



PSI PROGRAM PLAN:
GENERAL REFERENCE TEXT

PERRY NUCLEAR POWER PLANT, UNIT 1

Prepared For

CLEVELAND ELECTRIC ILLUMINATING COMPANY

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VALID ONLY IF THIS STAMP IS RED

Table with columns: TITLE/DEPT., APPROVALS (SIGNATURE), DATE. Includes handwritten signatures and dates for ISI Programs Eng. Mgr., Project Manager, and Quality Assurance Mgr. Includes a stamp at the bottom left with alphanumeric codes.



REVISION LOG

NUCLEAR ENERGY SERVICES, INC.

DOCUMENT NO. 80A4420

PAGE 2 OF 30

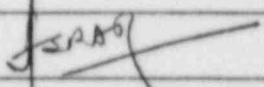
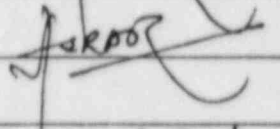
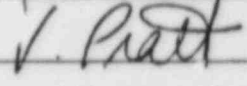
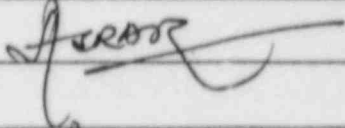
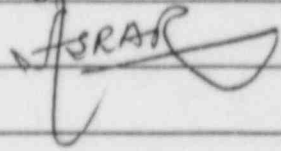
| REV. NO. | DATE | PAGE NO. | DESCRIPTION | APPROVAL |
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| 1 | 6/15/81 | | CRA No. 1899 |  |
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TABLE OF CONTENTS


| | <u>PAGE</u> | |
|---|-------------|--------|
| 1. INTRODUCTION | 4 | △ 3 |
| 2. BASES FOR PRESERVICE INSPECTION PROGRAM | 5 | |
| 2.1 NRC Regulations | 5 | |
| 2.2 Definition of Owner Intent | 5 | |
| 3. PRESERVICE INSPECTION PROGRAM PLAN DESCRIPTION | 6 | |
| 3.1 Document Designations | 6 | |
| 3.2 Zone Designations | 8 | |
| Zone Figures | 8 | |
| 3.3 Exceptions | 15 | |
| 3.4 Exemptions | 15 | |
| 3.4.1 Quality Group A | 15 | |
| 3.4.2 Quality Group B | 15 | |
| 3.4.3 Quality Group A, Group B, and Group C | 16 | |
| 3.4.4 Exempt Components | 16 | |
| 3.5 Quality Assurance | 16 | |
| 3.6 Examination Procedures | 17 | |
| 3.7 Ultrasonic Testing Calibration Standards | 17 | |
| 3.8 Evaluation Criteria | 22 | |
| 3.9 Records and Reports | 22 | |
| 3.10 Personnel Qualification Requirements | 22 | |
| 3.11 Pre-examination Requirements | 22 | |
| 3.12 Piping System Documents | 23 | |
| 3.13 Valve and Pump Grouping | 27 | |


LIST OF TABLES

| | |
|--|----|
| 3.1 Program Plan and System Documents | 6 |
| 3.2 General Reference Documents | 7 |
| 3.3 Zone Figures | 8 |
| 3.4 Reference NDE Procedures | 19 |
| 3.5 Program Plan Calibration Standards | 20 |
| 3.6 Designations | 25 |
| 3.7 Pump-Valve Grouping | 27 |

1. INTRODUCTION

This Program Plan has been prepared to fulfill the Preservice Inspection (PSI) requirements for the nuclear system components of Perry Nuclear Power Plant, Unit 1, owned by the Cleveland Electric Illuminating Company. This Program Plan will also be written to meet any Augmented Inspection requirements committed to by Cleveland Electric Illuminating Company. These PSI requirements are specified by the Code of Federal Regulations, 10 CFR 50.55 a(g).

The scope of examinations include Reactor Pressure Vessel (RPV), and Pressure Vessels, piping, components and their supports of the Reactor Coolant Pressure Boundary, as classified for Inservice Inspection (ISI). Systems or portions of systems common to Units 1 and 2 will be identified in this Program Plan Unit 1. 

The scope of examinations (as delineated above), procedures, and acceptance criteria meet the requirements outlined in Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1977 Edition with Addenda through Summer 1978. The extent of examination is determined by requirements of Addenda through Summer 1975 of Category B-J for Class 1 pipe welds; of Categories C-F and C-G for Class 2 pipe welds of the Residual Heat Removal System, Emergency Core Cooling Systems, and Containment Heat Removal System; and of Categories C-F and C-G for other Class 2 System pipe welds. Component supports will be examined in accordance with subsection IWF to the edition with latest approved addenda of the code. 

This PSI Program Plan presents information in a general text for overall performance of examinations. Examinations for individual piping systems are listed in system PSI Programs, each of which is a separate document. These piping system documents itemize the system-specific examinations. The examinations shall comply with Section XI requirements of examination categories, methods, techniques, and procedures; of personnel qualifications; of documentation, mapping, and evaluation of inspection results; and of disposition and repair.

The Program Plan discusses the regulatory requirements comprising the bases of the development of the plan and the technical scope of examinations to satisfy these requirements. The program plan also presents procedures for performance and documentation of these examinations.

2. BASES FOR PRESERVICE INSPECTION PROGRAM

2.1 NRC REGULATIONS

Title 10 of the Code of Federal Regulations, Part 50, Subsection 50.55 (a) establishes the edition of Section XI of the ASME BPV Code applicable to Preservice Inspection of the Balance of Plant based upon the date of construction permit. This unit is required to comply with requirements set forth in ASME Code no earlier than Summer 1972 Addenda of the 1971 edition. However, the examination requirement of the program plan, in accordance with Cleveland Electric Illuminating Company will comply with ASME 1977 Edition with Addenda through Summer 1978. Code cases listed in Reg. Guide 1.147 may be used when applicable.

The quality group classification system for radioactive water/steam-containing safety related components of water-cooled nuclear power plants is established by NRC Regulatory Guide 1.26, in conjunction with 50.55a of 10 CFR 50.

2.2 DEFINITION OF OWNER INTENT

In accordance with the requirements set forth by 10CFR 50.55a, the Perry Nuclear Power Plant, Unit 1 PSI Program Plan must comply with the requirements of the ASME Code no earlier than those of the Winter 1972 Addenda of the 1971 edition. However, in order to adopt a more recently accepted code with addenda, Cleveland Electric Illuminating Company has elected to comply with the 1977 Edition of the Code up to and including the Summer 1978 Addenda.

Accordingly, this Program Plan provides the details necessary for performing the Preservice Inspection of the Perry Nuclear Power Plant Unit 1, Group A, B and C nuclear safety related piping system and components. The plan schedules all required nondestructive examinations of piping systems within the Group A, B and C boundaries once, prior to initial startup, in accordance with ASME Section XI, Subsections IWA, IWB, IWC and IWD.

In addition, an augmented Inservice Inspection Program (provided later) will be implemented on high energy piping systems which penetrate containment for which the effects of postulated pipe breaks would be unacceptable.

This program will include branch lines which fall within augmented Inservice Inspection boundary up to the first pipe whip restraint beyond the branch line isolation valve.

3. PSI PROGRAM PLAN BOOK DESCRIPTION

3.1 DOCUMENT DESIGNATIONS

Listed in Table 3.1 are the documents that constitute the plan and schedule of examinations for the PSI Program Plan. Any additional Class 3 systems and augmented inspection examinations will be identified later. Component support examinations to requirements of subsection IWF will be identified later by others.

TABLE 3.1

Program Plan and System Documents

| <u>Number</u> | <u>Document Title</u> |
|---------------|--|
| 80A4420 | Preservice Inspection Program Plan for the Perry Nuclear Power Plant, Unit 1 |
| 80A4421 | PSI Program Plan: Reactor Pressure Vessel |
| 80A4422 | PSI Program Plan: Residual Heat Removal System |

TABLE 3.1 cont.

Program Plan and System Documents

| <u>Number</u> | <u>Document Title</u> |
|---------------|---|
| 80A4423 | PSI Program Plan: Low Pressure Core Spray System |
| 80A4424 | PSI Program Plan: High Pressure Core Spray System |
| 80A4425 | PSI Program Plan: Reactor Core Isolation Cooling System |
| 80A4426 | PSI Program Plan: Feedwater System |
| 80A4427 | PSI Program Plan: Main Steam System |
| 80A4428 | PSI Program Plan: Reactor Recirculation System |
| 80A4429 | PSI Program Plan: Reactor Water Clean Up System |
| 80A4430 | PSI Program Plan: Control Rod Drive Hydraulic System |
| 80A4431 | PSI Program Plan: Standby Liquid Control System |

Listed in Table 3.2 are the NES Controlled Documents supporting the development of this PSI Program Plan.

TABLE 3.2

General Reference Documents

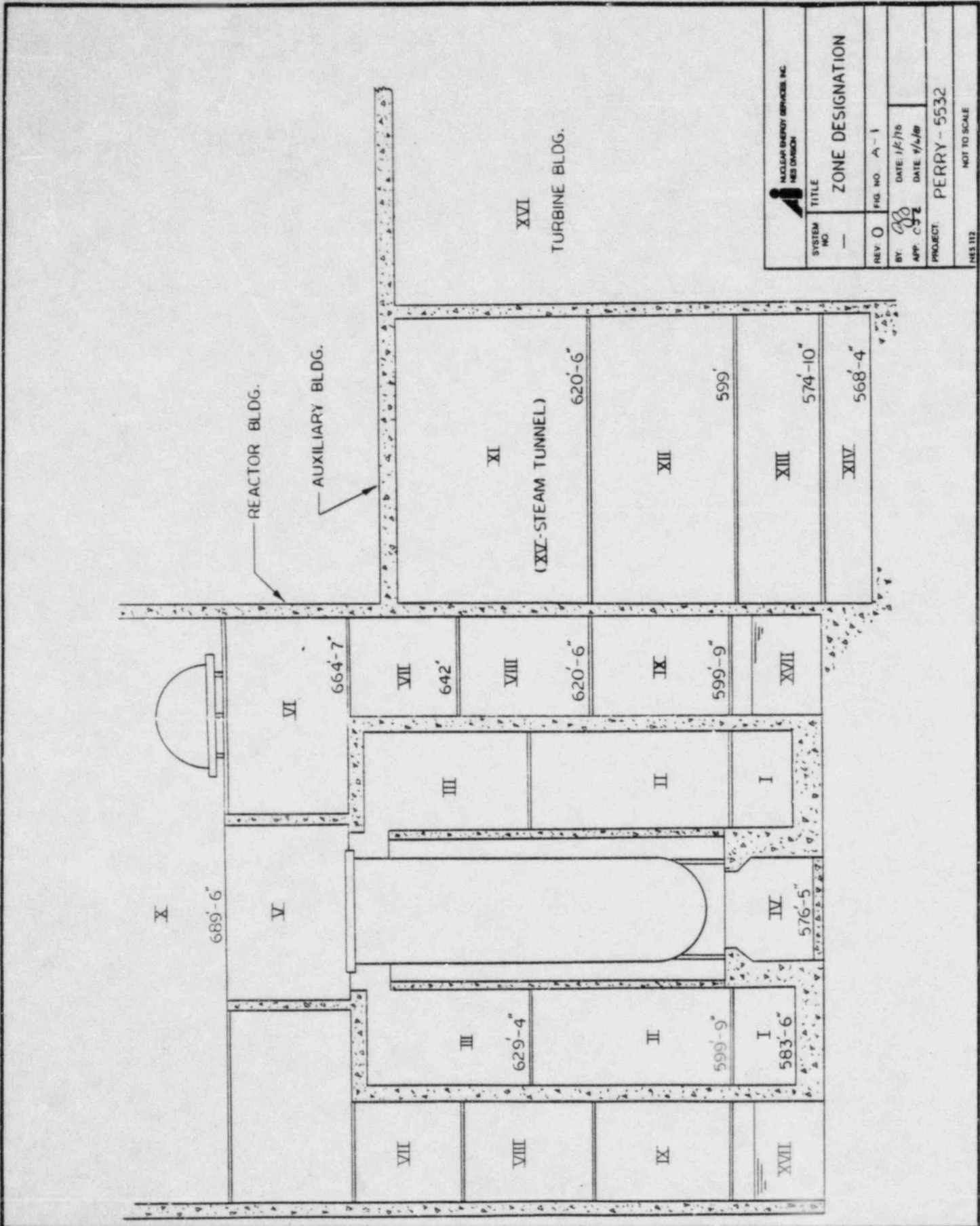
| <u>Number</u> | <u>Document Title</u> |
|---------------|---|
| 80A9068 | Training and Certification of Nondestructive Examination Personnel |
| 80A9069 | Certification of Visual Examination Personnel |
| 81A0268 | Quality Assurance Program Plan for the Perry Nuclear Power Plant, Units 1 & 2 |

3.2 ZONE DESIGNATIONS

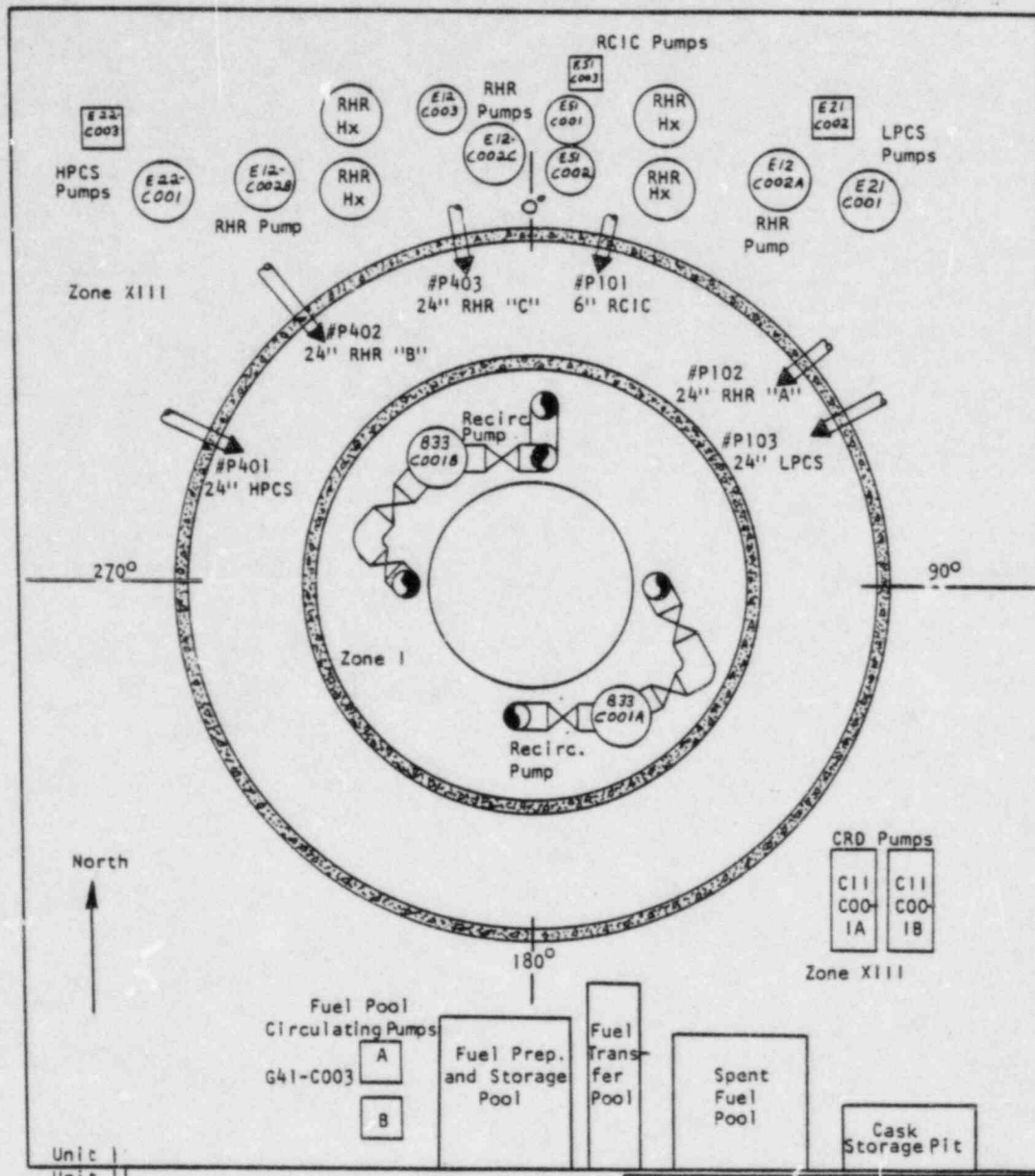
The plant has been subdivided into smaller areas of interest called zones usually delineated by floors. This system of zone designations has been developed for the purpose of aiding the examiners in locating welds and components to be examined. Table 3.3 lists the figures defining these zones and the orientation of equipment within the zones.

TABLE 3.3
Zone Figures

| | |
|-----|------------------------|
| A-1 | Zone Designations |
| A-2 | Floor Plan EI 574'-10" |
| A-3 | Floor Plan EI 599'-9" |
| A-4 | Floor Plan EI 620'-6" |
| A-5 | Floor Plan EI 642'-0" |
| A-6 | Floor Plan EI 664'-7" |



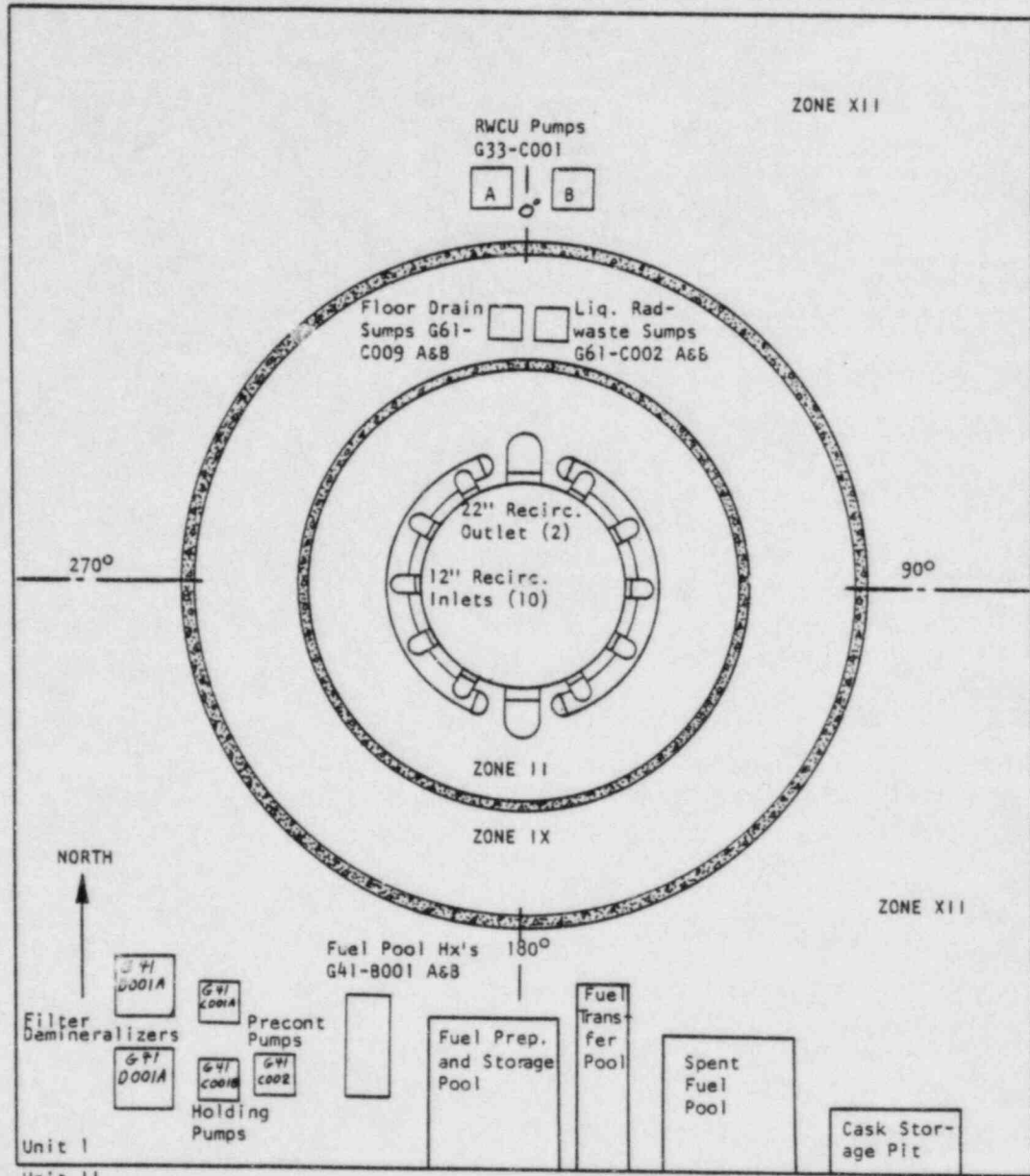
| | |
|---|------------------|
| NUCLEAR ENERGY SERVICES, INC. NES DIVISION | |
| SYSTEM NO. | TITLE |
| REV. 0 | ZONE DESIGNATION |
| BY: <i>JK</i> | FIG. NO. A-1 |
| APP: <i>JK</i> | DATE 1/17/76 |
| PROJECT: PERRY - 5532 | DATE 1/17/76 |
| NOT TO SCALE | |
| NES 112 | |



Unit I
Unit II

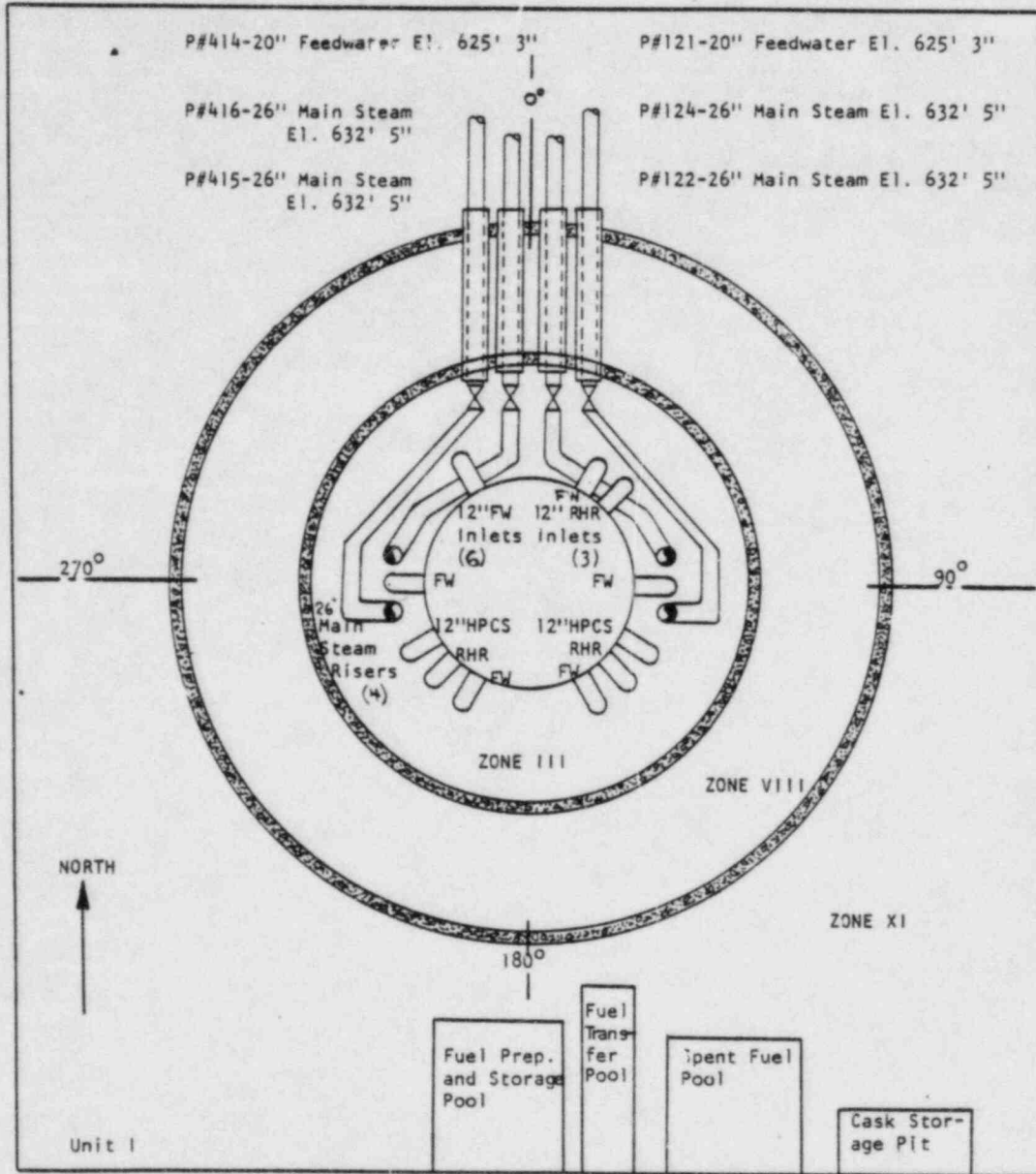
Ref. Dwg. - 0-300-882
0-300-883
E-300-901
E-300-941

| | |
|------------|---|
| SYSTEM NO. | TITLE Zone Designation Plan Above Floor El. 574' 10" |
| REV: 0 | FIG. NO. A - 2 |
| BY: CH | DATE: 1/5/78 |
| APP: CJZ | DATE: 9/6/81 |
| PROJECT: | Perry Unit I 5532 |



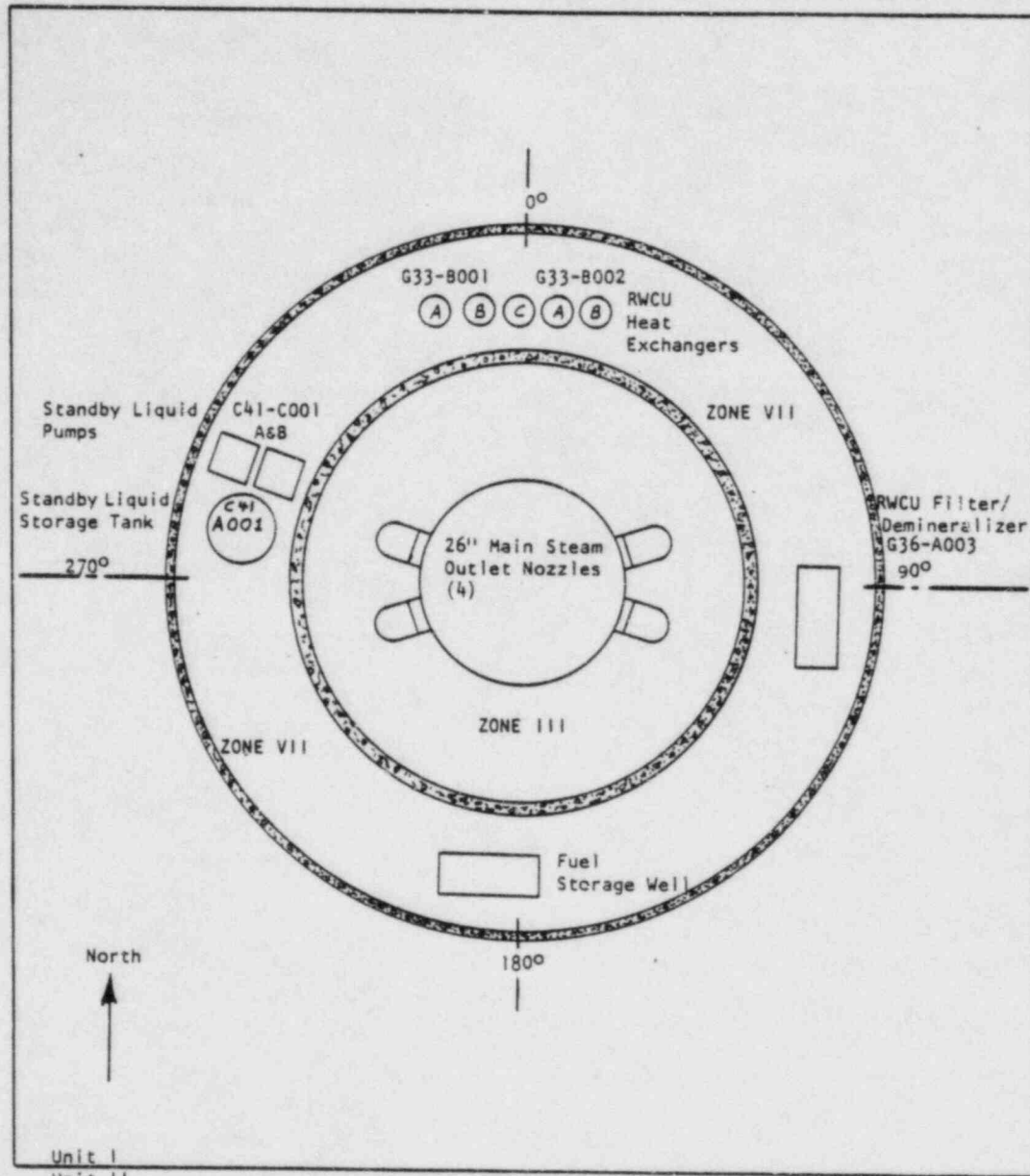
Ref. Dwg. D-300-884
 D-300-886
 D-300-887
 E-300-902
 E-300-942

| | | |
|----------------------------|--|-------|
| SYSTEM NO. | TITLE Zone Designation Plan Above Floor El. 599' 9" | |
| REV: 0 | FIG. NO. | A - 3 |
| BY: CH | DATE: 1/6/78 | |
| APP: CJZ | DATE: 4/6/81 | |
| PROJECT: Perry Unit I 5532 | | |



Ref. Dwg. E-300-943
D-300-840

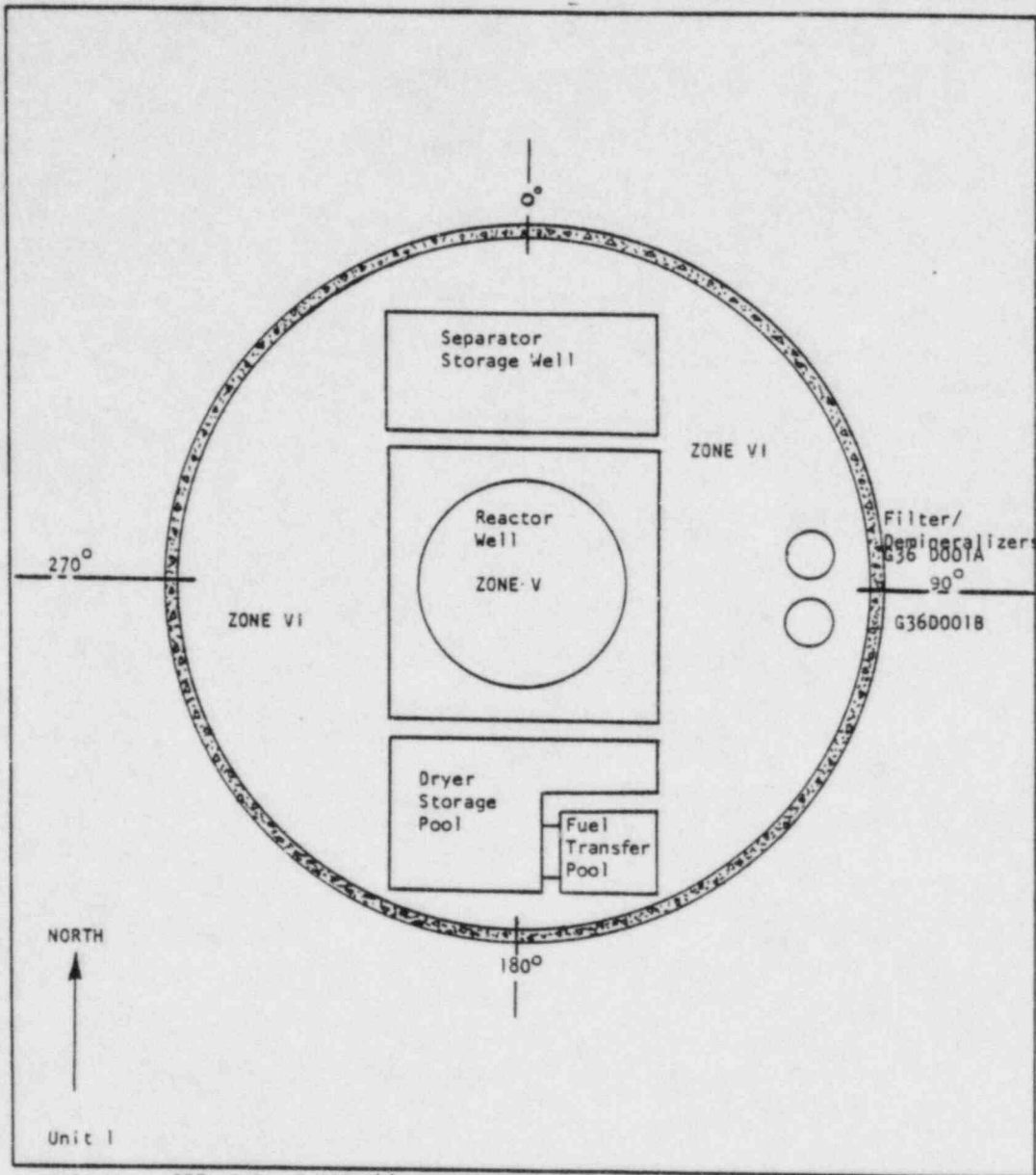
| | |
|----------------------------|--|
| SYSTEM NO. | TITLE Zone Designation Plan Above Floor El. 620' 6" |
| REV: 0 | FIG. NO. A - 4 |
| BY: CH | DATE: 1/5/78 |
| APP: CJE | DATE: 4/6/87 |
| PROJECT: Perry Unit 1 5532 | |



Unit I
Unit II

Ref. Dwg. E-300-944
E-300-945

| | |
|----------------------------|--|
| SYSTEM NO. | TITLE |
| REV: 0 | Zone Designation Plan Above Floor El. 642' 0'' |
| BY: CH | FIG NO. A - 5 |
| APP: CJL | DATE: 1/5/78 |
| | DATE: 4/6/81 |
| PROJECT: Perry Unit 1 5532 | |



Unit LL REF. DWG. E-300-946

| | |
|------------|---|
| SYSTEM NO. | TITLE |
| REV: 0 | Zone Designation Plan Above Floor El. 664' 7" |
| BY: CH | FIG. NO. A - 6 |
| APP: CJZ | DATE: 1/5/78 |
| | DATE: 4/6/81 |
| PROJECT: | Perry Unit 1 5532 |

3.3 EXCEPTIONS

The basis for exceptions to the requirements of Section XI are presented in the individual PSI Program Plan sections for each system. Exceptions to Code required examinations may be authorized by the regulatory authority, as allowed by 10 CFR 50.55 a(a)(2), provided that design fabrication, installation, testing and inspection performed in compliance with Codes and Section XI requirements would result in hardship without a compensating increase in the level of quality and safety, or provided that the proposed alternative examination will provide an acceptable level of quality and safety.

3.4 EXEMPTIONS

The following exemptions from examination requirements are applicable to Quality Group A, B, and C piping systems:

3.4.1 Quality Group A

All component connections, piping, and associated valves of 1" nominal size or smaller are exempt from examination, as allowed by ASME Section XI, Subparagraph IWB-1220(b). In addition to the above exemption, all components less than 2.36" ID for water service and 3.0" ID for steam service are exempt from examination requirements. This exemption, allowed by Subparagraph IWB-1220(a), is based on the exclusion diameter for normal makeup.

3.4.2 Quality Group B

All component connections, piping, and associated valves and vessels of 4" nominal pipe size and smaller are exempt, as allowed by subparagraph IWC-1220(c). In addition to the above exemption, all components in systems other than the Residual Heat Removal and Emergency Core Cooling systems where both the design pressure and temperature are equal to or less than 275 PSIG and 200°F respectively are exempt from examination

requirements, as allowed by Subparagraph IWC-1220(b). Also, components that during normal plant operating conditions are not required to operate or function but remain flooded at 80% operating pressure may be exempted, as allowed by Subparagraph IWC-1220(a).

3.4.3 Quality Group A, Group B, and Group C



For the purpose of system hydrostatic test, open-ended portions of suction or drain lines from a storage tank extending to the first shutoff valve are considered as an extension of the storage tank.

Open-ended portions of nonclosed systems shall have tested or observed unimpaired flow during system operation in lieu of a system pressure test.

3.4.4 Exempt Components



All Class 1 Quality Group A components exempted from examination requirements by IWB-1220 shall be visually examined during system hydrostatic pressure tests per Category B-P requirements of Table IWB-2500.

All Class 2 Quality Group B pressure-retaining components exempted from examination requirements by IWC-1220 shall be examined during system hydrostatic pressure tests, in accordance with IWA-5000 and IWC-5000.

3.5 QUALITY ASSURANCE



The NES Quality Assurance Program Plan (QAPP), Document 81A0268, governs the design review and implementation of the Perry ISI Program Plan. This document is in accordance with the requirements of the NES ISI Quality Assurance Manual (80A9021), which is in compliance with Appendix B of 10 CFR 50. The QAPP includes the detailed quality assurance requirements that are common to all activities of the program including organization, management, liaison, examination implementations, control of inspection records,

qualifications of personnel, materials and procedures, etc. The QAPP is presented as part of the ISI Program Plan.

3.6 EXAMINATION PROCEDURES



Subarticle IWA-1400 of Section XI requires the development and preparation of written examination procedures necessary for the conduct of the nondestructive examinations associated with PSI operations. The written procedures for the performance of visual, surface, and volumetric examinations are referenced in Table 3.4.

Visual Testing (VT) examination is employed to provide a report of the general condition of the part, component or surface to be examined; including such conditions as scratches, wear, cracks, corrosion or erosion on the surfaces; misalignment or movement of the part or component; or any evidence of leaking.

VT examinations are applicable to welds, support members, valves, pumps, fasteners, etc. The NES VT Examination Procedure is based on the requirements of Paragraph IWA-2210 of Section XI.

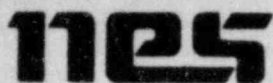
Liquid Penetrant Testing (PT) examination is specified as the surface examination method to delineate or verify the presence of cracks or discontinuities open to the examination surface. The NES PT Examination Procedure is based on the requirements of Paragraph IWA-2222 of Section XI.

The Ultrasonic (pulse echo) Testing (UT) examination is selected as the volumetric examination method to indicate the presence of subsurface discontinuities by examining the required volume of metal contained beneath the surface to be examined. The NES UT Examination Procedures are based on Appendix III of Section XI and Articles 4 and 5 of Section V.

3.7 ULTRASONIC TESTING CALIBRATION STANDARDS



The calibration standard design drawings are presented as part of the PSI



Program Plan. Table 3.5 lists all UT Calibration Standards required to perform the UT examinations. All calibration standards are retained on site.

The UT examination calibration standard design and material selection is in accordance with Subarticle III-3400 of Appendix III to Section XI. In addition to the required notches, drilled holes have been installed as additional reflectors in accordance with the provisions of Article 5 of Section V of the Code. These additional reflectors are allowed by Paragraph III-3400 of Appendix III of Section XI.

TABLE 3.4
Reference NDE Procedures



| | |
|---------|--|
| 80A0182 | Ultrasonic Examination General Requirements |
| 80A0183 | Liquid Penetrant Examination Procedures |
| 80A0184 | Visual Examination Procedure |
| 80A0185 | Magnetic Particle Examination Procedure |
| 80A0186 | Ultrasonic Examination Procedure For Ferritic Piping |
| 80A0187 | Ultrasonic Examination Procedure For Austenitic Piping |
| 80A0189 | Ultrasonic Examination Procedure For Reactor Vessel To Flange Weld and Flange Ligament Areas |
| 80A0190 | Ultrasonic Examination Procedure For Nozzle Inner Radii |
| 80A0191 | Ultrasonic Examination Procedure For Reactor Vessel Welds |
| 80A0192 | Ultrasonic Examination Procedure For Closure Head Welds and Nozzle Welds |
| 80A0193 | Ultrasonic Examination Procedure For Closure Head Nozzle to Flange Weld |
| 80A0194 | Ultrasonic Examination Procedure For Nozzle To Vessel Welds |
| 80A0195 | Ultrasonic Examination Procedure For Nozzle Safe End and Transition Welds |
| 80A0196 | Ultrasonic Examination Procedure For Component Bolts, Studs, and Nuts |
| 80A0206 | Ultrasonic Examination Procedure For Integrally Welded Pipe Supports and Attachments |
| 80A0207 | Ultrasonic Examination Procedure For Residual Heat Removal Heat Exchanger Welds |
| 80A0208 | Automated Ultrasonic Examination Procedure For Reactor Vessel Welds |
| 80A0209 | Automated Ultrasonic Examination Procedure For Reactor Vessel Nozzle Welds |
| 80A0210 | Automated Ultrasonic Examination Procedure For Nozzle Inner Radii |
| 80A0211 | Automated Ultrasonic Examination Procedure For Nozzle Safe End and Transition Welds |

TABLE 3.5
Program Plan Calibration Standards

| <u>Title</u> | <u>Schedule</u> | <u>Material Specification</u> | <u>Drawing No.</u> |
|----------------|-----------------|-------------------------------|--------------------|
| PY-6-80-CS | 0.432" | SA 106, Grade B | 80C0198 |
| PY-6-120-CS | 0.562" | SA 106, Grade B | 80C0198 |
| PY-10-80-CS | 0.593" | SA 106, Grade B | 80C0198 |
| PY-10-100-CS | 0.718" | SA 106, Grade B | 80C0198 |
| PY-12-80-CS | 0.687" | SA 106, Grade B | 80C0198 |
| PY-12-100-CS | 0.843" | SA 106, Grade B | 80C0198 |
| PY-12-120-CS | 1.00" | SA 106, Grade B | 80C0198 |
| PY-14-80-CS | 0.750" | SA 106, Grade B | 80C0198 |
| PY-18-40-CS | 0.562" | SA 106, Grade B | 80C0198 |
| PY-20-40-CS | 0.594" | SA 106, Grade B | 80C0198 |
| PY-24-40-CS | 0.687" | SA 106, Grade B | 80C0198 |
| PY-16-100-CS | 1.031" | SA 106, Grade B | 80C0199 |
| PY-20-80-CS | 1.031" | SA 106, Grade B | 80C0199 |
| PY-20-100-CS | 1.281" | SA 106, Grade B | 80C0199 |
| PY-26-80-CS | 1.499" | SA 155, Grade KCF 70 | 80C0199 |
| PY-26-XX1-CS | 1.147" | SA 155, Grade KCF 70 | 80C0199 |
| PY-26-XX2-CS | 1.321" | SA 106, Grade B | 80C0199 |
| PY-4-80-CS | 0.337" | SA 106, Grade B | 80A7387 |
| PY-4-XX1-CS-F | 0.337" | SA 234, WPB | 80D7385 |
| PY-4-XX1-SS | 0.325" | SA 358, TP 304 | 80D7385 |
| PY-6-XX1-CS-F | 0.562" | SA 234, WPB | 80D7385 |
| PY-8-100-CS | 0.594" | SA 106, Grade B | 80D7385 |
| PY-8-XX1-CS-F | 0.594" | SA 234, WPB | 80D7385 |
| PY-10-XX1-CS-F | 0.718" | SA 234, WPB | 80D7385 |
| PY-12-XX1-CS-F | 0.688" | SA 234, WPB | 80D7385 |
| PY-12-XX2-CS-F | 0.843" | SA 234, WPB | 80D7385 |
| PY-12-XX1-SS | 0.700" | SA 358, TP 304 | 80D7385 |
| PY-12-80-SS-F | 0.685" | SA 403, WP 304 W | 80D7385 |
| PY-14-XX1-CS-F | 0.750" | SA 234, WPB | 80D7385 |
| PY-18-XX1-CS-F | 0.562" | SA 234, WPB | 80D7385 |
| PY-18-XX1-SS-F | 0.562" | SA 403, WP 304 | 80D7385 |



TABLE 3.5 (continued)
Program Plan Calibration Standards

| <u>Title</u> | <u>Nominal Thickness</u> | <u>Material Specification</u> | <u>Drawing No.</u> |  |
|-----------------|--------------------------|-------------------------------|--------------------|---|
| PY-20-XX1-CS-F | 0.594" | SA 234, WPB | 80D7385 | |
| PY-24-XX1-CS-F | 0.687" | SA 234, WPB | 80D7385 | |
| PY-10-XX2-CS-F | 1.45" | SA 105 | 80D7386 | |
| PY-12-XX3-CS-F | 1.312" | SA 234, WPB | 80D7386 | |
| PY-16-XX1-CS-F | 1.031" | SA 234, WPB | 80D7386 | |
| PY-16-100-SS | 1.031" | SA 358, TP 304 | 80D7386 | |
| PY-20-120-CS | 1.500" | SA 106, Grade B | 80D7386 | |
| PY-20-XX1-SS-F | 1.281" | SA 182, F 316 L | 80D7386 | |
| PY-22-XX1-SS | 1.006" | SA 358, TP 304 | 80D7386 | |
| PY-22-XX1-SS-F | 1.13" | SA 403, WP 304 | 80D7386 | |
| PY-24-XX1-SS | 1.386" | SA 358, TP 304 | 80D7386 | |
| PY-24-XX1-SS-F | 1.735" | SA 403, WP 304 | 80D7386 | |
| PY-24-XX2-SS-F | 1.400" | SA 403, WP 304 | 80D7386 | |
| PY-26-XX1-CS-F | 1.414" | SA 234, WPB | 80D7386 | |
| PY-28-140-CS | 2.406" | SA 106, Grade C | 80D7386 | |
| PY-IR-RHR | Later | SA 105 | Later | |
| SA 105-CS | | | | |
| PY-STUD-LPCS | 2.25"φ | SA 193 GR B7 | 80D7550 |  |
| 2.25 - CS | | | | |
| PY-STUD-RR- | 3"φ | SA 540 GR B23, CLA | 80D7549 | |
| 3 - CS | | | | |
| PY-STUD-MS- | 2.25"φ | SA 540 BR B23, CL5 | 80D7551 | |
| 2.25 - CS | | | | |
| PY-1.5-RHR | LATER | LATER | 80D7548 | |
| SA16GR70-CS | | | | |
| PY-Valve-XXI-CS | 2.2" | LATER | 80D7547 | |
| PY-Valve-XX2-CS | 1.5" | LATER | 80D7547 | |
| PY-Valve-XX3-CS | 1.12" | LATER | 80D7547 | |

3.8 EVALUATION CRITERIA

Evaluation of any indications detected during PSI shall be made in accordance with IWA-3000 of Section XI. Indications detected may be evaluated by other nondestructive methods, where practical, to assist in the determination (size, shape, location, orientation) before final disposition is made.

3.9 RECORDS AND REPORTS

A system of records of the Preservice Inspection, plans, schedules and calibration standards; the examination results and reports, the corrective action required and taken, will be developed and maintained at the site in accordance with Article IWA-6000 of Section XI.

3.10 PERSONNEL QUALIFICATION REQUIREMENTS

Personnel performing nondestructive examination operations shall be qualified with procedures prepared in accordance with SNT-TC-1A, 1975 Edition, for the applicable examination technique and methods as required by Article IWA-2300 of Section XI. All examinations shall be performed and the results evaluated by qualified nondestructive examination personnel.

For those nondestructive examination methods not covered by SNT-TC-1A documents, NES shall qualify personnel on the particular method involved. The NES procedures for such qualification provide uniform programs of training, evaluation, and certification of personnel are included in Table 3.2.

3.11 PRE-EXAMINATION REQUIREMENTS

General provisions for accessibility have been defined by Article IWA-1500 of Section XI of the ASME Code.

1. All systems and components that require inspection in accordance with the requirements of ASME Section XI will be designed with adequate physical access to allow the required inspection.

2. Piping systems requiring ultrasonic inspection will be designed so that all welds requiring inspection are physically accessible for inspection with ultrasonic equipment.
 - A. Access will be provided by leaving adequate space around pipes at these welds and by means of removable insulation and shielding as required.
 - B. Pipes welded to fittings will be designed to permit meaningful examination by avoidance of irregular surface geometries.
 - C. The surface of welds will be smoothed and contoured to permit effective use of ultrasonic transducers or surface examination indicators.
 - D. Piping systems requiring surface or visual examination will be designed to allow access and visibility adequate for performance of such examinations.

3.12 PIPING SYSTEM DOCUMENTS

Each piping system document contains the following groups of information that are to be used for the preservice inspection of the Perry Nuclear Power Plant Unit 1.

1. Exemptions and Exceptions

These are lists of the basis for exemptions and exceptions to the requirements of Section XI, as claimed in the Preservice Inspection Plan for those areas that are exempted by the code or cannot be examined either fully or in part because of limitations in accessibility, material, or design.

3

2. System Classification

The Perry Nuclear Power Plant Unit 1 System ASME Group A, B, and C, boundaries have been established in accordance with Reg. Guide 1.26.

3. Program Plan and Schedule

The specific examination requirements for the Perry Unit 1 System Preservice Inspection Plan are defined in the Program Plan and Schedule. Each weld or other examination area is designated by a unique identification number along with the applicable procedure number, examination category and method, and calibration standard number, if required for ultrasonic examinations. Each weld has been given a unique designation number in the Program Plan and Schedule. Table 3.6 provides a key to the designator notation. Exam items are divided by system and further subdivided according to the weld or hanger figure that they appear on. Multiple examination requirements of the same component are listed in the Schedule appearing together. Hanger and component examinations follow the piping weld examinations within each system.

4. System Isometrics and Sketches

The piping isometric drawings show the piping for plant systems, delineating the identification of components subject to examination.



TABLE 3.6
DESIGNATIONS

A. Piping Systems have been designated as follows:



| <u>System</u> | <u>Designation</u> |
|--------------------------------|--------------------|
| Reactor Pressure Vessel | RPV |
| Residual Heat Removal | RHR |
| Low Pressure | LPCS |
| Core Spray | |
| High Pressure | HPCS |
| Core Spray | |
| Reactor Core Isolation Cooling | RCIC |
| Feedwater | FW |
| Main Steam | MS |
| Reactor Recirculation | RR |
| Reactor Water Clean Up | RWCU |
| Control Rod Drive | CRD |
| Standby Liquid Control | SLC |

B. Pipe Weld Identification according to the following format:

n-XXX-AAAA

Where n is "Unit Number"
 XXX is "System Prefix" Per Piping System abbreviation
 AAAA is Weld Identification Number

C. Component Examination will have the following similar format:

n-XXX-AAAAA-ZZZ

Where n is "Unit Number"
 XXX is "System Prefix" Per Piping System abbreviation
 AAAAA is Component Identification Number
 ZZZ is Component Weld Identification Number

- D. A suffix may designate particular exam areas or additional (repair) field welds. △
3

Suffix Key:

A New or additional weld (successive letters are required for field identification)

B Bolting (Studs, Nuts, Washers, etc. as applicable to component identification only)

D1 Longitudinal Seam, (Downstream)

D2 Longitudinal Seam (Downstream)

U1 Longitudinal Seam (Upstream)

U2 Longitudinal Seam (Upstream)

N Nuts

R Repair Weld

Stud Studs

IR Inner Radius

NZ Nozzle

Note: HYD denotes Visual Examination During Hydrostatic Test

N/A denotes NOT APPLICABLE

N/S denotes NOT SPECIFIED

E. PERRY EXAMINATION CODE

- MT Magnetic Particle Examination
- PT Liquid Penetrant Examination
- RT Radiographic Examination
- UT Ultrasonic Examination
- VT-1 Visual Examination
- VT-2 Hydro-Visual Examination
- VT-3 Visual Examination
- VT-4 Visual Examination



3.13 VALVE AND PUMP GROUPING

To satisfy the requirements of category B-M-2 (valve bodies greater than 4" nominal size), B-L-2 pump casing, and C-G (pump & valve casing/body welds) the internal pressure boundary surfaces shall be visually examined for one valve/pump within each group of valve/pump listed in Table 3.7, per the preservice examination requirements of IWB-2100.

Valves/pumps are grouped according to same body constructional design, manufacturing method, manufacturer and performance of similar function in a system.



TABLE 3.7
PUMP - GROUPING (B-L-2)



| <u>Group #</u> | <u>Manufacturer</u> | <u>System</u> | <u>Pump #</u> | <u>Description</u> |
|----------------|---------------------|--------------------------|------------------------|--------------------|
| I | Byron Jackson | Reactor Recirculation | B33-C001A B33-C001B | Centrifugal |

Valve Grouping (B-M-2)

| <u>Group #</u> | <u>Manufacturer</u> | <u>System</u> | <u>Valve #</u> | <u>Description</u> |
|----------------|---------------------|--------------------------|----------------------------------|--------------------|
| I | Borg-Warner | Residual Heat Removal | E12-F008 E12-F009 E12-F010 | 20" Gate Valve |
| II | Borg-Warner | Residual Heat Removal | E12-F039 A,B,C E12-F042 A,B,C | 12" Gate Valve |

TABLE 3.7 (Cont'd)



Valve Grouping (B-M-2)

| <u>Group #</u> | <u>Manufacturer</u> | <u>System</u> | <u>Valve #</u> | <u>Description</u> |
|----------------|------------------------|--------------------------------|----------------------|--------------------|
| III | Rockwell International | Residual Heat Removal | E12-F041 A,B,C | 12" Gate Valve |
| IV | Borg-Warner | Residual Heat Removal | E12-F019 | 6" Check Valve |
| V | Borg-Warner | Residual Heat Removal | E12-F023 | 6" Globe Valve |
| I | Borg-Warner | Low Pressure Core Spray | E21-F007 | 12" Gate Valve |
| II | Borg-Warner | Low Pressure Core Spray | E21-F006 E21-F005 | 12" Gate Valve |
| I | Borg-Warner | High Pressure Core Spray | E22-F036 | 12" Gate Valve |
| II | Borg-Warner | High Pressure Core Spray | E22-F005 | 12" Gate Valve |
| III | Borg-Warner | High Pressure Core Spray | E22-F004 | 12" Control Valve |
| I | Borg-Warner | Reactor Core Isolation Cooling | E51-F065 | 6" Disc Valve |
| II | Rockwell International | Reactor Core Isolation Cooling | E51-F066 | 6" Check Valve |
| III | Borg-Warner | Reactor Core Isolation Cooling | E51-F013 | 6" Gate Valve |
| IV | Borg-Warner | Reactor Core Isolation Cooling | E51-F063 E51-F064 | 10" Gate Valve |

TABLE 3.7 (Cont'd)



Valve Grouping (B-M-2)

| <u>Group #</u> | <u>Manufacturer</u> | <u>System</u> | <u>Valve #</u> | <u>Description</u> |
|----------------|------------------------|------------------------|---|------------------------------|
| I | Dickers | Main Steam | B-21-F047 B,C,D B21-F047 F,G,H B21-F041 A,B,C B21-F041 D,E,F,G,K B21-F051 A,B,C B21-F051 D,G | 8" x 10" Safety Relief Valve |
| II | Atwood & Morrill | Main Steam | B21-F028 A,B,C,D B21-F022 A,B,C,D | 26" Globe Valve |
| I | Rockwell International | Feedwater | B21-F032 A,B B21-F559 A,B | 20" Check Valve |
| II | Borg-Warner | Feedwater | B21-F560 A,B | 20" Gate Valve |
| I | Anchor/Darling | Reactor Recirculation | B33-F067 A,B | 24" Gate Valve |
| II | Anchor/Darling | Reactor Recirculation | B33-F023 A,B | 22" Gate Valve |
| III | Fisher Control | Reactor Recirculation | B33-F060 A,B | 24" Ball Valve |
| I | Borg-Warner | Reactor Water Clean-up | G33-F004 G33-F001 | 6" Gate Valve |

Valve Grouping (C-G)



| <u>Group #</u> | <u>Manufacturer</u> | <u>System</u> | <u>Valve #</u> | <u>Description</u> |
|----------------|------------------------|--------------------------|----------------|------------------------|
| I | Rockwell International | Residual Heat Removal | E12-F055 A,B | 6" Safety Relief Valve |
| I | Borg-Warner | High Pressure Core Spray | E22-F003 | 6" Check Valve |
| II | Borg-Warner | High Pressure Core Spray | E22-F026 | 6" Gate Valve |



NUCLEAR ENERGY SERVICES, INC.

DOCUMENT NO. 80A4420

PAGE 30 OF 30

Valve Grouping (C-G)

| <u>Group #</u> | <u>Manufacturer</u> | <u>System</u> | <u>Valve #</u> | <u>Description</u> |
|----------------|---------------------|-----------------------------------|----------------|--------------------|
| I | Borg-Warner | Reactor Core Isolation Cooling | E51-F502 | 6" Gate Valve |

3