-2H	REACTOR WATER CLEAN-UP
ISIDCA103-1H	REACTOR WATER CLEAN-UP
ISIDCA107-1H	CORE SPRAY
ISIDCA107-2H	CORE SPRAY
ISIDCA108-1H	RESIDUAL HEAT REMOVAL
ISIDCA109-1H	CORE SPRAY
ISIDCA109-2H	CORE SPRAY
ISIDCA110-1H	RESIDUAL HEAT REMOVAL
ISIDCA110-2H	RESIDUAL HEAT REMOVAL
ISIDCA111-1H	RESIDUAL HEAT REMOVAL
ISIDCA111-2H	RESIDUAL HEAT REMOVAL

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIDCA141-1H	REACTOR RECIRCULATION
ISIDCA142-1H	REACTOR RECIRCULATION
ISIDCB102-1H	RESIDUAL HEAT REMOVAL
ISIDLA101-1H	FEEDWATER
ISIDLA102-1H	FEEDWATER
ISIDLA103-1H	FEEDWATER
ISIDLA104-1H	FEEDWATER
ISIDLA104-2H	FEEDWATER
ISIDLA104-3H	FEEDWATER
ISIDLA104-4H	FEEDWATER
ISIEBB102-1H	HIGH PRESSURE COOLANT INJECTION
ISIEBB103-1H	REACTOR CORE ISOLATION COOLING
ISIGBB101-1H	CORE SPRAY
ISIGBB101-2H	CORE SPRAY
ISIGBB101-3H	CORE SPRAY
ISIGBB101-4H	CORE SPRAY
ISIGBB103-1H	CORE SPRAY
ISIGBB103-2H	CORE SPRAY
ISIGBB104-1H	RESIDUAL HEAT REMOVAL
ISIGBB104-2H	RESIDUAL HEAT REMOVAL
ISIGBB104-3H	RESIDUAL HEAT REMOVAL
ISIGBB104-4H	RESIDUAL HEAT REMOVAL
ISIGBB105-1H	RESIDUAL HEAT REMOVAL
ISIGBB105-2H	RESIDUAL HEAT REMOVAL
ISIGBB106-1H	RESIDUAL HEAT REMOVAL
ISIGBB106-2H	RESIDUAL HEAT REMOVAL
ISIGBB107-1H	RESIDUAL HEAT REMOVAL
ISIGBB107-2H	RESIDUAL HEAT REMOVAL
ISIGBB108-1H	RESIDUAL HEAT REMOVAL
ISIGBB109-1H	RESIDUAL HEAT REMOVAL
ISIGBB109-2H	RESIDUAL HEAT REMOVAL
ISIGBB112-1H	RESIDUAL HEAT REMOVAL
ISIGBB112-2H	RESIDUAL HEAT REMOVAL
ISIGBB113-1H	RESIDUAL HEAT REMOVAL
ISIGBB115-1H	RESIDUAL HEAT REMOVAL
ISIGBB116-1H	RESIDUAL HEAT REMOVAL
ISIGBB116-2H	RESIDUAL HEAT REMOVAL

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIGBB117-1H	RESIDUAL HEAT REMOVAL
ISIGBC101-10H	MAIN STEAM
ISIGBC101-11H	MAIN STEAM
ISIGBC101-12H	MAIN STEAM
ISIGBC101-13H	MAIN STEAM
ISIGBC101-14H	MAIN STEAM
ISIGBC101-15H	MAIN STEAM
ISIGBC101-16H	MAIN STEAM
ISIGBC101-17H	MAIN STEAM
ISIGBC101-18H	MAIN STEAM
ISIGBC101-19H	MAIN STEAM
ISIGBC101-1H	MAIN STEAM
ISIGBC101-20H	MAIN STEAM
ISIGBC101-21H	MAIN STEAM
ISIGBC101-22H	MAIN STEAM
ISIGBC101-23H	MAIN STEAM
ISIGBC101-24H	MAIN STEAM
ISIGBC101-25H	MAIN STEAM
ISIGBC101-26H	MAIN STEAM
ISIGBC101-27H	MAIN STEAM
ISIGBC101-28H	MAIN STEAM
ISIGBC101-29H	MAIN STEAM
ISIGBC101-2H	MAIN STEAM
ISIGBC101-30H	MAIN STEAM
ISIGBC101-31H	MAIN STEAM
ISIGBC101-32H	MAIN STEAM
ISIGBC101-3H	MAIN STEAM
ISIGBC101-4H	MAIN STEAM
ISIGBC101-5H	MAIN STEAM
ISIGBC101-6H	MAIN STEAM
ISIGBC101-7H	MAIN STEAM
ISIGBC101-8H	MAIN STEAM
ISIGBC101-9H	MAIN STEAM
ISIHBB101-1H	REACTOR CORE ISOLATION COOLING
ISIHBB101-2H	REACTOR CORE ISOLATION COOLING
ISIHBB104-1H	CORE SPRAY
ISIHBB104-2H	CORE SPRAY

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIHBB107-1H	HIGH PRESSURE COOLANT INJECTION
ISIHBB108-1H	HIGH PRESSURE COOLANT INJECTION
ISIHBB108-2H	HIGH PRESSURE COOLANT INJECTION
ISIHBB109-1H	HIGH PRESSURE COOLANT INJECTION
ISIHBB110-1H	RESIDUAL HEAT REMOVAL
ISIHBB110-2H	RESIDUAL HEAT REMOVAL
ISIHBB110-3H	RESIDUAL HEAT REMOVAL
ISIHBB110-4H	RESIDUAL HEAT REMOVAL
ISIHBB111-1H	RESIDUAL HEAT REMOVAL
ISIHBB111-2H	RESIDUAL HEAT REMOVAL
ISIHBB120-1H	RESIDUAL HEAT REMOVAL
ISIHBB120-2H	RESIDUAL HEAT REMOVAL
ISIHBB120-3H	RESIDUAL HEAT REMOVAL
ISIHBB185-1H	RESIDUAL HEAT REMOVAL
ISIHBB186-1H	RESIDUAL HEAT REMOVAL
ISIHRC1-90H	RHR SERVICE WATER
ISIHRC10-3H	EMERGENCY SERVICE WATER
ISIHRC101-1H	EMERGENCY SERVICE WATER
ISIHRC101-2H	EMERGENCY SERVICE WATER
ISIHRC102-1H	EMERGENCY SERVICE WATER
ISIHRC102-2H	EMERGENCY SERVICE WATER
ISIHRC102-3H	EMERGENCY SERVICE WATER
ISIHRC103-1H	EMERGENCY SERVICE WATER
ISIHRC104-1H	EMERGENCY SERVICE WATER
ISIHRC105-1H	EMERGENCY SERVICE WATER
ISIHRC105-2H	EMERGENCY SERVICE WATER
ISIHRC106-1H	EMERGENCY SERVICE WATER
ISIHRC107-1H	EMERGENCY SERVICE WATER
ISIHRC108-1H	EMERGENCY SERVICE WATER
ISIHRC109-1H	EMERGENCY SERVICE WATER
ISIHRC11-2H	EMERGENCY SERVICE WATER
ISIHRC11-3H	EMERGENCY SERVICE WATER
ISIHRC110-1H	EMERGENCY SERVICE WATER
ISIHRC112-1H	RHR SERVICE WATER
ISIHRC112-2H	RHR SERVICE WATER
ISIHRC112-3H	RHR SERVICE WATER
ISIHRC112-4H	RHR SERVICE WATER

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIHRC113-1H	RHR SERVICE WATER
ISIHRC113-2H	RHR SERVICE WATER
ISIHRC114-1H	RHR SERVICE WATER
ISIHRC114-2H	RHR SERVICE WATER
ISIHRC12-2H	EMERGENCY SERVICE WATER
ISIHRC13-1H	EMERGENCY SERVICE WATER
ISIHRC13-2H	EMERGENCY SERVICE WATER
ISIHRC14-1H	EMERGENCY SERVICE WATER
ICIHRC14-2H	EMERGENCY SERVICE WATER
ISIHRC16-5H	RHR SERVICE WATER
ISIHRC16-6H	RHR SERVICE WATER
ISIHRC17-1H	EMERGENCY SERVICE WATER
ISIHRC3-1H	EMERGENCY SERVICE WATER
ISIHRC3-2H	EMERGENCY SERVICE WATER
ISIHRC3-3H	EMERGENCY SERVICE WATER
ISIHRC3300-1H	EMERGENCY SERVICE WATER
ISIHRC3301-1H	EMERGENCY SERVICE WATER
ISIHRC3302-1H	EMERGENCY SERVICE WATER
ISIHRC3303-1H	EMERGENCY SERVICE WATER
ISIHRC4-1H	EMERGENCY SERVICE WATER
ISIHRC5-3H	EMERGENCY SERVICE WATER
ISIHRC7-1H	EMERGENCY SERVICE WATER
ISIHRC7-2H	EMERGENCY SERVICE WATER
ISIHRC9-1H	EMERGENCY SERVICE WATER
ISIHRC9-2H	EMERGENCY SERVICE WATER
ISIHRC9-3H	EMERGENCY SERVICE WATER
ISIHRC9-4H	EMERGENCY SERVICE WATER
ISIHRC9-5H	EMERGENCY SERVICE WATER
ISISPDCA102-1H	REACTOR RECIRCULATION
ISISPDCA102-2H	REACTOR RECIRCULATION
ISISPDCA103-6H	REACTOR WATER CLEAN-UP
ISISPDCA106-1H	STANDBY LIQUID CONTROL
ISISPDCA106-2H	STANDBY LIQUID CONTROL
ISISPDCA106-3H	STANDBY LIQUID CONTROL
ISISPDCA106-4H	STANDBY LIQUID CONTROL
ISIVBB102-1H	CONTROL ROD DRIVE
ISIVBB102-2H	CONTROL ROD DRIVE

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are *"for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.*

Unit 1
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIVNBB21-1H	MAIN STEAM
ISIVNBB21-2H	MAIN STEAM
ISIVRRB31-1H	REACTOR RECIRCULATION
ISIVRRB31-2H	REACTOR RECIRCULATION

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIDBA201-1H	REACTOR WATER CLEAN-UP
ISIDBA201-2H	REACTOR WATER CLEAN-UP
ISIDBA202-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBA202-2H	HIGH PRESSURE COOLANT INJECTION
ISIDBA205-1H	REACTOR CORE ISOLATION COOLING
ISIDBB201-1H	MAIN STEAM
ISIDBB202-1H	MAIN STEAM
ISIDBB203-1H	MAIN STEAM
ISIDBB204-1H	MAIN STEAM
ISIDBB205-1H	MAIN STEAM
ISIDBB205-2H	MAIN STEAM
ISIDBB207-1H	RESIDUAL HEAT REMOVAL
ISIDBB207-2H	RESIDUAL HEAT REMOVAL
ISIDBB213-1H	CORE SPRAY
ISIDBB213-2H	CORE SPRAY
ISIDBB214-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBB215-1H	RESIDUAL HEAT REMOVAL
ISIDBB217-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBB218-1H	FEEDWATER
ISIDBB219-1H	FEEDWATER
ISIDBB220-1H	HIGH PRESSURE COOLANT INJECTION
ISIDBB220-2H	HIGH PRESSURE COOLANT INJECTION
ISIDBB221-1H	REACTOR CORE ISOLATION COOLING
ISIDBB221-2H	REACTOR CORE ISOLATION COOLING
ISIDBB221-3H	REACTOR CORE ISOLATION COOLING
ISIDBB222-1H	REACTOR WATER CLEAN-UP
ISIDBB222-2H	REACTOR WATER CLEAN-UP
ISIDBB229-1H	MAIN STEAM
ISIDCA202-1H	REACTOR WATER CLEAN-UP
ISIDCA202-2H	REACTOR WATER CLEAN-UP
ISIDCA203-1H	REACTOR WATER CLEAN-UP
ISIDCA207-1H	CORE SPRAY
ISIDCA207-2H	CORE SPRAY
ISIDCA208-1H	RESIDUAL HEAT REMOVAL
ISIDCA209-1H	CORE SPRAY
ISIDCA209-2H	CORE SPRAY

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIDCA210-1H	RESIDUAL HEAT REMOVAL
ISIDCA210-2H	RESIDUAL HEAT REMOVAL
ISIDCA211-1H	RESIDUAL HEAT REMOVAL
ISIDCA211-2H	RESIDUAL HEAT REMOVAL
ISIDCA211-3H	RESIDUAL HEAT REMOVAL
ISIDCA241-1H	REACTOR RECIRCULATION
ISIDCA242-1H	REACTOR RECIRCULATION
ISIDCB202-1H	RESIDUAL HEAT REMOVAL
ISIDLA201-1H	FEEDWATER
ISIDLA202-1H	FEEDWATER
ISIDLA203-1H	FEEDWATER
ISIDLA204-1H	FEEDWATER
ISIEBB202-1H	HIGH PRESSURE COOLANT INJECTINO
ISIEBB203-1H	REACTOR CORE ISOLATION COOLING
ISIGBB201-1H	CORE SPRAY
ISIGBB201-2H	CORE SPRAY
ISIGBB201-3H	CORE SPRAY
ISIGBB201-4H	CORE SPRAY
ISIGBB203-1H	CORE SPRAY
ISIGBB203-2H	CORE SPRAY
ISIGBB204-1H	RESIDUAL HEAT REMOVAL
ISIGBB204-2H	RESIDUAL HEAT REMOVAL
ISIGBB204-3H	RESIDUAL HEAT REMOVAL
ISIGBB204-4H	RESIDUAL HEAT REMOVAL
ISIGBB205-1H	RESIDUAL HEAT REMOVAL
ISIGBB205-2H	RESIDUAL HEAT REMOVAL
ISIGBB206-1H	RESIDUAL HEAT REMOVAL
ISIGBB206-2H	RESIDUAL HEAT REMOVAL
ISIGBB207-1H	RESIDUAL HEAT REMOVAL
ISIGBB207-2H	RESIDUAL HEAT REMOVAL
ISIGBB208-1H	RESIDUAL HEAT REMOVAL
ISIGBB209-1H	RESIDUAL HEAT REMOVAL
ISIGBB209-2H	RESIDUAL HEAT REMOVAL
ISIGBB212-1H	RESIDUAL HEAT REMOVAL
ISIGBB212-2H	RESIDUAL HEAT REMOVAL
ISIGBB213-1H	RESIDUAL HEAT REMOVAL
ISIGBB215-1H	RESIDUAL HEAT REMOVAL

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Unit 2
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIGBB216-1H	RESIDUAL HEAT REMOVAL
ISIGBB216-2H	RESIDUAL HEAT REMOVAL
ISIGBB217-1H	RESIDUAL HEAT REMOVAL
ISIGBB219-1H	RESIDUAL HEAT REMOVAL
ISIGBB219-2H	RESIDUAL HEAT REMOVAL
ISIGBC201-10H	MAIN STEAM
ISIGBC201-11H	MAIN STEAM
ISIGBC201-12H	MAIN STEAM
ISIGBC201-13H	MAIN STEAM
ISIGBC201-13H	MAIN STEAM
ISIGBC201-14H	MAIN STEAM
ISIGBC201-15H	MAIN STEAM
ISIGBC201-16H	MAIN STEAM
ISIGBC201-17H	MAIN STEAM
ISIGBC201-18H	MAIN STEAM
ISIGBC201-19H	MAIN STEAM
ISIGBC201-20H	MAIN STEAM
ISIGBC201-21H	MAIN STEAM
ISIGBC201-23H	MAIN STEAM
ISIGBC201-26H	MAIN STEAM
ISIGBC201-27H	MAIN STEAM
ISIGBC201-28H	MAIN STEAM
ISIGBC201-29H	MAIN STEAM
ISIGBC201-32H	MAIN STEAM
ISIGBC201-33H	MAIN STEAM
ISIGBC201-35H	MAIN STEAM
ISIGBC201-4H	MAIN STEAM
ISIGBC201-5H	MAIN STEAM
ISIGBC201-6H	MAIN STEAM
ISIGBC201-7H	MAIN STEAM
ISIGBC201-8H	MAIN STEAM
ISIGBC201-9H	MAIN STEAM
ISIGBC205-1H	MAIN STEAM
ISIGBC205-2H	MAIN STEAM
ISIHBB201-1H	REACTOR CORE ISOLATION COOLING
ISIHBB201-2H	REACTOR CORE ISOLATION COOLING

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIHBB204-1H	CORE SPRAY
ISIHBB204-2H	CORE SPRAY
ISIHBB207-1H	HIGH PRESSURE COOLANT INJECTION
ISIHBB208-1H	HIGH PRESSURE COOLANT INJECTION
ISIHBB208-2H	HIGH PRESSURE COOLANT INJECTION
ISIHBB209-1H	HIGH PRESSURE COOLANT INJECTION
ISIHBB210-1H	RESIDUAL HEAT REMOVAL
ISIHBB210-2H	RESIDUAL HEAT REMOVAL
ISIHBB210-3H	RESIDUAL HEAT REMOVAL
ISIHBB210-4H	RESIDUAL HEAT REMOVAL
ISIHBB211-2H	RESIDUAL HEAT REMOVAL
ISIHBB220-1H	RESIDUAL HEAT REMOVAL
ISIHBB220-2H	RESIDUAL HEAT REMOVAL
ISIHBB220-3H	RESIDUAL HEAT REMOVAL
ISIHBD285-1H	RESIDUAL HEAT REMOVAL
ISIHBD285-2H	RESIDUAL HEAT REMOVAL
ISIHBD286-1H	RESIDUAL HEAT REMOVAL
ISIHCC203-1H	FUEL POOL COOLING
ISIHCC203-2H	FUEL POOL COOLING
ISIHCC203-3H	FUEL POOL COOLING
ISIHCC203-4H	FUEL POOL COOLING
ISIHRC201-1H	EMERGENCY SERVICE WATER
ISIHRC202-1H	EMERGENCY SERVICE WATER
ISIHRC203-1H	EMERGENCY SERVICE WATER
ISIHRC204-1H	EMERGENCY SERVICE WATER
ISIHRC205-1H	EMERGENCY SERVICE WATER
ISIHRC206-1H	EMERGENCY SERVICE WATER
ISIHRC207-1H	EMERGENCY SERVICE WATER
ISIHRC208-1H	EMERGENCY SERVICE WATER
ISIHRC209-1H	EMERGENCY SERVICE WATER
ISIHRC209-2H	EMERGENCY SERVICE WATER
ISIHRC210-1H	EMERGENCY SERVICE WATER
ISIHRC210-2H	EMERGENCY SERVICE WATER
ISIHRC212-1H	RHR SERVICE WATER
ISIHRC212-2H	RHR SERVICE WATER
ISIHRC212-3H	RHR SERVICE WATER
ISIHRC212-4H	RHR SERVICE WATER

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Hanger Identification Isometrics

Drawing Number	System
ISIHRC213-1H	RHR SERVICE WATER
ISIHRC213-2H	RHR SERVICE WATER
ISIHRC214-1H	RHR SERVICE WATER
ISIHRC214-2H	RHR SERVICE WATER
ISISPDCA202-1H	REACTOR RECIRCULATION
ISISPDCA202-1H	REACTOR RECIRCULATION
ISISPDCA202-2H	REACTOR RECIRCULATION
ISISPDCA202-2H	REACTOR RECIRCULATION
ISISPDCA203-3H	REACTOR WATER CLEAN-UP
ISISPDCA203-3H	REACTOR WATER CLEAN-UP
ISISPDCA206-1H	STANDBY LIQUID CONTROL
ISISPDCA206-1H	STANDBY LIQUID CONTROL
ISISPDCA206-2H	STANDBY LIQUID CONTROL
ISISPDCA206-2H	STANDBY LIQUID CONTROL
ISISPDCA206-3H	STANDBY LIQUID CONTROL
ISISPDCA206-3H	STANDBY LIQUID CONTROL
ISISPDCA206-4H	STANDBY LIQUID CONTROL
ISISPDCA206-4H	STANDBY LIQUID CONTROL
ISISPDCA206-5H	STANDBY LIQUID CONTROL
ISISPDCA206-5H	STANDBY LIQUID CONTROL
ISIVBB201-1H	HIGH PRESSURE COOLANT INJECTION
ISIVBB202-1H	CONTROL ROD DRIVE
ISIVBB202-2H	CONTROL ROD DRIVE
ISIVNBB21-3H	MAIN STEAM
ISIVNBB21-4H	MAIN STEAM
ISIVRRB31-3H	REACTOR RECIRCULATION
ISIVRRB31-4H	REACTOR RECIRCULATION

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Component Detail Drawings

Component Drawing	Drawing Number
RPV Shell	C-198607
Reactor Recirculation Pumps 1P-401A,B	C-198638
RPV Stabilizer Brackets	C-205754
RPV Skirt	C-205755
RPV Top and Bottom Head	C-198624
CRD Housing and Incore Penetration	C-198623
CRD Housing and Incore Penetration Identification	C-198608
RHR Heat Exchangers and Supports 1E-205A,B	C-198636
Core Spray Pumps 1P-206A,B,C,D	C-198635
RHR Pumps 1P-202A,B,C,D	C-198634
ISI Drawing - Examination Categories B-N-1 & B-N-2	C-199587

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Component Detail Drawings

Component Drawing	Drawing Number
RPV Shell	C-205719
Reactor Recirculation Pumps 1P-401A,B	C-199554
RPV Stabilizer Brackets	C-205754
RPV Skirt	C-205755
RPV Top and Bottom Head	C-199558
CRD Housing and Incore Penetration	C-199557
CRD Housing and Incore Penetration Identification	C-199556
RHR Heat Exchangers and Supports 1E-205A,B	C-199555
RHR Heat Exchanger Supports	C-199561
Core Spray Pumps 1P-206A,B,C,D	C-199560
RHR 1P-202A,B,C,D	C-199559
ISI Drawing - Examination Categories B-N-1 & B-N-2	C-199587

Inservice Inspection drawing listings in Appendix D are <u>not</u> configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hydrostatic and Pressure Test Boundary Drawings

Drawing Number	Description
SE-054-301-1 SH.1	ESW Loop A Leak Test
SE-054-301-1 SH.2	ESW 'E' Diesel Leak Test
SE-054-301-2	ESW Loop B Leak Test
SE-054-310-1	ESW Loop A Hydro Test
SE-054-310-2	ESW 'E' Diesel Hydro Test
SE-054-311	ESW Loop B Hydro Test
SE-100-002	Class 1 Hydro/Leak Test
SE-116-301	RHR Service Water System A&B Leak Test
SE-116-310 SH.1	RHR Service Water System A&B Hydro Test
SE-116-310 SH.2	RHR Service Water System A&B Hydro Test
SE-116-310 SH.3	RHR Service Water System A&B Hydro Test
SE-135-301	Fuel Pool Cooling Leak Test
SE-145-301	Feedwater/RWCU Leak Test
SE-145-310 SH.1	Feedwater/HPCI Hydro Test
SE-145-310 SH.2	Feedwater/RCIC Hydro Test
SE-145-310 SH.3	Feedwater/RWCU Hydro Test
SE-149-301-1	RHR System A Leak Test
SE-149-301-2	RHR System B Leak Test
SE-149-310 SH.1	RHR System A Hydro Test
SE-149-310 SH.2	RHR System A Hydro Test
SE-149-310 SH.3	RHR System A Hydro Test
SE-149-310 SH.4	RHR System B Hydro Test
SE-149-311 SH.1	RHR System B Hydro Test
SE-149-311 SH.2	RHR System B Hydro Test
SE-149-311 SH.3	RHR System B Hydro Test
SE-149-311 SH.4	RHR System B Hydro Test
SE-150-301	RCIC Leak Test
SE-150-310 SH.1	RCIC Hydro Test
SE-150-310 SH.2	RCIC Hydro Test
SE-150-310 SH.3	RCIC Hydro Test
SE-150-310 SH.4	RCIC Hydro Test
SE-150-310 SH.5	RCIC Hydro Test

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 1
Inservice Inspection Drawings
Hydrostatic and Pressure Test Boundary Drawings

Drawing Number	Description
SE-151-301-1	Core Spray System A Leak Test
SE-151-301-2	Core Spray System B Leak Test
SE-151-310 SH.1	Core Spray System A Hydro Test
SE-151-310 SH.2	Core Spray System A Hydro Test
SE-151-310 SH.3	Core Spray System A Hydro Test
SE-151-311 SH.1	Core Spray System B Hydro Test
SE-151-311 SH.2	Core Spray System B Hydro Test
SE-151-311 SH.3	Core Spray System B Hydro Test
SE-152-301	HPCI Leak Test
SE-152-310 SH.1	HPCI Hydro Test
SE-152-310 SH.2	HPCI Hydro Test
SE-152-310 SH.3	HPCI Hydro Test
SE-152-310 SH.4	HPCI Hydro Test
SE-152-310 SH.5	HPCI Hydro Test
SE-152-310 SH.6	HPCI Hydro Test
SE-152-310 SH.7	HPCI Hydro Test
SE-152-310 SH.8	HPCI Hydro Test
SE-153-301	Standby Liquid Control Leak Test
SE-153-310 SH.1	Standby Liquid Control Hydro Test
SE-153-310 SH.2	Standby Liquid Control Hydro Test
SE-155-301-1	CRD Leak Test
SE-155-301-2	CRD Scram Discharge Leak Test
SE-155-310-1 SH.1	CRD Hydro Test
SE-155-310-1 SH.1	CRD Hydro Test
SE-155-310-2	CRD Scram Discharge Hydro Test
SE-183-311	Main Steam Leak Test
SE-183-312	Main Steam Hydro Test

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Hydrostatic and Pressure Test Boundary Drawings

Drawing Number	Description
SE-200-002	Class 1 Hydro/Leak Test
SE-216-301	RHR Service Water System A&B Leak Test
SE-216-310 SH.1	RHR Service Water System A&B Hydro Test
SE-216-310 SH.2	RHR Service Water System A&B Hydro Test
SE-216-310 SH.3	RHR Service Water System A&B Hydro Test
SE-235-301	Fuel Pool Cooling Leak Test
SE-245-301	Feedwater/RWCU Leak Test
SE-245-310 SH.1	Feedwater/HPCI Hydro Test
SE-245-310 SH.2	Feedwater/RCIC Hydro Test
SE-245-310 SH.3	Feedwater/RWCU Hydro Test
SE-249-301-1	RHR System A Leak Test
SE-249-301-2	RHR System B Leak Test
SE-249-310 SH.1	RHR System A Hydro Test
SE-249-310 SH.2	RHR System A Hydro Test
SE-249-310 SH.3	RHR System A Hydro Test
SE-249-310 SH.4	RHR System A Hydro Test
SE-249-311 SH.1	RHR System B Hydro Test
SE-249-311 SH.2	RHR System B Hydro Test
SE-249-311 SH.3	RHR System B Hydro Test
SE-249-311 SH.4	RHR System B Hydro Test
SE-250-301	RCIC Leak Test
SE-250-310 SH.1	RCIC Hydro Test
SE-250-310 SH.2	RCIC Hydro Test
SE-250-310 SH.3	RCIC Hydro Test
SE-250-310 SH.4	RCIC Hydro Test
SE-250-310 SH.5	RCIC Hydro Test
SE-251-301-1	Core Spray System A Leak Test
SE-251-301-2	Core Spray System B Leak Test
SE-251-310 SH.1	Core Spray System A Hydro Test
SE-251-310 SH.2	Core Spray System A Hydro Test
SE-251-310 SH.3	Core Spray System A Hydro Test

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.

Unit 2
Inservice Inspection Drawings
Hydrostatic and Pressure Test Boundary Drawings

Drawing Number	Description
SE-251-311 SH.1	Core Spray System B Hydro Test
SE-251-311 SH.2	Core Spray System B Hydro Test
SE-251-311 SH.3	Core Spray System B Hydro Test
SE-252-301	HPCI Leak Test
SE-252-310 SH.1	HPCI Hydro Test
SE-252-310 SH.2	HPCI Hydro Test
SE-252-310 SH.3	HPCI Hydro Test
SE-252-310 SH.4	HPCI Hydro Test
SE-252-310 SH.5	HPCI Hydro Test
SE-252-310 SH.6	HPCI Hydro Test
SE-252-310 SH.7	HPCI Hydro Test
SE-252-310 SH.8	HPCI Hydro Test
SE-253-301	Standby Liquid Control Leak Test
SE-253-310 SH.1	Standby Liquid Control Hydro Test
SE-253-310 SH.2	Standby Liquid Control Hydro Test
SE-254-301-1 SH.1	ESW Loop A Leak Test
SE-254-301-1 SH.2	ESW 'E' Diesel Leak Test
SE-254-301-2	ESW Loop B Leak Test
SE-254-310-1	ESW Loop A Hydro Test
SE-254-310-2	ESW 'E' Diesel Hydro Test
SE-254-311	ESW Loop B Hydro Test
SE-255-301-1	CRD Leak Test
SE-255-301-2	CRD Scram Discharge Leak Test
SE-255-310-1 SH.1	CRD Hydro Test
SE-255-310-1 SH.1	CRD Hydro Test
SE-255-310-2	CRD Scram Discharge Hydro Test
SE-283-311	Main Steam Leak Test
SE-283-312	main Steam Hydro Test

Inservice Inspection drawing listings in Appendix D are not configuration controlled and are "for information only". This listing is typical of the ISI drawings to be used for the second inservice inspection interval.