VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION UNIT 2

INSERVICE INSPECTION PROGRAM FOR

THE SECOND INSPECTION INTERVAL

VOLUME 1

INSERVICE INSPECTION PROGRAM FOR

COMPONENTS AND COMPONENT SUPPORTS

REVISION 0 AUGUST 1990

INTERVAL 2

DECEMBER 14, 1990 - DECEMBER 14, 2000

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
INSERVICE INSPECTION PROGRAM
SECOND INSPECTION INTERVAL
DECEMBER 14, 1990 - DECEMBER 14, 2000
REVISION 0
DISTRIBUTION RECORD

| DISTRIBUTION NO. | DATE ENTERED | INITIAL | DISTRIBUTION NO. | DATE ENTERED | INITIAL |
|---|---|---|---|---|---|
| 1 | | | 21 | | |
| 2 | | | 22 | | |
| 3 | | | 23 | | |
| 4 | | | 24 | | |
| 5 | | | 25 | | |
| 6 | | | 26 | | |
| 7 | | | 27 | | |
| 8 | | | 28 | | |
| 9 | | | 29 | | |
| 10 | | | 30 | | |
| 11 | | | 31 | | |
| 12 | | | 32 | | |
| 13 | | | 33 | | |
| 14 | | | 34 | | |
| 15 | | | 35 | | |
| 16 | | | 36 | | |
| 17 | | | 37 | | |
| 18 | | | 38 | | |
| 19 | | | 39 | | |
| 20 | | | 40 | | |

Future distributions to this program plan will be accompanied by two copies of the distribution memo, one of which is to be returned per instructions thereon, and the other one is to be filed sequentially behind this page giving you a record of the contents of each distribution.

TABLE OF CONTENTS

# ABSTRACT
# VIRGINIA ELECTRIC AND POWER COMPANY
# NORTH ANNA POWER STATION UNIT 2
# INSERVICE INSPECTION PROGRAM
# SECOND INSPECTION INTERVAL
# DECEMBER 14, 1990 TO DECEMBER 14, 2000

In accordance with 10CFR50.55a dated January 1, 1990, the North Anna Unit 2 (NAPS-2) Inservice Inspection (ISI) Program was updated to meet the requirements of ASME Section XI, 1986 Edition. This updated program is for the NAPS-2 second ten year inspection interval scheduled to commence December 14, 1990 and be completed December 14, 2000. In cases where the requirements of Section XI have been determined to be impractical, requests for relief have been developed per 10CFR50.55a(g)(5)(iii).

This program is divided into two volumes. Volume 1 contains the Inservice Inspection Program, and Volume 2, which was previously submitted, contains the Inservice Testing Program. The Inservice Inspection Program does not include requirements per Subsection IWE, Requirements For Class MC Components Of Light Water Cooled Power Plants. Current Federal Regulations do not require these rules to be included in ISI programs.

This document provides an overview and summary of the NAPS-2 ISI Program for Subsections IWA, IWB, IWC, IWD, and IWF. The boundaries of the ISI Program, component classifications, and the employment of exemptions in IWB-1220, IWC-1220, IWD-1220, and IWF-1230 are shown on the ISI Classification Boundary Drawings (CBDs) listed on pages 1-11 to 1-12. The codings, symbols and text used on the CBDs are detailed on 12050-CBM-L&S-2, Legends and Symbols Drawing.

Section 1 of this document provides the general information and format regarding this program. Section 2 of this document provides a program implementation overview of the ISI Program for ISI Class 1, 2, and 3 components. A summary table of Section XI requirements applicable to NAPS-2 is provided as well as relief requests for components. Section 3 of this document provides a program implementation overview for ISI Class 1, 2, and 3 component supports. A summary table of Section XI requirements applicable to NAPS-2 component supports is provided as well as relief requests for component supports.

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION

UNIT 2

# INSERVICE INSPECTION PROGRAM

## GENERAL

## SECOND INSPECTION INTERVAL

SECTION 1
TABLE OF CONTENTS

# 1.0 INSERVICE INSPECTION PROGRAM - GENERAL

## 1.1 GENERAL INFORMATION

North Anna Power Station Unit 2 (NAPS-2) is located on Lake Anna in Louisa County, Virginia. The plant employs a Pressurized Water Reactor (PWR) and associated Nuclear Steam Supply System components provided by Westinghouse Electric Corporation.

### 1.1.1 Preservice Examinations

Preservice examinations at NAPS-2 were performed utilizing the requirements of ASME Section XI, 1974 Edition with Addenda through Summer 1975.

### 1.1.2 Initial Inservice Inspection Interval

NAPS-2 commercial operation commenced on December 14, 1980. Accordingly, the initial ten year inspection interval was conducted from 12/14/80 to 12/14/90. Examinations during the first inspection interval were also performed per ASME Section XI, 1974 Edition with Addenda through Summer 1975. Certain system pressure testing requirements were completed per ASME Section XI, 1977 Edition with Addenda through Summer 1979.

### 1.1.3 Second Inservice Inspection Interval

As mandated by the Code of Federal Regulations, Title 10, Part 50, Article 50.55a (10CFR50.55a), the NAPS-2 Inservice Inspection (ISI) Program has been updated to the 1986 Edition of ASME Section XI. This is the latest edition and addenda of Section XI incorporated into 10CFR50.55a as of December 14, 1989. The second inservice inspection interval is scheduled to commence on December 14, 1990 and be completed on December 14, 2000.

### 1.1.4 Inservice Inspection Program Description

The ISI Program contained herein addresses the inservice inspection and testing of ISI Class 1, 2, and 3 components and the associated component supports. Applicable requirements in Subsections IWA, IWB, IWC, IWD, IWF and the Mandatory Appendices of the 1986 Edition of ASME Section XI have been incorporated into our

1.1.4 Inservice Inspection Program Description (Continued)

corporate and site ISI programs and procedures. Any programmatic modifications to these requirements are discussed in this document.

This document is not intended to provide specific information on the implementation of the ISI Program. The intent of this document is to provide specific information on the scope of the NAPS-2 ISI program (i.e., its boundary and compliance with Section XI) and identify those Section XI requirements which are deemed impractical. Requests for relief for these impractical requirements have been developed per 10CFR50.55a(g)(5)(iii).

1.1.4.1 Exclusion of Subsection IWE

Subsection IWE, Requirements For Class MC Components of Light-Water Cooled Power Plants, is not included in this program per the Final Rules in the Federal Register, Volume 53, page 16053, which specifically excludes the requirements of Subsection IWE from 10 CFR 50.55a.

1.1.4.2 Exclusion of Subsections IWP and IWV

Subsections IWP and IWV, Inservice Testing of Pumps and Inservice Testing of Valves in Nuclear Power Plants are not included in this program. The IWP and IWV program was submitted separately.

1.1.4.3 Inservice Inspection Plan

The inservice inspection plan required by IWA-2420, detailing the components and component supports selected for examination during the interval will be provided as a separate document. This document will be provided by 12/14/90.

1.1.4.4 Inspection Program Employed

The ISI Program for North Anna Unit 2 will utilize the interval format of Inspection Program B, as shown in IWA-2432.

1.1.4.5 Weld Reference System

The weld reference system required by IWA-2600 is a recent addition to the rules of ASME Section XI. The implementation plan for this requirement is detailed in relief requests NDE-13 and NDE-14, shown on pages 2-69 and 2-70 respectively.

1.1.4.6 Classification of Components

A. Classification of Components-Design

North Anna Unit 2 was issued construction permit No. CPPR-78 in February 1971. The station design incorporates the codes and standards that were in effect when the equipment was purchased. The codes and standards used for the design, fabrication, erection, and testing of safety related components are commensurate with the importance of the safety functions to be performed.

The group classifications tabulated in the "Standard Format and Content of Safety Analysis Reports for Nuclear Power Reactors", issued in Februar[illegible]71, and in Safety Guide No. 26, [illegible]lished in March 1972, incorpor[illegible]ed, in most cases, later editions of codes than those in effect when the majority of safety-related equipment was designed. Some of the equipment that would fall under a "group" as defined in Safety Guide No. 26 was designed to different codes or different editions of the same code. For example, for different components that would be in the same group,

A. Classification of Components-Design (Continued)

one may be designed to ASME III-1968, one to ASME III-1971, and one to ASME VIII-1968.

Therefore, pressure-containing components of safety-related systems do not necessarily fall under the group classification listed above.

B. Classification of Components-Inservice Inspection

The classification of components for Inservice Inspection was performed by employing the guidelines of 10CFR50.55a, USNRC Regulatory Guide 1.26 Revision 3, ANSI N18.2-1973, ANSI N18.2a-1975, and NUREG-00800, Standard Review Plan 3.2.2-Revision 1, in conjunction with the System Quality Group Classification Section of the North Anna Power Station UFSAR, Section 3.2.2. Quality Groups A, B, and C, as discussed in Regulatory Guide 1.26 and are considered the same as ISI Classes 1, 2, and 3 for the purposes of this program.

The ISI Classification of each component included in NAPS-2 program is shown on the ISI Classification Boundary Drawings (CBDs) listed on pages 1-11 to 1-12. The Legends and Symbols ISI Classification Boundary Drawing (12050-CBM-L&S-2) details the line codings and component markings which provide the ISI Classification of all items included within the ISI Program boundaries. In general, the ISI classification of piping is accomplished by line "codings" or symbols shown on 12050-CBM-L&S-2. ISI Classification of components

B. Classification of Components-Inservice Inspection (Continued)

which graphically cannot be coded, such as pressure vessels, pumps, strainers, and tanks, etc. is shown as text (e.g., ISI Class 1A, 3E, etc.) either inside the component graphics or adjacent to the component mark number.

Classification changes are typically shown at the seat of a valve, with the ISI Class shown on either side of the classification "break line".

1.1.4.7 Components and Component Supports Exempt from Examination

The application of the exemptions allowed per IWB-1220, IWC-1220, IWD-1220, and IWF-1230 is also detailed by the codings and component markings of 12050-CBM-L&S-2 discussed in section 1.1.4.5.2. Because the exemptions of IWF-1230 are "in the course of preparation", a set of exemptions for component supports developed in a proposed code case, WGCS 89-1(b) is being employed. Relief request CS-1 details the reasoning for this program modification.

1.1.4.8 Requests For Relief-Components and Component Supports

Where the requirements of ASME Section XI have been determined to be impractical, requests for relief have been developed in accordance with 10CFR50.55a(g)(5)(iii). The impractical requirements are detailed in three sets of relief requests: an NDE series for components and nondestructive examination areas, an SPT series for system pressure

1.1.4.8 Requests For Relief-Components and Component Supports (Continued)

testing areas, and a CS series for component support areas. Each relief request is formatted as follows:

I. IDENTIFICATION OF COMPONENTS

II. IMPRACTICAL CODE REQUIREMENTS

III. BASIS FOR RELIEF

IV. ALTERNATIVE EXAMINATION (OR TESTING)

Relief requests which pertain to a specific ASME Section XI Category and Item Number are referenced in the Inservice Inspection Program Summary Tables in Sections 2 and 3 of this document. Relief requests which are programmatic in content will be discussed in the text of Sections 1, 2, or 3, but not listed in the Inservice Inspection Program Summary Tables.

1.1.4.9 ASME Section XI Code Cases Incorporated Into Program

As allowed by 10CFR50.55a(c)(3) and USNRC Regulatory Guide 1.147, Revision 7, the following Code Cases are being incorporated into the NAPS-2 ISI Program:

Case N-401 - Eddy Current Examination, Section XI, Division 1.

Case N-402 - Eddy Current Calibration Standard Material, Section XI, Division 1.

Case N-406 - Alternative Rules for Replacement, Section XI, Division 1.

Case N-416 - Alternative Rules For Hydrostatic Testing of Repair or Replacement of Class 2 Piping, Section XI, Division 1.

Case N-446 - Recertification of Visual Examination Personnel, Section XI, Division 1.

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

1.1.4.10 Augmented Inservice Inspection Program for ISI Class 1, 2, and 3 Components

Augmented Inservice Inspection activities which pertain to components within the scope of the ASME Section XI program are summarized in Section 2, Table 2.6. A listing of specific components scheduled to be examined per the augmented program will be included as part of the Inservice Inspection Plan discussed in Section 1.1.4.3. This plan will be provided as a separate document.

1.2

# DRAWING LIST

## NORTH ANNA UNIT 2

## SECOND INSPECTION INTERVAL

## ISI CLASSIFICATION BOUNDARY DRAWINGS

## NORTH ANNA UNIT 2 INTERVAL 2 ISI CLASSIFICATION BOUNDARY DRAWINGS SORTED BY SERIES

### LEGENDS AND SYMBOLS DRAWING

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 1. | 12050-CBM-L&S-2 | : 1 OF 1 | : LEGEND AND SYMBOLS |

### 11715-CBB SERIES

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 1. | 11715-CBB-006A-2 | : 2 OF 3 | : AIR COOLING AND PURGING SYSTEM |
| 2. | 11715-CBB-040D-2 | : 2 OF 3 | : AIR CONDITIONING CONDENSER WATER SYSTEM |

### 11715-CBM SERIES

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 1. | 11715-CBM-078B-2 | : 3 OF 4 | : SERVICE WATER SYSTEM |
| 2. | 11715-CBM-078B-2 | : 4 OF 4 | : SERVICE WATER SYSTEM |
| 3. | 11715-CBM-088A-2 | : 3 OF 4 | : FUEL PIT CLNG & REFUELING PUR. SYSTEM |
| 4. | 11715-CBM-105B-2 | : 2 OF 2 | : SECONDARY PLANT GAS SUPPLY SYSTEM |

### 12050-CBB SERIES

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 1. | 12050-CBB-104A-2 | : 1 OF 1 | : INTERIOR FIRE PROTECTION & HOSE RACK SYS |

### 12050-CBM SERIES

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 1. | 12050-CBM-070A-2 | : 3 OF 3 | : MAIN STEAM SYSTEM |
| 2. | 12050-CBM-070B-2 | : 1 OF 3 | : MAIN STEAM SYSTEM |
| 3. | 12050-CBM-070B-2 | : 2 OF 3 | : MAIN STEAM SYSTEM |
| 4. | 12050-CBM-070B-2 | : 3 OF 3 | : MAIN STEAM SYSTEM |
| 5. | 12050-CBM-072A-2 | : 2 OF 3 | : AUXILIARY STEAM & AIR REMOVAL SYSTEM |
| 6. | 12050-CBM-074A-2 | : 1 OF 3 | : FEEDWATER SYSTEM |
| 7. | 12050-CBM-074A-2 | : 3 OF 3 | : FEEDWATER SYSTEM |
| 8. | 12050-CBM-079A-2 | : 1 OF 5 | : COMPONENT COOLING WATER SYSTEM |
| 9. | 12050-CBM-079A-2 | : 2 OF 5 | : COMPONENT COOLING WATER SYSTEM |
| 10. | 12050-CBM-079A-2 | : 3 OF 5 | : COMPONENT COOLING WATER SYSTEM |
| 11. | 12050-CBM-079A-2 | : 4 OF 5 | : COMPONENT COOLING WATER SYSTEM |
| 12. | 12050-CBM-079A-2 | : 5 OF 5 | : COMPONENT COOLING WATER SYSTEM |
| 13. | 12050-CBM-079B-2 | : 3 OF 3 | : COMPONENT COOLING WATER SYSTEM |
| 14. | 12050-CBM-082A-2 | : 1 OF 3 | : COMPRESSED AIR SYSTEM |
| 15. | 12050-CBM-082B-2 | : 1 OF 3 | : COMPRESSED AIR SYSTEM |
| 16. | 12050-CBM-082B-2 | : 2 OF 3 | : COMPRESSED AIR SYSTEM |
| 17. | 12050-CBM-082C-2 | : 2 OF 2 | : COMPRESSED AIR SYSTEM |
| 18. | 12050-CBM-082F-2 | : 2 OF 2 | : COMPRESSED AIR SYSTEM |
| 19. | 12050-CBM-089A-2 | : 3 OF 4 | : SAMPLING SYSTEM |
| 20. | 12050-CBM-089B-2 | : 1 OF 1 | : SAMPLING SYSTEM |

NORTH ANNA UNIT 2 INTERVAL 2 ISI CLASSIFICATION BOUNDARY DRAWINGS
SORTED BY SERIES-CONTINUED

12050-CBM SERIES

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 21. | 12050-CBM-090A-2 | : 1 OF 3 | : VENT & DRAIN SYSTEM |
| 22. | 12050-CBM-090A-2 | : 3 OF 3 | : VENT & DRAIN SYSTEM |
| 23. | 12050-CBM-090B-2 | : 1 OF 1 | : VENT & DRAIN SYSTEM |
| 24. | 12050-CBM-091A-2 | : 1 OF 4 | : CONT QUENCH & RECIR SPRAY SUB SYSTEM |
| 25. | 12050-CBM-091A-2 | : 2 OF 4 | : CONT QUENCH & RECIR SPRAY SUB SYSTEM |
| 26. | 12050-CBM-091A-2 | : 3 OF 4 | : CONT QUENCH & RECIR SPRAY SUB SYSTEM |
| 27. | 12050-CBM-091A-2 | : 4 OF 4 | : CONT QUENCH & RECIR SPRAY SUB SYSTEM |
| 28. | 12050-CBM-091B-2 | : 1 OF 1 | : CONT QUENCH & RECIR SPRAY SUB SYSTEM |
| 29. | 12050-CBM-092A-2 | : 1 OF 2 | : LEAKAGE MONITOR SYSTEM |
| 30. | 12050-CBM-092A-2 | : 2 OF 2 | : CONTAINMENT VACUUM SYSTEM |
| 31. | 12050-CBM-093A-2 | : 1 OF 3 | : REACTOR COOLANT SYSTEM-LOOP 1 |
| 32. | 12050-CBM-093A-2 | : 2 OF 3 | : REACTOR COOLANT SYSTEM-LOOP 2 |
| 33. | 12050-CBM-093A-2 | : 3 OF 3 | : REACTOR COOLANT SYSTEM-LOOP 3 |
| 34. | 12050-CBM-093B-2 | : 1 OF 3 | : REACTOR COOLANT SYSTEM |
| 35. | 12050-CBM-093B-2 | : 2 OF 3 | : REACTOR COOLANT SYSTEM |
| 36. | 12050-CBM-094A-2 | : 1 OF 2 | : RESIDUAL HEAT REMOVAL SYSTEM |
| 37. | 12050-CBM-094A-2 | : 2 OF 2 | : RESIDUAL HEAT REMOVAL SYSTEM |
| 38. | 12050-CBM-095A-2 | : 1 OF 2 | : CHEMICAL AND VOLUME CONTROL SYSTEM |
| 39. | 12050-CBM-095A-2 | : 2 OF 2 | : CHEMICAL AND VOLUME CONTROL SYSTEM |
| 40. | 12050-CBM-095B-2 | : 1 OF 2 | : CHEMICAL AND VOLUME CONTROL SYSTEM |
| 41. | 12050-CBM-095B-2 | : 2 OF 2 | : CHEMICAL AND VOLUME CONTROL SYSTEM |
| 42. | 12050-CBM-095C-2 | : 1 OF 2 | : CHEMICAL AND VOLUME CONTROL SYSTEM |
| 43. | 12050-CBM-095C-2 | : 2 OF 2 | : CHEMICAL AND VOLUME CONTROL SYSTEM |
| 44. | 12050-CBM-096A-2 | : 1 OF 3 | : SAFETY INJECTION SYSTEM |
| 45. | 12050-CBM-096A-2 | : 2 OF 3 | : SAFETY INJECTION SYSTEM |
| 46. | 12050-CBM-096A-2 | : 3 OF 3 | : SAFETY INJECTION SYSTEM |
| 47. | 12050-CBM-096B-2 | : 1 OF 4 | : SAFETY INJECTION SYSTEM |
| 48. | 12050-CBM-096B-2 | : 2 OF 4 | : SAFETY INJECTION SYSTEM |
| 49. | 12050-CBM-096B-2 | : 3 OF 4 | : SAFETY INJECTION SYSTEM |
| 50. | 12050-CBM-096B-2 | : 4 OF 4 | : SAFETY INJECTION SYSTEM |
| 51. | 12050-CBM-098A-2 | : 2 OF 5 | : STEAM GENERATOR BLOWDOWN SYSTEM |
| 52. | 12050-CBM-098A-2 | : 3 OF 5 | : STEAM GENERATOR BLOWDOWN SYSTEM |
| 53. | 12050-CBM-098A-2 | : 4 OF 5 | : STEAM GENERATOR BLOWDOWN SYSTEM |
| 54. | 12050-CBM-102A-2 | : 2 OF 2 | : CHEMICAL FEED SYSTEMS |
| 55. | 12050-CBM-102B-2 | : 1 OF 1 | : CHEMICAL FEED SYSTEM |

13075-CBM SERIES

| ##: | :DRAWING NUMBER | : SHEET | : TITLE |
|---|---|---|---|
| 1. | 13075-CBM-093D-2 | : 1 OF 2 | : REACTOR COOLANT SYSTEM |
| 2. | 13075-CBM-093D-2 | : 2 OF 2 | : REACTOR COOLANT SYSTEM |

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION

UNIT 2

# INSERVICE INSPECTION PROGRAM

# FOR COMPONENTS

# SECOND INSPECTION INTERVAL

SECTION 2
TABLE OF CONTENTS

## 2.0 INSERVICE INSPECTION PROGRAM FOR COMPONENTS

### 2.1 PROGRAM DESCRIPTION

2.1.1 The Inservice Inspection Program for Class 1, 2 and 3 components meets the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition except where these requirements have been determined to be impractical. Detailed relief requests for these impractical requirements are included in Section 2.7. Programmatic modifications to Section XI requirements are outlined in Sections 2.1.2 and 2.1.3.

2.1.2 ISI Class 1 piping welds will be selected for examination such that 25% of the total number of welds are examined during the interval. The 25% sampling will be comprised as follows: one half of the sampling (12.5% of the total number of piping welds) will be welds which were examined during the first interval, and one-half of the sampling (12.5% of the total number of piping welds) will be welds which were not examined during the first interval. The welds selected will be evenly distributed across the ISI Class 1 piping weld population based on line size, line function, and line design to the extent practicable. This criteria will be employed in lieu of Notes 1(b) and 2 of Category B-J, Table IWB-2500-1. See Relief Request NDE-4 for details.

2.1.3 ISI Class 2 Carbon Steel piping welds will be selected for examination per ASME Section XI, 1974 Edition with Addenda through Summer 1975, IWC-2411 as allowed by 10CFR50.55a(b)(2)(iv)(B). ISI Class 2 Stainless Steel piping welds will be selected in accordance with Table IWC-2500-1, Category C-F-1.

### 2.2 PROGRAM SUMMARY

2.2.1 The Inservice Inspection Program Summary for the Components is presented in Sections 2.3, 2.4 and 2.5 in a tabular format. The applicable NAPS-2 components and associated requirements are listed alphabetically according to Code Category. Those Categories and Item Numbers listed with "N/A" are for components not found

at North Anna Unit 2 and are included for reference only. The following information is included in the tables:

A. Code Category - The Section XI Examination Category as defined in Tables IWB-2500-1, IWC-2500-1 and IWD-2500-1 for Class 1, 2 and 3 components, respectively.

B. Item Number - The Section XI Item Number as listed in Tables IWB-2500-1, IWC-2500-1 and IWD-2500-1. All Item Numbers are listed for each Code Category with the exception of those associated with Program A of Category B-D.

C. Part Examined - The ASME Section XI description of the area to be examined.

D. Examination Method - Lists the examination method or methods required by the provisions of Section XI. The abbreviations used are as follows:

VOL - Volumetric per IWA-2230

SUR - Surface per IWA-2220

VIS - Visual per IWA-2211, 12 and 13

E. Alternate Examination Method - Lists the examination method that will be performed as an alternative to the Section XI required examination as stated in a relief request.

F. Examination Requirements or Test Required /Figure Number - Lists the applicable Section XI figure for determining the volume of the component to be examined.

G. Acceptance Criteria - Lists the applicable portion of Section XI for determining the acceptance criteria.

H. Relief Request Number - References a specific relief request contained in Section 2.7. Relief requests are presented in two series: an NDE-Series for components and nondestructive examination areas and a SPT-Series for system pressure testing areas.

## 2.3 ISI Class 1 Components - Program Summary Table

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

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B1.11 | Reactor Vessel Circumferential Shell Welds | VOL | | IWB-2500-1 | IWB-3510 | |
| B1.12 | Reactor Vessel Longitudinal Shell Welds | VOL | | IWB-2500-2 | IWB-3510 | |
| B1.21 | Reactor Vessel Circumferential Head Weld | VOL | | IWB-2500-3 | IWB-3510 | |
| B1.22 | Reactor Vessel Meridional Head Weld | VOL | | IWB-2500-3 | IWB-3510 | |
| B1.30 | Reactor Vessel Shell-to-Flange Weld | VOL | | IWB-2500-4 | IWB-3510 | NDE-15 |
| B1.40 | Reactor Vessel Head-to-Flange Weld | VOL & SUR | | IWB-2500-5 | IWB-3510 | |
| B1.51 | Reactor Vessel Beltline Region Repair Welds | VOL | | IWB-2500-1, and -2 | IWB-3510 | |

## 2.3.2 Examination Category B-B, Pressure Retaining Welds in Vessels Other Than Reactor Vessels

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B2.11 | Pressurizer Circumferential Shell-to-Head Welds | VOL | | IWB-2500-1 | IWB-3511 | |
| B2.12 | Pressurizer Longitudinal Shell-to-Head Welds | VOL | | IWB-2500-2 | IWB-3511 | |
| B2.21 | Pressurizer Circumferential Head Welds | N/A | | N/A | N/A | |
| B2.22 | Pressurizer Meridonial Head Welds | N/A | | N/A | N/A | |
| B2.31 | Steam Generator Circumferential Head Welds | N/A | | N/A | N/A | |
| B2.32 | Steam Generator Meridonial Head Welds | N/A | | N/A | N/A | |
| B2.40 | Steam Generator Tubesheet-to-Head Weld | VOL | | IWB-2500-6 | IWB-3511 | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

2.3.2 Examination Category B-B, Pressure Retaining Welds in Vessels Other Than Reactor Vessels (continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B2.51 | Heat Exchanger Circumferential Head Welds | N/A | | N/A | N/A | |
| B2.52 | Heat Exchanger Meridonial Head Welds | N/A | | N/A | N/A | |
| B2.60 | Heat Exchanger Tubesheet-to-Head Welds | N/A | | N/A | N/A | |
| B2.70 | Heat Exchanger Longitudinal Welds | N/A | | N/A | N/A | |
| B2.80 | Heat Exchanger Tubesheet-to-Shell Welds | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

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

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B3.90 | Reactor Vessel Nozzle-to-Vessel Welds | VOL | | IWB-2500-7 | IWB-3512 | NDE-15 |
| B3.100 | Reactor Vessel Nozzle Inside Radius Section | VOL | | IWB-2500-7 | IWB-3512 | NDE-15 |
| B3.110 | Pressurizer Nozzle-to-Vessel Welds | VOL | | IWB-2500-7 | IWB-3512 | NDE-1 |
| B3.120 | Pressurizer Nozzle Inside Radius Section | VOL | VIS, VT-2 | IWB-2500-7 | IWB-3512 | NDE-2 |
| B3.130 | Steam Generator Nozzle-to-Vessel Welds | N/A | N/A | | N/A | |
| B3.140 | Steam Generator Nozzle Inside Radius Section | VOL | VIS, VT-1 | IWB-2500-7 | IWB-3512 | NDE-2 |
| B3.150 | Heat Exchanger Nozzle-to-Vessel Welds | N/A | N/A | | N/A | |
| B3.160 | Heat Exchanger Nozzle Inside Radius Section | N/A | N/A | | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

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

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B4.11 | Partial Penetration Vessel Nozzles | VIS, VT-2 | | EXTERNAL SURFACE | IWB-3522 | |
| B4.12 | Partial Penetration Control Rod Drive Nozzles | VIS, VT-2 | | EXTERNAL SURFACE | IWB-3522 | |
| B4.13 | Partial Penetration Instrumentation Nozzles | VIS, VT-2 | | EXTERNAL SURFACE | IWB-3522 | SPT-11 |
| B4.20 | Pressurizer Heater Penetration Welds | VIS, VT-2 | | EXTERNAL SURFACE | IWB-3522 | |

## 2.3.5 Examination Category B-F, Pressure Retaining Dissimilar Metal Welds

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B5.10 | Reactor Vessel Nominal Pipe Size ≥ 4 in. Nozzle-to-Safe End Butt Welds | VOL & SUR | VOL | IWB-2500-8 | IWB-3514 | NDE-15 |
| B5.20 | Reactor Vessel Nominal Pipe Size ≤ 4 in. Nozzle-to-Safe End Butt Welds | N/A | | N/A | N/A | |
| B5.30 | Reactor Vessel Nozzle-to-Safe End Socket Welds | N/A | | N/A | N/A | |
| B5.40 | Pressurizer Nominal Pipe Size ≥ 4 in. Nozzle-to-Safe End Butt Welds | VOL & SUR | | N/A | N/A | |
| B5.50 | Pressurizer Nominal Pipe Size ≤ 4 in. Nozzle-to-Safe End Butt Welds | N/A | | N/A | N/A | |
| B5.60 | Pressurizer Nozzle-to-Safe End Socket Welds | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

2.3.5 Examination Category B-F, Pressure Retaining Dissimilar Metal Welds (continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B5.70 | Steam Generator Nominal Pipe Size ≥ 4 in. Nozzle-to-Safe End Butt Welds | VOL & SUR | | IWB-2500-8 | IWB-3514 | |
| B5.80 | Steam Generator Nominal Pipe Size ≤ 4 in. Nozzle-to-Safe End Butt Welds | N/A | | N/A | N/A | |
| B5.90 | Steam Generator Nozzle-to-Safe End Socket Welds | N/A | | N/A | N/A | |
| B5.100 | Heat Exchanger Nominal Pipe Size ≥ 4 in. Nozzle-to-Safe End Butt Welds | N/A | | N/A | N/A | |
| B5.110 | Heat Exchanger Nominal Pipe Size ≤ 4 in. Nozzle-to-Safe End Butt Welds | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

2.3.5 Examination Category B-F, Pressure Retaining Dissimilar Metal Welds (con.t)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CPITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B5.120 | Heat Exchanger Nozzle-to-Safe End Socket Welds | N/A | | N/A | N/A | |
| B5.130 | Piping Nominal Pipe Size $\geq$ 4 in. Dissimilar Metal Butt Welds | VOL & SUR | | IWB-2500-8 | IWB-3514 | |
| B5.140 | Piping Nominal Pipe Size $\leq$ 4 in. Dissimilar Metal Butt Welds | N/A | | N/A | N/A | |
| B5.150 | Piping Dissimilar Metal Socket Welds | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

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

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B6.10 | Reactor Vessel Closure Head Nuts | SUR | | * | * | |
| B6.20 | Reactor Vessel Closure Studs, in Place | VOL | | IWB-2500-12 | IWB-3515 | |
| B6.30 | Reactor Vessel Closure Studs when removed | SUR & VOL | | IWB-2500-12 | IWB-3515 | |
| B6.40 | Reactor Vessel Threads in Flange | VOL | | IWB-2500-12 | IWB-3515 | NDE-3, NDE-15 |
| B6.50 | Reactor Vessel Closure Washers, Bushings | VIS, VT-1 | | Surfaces | IWB-3517 | |
| B6.60 | Pressurizer Bolts and Studs | N/A | | N/A | N/A | |
| B6.70 | Pressurizer Flange Surface, when connection disassembled | N/A | | N/A | N/A | |
| B6.80 | Pressurizer Nuts, Bushings, and Washers | N/A | | N/A | N/A | |
| B6.90 | Steam Generator Bolts and Studs | N/A | | N/A | N/A | |

* In course of preparation.

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

2.3.6 Examination Category B-G-1, Pressure Retaining Bolting, Greater Than 2 in. In Diameter (continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B6.100 | Steam Generator Flange Surface, when connection disassembled | N/A | | N/A | N/A | |
| B6.110 | Steam Generator Nuts, Bushings, and Washers | N/A | | N/A | N/A | |
| B6.120 | Heat Exchanger Bolts and Studs | N/A | | N/A | N/A | |
| B6.130 | Heat Exchanger Flange Surface, | N/A | | N/A | N/A | |
| B6.140 | Heat Exchanger Nuts, Bushings, | N/A | | N/A | N/A | |
| B6.150 | Piping Bolts and Studs | N/A | | N/A | N/A | |
| B6.160 | Piping Flange Surface, when connection disassembled | N/A | | N/A | N/A | |
| B6.170 | Piping Nuts, Bushings, and Washers | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

2.3.6 Examination Category B-G-1, Pressure Retaining Bolting, Greater Than 2 in. In Diameter (continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B6.180 | Pumps Bolts and Studs | VOL | | IWB-2500-12 | IWB-3515 | |
| B6.190 | Pumps Flange Surface, when connection disassembled | VIS, VT | | Surfaces | IWB-3517 | |
| B6.200 | Pumps Nuts, Bushings, and Washers | VIS, VT | | Surfaces | IWB-3517 | |
| B6.210 | Valves Bolts and Studs | VOL | | IWB-2500-12 | IWB-3515 | |
| B6.220 | Valves Flange Surface, when connection disassembled | VIS, VT-1 | | Surfaces | IWB-3517 | |
| B6.230 | Valves Nuts, Bushings, and Washers | VIS, VT-1 | | Surfaces | IWB-3517 | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

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

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B7.10 | Reactor Vessel Bolts, Studs and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |
| B7.20 | Pressurizer Bolts, Studs, and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |
| B7.30 | Steam Generator Bolts, Studs, and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |
| B7.40 | Heat Exchanger Bolts, Studs and Nuts | N/A | | N/A | N/A | N/A |
| B7.50 | Piping Bolts, Studs, and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |
| B7.60 | Pumps Bolts, Studs, and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |
| B7.70 | Valves Bolts, Studs, and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |
| B7.80 | CRD Housings Bolts, Studs and Nuts | VIS, VT-1 | | Surface | IWB-3517 | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.3.8 Examination Category B-H, Integral Attachments for Vessels

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B8.10 | Reactor Vessel Integrally Welded Attachments | N/A | | N/A | N/A | |
| B8.20 | Pressurizer Integrally Welded Attachments | VOL OR SUR | | IWB-2500-13, -14, and -15 | IWB-3516 | |
| B8.30 | Steam Generator Integrally Welded Attachments | VOL OR SUR | | IWB-2500-13, -14, and -15 | IWB-3516 | |
| B8.40 | Heat Exchanger Integrally Welded Attachments | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.3.9 Examination Category B-J, Pressure Retaining Welds in Piping

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B9.11 | Nominal Pipe Size > 4 in. Circumferential Welds | VOL & SUR | | IWB-2500-8 | IWB-3514 | NDE-4 |
| B9.12 | Nominal Pipe Size ≥ 4 in. Longitudinal Welds | VOL & SUR | | IWB-2500-8 | IWB-3514 | NDE-4 |
| B9.21 | Nominal Pipe Size ≤ 4 in. Circumferential Welds | SUR | | IWB-2500-8 | IWB-3514 | NDE-4 |
| B9 22 | Nominal Pipe Size ≤ 4 in. Longitudinal Welds | SUR | | IWB-2500-8 | IWB-3514 | NDE-4 |
| B9.31 | Nominal Pipe Size ≥ 4 in. Branch Pipe Connection Welds | VOL & SUR | | IWB-2500-9, -10, and -11 | IWB-3514 | NDE-4 |
| B9.32 | Nominal Pipe Size ≤ 4 in. Branch Pipe Connection Welds | SUR | | IWB-2500-9, -10, and -11 | IWB-3514 | NDE-4 |
| B9.40 | Socket Welds | SUR | | IWB-2500-8 | IWB-3514 | NDE-4 |

## 2.3.10 Examination Category B-K-1, Integral Attachments for Piping, Pumps, and Valves

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B10.10 | Piping Integrally Welded Attachments | VOL or SUR | | IWB-2500-13, -14, and -15 | IWB-3516 | |
| B10.20 | Pumps Integrally Welded Attachments | N/A | | N/A | N/A | |
| B10.30 | Valves Integrally Welded Attachments | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.3.11 Examination Category B-L-1, Pressure Retaining Welds in Pump Casings

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B12.10 | Pump Casing Welds | VOL | SUR | IWB-2500-16 | IWB-3518 | NDE-5 |

## 2.3.12 Examination Category B-L-2, Pump Casings

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B12.20 | Pump Casing | VIS, VT-3 | VIS, VT-1 | Internal Surfaces | IWB-3518 | NDE-5 |

## 2.3.13 Examination Category B-M-1, Pressure Retaining Welds in Valve Bodies

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B12.30 | Valves, Nominal Pipe Size ≤ 4 in. Valve Body Welds | N/A | | N/A | N/A | |
| B12.40 | Valves, Nominal Pipe Size ≥ 4 in. Valve Body Welds | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.3.14 Examination Category B-M-2, Valve Bodies

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B12.50 | Valve Body, Exceeding 4 in. Nominal Pipe Size | VIS, VT-3 | VIS, VT-3 | Internal Surfaces | IWB-3519 | NDE-6 |

## 2.3.15 Examination Category B-N-1, Interior of Reactor Vessel

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B13.10 | Reactor Vessel - Vessel Interior | VIS, VT-3 | | Accessible areas | IWB-3520.2 | |

## 2.3.16 Examination Category B-N-2, Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B13.20 | BWRs Only | N/A | | N/A | N/A | |
| B13.30 | BWRs Only | N/A | | N/A | N/A | |
| B13.50 | Reactor Vessel Interior Attachments Within Beltline Region | VIS, VT-1 | | Accessible welds | IWB-3520.1 | |
| B13.60 | Reactor Vessel Interior Attachments Beyond Beltline Region | VIS, VT-3 | | Accessible welds | IWB-3520.2 | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.3.17 Examination Category B-N-3, Removable Core Support Structures

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B13.40 | BWRs Only | N/A | | N/A | N/A | |
| B13.70 | Reactor Vessel Core Support Structure | VIS, VT-3 | | Accessible Surfaces | IWB-3520.2 | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.2.18 Examination Category B-O, Pressure Retaining Welds in Control Rod Housings

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B14.10 | Reactor Vessel Welds in CRD Housing | VOL or SUR | | IWB-2500-18 | IWB-3523 | |

## 2.3.19 Examination Category B-P, All Pressure Retaining Components

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | TEST REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B15.10 | Reactor Vessel Pressure Retaining Boundary | VIS, VT-2 | | LEAKAGE PER IWB-5221 | IWB-3522 | SPT-11, SPT-12 |
| B15.11 | Reactor Vessel Pressure Retaining Boundary | VIS, VT-2 | | HYDROSTATIC PER IWB-5222 | IWB-3522 | SPT-11, SPT-12 |
| B15.20 | Pressurizer Pressure Retaining Boundary | VIS, VT-2 | | LEAKAGE PER IWB-5221 | IWB-3522 | SPT-12 |
| B15.21 | Pressurizer Pressure Retaining Boundary | VIS, VT-2 | | HYDROSTATIC PER IWB-5222 | IWB-3522 | SPT-12 |
| B15.30 | Steam Generator Pressure Retaining Boundary | VIS, VT-2 | | LEAKAGE PER IWB-5221 | IWB-3522 | SPT-12 |
| B15.31 | Steam Generator Pressure Retaining Boundary | VIS, VT-2 | | HYDROSTATIC PER IWB-5222 | IWB-3522 | SPT-12 |
| B15.40 | Heat Exchanger Pressure Retaining Boundary | N/A | | N/A | N/A | |
| B15.41 | Heat Exchanger Pressure Retaining Boundary | N/A | | N/A | N/A | |

## 2.3.19 Examination Category B-P, All Pressure Retaining Components (continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | TEST REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B15.50 | Piping Pressure Retaining Boundary | VIS, VT-2 | | LEAKAGE PER IWB-5221 | IWB-3522 | SPT-12 |
| B15.51 | Piping Pressure Retaining Boundary | VIS, VT-2 | | HYDROSTATIC PER IWB-5222 | IWB-3522 | SPT-1,-2 SPT-3,-4 SPT-12 |
| B15.60 | Pumps Pressure Retaining Boundary | VIS, VT-2 | | LEAKAGE PER IWB-5221 | IWB-3522 | SPT-12 |
| B15.61 | Pumps Pressure Retaining Boundary | VIS, VT-2 | | HYDROSTATIC PER IWB-5222 | IWB-3522 | SPT-1, SPT-12 |
| B15.70 | Valves Pressure Retaining Boundary | VIS, VT-2 | | LEAKAGE PER IWB-5221 | IWB-3522 | SPT-12 |
| B15.71 | Valves Pressure Retaining Boundary | VIS, VT-2 | | HYDROSTATIC PER IWB-5222 | IWB-3522 | SPT-1,-2 SPT-3,-4 SPT-12 |

## 2.3.20 Examination Category B-Q, Steam Generator Tubing

| ITEM NO. | PARTS TO BE EXAMINED | EXAM. METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| B16.10 | Steam Generator Tubing in Straight Tube Design | N/A | | N/A | N/A | |
| B16.20 | Steam Generator Tubing in U-Tube Design | VOL | | Hot Leg and U-Bend | IWB-3521 | |

NOTE: "N/A" in the EXAM. METHOD column indicates that no applicable components are included in North Anna Unit 2.

## 2.4 ISI Class 2 Components - Program Summary Table

### 2.4.1 Examination Category C-A, Pressure Retaining Welds in Pressure Vessels

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C1.10 | Pressure Vessel Circumferential Shell Welds | VOL | | IWC-2500-1 | IWC-3000 | |
| C1.20 | Pressure Vessel Circumferential Head Welds | VOL | | IWC-2500-1 | IWC-3000 | |
| C1.30 | Pressure Vessel Tubesheet-to-Shell Weld | VOL | | IWC-2500-2 | IWC-3000 | |

## 2.4.2 Examination Category C-B, Pressure Retaining Nozzle Welds in Vessels

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C2.11 | Pressure Vessel ≤ 1/2 in. Nominal Thickness Nozzle-to-Shell (or Head) Weld | SUR | | IWC-2500-3 | IWC-3000 | |
| C2.21 | Pressure Vessel > 1/2 in. Nominal Thickness Nozzle-to-Shell (or Head) Weld without Reinforcing Plate | SUR & VOL | | IWC-2500-4(a) or (b) | IWC-3000 | |
| C2.22 | Pressure Vessel > 1/2 in. Nominal Thickness Nozzle Inside Radius Section without Reinforcing Plate | VOL | | IWC-2500-4(a) or (b) | IWC-3000 | |
| C2.31 | Pressure Vessel > 1/2 in. Nominal Thickness Reinforcing Plate Welds to Nozzle and Vessel | SUR | | IWC-2500-4(c) | IWC-3000 | |

2.4.2 Examination Category C-B, Pressure Retaining Nozzle Welds in Vessels (continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C2.32 | Pressure Vessel > 1/2 in. Nominal Thickness Nozzle-to-Shell (or Head) Welds When inside of Vessel is Accessible | VOL | | IWC-2500-4(c) | IWC-3000 | |
| C2.33 | Pressure Vessel > 1/2 in. Nominal Thickness Nozzle-to-Shell (or Head) When Inside of Vessel Is Inaccessible | VIS, VT-2 | | N/A | No leakage | |

## 2.4.3 Examination Category C-C, Integral Attachments For Vessels, Piping, Pumps, and Valves

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C3.10 | Pressure Vessel Integrally Welded Attachments | SUR | | IWC-2500-5 | IWC-3512 | |
| C3.20 | Piping Integrally Welded Attachments | SUR | | IWC-2500-5 | IWC-3512 | |
| C3.30 | Pump Integrally Welded Attacnments | SUR | | IWC-2500-5 | IWC-3512 | |
| C3.40 | Valve Integrally Welded Attachments | SUR | | IWC-2500-5 | IWC-3512 | |

## 2.4.4 Examination Category C-D, Pressure Retaining Bolting Greater Than 2 in. In Diameter

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C4.10 | Pressure Vessel Bolts and Studs | VOL | | IWC-2500-6 | IWC-3512 | |
| C4.20 | Piping Bolts and Studs | N/A | | N/A | N/A | |
| C4.30 | Pump Bolts and Studs | N/A | | N/A | N/A | |
| C4.40 | Valve Bolts and Studs | N/A | | N/A | N/A | |

## 2.4.5 Examination Category C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel or High Alloy Piping

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C5.11 | Circumferential Welds In Piping > NPS 4 And ≥ 3/8 in. Nominal Wall Thickness | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.12 | Longitudinal Welds In Piping > NPS 4 And ≥ 3/8 in. Nominal Wall Thickness | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.21 | Circumferential | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.22 | Longitudinal | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.30 | Socket Welds | SUR | | IWC-2500-7 | IWC-3514 | |

2.4.5 Examination Category C-F-1, Pressure Retaining Welds In Austenitic Stainless Steel or High Alloy Piping (Continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C5.41 | Circumferential Branch Connection Welds of Branch Piping ≥ NPS 2 | SUR | | IWC-2500-9, to -13 | IWC-3514 | |
| C5.42 | Longitudinal Branch Connection Welds of Branch Piping ≥ NPS 2 | SUR | | IWC-2500-12 and -13 | IWC-3514 | |

## 2.4.6 Examination Category C-F-2, Pressure Retaining Welds In Carbon Steel or Low Alloy Steel Piping

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C5.51 | Circumferential Welds In Piping > NPS 4 And ≥ 3/8 in. Nominal Wall Thickness | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.52 | Longitudinal Welds In Piping > NPS 4 And ≥ 3/8 in. Nominal Wall Thickness | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.61 | Circumferential | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.62 | Longitudinal | SUR & VOL | | IWC-2500-7 | IWC-3514 | |
| C5.30 | Socket Welds | SUR | | IWC-2500-7 | IWC-3514 | |

2.4.5 Examination Category C-F-2, Pressure Retaining Welds In Carbon Steel or Low Alloy Steel Piping (Continued)

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C5.81 | Circumferential Branch Connection Welds of Branch Piping ≥ NPS 2 | SUR | | IWC-2500-9, to -13 | IWC-3514 | NDE-7 |
| C5.82 | Longitudinal Branch Connection Welds of Branch Piping ≥ NPS 2 | SUR | | IWC-2500-12 and -13 | IWC-3514 | |

## 2.4.7 Examination Category C-G, Pressure Retaining Welds In Pumps And Valves

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C6.10 | Pump Casing Welds | SUR | | IWC-2500-8 | IWC-3515 | NDE-8<br>NDE-9 |
| C6.20 | Valve Body Welds | N/A | | N/A | N/A | |

NOTE: "N/A" in the EXAM. METHOD Column indicates that no applicable components are included at North Anna Unit 2.

## 2.4.8 Examination Category C-H, All Pressure Retaining Components

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | TEST REQUIRED | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C7.10 | Pressure Vessel Pressure Retaining Components | VIS, VT-2 | | FUNCTIONAL PER IWC-5221 | IWC-3516 | SPT-12, SPT-13 |
| C7.20 | Pressure Vessel Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWC-5222 | IWC-3516 | SPT-8, SPT-12, SPT-13 |
| C7.30 | Piping Pressure Retaining Components | VIS, VT-2 | | FUNCTIONAL PER IWC-5221 | IWC-3516 | SPT-12, SPT-13 |
| C7.40 | Piping Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWC-5222 | IWC-3516 | SPT-5,-6 SPT-7,-8 SPT-11, -12,-13 |
| C7.50 | Pump Pressure Retaining Components | VIS, VT-2 | | FUNCTIONAL PER IWC-5221 | IWC-3516 | SPT-12, SPT-13 |
| C7.60 | Pump Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWC-5222 | IWC-3516 | SPT-12, SPT-13 |
| C7.70 | Valve Pressure Retaining Components | VIS, VT-2 | | FUNCTIONAL PER IWC-5221 | IWC-3516 | SPT-12, SPT-13 |

## 2.4.8 Examination Category C-H, All Pressure Retaining Components

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | TEST REQUIRED | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| C7.80 | Valve Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWC-5222 | IWC-3516 | SPT-5,-6 SPT-7,-8 SPT-12, SPT-13 |

## 2.5 ISI Class 3 Components - Program Summary

### 2.5.1 Examination Category D-A, Systems In Support of Reactor Shutdown Function

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | TEST AND EXAM REQUIREMENTS | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| D1.10 | Pressure Retaining Components | VIS, VT-2 | | INSERVICE PER IWD-5221 | IWD-3000 | |
| D1.10 | Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWD-5223 | IWD-3000 | |
| D1.20 | Integral Attachment-Component Supports and Restraints | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D1.30 | Integral Attachment-Mechanical and Hydraulic Snubbers | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D1.40 | Integral Attachment-Spring Type Supports | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D1.50 | Integral Attachment-Constant Load Type Supports | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D1.60 | Integral Attachment-Shock Absorbers | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |

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

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | TEST AND EXAM REQUIREMENTS | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| D2.10 | Pressure Retaining Components | VIS, VT-2 | | INSERVICE PER IWD-5221 | IWD-3000 | |
| D2.10 | Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWD-5222 | IWD-3000 | SPT-9 |
| D2.20 | Integral Attachment-Component Supports and Restraints | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | NDE-10 |
| D2.30 | Integral Attachment-Mechanical and Hydraulic Snubbers | VIS, VT-3 | | IWC-2500-1 | IWD-3000 | NDE-10 |
| D2.40 | Integral Attachment-Spring Type Supports | VIS, VT-3 | | IWD-2500-1 | IWC-3000 | NDE-10 |
| D2.50 | Integral Attachment-Constant Load Type Supports | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | NDE-10 |
| D2.60 | Integral Attachment-Shock Absorbers | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | NDE-10 |

## 2.5.3 Examination Category D-C, Systems In Support of Residual Heat Removal From Spent Fuel Storage Pool

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | TEST AND EXAM REQUIREMENTS | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| D3.10 | Pressure Retaining Components | VIS, VT-2 | | INSERVICE PER IWD-5221 | IWD-3000 | |
| D3.10 | Pressure Retaining Components | VIS, VT-2 | | HYDROSTATIC PER IWD-5223 | IWD-3000 | |
| D3.20 | Integral Attachment-Component Supports and Restraints | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D3.30 | Integral Attachment-Mechanical and Hydraulic Snubbers | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D3.40 | Integral Attachment-Spring Type Supports | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D3.50 | Integral Attachment-Constant Load Type Supports | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |
| D3.60 | Integral Attachment-Shock Absorbers | VIS, VT-3 | | IWD-2500-1 | IWD-3000 | |

2.6 Augmented Inspection Requirements on ISI Class 1, 2, or 3 Systems - Program Summary Table

| ITEM NO. | COMPONENT DESCRIPTION | REFERENCE(S) | EXAM AND FREQUENCY |
|---|---|---|---|
| 1 | REACTOR COOLANT PUMPS - FLYWHEEL | TECH. SPECS. 4.4.10.1.1<br>REG. GUIDE 1.14, REV. 1 | UT IN PLACE AT APPROX. 3 YEAR INTERVALS.<br>UT/PT (FLYWHEEL REMOVED) 10 YEAR INTERVALS. |
| 2 | REACTOR COOLANT LOOP BYPASS LINES | UFSAR 3.6.2.3.1 | UT/PT EXAM EVERY WELD EVERY 40 MONTHS. |
| 3 | PRESSURIZER SPRAY PIPING IN THE LOWER CUBICLE BETWEEN FLOOR ELEVATIONS 262 FT. 10 IN. AND 272 FT. 6 IN. | UFSAR 3.6.2.3.2 | UT/PT EXAM SELECTED WELDS EVERY 40 MONTHS |
| 4. | PRESSURIZER SAFETY VALVE INLET PIPING LINES | UFSAR 3.6.2.3.3 | UT/PT EXAM SELECTED WELDS EVERY 40 MONTHS |
| 5. | MAIN STEAM POSTULATED BREAK LOCATIONS | UFSAR 3C.2.7 | UT/PT EXAM OF 1/3 OF SELECTED WELDS EVERY 40 MONTHS, WITH 100% OF ALL WELDS COMPLETED BY THE END OF THE INTERVAL. |
| 6 | FEEDWATER POSTULATED BREAK LOCATIONS | UFSAR 3C.2.7 | UT/PT EXAM OF 1/3 OF SELECTED WELDS EVERY 40 MONTHS, WITH 100% OF ALL WELDS COMPLETED BY THE END OF THE INTERVAL. |
| 7. | STEAM GENERATORS - SUPPORTS | TECH. SPECS. 4.4.10.1.2 | VT-1 EVERY 40 MONTHS 1/3 OF THE MAIN MEMBER WELDS JOINING A572 MATERIAL. |

2.6 Augmented Inspection Requirements on ISI Class 1, 2, or 3 Systems

| ITEM NO. | COMPONENT DESCRIPTION | REFERENCE(S) | EXAM AND FREQUENCY |
|---|---|---|---|
| 8. | ROCKWELL EDWARDS T-58 ANGLE UNIVALVES | IEIN84-48 | RT A SELECTED GROUP OF VALVES EVERY 18 MONTHS |
| 9. | SERVICE WATER PIPE WALL THICKNESS MEASUREMENTS | STATION PT 1-PT-75.14 | SEMI-ANNUAL UT THICKNESS AND DRY FILM PAINT THICKNESS. |
| 10. | REACTOR VESSEL INCORE DETECTOR THIMBLE TUBES | NRCB 88-09 | 100% EDDY CURRENT EXAMINATION ON ALL INCORE DETECTOR THIMBLE TUBES IN SERVICE EACH REFUELING |
| 11. | REACTOR COOLANT PIPING - THERMAL SLEEVES | LER 82-043 DATED 8/26/82 | RT EVERY THIRD REFUELING OUTAGE. |

ABBREVIATIONS USED

IEIN = NRC IE INFORMATION NOTICE
LER = LICENSEE EVENT REPORT
NRCB = NRC IE BULLETIN
PT = PENETRANT TEST/EXAMINATION
PT = PERIODIC TEST (REFERENCE)
RG = NRC REGULATORY GUIDE
RT = RADIOGRAPHY TEST/EXAMINATION
UFS R = UPDATED FINAL SAFETY ANALYSIS REPORT
VT = VISUAL TEST/EXAMINATION

2.7.1

NDE SERIES

RELIEF REQUESTS

## RELIEF REQUEST NDE-1

I. IDENTIFICATION OF COMPONENTS

Nozzle-to-Vessel Welds

Pressurizer: (2-RC-E-2)

| Drawing No. | Weld No. |
|---|---|
| 12050-WMKS-RC-E-2 | 9 |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code 1986 Edition, Category B-D, Item No. B3.110, requires a volumetric examination of Pressurizer nozzle-to-vessel welds.

Relief is requested from the volumetric examination requirements for the pressurizer nozzle-to-vessel weld.

III. BASIS FOR RELIEF

During the performance of the first interval examination, it was discovered that the pressurizer heater cables and the heater cable penetrations attached to the pressurizer bottom head limit access and prevent meaningful examination of the nozzle-to-vessel weld. Measurements conducted of the examination area indicate that approximately 3 to 8 percent of the weld volume could be ultrasonically examined. This would be accomplished at an estimated cost of 10 man-rem to complete the partial examination. Other examination methods would also be restricted by the same obstructions. It is felt that the gain in system integrity is not commensurate with the exposure associated with this partial examination.

IV. ALTERNATE PROVISIONS

A visual (VT-2) examination of the pressurizer surge line nozzle-to-vessel weld will be performed during the normally scheduled system leakage test each refueling.

## RELIEF REQUEST NDE-2

I. IDENTIFICATION OF COMPONENTS

Nozzle Inner Radius Sections

Steam Generators: (2-RC-E-1A, 2-RC-E-1B, 2-RC-E-1C)

Pressurizer: (2-RC-E-2)

| Drawing No. | Inner Radius Identification No. |
|---|---|
| 12050-WMKS-RC-E-2 (Pressurizer) | 9NIR, 10NIR, 11NIR, 12NIR, 13NIR, and 14NIR |
| 12050-WMKS-RC-E-1A.2 (Steam Generator A) | 11NIR and 12NIR (ISI Class 1)<br>09NIR and 10NIR (ISI Class 2) |
| 12050-WMKS-RC-E-1B.2 (Steam Generator B) | 11NIR and 12NIR (ISI Class 1)<br>09NIR and 10NIR (ISI Class 2) |
| 12050-WMKS-RC-E-1C.2 (Steam Generator C) | 11NIR and 12NIR (ISI Class 1)<br>09NIR and 10NIR (ISI Class 2) |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category B-D, Item Nos. B3.120, B3.140, and Category C-B, Item No. C2.22 require the nozzle inside radius sections of the pressurizer and steam generators to be volumetrically examined.

Relief is requested from the volumetric examination requirements of the nozzle inner radii for the steam generator and pressurizer nozzles.

III. BASIS FOR RELIEF

Relief from examining the Section XI Code required volume is requested based upon the following criteria:

1) Nozzles in the pressurizer and steam generators contain inherent geometric constraints and clad inner surfaces which limit the ability to perform meaningful volumetric (ultrasonic) examinations of the inner radii areas. The pressurizer surge line nozzle I.D. is physically restricted by the sparger, the thermal sleeve, and heater bank interferences. The steam generator main steam nozzles are physically restricted by the flow limiting devices.

2) Presently, there is no comprehensive examination technique, nor guidance for such in the ASME Code, which would provide a conclusive assessment for the Section XI Code required volumetric examinations of these inner radii, particularly since no preservice results are available for review.

3) Radiography (RT) is not a viable examination technique due to the same inherent geometric constraints and accessibility limitations that restrict the effectiveness of the ultrasonic examination method. In addition, high radiation levels on primary system nozzles could potentially expose radiographic film, causing it to "fog" beyond acceptable standards.

IV. ALTERNATE EXAMINATION

1. As an alternate to the Section XI required volumetric examination of the five Category B-D Pressurizer upper head nozzle inside radius sections (10NIR, 11NIR, 12NIR, 13NIR, and 14NIR) the areas will be visually examined (VT-1) from the nozzle I.D. using direct or remote techniques when accessible by the end of the inspection interval.

2. As an alternative to the Section XI Category B-D required volumetric examination of the Pressurizer lower head nozzle inside radius section (09NIR), this area on the O.D. of the nozzle will be visually examined (VT-2) after the pressurizer has reached operating pressure and temperature.

3. As an alternative to the Section XI required volumetric examination of the Steam Generators six Category B-D nozzle inside radius sections (11NIR and 12NIR on 2-RC-E-1A, -1B, and -1C), the areas will be visually examined (VT-1) from the nozzle I.D. using direct or remote techniques per the schedule shown in Table IWB-2412-1, Inspection Program B.

4. As an alternative to the Section XI required volumetric examination of the Steam Generator Feedwater nozzle inner radius sections (09NIR on 2-RC-E-1A, -1B, and -1C), the accessible portions of these sections will be visually (VT-1) examined outage per the schedule shown in Table IWB-2412-1, Inspection Program B.

5. As an alternative to the Section XI required volumetric examination of the Steam Generators' three Category C-B Main Steam nozzle inner radius sections, (10NIR on 2-RC-E-1A, -1B, and -1C), the area on the O.D. of the nozzles will be visually examined (VT-2) when the Steam Generator has reached normal operating pressure and temperature per the schedule shown in Table IWB-2412-1, Inspection Program B.

NOTE: Similar relief was submitted by letter dated April 24, 1986 to Mr. Harold Denton, Serial No. 86-670 for Surry Power Station Unit 1 and approved by NRC letter dated June 27, 1986.

## RELIEF REQUEST NDE-3

I. IDENTIFICATION OF COMPONENTS

Threads in Flange

Reactor Vessel (2-RC-R-1)

| Drawing No. | Thread In Flange Mark No. |
|---|---|
| 12050-WMKS-RC-R-1.3 | TIF-01 through TIF-58 |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category B-G-1, Item No. B6.40 requires a volumetric examination of the Reactor Vessel Threads In Flange. In addition, deferral of the examination is not permissible. Virginia Electric and Power Company is employing Table IWB-2412-1, Inspection Program B to schedule examinations.

Relief is requested from the examination frequency requirements specified in Table IWB-2412-1 for the reactor vessel threads in flange examination.

III. BASIS FOR RELIEF

Relief from the examination frequency requirements is requested based upon the following criteria:

1) Virginia Electric and Power Company currently schedules the reactor vessel flange threads examination to be performed in concurrence with the automated examination performed on the reactor vessel welds. This permits the examinations to be conducted with more sophisticated (i.e., digital, automated) ultrasonic techniques in lieu of manual techniques.

2) In order to accommodate the automated ultrasonic calibrations, the calibration block is currently being maintained by our Reactor Vessel-ISI contractor at their facility. To examine the percentage of threads in the flange specified in the second period by Table IWB-2413-1, it would be necessary to either schedule an automated ultrasonic examination solely to examine these threads or to fabricate a calibration block to

perform manual ultrasonic examinations. Virginia Electric and Power Company does not believe that the cost of an additional automated examination is justified or that a manual examination would be as reliable as an automated examination for these threads.

IV. ALTERNATE PROVISIONS

An automated ultrasonic examination shall be performed on 50% of the threads in flange during the first period reactor vessel examination and the remaining 50% of the threads in flange during the end of interval reactor vessel examination.

## RELIEF REQUEST NDE-4

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 Pressure retaining welds in piping

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition requires that notes 1(b) and 2 of Category B-J, table IWB-2500-1 be used in the selection of welds for examination.

III. BASIS FOR RELIEF

The first interval selection was based upon the 1974 Edition with Summer 1975 Addenda (74/S75) of ASME Section XI. As a result notes 1(b) and 2 cannot be applied without some programmatic additions and modifications. In addition, although stress and utilization calculations exist for North Anna Unit 2, no correlation exists with actual weld locations. Total reuse of the first interval plan is not desirable, since even though the 74/S75 requirements were met, distribution of welds selected did not equitably cover certain line functions and designs.

IV. ALTERNATE EXAMINATION

ISI Class 1 piping welds will be selected for examination such that 25% of the total number of welds are examined during the interval. The 25% sampling will be comprised as follows: one half of the sampling (approximately 12.5% of the total number of piping welds) will be welds which were examined in the first interval and one-half of the sampling (approximately 12.5% of the total number of piping welds) will be welds which were not examined in the first interval. Welds which were examined in the first interval will be identified in the second interval plan by the designation "old" in the remarks column. Welds which were not examined in the first interval will be identified in the second interval plan by the designation "new" in the remarks column. The welds selected will be evenly distributed based upon line size, line function, and line design to the extent practicable. These selected welds will be examined in all future successive inspection intervals to the extent allowed by code editions approved at that time.

## RELIEF REQUEST NDE-5

I. IDENTIFICATION OF COMPONENTS

Pressure retaining welds in pump casings

Pump casings

Reactor Coolant Pumps: (2-RC-P-1A, -1B, -1C)

| Drawing No. | Weld No. | Casing Exam Identifier |
|---|---|---|
| 12050-WMKS-RC-P-1A.1 | 1 | Case |
| 12050-WMKS-RC-P-1B.1 | 1 | Case |
| 12050-WMKS-RC-P-1C.1 | N/A | Case |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category B-L-1, Item No. B12.10 requires a volumetric examination to be performed on 100% of the pressure retaining welds in at least one pump in each group of pumps performing similar functions in the system (e.g., reactor coolant pumps). In addition, Category B-L-2, Item No. B12.20 requires a visual (VT-3) examination of one pump casing in each group of pumps performing similar functions.

III. BASIS FOR RELIEF

A. Pump Casing Weld

Two of the North Anna Power Station Unit 2 reactor coolant pumps are Westinghouse Model 93 controlled leakage pumps. The Model 93 pump's casing is fabricated by welding two stainless steel castings together. Thus, there is one circumferential pressure boundary weld in the casing that is to be examined in accordance with Category B-L-1.

Since the installation of these pumps, it has been recognized that a volumetric examination of the casing welds is not practical when employing current ultrasonic techniques.

The physical properties of the stainless steel casting and weld material preclude a meaningful ultrasonic examination. The capability to examine these pump casing welds in the field did not exist until recently. In the spring of 1981, an examination was performed on one of the reactor coolant pumps at the R.E. Ginna plant using the miniature linear accelerator (MINAC), which was built under an EPRI sponsored program. This equipment has been made available to other utilities, and currently constitutes the only viable examination method for the volumetric examination of reactor coolant pump welds.

The volumetric examination method is radiographic and is performed by placing the MINAC inside the pump casing and placing film on the outside of the pump. To perform the examination, the pump must be completely disassembled, including removal of the diffuser adapter. This amount of disassembly is far beyond the amount of disassembly performed for normal maintenance. Insulation must also be removed from the exterior of the pump casing.

The examination has been performed at four different sites, all of which have the Westinghouse Model 93 pump. The MINAC examination was performed at Ginna in the spring of 1981, at Point Beach Unit 1 in the fall of 1981, at Turkey Point Unit 3 early in 1982 and at H. B. Robinson Unit 2 later in 1982. No problems with the welds were found at any of the sites. A review of the original radiographs of the Point Beach Unit 1 pump was performed prior to the MINAC examination, and all the landmarks found were identified during field examination with no apparent change.

The successful performance of this volumetric examination using the MINAC at four different sites demonstrates that the method is capable of satisfying ASME Section XI examination requirements. However, the performance of the examination has shown there is a relatively high radiation exposure associated with it. The total exposure associated with insulation removal, disassembly, examination and reassembly of the pump has averaged about 40 man-rem per pump.

There have been no defects identified by the four successful examinations performed on these pumps to date. Several unsuccessful attempts have been made to examine these welds at Virginia Power's reactors: a volumetric examination was attempted at North Anna in 1982. A radioactive source was placed within the pump casing and film around the outside. The developed film did not meet the density requirements for an acceptable examination. This examination was attempted twice at Surry. Both examinations yielded similar results.

B. Pump Casing

The pump casing examinations are also not justified from a cost/benefit perspective. The pump disassembly, examination and reassembly is estimated to cost $750,000.

IV. ALTERNATE EXAMINATION

A visual examination of the external surfaces of one pump's casing weld and a surface examination of the weld to the extent practicable of the external casing weld of one pump will be performed to the extent and frequency of Category B-L-2 in lieu of the required Section XI examinations.

NOTE: Similar relief was submitted by letter dated March 30, 1988 (corrected), serial no. 86-796B, for North Anna Unit 1, interval 1 and approved by NRC letter dated July 17, 1987, serial no. 87-443.

## RELIEF REQUEST NDE-6

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 Valve Bodies Exceeding 4 in. Nominal Pipe Size

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category B-M-2, Item No. B12.50, requires a visual examination (VT-3) be performed on the internal pressure boundary surfaces of one valve in each group of valves that are the same construction design and manufacturing method, and that perform similar functions in the system.

Because these examinations must be met whether or not the valves have to be disassembled for maintenance, this requirement is considered impractical.

III. BASIS FOR RELIEF

The requirement to disassemble primary system valves for the sole purpose of performing a visual examination of the internal pressure boundary surfaces has a very small potential of increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

The ISI Class 1 systems at North Anna Unit 2 include valves which vary in size, design and manufacturer, but all are produced from either cast stainless steel or cast carbon steel. None of the valve bodies are welded.

The performance of both carbon and stainless cast valve bodies has been excellent in Pressurized Water Reactor (PWR) applications. Based on this experience and both industry and regulatory acceptance of these alloys, continued excellent service performance is anticipated.

A more practical approach is to examine the internal pressure boundary of only those valves that require disassembly for maintenance purposes. This methodology would provide a modified sampling program to that required by Section XI while significantly reducing radiation exposure to plant personnel.

Virginia Electric and Power Company feels this approach would provide a reasonable level of assurance that the integrity of the primary system valves is being maintained.

IV. ALTERNATE EXAMINATION

The visual examination of the internal pressure boundary surfaces will be performed, to the extent practical, when a valve is disassembled for maintenance purposes.

NOTE: Similar relief was submitted by letter dated March 30, 1988 (corrected), serial no. 86-796B, for North Anna Unit 1, interval 1 and approved by NRC letter dated July 17, 1987.

## RELIEF REQUEST NDE-7

I. IDENTIFICATION OF COMPONENTS

Branch connection welds - Main steam relief headers

| Drawing No. | Weld Nos. |
|---|---|
| 12050-WMKS-101A-1 | SW-77 to SW-88 |
| 12050-WMKS-101A-2 | SW-83 to SW-87 |
| 12050-WMKS-101A-3 | SW-7W to SW-11W |

See Detail A and Section B-B of each drawing.

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category C-F-2, Item No. C5.81 requires circumferential pipe branch connection welds be surface examined.

III. BASIS FOR RELIEF

The design of the main steam relief header branch connection welds calls for the use of a reinforcement pad. These pads are fillet welded and completely encase the branch connection welds.

IV. ALTERNATE PROVISIONS

A surface examination of the reinforcement pad's fillet welds associated with one branch connection weld will be performed during the interval.

## RELIEF REQUEST NDE-8

I. IDENTIFICATION OF COMPONENTS

Pump Casing Welds

Outside Recirculation Spray Pumps (2-RS-P-2A and 2-RS-P-2B)

| Drawing No. | Weld Nos. |
|---|---|
| 12050-WMKS-RS-P-2A | SW-1, SW-2, SW-3<br>LS-6, LS-7, LS-8<br>LS-9 (Partial Access)<br>LS-10 (Partial Access) |
| 12050-WMKS-RS-P-2B | SW-1, SW-2, SW-3<br>LS-6, LS-7, LS-8<br>LS-9 (Partial Access)<br>LS-10 (Partial Access) |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category C-G, Item Number C6.10, requires pump casing welds to have a surface examination each inspection interval. A surface examination of all of the pumps casing welds is not practicable.

III. BASIS FOR RELIEF

Each of the two outside recirculation spray pump casings have a total of five circumferential welds and five longitudinal welds. Three of the circumferential welds (SW-1, SW-2 and SW-3), and three of the longitudinal welds (LS-6, LS-7 and LS-8) are completely encased in concrete and are not accessible for examination from the outside diameter (O.D.). Of the remaining two longitudinal welds, one weld is partially encased in concrete (LS-9) and one weld is partially covered by a vibration plate (LS-10). O.D. examinations can be performed on both of these longitudinal welds. The remaining two circumferential welds are completely accessible for examinations from the O.D. Surface examinations from the Inside Diameter (I.D.) are not a practicable alternative. Access to the inside of the pump casings is limited by physical size (24 inch outside diameter), the pump shaft, and the pump shaft support obstructions.

IV. ALTERNATE PROVISIONS

A surface examination of the accessible portions of the circumferential and longitudinal welds will be performed to the extent and frequency described in IWC-2500. A remote visual examination (VT-1) of the I.D. of the pump casing welds will be performed only if the pump is disassembled for maintenance.

## RELIEF REQUEST NDE-9

I. IDENTIFICATION OF COMPONENTS

Pump Casing Welds

Low Head Safety Injection Pumps (2-SI-P-1A and 2-SI-P-1B)

| Drawing No. | Weld Nos. |
|---|---|
| 12050-WMKS-SI-P-1A | 1, 2, 3<br>LS-1, LS-2, LS-3<br>LS-4 (Partial Access)<br>LS-5 (Partial Access) |
| 12050-WMKS-SI-P-1B | 1, 2, 3<br>LS-1, LS-2, LS-3<br>LS-4 (Partial Access)<br>LS-5 (Partial Access) |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category C-G, Item Number C6.10, requires pump casing welds to have a surface examination each inspection interval. A surface examination of all of the pumps casing welds is not practicable.

III. BASIS FOR RELIEF

Each of the two low head safety injection pump casings have a total of five circumferential welds and five longitudinal welds. Three of the circumferential welds (1,2 and 3) and three of the longitudinal welds (LS-1, LS-2 and LS-3) are completely encased in concrete and are not accessible for examination. Of the remaining two longitudinal welds, one weld is partially encased in concrete (LS-4) and one weld is partially covered by a vibration plate (LS-5). Partial Outside Diameter (O.D.) examinations can be performed on both of these longitudinal welds. The remaining two circumferential welds are completely accessible for examinations from the O.D. Surface examinations from the Inside Diameter (I.D.) are not a practicable alternative. Access to the inside of the pump casings is limited by physical size (24 inch outside diameter), the pump shaft, and the pump shaft supports.

IV. ALTERNATE PROVISIONS

A surface examination of the accessible portions of circumferential and accessible longitudinal welds will be performed to the extent and frequency described in IWC-2500. A remote visual examination (VT-1) of the I.D. of the pump casing welds will be performed only if the pump is disassembled for maintenance.

## RELIEF REQUEST NDE-10

I. IDENTIFICATION OF COMPONENTS

ISI Class 3 Components in the Auxiliary Feedwater System

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, IWD-1220.1 exempts integral attachments of supports and restraints to components that are NPS 4 and smaller except for PWR Auxiliary Feedwater Systems.

This exemption does not provide a minimum (lower) size exemption for examinations of integral attachments on ISI Class 3 components within the Auxiliary Feedwater System.

III. BASIS FOR RELIEF

To examine all integral attachments in this system regardless of size is impractical considering that ASME Section XI allows the exemption of ISI Class 1 components less than one inch NPS, which are more critical. In addition, IWA-7400 provides an exemption for replacements at NPS 1 creating a situation, where no preservice inspection would be required in a replacement, although normal inservice inspection is required.

IV. ALTERNATE PROVISIONS

A 1 NPS exemption will be applied on Auxiliary Feedwater Systems for examinations on integral attachments as required by IWD-2000.

## RELIEF REQUEST NDE-11

I. IDENTIFICATION OF COMPONENTS

Ultrasonic calibration blocks

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, gives specific requirements for the fabrication of ultrasonic calibration blocks. Specifically, paragraph IWA-2232(a), IWA-2232(b) and IWA-2232(d)(4)

III. BASIS FOR RELIEF

North Anna power station was constructed prior to the issuance and adoption of ASME Section XI. Therefore, ultrasonic calibration blocks were fabricated before the guidelines of ASME Section XI were developed and approved. Meeting the requirements of IWA-2232(a), IWA-2232(b) and IWA-2232(d)(4) of the 1986 Code would require us to manufacture new calibration blocks. Using the existing calibration blocks allows us to correlate ultrasonic data from the first interval inspections as required by IWA-1400(h).

IV. ALTERNATE PROVISIONS

The existing ultrasonic calibration blocks will be used for the second inspection interval examinations in lieu of current code requirements. In addition, Code Case N-461, Alternative Rules for Piping Calibration Block Thickness, will be used as necessary.

Note: It is our understanding that Code Case N-461 is scheduled for approval in Regulatory Guide 1.147 Revision 8. Any limitations or modifications to this Code Case as indicated in the Regulatory Guide shall be adhered to.

## RELIEF REQUEST NDE-12

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 and Class 2 Welds

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, requires that the entire volume or area of a weld be examined before credit of examination can be given.

III. BASIS FOR RELIEF

Throughout the ISI Class 1 and ISI Class 2 systems situations exist where the entire examination volume or area cannot be examined due to interference by another component or part geometry.

IV. ALTERNATE PROVISIONS

Code Case N-460 alternative examination coverage for Class 1 and Class 2 welds, will be utilized in its entirety for determination of examination credit.

Note: It is our understanding that Code Case N-460 is scheduled for approval in Regulatory Guide 1.147 Revision 8. Any limitations or modifications to this Code Case as indicated in the Regulatory Guide shall be adhered to.

## RELIEF REQUEST NDE-13

I. IDENTIFICATION OF COMPONENTS

ISI Class 1 and 2 Piping, Vessel and Component Welds

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, IWA-2600, weld reference system.

III. BASIS FOR RELIEF

The original construction code used at North Anna Power Station, ANSI B31.7, 1969 Edition, did not establish a weld reference system. Immediate establishment of a weld reference system cannot be practically attained within the scope and schedule of existing outages.

IV. ALTERNATE PROVISIONS

North Anna Unit 2 has recently updated its weld isometrics, providing a detailed identification of location. It is our intention to use these drawings for tracking and locating welds.

In addition, as welds requiring volumetric examinations are examined a reference will be established for each weld, indicating a zero point and direction of examination. Welds which contain recordable indications (RI) shall be marked to ensure location of the indication, using appropriate reference marks. This reference system and marks will be permanently fixed on the weld.

## RELIEF REQUEST NDE-14

I. IDENTIFICATION OF COMPONENTS

Pressure Retaining Welds in the Reactor Vessel and Vessel Nozzle area examined by the automated vessel tool inspection device.

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, IWA-2600, weld reference system.

III. BASIS FOR RELIEF

The automated tool establishes its reference point using an existing zero reference in the reactor vessel. This point allows the device to repeat examination locations without the necessity of any other reference systems. It accomplishes this by the use of an electronic encoder system which provides for sufficient repeatability.

IV. ALTERNATE PROVISIONS

The automated vessel tool examinations will continue to establish its reference system based upon the existing zero reference. No other system is planned or deemed necessary.

## RELIEF REQUEST NDE-15

I. IDENTIFICATION OF COMPONENTS

Reactor vessel shell-to-flange weld
Reactor vessel nozzle-to-vessel welds
Reactor vessel nozzle inside radius sections
Reactor vessel nozzle-to-safe-end welds
Reactor vessel threads in flange

| Drawing No. | Mark No. |
|---|---|
| 12050-WMKS-RC-R-1.1 | Weld 1<br>Welds 10, 12, 14<br>NIRs 10, 12, 14 |
| 12050-WMKS-RC-R-1.3 | (50%) TIF-01 through TIF-58 |
| 12050-WMKS-109E-1 | Weld 1 |
| 12050-WMKS-109F-1 | Weld 13 |
| 12050-WMKS-109G-1 | Weld 25 |

II. IMPRACTICABLE CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category B-A, Item B1.30, Category B-D, Item 3.90, Category B-D, Item B3.100, Category B-F, Item B5.10, and Category B-G-1, Item B6.40 requires examinations, which utilize the automated vessel tool.

Relief is requested from interval requirements described in IWA-2432 concerning the examination of the reactor vessel.

III. BASIS FOR RELIEF

North Anna Unit 2, first interval, began December 14, 1980 and concludes December 14, 1990. As part of the first interval inspection, North Anna Unit 2 conducted examinations on the reactor vessel using the automated vessel tool. These examinations were conducted approximately two months prior to the start of the second interval. As only two months remain before the start of the second interval, requiring the automated vessel tool to be brought back to conduct examinations for the first period, second interval is impractical economically, and would unnecessarily impact a subsequent outage.

IV. ALTERNATE PROVISIONS

Alternatively the required second interval, first period examinations have been combined with the requirements of the first interval. This will not eliminate any required examination, as different areas will be examined. This application is implied as acceptable in IWA-2430(d) of the 1986 Edition of ASME Section XI, however this relief request is being submitted as only the reactor vessel examinations are affected.

2.7.2

SPT SERIES

RELIEF REQUESTS

## RELIEF REQUEST SPT-1

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control (CH)

Components: Piping on drawing 12050-CBM-095C-2, Sheet 2 of 2, between the pumps, and the boundaries listed below.

| PUMP | LINE | BOUNDARY | ISI CLASS |
|---|---|---|---|
| 2-RC-P-1A | 2"-CH-414-1502-Q1 | 1st Flange | 2 |
| | 1 1/2"-CH-798-1502-Q1 | 1st Flange | 1 |
| | 3/4"-CH-772-1502-Q1 | 1st Flange | 2 |
| | 1" & 3/4" line | 2-CH-274 | 1 |
| | 1" & 3/4" line | 2-CH-275 | 1 |
| 2-RC-P-1B | 2"-CH-415-1502-Q1 | 1st Flange | 2 |
| | 1 1/2"-CH-797-1502-Q1 | 1st Flange | 1 |
| | 3/4"-CH-773-1502-Q1 | 1st Flange | 2 |
| | 1" & 3/4" line | 2-CH-298 | 1 |
| | 1" & 3/4" line | 2-CH-299 | 1 |
| 2-RC-P-1C | 2"-CH-416-1502-Q1 | 1st Flange | 2 |
| | 1 1/2"-CH-796-1502-Q1 | 1st Flange | 1 |
| | 3/4"-CH-774-1502-Q1 | 1st Flange | 2 |
| | 1" & 3/4" line | 2-CH-321 | 1 |
| | 1" & 3/4" line | 2-CH-322 | 1 |

II. IMPRACTICAL CODE REQUIREMENTS

ISI Class 1 System Hydrostatic Test per IWB-5222
Po = 2500 psig To = 496F
Test Pressure = 2550 psig

ISI Class 2 System Hydrostatic Test per IWC-5222
Pd = 2735 psig Td = 250F
Test Pressure = 3419 psig

III. BASIS FOR RELIEF

Pressurizing the piping listed above to the pressures required by Section XI will also pressurize the number one seal of the reactor coolant pumps. This could potentially damage the number one seal.

IV. ALTERNATE TESTING

The normal system leakage test per IWB-5221 with visual (VT-2) examination after each refueling is an adequate alternative to verify the integrity of these components.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

RELIEF REQUEST SPT-2

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control (CH)

Components: Piping located on drawing 12050-CBM-095C-2, Sheet 1 of 2, between the valves listed below.

| VALVES | LINE |
|---|---|
| 2-CH-341 and 2-CH-HCV-2311 | 2"-CH-468-1502-Q1 |
| 2-CH-358 and 2-CH-340 | 3"-CH-401-1502-Q1 |

ISI Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

System Hydrostatic Test per IWB-5222. Po=2500 psig, To=496 F, Test Pressure is 2550 psig per IWB-5222.

III. BASIS FOR RELIEF

Check valves 2-CH-341 and 2-CH-358 prevent the components listed above from being pressurized to Section XI requirements without pressurizing the reactor coolant system. The code required test pressure of 2550 psig will overpressurize the reactor coolant system.

Also, the power operated relief valves (2-RC-PCV-2456 and 2-RC-PCV-2455C) of the reactor coolant system are designed to limit the pressurizer pressure to a value below the fixed high-pressure reactor trip setpoint (2385 psig). The relief valve setpoints are 2335 psig. It is not desirable to take the reactor coolant system above the power operated relief valve setpoint.

IV. ALTERNATE TESTING

As an alternative, the reactor coolant system will be pressurized to a pressure as close as practical to 2335 psig but not less than 2300 psig while the reactor is in a shutdown condition in order to seat check valves 2-CH-358 and 2-CH-341, thus creating a pressure boundary. The components listed above will then be tested at a pressure between 2300 psig and 2335 psig using a charging pump.

RELIEF REQUEST SPT-2
CONTINUED

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

RELIEF REQUEST SPT-3

I. IDENTIFICATION OF COMPONENTS

System : Residual Heat Removal (RH)

Components: Piping located on drawing 12050-CSM-094A-2, Sheet 1 of 2, between the valves listed below.

| VALVES | LINE |
|---|---|
| 2-RH-MOV-2701 & 2-RH-MOV-2700 | 14"-RH-401-1502 |

ISI Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Class 1 System Hydrostatic Test IWB-5222. Po=2235 psig, To=650 F, Test pressure per IWB-5222 is 2280 psig.

III. BASIS FOR RELIEF

During the system hydrostatic test of the primary system, 2-RH-MOV-2700 and 2-RH-MOV-2701 are closed in order to prevent possible overpressurization of the residual heat removal system. Thus, the portion of the RHR system identified above cannot be pressurized with the primary system and due to system design, it cannot be pressurized without opening one of the MOVs.

IV. ALTERNATE TESTING

As an alternative, the components listed above will be tested in accordance with IWC-5222 during the hydrostatic test administered to line 14"-RH-402-602. The test pressure will be 584 psig as determined by the setpoint of relief valves 2-RH-RV-2721A and 2-RH-RV-2721B. This alternative is considered sufficient since the relief valves are set at 467 psig. As a result, line 14"-RH-401-1502 should not see a pressure significantly higher than 467 psig. In addition, 2-RH-MOV-2700 and 2-RH-MOV-2701 will not open if the reactor coolant pressure is 660 psig.

Relief was granted to North Anna Power Station Unit 1 per Safety Evaluation Report dated July 13, 1987 (TAC No. 64718) for the same situation described above.

# RELIEF REQUEST SPT-4

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection (SI)

Components: Piping located on drawing 12050-CBM-096B-2, Sheet 4 of 4, between the valves listed below.

| VALVES | LINES |
|---|---|
| 2-SI-92, 2-SI-90 and 2-SI-91 | 6"-SI-531-1502 |
| 2-SI-100, 2-SI-98 and 2-SI-99 | 6"-SI-533-1502 |
| 2-SI-106, 2-SI-104 and 2-SI-105 | 6"-SI-532-1502 |
| 2-SI-125, 2-SI-112 and 2-SI-123 | 6"-SI-416-1502<br>2"-SI-463-1502 |
| 2-SI-113, 2-SI-117 and 2-SI-111 | 6"-SI-419-1502<br>2"-SI-459-1502 |
| 2-SI-118, 2-SI-124 and 2-SI-116 | 6"-SI-421-1502<br>2"-SI-461-1502 |

ISI Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Class 1 System Hydrostatic Test per IWB-5222. Po=2235 psig, To=160 F, Test Pressure per IWB-5222 is 2432 psig.

III. BASIS FOR RELIEF

The first valve in each set of valves listed above prevent the components listed above from being pressurized without pressurizing the reactor coolant system. The power operated relief valves (2-RC-PCV-2456 and 2-RC-PCV-2455C) of the reactor coolant system are designed to limit the pressurizer pressure to a value below the fixed high-pressure reactor trip setpoint (2385 psig). The relief valve setpoints are 2335 psig which is below the test pressure of 2432 psig. It is not desirable to take the reactor coolant system above the power operated relief valve setpoint.

IV. ALTERNATE TESTING

As an alternative, the reactor coolant system will be pressurized to a pressure as close as practical to 2335 psig but not less than 2300 psig while the reactor is in a shutdown condition to create a pressure boundary at the first valve of each set listed above. These components will then be tested to a pressure beween 2300 psig and 2335 psig using a charging pump. The reactor coolant system will be borated to a concentration equal to or greater than cold shutdown boron concentration.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

RELIEF REQUEST SPT-5

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control (CH)

Components: Piping located on drawing 12050-CBM-095C-2, Sheet 1 of 2, between the valves listed below.

| VALVES | LINES |
|---|---|
| 2-CH-358, 2-CH-HCV-2311, and 2-CH-MOV-2289A | 3/4"-CH-640-1502<br>2"-CH-468-1502<br>3"-CH-401-1502<br>3"-CH-479-1502<br>3"-CH-819-1502 |

ISI Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Class 2 System Hydrostatic Test per IWC-5222. Since there are no relief valves for the above components, test pressure per IWC-5222 is 3419 psig.

III. BASIS FOR RELIEF

Check Valves 2-CH-341, 2-CH-340 and 2-CH-358 prevent the components listed above from being pressurized without pressurizing the reactor coolant system. The Code required test pressure of 3419 psig will overpressurize the reactor coolant system.

Also, the power operated relief valves (2-RC-PCV-2456 and 2-RC-PCV-2445C) of the reactor coolant system are designed to limit the pressurizer pressure to a value below the fixed high-pressure reactor trip setpoint (2385 psig). The relief valve setpoints are 2335 psig. It is not desirable to take the reactor coolant system above the power operated relief valve setpoint.

IV. ALTERNATE TESTING

As an alternative, the reactor coolant system will be pressurized to a pressure as close as practical to 2335 psig but not less than 2300 psig using a charging pump while the reactor is in a shutdown condition to create a pressure boundary at check valves 2-CH-341 and 2-CH-358. The components listed above will then be tested to a pressure between 2300 psig and 2335 psig using a charging pump.

RELIEF REQUEST SPT-5
CONTINUED

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

RELIEF REQUEST SPT-6

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Components: Piping and valves located on drawings 12050-CBM-096A, Sheet 2 of 3, and 12050-CBM-096B, Sheet 4 of 4, listed below.

| VALVE | CONNECTING LINE | VALVE |
|---|---|---|
| 2-SI-MOV-2890C and | 10"-SI-418-1502 | |
| 2-SI-MOV-2890D | 10"-SI-624-1502 | |
| | to 6"-SI-533-1502 | 2-SI-91 |
| | to 6"-SI-532-1502 | 2-SI-105 |
| | to 6"-SI-531-1502 | 2-SI-99 |
| 2-SI-MOV-2890A | 10"-SI-415-1502 | |
| | to 6"-SI-416-1502 | 2-SI-112 |
| | to 6"-SI-419-1502 | 2-SI-117 |
| | to 6"-SI-530-1502 | 2-SI-214 |
| | to 6"-SI-421-1502 | |
| 2-SI-MOV-2890B | 10"-SI-540-1502 | |
| | to 6"-SI-421-1502 | 2-SI-124 |
| 2-SI-89 | 2"-SI-451-1502 | 2-SI-90 |
| 2-SI-97 | 2"-SI-453-1502 | 2-SI-98 |
| 2-SI-103 | 2"-SI-455-1502 | 2-SI-104 |

ISI Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Class 2 System Hydrostatic Test per IWC-5222. $P_d$ = 2485 psig, Design Temperature is less than 200 F, Test pressure is 2733.5 psig.

III. BASIS FOR RELIEF

Check valves 2-SI-92, 2-SI-100, 2-SI-106, 2-SI-125, 2-SI-113 and 2-SI-118 prevent the components listed above from being pressurized without pressurizing the reactor coolant system. The Code required test pressure of 2733.5 psig will overpressurize the reactor coolant system.

The power operated relief valves (2-RC-PCV-2456 and 2-RC-PCV-2455C) of the reactor coolant system are designed to limit the pressurizer pressure to a value below the fixed high-pressure reactor trip setpoint (2385 psig). The relief valve setpoints are 2335 psig which is below the test pressure of 2733.5 psig. It is not desirable to take the reactor coolant system above the power operated relief valve setpoint.

IV. ALTERNATE TESTING

As an alternative, the reactor coolant system will be pressurized to a pressure as close as practical to 2335 psig but not less than 2300 psig while the reactor is in a shutdown condition to create a pressure boundary at check valves 2-SI-92, 2-SI-100, 2-SI-106, 2-SI-125, 2-SI-113 and 2-SI-118. These components will then be tested to a pressure between 2300 psig and 2335 psig using a test pump.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

RELIEF REQUEST SPT-7

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection (SI)

Components: Piping located on drawings 12050-CBM-096B-2, Sheets 1 of 4, 2 of 4 and 3 of 4, between the sets of valves listed below.

| VALVES | LINE NUMBERS |
|---|---|
| 2-SI-MOV-2865A, 2-SI-151 and 2-SI-149 | 12"-SI-523-1502<br>3/4"-SI-478-1502 |
| 2-SI-MOV-2865B, 2-SI-168 and 2-SI-166 | 12"-SI-524-1502<br>3/4"-SI-484-1502 |
| 2-SI-MOV-2865C, 2-SI-185 and 2-SI-183 | 12"-SI-525-1502<br>3/4"-SI-480-1502 |

ISI Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Class 2 System Hydrostatic Test per IWC-5222. $P_d$=2485 psig, T=200 F, Test pressure per the code is 2733.5 psig since there is no overpressure protection for the above components.

III. BASIS FOR REQUEST

Check valves 2-SI-151, 2-SI-168, and 2-SI-185 at the Class 1 and 2 system boundaries prevent the pressurization of the above components without pressurizing the primary system. The required test pressure is 2733.5 psig as stated above, which would overpressurize the primary system.

IV. ALTERNATE TESTING

As an alternative, it is requested that the Class 2 components listed above be tested to the conditions of IWB-5222 which is required for the adjacent Class 1 piping. The nominal operating pressure is 660 psig and temperature is 120 F. Thus, testing per IWB-5222 would require a test pressure of 724 psig. This should be adequate considering the nominal operating conditions.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

## RELIEF REQUEST SPT-8

I. IDENTIFICATION OF COMPONENTS

Systems : Main Steam (SHP)
Decay Heat Release (SPHV)
Feedwater (WFPD)
Chemical Feed (CFPD & SGD)
Blowdown (WGCB)
Sampling (SS)

Components: Secondary side of the Steam Generators and attached piping located on drawings 12050-CBM-070B-2, Sheet 1 of 3, 2 of 3, and 3 of 3; 12050-CBM-074A-2, Sheet 1 of 3; 12050-CBM-089B, Sheet 3 of 4; 12050-CBM-098A, Sheet 2 of 5; 12050-CBM-102A-2, Sheet 2 of 2; and 12050-CBM-102B-2, Sheet 1 of 1 between the components listed in Table SPT-8.

ISI Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Class 2 Hydrostatic Test per IWC-5222 and IWA-5213(d). For Feedwater components, $P_d$=1100 psig, $T_d$>200 F, test pressure per IWC-5222 would be 1375 psig. For the Chemical Feed components, $P_d$=1775 psig, $T_d$<200 F, test pressure per IWC-5222 would be 1952.5 psig. The remaining components have $P_d$=1085 psig, $T_d$>200 F, test pressure per IWC-5222 would be 1356 psig.

III. BASIS FOR REQUEST

Westinghouse, the manufacturer of the steam generators, gives specific testing requirements for the steam generator which must also be applied tc the components listed above because these components cannot be isolated from the steam generators.

IV. ALTERNATE TESTING

The Westinghouse Technical Manual for the Steam Generators requires the secondary side to be pressurized to 1356 psig, held for 30 minutes and then reduced to design pressure (1085 psig) for a sufficient time to permit proper examination of welds, closures and surfaces for leakage or weeping.

The secondary side will be held at 1356 psig for 30 minutes and then reduced to 1085 psig for a minimum of 3 1/2 hours in accordance with Section XI. A VT-2 examination will then be performed on the components described in Table SPT-8.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

Table SPT-8
Components

| FROM COMPONENT | CONNECTED PIPING | TO COMPONENT |
|---|---|---|
| 2-RC-E-1A | 32"-SHP-401-601 | 2-MS-SV-201A |
| | to 32"-SHP-422-601 | 2-MS-SV-202A |
| | | 2-MS-SV-203A |
| | | 2-MS-SV-204A |
| | | 2-MS-SV-205A |
| | to 6"-SHP-437-601 & | |
| | 1"-SHP-484-601 | 2-MS-PCV-201A |
| | to 3"-SHP-464-601 & | 2-MS-18 |
| | 1"-SHP-478-601 | 2-MS 335 |
| | to 1 1/2"-SHPD-406-601 | 2-MS-72 |
| | to 1/2"-SHPD-471-601 | 2-MS-26 |
| 2-RC-E-1A | 32"-SHP-401-601 | 2-MS-502 |
| | | 2-NRV-MS-201A |
| | 3"-SHP-460-601 | 2-MS-344 |
| 2-RC-E-1A | 32"-SHP-401-601 | |
| | to 32"-SHP-422-601 | |
| | to 3"-SHP-445-601 | 2-MS-344 |
| | to 3"-SHP-562-601 | 2-MS-NRV-203A |
| | to 1"-SHP-555-601 | 2-MS-346 |
| | | 2-MS-348 |
| 2-RC-E-1A | 2"-SS-620-601 & | |
| | 1"-SS-753-601 | 2-SS-83 |
| 2-RC-E-1A | 32"-SHP-401-601 | |
| | to 32"-SHP-422-601 | |
| | to 3"-SDHV-401-601 | |
| | to 4"-SDHV-404-601 | 2-MS-20 |
| 2-RC-E-1A | 16"-WFPD-424-601 | 2-FW-62 |
| | to 3"-WAPD-427-601 | 2-FW-70 |
| | to 3/4"-CFPD-401-601 | 2-WT-42 |
| 2-RC-E-1A | 2"-WGCB-404-601 | 2-BD-4 |
| | 2"-WGCB-405-601 | 2-BD-1 |
| | 1"-WGCB-406-601 | 2-BD-2 |
| 2-RC-E-1A | 2"-SGD-404-601 | 2-WT-426 |

RELIEF REQUEST SPT-8
Table SPT-8
Components
CONTINUED

| FROM COMPONENT | CONNECTED PIPING | TO COMPONENT |
|---|---|---|
| 2-RC-E-1B | 32"-SHP-402-601 | |
| | to 32"-SHP-423-601 | 2-MS-SV-201B |
| | | 2-MS-SV-202B |
| | | 2-MS-SV-203B |
| | | 2-MS-SV-204B |
| | | 2-MS-SV-205B |
| | to 6"-SHP-438-601 & | |
| | 1"-SHP-485-601 | 2-MS-PCV-201B |
| | to 3"-SHP-465-601 | 2-MS-333 |
| | 1"-SHP-480-601 | 2-MS-57 |
| | to 1 1/2"-SHPD-408-601 | 2-MS-60 |
| | to 1/2"-SHPD-473-601 | 2-MS-64 |
| 2-RC-E-1B | 32"-SHP-402-601 | 2-MS-73 |
| | | 2-MS-NRV-201B |
| | 3"-SHP-461-601 | 2-MS-353 |
| 2-RC-E-1B | 32"-SHP-402-601 | |
| | to 32"-SHP-423-601 | |
| | to 3"-SHP-446-601 | 2-MS-352 |
| | to 3"-SHP-461-601 | 2-MS-353 |
| | to 3"-SHP-563-601 | 2-MS-NRV-203B |
| | to 1"-SHP-503-601 | 2-MS-356 |
| | | 2-MS-357 |
| 2-RC-E-1B | 2"-SS-625-601 & | |
| | 1"-SS-754-601 | 2-SS-84 |
| 2-RC-E-1B | 32"-SHP-402-601 | |
| | to 32"-SHP-423-601 | |
| | to 3"-SDHV-402-601 | |
| | to 4"-SDHV-404-601 | 2-MS-20 |
| 2-RC-E-1B | 16"-WFPD-423-601 | 2-FW-104 |
| | to 3"-WAPD-428-601 | 2-FW-102 |
| | to 3/4"-CFPD-402-601 | 2-WT-54 |
| 2-RC-E-1B | 2"-WGCB-407-601 | 2-BD-13 |
| | 2"-WGCB-408-601 | 2-BD-10 |
| | 2"-WGCB-409-601 | 2-BD-11 |
| 2-RC-E-1B | 2"-SGD-405-601 | 2-WT-427 |

RELIEF REQUEST SPT-8
Table SPT-8
Components
CONTINUED

| FROM COMPONENT | CONNECTED PIPING | TO COMPONENT |
|---|---|---|
| 2-RC-E-1C | 32"-SHP-403-601 | |
| | to 32"-SHP-424-601 | 2-MS-SV-201C |
| | | 2-MS-SV-202C |
| | | 2-MS-SV-203C |
| | | 2-MS-SV-204C |
| | | 2-MS-SV-205C |
| | to 6"-SHP-439-601 & | |
| | 1"-SHP-486-601 | 2-MS-PCV-201C |
| | to 3"-SHP-466-601 & | 2-MS-95 |
| | 1"-SHP-482-601 | 2-MS-331 |
| | to 1 1/2"-SHPD-407-601 | 2-MS-98 |
| | to 1/2"-SHPD-475-601 | 2-MS-102 |
| 2-RC-E-1C | 32"-SHP-403-601 | 2-MS-111 |
| | | 2-MS-NRV-201C |
| | 3"-SHP-462-601 | 2-MS-362 |
| 2-RC-E-1C | 32"-SHP-403-601 | |
| | to 32"-SHP-424-601 | |
| | to 3"-SHP-447-601 | 2-MS-TV-213C |
| | to 3"-SHP-462-601 | 2-MS-362 |
| | to 3"-SHP-564-601 | 2-MS-NRV-203C |
| | to 1"-SHP-504-601 & | 2-MS-366 |
| | 1"-SHP-557-601 | 2-MS-365 |
| 2-RC-E-1C | 2"-SS-627-601 | |
| | 1"-SS-755-601 | 2-SS-85 |
| 2-RC-E-1C | 32"-SHP-403-601 | |
| | to 32"-SHP-424-601 | |
| | to 3"-SDHV-403-601 | |
| | to 4"-SDHV-404-601 | 2-MS-20 |
| 2-RC-E-1C | 16"-WFPD-422-601 | 2-FW-126 |
| | to 3"-WAPD-429-601 | 2-FW-134 |
| | to 3/4"-CFPD-403-601 | 2-WT-70 |
| 2-RC-E-1C | 2"-WGCB-410-601 | 2-BD-22 |
| | 2"-WGCB-411-601 | 2-BD-19 |
| | 1"-WGCB-412-601 | 2-BD-20 |
| 2-RC-E-1C | 2"-SGD-405-601 | 2-WT-428 |

# RELIEF REQUEST SPT-9

## I. IDENTIFICATION OF COMPONENTS

System : Feedwater (WAPD)

Components: Piping located on drawing 12050-CBM-074A-2, SheetS 1 of 3 and 3 0f 3, between the valves listed below.

| VALVE | CONNECTING LINES | VALVE |
|---|---|---|
| 2-FW-64 | 3"-WAPD-410-601 to 3"-WAPD-409-601 | 2-FW-66 |
| 2-FW-66 | 3"-WAPD-409-601 | 2-FW-70 |
| 2-FW-93 | 3"-WAPD-412-601 to 3"-WAPD-411-601 | 2-FW-98 |
| 2-FW-98 | 3"-WAPD-411-601 | 2-FW-102 |
| 2-FW-128 | 3"-WAPD-414-601 to 3"-WAPD-413-601 | 2-FW-130 |
| 2-FW-130 | 3"-WAPD-413-601 | 2-FW-134 |
| 2-FW-278 | 4"-WAPD-439-601 to 3"-WAPD-409-601 | 2-FW-66 |

ISI Class : 3

## II. IMPRACTICAL CODE REQUIREMENTS

Class 3 System Hydrostatic Test per IWD-5223 and IWA-5213(d). $P_d$=1400 psig, $T_d$ < 200 F, Test Pressure is 1540 psig per IWD-5223.

## III. BASIS FOR RELIEF

Due to check valves 2-FW-134, 2-FW-102, and 2-FW-70, the piping listed above cannot be pressurized without pressurizing the steam generators. The code required test pressure of 1540 psig would overpressurize the steam generators.

IV. ALTERNATE TESTING

Since the components listed above cannot be pressurized without pressurizing the steam generators, they must be tested per the required manufacturer's hydrostatic test method. Therefore, the proposed alternative examination is the examination described in the Westinghouse Technical Manual for the secondary side of the steam generators. The examination is to pressurize the secondary side of the steam generators to 1356 psig, hold for 30 minutes, and then reduce to the design pressure (1085 psig) for 3 1/2 hours. A VT-2 examination will then be performed.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

## RELIEF REQUEST SPT-10

I. IDENTIFICATION OF COMPONENTS

System : Component Cooling (CC), Chemical and Volume Control (CH), Fuel Pit Cooling (FC), Safety Injection (SI), Quench Spray (QS), Recirculation Spray (RS), Service Water (WS) and Sampling (SS).

Components: All piping and components included in the system hydrostatic test boundaries

ISI Class : 1, 2 and 3

II. IMPRACTICAL CODE REQUIREMENTS

Per IWA-5265(b)..."the imposed pressure on any component, including static head, will not exceed 106% of the specified test pressure for the system."

III. BASIS FOR RELIEF

Portions of the above systems not capable of being isolated within the system hydrostatic test boundary are located throughout the plant. Certain non-isolatable portions of the above systems have variations in elevation within the boundaries that would result in imposed pressures in excess of six percent of the specified test pressure. It is Virginia Electric and Power Company's desire to limit the test pressure imposed on system components to 106% of the specified test pressure (as required by paragraph IWA-5265(b)). Thus, due to the effects of static head, portions of the piping at higher elevations will be subjected to a test pressure lower than that specified. There is no practical method for isolating the piping segments to achieve the required test pressure at all elevations.

IV. ALTERNATE TESTING

Hydrostatic testing of systems that cannot be isolated to meet the system test pressure at the test boundary high point and the 106% system test pressure maximum at the test boundary low point shall be conducted by pressurizing to the system test pressure at the low point in the test boundary.

NOTE: Similar relief was submitted by letter dated May 22, 1987, Serial No. 86-796A for North Anna Unit 1, and approved by NRC letter dated July 17, 1987.

RELIEF REQUEST SPT-11

I. IDENTIFICATION OF COMPONENTS

System : Reactor Coolant (RC)

Components: Partial Penetration Welds @ Bottom of Reactor Vessel
Bottom of Reactor Vessel

ISI Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, Category B-E, Item No. 4.13, requires reactor vessel partial penetration welds to have a visual (VT-2) examination during the system hydrostatic test of IWB-5222; in addition, Category B-P, Item Nos. B15.10, and B15.11 require a visual (VT-2) examination of the bottom of the reactor vessel during the system leakage test of IWB-5221 and during the system hydrostatic test of IWB-5222, respectively.

III. BASIS FOR RELIEF

In order to meet the Section XI pressure and temperature requirements for the system leakage and system hydrostatic tests of the reactor vessel, reactor containment at North Anna Unit 2 is required to be at a subatmospheric pressure. Station administrative procedures require that self contained breathing apparatus be worn for containment entries under these conditions. This requirement significantly complicates the visual (VT-2) examination of the bottom of the reactor vessel during testing. Access to the bottom of the reactor vessel requires that the examiner descend several levels by ladder and navigate a small entrance leading to the reactor vessel. In addition to these physical constraints, the examiner must contend with extreme environmental conditions: elevated air temperatures due to reactor coolant at temperatures above 500 degrees F and limited air circulation in the vessel cubicle. In addition, the examiner is limited to the approximate 30 minute capacity of the breathing apparatus for containment entry, the VT-2 examination, and containment exit.

IV. ALTERNATE TESTING

Technical Specifications require that the Reactor Coolant System Leak Rate be limited to 1 gallon per minute unidentified leakage. This value is calculated at least once per 72 hours. Additionally the containment atmosphere particulate radioactivity is monitored every 12 hours. The incore sump room has an level alarm in the control room requiring operator action. These actions would identify any integrity concerns associated with this area. A VT-2 examination will be conducted when containment is at atmospheric conditions each refueling for evidence of boric acid corrosion.

RELIEF REQUEST SPT-12

I. IDENTIFICATION OF COMPONENTS

System : Reactor Coolant (RC)
Charging (CH)
Safety Injection

Components: Pressure Retaining Bolting

ISI Class : 1 and 2

II. IMPRACTICAL CODE REQUIREMENTS

Subparagraph IWA-5242(a) requires, for systems borated for the purposes of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2.

III. BASIS FOR RELIEF

A majority of these systems are located in containment. In cases where there is no intermediate isolation from the reactor coolant system the system pressure test is performed when the reactor coolant is greater than 500 degrees F and the containment is subatmospheric. Removing and reinstalling insulation under these conditions is difficult to perform and deemed impractical when compared to the existing VT-2 program.

IV. ALTERNATIVE TESTING

It is proposed that bolted connections on lines 3 inch NPS and larger on systems containing boric acid be examined each refueling outage. The examination would be performed with the insulation removed. This alternative only applies to systems that can only be pressure tested under subatmospheric conditions.

This alternative is already in place and goes beyond our response to IE Bulletin 82-02, Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants. In our response to IE Bulletin 82-02 we agreed to examine pressure retaining bolting on lines 4 inch NPS and larger each refueling outage. In addition our response to NRC Generic Letter 88-05, Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants, we committed to performing a visual examination of all accessible portions of systems contain boric acid anytime the

unidentified leak rate exceeds a predetermined value, at every cold shutdown prior to decontaminating the containment, and during every reactor startup from Mode 5. In addition the Code required testing will still be conducted with a VT-2 Examination without removing the insulation.

# RELIEF REQUEST SPT-13

## I. IDENTIFICATION OF COMPONENTS

System : Charging (CH)
Safety Injection (SI)
Quench Spray (QS)

Components: Pressure Retaining Bolting

ISI Class : 2

## II. IMPRACTICAL CODE REQUIREMENTS

Subparagraph IWA-5242(a) requires, for systems borated for the purposes of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2.

## III. BASIS FOR RELIEF

Removing insulation and heat tracing can be detrimental to these components. In some areas the insulation covering bolted connections on these systems is calcium silicate with a solid plaster exterior. This insulation cannot be removed without damaging it.

The inventory of charging and safety injection is monitored as part of the Tech. Spec. requirements. When the reactor coolant leak rate exceeds a predetermined level the system is walked down to identify the source and a work request is submitted to correct the problem. Any gross leakage in inaccessible areas would be detected by local radiation monitors. A majority of these systems are located in accessible areas of the auxiliary building and yard, and are walked down each day by operators. A work request is submitted for any leakage noted by the operators.

## IV. ALTERNATIVE TESTING

It is proposed that current program of performing system pressure tests each period and system hydrostatic tests each interval be maintained. These tests will be performed with the insulation in place. If evidence of leakage is detected the insulation will be removed until the source is located and corrected.

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION

UNIT 2

# INSERVICE INSPECTION PROGRAM FOR COMPONENT SUPPORTS SECOND INSPECTION INTERVAL

SECTION 3
TABLE OF CONTENTS

# 3.0 INSERVICE INSPECTION PROGRAM FOR COMPONENT SUPPORTS

## 3.1 PROGRAM DESCRIPTION

The Inservice Inspection Program for ISI Class 1, 2 and 3 component supports meets the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition except where these requirements have been determined to be impractical. Detailed relief requests for these impractical requirements are included in Section 3.4. Programmatic modifications to Section XI requirements are outlined in Sections 3.1.1 through 3.1.4.

3.1.1 This program does not cover inservice testing of snubbers. Snubbers will be tested in accordance with Technical Specifications.

3.1.2 Component supports exempt from the examination requirements of IWF-2000 are those connected to components and items exempted from examination under IWB-1220, IWC-1220, and IWD-2000. In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of IWF-2000. These exemptions are excerpted from proposed Code Case WGCS 89-1(b). See Relief Request CS-1 for details.

3.1.3 Component supports to be examined shall be the supports of those components that are required to be examined under IWB-2500, IWC-2500, and IWD-2500 by volumetric, surface or visual (VT-1 or VT-3) examination methods. Piping supports to be examined shall be the supports of piping not exempted under IWB-1220, IWC-1220, IWD-1220. This selection criteria is excerpted from proposed Code Case WGCS 89-1(b). See Relief Request CS-1 for details.

3.1.4 The following sampling plan will be employed:

ISI Class 1 Piping Supports - Examine 25% of supports per interval. Notes 1, 2 and 4.

ISI Class 2 Piping Supports - Examine 15% of supports per interval. Notes 1, 2 and 4.

ISI Class 3 Piping - Supports Examine 10% of supports per interval. Notes 1, 2 and 4.

Supports Other Than Piping Supports - Examine 100% of supports per interval. Notes 3 and 4.

NOTES:

(1) Supports shall be categorized to identify support types by component support function (e.g., A = supports such as one directional rod hangers; B = supports such as multi-directional restraints; and C = supports that allow thermal movement, such as springs).

(2) The total percentage sample shall be comprised of supports from each system (such as Main Steam, Feedwater or RHR), where the individual sample sizes are proportional to the total number of non-exempt supports of each type and function within each system.

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

(4) To the extent practical, the same supports selected for examination during the first inspection interval shall be examined during each successive inspection interval.

This sampling plan is excerpted from proposed Code Case WGCS 89-1(b).

## 3.2 PROGRAM SUMMARY

3.2.1 The Inservice Inspection Program Plan Summary for Component Supports is presented in Section 3.3 in a tabular format. The component supports and associated requirements are listed in descending order according to Code Category and Item Numbers. The following information is included in the tables:

A. Code Category - The Section XI Examination Category as defined in Table IWF-2500-1 for Class 1, 2 and 3 component supports.

B. Item Number - The Section XI Item Number as listed in Table IWF-2500-1. All Item Numbers are listed for each Code Category.

C. Part Examined - The Section XI description of the area to be examined.

D. Examination Method - Lists the examination method required by Section XI. The abbreviation used is as follows:

VIS - Visual examination per IWA-2213

E. Alternate Examination Method - Lists the examination method that will be performed as an alternative to the Section XI required examination as stated in a referenced relief request.

F. Examination Requirements/Figure Number - Lists the applicable Section XI figure for determining the volume of the component to be examined.

G. Acceptance Criteria - Lists the applicable portion of Section XI for determining the acceptance criteria.

H. Relief Request - References a specific relief request contained in Section 3.4.

3.3 ISI Class 1, 2 & 3 Component Supports

3.3.1 Examination Category F-A, Plate And Shell Type Supports - Program Summary Table

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRED/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| F1.10 | Mechanical connections to pressure retaining components and building structure | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F1.20 | Weld connections to building structure | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F1.30 | Weld and mechanical connections at intermediate joints in multiconnected integral and nonintegral supports | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F1.40 | Component displacement settings of guides and stops, misalignment of supports, assembly of support items | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |

### 3.3.2 Examination Category F-B, Linear Type Supports

| ITEM NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRE/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| F2.10 | Mechanical connections to pressure retaining components and building structure | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F2.20 | Weld connections to building structure | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F2.30 | Weld and mechanical connections at intermediate joints in multiconnected integral and nonintegral supports | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F2.40 | Component displacement settings of guides and stops, misalignment of supports, assembly of support items | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |

### 3.3.3 Examination Category F-C, Component Standard Supports

| NO. | PARTS TO BE EXAMINED | EXAM METHOD | ALT. EXAM METHOD | EXAM REQUIRE/ FIG NO. | ACCEPTANCE CRITERIA | RELIEF REQUEST |
|---|---|---|---|---|---|---|
| F3.10 | Mechanical connections to pressure retaining components and building structure | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F3.20 | Weld connections to building structure | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F3.30 | Weld and mechancial connections at intermediate joints i. multiconnected integral and nonintegral supports | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F3.40 | Component displacement settings of guides and stops, misalignment of supports, assembly of support items | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |
| F3.50 | Spring type supports, constant load type supports, shock absorbers, hydraulic and mechanical type snubbers | VIS, VT-3 | | IWF-1300-1 | IWF-3410 | CS-1 |

# 3.4

# COMPONENT SUPPORT

# RELIEF REQUESTS

RELIEF REQUEST NO. CS-1

I. IDENTIFICATION OF COMPONENTS

ISI Class 1, 2 and 3 Component Supports

II. IMPRACTICAL CODE REQUIREMENTS

The nonexistent or unclear portions of Subsection IWF, Section XI 1986 Edition detailed in the BASIS FOR RELIEF section of this relief request.

III. BASIS FOR RELIEF

Subsection IWF of the 1986 Edition of Section XI lacks a complete concise set of rules for the inservice inspection of component supports. The following areas in particular have been identified as needing clarification:

SUPPORTS EXEMPT FROM EXAMINATION AND TEST

IWF-1230 in the 1986 Edition of Section XI is "in the course of preparation". The Section XI Working Group on Component Supports (WGCS) has developed proposed Code Case WGCS 89-1(b) which includes a complete set of exemptions in Section 1230.

SUPPORTS SELECTED FOR EXAMINATION

IWF-2510(a) in the 1986 Edition of Section XI states: "Component supports selected for examination shall be the supports of those components that are required to be examined under IWB, IWC, IWD and IWF during the first inspection interval." These selection requirements are confusing in that the exemptions for these subsections have been modified significantly since the application of ASME Section XI, 1974 Edition with Addenda through Summer 1975 for North Anna Unit 2, Interval 1. WGCS 89-1(b) includes in section 2510 a clear, detailed set of guidelines for examination.

SAMPLING PROGRAM

The general philosophy of Section XI has evolved into a sampling program approach where a percentage of like components are examined to determine their suitability for continued service. WGCS 89-1(b) includes in Table 2500-1 a specific sampling program for supports.

It is Virginia Electric and Power Company's position that the portions of WGCS-89-1(b) presented in the Alternate Provisions section of this relief request in conjunction with Subsection IWF of the 1986 Edition of Section XI provide a complete, coherent and sound set of rules for the inservice inspection of component supports.

IV. ALTERNATE PROVISIONS

In place of IWF-1230, which is under development, the following will be used:

Component supports exempt from the examination requirements of IWF-2000 are those connected to components and items exempted from examination under IWB-1220, IWC-1220, and IWD-1200. In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of IWF-2000.

SUPPORTS EXEMPT FROM EXAMINATION

In lieu or IWF-2510(a), the following will be used: Component supports to be examined shall be the supports of those components that are required to be examined under IWB-2500, IWC-2500, and IWD-2500 by volumetric, surface or visual (VT-1 or VT-3) examination methods. Piping supports to be examined shall be the supports of piping not exempted under IWB-1220, IWC-1220, and IWD-1220.

In conjunction with Table IWF-2500-1, Categories F-A, F-B and F-C the following sampling plan will be used:

ISI Class 1 Piping Supports - Examine 25% of supports per interval. Notes 1, 2 and 4.

ISI Class 2 Piping Supports - Examine 15% of supports per interval. Notes 1, 2 and 4.

ISI Class 3 Piping - Supports Examine 10% of supports per interval. Notes 1, 2 and 4.

Supports Other Than Piping Supports - Examine 100% of supports per interval. Notes 3 and 4.

NOTES:

(1) Supports shall be categorized to identify support types by component support function (e.g., A = supports such as one directional rod hangers; B = supports such as multi-directional restraints; and C = supports that allow thermal movement, such as springs).

(2) The total percentage sample shall be comprised of supports from each system (such as Main Steam, Feedwater or RHR), where the individual sample sizes are proportional to the total number of non-exempt supports of each type and function within each system.

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

(4) To the extent practical, the same supports selected for examination during the first inspection interval shall be examined during each successive inspection interval.