ENCLOSURE 2

REVISION 17 TO SEQUOYAH NUCLEAR PLANT

UNIT 1 IN-SERVICE INSPECTION PROGRAM

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

SI-114.1

ASME SECTION XI INSERVICE INSPECTION PROGRAM UNIT 1

Revision 17

PREPARED/PROOFREAD BY: Ernie Crane DATE: 12/19/91

SIGNATURE: Ernie D. Crane

RESPONSIBLE ORGANIZATION: Site Quality Organization

APPROVED BY: [signature] DATE: 2-5-92

EFFECTIVE DATE: 2-12-92

REVISION DESCRIPTION: General revision to define organization responsibilities, incorporate support modifications, CCHx changeout, and residual heat removal (RHR) modifications; revised Exam Tables to better define weld numbers, support numbers, valves and other components subject to examination in ISI interval; revised Augmented Inspection Section: added augmented exam tables, responsible organization, inspections completed, and sequence of order; revised section on Successive Inspections, added Successive Inspection Table, Revised Notice of Indication (NOI) Section, added section on Corrective Action, revised Requests for Relief (RFR) to reflect Nuclear Regulatory Commission (NRC) Safety Evaluation Report (SER) Summary Evaluation, added five additional RFRs (ISI-14, -15, -16, -17, and -18), revised various ISI Drawings.

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OWNER STATEMENT

Owner: Tennessee Valley Authority

Address of Corporate Office: Chattanooga Office Complex
1101 Market Street
Chattanooga, Tennessee 37402-2801

Name and Address of Nuclear Power Plant: Sequoyah Nuclear Plant
P.O. Box 2000
Soddy Daisy, Tennessee 37379

Applicable Nuclear Power Units: Sequoyah Nuclear Plant, Unit 1

Commercial Operation Date: July 1, 1981

0.1 PREREQUISITES

0.1.1 When craft support of minor or similar maintenance (examples: scaffolding, insulation removal, buffing of welds using scotchbrite pads, and cleaning bolts) is required to facilitate performance of this Surveillance Instruction (SI), a work request (WR)/work order (WO) may be used. This WR/WO shall be processed in accordance with Sequoyah Standard Practice (SSP) 6.21 and the system code for SI-114.1 (system code 114.1) will be referenced on the WR.

Additional WRs are required to remove fire barrier insulation foam in sleeves, piping support clamps, steam generator support rings, reactor coolant pump flywheel access covers and plugs, etc.

0.1.2 Contact Radiological Control (RC) for radiation work permit (RWP)/ ALARA preplanning requirements.

0.1.3 Controlled copies of ASME Section XI Code Classification Drawings and ISI Drawings are issued through DCRM.

0.2 Precautions

0.2.1 Safety belts should be worn when working from scaffolding or ladders in accordance with AI-56.

0.2.2 Protective clothing, such as long-sleeve shirts or gloves, should be worn except in RWP areas when working around hot pipes and equipment.

0.2.3 Care should be exercised when climbing on plant structures and piping to ensure firm footing. Flexing of instrument lines and electrical conduit, for example, could cause equipment damage as well as bodily injury resulting from a fall. Walking on insulation shall be avoided.

0.2.4 Efforts should be made to ensure proper planning to reduce delays and radiation exposure in performance of the work.

0.2.5 Read and observe all applicable precautions as indicated in Sequoyah Nuclear Plant (SQN) Administrative Instruction AI-8 "Access to Containment," and Sequoyah Standard Practice (SSP) 12.8 "Foreign Material Exclusion."

1.0 STATEMENT OF APPLICABILITY

This program outlines requirements for performing the first 10-year interval inservice nondestructive examinations (NDEs) of the SQN Unit 1, American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 (equivalent) components (and their supports) containing water, steam, or radioactive material (other than radioactive waste management systems). The program has been organized to fulfill inservice examination requirements of Standard (STD) 6.10 and comply as practical with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code.

In addition, this program implements applicable portions of the SQN Technical Specifications. The Inservice Inspection (ISI) Program satisfies the requirements of Surveillance Requirements 4.4.3.2.4, 4.4.5.0, and 4.4.10, and partially satisfies the requirements of Surveillance Requirement 4.0.5. Inspection frequencies are in accordance with Appendix A of this instruction and are generally scheduled to coincide with outage periods.

The requirements of this program are applicable beginning at the date of commercial operation of the unit.

2.0 PURPOSE

The ISI Program shall be used for planning inspections and examinations of SQN ASME Class 1, 2, and 3 (equivalent) components for the first ISI interval.

The examinations required by this program will establish acceptance of components for continued service.

3.0 INSPECTION INTERVALS AND INSPECTION PERIODS

The inservice examinations required by ASME Section XI shall be performed during each 10-year interval of service (inspection interval). The inspection intervals represent calendar years after the unit has been placed into commercial service. The commercial operation date for Unit 1 is July 1, 1981. The inspection interval may be decreased or extended by as much as one year. If the unit is out of service continuously for six months or more, the inspection interval may be extended for an equivalent period. This SI may be performed in any mode and is applicable for all operational modes.

The inspection interval shall be separated into three inspection periods. Except for examinations that may be deferred to the end of the inspection interval, the required examinations shall be performed in accordance with the following schedule.

Inspection Period	Minimum Examinations Completed, Percent	Maximum Examinations Completed, Percent
3 Years	16	34
7 Years	50	67
10 Years	100	100

The examinations deferred to the end of the inspection interval shall be completed by the end of the inspection interval.

On August 26, 1985 SQN Unit 1 went off line and remained off line until November 10, 1988. In accordance with IWA-2400(c) TVA will extend the first interval by 1,173 days. As a result of this extension, the first interval will end on September 15, 1994. The period duration will be as follows:

First period: July 1, 1981 through June 30, 1984

Second period: July 1, 1984 through September 15, 1991

Third period: September 16, 1991 through September 15, 1994

4.0 CODES OF RECORD AND CODE CASES

Preservice examinations were conducted in accordance with the 1974 Edition, Summer 1975 Addenda, of ASME Section XI. SI-114 was the Preservice Inspection (PSI) Program for SQN Units 1 and 2.

The SQN Unit 1 operating license (low power) was issued on February 29, 1980. Thus, as a minimum the ISI Program shall not be prepared to a Section XI Code Edition and Addenda prior to the 1974 Edition, Summer 1975 Addenda.

In accordance with 10 CFR Part 50.55a(g)(4)(iv), this program was prepared to meet the requirements of the 1977 Edition, Summer 1978 Addenda, of Section XI of the ASME Boiler and Pressure Vessel Code. Steam Generator Tubing Examination requirements are in accordance with Regulatory Guide 1.83, Rev. 1, and Technical Specification and Surveillance Requirement 4.4.5. In accordance with 10 CFR Part 50.55a(b)(2), the extent of examination for piping welds Examination Categories B-J and C-F is in accordance with the 1974 Edition, Summer 1975 Addenda of ASME, Section XI (Examination Categories B-J, C-F and C-G). Extent of examination is defined as criteria for the selection of Class 1 and Class 2 components for examination and as criteria for determining which Class 2 components may be exempt from examination. The extent of examination specifies the length of weld to be examined.

See Section 9.0 and Attachment 3 of this program for requests for relief information.

The qualifications of NDE examination personnel shall be as per paragraphs IWA-1600, IWA-2300, and Table IWA-1600-1 of ASME Section XI 1983 Edition, Winter 1985 Addenda. TVA will use the 1984 Edition of ASNT SNT-TC-1A for certification of NDE personnel as approved by the Nuclear Regulatory Commission's (NRC's) letter from S. C. Black to O. D. Kingsley, Jr., dated January 18, 1990. (TAC No. 72833)

TVA will use the following Code cases which have been approved by the NRC per Regulatory Guide 1.147 and as outlined on the applicable NDE procedure:

N-209, Conditional Acceptance of Identifiable Isolated or Random Rounded Indications

N-234, Time Between Ultrasonic Calibration Checks

N-235, Ultrasonic Calibration Checks per Section V

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

N-308, Documentation of Repairs and Replacements of Components in Nuclear Power Plants

N-401-1, Eddy Current Examination

N-402, Eddy Current Calibration Standard Material

N-416, Alternative Rules for Hydrostatic Testing of Repair or Replacement of Class 2 Piping

N-425, Extent of VT-1 Examinations, Category B-G-2 of Table IWB-2500-1.

N-435-1, Alternative Examination Requirements for Vessels with Wall Thickness 2 Inches or Less

N-461, Alternative Rules for Piping Calibration Block Thickness

Code Cases N-341, Certification of Level III NDE Examiner, and N-356, Certification Period for Level III NDE Personnel, were authorized for TVA use by NRC by memorandum from Gary L. Zech to S. A. White dated January 25, 1988.

Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, was authorized for TVA use by NRC by memorandum from Suzanne C. Black to O. D. Kingsley, Jr., dated December 13, 1989.

TVA will utilize Regulatory Guide 1.150, Rev. 1, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," for its examinations as outlined in the applicable NDE procedure.

5.0 METHOD OF IMPLEMENTATION AND RESPONSIBILITIES

Any revisions initiated by other groups shall be submitted to ISI Programs for approval prior to incorporating the revisions into this program.

5.1 ISI Programs

5.1.1 ISI Program Responsibilities:

A. Defining ASME Section XI Code Classification 1, 2, and 3 (equivalent) boundaries in accordance with 10 CFR 50.2(v), Regulatory Guide 1.26 R3, ASME Section XI and guidelines in 10 CFR 50.55a.

B. Preparing/revising ASME Section XI color-coded boundary classification drawings to identify the ASME Section XI Code Classification 1, 2, and 3 (equivalent) boundaries within each plant system as defined in 5.1.1.A. These drawings are to be used for all ASME Section XI program activities only. See Attachment 1 for drawing list.

C. Preparing/revising ASME Section XI drawings which identify the Class 1, 2, and 3 equivalent components (including supports) that require inservice and/or preservice nondestructive examination (NDE) to satisfy ISI Program requirements. See Attachment 1 for drawing list.

D. Preparing/revising SQN ISI Programs as required.

E. Ensuring that these programs provide detailed instructions for ISI including the following information as a minimum:

1. The ASME Section XI Code of Record for ISI.

2. The inspection interval.

3. A list of the Section XI boundary classification drawings (for ISI only).

4. A list of the ISI drawings.

5. An examination schedule in tabular form and provide the 40-year sample, the 10-year interval sample, and the samples for the three periods within the interval.

6. Augmented examination requirements based on other codes/standards, regulatory guides, etc.

7. The NDE method to be used for each component.

8. The ASME Section XI examination category for each component.

9. Copies of all requests for relief.

10. Name and address of owner.

11. Name and address of generating plant.

12. Name or number designation of the unit.

13. Commercial operating date for the unit.

14. A description of the system for maintaining status of completed work.

15. Discussion of scan plans which provide details of required component examinations such as component identifier, NDE procedure, calibration block, drawing number, etc.

F. Ensuring that Notification of Indication (NOI) Form is included as an appendix within ISI programs.

G. Preparing/revising component support tables, identifying each support, its types, and its operations characteristics.

H. Providing PSI and/or ISI ASME Section XI interpretations as requested by various site organizations or as required in program development and implementation.

I. ISI Programs shall be responsible for preparing and revising the initial piping component support examination boundaries, Appendix D.

5.1.2 ISI Programs PRISIM Responsibilities:

A. Providing a list of components requiring examination during each period of the 10-year interval that includes the components that must be examined during a specific refueling outage. This list will be provided to the Site Quality Organization and the Inspection Services Organization in accordance with plant schedules.

B. Providing any additional samples required due to examinations performed.

C. Approving scan plans and revisions affecting component selection or the NDE method.

5.1.3 ISI Programs Request for Relief Responsibilities:

A. Determining if a request for relief is required because of areas which are inaccessible or partially inaccessible for examination or because it is determined that conformance with ASME Code requirements is impractical.

B. Ensuring that requests for relief include supporting information on the need for relief and any alternate examinations are documented.

C. Submitting Requests for Relief to Site Licensing.

5.2 The Inspection Services Organization (ISO)

5.2.1 ISO Shall be Responsible for:

A. Preparing/revising PRISIM data base to include all components within the ISI Program Instruction for SQN.

B. Preparing/revising scan plans for each refueling outage of an inspection interval utilizing PRISIM.

C. Providing Level III approval of each scan plan revision and maintaining a scan plan revision history log.

D. Submitting scan plans to the Site Quality Organization in accordance with plant schedules.

E. Any areas that are inaccessible or partially inaccessible for examination will be evaluated by NDE Level III personnel to determine if a request for relief should be submitted to the NRC. This information shall be provided to ISI Programs.

F. NDE Level III shall compare completed examination results to the requirements of the scan plan, identify any limitations or impractical examinations, and provide notification to ISI Programs for possible action in accordance with Section 19.0 of this program.

5.2.2 ISO Responsibilities When NDE Performed by Contractors:

A. Ensuring the adequacy of prospective contractor's QA programs in accordance with the TVA NQA Plan.

B. Ensuring the preservice and/or inservice examinations are performed in accordance with TVA NDE procedures or performed in accordance with contractor procedures that have been authorized for use by ISO.

C. Contract preparation and administration will be the responsibility of ISO. Inspection plans submitted by outside contractors shall be reviewed and approved by ISO prior to use.

5.3 The Site Quality Organization (SQO)

5.3.1 SQO Responsibilities on Scheduled Examinations:

Providing a list of the components to be scheduled for examination during each refueling outage to the Inspection Services Organization. This will be provided in accordance with plant schedules.

5.3.2 SQO Responsibilities on Distribution of Scan Plans

Submitting copies of the approved scan plan to site management and to the authorized Nuclear Inservice Inspector (ANII).

5.3.3 SQO Responsibilities on Performance of NDE

A. Performing NDE in accordance with ISI Program Instructions, applicable scan plan, and NDE procedures utilizing personnel certified in accordance with QMP-102.4.

B. Ensuring that the services of an Authorized Inspection Agency (AIA) are used when performing Code-required examinations through a contract established with an AIA. Duties of the AIA inspector are described in IWA-2000, Section XI, of the ASME Code.

C. Arranging for the AIA representative to have access to any documents and all parts of the plant and offices (subject to plant security and health physics requirements) necessary for performing his required duties.

D. Notifying the ANII prior to starting examinations.

E. Preparing NOIs for examination results which, when evaluated by Level II or III examination personnel, do not meet the acceptance criteria of the NDE procedure. NOIs do not apply to PSI NDEs following repair and replacement activities.

F. Ensuring that NOIs are forwarded to Plant Management as notification of discrepant conditions and for disposition. A copy is to be sent to ISI Programs.

G. Ensuring that NOIs are closed by performing followup examinations as required by the disposition.

H. Documenting follow-up examination by recording examination report number on NOI form prior to closure.

I. Ensuring that original of the closed NOI is filed with the original examination report and a copy is sent to ISI Programs.

J. Preparing examination reports for completed examinations in accordance with the format in the NDE procedure.

1. Ensuring that all scan plan examinations are completed prior to the completion of each refueling outage.

2. Ensuring that status of completed examinations are recorded in the scan plan.

3. Ensuring that report number, date of examination, examiners initials and any comments or discrepancies (NOI number) are recorded in the scan plan.

4. Submitting the original examination reports to DCRM as QA records.

K. Ensuring that ISI Programs is notified of any areas that are inaccessible or partially inaccessible for examination. This information will be evaluated by Level III examination personnel to determine if a request for relief should be submitted to the NRC. This information shall be provided to ISI Programs.

L. An NDE Level II or III individual shall evaluate the NDE results in accordance with ASME Section XI, IWA-3000. The results shall be compared with recorded results of the preservice NDE and previous inservice NDE results.

5.3.4 SQO Responsibilities on Reports:

A. Preparing ISI Summary Report including Form NIS-1 in accordance with requirements of ASME Section XI IWA-6000.

B. Ensuring that Form NIS-1 is signed by the ANII.

C. Submitting Inservice Inspection Summary Report within 90 days of the completion of the inservice inspection (refueling outage) to Site Licensing.

D. Following each refueling outage when inservice examinations are performed, the Site Final Report Cover Sheet in Appendix B shall be completed by SQO and submitted to the plant with the final report discussed in Section 16.0.

E. Submitting the Final Report which contains the Summary Report to DCRM as a QA record.

5.3.5 SQO Responsibilities When NDE Performed by Contractors:

A. Ensuring that contractors are familiar with the ISI Program Instruction being used.

B. Ensuring contractors are certified using guidelines of GMP-102.4.

C. Maintaining surveillance of contractor ISI or PSI activities to verify compliance with the contract and applicable ISI Program Instruction requirements.

5.3.6 SQO Responsibilities With PSI Conducted in Manufacturer's Shop

SQO is responsible for ensuring records are identified and documented as are TVA-generated reports in accordance with this instruction. Other report formats may be utilized provided the minimum required information is contained therein.

5.3.7 SQO Responsibilities for Component Support Boundaries

SQO shall be responsible for determining the examination boundary for new or modified supports.

5.4 Site Document Control and Records Management (DCRM)

DCRM shall be responsible for issuing controlled copies of ASME Section XI Code Classification Drawings and ISI Drawings to specified distribution lists.

DCRM shall be responsible for providing controlled copies of ISI Program instructions to SQO, the Authorized Nuclear Inspection/ Authorized Nuclear Inservice Inspector (ANI/ANII), ISI Programs Supervisor, and to the Site Licensing Manager as requested.

5.5 Steam Generator Maintenance and Technology (SGMT)

SGMT shall be responsible for ensuring the adequacy of the technical and administrative requirements related to steam generator tubing contained in Sections 7.3.8, 20.4, 20.6, and 20.13.

SGMT is responsible for the selection of steam generator tubes to be examined for Section XI credit.

5.6 Site Licensing Manager

Site Licensing Manager is responsible for submitting ISI Program Instructions, revisions, requests for relief and reports to the NRC for review and/or approval. All ASME Section XI correspondence shall include ISI Programs on distribution.

5.7 Plant Manager

Plant Manger is responsible for approving and issuing SI-114.1.

The Plant Manager is responsible for designating the organization responsible for preparing dispositions for NOIs.

5.8 Site Engineering

Site Engineering is responsible for designing, fabricating, erecting, and constructing all structures, systems, and components to quality standards commensurate with the importance of the safety function to be performed. Design for access in accordance with the ASME Code, Section XI must be satisfied.

Site Engineering is responsible for evaluating and providing a disposition for indications initiated by a Notification of Indication (NOI).

5.9 PSI Conducted in Manufacturer's Shop

If examinations were performed in the manufacturer's shop, they may serve as PSI examinations provided:

A. They were performed after hydrostatic test of vessel.

B. They were conducted under conditions and with methods expected to be employed for subsequent ISI examinations.

5.10 Implementation

ISI Programs, ISO, and SQO utilize a computerized data base system, PRISIM, for status and Section XI credit of completed ISI examinations. PRISIM data base is utilized to provide a listing of components requiring examination during the 10-year ISI interval, each period and scan plans for a specific refueling outage.

All specific NDE procedures used during the inspection program shall be reviewed and approved in accordance with the NDE Procedures Manual, QMP-110.5. NDE procedures will be implemented in accordance with SSP 3.1.

Whenever an unacceptable indication is discovered, Section 17.0 of this procedure and the form in Appendix C shall be utilized. In those cases where an outside contractor is furnishing inservice examination services, the contractor will normally initiate the form in Appendix C under the supervision of the SQO Representative. See Section 17.0 of this program.

5.11 Scan Plan

The scan plan should include as a minimum references to components to be examined, methods of examinations, examination procedures, and calibration standards. Prior to performing examinations on a system or component, the scan plan shall be approved by ISI Programs and an NDE Level III individual from ISO. ISO shall submit scan plans to SQO in accordance with plant schedules. SQO shall submit copies of the approved scan plan to Site Management and to the Authorized Nuclear Inservice Inspector. When inservice examinations are implemented by instructions other than this program (e.g., maintenance instructions), copies of the instruction

data sheets shall be submitted to SQO by the performing organization to allow these examinations, if applicable, to be included in the reports discussed in Section 16.0.

During implementation phases (usually outage periods), it may become necessary to change the scan plan. Scan plan changes can be initiated by SQO, ISO, and ISI Programs, or by other personnel involved with the implementation of the scan plan. All changes shall be coordinated with an SQO Representative and, as needed, with the appropriate plant planning and scheduling personnel for facilitating the use of supporting craft personnel. Revisions to the scan plan shall be controlled in the same manner as the original. ISO shall maintain a scan plan revision history log. However, interim working copies may be hand written to allow examinations to be performed before a formal revision is issued. These changes shall be approved by an ISI Programs Specialist and an NDE Level III. Both individuals shall sign and date all such changes.

5.12 Piping Configuration Changes

When major portions of existing piping are replaced or whole new systems are added, a system walkdown should be performed by ISI Programs to identify the piping configuration, welds, and components that will be included in the inspection program.

If variations in configuration are discovered or modifications (including additions and deletions), replacements, or repairs are made during the service life of the unit, these changes shall be marked on field corrected copies of the appropriate drawings. These field corrected copies shall be used in the performance of examinations. Copies of these field corrected drawings shall be transmitted to ISI Programs by SQO using a drawing transmittal form as in Appendix E of this program. A file and transmittal number log of the corrected drawings and transmittal forms shall be maintained by SQO for future reference. ISI Programs shall be responsible for reviewing the proposed change, revising the drawings as necessary, and issuing the revised drawing prior to the next refueling outage. The transmittal form shall be returned to the SQO after the referenced drawings have been revised by an ISI Programs representative. The ISO scan plan shall be revised as necessary to reflect these field corrected drawings (interim working drawings) and any PSI/ISI examinations performed due to these variations in configuration.

6.0 ABBREVIATIONS AND DEFINITIONS

6.1 AIA - Authorized Inspection Agency.

6.2 AI - Authorized Inspector (may denote an ANI or ANII).

6.3 ANI - Authorized Nuclear Inspector.

6.4 ANII - Authorized Nuclear Inservice Inspector.

6.5 Type A Examination Boundary. The type of boundary to be used for those supports that are attached to building floor, walls, ceiling, or embedded plate.

6.6 Type B Examination Boundary: The type of boundary to be used for those supports that are attached to another existing support.

6.7 Type C Examination Boundary: The type of boundary to be used for those supports that are attached to existing steel.

6.8 Type D Examination Boundary: The type of boundary to be used for those supports that are attached to an intervening element.

6.9 Notice of Indication (NOI) - A form used to report any discrepant conditions found during the performance of nondestructive examination. Used for ISI examinations only.

6.10 Scan Plan - A schedule of examinations required to be performed during a particular period of time.

6.11 NDE - Nondestructive Examination.

6.12 WR/WO - Work Request/Work Order.

6.13 PER - Problem Evaluation Report.

6.14 Program for ISI Data Management (PRISIM) - A mainframe computer program for scheduling, tracking, maintaining status, and reporting of ISI examinations performed on a site/unit basis. It has the capability to allow categorization of these examinations by areas as needed for Code credit, NUREG credit, additional exam credit, augmented credit, etc.

6.15 Components - Denotes items in a power plant such as vessels, piping systems, pumps, valves, and component supports.

6.16 Normal Operation - Normal plant operation conditions include reactor startup, operation at power, hot standby, and reactor cooldown to cold shutdown conditions. Test conditions are excluded.

6.17 Pressure-Retaining Material - Applies to items such as vessel heads, nozzles, pipes, tubes, fittings, valve bodies, bonnets, disks, pump casings, covers, and boltings which join pressure-retaining items.

6.18 Repair - Those operations involving welding, heat treatment, or defect removal which are required to restore an item to a safe and satisfactory operating condition.

6.19 Replacement - Replacements include spare and renewal components, or parts of a component (e.g., valve body bonnet, disc, bolting). It also includes the addition of components such as valves and system changes such as rerouting of piping. For the purpose of this procedure, the term replacement shall apply where attachment to the pressure boundary is by welding or mechanical means.

6.20 FIR - Finding Identification Report

6.21 SCAR - Significant Corrective Action Reports

6.22 Examination - Denotes the performance of all visual observation and nondestructive examination.

6.23 Inservice Inspection (ISI) - Inspection required by ASME Section XI during the service lifetime of the power unit.

6.24 Nondestructive Examination (NDE) - Methods used for the detection and evaluation of discontinuities and the measurement of physical dimensions and condition of items. These methods include radiography, ultrasonic, eddy current, liquid penetrant, magnetic particle, inservice visual, and welding visual. These methods do not impair the serviceability of the items.

6.25 Preservice Inspection (PSI) - Inspections required by ASME Section XI to be completed prior to initial plant startup, or inspections required by ASME Section XI if a component is replaced, added, repaired or altered during the service lifetime of a power unit.

7.0 COMPONENTS SUBJECT TO EXAMINATION--ASME CODE CLASS 1 (EQUIVALENT)

The ASME Code Class 1 (equivalent) components to be examined during the inspection interval are outlined in the following paragraphs. The entire length of each weld described shall be examined for the first 10-year ISI interval unless otherwise noted. When a portion of a weld length is to be examined during an inspection period, the areas examined each inspection period shall be documented on the examination data sheets.

Components exempted from examination are discussed in Section 7.7 of this program.

Appendix A, Table A, provides additional information such as reference drawing numbers and ASME Section XI, Table IWB-2500-1, examination categories.

7.1 Reactor Vessel

7.1.1 Reactor Vessel Seam Welds

7.1.1.1 Circumferential Shell Welds

There are four circumferential welds (each approximately 50 feet in length) in the vessel cylindrical shell, three of which are located behind the thermal shield. The entire length of each of these welds will be ultrasonically examined during

the third inspection period using remote inspection devices from the vessel ID with the core internals removed.

The vessel shell sections are machined forgings fabricated of A-508, Class 2, manganese-molybdenum steel and are clad with weld deposited austenitic stainless steel.

7.1.1.2 Longitudinal Shell Welds

There are no longitudinal shell welds associated with the reactor vessel.

7.1.1.3 Closure Head Circumferential Weld

The entire length of the closure head cap weld (approximately 41 feet in length) will be manually ultrasonically examined from the head outside diameter. The length of weld to be examined each inspection period is included in Table A of Appendix A.

During the conduct of the Unit 1 preservice examination a flaw indication in the closure head weld was observed (weld 09-10). Flaw evaluation and acceptability was based on Code Case N-209 (see Nonconforming Report 6P for additional information concerning flaw evaluation and location). In addition to the examinations above, the flaw indication volume shall be examined during each inspection period. This provides examination of the flaw indication volume for three successive inspection periods. Should these successive examinations reveal that the flaw indication has remained essentially unchanged, then the examination frequency may revert to that of Examination Category B-A of Table IWB-2500-1 of ASME Section XI. If the successive examinations reveal that the flaw indication size has increased, then technical justification shall be presented to NRC for allowing continued operations.

The closure head ring is fabricated of A-508, Class 2, manganese-molybdenum steel. The closure head hemispherical section is fabricated of A-533, Gr. B, Class 1, manganese-molybdenum steel. Both sections are clad with weld deposited austenitic stainless steel.

7.1.1.4 Lower-Head Circumferential Weld

The entire length of the lower head circumferential weld (approximately 38 feet in length) will be ultrasonically examined during the third inspection

period using remote inspection devices from the vessel inside diameter with the core internals removed (see Request for Relief ISI-5).

The lower-head sections are fabricated of A-533, Gr. B, Class 1, manganese-molybdenum steel, and are clad with weld deposited austenitic stainless steel.

7.1.1.5 Closure Head Meridional Weld

The closure head does not include any meridional welds.

7.1.1.6 Lower-Head Meridional Welds

There are six meridional welds (each approximately 4 feet in length) located in the lower head. The entire length of each of these welds will be ultrasonically examined during the third inspection period using remote inspection devices from the vessel inside diameter with the core internals removed.

The lower-head section material is fabricated of A-533, Gr. B, Class 1, manganese-molybdenum steel and clad with weld deposited austenitic stainless steel.

7.1.1.7 Shell-To-Flange Weld

The entire length of the shell-to-flange weld (approximately 50 feet in length) will be ultrasonically examined from the vessel inside diameter using remote inspection devices during the third inspection period (see Request for Relief ISI-10).

The vessel flange section is fabricated of A-508, Class 2, manganese-molybdenum steel and is clad internally and on the gasket face with weld deposited austenitic stainless steel.

7.1.1.8 Closure Head-To-Flange Weld and Flex Area

The entire length of the head-to-flange weld (approximately 45 feet in length) will be manually, ultrasonically examined from the head outside diameter. The entire length of the closure head-flex area will be surface examined during the inspection interval. The length of weld to be examined each inspection period is included in Table A of Appendix A.

The closure head flange section is fabricated of A-508, Class 2, manganese-molybdenum steel and is clad internally and on the gasket face with weld deposited austenitic stainless steel.

7.1.1.9 Repair Welds

Base metal weld repairs in the beltline region where the repair depth exceeds 10 percent nominal of the vessel wall shall be ultrasonically examined. There are no base metal repair welds in the beltline region of the Unit 1 reactor vessel.

7.1.2 Reactor Vessel Nozzle-To-Vessel Welds

There are four inlet nozzles (27.500 inch ID) and four outlet nozzles (29.937-inch ID). The eight nozzle-to- vessel welds will be ultrasonically examined from the inside diameter using remote inspection devices.

The four outlet nozzle-to-vessel welds shall be ultrasonically examined from the nozzle bore when the upper internals are removed during the first inspection period. The inlet nozzles are not accessible until the core barrel is removed. The four inlet nozzle-to-vessel welds shall be ultrasonically examined from the nozzle bore and from the vessel shell inside diameter during the third inspection period when the core barrel has been removed. The outlet nozzle-to-vessel welds shall also be ultrasonically examined from the vessel shell inside diameter during the third inspection period when the core barrel has been removed.

A proposed examination schedule change has been submitted to NRC in accordance with Request for Relief ISI-14.

The nozzle forgings are fabricated of A-508, Class 2, manganese-molybdenum steel and are clad with weld deposited austenitic stainless steel.

7.1.3 Reactor Vessel Nozzle Inside Radius Section

The eight nozzle inside radius sections (including the outlet nozzle integral extensions) shall be ultrasonically examined at the same time as the examination of the nozzle-to-vessel welds (see Section 7.1.2).

Nozzle forging material is identified in Section 7.1.2 of this program.

7.1.4 Reactor Vessel Partial Penetration Welds

The vessel includes 4 Upper-Head Injection (UHI) nozzles (capped in Unit 1 Cycle 4 UHI removal), 1 vent pipe nozzle, 78 control rod drive nozzles, and 58 instrumentation nozzles with partial penetration welds. Approximately 25 percent of

each group of nozzles shall be visually examined from the vessel outside diameter in accordance with visual examination method VT-2. This 25 percent shall include 1 UHI nozzle, 1 vent pipe nozzle, 20 control rod drive nozzles, and 15 instrumentation nozzles. Examination of these nozzles during the inspection interval shall be distributed among the inspection periods in accordance with Table A of Appendix A.

7.1.5 Reactor Vessel Nozzle-To-Safe End Welds

The inlet and outlet nozzle-to-safe end welds shall be ultrasonically examined from the inside diameter using remote inspection devices. The ultrasonic examination shall be performed at the same time as the examination of the nozzle-to-vessel welds conducted from the nozzle bore (see Section 7.1.2).

All of the nozzle-to-safe end welds shall also be liquid penetrant examined during the inspection interval coincident with the ultrasonic examinations. The SQN Unit 2 Report--"Evaluation of Cracking in Reactor Vessel Nozzle Stainless Steel Buttering"--states that Unit 1 nozzle-to-safe end welds RC-09-SE and RC-32-SE shall be examined during the first inspection interval (see memorandum from D. W. Wilson to H. L. Abercrombie, dated August 1, 1986 (L18 860730 899)). The remaining nozzles will be examined during the normal ISI intervals.

Each nozzle safe end weld is a stainless steel type 304 weld build up (buttering).

7.1.6 Reactor Vessel Pressure Retaining Bolting Larger Than Two Inches In Diameter

During each refueling outage all closure studs, nuts, and washers are removed. All of the 54 closure studs, nuts, washers, and ligaments between the vessel flange stud holes shall be examined during the inspection interval in accordance with Table A of Appendix A. The closure nuts shall be magnetic particle examined. The closure studs shall be ultrasonically and magnetic particle examined. The ligaments between the vessel flange stud holes shall be ultrasonically examined. The closure washers shall be visually examined in accordance with visual examination method VT-1. The bolting may be examined either (a) in place under tension, (b) when the connection is disassembled, or (c) when the bolting is removed.

Provisions for this examination are included in 0-MI-MRR-068-005.0. Where needed the examinations of the studs should be identified with the particular stud in accordance with the unique identification system for the studs and nuts.

The 7-inch diameter studs, nuts, and washers are fabricated of SA-540, Gr. B23 Nickel, chrome-molybdenum steel.

7.1.7 Reactor Vessel Pressure Retaining Bolting Two Inches And Smaller In Diameter

There is no pressure retaining bolting two inches or smaller in diameter.

7.1.8 Reactor Vessel Integrally Welded Attachments

There are no integrally welded vessel supports.

7.1.9 Reactor Vessel Interior

The vessel interior shall be visually examined in accordance with visual examination method VT-3. These examinations shall include the space above and below the reactor core that is made accessible for examination by removal of components during normal refueling outages. The examinations shall be performed at the first refueling outage and subsequent refueling outages at approximately three-year intervals.

7.1.10 Reactor Vessel Removable Core Support Structures

The visually accessible attachment welds and visually accessible surfaces of the core support structure shall be visually examined in accordance with visual examination method VT-3. This examination may be deferred to the third inspection period. The structure shall be removed from the reactor vessel for examination. The removal of the core support structure is implemented by MI-1.4.

7.1.11 Reactor Vessel Control Rod Drive Housings

There are 78 control rod drive housings penetrating the closure head. Each housing includes a pressure retaining dissimilar metal butt weld.

There are 20 peripheral control rod drive housings. Two (10 percent) of the peripheral housing butt welds shall be ultrasonically examined during the inspection interval in accordance with Table A of Appendix A. The housings consist of a 6-inch OD adapter of SA-182, 304SS and a 4-inch OD body of SA-167.

7.1.12 Reactor Vessel Auxiliary Head Adapters

Each of the four auxiliary head adapters includes a pressure retaining dissimilar metal weld. The four dissimilar metal welds shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

The adapters consist of a SA-182, 304SS upper portion and a SB-166 lower portion. See Section 7.4.4.6 for information on RV auxiliary head adapter circumferential pipe cap welds. The pipe cap welds are included in the reactor coolant system.

7.2 Pressurizer

7.2.1 Pressurizer Circumferential Shell-To-Head Welds

There are two circumferential shell-to-head welds, each approximately 24 feet in length. The entire length of each weld shall be ultrasonically examined during the inspection interval in accordance with Table A of Appendix A.

All vessel shell and head sections are fabricated of SA-533, Class 2, manganese-molybdenum steel and are clad with austenitic stainless steel.

7.2.2 Pressurizer Longitudinal Shell-To-Head Welds

There is one longitudinal weld intersecting each circumferential shell-to-head weld. One foot of each longitudinal weld shall be ultrasonically examined during the inspection periods in accordance with Table A of Appendix A. The one foot of weld examined during each examination shall include the length of weld as measured from the point of intersection of the longitudinal weld with the circumferential head-to-shell weld.

The vessel shell section material is identified in Section 7.2.1.

7.2.3 Pressurizer Circumferential and Meridional Head Welds

There are no pressurizer circumferential or meridional head welds.

7.2.4 Pressurizer Nozzle-To-Vessel Welds and Nozzle Inside Radius Section

The pressurizer includes three 6-inch safety valve nozzles, one 6-inch relief valve nozzle, one 4-inch spray nozzle, and one 14-inch surge nozzle. All of the nozzle-to-vessel welds, including nozzle inside radius section, shall be ultrasonically examined during the inspection interval in accordance with Table A of Appendix A.

The nozzles are fabricated of SA-508, Class 2, manganese-molybdenum steel.

7.2.5 Pressurizer Heater Penetration Welds

There are 78 heater penetration welds located in the pressurizer lower head. Approximately 25 percent of the

heater penetration welds (20 welds) shall be visually examined during the inspection interval in accordance with visual examination method VT-2. Examination of these penetrations during the inspection interval shall be distributed among the inspection periods in accordance with Table A of Appendix A.

7.2.6 Pressurizer Nozzle-To-Safe End Welds

Each of the six nozzles identified in Section 7.2.4 includes a welded forging safe end. All of the nozzle-to-safe end welds shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

Safe end connections are SA-182, Gr. F-316L forgings.

7.2.7 Pressurizer Pressure Retaining Bolting Larger Than Two Inches In Diameter

There is no pressure retaining bolting larger than 2 inches in diameter.

7.2.8 Pressurizer Pressure Retaining Bolting Two Inches And Smaller In Diameter

All of the pressurizer manway bolts shall be visually examined in accordance with visual examination method VT-1. The examinations during the inspection interval shall be in accordance with Table A of Appendix A. The bolts may be examined in place under tension or when the bolts are removed. It is preferable to perform the examinations when the bolts are removed if possible. Removal of the manway cover is performed in accordance with 0-MI-MXX-068-004.0 and provides for examination of bolting. The manway includes 16 bolts at 1.88 inches in diameter.

7.2.9 Pressurizer Integrally Welded Support Attachments

7.2.9.1 Pressurizer Support Skirt

The entire length of the pressurizer support skirt-to-vessel weld (approximately 23 feet in length) shall be surface examined (magnetic particle) during the inspection interval in accordance with Table A of Appendix A.

The support skirt is approximately 1.5 inches thick and is fabricated of SA-516, Gr. 70, carbon steel plate.

7.2.9.2 Pressurizer Seismic Lugs

There are four (4) integrally welded seismic lugs on the pressurizer, whose design base thickness is greater than 5/8 inch. All four (4) lugs shall be surface examined during the inspection interval in accordance with Table A of Appendix A.

7.3 Steam Generators (4)

7.3.1 Steam Generator Primary Side Circumferential And Meridional Head Welds

There are no steam generator primary side circumferential or meridional head welds.

7.3.2 Steam Generator Primary Tubesheet-To-Head Weld

Each steam generator includes a tubesheet-to-head weld (approximately 36 feet in length). The entire length of each weld shall be ultrasonically examined during the inspection interval. The entire length of a tubesheet-to-head weld shall be examined during the first and second inspection periods. The entire length of the two remaining welds shall be examined during the third inspection period. See Table A of Appendix A for examinations during the inspection interval.

The tube plate is a SA-508, Class 2, steel forging, clad on the primary side with NiCrFe alloy. The hemispherical chamber is a SA-216, Gr. WCC casting, clad with austenitic stainless steel.

7.3.3 Steam Generator Primary Nozzles Inside Radius Section

The steam generator primary nozzles are an integral part of the vessel. Each steam generator consists of two integrally cast nozzles. The nozzles are fabricated to SA-216, Gr. WCC. The primary nozzles inside radius section of all nozzles shall be ultrasonically examined. In accordance with the SQN Unit 1 NRC Safety Evaluation Report dated February 7, 1991, Enclosure Paragraph 2.3 (page 4) states "that delaying the volumetric examination of the nozzle sections until the third inspection period of the first inspection interval and then following the Code requirements is acceptable." See Request for Relief ISI-6.

7.3.4 Steam Generator Primary Nozzle-To-Safe End Welds

Each steam generator includes two nozzles with buttered safe ends. Each nozzle-to-safe end weld from each generator shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

The nozzles have buttered 308L safe ends.

7.3.5 Steam Generator Primary Pressure Retaining Bolting Larger Than Two Inches In Diameter

There is no pressure retaining bolting larger than two inches in diameter.

7.3.6 Steam Generator Primary Pressure Retaining Bolting Two Inches And Smaller In Diameter

Each steam generator includes two manways. Each manway includes 16 connections at 1.88 inches in diameter. All the manway bolting (all bolts, studs, and nuts) from each steam generator manway shall be visually examined in accordance with visual examination method VT-1. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

The bolting may be examined in place under tension or when they are removed. It is preferable to perform the examinations when the bolting is removed if possible. Removal of bolting is performed in accordance with 0-MI-MXX-068-003.0 and provides for examination of bolting.

7.3.7 Steam Generator Primary Integrally Welded Support Attachments

There are no integrally welded vessel supports. The four main support pads are secured to the steam generator field support system by high strength bolts.

7.3.8 Steam Generator Tubing

Steam Generator Maintenance and Technology (SGMT) shall be responsible for ensuring the adequacy of the technical and administrative requirements related to steam generator tubing contained in this program.

Each steam generator tube bundle consists of 3,388 NiCrFe alloy (Inconel SB-163) U-tubes of 0.875 O.D. by 0.050 average wall thickness.

During the inspection interval, steam generator tubing shall undergo eddy current examinations. Other NDE methods may be utilized to improve characterization of an indication but eddy current shall be utilized to determine compliance with acceptance criteria. These examinations shall be performed in accordance with the SQN Technical Specifications and satisfy Surveillance Requirement 4.4.5.0. The initial and additional samples (as required) identifying the steam generator tubes to be examined shall be supplied by SGMT for inclusion in the scan plan. The Steam Generator Maintenance and Technology Supervisor is responsible for the selection of steam generator tubes to be examined.

7.3.8.1 Steam Generator Sample Selection and Inspection

Each steam generator shall be determined operable during the shutdown by selecting and inspecting at least the minimum number of steam generators specified in Table 1 of Appendix A.

7.3.8.2 Steam Generator Tube Sample Selection and Inspection [C.2]

The steam generator tube minimum sample size inspection result classification, and the corresponding action required shall be as specified in Table 2 of Appendix A. The ISI of steam generator tubes shall be performed at the frequencies specified in Section 7.3.8.3, and the inspected tubes shall be verified acceptable per the acceptance criteria of Section 7.3.8.4. The full length of a minimum of S (as defined by Appendix A, Table 2) tubes selected for inspection will be examined [TVA commitment to NRC L44 850617 801]. Note that the hot leg inspection sample and the cold leg inspection sample do not necessarily involve the same tube, (i.e., it does not preclude making separate entries from the hot and cold leg sides and selecting different tubes on the hot leg and cold leg sides to meet the minimum sample). The tubes selected for each ISI shall include at least 3 percent of the total number of tubes in all steam generators; the tubes selected for these inspections shall be selected on a random basis except:

a. Where experience in similar plants with similar water chemistry indicates critical areas to be inspected, then at least 1/2S (as defined by Appendix A, Table 2) tubes inspected shall be from these critical areas.

b. The first sample of tubes selected for each inspection (subsequent to the PSI) of each steam generator shall include:

   1. All nonplugged tubes that previously had detectable wall penetrations greater than 20 percent.

   2. Tubes in those areas where experience has indicated potential problems.

   3. A tube inspection (pursuant to Section 7.3.8.4.a.8) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this

shall be evaluated and recorded and an adjacent tube shall be selected and subjected to a tube inspection.

c. The tubes selected as the second and third samples (if required by Table 2 of Appendix A) during each ISI may be subjected to a partial tube inspection provided:

1. The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found.

2. The inspections include those portions of the tubes where imperfections were previously found.

d. The results of each sample inspection shall be classified into one of the following three categories:

Category	Inspection Results
C-1	Less than 5 percent of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1 percent of the total tubes inspected are defective, or between 5 and 10 percent of the total tubes inspected are degraded tubes.
C-3	More than 10 percent of the total tubes inspected are degraded tubes or more than 1 percent of the inspected tubes are defective.

NOTE: In all inspections, previously degraded tubes must exhibit significant (10 percent) further wall penetrations to be included in the above percentage calculations.

7.3.8.3 Inspection Frequencies

The above required ISIs of steam generators shall be performed at frequencies indicated in the following paragraphs and in such a manner that the maximum allowable time between eddy current inspections on individual steam generators is 72 months.

a. The first ISI shall be performed after 6 Effective Full Power Months but within 24 calendar months of initial criticality. Subsequent ISIs shall be performed at intervals of not less than 12 nor more than 24 calendar months after the previous inspection. If two consecutive inspections following service under All Volatile Treatment conditions, not including the PSI, result in all inspection results falling into the C-1 category or if two consecutive inspections demonstrate that previously observed degradation has not continued and no additional degradation has occurred, the inspection interval may be extended to a maximum of once per 40 months.

b. If the results of the ISI of a steam generator conducted in accordance with Table 2 of Appendix A at 40-month intervals fall in Category C-3, the inspection frequency shall be increased to at least once per 20 months. The increase in inspection frequency shall apply until the subsequent inspections satisfy the criteria of section 7.3.8.3.a; the interval may then be extended to a maximum of once per 40 months.

c. Additional, unscheduled ISIs shall be performed on each steam generator in accordance with the first sample inspection specified in Table 2 of Appendix A during the shutdown subsequent to any of the following conditions.

1. Primary-to-secondary tubes leaks (not including leaks originating from tube-to-tube sheet welds) in excess of the limits of Technical Specification 3.4.6.2.

2. A seismic occurrence greater than the Operating Basis Earthquake.

3. A loss-of-coolant accident requiring actuation of the engineered safeguards.

4. A main steam line or feedwater line break.

7.3.8.4 Acceptance Criteria

a. As used in Section 7.3.8:

1. Imperfection means an exception to the dimensions, finish or contour of a tube from that required by fabrication drawings

or specifications. Eddy-current testing indications below 20 percent of the nominal tube wall thickness, if detectable, may be considered as imperfections.

2. Degradation means a service-induced cracking, wastage, wear or general corrosion occurring on either inside or outside of a tube.

3. Degraded Tube means a tube containing imperfections greater than or equal to 20 percent of the nominal wall thickness caused by degradation.

4. Percent Degradation means the percentage or the tube wall thickness affected or removed by degradation.

5. Defect means an imperfection of such severity that it exceeds the plugging limit. A tube containing a defect is defective.

6. Plugging Limit means the imperfection depth at or beyond which the tube shall be removed from service because it may become unserviceable prior to the next inspection and is equal to 40 percent of the nominal tube wall thickness.

7. Unserviceable describes the condition of a tube if it leaks or contains a defect large enough to affect its structural integrity in the event of an Operating Basis Earthquake, a loss-of-coolant accident, or a steam line or feedwater line break as specified in Section 7.3.8.3.c.

8. Tube Inspection means an inspection of the steam generator tube from the point of entry (hot leg side) completely around the U-bend to the point of exit (cold leg side) (i.e., tube end to tube end). Entries may be made from either the hot or cold leg sides and separate entries on the hot leg and cold leg sides on different tubes are allowed.

9. Preservice Inspection (PSI) means a tube inspection of each steam generator tube performed by eddy current techniques prior to service to establish a baseline

condition of the tubing. This inspection shall be performed prior to initial power operation using the equipment and techniques expected to be used during subsequent ISIs.

b. The steam generator shall be determined operable after completing the corresponding actions (plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 2 of Appendix A.

7.4 Piping

All ASME Code Class 1 piping systems to be examined are fabricated of stainless steel. The reactor coolant main loop piping straight lengths are centrifugal cast and the elbows are static cast. The reactor vessel auxiliary head adapter is included in Sections 7.1.12 and 7.4.4.6. Specific material specifications for each piping system are included on the weld isometric. See Request for Relief ISI-3 for Class 1 longitudinal, circumferential, and pipe branch connection welds, examination categories B-F and B-J, which have interference problems for volumetric examination.

The following Class 1 piping systems are subject to examination:

Reactor Coolant
  Main Loop (RX)
  Other (RC)
Chemical and Volume Control (CVC)
Residual Heat Removal (RHR)
Safety Injection (SI)
Upper Head Injection (UHI)

The UHI System was removed from service during Unit 1 Cycle 4. For reference to the schedule of examinations performed on this system, see revision 14 of this instruction. Reference Sections 7.1.12 and 7.4.4.6.

7.4.1 Piping Dissimilar Metal Welds

There are no Class 1 dissimilar metal welds.

7.4.2 Piping Pressure Retaining Bolting Larger Than 2 Inches In Diameter

There is no piping pressure retaining bolting larger than 2 inches in diameter.

7.4.3 Piping Pressure Retaining Bolting 2 Inches and Smaller in Diameter

The following systems contain bolted piping flange connections. All of the bolts or studs and nuts in each flange connection shall be visually examined during the inspection interval in accordance with visual examination

method VT-1. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

The bolting may be examined in place under tension or when the bolting is removed.

7.4.3.1 Reactor Coolant System Piping Bolting

The Reactor Coolant System piping includes bolted flange connections.

7.4.3.2 Chemical and Volume Control System Piping Bolting

The Chemical and Volume Control System (seal water injection) piping includes bolted flange connections.

7.4.3.3 RHR System Piping Bolting

The RHR System piping does not include any bolted connections.

7.4.3.4 Safety Injection System Piping Bolting

The Safety Injection System piping includes bolted flange connections.

7.4.4 Circumferential and Longitudinal Piping Welds

All Class 1 piping is seamless.

Circumferential pipe welds four inches and greater nominal pipe size selected for examination shall be ultrasonically and liquid penetrant examined. Circumferential pipe welds less than 4-inch nominal pipe size selected for examination shall be liquid penetrant examined.

The examinations performed during the inspection interval shall include approximately 25 percent of the 40-year sample of circumferential welds. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

7.4.4.1 Reactor Coolant System Main Loop Piping Circumferential Welds

The Reactor Coolant System Main Loop piping includes circumferential pipe welds 4 inches and greater nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are no Class 1 pipe welds less than 4-inch nominal pipe size in the Reactor Coolant System Main Loop

piping. Two circumferential welds in the Reactor Coolant Main Loop piping, RC-23S1 (Loop 3) and RC-31S1 (Loop 4) are located inside the reactor vessel shield wall and are inaccessible for examination. See Request for Relief ISI-7.

7.4.4.2 Reactor Coolant System Piping Circumferential Welds

Reactor Coolant System piping includes circumferential pipe welds 4 inches and greater nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are pipe welds less than 4-inch nominal pipe size. The welds selected for examination shall be liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

7.4.4.3 Chemical and Volume Control System Piping Circumferential Welds

The Chemical and Volume Control System piping (including seal water injection) includes circumferential welds less than 4-inch nominal pipe size. The welds selected for examination shall be liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are no Class 1 pipe welds 4 inches and greater in the CVCS system.

7.4.4.4 RHR System Piping Circumferential Welds

The RHR System piping includes circumferential welds 4 inches and greater nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are no Class 1 pipe welds less than 4-inch nominal pipe size in the RHR system.

7.4.4.5 Safety Injection System Piping Circumferential Welds

The Safety Injection System piping includes circumferential pipe welds 4 inches and greater nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are pipe welds less than 4-inch nominal pipe size. The welds selected for examination shall be liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

7.4.4.6 Reactor Vessel Auxiliary Head Adapter Cap Welds

The graylock connectors were removed from service in Unit 1 Cycle 4 and replaced with welded pipe caps. One of these four circumferential pipe cap welds (≈ 5.5 in.) shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Section 7.4.4.2 of Table A of Appendix A. See Section 7.1.12 for information on reactor vessel auxiliary head adapter dissimilar metal welds.

7.4.5 Branch Piping Connection Welds

The entire length of each branch pipe connection weld selected for examination shall be examined. Branch pipe connection welds exceeding 2 inches nominal pipe size selected for examination shall be ultrasonically and liquid penetrant examined. Branch pipe connection welds 2 inches nominal pipe size and smaller selected for examination shall be liquid penetrant examined.

The examinations performed during the inspection interval shall include approximately 25 percent of the branch pipe connection welds. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

NOTE: In the case of branch pipe connections 2 inches nominal pipe size and smaller, the welds of all the systems affected have been combined and shall be evenly distributed over the four inspection intervals.

7.4.5.1 Reactor Coolant System Main Loop Branch Pipe Connection Welds

The Reactor Coolant System Main Loop piping includes a branch pipe connection weld exceeding 2 inches nominal pipe size. This weld shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are branch pipe connection welds 2 inches nominal pipe size and smaller. The welds selected for examination shall be liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

NOTE: Each of these branch pipe connections 2 inches nominal pipe size and smaller has a special boss. This is a special boss for use with temperature elements with an outside diameter (OD) of 0.875 inch. The special boss has an OD = 2-1/2 inches ± .01 inch with an inside diameter (ID) of

0.9 inch reamed to provide 0.015 inch - 0.020 inch clearance with 0.010 inch misalignment. Assuming the worst possible case (the weld to pipe fails), the largest hole is that for a 2-inch pipe (any schedule). Therefore, it shall be treated as a 2-inch branch pipe for ASME Section XI purposes. See contract 68C60-91934, (N2M-2-8) drawing nos. 206C470 and 206C471 and installation detail N2M-2-50.

7.4.5.2 Reactor Coolant System Branch Pipe Connection Welds

The Reactor Coolant System piping includes branch pipe connection welds exceeding 2 inches nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are branch pipe connection welds 2 inches nominal pipe size and smaller. The welds selected for examination shall be liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

7.4.5.3 Chemical and Volume Control System Branch Pipe Connection Welds

The Chemical and Volume Control System piping includes branch pipe connection welds exceeding 2 inches nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

There is a branch pipe connection weld 2 inches nominal pipe size and smaller. This weld is not scheduled for examination this interval. When this weld is selected for examination it shall be liquid penetrant examined.

7.4.5.4 RHR System Branch Pipe Connection Welds

The RHR System piping includes branch pipe connection welds exceeding 2 inches nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are branch pipe connection welds 2 inches nominal pipe size and smaller in the RHR System. These welds are not scheduled for examination this interval. When these welds are selected for examination they shall be liquid penetrant examined.

7.4.5.5 Safety Injection System Branch Pipe Connection Welds

The Safety Injection System piping includes branch pipe connection welds exceeding 2 inches nominal pipe size. The welds selected for examination shall be ultrasonically and liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A. There are branch pipe connection welds 2 inches nominal pipe size and smaller. The welds selected for examination shall be liquid penetrant examined during the inspection interval in accordance with Table A of Appendix A.

7.4.6 Piping Socket Welds

The entire length of each socket weld selected for examination shall be liquid penetrant examined.

The examinations performed during the inspection interval shall include approximately 25 percent of the socket welds. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

7.4.6.1 Reactor Coolant System Piping Socket Welds

The Reactor Coolant System piping includes socket welds. The welds selected for examination shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.6.2 Chemical and Volume Control System Piping Socket Welds

The Chemical and Volume Control System piping includes socket welds. The welds selected for examination shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.6.3 RHR System Piping Socket Welds

The RHR System piping includes socket welds. The welds selected for examination shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.6.4 Safety Injection System Piping Socket Welds

The Safety Injection System piping includes socket welds. The welds selected for examination shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.7 Piping and Valve Integrally Welded Support Members

Integrally welded support members include the support attachments of piping required to be examined by Examination Category B-J. Included are those supports which have attachment welds to the valve and piping pressure retaining boundary and those attachments whose support base material design thickness is 5/8 inch and greater. The entire length of each support attachment weld selected for examination shall be surface examined.

The examinations performed during the inspection interval shall include 100 percent of the integrally welded support members. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

7.4.7.1 Reactor Coolant System Piping and Valve Integrally Welded Support Members

The Reactor Coolant System piping includes integrally welded support members. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.7.2 Chemical and Volume Control System Piping and Valve Integrally Welded Support Members

The Chemical and Volume Control System piping does not include any integrally welded support members.

7.4.7.3 RHR System Piping and Valve Integrally Welded Support Members

The RHR System piping includes integrally welded support members. All of these supports shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.7.4 Safety Injection Syutem Piping and Valve Integrally Welded Support Members

The Safety Injection System piping includes integrally welded support members. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.8 Piping and Valve Component Supports

All piping and valve component supports of piping required to be examined by Examination Category B-J shall be visually examined during the inspection interval in accordance with visual examination methods VT-3 and VT-4 as applicable. This examination includes integrally welded

and nonintegrally welded component supports. Component supports extend from the piping and valves up to and including the attachment to the supporting structure.

The setting of snubbers, shock absorbers, and spring-type hangers shall be verified in accordance with the applicable NDE procedure with the acceptance criteria identified in the Scan Plan (see PRISIM data base) or the applicable work instruction.

For information, the acceptance ranges are listed in the component support acceptance range drawings in Attachment 1.

The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

7.4.8.1 Reactor Coolant System Piping and Valve Component Supports

The Reactor Coolant System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.8.2 Chemical and Volume Control System Piping and Valve Component Supports

The Chemical and Volume Control System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.8.3 RHR System Piping and Valve Component Supports

The RHR System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.8.4 Safety Injection System Piping and Valve Component Supports

The Safety Injection System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.4.8.5 Reactor Coolant System Main Loop Piping and Valve Component Supports

The Reactor Coolant System Main Loop Piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.5 Reactor Coolant Pumps (4) - RCP

7.5.1 RCP Pressure Retaining Bolting Larger Than Two Inches In Diameter

The main flange on each pump includes 24 bolts of 4-1/2 inches in diameter and 30-1/2 inches in length. All the bolts from each pump shall be ultrasonically examined during the inspection interval. Bolting may be examined either (a) in place under tension, (b) when the connection is disassembled, or (c) when the bolting is removed.

Flange ligaments between threaded bolt holes shall be visually examined (VT-1) once during the inspection interval if the connection is disassembled at any time during the inspection interval.

If the bolts are removed at any time during the inspection interval, each bolt shall be magnetic particle (MT) examined and all threads in the base material shall be visually examined (VT-1) once during the inspection interval. This examination may be deferred until the end of the interval.

The main flange bolts are fabricated of 4340 steel, heat treated to A-540, GR. 24. Provisions for this examination are included in MI-2.2.

7.5.2 RCP Pressure Retaining Bolting 2 Inches and Smaller in Diameter

Each RCP includes two sets of pressure retaining bolting 2 inches and smaller in diameter. The bolting sets include the number 1 seal housing and cartridge seal assembly bolting. The Number 1 seal housing and cartridge seal assembly bolting includes 12 HEX head cap screws at 2 inches in diameter. The number 1 seal assembly bolting from each pump shall be visually examined in accordance with visual examination method VT-1. The cartridge seal assembly bolting is Class 2 (8 socket head cap screws at 1.5 inches in diameter) and does not require examination (see memo to C. R. Brimer from V. A. Bianco dated January 10, 1987, No. B25870109045).

The bolting may be examined in place under tension or when removed. It is preferable to perform the examinations when the bolts are removed if the connection(s) is disassembled. Removal of bolting is performed in accordance with MI-10.2.2 and MI-10.2.3 and provides for examination of bolting.

All of the bolting from one RCP shall be examined during the first inspection period, and all of the bolting from a different pump shall be examined during the second

inspection period. All of the bolting from the remaining two pumps shall be examined during the third inspection period.

7.5.3 RCP Integrally Welded Support Members

There are no integrally welded support components associated with the RCP.

7.5.4 RCP Component Supports

Each RCP includes three integrally cast pump feet bolted to the support system. All component supports from each pump shall be visually examined during the inspection interval in accordance with visual examination method VT-3. Support components extend from the RCP to and including the attachment to the supporting structure.

All of the supports from one RCP shall be examined during the first inspection period, and all of the supports from a different pump shall be examined during the second inspection period. All of the supports from the remaining two pumps shall be examined during the third inspection period.

7.5.5 RCP Casing Welds

Each Unit 1 RCP casing includes a 2-piece welded type 304SST casting. The casing welds cannot be ultrasonically examined and achieve meaningful results due to limitations of examining integrally cast material. The entire length of one RCP casing weld shall be liquid penetrant examined during the inspection interval. This examination may be deferred to the third inspection period (see Request for Relief ISI-8).

7.5.6 RCP Casing

If a pump is disassembled for maintenance during the inspection interval, the internal pressure boundary surfaces shall be visually examined in accordance with visual examination method VT-1. Disassembly of RCP's is performed in accordance with MI-2.2 and provides for these visual examinations.

If during the inspection interval a pump from either Unit 1 or Unit 2 is not disassembled for maintenance, a pump from one unit shall be examined from the exterior by ultrasonic thickness measurements (see Request for Relief ISI-1).

7.6 Valves

A tabulation of valves is contained in Attachment 2.

7.6.1 Valve Pressure Retaining Bolting Larger Than 2 Inches in Diameter

There are no valves with pressure retaining bolting larger than 2 inches in diameter.

7.6.2 Valve Pressure Retaining Bolting 2 Inches and Smaller in Diameter

The following systems contain valves with bolted bonnet connections. All of the bolts or studs and nuts in each connection not excluded in accordance with Code Case N-426 shall be visually examined during the inspection interval in accordance with visual examination method VT-1. The examinations shall be distributed during the inspection interval in accordance with Table A of Appendix A.

The bolting may be examined in place under tension or when the bolting is removed. It is preferable to examine the bolting when removed if possible. Valve disassembly is performed in accordance with MI-6.15 and provides for examination of bolting.

7.6.2.1 Reactor Coolant System Valve Bolting

The Reactor Coolant System includes valves with bolted bonnet connections. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.6.2.2 Chemical and Volume Control System Valve Bolting

The Chemical and Volume Control System includes valves with bolted bonnet connections. All of these have been excluded from examination in accordance with Code Case N-426 during the inspection interval.

7.6.2.3 Residual Heat Removal (RHR) System Valve Bolting

The RHR System includes valves with bolted bonnet connections. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.6.2.4 Safety Injection System Valve Bolting

The Safety Injection System includes valves with bolted bonnet connections. All of these shall be examined during the inspection interval in accordance with Table A of Appendix A.

7.6.3 Valve Integrally Welded Support Members

Examination of valve integrally welded support members is included in Section 7.4.7.

7.6.4 Valve Component Supports

Examination of valve component supports is included in Section 7.4.8.

7.6.5 Valve Body Welds

There are no valves with body welds.

7.6.6 Valve Bodies

The internal pressure boundary surfaces of valve bodies exceeding 4-inch nominal pipe size shall be visually examined in accordance with visual examination method VT-1. Examinations are limited to one valve within each group of valves that are of the same constructional design (i.e., globe, gate, or check valve), manufacturing method, and that are performing similar functions in the system.

When it becomes necessary to disassemble any valve, subject to internal surface visual examination, for normal maintenance purposes, the interior surface of the valve body will be visually examined and the results recorded.

See Request for Relief ISI-2.

A tabulation of valves by groupings is presented in Table 1 of Attachment 2. Disassembly of valves is performed in accordance with G-MI-MVV-000.008.0 and provides for examination of valve internal pressure boundary surfaces.

Valve examinations are listed on Valve Interior Examination Drawings in Attachment 1.

7.7 Exempted Components

Components exempted from examination include component connections, piping, and associated valves and their supports that are one inch nominal pipe size and smaller, except for steam generator tubing; components connected to and part of the reactor coolant pressure boundary (defined in 10 CFR 50, Section 50.2(V); revised January 1, 1975) but exempted from Class 1 requirements by regulations of the regulatory authority having jurisdiction at the plant site; reactor vessel head connections and associated piping, 2-inch nominal pipe size and smaller, made inaccessible by control rod drive penetrations.

7.8 Successive Examinations

Areas of flaw indications evaluated in accordance with IWB-3122.4 and SSP-3.4 that qualify for continued service shall be reexamined during the next three inspection periods listed in the inspection schedules. If the re-examinations reveal that the flaw indications remain essentially unchanged for three successive inspections, then the component examination schedule may revert to the original schedule. Exceptions to this requirement may occur when the examination schedule is dictated by an augmented inspection requirement. Components requiring successive examinations shall be scheduled for examination in accordance with Table D of Appendix A.

7.9 System Pressure Tests

All ASME Code Class 1 (equivalent) system pressure tests shall be in accordance with Technical Instruction (TI) 89, "Inservice Testing Required by ASME Section XI."

8.0 COMPONENTS SUBJECT TO EXAMINATION - ASME CODE CLASS 2 (EQUIVALENT)

The ASME Code Class 2 (equivalent) components to be examined during the inspection interval are outlined in the following paragraphs. Extent of examination for piping welds will be in accordance with paragraph IWC-2411 and Table IWC-2520 of the 1974 Edition, Summer 1975 Addenda, ASME Section XI (examination categories C-F and C-G).

Components that are exempted from examination in accordance with IWC-1220 of ASME Section XI are discussed in Section 8.13 of this program.

Where examinations specify a percentage of the total length of weld to be examined, the areas(s) examined shall be documented in the examination report. Where a percentage of weld length is not referenced, the entire weld length shall be examined.

Table B in Appendix A supplies additional information such as reference drawing numbers and ASME Section XI Table-IWC-2500-1 examination categories.

8.1 Steam Generators (4)

8.1.1 Steam Generator Secondary Side Circumferential Shell Welds

There are three circumferential shell welds at gross structural discontinuities on each generator. The entire length of these three shell welds from one steam generator shall be ultrasonically examined during the inspection interval. The number of welds to be examined during each inspection period shall be in accordance with Table B of Appendix A.

One of the three welds on each steam generator is partially inaccessible for examination due to the upper steam generator support arrangement (weld nos. SGW-D1, D2, D3,

and D4; see Request for Relief ISI-4). The weld selected for examination shall be ultrasonically examined on a best-effort basis.

The vessel shell sections are fabricated of SA-533, Gr. A, Class 1, steel plate.

8.1.2 Steam Generator Secondary Side Circumferential Head Welds

Each steam generator includes a circumferential head-to-shell weld. The entire length of one head-to-shell weld shall be ultrasonically examined during the inspection interval in accordance with Table B of Appendix A. The weld selected for examination may be from the generator selected for examination by Section 8.1.1.

The vessel head section is fabricated of SA-533, Gr. A, Class 1, steel plate.

8.1.3 Steam Generator Secondary Side Tubesheet-To-Shell Weld

Each steam generator includes a tubesheet-to-shell weld. The entire length of one tubesheet-to-shell weld shall be ultrasonically examined during the inspection interval in accordance with Table B of Appendix A. The weld selected for examination may be from the generator selected for examination by Section 8.1.1

The tube plate is a SA-508, Class 2, steel forging.

8.1.4 Steam Generator Secondary Side Nozzle-To-Vessel Welds and Nozzle-To-Vessel Inside Radius

Each steam generator includes one feedwater nozzle (3.62 inches nominal wall thickness) and one main steam nozzle (3.62 inches nominal wall thickness). All of the nozzle-to-vessel welds from each generator shall be ultrasonically and magnetic particle examined during the inspection interval in accordance with Table B of Appendix A. The nozzle inside radius sections on each nozzle will be ultrasonically examined once during the inspection interval. (Reference: CAQR CHS 900013).

The nozzles are fabricated of SA-508, Class 2, steel.

8.1.5 Steam Generator Secondary Side Integrally Welded Support Attachments

There are no integrally welded vessel support attachments.

8.1.6 Steam Generator Secondary Side Component Supports

There are no component supports (including mechanical and hydraulic supports) which are in contact with the vessel.

8.1.7 Steam Generator Secondary Side Pressure Retaining Bolting Exceeding 2 Inches in Diameter

There is no steam generator secondary side bolting exceeding 2 inches in diameter.

8.2 RHR Heat Exchangers (2) - RHRHX

8.2.1 RHRHX Circumferential Welds

8.2.1.1 RHRHX Shell Circumferential Weld

There is one circumferential shell weld located at a gross structural discontinuity on each RHRHX. The entire length of this shell weld from one heat exchanger shall be ultrasonically examined during each inspection interval in accordance with Table B of Appendix A (see Request for Relief ISI-16).

The RHRHX shell section is fabricated from SS, SA-182, F304.

8.2.1.2 RHRHX Head Circumferential Weld

There is one circumferential head-to-shell weld per RHRHX. The entire length of one head-to-shell weld shall be ultrasonically examined during the inspection interval in accordance with Table B of Appendix A. The weld selected for examination may be from the heat exchanger selected for examination by section 8.2.1.1.

The channel cylinder section (shell) and channel head are one inch thick fabricated from SS, SA-240, TP-304.

8.2.1.3 RHRHX Tubesheet to Shell Weld

There are no RHRHX tubesheet-to-shell welds.

8.2.2 RHRHX Nozzle-to-Vessel Welds

The channel cylinder section of each RHRHX includes one inlet nozzle (14-inch ID) and one outlet nozzle (14-inch ID) over 1/2-inch nominal thickness. A total of four nozzle-to-vessel welds from the two RHRHX will be liquid penetrant examined during the inspection interval. The nozzle-to-vessel welds and nozzle inside radius sections will not be ultrasonically examined during the inspection interval (see Requests for Relief ISI-13).

The nozzles are 2.5 inches thick, fabricated from SS, SA-240, TP-304.

8.2.3 RHRHX Integrally Welded Support Attachments

There are two integrally welded support attachments (1-inch) on each RHRHX whose base material exceeds 1/2-inch nominal thickness. A total of two support pad-to-vessel welds from the RHRHX will be liquid penetrant examined during each inspection interval in accordance with Table B of Appendix A. The welds selected for examination may be conducted on one heat exchanger and shall cover 100 percent of the required area of each support attachment.

The support pad is fabricated from SS, SA-240, TP-304.

8.2.4 RHRHX Component Supports

There are two component supports on each RHRHX which are in contact with the vessel. All component supports from each heat exchanger shall be visually examined during the inspection interval in accordance with visual examination method VT-3.

This examination includes integrally welded and nonintegrally welded component supports. Component supports extend from the heat exchanger to and including the attachment to the supporting structure.

The examinations shall be distributed during the inspection interval in accordance with Table B of Appendix A.

There are no mechanical (snubbers) and/or hydraulic (shock absorbers) supports which are in contact with the vessel.

8.2.5 RHRHX Pressure Retaining Bolting Exceeding 2 Inches in Diameter

There is no RHRHX bolting exceeding 2 inches in diameter.

8.3 Regenerative Heat Exchanger

Section 8.3 has been deleted from this program in accordance with IWC-1220 (c) of ASME Section XI (see Request for Relief ISI-12).

8.4 Excess Letdown Heat Exchanger

Section 8.4 has been deleted from this program in accordance with IWC-1220 (c) of ASME Section XI (see Request for Relief ISI-12).

8.5 Centrifugal Charging Pump (CCP) Tank/(Boron Injection Tank BIT) (One)

NOTE: The CCP tank was formerly identified as the BIT tank. This change occurred in Unit 1 Cycle 4 refueling outage. As a transition, both IDs are being retained for traceability.

8.5.1 CCP Tank (BIT) Circumferential Shell and Head Welds

There are two circumferential head-to-shell welds located at structural discontinuities on the CCP Tank. These welds shall be ultrasonically examined during the inspection interval in accordance with Table B of Appendix A. The examination shall cover 100 percent of the weld length. The head and shell are SA-264 material consisting of SA-516, GR70 steel backing outside with 1/8 inch SA-240, TP304L cladding inside.

8.5.2 CCP Tank (BIT) Nozzle-to-Vessel Welds

There are two nozzles, one located on each head with a 6-inch inside diameter whose nominal thickness (2.00 in.) is greater than 1/2 inch. These nozzle-to-vessel welds shall be ultrasonically and surface examined during the inspection interval in accordance with Table B of Appendix A. The examination shall cover 100 percent of the weld length.

The nozzles are fabricated to SA-350, LF2.

8.5.3 CCP Tank (BIT) Integrally Welded Supports

There are four integrally welded support attachment pads welded to the shell, whose base material design thickness is 5/8 inch and therefore requires surface examination in accordance with Table IWC-2500-1 of ASME Section XI.

8.5.4 CCP Tank (BIT) Component Supports

There are four component supports associated with the CCP tank. All of these supports shall be visually examined (VT-3) during the inspections interval in accordance with Table B of Appendix A.

8.5.5 CCP Tank (BIT) Pressure Retaining Bolting Exceeding Two Inches in Diameter

There are 16 manway cover studs at 2-1/2 inches in diameter. All 16 studs shall be ultrasonically examined during the inspection interval in accordance with Table B of Appendix A. The studs may be examined in place under tension or when they are removed. It is preferable to perform the examinations when the studs are removed.

8.6 UHI Water Accumulator

Section 8.6 has been deleted from this program in accordance with IWC-1220 (a) of ASME Section XI. This component has also been removed from service.

8.7 UHI Surge Tank

Section 8.7 has been deleted from this program in accordance with IWC-1220 (a) of ASME Section XI. This component has also been removed from service.

8.8 Seal Water Injection Filters

Section 8.8 has been deleted from this program in accordance with IWC-1220 (c) of ASME Section XI (see Request for Relief ISI-12).

8.9 Piping

Material specifications for each piping system are stated on the weld map isometrics. The following Class 2 piping systems are subject to examination:

Residual Heat Removal (RHR)
Safety Injection (SI)
Main Steam (MS)
Feedwater (FW)
Containment Spray (CS)
Upper Head Injection (UHI) - The UHI system was removed from service during Unit 1 Cycle 4. For reference to the schedule of examinations performed on this system, see Revision 14 of this instruction.

8.9.1 Piping and Valve Integrally Welded Support Members

Integrally welded support members include the support attachments of piping required to be examined by Examination Category C-F. Included are those supports which have attachment welds to the valve and piping pressure retaining boundary, and those attachments whose support base material design thickness exceeds 3/4 inch (see PRISIM data base). The entire length of each support attachment weld selected for examination shall be surface examined.

The examinations performed during the inspection interval shall include 100 percent of the integrally welded support members. The examinations shall be distributed during the inspection interval in accordance with Table B of Appendix A (see Request for Relief ISI-17).

8.9.1.1 Residual Heat Removal (RHR) System Piping and Valve Integrally Welded Support Members

The RHR System piping does not include any integrally welded support members.

8.9.1.2 Safety Injection System Piping and Valve Integrally Welded Support Members

The Safety Injection System piping includes integrally welded support members. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.1.3 Main Steam System Piping and Valve Integrally Welded Support Members

The Main Steam System piping includes integrally welded support members. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.1.4 Feedwater System Piping and Valve Integrally Welded Support Members

The Feedwater System piping includes integrally welded support members. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.1.5 Containment Spray System Piping and Valve Integrally Welded Support Members

The Containment Spray System piping does not include any integrally welded support members.

8.9.2 Piping and Valve Component Supports

All piping and valve component supports shall be visually examined during the inspection interval in accordance with visual examination methods VT-3 and VT-4. This examination includes integrally welded and non-integrally welded component supports. Component supports extend from the piping and valves to and including the attachment to the supporting structure.

The setting of snubbers, shock absorbers and spring-type hangers shall be verified in accordance with the applicable NDE procedure with the acceptance criteria shown in the Scan Plan (see MISIM data base) or the applicable work instruction. For information the acceptance ranges are listed in the component supports acceptance range drawings in Attachment 1.

The examinations shall be distributed during the inspection interval in accordance with Table B of Appendix A.

8.9.2.1 Residual Heat Removal (RHR) System Piping and Valve Component Supports

The RHR System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.2.2 Safety Injection System Piping and Valve Component Supports

The Safety Injection System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.2.3 Main Steam System Piping and Valve Component Supports

The Main Steam System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.2.4 Feedwater System Piping and Valve Component Supports

The Feedwater System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.2.5 Containment Spray System Piping and Valve Component Supports

The Containment Spray System piping includes component supports. All of these shall be examined during the inspection interval in accordance with Table B of Appendix A.

8.9.3 Pressure-Retaining Bolting

There is no Class 2 Pressure-Retaining Bolting larger than two inches in diameter.

8.9.4 Circumferential and Longitudinal Pipe Welds

Selection of welds for examination is based on Table IWC-2520, Paragraph IWC-1220, and Paragraph IWC-2411 (Summer 1975 Addenda). All of the welds selected shall be examined during the inspection interval and distributed in accordance with Table B of Appendix A.

The entire length of each weld selected for examination shall be ultrasonically and/or surfaced examined. Circumferential and longitudinal piping welds in piping with a nominal wall thickness of 1/2 inch or less shall be surface examined. Circumferential and longitudinal piping welds in piping with a nominal wall thickness greater than 1/2 inch shall be ultrasonically and surfaced examined.

The areas subject to examination include circumferential pipe welds at structural discontinuities, within 3 pipe diameters of the centerline of rigid pipe anchors, anchors at the penetration of primary containment or at rigidly anchored components, and longitudinal weld joints in pipe fittings.

8.9.4.1 Residual Heat Removal (RHR) Piping

The RHR Piping System includes Class 2 circumferential and longitudinal piping welds with a nominal wall thickness greater than 1/2 inch subject to examination. The welds selected for examination shall be ultrasonically and surfaced examined each inspection interval in accordance with Table B of Appendix A. The RHR piping system includes the circumferential and longitudinal pipe welds with a nominal wall thickness of 1/2 inch or less. The welds selected for examination shall be surface examined each inspection interval in accordance with Table B of Appendix A.

8.9.4.2 Safety Injection Piping

The Safety Injection Piping System includes Class 2 circumferential piping welds with a nominal wall thickness greater than 1/2 inch subject to examination. The welds selected for examination shall be ultrasonically and surface examined each inspection interval in accordance with Table B of Appendix A. The safety injection piping system includes the circumferential and longitudinal pipe welds with a nominal wall thickness of 1/2 inch or less. The welds selected for examination shall be surfaced examined each inspection interval in accordance with Table B of Appendix A.

8.9.4.3 Main Steam Piping

The Main Steam Piping System includes Class 2 circumferential and longitudinal piping welds with a nominal wall thickness greater than 1/2 inch subject to examination. The circumferential and longitudinal piping welds selected for examination shall be ultrasonically and surfaced examined each inspection interval in accordance with Table B of

Appendix A. There are no circumferential and longitudinal pipe welds with a nominal wall thickness of 1/2 inch or less in the Main Steam System.

8.9.4.4 Feedwater Piping

The Feedwater Piping System includes Class 2 circumferential and longitudinal piping welds with a nominal wall thickness greater than 1/2 inch subject to examination. The circumferential and longitudinal piping welds selected for examination shall be ultrasonically and surfaced examined each inspection interval in accordance with Table B of Appendix A. The one longitudinal weld is on Loop 4 at the reducing elbow (18" X 16"). The feedwater piping system includes circumferential pipe welds with a nominal wall thickness of 1/2 inch or less. The circumferential weld scheduled for the 40-year sample has not been scheduled for examination this interval. There are no longitudinal pipe welds with a nominal wall thickness of 1/2 inch or less in the feedwater system.

8.9.4.5 Containment Spray Piping

The Containment Spray Piping System includes Class 2 circumferential and longitudinal piping welds with a nominal wall thickness of 1/2 inch or less, subject to examination. The circumferential and longitudinal pipe welds selected for examination shall be surface examined each inspection interval in accordance with Table B of Appendix A. There are no circumferential and longitudinal pipe welds with a nominal wall thickness greater than 1/2 inch in the Containment Spray System.

8.9.5 Branch Piping Connection Welds

There are no Class 2 branch pipe connection welds.

8.10 Pumps

8.10.1 RHR Pumps (2) - RHRP

8.10.1.1 RHRP Integrally Welded Supports

There are no integrally welded supports associated with the RHRP.

8.10.1.2 RHRP Support Components

Each RHRP includes one component support bolted to the pump feet which are integrally forged with the pump. The component support from each pump shall be visually examined during the inspection interval in accordance with visual examination method VT-3. Support components extend from the RHRP to and including the attachment to the supporting structure.

Both of the RHRP support components shall be examined during the inspection interval.

8.10.1.3 RHRP Supports - Mechanical or Hydraulic

There are no mechanical or hydraulic supports associated with the RHRP.

8.10.1.4 RHRP Pressure Retaining Bolting

The stuffing box extension to pump casing connection bolting is not greater than two inches in diameter.

The connection includes 24 studs at 1-1/4 inches in diameter with nuts and washers. The studs are fabricated to SA-193, GR. B7, and the nuts to SA-194, GR. 2H.

8.10.1.5 RHRP Casing Welds

The PHRP does not include any casing welds. The casing is a one piece forging fabricated to SA-182 F304.

8.10.2 CVCS Centrifugal Charging Pumps (2) CCP

Examination of these pumps, and their associated component supports, pressure retaining bolting, and casing welds are exempted under previsions outlined in table IWC-2500-1 and accompanying footnotes, examination categories C-C, C-G, which limit the exam requirements to components in piping examined under examination category C-F.

8.10.3 CVCS Positive Displacement Pump(1) PDP/Reciprocating Charging Pump

Examination of these pumps, and their associated component supports, pressure retaining bolting, and casing welds are exempted under previsions outlined in table IWC-2500-1 and accompanying footnotes, examination categories C-C, C-G, which limit the exam requirements to components in piping examined under examination category C-F.

8.10.4 Safety Injection Pumps (2) SIP

Examination of these pumps, and their associated component supports, pressure retaining bolting, and casing welds are exempted under previsions outlined in table IWC-2500-1 and accompanying footnotes, examination categories C-C, C-G, which limit the exam requirements to components in piping examined under examination category C-F.

8.11 Valves

Systems including ASME Code Class 2 valves subject to examination are identified in Section 8.9. A tabulation of valves is presented in Attachment 2, Table 3.

8.11.1 Valve Integrally Welded Supports

Examination of valve integrally welded support members is included in Section 8.9.1.

8.11.2 Valve Component Supports

Examination of valve component supports is included in Section 8.9.2.

8.11.3 Valve Pressure-Retaining Bolting

There is no Class 2 pressure-retaining bolting greater than 2 inches in diameter.

8.11.4 Valve Body Welds

There are no Class 2 valves with body welds.

8.12 System Pressure Test

All ASME Code Class 2 (equivalent) system pressure tests shall be in accordance with TI-89, "Inservice Testing Required by ASME Section XI."

8.13 Exempted Components

8.13.1 Exempted Components (Except Piping Welds)

Components exempted from examination include:
(a) components of systems or portions of systems that during normal plant operating conditions are not required to operate or perform a system function but remain flooded under static conditions at a pressure of at least 80 percent of the pressure that the component or system will be subjected to when required to operate; or
(b) components of systems or portions of systems, other than RHR Systems and Emergency Core Cooling Systems, that are not required to operate above a pressure of 275 psig or above a temperature of 200°F; or (c) component connections

(including nozzles in vessels and pumps), piping and associated valves and vessels (and their supports) that are 4 inch nominal pipe size and smaller.

8.13.2 Exempted Components (Piping Welds Only)

Piping exempted from examination include: (a) Piping systems where both the design pressure and temperature are equal to or less than 275 psig and 200°F, respectively; (b) piping systems or portions of systems other than emergency core cooling systems which do not function during normal reactor operation; (c) piping that is 4-inch nominal pipe size and smaller.

8.14 Successive Examinations

Components with flaw indications evaluated in accordance with IWC-3000 and SSP-3.4 that qualify for continued service shall be reexamined during the next inspection period listed in the inspection schedule. If the reexamination reveals that the flaw indications remain essentially unchanged the component examination schedule may revert to the original schedule. Exceptions to this requirement may occur when the examination schedule is dictated by an augmented inspection requirement. Components requiring successive examinations shall be scheduled for examination in accordance with Table D of Appendix A.

9.0 COMPONENTS SUBJECT TO EXAMINATION - ASME CODE CLASS 3 (EQUIVALENT)

ASME Code Class 3 (equivalent) component supports and restraints within the boundaries identified in Sections 9.1 and 9.2 for components exceeding 4-inch nominal pipe size shall be visually examined, VT-3, during each inspection period.

Mechanical and hydraulic snubbers, spring loaded and constant weight supports within the boundaries identified in section 9.1 for components exceeding 4-inch nominal pipe size shall be visually examined, VT-4 during each inspection period.

9.1 Piping and Valve Component Supports

All piping and valve component supports shall be visually examined during each inspection period in accordance with visual examination methods VT-3 and VT-4. This examination includes integrally welded and nonintegrally welded component supports. Component supports extend from the piping and valves to and including the attachment to the supporting structure. The setting of snubbers, shock absorbers and spring-type hangers shall be verified in accordance with the applicable NDE procedure with the acceptance criteria shown in the Scan Plan (see PRISIM data base) or the applicable work instruction. For information the acceptance ranges are listed in the component support acceptance range drawings in Attachment 1. The examinations (100 percent) shall be conducted during each inspection period during the inspection interval in accordance with Table C of Appendix A.

9.1.1 Auxiliary Feedwater System Piping and Valve Component Supports

The Auxiliary Feedwater System piping includes component supports. All of these shall be examined during each inspection period in accordance with Table C of Appendix A.

9.1.2 Chemical and Volume Control System Piping and Valve Component Supports

The Chemical and Volume Control System piping component supports are not required to be examined because there is no examination category for this piping. This piping is TVA Safety Class D. (The change in support numbers during the second period was due to new class boundaries.)

9.1.3 Component Cooling System Piping and Valve Component Supports

The Component Cooling System piping includes component supports. All of these shall be examined during each inspection period in accordance with Table C of Appendix A.

9.1.4 Containment Spray System Piping and Valve Component Supports

The Containment Spray System piping has no component supports. (The change in support numbers during the second period was due to new class boundaries.)

9.1.5 Essential Raw Cooling Water System Piping and Valve Component Supports

The Essential Raw Cooling Water System piping includes component supports. All of these shall be examined during each inspection period in accordance with Table C of Appendix A.

9.1.6 Fuel Pool Cooling System Piping and Valve Component Supports

The Fuel Pool Cooling System piping includes component supports. All of these shall be examined during each inspection period in accordance with Table C of Appendix A.

9.1.7 RHR System Piping and Valve Component Supports

The RHR System piping has no component supports. (The change in support numbers during the second period was due to new code class boundaries.)

9.1.8 Safety Injection System Piping and Valve Component Supports

The Safety Injection System piping has no component supports. (The change in support numbers during the second period was due to new code class boundaries.)

9.2 Equipment Component Supports

The equipment component support and the associated integrally welded support attachment will be (VT-3) examined together.

9.2.1 Containment Spray Heat Exchanger (2) Support - CSH (ERCW)

There is one component support on each CSH. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.2 Nonregenerative Letdown Heat Exchanger (1) Support - NRLHX (CCS)

There is one component support on the NRLHX. This support shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.3 Gas Stripper and Boric Acid Evaporator (1) - GSBAE (CCS)

9.2.3.1 GSBAE Evaporator Condensor (1) Support - EC

There are two component supports on the EC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.3.2 GSBAE Distillate Cooler (1) Support - DC (CCS)

There are two component supports on the DC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.3.3 GSBAE Vent Cooler (1) Support - VC (CCS)

There are two component supports on the VC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.3.4 GSBAE Support Frame (1) Support - SF (CCS)

The SF consists of one component support. This support shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.4 Component Cooling Surge Tank (1) Support - CCST (CCS)

There is one component support on the CCST. This support shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.5 Component Cooling System Positive Displacement Charging Pump Oil Cooler (1) Support - PDOC (CCS)

There are two component supports on the PDOC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.6 Component Cooling Water Gross Failed Fuel Detector (1) Support - GFFD (CCS)

There is one component support on the GFFD. This support shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.7 Centrifugal Charging Pump Gear Oil Cooler (2) Support - CCPGOC (ERCW)

There are two component supports on each CCPGOC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.8 Centrifugal Charging Pump Oil Cooler (2) Support - CCPOC (ERCW)

There are two component supports on each CCPOC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.9 Waste Gas Compressor Heat Exchanger (1) Support - WGCHX (CCS)

There are two component supports on the WGCHX. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.10 Centrifugal Charging Pump Mechanical Seal Cooler (4) Support - CCPMSC (CCS)

There is one component support on each CCPMSC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.11 RHR Pump Seal Cooler (2) Support - RHRSC (CCS)

There is one component support on each RHRSC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.12 Safety Injection Pump Oil Cooler (2) Support - SIPOC (ERCW)

There are two component supports on each SIPOC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.13 Safety Injection Pump Seal Cooler (4) Support - SIPSC (ERCW)

There is one component support on each SIPSC. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.14 Component Cooling System Seal Water Heat Exchanger (1) Support - SWHX (CCS)

There is one component support on the SWHX. This support shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.15 Component Cooling System Thermal Barrier Booster Pump (2) Support - TBBP (CCS)

There are two component supports on each TBBP. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.16 Turbine Driven Auxiliary Feedwater Pump (1) Support - TDAFP (AFW)

There are two component supports on the TDAFP. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.17 Motor Driven Auxiliary Feedwater Pump (2) Support - MDAFP (AFW)

There are two component supports on each MDAFP. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.18 Component Cooling System Water Pumps (3) Support - CCSWP (CCS)

There is one component support on each CCSWP. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.19 Component Cooling Heat Exchanger (4) Support - CCHX (CCS)

There is one component support on each CCHX. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.20 Essential Raw Cooling Water System Strainer Support (2) Support - ERCWS (ERCW)

There is one component support on each ERCWS. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.21 Essential Raw Cooling Water System Pump Station Pump (8) Support - ERCWP (ERCW)

There is one component support on each ERCWP. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.22 Fuel Pool Cooling And Cleaning System - Spent Fuel Pit Pumps (3) Support - SFPP (FPC)

There is one component support on each SFPP. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.23 Fuel Pool Cooling And Cleaning System - Spent Fuel Pit Heat Exchanger (2) Support - SFPHX (FPC)

There are two component supports on each SFPHX. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.24 RHR Heat Exchanger Secondary Side (2) Supports - RHRHSXH (CCS)

There are two component supports on each RHRHSHX. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.2.25 ERCW Screen Wash Pump (2) Support - ERCWSWPH (ERCW)

There is one component support on each ERCWSWPH. These supports shall be (VT-3) examined during the inspection interval in accordance with Table C of Appendix A.

9.3 System Pressure Tests

All ASME Code Class 3 (equivalent) system pressure tests shall be in accordance with TI-89, "Inservice Testing required by ASME Section XI."

10.0 AUTHORIZED INSPECTOR

TVA shall employ an Authorized Inspection Agency in accordance with ASME Section XI for inservice examinations, repairs, and replacements of ASME Code Class 1, 2 and 3 (equivalent) components at SQN. The Authorized Inspector(s) shall verify, assure, or witness that code requirements have been met. He shall have the prerogative and authorization to require requalification of any operator or procedure when he has reason to believe the requirements are not being met. TVA shall provide access for the Authorized Inspector(s) in accordance with IWA-2140 of ASME Section XI.

TVA's interface with the Authorized Inspector for ISI, Repairs and Replacements is defined in STD-6.10, SSP-13.3, AI-19 Parts IV and VI.

11.0 EXAMINATION METHODS AND CALIBRATION BLOCKS

11.1 Examination Methods

NDE examinations shall be performed in accordance with this program as scheduled in Appendix A, the applicable Scan Plan, QMP-102.4, and QMP-110.5. Requirements for NDE methods shall be in accordance with IWA-2210 through IWA-2233 of ASME Section XI.

If, during an examination, it is determined by an NDE Level III that code exam coverage cannot be achieved, the fact shall be documented on the data sheet and a best-effort examination shall be performed. ISI Programs shall be informed in writing of the limited exam.

Data must be provided on the exam sheet to determine the percentage of code exam coverage achieved.

11.2 CALIBRATION BLOCKS

Calibration blocks will be used for ultrasonic examinations (a calibration tube will be used for eddy-current examination of steam generator tubing). The blocks will be fabricated to the general requirements of ASME Section V and ASME Section XI. The blocks shall be fabricated of the material to be examined or equivalent P numbers. Mill test reports shall be obtained and retained by NQA for all calibration blocks. The blocks shall employ drilled holes and/or notches for calibration reflectors (See Request for Relief ISI-9).

ISO shall maintain as-built calibration block drawings. The calibration blocks shall be stored at the plant site and maintained by SQO personnel.

12.0 QUALIFICATIONS OF NDE PERSONNEL

Personnel performing NDE operations shall be qualified in accordance with IWA-2300 of ASME Section XI as required in QMP 102.4.

13.0 ACCEPTANCE CRITERIA

All acceptance standards for ASME Code Class 1, 2 and 3 (equivalent) components shall be in accordance with IWA-3000, IWB-3000, IWC-3000, or IWD-3000 of ASME Section XI, except where ASME Section III examinations are employed to satisfy ASME Section XI requirements.

14.0 REPAIRS AND REPLACEMENTS

All ASME Section XI components and their supports, ASME Classes 1, 2, and 3 (equivalent) shall be repaired in accordance with the Repair and Replacement Program implemented by AI-19 Parts IV and VI and SSP-13.3.

ASME Section XI repairs and replacements may be coordinated as necessary with ISI Programs.

15.0 PUMP AND VALVE TESTING

Pump and valve testing shall be in accordance with TI-89, "Inservice Testing Required by ASME Section XI."

16.0 RECORDS AND REPORTS

16.1 Repair and Replacement Reports

Repair and Replacement Form NIS-2 reports shall be prepared in accordance with AI-19, Parts IV and VI, and SSP-13.3.

16.2 Report for ISI of Class 1 and 2 Components

SQO shall prepare an ISI Report for Class 1 and 2 components to be submitted within 90 days after the completion of the ISI to the NRC Region II Office in accordance with IWA-6220, ASME Section XI.

The ISI Report shall have a cover sheet providing the following information:

1. Date of document completion.
2. Name and address of owner.
3. Name and address generating plant.
4. Name or number assigned to the nuclear power unit by TVA.
5. Commercial operation date for unit.

All reports shall provide the following information as a minimum.

1. Numbers assigned to the components by the state.
2. National Board Number assigned to the components by the manufacturer.
3. Names of the components and descriptions including size, capacity, material, location, and drawings to aid identification.
4. Name and address of principal manufacturer (e.g., Westinghouse, GE, etc.) and the principal contract number which will identify the subcontractors. Manufacturer's component identification numbers.
5. Date of completion of the examination.
6. Name of ANII who witnessed or otherwise verified the examinations and his employer and business address, when required.
7. Abstract of examinations, conditions observed; and corrective measures recommended or taken.

8. Signature of ANII, when required.

9. Owner's Data Report for ISI, Form NIS-1, as shown in Appendix II, of ASME Section XI and Forms NIS-2 as identified above in Section 16.1.

SQO shall submit the Inservice Inspection Report to the plant manager for retention as part of the final report discussed in Section 16.3. SQO shall submit applicable summaries of the report with a cover sheet as described above to the NRC via SQN Site Licensing.

16.3 Site Final Report

A detailed report of all examinations shall be prepared by SQO (and/or the performing or responsible organization) and should contain, but not be limited to, the following information:

Cover Sheet - Data Sheet 1 in Appendix B will be completed and used as a cover sheet for the Site Final Report and to document the review process.

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I. Introduction - The introduction should include the following information: Plant, unit number, PSI or ISI and cycle number, systems, components and vessels examinations were performed on, organization examinations were performed by, dates examinations were performed, ASME Section XI Code of Record.

II. Summary - The summary should include a brief description of the overall inspection.

III. Summary of Notifications - The summary of notifications shall give a short summary of each notification report along with the indication discrepancy and its location. It should also contain the final disposition including a reference to the corrective action taken and the date of completion.

IV. Examination Plan - The Examination Plan shall give a detailed description of all areas subject to examination during the inspection. It should contain the following information: Examination Area, Code Category, Weld Size, Reference Drawing, Examination Method, Procedure, Calibration Block, date of examination and result of examination.

V. Summary of Personnel Certifications

VI. Calibration Sheets

VII. Examination Data Sheets

VIII. Copy of the ISI Report as Discussed in Section 16.2

For eddy current examination of heat exchanger tubing, the report shall include a record indicating the tube(s) examined (this may be marked on a tube sheet sketch or drawing), the extent to which each tube was examined, the location and depth of each reported indication, and the identification or the operator(s) and data evaluator(s) who conducted each examination or part thereof, and magnetic media and strip charts as applicable.

All procedures and equipment shall be identified sufficiently to permit duplication of the examination at a later date. This shall include initial calibration data for the equipment and any significant changes.

All required and pertinent information will be recorded on the appropriate data sheets by the performing organization. When portions of the inspection work are contracted, a detailed report will be submitted to TVA by the contractor with all pertinent and required information. TVA will retain the original copies of all raw data taken.

SQO shall review and submit the Site Final Report in accordance with SSP 8.2, "Surveillance Test Program," for retention as a quality assurance record in accordance with SSP-2.9, "Records Management."

16.4 Records for ASME Code Class 1, 2 and 3 (Equivalent)

The following records are QA Records and shall be retained in accordance:

1. Site Final Report - SSP-2.9

2. NDE Procedures - QMP-110.5

3. Calibration Block Drawings - QMP-105.4

The following drawings are retained as QA records:

1. ASME Section XI Boundary Classification Drawings

2. ASME Section XI ISI Drawings

16.5 Records of System Pressure Tests

Records of the visual examinations conducted during system leakage or hydrostatic tests shall consist of an itemization of the number and location of leaks found in a system and the corrective actions taken.

16.6 Augmented Examination Reports

Augmented examination special reports shall be submitted to the NRC Region II Office within the time period specified for each augmented examination. For specific details on records, reports and reporting see Sectior 20.0, Augmented Inspections. The status of augmented examinations requested by ISI Programs and implemented by SQO shall be maintained in a computerized data base (PRISIM).

16.7 Status of Completed Examinations

ISO maintains a computer based status listing (PRISIM data base) of the examinations completed for ASME Section XI credit for examinations performed during the inspection period and interval. This listing as a minimum identifies the component examined, ASME class, examination method, and outage cycle when the examination was performed. This listing may also be used to identify components to be inspected in the future.

17.0 NOTIFICATION OF INDICATION

17.1 The Notification of Indication (NOI) form in Appendix C of this program is to be used to: (1) notify Plant Management of an indication found during the performance of scheduled ISI examinations that will require evaluation and a disposition in accordance with plant procedures, (2) notify ISI Programs that an indication that exceeds the acceptance criteria of Article 3000 of the ASME Section XI Code has been documented on an examination report form contained within the NDE procedure used for examination, (3) provide ISO and SQO with a method to track examination reports that require reexamination or a documented disposition for closure, and (4) as a final product, with the disposition provided under plant procedures added to Part II of the form, provide ISI Programs a method of determining if additional Code examinations are required.

17.2 Functionally an NOI Form shall be initiated and processed as follows.

17.2.1 Part 1 of an NOI Form will be initiated by the NDE Examiner when an indication exceeds the acceptance criteria of the NDE Procedure being used to perform a scheduled ISI examination. The Examiner will sign and date the NOI Form. The Field Supervisor, in the case of contracted examinations, will review the information in Part I and sign and date the NOI Form as approving the information. The SQO Representative will review for accuracy, sign and date the NOI Form.

17.2.2 After completion of Part I, SQO shall send the original NOI Form and a copy of the Examination Report to Site Engineering as a notification to plant management that an indication requiring evaluation has been found. A prompt determination of any impact on operability must be made in

accordance with plant procedures. SQO shall also send a copy to ISI Programs as notification that a potential exists for additional examinations to be performed per ASME Section XI.

17.2.3 Site Engineering shall be responsible for evaluating and providing a disposition for the indication in accordance with plant procedures. The disposition shall be documented in detail on an administrative control program document (PER, FIR, SCAR, WR/WO, etc.) if required by Section 18.0.

17.2.4 Site Engineering shall include the final disposition on the NOI Form in Part II, sign and date the NOI Form and return the original to the SQO Representative for closure. Reference to any PERs, FIRs, SCARs, WR/WOs, etc., shall be included.

17.2.5 The SQO Representative shall immediately, upon receipt, provide a copy of the NOI Form bearing the recorded disposition to ISI Programs for determination of additional examination requirements.

17.2.6 Upon notification from ISI Programs, the SQO Representative shall check "yes" or "no" for additional examinations, and he shall close the NOI Form in Part III by reexamination, in the case where work was performed as a part of the disposition, or by verification of the disposition if no physical work was required to remove or modify the indication.

17.2.7 The original NOI Form shall be filed with the original examination report. A copy of the form shall be sent to ISI Programs for closure of their files. The reexamination report, if applicable, shall reference the NOI number. The NOI Form and original examination report shall reference the reexamination report number.

17.3 Additional Sample Selection for CC-1 and CC-2 NOIs

After a NOI has been dispositioned and returned to the SQO Representative, a copy shall be forwarded to ISI Programs for evaluation to determine if additional examinations shall be required. If it is determined that additional examinations are required, these examinations shall be performed during the same outage as the initial examinations. A sample is defined as those items (welds, areas, or parts) as described or intended in a particular examination category and item number and within the same system. For component support samples, the additional examinations may also be limited to component supports within the same examination method (VT-3, and VT-4). The initial sample is the sample scheduled for examination at a particular outage for Section XI credit. For steam generator tubing, additional samples shall be per Section 7.3.8.

17.3.1 Evaluation For First Additional Sample

A first additional sample shall be selected for those examinations performed in the initial sample that reveal indications exceeding the corresponding acceptance standards of IWX-3000 of ASME Section XI. The first additional sample shall include approximately the same number of items examined in the initial sample. The first additional sample shall be selected from the ten year interval sample. The items selected should be from those items that have the longest service time from its previous inservice examination.

If a system contains a sample within the same examination category and item number as the initial sample which had the indication and is not scheduled for examination this outage, this system sample shall be evaluated to determine if it should be examined this outage to provide a representative sample from each system within a particular examination category and item number. This evaluation should consider, but is not limited to, the type of indication found in the initial sample and similar system design and operating parameters.

The ISI Programs Representative shall submit the additional sample to the SQO Representative for addition to the scan plan.

17.3.2 Evaluation for Second Additional Sample

A second additional sample shall be selected for those examinations performed in the first additional sample that reveal indications exceeding the corresponding acceptance standards of IWX-3000 of ASME Section XI. The second additional sample shall include all the remaining items of the ten-year interval sample not examined in the initial or first additional sample during this outage. If no items remain in the ten year interval sample (e.g., Accelerated Field Weld Program) and indications were found in the first additional sample, a notification of sample results shall be made to Site Engineering as described in Section 17.3.3. The ISI Programs representative shall submit the second additional sample to the SQO Representative for addition to the scan plan.

17.3.3 Notification of Sample Results to Site Engineering

After completion of the second additional sample examinations, ASME Section XI code requirements for additional examinations are complete. If examinations performed in the second additional sample reveal indications exceeding the corresponding acceptance standards of IWX-3000 of ASME Section XI, Site Engineering shall be notified. Site Engineering shall be notified to

evaluate the indications and make recommendation(s) for further action, if needed, within this and/or other systems.

This notification shall be sent to the Site Engineering Operations Support by ISI Programs for coordination with the applicable Site Engineering staff. Included in the notification should be a summary of the indications found, number of examinations and number of indications in each sample, type of examination performed, examination category and item number, copies of the NOIs, and any other pertinent information.

18.0 CORRECTIVE ACTION PROGRAM

Any corrective action required as a result of ISI examinations shall be handled in accordance with SSP-3.4, SSP-3.6, SSP-3.7, or SSP-6.21.

19.0 REQUESTS FOR RELIEF

Where TVA has determined that certain code requirements or examinations are impractical, TVA will submit written requests for relief to NRC with information to support the determinations and any proposed alternate examinations. The impractical code requirements or examinations shall be identified in this program, and references to particular requests for relief shall be included.

When impractical examination requirements are identified in the field, ISO shall notify ISI Programs such that the information may be included in this program and requests for relief may be prepared if necessary. Requests for relief shall be submitted to the NRC via SQN Site Licensing.

Sequoyah Unit 1 Requests for Relief are contained in Attachment 3. TVA submitted 13 Requests for Relief (ISI-1 to ISI-13) from Code Requirements. ISI-1, ISI-3 to ISI-6, ISI-8 to ISI-10, and ISI-13 were granted. ISI-11 was withdrawn, ISI-12 was not needed, and two, ISI-2 and ISI-7, were postponed. For more detailed information on Requests for Relief, see Safety Evaluation Report, dated February 7, 1991, from F. J. Hebdon, NRC, to O. D. Kingsley, Jr. (A02 910214 009), and Safety Evaluation Report dated October 21, 1991, from F. J. Hebdon to D. A. Nauman (A02 911024 003).

On August 21, 1991, TVA submitted Request for Relief ISI-14 to the NRC requesting a response by June 1, 1992.

* TVA has now identified four (4) other areas where code requirements are impractical. These Requests for Relief are identified as ISI-15, -16, -17, and -18. These Relief Requests shall be submitted to the NRC with Revision 17 of this program.

20.0 AUGMENTED INSPECTIONS

Augmented inspections are performed in addition to ASME Section XI code requirements. The augmented inspections may be required by the NRC or self-imposed by TVA.

Augmented examinations of components that require reporting (verbal or written) to the NRC shall be the responsibility of the organization designated in the particular examination. These reports shall be submitted to the NRC Region II Office within the time period specified for each augmented examination. Each augmented exam shall state the required reporting time and the document requiring the information to be included in the report. See Table E of Appendix A for examination schedules.

20.1 Feedwater Nozzle-to-Pipe Welds and Adjacent Pipe and Nozzle Areas

The requirements of NRC IE Bulletin 79-13 were satisfied during the Unit 1, Cycle 1 outage. Due to the safety-related ramifications of the steam generator nozzle transition section cracking problem, TVA will perform an augmented inspection (reference memorandums L29 831222 836 and L29 840105 856, and memorandum from D. F. Goetcheus to J. T. Lewis (S57 880902 911)) of four feedwater nozzle transition pieces during the inspection interval as listed below. The augmented examination of the steam generator nozzle transition section shall include 100 percent volume of the transition pieces, the nozzle-to-transition piece welds, transition piece-to-pipe welds, and base material adjacent to each weld for a distance of two wall thicknesses. These welds shall be ultrasonically examined and ultrasonic sensitivities should be equivalent to those required by NRC-IE Bulletin 83-02. Results of the examination shall be included in the ISI Report discussed in Section 16.3.

FEEDWATER NOZZLE TRANSITION PIECE EXAM SCHEDULE

Cycle	Examination Areas
1	IE Bulletin 79-13 completed
2	1 nozzle-to-pipe weld and adjacent pipe and nozzle area
3	1 nozzle-to-pipe weld and adjacent pipe and nozzle area
4	All nozzle transition section pieces and welds
5	All nozzle transition section pieces and welds
6	All nozzle transition section pieces and welds

20.2 RPV Nozzle Safe Ends

The augmented examination requirements of the RPV nozzle-to-safe end welds are included in the final report - "SQN - Evaluation of cracking in reactor vessel nozzle stainless steel buttering." The examinations for Unit 1 will be monitored at the normal ISI intervals (see Section 7.1.5) for dissimilar metal welds as required by Section XI of the ASME Code. This augmented examination does not require a special report. Results of the examination shall be included in the ISI Report discussed in Section 16.2.

20.3 Reactor Coolant Pump Flywheel

The augmented examination requirements of the reactor coolant pump flywheel are included in Regulatory Position C.4.b of Regulatory

Guide 1.14; (1) an in-place ultrasonic examination of the areas of higher stress concentration at the bore and keyway at approximately 3-year intervals during the refueling or maintenance shutdown coinciding with the ISI schedule as required by Section XI of the ASME Code, and (2) a surface examination of all exposed surfaces and complete ultrasonic examination at approximately 10-year intervals during the plant shutdown coinciding with the ISI schedule as required by Section XI of the ASME Code. This examination is performed in accordance with Sequoyah Technical Specifications and satisfies Surveillance Requirement 4.4.10a.

This augmented examination does not require a special report unless the examination reveals a flaw. If the examination and evaluation indicate an increase in flaw size or growth rate greater than predicted for the service life of the flywheel, the results of the examination and evaluation should be submitted to the NRC for evaluation. Refer to Regulatory Guide 1.14 for information to be included. The examination results shall be included in the ISI Report discussed in Section 16.2.

The flywheel consists of 2 plates, approximately 5 inches and 8 inches thick, bolted together. Each plate is fabricated from vacuum degassed A-533, GR. B, Class 1, steel.

The 3-year in place RCP examinations shall be recorded using the RCP motor serial number and exam ID:

RCP Motor S/N - BOREKEY (i.e., 4S-81P352 - BOREKEY)

For the 10-year exam, the ID's shall be:

RCP Motor S/N - SUR (i.e., 4S-81P352 - SUR)
RCP Motor S/N - VOL (i.e., 4S-81P352 - VOL)

See Augmented Examination Table Appendix A, Table E for RCP flywheel scheduled examinations.

20.4 Steam Generator Tubing

Steam Generator Maintenance and Technology (SGMT) shall be responsible for ensuring the adequacy of the technical and administrative requirements of this section. Refer to Technical Specification Surveillance Requirements 4.0.5 and 4.4.5.0 and sections 7.3.8 and 16.0 of this program for information to be included.

Plant management shall report this information to the NRC Region II Office within the time period specified. See Plant Instruction AI-18 series for reporting instructions.

a. Tube Plugging Report

Following each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the NRC within 15 days of steam generator manway closure.

b. Inservice Inspection Results Report

The complete results of the steam generator tube ISI shall be submitted to the NRC in a special report pursuant to Technical Specification 6.9.2 within 12 months following completion of the inspection (steam generator manway closure). Steam Generator Maintenance and Technology shall prepare this special report and submit the report to the NRC Region II Office within the stated time period. This special report shall include:

1. Number and extent of tubes inspected.

2. Location and percent of wall-thickness penetration for each indication of an imperfection.

3. Identification of tubes plugged.

c. Category C-3 Report

Results of steam generator tube inspections which fall into Technical Specification Category C-3 require prompt notification of the NRC pursuant to Technical Specification 6.9.1 prior to resumption of plant operation.

The written followup of this report shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures to prevent recurrence.

20.5 RPV Nozzle Cladding

All vessel nozzles cladding shall be ultrasonically examined at the end of each 10-year inspection interval, using techniques at least as sensitive as those used to conduct the supplemental examinations performed prior to fuel loading. These examinations are performed during the automated reactor vessel nozzle inspection. This examination is performed in accordance with SQN Technical Specifications and satisfies Surveillance Requirement 4.4.10b. This augmented examination does not require a special report. Results of the examination shall be reported to NRC via the ISI Report discussed in Section 16.2.

Nozzle forging material and cladding is identified in Section 7.1.2.

20.6 Steam Generator Feed Ring and J-Tubes

SGMT shall be responsible for ensuring the adequacy of the technical and administrative requirements of this section.

The carbon steel J-tube nozzles have been replaced with Inconel 600 J-tube nozzles. This material is resistant to erosion corrosion damage. Inspection of the J-tube nozzles is not necessary. An ultrasonic thickness check of the feed ring header and tee shall be performed on a frequency of every 10 years. This augmented examination is self-imposed by TVA (S01 860515 828) and does not require a special report. Results of the examination shall be included in the ISI Report discussed in Section 16.3.

20.7 Control Rod Guide Tube Flexures

Mechanical Maintenance shall be responsible for ensuring the adequacy of the technical and administrative requirements of this section. Any revisions or waivers of this examination plan as stated in this section shall be the responsibility of the Mechanical Maintenance Supervisor or his designee.

Due to the potential of intergranular stress corrosion cracking of guide tube flexures, the following control rod guide tube flexure augmented examination plan shall be initiated (see Westinghouse reference memorandums A27 840123 022 and L01 840723 035).

The control rod guide tube flexures shall be visually examined in accordance with visual examination method VT-3 (see section 11.1) during each refueling outage. These examinations shall be performed in accordance with SMI-0-68-15. At each scheduled refueling outage the tops of all guide tubes shall be visually examined to assure that all flexures are in their proper orientation. If any flexure heads are discovered to be broken from their stems, the heads should be retrieved and flexureless inserts installed. If flexureless inserts are not installed after a break has occurred, a safety evaluation will be required to confirm continued safe plant operation. A copy of the VT data sheets shall be forwarded to the appropriate cognizant engineer.

The PRISIM identifiers for the control rod guide tube flexures are:

CRDTUBEFLEX-A07
CRDTUBEFLEX-E09
CRDTUBEFLEX-G05
CRDTUBEFLEX-J11
CRDTUBEFLEX-L07

This augmented examination is self-imposed by TVA and does not require a report. Results of the examination shall be included in the ISI Report discussed in Section 16.3.

20.8 Rod Control Cluster Assembly (RCCA) Cladding Wear Measurements

PWR Fuel Engineering shall be responsible for ensuring the adequacy of the technical and administrative requirements related to this section.

The RCCA rodlet cladding wear for both SQN units has been examined via the eddy current measurement NDE technique. Encircling coils were used for total area loss determinations and profilometry data taken to characterize wear scars. SQN Unit 2 RCCAs were inspected for rodlet cladding wear in February 1989. SQN Unit 1 RCCAs were inspected in April 1990. Results were documented (L38 890511 800 and L36 901030 800). Summaries were provided for the ISI Reports discussed in Section 16.2.

Because TVA has cladding wear data for each unit's RCCAs and has implemented an axially repositioning program, RCCA inspections need only to be done periodically in the future when identified by PWR Fuel Engineering. When performed, the results will be reviewed, the wear data bases updated, and specific repositioning plans revised as necessary. Any RCCA with excessive rodlet cladding wear will be replaced.

RCCA wear examinations via NDE techniques are self-imposed by TVA and do not require a special report. An examination summary shall be included in the ISI Report discussed in Section 16.3 whenever the RCCAs are inspected for either SQN unit.

20.9 Accelerated Field Weld Program [C.1] - COMPLETE

In accordance with R. L. Gridley's January 30, 1987 memorandum to B. J. Youngblood (L44 870130 804), TVA committed to implement an Accelerated Field Weld Program for SQN Unit 1 and 2. This augmented and accelerated program requires completion of 100 percent of ASME Classes 1 and 2 piping, piping support, and component (reactor vessel, steam generator, pressurizer, and reactor coolant pumps) support field welds that are in the first 10-year program in the two (2) consecutive refueling outages following restart. The Accelerated Field Weld Program was completed during the Unit 1 Cycle 5 refueling outage. The results were included in the ISI Report discussed in Section 16.2.

20.10 Thimble Tube Guide

Site Engineering shall be responsible for ensuring the adequacy of the technical and administrative requirements of this section.

Due to the potential thinning of thimble tube guides as reported on NRC Bulletin 88-09 and Information Notice No. 87-44 supplement 1, TVA performed an augmented examination of the thimble tubes using Eddy Current Examination (ET) during the Unit 1 Cycle 4 refueling outage. See R. W. Fortenberry's July 21, 1988 memorandum to S. J. Smith (S57 880721 821) and J. F. Murdock's June 3, 1988 memorandum to J. B. Hosmer (L29 880531 914).

Future examinations shall be to examine all thimble tubes at each outage until a wear data base has been established. Results of the examinations shall be forwarded to Site Engineering. See P. J. Trudel's April 20, 1990 memorandum to M. J. Burzynski (B25 900420 008).

Results of the examinations shall be included in the ISI Report discussed in Section 16.3.

20.11 Examination of Piping Connected to the Reactor Coolant System Due to Thermal Stresses - COMPLETE

Due to the potential thermal stresses on unisolatable piping attached to the RCS (see NRC Bulletin 88-08) TVA has examined the following areas: 1) the four 1.5-inch high head injection lines, 2) the 2-inch pressurizer spray line from the charging path, 3) the 3-inch alternate charging path, and 4) the 3-inch normal charging path. All of the welds up to the first valve have been PT examined, and the 3-inch line has been UT examined as well. These exams were conducted during Cycle 3 shutdown period.

The SQN Project Engineer has prepared a report to Licensing, who in turn prepared a report to the NRC. (See memorandums B29 880906 008, S08 880830 843, L44 880824 802, and B25 880819 014.)

20.12 Examination of Pressurizer Surge Line Due to Occurrence of Thermal Stratification - COMPLETE

The requirements of IEB 88-11 were satisfied during the Unit 1 Cycle 4 refueling outage. The following paragraphs are being retained for historical information only.

Due to the thermal stratification of the pressurizer surge line (see NRC Bulletin 88-11) TVA performed a visual inspection on the pressurizer surge line. This examination should determine any gross discernable distress or structural damage in the entire pressurizer surge line, including piping, pipe supports, pipe whip restraints, and anchor bolts.

This examination was scheduled and performed per SMI-0-68-4. The results of the examination are to be coordinated in accordance with SMI-0-68-4. NE Operations Support submitted the results of the examination to Nuclear Technology and Licensing for submittal to the NRC within 30 days after completion of the examinations.

20.13 Pressurizer Relief Line Repair Welds and Adjoining Areas

The augmented examination requirements of the pressurizer relief line (draw bead welds) are included in the Technical Specifications 4.0.5 and 4.4.3.2.4. The pressurizer relief line repair welds (RCF-24P and RCF-24H) and adjoining areas shall be

examined in accordance with TVA procedure N-UT-25 using improved ultrasonic detection and evaluation procedures prior to entering Mode 4 whenever the plant has been in cold shutdown for 72 hours or more if the examination has not been performed in the previous six months. This procedure has been qualified in accordance with NRC IE Bulletin 83-02 by demonstrating proficiency in detecting Intergranular Stress Corrosion Cracking (IGSCC). All future examinations of the pressurizer relief line repair welds will be performed using this procedure or a procedure with ultrasonic sensitivities equivalent to those required for detecting IGSCC.

In the event these 6-month period examinations find the piping free of unacceptable indications for three successive inspections, the inspection interval shall be extended to 36 month intervals (12 months to coincide with a scheduled refueling outage). The report shall be submitted with the ISI Report discussed in Section 16.2. See examination history below:

Examination History

Date Examinations Were Performed	Examination Periods
9-26-80 (Examination Performed by SI-284)	Start of first 6-month period
5-15-81 (Examination Performed by SI-284)	End of first 6-month period Start of second 6-month period
1-25-82 (Examination Performed by SI-284)	End of second 6-month period Start of third 6-month period
11-1-82 (Examination Performed by SI-284)	End of third 6-month period Start of first 36-month period
9-14-85 (Examination Performed by SI-284)	End of first 36-month period Start of second 36-month period
8-2-88 (Examination Performed by SI-114.1)	End of second 36-month period Start of third 36-month period
XX-XX-91 (Examination Performed by SI-114.1)	End of third 36-month period Start of first 80-month period

20.14 RPV Closure Head Circumferential Weld (W09-10)

See subsection 7.1.1.3 of this program for augmented examination requirements. This augmented examination does not require a special report. Results of the examination shall be included in the ISI Report discussed in Section 16.2. See the following table:

RV Head Flaw Examination Dates by Cycle:

Cycle 2 (W09-10B)	First Period
Cycle 4 (W09-10B-FLAW)	Second Period
Cycle 6 (W09-10B-FLAW)	Third Period

20.15 Main Feedwater Isolation Valves

The augmented examination requirements of the Main Feedwater Isolation Valves were satisfied during the Unit 1 Cycle 5 refueling outage. This information is being retained for historical purposes.

Site Engineering shall be responsible for ensuring the adequacy of the technical and administrative requirements of this section.

Due to the bonnet indications found by previous inspections, MFIVs 1-FCV-3-33 and 1-FCV-3-47 received an augmented magnetic particle (MT) examination during Unit 1 Cycle 5 refueling outage.

The bonnet indications were determined not to be service related and were identified as artifacts of the casting process used to produce the valve bonnets. The purpose of the re-examination is to verify that no progression of the damage is occurring. The examinations shall be performed in accordance with the following:

a. The results of the magnetic particle examination will be compared to the previous examination record for evidence of propagation based on the measured length of the indication. If the indication seems to have grown, the ends of the indication will be examined optically either in situ or by replication and laboratory examination for evidance of growth.

b. If measuring the indication shows growth but no evidence of crack extensions can be visually seen, the ends of the indication shall be stenciled with a low stress punch, and the bonnet or body shall be reinspected in the following outage.

c. If there is definite evidence of crack propagation based on visual inspection, it shall be referred to Site Engineering (Mechanical/Nuclear). Engineering will evaluate the condition and recommend that the bonnet or body affected be weld repaired or replaced, as necessary. "Definite evidence" is considered to be fatigue-type cracking emanating from the end of the previous indication or stress corrosion cracking. In either case, the propagated cracking would be free of the high temperature corrosion product present in the previous examination.

d. If there is no evidence of growth associated with the reinspection, no further inspection is required.

This augmented examination was self-imposed by TVA (B25 891228 008) and did not require a special report. Results of the examinations were forwarded to Site Engineering (Mechanical/Nuclear) by SQO and included in the ISI Report discussed in Section 16.3.

21.0 INTERFACE DOCUMENTS

21.1.1 Quality Methods Procedure: QMP-102.4, Qualification and Certification Requirements for NQA NDE Personnel

21.1.2 Quality Methods Procedure: QMP-110.5, Nondestructive Examination Procedures Approved for Use on CSSC Items at All Nuclear Plants

21.1.3 Quality Methods Procedure: QMP-105.4, Control of Calibration Blocks.

21.1.4 Sequoyah Nuclear Plant Administrative Instructions AI-8, AI-18 (Series) and AI-19 (Part IV and Part VI).

21.1.5 Sequoyah Nuclear Plant Site Standard Practice SSP-2.9, SSP-3.1, SSP-3.4, SSP-3.6, SSP-3.7, SSP-6.21, SSP-8.2, SSP-12.8, and SSP-13.3.

21.1.6 Sequoyah Nuclear Plant Technical Instruction TI-89.

21.1.7 Sequoyah Nuclear Plant Special Maintenance Instructions SMI-0-68-04 and SMI-0-68-15.

21.1.8 Sequoyah Nuclear Plant Maintenance Instructions O-MI-MRR-068-005.0, MI-1.4, O-MI-MXX-068-004.0, O-MI-MXX-068-003.0, MI-2.2, MI-10.2.2, MI-10.2.3, MI-6.15, O-MI-MVV-000.008.0.

22.0 DEVELOPMENTAL REFERENCES

22.1.1 Memorandum from D. W. Wilson to H. L. Abercrombie, dated August 1, 1986 "Sequoyah Nuclear Plant, Units 1 and 2, "Indications in Class 1 Welds" (L18 860730 899).

22.1.2 Memorandum from V. A. Bianco to C. R. Brimer dated January 10, 1987 (B25 870109 045).

22.1.3 Memorandum from G. C. Zech to S. A. White dated January 25, 1988 allowing use of code cases N-341 and N-356.

22.1.4 Memorandum from P. G. Trudel to M. J. Burzynski dated April 20, 1990 (B25 900920 008).

22.1.5 Memorandum from R. L. Gridley to B. J. Youngblood dated January 30, 1987 (L44 870130 804).

22.1.6 NRC Bulletin 88-09 and Information Notice 87-44 supplement 1, "Thimble Tube Thinning in Westinghouse Reactors."

22.1.7 Memorandum from R. W. Fortenberry to S. J. Smith dated July 21, 1988 (S57 880721 821).

22.1.8 Memorandum from J. F. Murdock to J. B. Hosmer dated June 3, 1988 (L29 880531 914).

22.1.9 NRC Bulletin 88-08, "Thermal Stresses on Piping Connected to Reactor Coolant Systems."

22.1.10 NRC Bulletin 88-11, "Pressurizer Surge Line Thermal Stratification."

22.1.11 Memorandum from D. F. Goetcheus to J. T. Lewis dated September 2, 1988 (S57 880902 911).

22.1.12 Letter from S. C. Black to O. D. Kingsley, Jr., dated January 18, 1990, "Nuclear Quality Assurance Plan" (TAC No. 72833), allowing the use of 1984 Edition of ASNT SNT-TC-1A for certification of NDE personnel.

22.1.13 Memorandum from P. G. Trudel to L. E. Martin dated April 17, 1989 (B25 890417 024).

22.1.14 Memorandum from S. C. Black to O. D. Kingsley, Jr., dated December 13, 1989, allowing the use of Code Case N-460.

22.1.15 Memorandum from F. J. Hebdon to O. D. Kingsley, Jr., dated February 7, 1991 (A02 910214 009).

22.1.16 Memorandum from F. J. Hebdon to D. A. Nauman dated October 21, 1991 (A02 911024 003).

22.1.17 Memorandum from P. G. Trudel to R. L. Lumpkin, Jr. dated December 28, 1989 (B25 891228 008).

22.1.18 Memorandum from G. J. Pitzl to G. L. Belew dated January 5, 1984 (L29 840105 856).

22.1.19 Memorandum from T. F. Ziegler to R. C. Parker dated December 27, 1983 (L29 831222 836).

22.1.20 NRC Bulletin 83-02, "Stress Corrosion Cracking in Large-Diameter Stainless Steel Recirculation System Piping at BWR Plants."

22.1.21 NRC Bulletin 79-13, "Cracking in Feedwater System Piping."

22.1.22 Memorandum from D. F. Goetcheus to G. L. Belew dated May 15, 1986 (S01 860515 828).

22.1.23 Memorandum from R. S. Howard, Westinghouse, to J. P. Darling dated July 9, 1984 (L01 840723 035).

22.1.24 Memorandum from J. L. Tain, Westinghouse, to J. A. Raulston, dated January 19, 1984 (A27 840123 022).

22.1.25 Memorandum from W. E. Pennell to R. A. Sessoms dated August 10, 1987 (B41 870810 003).

22.1.26 Memorandum from J. A. Kirkebo to Site Directors dated June 24, 1987 (L29 870528 815).

22.1.27 Memorandum from J. A. Domer to NRC dated June 17, 1985 (L44 850617 801).

22.1.28 Memorandum from J. L. Wilson to NRC dated August 21, 1991 (S10 910821 848).

22.1.29 Memorandum from R. R. Calabro to Those listed dated May 16, 1989 (L38 890511 800).

22.1.30 Memorandum from R. R. Calabro to Those listed dated October 30, 1990 (L36 901030 800).

22.1.31 Memorandum from P. G. Trudel to M. J. Ray dated September 6, 1988 (B29 880906 008).

22.1.32 Memorandum from L. E. Martin to P. G. Trudel dated August 30, 1988 (S08 880830 843).

22.1.33 Memorandum from M. J. Ray to NRC dated August 24, 1988 (L44 880824 802).

22.1.34 Memorandum from P. G. Trudel to S. J. Smith dated August 19, 1988 (B25 880819 014).

22.1.35 Instruction Manual - 173-inch ID Reactor Pressure Vessel - Rotterdam Dockyard Company, Contract No. 68C60-91934, N2M-2-3.

22.1.36 Westinghouse Technical Manual - Pressurizer, TM 1440-C225, Contract No. 68C60-91934, N2M-2-6.

22.1.37 Westinghouse Technical Manual - Vertical Steam Generators, TM 1440-C224, Contract No. 68C31-91934, N2M-2-4.

22.1.38 Westinghouse Instruction Manual - Auxiliary Heat Exchangers, Contract No. 68C60-91934, N2M-2-25.

22.1.39 Westinghouse Instruction Book - Reactor Coolant Pump, Contract No. 68C60-91934, N2M-2-5.

22.1.40 Ingersoll-Rand Instruction Manual - Residual Heat Removal Pumps, Contract No. 68C60-91934, N2M-2-30.

APPENDIX A
TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of	40 Yr. Sample Length of Weld	10 Yr. Insp Interval No. Welds/of	10 Yr. Insp Interval Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
A. Reactor Vessel											
1. Circumferential Shell Welds	7.1.1.1	UT	B-A	4/50 ft.		4/50 ft.		0	0	4	CHM-2343-B
2. Closure Head Circ Weld	7.1.1.3	UT	B-A	41 ft.		41 ft.		13 ft.	0 ft.	28 ft.	CHM-2358-A
3. Lower Head Circ Weld	7.1.1.4	UT	B-A	38 ft.		38 ft.		0 ft.	0 ft.	38 ft.	CHM-2343-B
4. Lower Head Meridional Welds	7.1.1.6	UT	B-A	6/4 ft.		6/4 ft.		0	0	6	CHM-2343-B
5. Shell-to-Flange Weld	7.1.1.7	UT	B-A	50 ft.		50 ft.		0 ft.	0 ft.	50 ft.[2]	CHM-2343-B
6. Closure Head-to-Flange Weld	7.1.1.8	UT	B-A	45 ft.		45 ft.		15 ft.	15 ft.	15 ft.	CHM-2358-A
Closure Head-to-Flange Flex Area	7.1.1.8	MT	B-A	45 ft.		45 ft.		0	0	45 ft.	CHM-2358-A
7. Nozzle-to-Vessel Welds	7.1.2	UT	B-D	8		8		4[1] Outlets	0	4[1] Inlets (Bore & Shell ID) 4 Outlets (Shell ID)	CHM-2343-B CHM-2360-A CHM-2361-A

[1]The four outlet nozzle-to-vessel welds examination from the vessel shell shall be done in the third inspection period.
[2]See Request for Relief ISI-10

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Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
A. Reactor Vessel (cont'd)											
8. Inside Radius Sections (Includes Integral Extensions on the Outlet Nozzles)	7.1.3	UT	B-D	8		8		4 Outlet	0	8 (4 Inlet 4 Outlet)	CHM-2343-B CHM-2360-A CHM-2361-A
9. Vessel Penetrations and Attachments	7.1.4	VT-2	B-E	37		37		12	12	13	CHM-2651-C MSG-0004-C
10. Nozzle-to-Safe End Welds	7.1.5	UT,PT	B-F	8		8		4 Outlet	0	4 Inlet	CHM-2343-B
11. Closure Studs and Nuts	7.1.6	UT,MT	B-G-1	54		54		18	18	18	CHM-2341-B
	7.1.6	MT	B-G-1	54		54		18	18	18	CHM-2341-B
12. Ligaments Between Threaded Stud Holes	7.1.6	UT	B-G-1	54		54		18	18	18	CHM-2341-B
13. Closure Washers	7.1.6	VT-1	B-G-1	54		54		18	18	18	CHM-2341-B
14. Vessel Interior	7.1.9	VT-3	B-N-1	1		1		1	1	1	CHM-2343-B
15. Removable Core Support Structure	7.1.10	VT-3	B-N-3	See Program Section 7.1.10							

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Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds	Length of Weld	1st Insp. Interval No. Welds	Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
A. Reactor Vessel (cont'd)											
16. Control Rod Drive Housings	7.1.11	UT	B-O	2		2		0	1	1	CHM-2651-C CHM-2359-A
17. RV Aux Head Adapters	7.1.12	UT,PT	B-F	4		4		1	1	2	CHM-2651-C ISI-0014-A
B. Pressurizer											
1. Circumferential Shell-to-Head Welds	7.2.1	UT	B-B	2/24 ft.		2/24 ft.		12 ft.	12 ft.	24 ft.	ISI-0394-C
2. Longitudinal Shell-to-Head Welds	7.2.2	UT	B-B	2/1 ft.[1]		2/1 ft.		1	0	1	ISI-0394-C
3. Nozzle-to-Vessel Welds and Inside Radius Section	7.2.4	UT	B-D	6		6		2	2	2	ISI-0394-C
4. Heater Penetrations	7.2.5	VT-2	B-E	78		20		5	7	7	MSG-0006-A
5. Nozzle-to-Safe End Welds	7.2.6	UT,PT	B-F	6		6		2	2	2	ISI-0394-C

[1]One foot of the longitudinal weld selected for examination is that section of weld intersecting the circumferential shell-to-head weld examined.

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Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	40 Yr. Sample Length Welds/of Weld	1st Insp. Interval No. Welds/of Weld	1st Insp. Interval Length Welds/of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
B. Pressurizer (cont'd)											
6. Pressure Retaining Bolting	7.2.8	VT-1	B-G-2	1 Mwy/ 16 bolts		1 Mwy/ 16 bolts		16	0	0	MSG-0002-B
7. Integrally Welded Support Skirt	7.2.9.1	MT	B-H	23 ft.		23 ft.		7 ft.	8 ft.	8 ft.	ISI-0394-C
8. Seismic Lugs	7.2.9.2	MT	B-H	4		4		0	0	4	ISI-0394-C
C. Steam Generators											
1. Primary Head-to-Tube Sheet Weld	7.3.2	UT	B-B	4/36 ft.		4/36 ft.		1	1	2	ISI-0399-C
2. Primary Nozzles Inside Radius Section	7.3.3	UT	B-D	8[1]		8[1]		0	0	8[1]	ISI-0399-C
3. Primary Nozzle-to-Safe End Welds	7.3.4	UT,PT	B-F	8		8		2	3	3	ISI-0399-C
4. Pressure Retaining Bolting	7.3.6	VT-1	B-G-2	4 Gens./2Mwy		8 Mwy		2	2	4	MSG-0002-B
5. Tubing	7.3.8	ET	B-Q	See program sections 7.3.8 and 20.4							ISI-0397-C

[1]See Program Section 7.3.3 and Request for Relief ISI-6.

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CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	40 Yr. Sample Length of Weld	1st Insp. Interval No. Welds/of Weld	1st Insp. Interval Length of Weld	Inspection Periods 3 yrs.	Inspection Periods 7 yrs.	Inspection Periods 10 yrs.	Reference Dwg. No.
D. Piping											
1. Pressure Retaining Bolting											
a. Reactor Coolant System	7.4.3.1	VT-1	B-G-2	5 Sets[2]		5 Sets[2]		2	1	2	ISI-0369-C
b. Chemical and Volume Control System (SWI)	7.4.3.2	VT-1	B-G-2	4 Sets/4 Bolts		4 Sets		1	1	2	CHM-2338-C
c. Safety Injection System	7.4.3.4	VT-1	B-G-2	4 Sets/4 Bolts		4 Sets		1	1	2	CHM-2333-C
2. Circumferential Welds											
a. Reactor Coolant System Main Loops Circs ≥4"	7.4.4.1	UT/PT	B-J	63		16		5	5	6	CHM-2333-B
b. Reactor Coolant System Circs ≥4" Nom. Size	7.4.4.2	UT/PT	B-J	65[1]		17[1]		5	5	7	ISI-0369-C
Circs <4" Nom. Size	7.4.4.2	PT	B-J	20[3]		5[3]		2	1	2	ISI-0369-C CHM-2333-B

[1]The change in welds numbers during the third period was due to the RV Aux Head Adapter Cap Welds (UHI Caps) being added to RC System after U1C4 Mod.
[2]The change in bolted connections was due to the U1C4 RTD Mod.
[3]The change in weld numbers was due to the U1C4 RTD Mod.

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CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of	Length Weld	1st Insp. Interval No. Welds/of	Length Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
c. Chemical and Volume Control System Circs ≥4" Nom. Size	7.4.4.3	N/A									
Circs <4" Nom. Size	7.4.4.3	PT	B-J	62		15		5	5	5	CHM-2335-C
d. Residual Heat Removal System Circs ≥4" Nom. Size	7.4.4.4	UT/PT	B-J	49		13		4	4	5	CHM-2336-C
e. Safety Injection System Circs ≥4" Nom. Size	7.4.4.5	UT/PT	B-J	84[1]		21[1]		7	6	8	CHM-2333-C
Circs <4" Nom. Size	7.4.4.5	PT	B-J	33		8		2	2	4	CHM-2333-C
f. RV Aux Head Adapter Cap Welds (UHI Caps) Circs ≥4"	7.4.4.6	These welds are examined as a part of the RC System, Section 7.4.4.2, due to the UHI Mod.									

[1]The change in weld numbers was due to new code class boundaries.

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Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	40 Yr. Sample Length Welds/of Weld	1st Insp. Interval No. Welds/of Weld	1st Insp. Interval Length Welds/of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
3. Branch Pipe Connection Welds											
a. Reactor Coolant System – Main Loops											
Welds >2" Nom. Size	7.4.5.1	UT/PT	B-J	1		1		0	1	0	CHM-2333-B
Welds ≤2" Nom. Size	7.4.5.1	PT	B-J	13		4		1	2	1	CHM-2333-B
b. Reactor Coolant System											
Welds >2" Nom. Size	7.4.5.2	UT/PT	B-J	6		2		0	1	1	CHM-2333-B ISI-0369-C
Welds ≤2" Nom. Size	7.4.5.2	PT	B-J	7		2		0	1	1	CHM-2333-B ISI-0369-C
c. Chemical and Volume Control System											
Welds >2" Nom. Size	7.4.5.3	UT/PT	B-J	3		1		0	0	1	CHM-2335-C
Welds ≤2" Nom. Size	7.4.5.3	PT	B-J	1		See Note 1		-	-	-	CHM-2335-C

[1]Examination not scheduled this interval.

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TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of	40 Yr. Sample Length of Weld	1st Insp. Interval No. Welds/of	1st Insp. Interval Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
3. Branch Pipe Connection Welds (cont'd)											
d. Residual Heat Removal System											
Welds >2"											
Nom. Size	7.4.5.4	UT/PT	B-J	3		1		0	0	1	CHM-2336-C
Welds ≤2"											
Nom. Size	7.4.5.4	PT	B-J	2		See Note 2		-	-	-	CHM-2336-C
e. Safety Injection System											
Welds >2"											
Nom. Size	7.4.5.5	UT/PT	B-J	5		2		0	1	1	CHM-2333-C
Welds ≤2"											
Nom. Size	7.4.5.5	PT	B-J	11		2		0	1	1	CHM-2333-C
4. Socket Welds											
a. Reactor Coolant System	7.4.6.1	PT	B-J	71[1]		17[1]		0	0	17	ISI-0369-C CHM-2333-B

[1]The change in weld numbers was due to the UICA 5.0 Mod.
[2]Examinations not scheduled this interval.

APPENDIX A
TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	40 Yr. Sample Length Welds/of Weld	1st Insp. Interval No. Welds/of Weld	1st Insp. Interval Length Welds/of Weld	Inspection Periods 3 yrs.	Inspection Periods 7 yrs.	Inspection Periods 10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
4. Socket Welds											
b. Chemical and Volume Control System	7.4.6.2	PT	B-J	246	62	19	19	24			CHM-2338-C CHM-2335-C
c. Residual Heat Removal System	7.4.6.3	PT	B-J	18	5	1	2	2			CHM-2336-C
d. Safety Injection System	7.4.6.4	PT	B-J	189	47	15	16	16			CHM-2333-C
5. Piping and Valve Integrally Welded Support Members											
a. Reactor Coolant System	7.4.7.1	PT	B-K-1	6[1]	6[1]	2	1	3			ISI-0370-C
b. Chemical and Volume Control System	7.4.7.2	PT	B-K-1	0[2]	0[2]	0	0	0			CHM-2434-C
c. Residual Heat Removal System	7.4.7.3	PT	B-K-1	3[2]	3[2]	0	1	2			CHM-2435-C

[1]The change in weld numbers was due to the U1C4 RTD Mod.
[2]The change in weld numbers due to removal of a support.

APPENDIX A
TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of	Length Weld	1st Insp. Interval No. Welds/of	Length Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
d. Safety Injection System	7.4.7.4	PT	B-K-1	5[1]		5[1]		1	2	2	CHM-2436-C
6. Piping and Valve Component Supports											
a. Reactor Coolant System	7.4.8.1	VT-3, VT-4	B-K-2	55[2]		55[2]		13	22	20	ISI-0370-C
b. Chemical and Volume Control System	7.4.8.2	VT-3, VT-4	B-K-2	126[1]		126[1]		37	41	48	CHM-2433-C CHM-2434-C
c. Residual Heat Removal System	7.4.8.3	VT-3, VT-4	B-K-2	16[3]		16[3]		4	5	7	CHM-2435-C

[1]The change in support numbers was due to new code class boundaries.
[2]The change in weld numbers was due to the U1C4 RTD Mod.
[3]The change in support numbers was due to support removal modifications.

APPENDIX A
TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/Length of Weld	1st Insp. Interval No. Welds/Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)									
d. Safety Injection System	7.4.8.4	VT-3, VT-4	B-K-2	91[1]	91[1]	16	36	39	CHM-2435-C
e. RCS Main Loop Piping	7.4.8.5	VT-3 VT-4	B-K-2	7	7	0	4	3	ISI-0303-C
E. Reactor Coolant Pumps									
1. Pressure-Retaining Bolting	7.5.1	UT	B-G-1	96	96	24	24	48	CHM-2675-B
2. Pressure-Retaining Bolting	7.5.1	VT-1, MT	B-G-1	See Note 2					CHM-2675-B
3. Pressure-Retaining Bolting	7.5.2	VT-1	B-G-2	4 Sets	4 Sets	1 Set	1 Set	2 Sets	CHM-2675-B
4. Component Supports	7.5.4	VT-3	B-K-2	4 Pumps/3 ft. per pump	12 ft.	3 (1-pump)	3 (1-pump)	6 (2-pumps)	ISI-0325-B
5. Casing Welds	7.5.5	PT	B-L-1	4	1	0	0	1	MSG-0003-B

[1]The change in support numbers was due to new code class boundaries.
[2]When disassembled, bolts shall be magnetic particle examined, threads in the base material and flange ligaments between threaded bolt holes shall be visually examined.

APPENDIX A
TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
6. Casing	7.5.6	VT-1 or (UT & VT-2)	B-L-2	4		See Program Section RFR ISI-1		7.5.6, 7.9 and			MSG-0003-B
F. Valves											
1. Pressure Retaining Bolting											
a. Reactor Coolant System	7.6.2.1	VT-1	B-G-2	3[1, 2]		3[1, 2]		1	2	0	ISI-0369-C
b. Chemical and Volume Control System	7.6.2.2	VT-1	B-G-2	0[2]		0[2]		0	0	0	CHM-2335-C
c. Residual Heat Removal System	7.6.2.3	VT-1	B-G-2	6		6		0	3	3	CHM-2336-C
d. Safety Injection System	7.6.2.4	VT-1	B-G-2	14[2]		14[2]		5	6	3	CHM-2333-C

[1]The change in valve bolting numbers was due to the U1C4 RTD Mod.
[2]The change in valve bolting numbers is in accordance with Code Case N-426.

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TABLE A
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 1 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
F. Valves (cont'd)											
2. Integrally Welded Support Members	7.6.3	PT	B-K-1	Totals are included in D.5 of this table.							
3. Component Supports	7.6.4	VT-3, VT-4	B-K-2	Totals are included in D.6 of this table.							
4. Valve Bodies >4" N.P.S.	7.6.6	VT-1	B-M-2	See Table 1 of Attachment 2							
G. System Pressure Test	7.9	VT-2	B-P	See Program Section 7.9							

APPENDIX A
TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
A. Steam Generators											
1. Circumferential Shell Welds	8.1.1	UT	C-A	4Gens/3Welds (12)		3		1	1	1	ISI-0399-C
2. Circumferential Head Welds	8.1.2	UT	C-A	4Gens/1Weld (4)		1 Weld/46 ft.		15'	15'	16'	ISI-0399-C
3. Tubesheet-to-Shell Weld	8.1.3	UT	C-A	4Gens/1Weld (4)		1 Weld/36 ft.		12'	12'	12'	ISI-0399-C
4. Nozzle-to-Vessel Weld and Inside Radius											
a. Nozzle-to-Vessel Welds	8.1.4	UT,MT	C-B	4Gens/2Noz(8)		8		2	3	3	ISI-0399-C
b. Nozzle-to-Vessel Inside Radius	8.1.4	UT	C-B	4Gens/2Noz(8)		8		1	4	3	ISI-0399-C
B. Heat Exchangers											
1. Residual Heat Removal Heat Exchangers (2)											
a. RHRHX Circumferential Shell Weld	8.2.1.1	UT	C-A	2Ht.Ex./1Weld(2)		1 weld/113"		37"	38"	38"	CHM-2404-A

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TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
B. Heat Exchangers (cont'd)											
b. RHRHX Circumferential Head Weld	8.2.1.2	UT	C-A	2Ht.Ex./1Weld(2)		1 weld/113"		37"	38"	38"	CHM-2404-A
c. RHRHX Nozzle-to-Vessel Welds	8.2.1	PT[1]	C-B	2Ht.Ex./2Noz.(4)		4		1	1	2	CHM-2404-A
d. RHRHX Integrally Welded Supports	8.2.3	PT	C-C	2Ht.Ex./2Welds (4)		2		1	0	1	CHM-2404-A
e. RHRHX Component Supports	8.2.4	VT-3	C-E	2Ht.Ex./2 Sprts. (4)		4		1	1	2	CHM-2404-A
C. Tanks											
1. CCP Tank (Boron Injection Tank) (1)											
a. CCP Tank Circumferential Shell/Head Weld	8.5.1	UT	C-A	1Tank/2Welds		2		1	0	1	ISI-0069-A

[1]See Request for Relief ISI-13, PT examination only.

APPENDIX A
TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
C. Tanks (cont'd)											
b. CCP Tank Nozzle to Vessel Welds	8.5.2	UT,MT	C-B	1Tank/2Noz		2		1	1	0	ISI-0069-A
c. CCP Tank Integrally Welded Supports	8.5.3	PT	C-C	1Tank/4IA		4		0	2	2	ISI-0069-A
d. CCP Tank Component Supports	8.5.4	VT-3	C-E	4		4		1	1	2	ISI-0069-A
e. CCP Tank Pressure Retaining Bolting >2" Dia.	8.5.5	UT	C-D	1Mwy/16Studs		1Mwy		1	0	0	ISI-0069-A
D. Piping											
1. Integrally Welded Supports											
a. Residual Heat Removal System	8.9.1.1	PT	C-C	0[1]		0[1]		0	0	0	CHM-2435-C

[1]The change in support numbers during the second period was due to new code class boundaries.

APPENDIX A
TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
b. Safety Injection System	8.9.1.2	PT	C-C	4[1,3]		4[1,3]		0	0	4	CHM-2436-C
c. Main Steam System	8.9.1.3	MT	C-C	10[1]		10[1]		0	4	6	CHM-2438-C
d. Feedwater System	8.9.1.4	MT	C-C	5[1, 4]		5[1, 4]		2	1	2	CHM-2439-C
2. Piping and Valve Component Supports											
a. Residual Heat Removal System	8.9.2.1	VT-3, VT-4	C-E	85[1,2]		85[1,2]		25	27	33	CHM-2435-C
b. Safety Injection System	8.9.2.2	VT-3, VT-4	C-E	57[1, 2]		57[1, 2]		18	22	17	CHM-2436-C
c. Main Steam System	8.9.2.3	VT-3, VT-4	C-E	46[1]		46[1, 5]		8	16	22	CHM-2438-C

[1]The change in support numbers was due to new code class boundaries.
[2]The change in support numbers was due to new code class boundaries in accordance with IWC-1220 (a).
[3]The change in support numbers was due to mods of the IAs and new code class boundaries in accordance with IWC-1220 (a).
[4]The change in support numbers was due to mods of the IAs.
[5]The change in support numbers was due mods.

APPENDIX A
TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	Length	1st Insp. Interval No. Welds/of Weld	Length	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (Continued)											
d. Feedwater System	8.9.2.4	VT-3, VT-4	C-E	31[1]		31[1]		10	10	11	CHM-2439-C
e. Containment Spray System	8.9.2.5	VT-3, VT-4	C-E	5		5		1	2	2	CHM-2440-C
3. Circumferential and Longitudinal											
a. Residual Heat Removal System											
1. RHR Circs >1/2" Nom. Wall Thickness	8.9.4.1	UT,PT	C-F	27[1]		7[1]		2	2	3	CHM-2336-C
2. RHR Long. >1/2" Nom. Wall Thickness	8.9.4.1	UT,PT	C-F	6[1]		2[1]		1	1	0	CHM-2336-C
3. RHR Circs ≤1/2" Nom. Wall Thickness	8.9.4.1	PT	C-F	118[1]		30[1]		9	10	11	CHM-2336-C
4. RHR Long. ≤1/2" Nom. Wall Thickness	8.9.4.1	PT	C-F	48[1]		12[1]		3	4	5	CHM-2336-C

[1]The change in weld numbers was due to new code class boundaries.

APPENDIX A
TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/%	Length Weld	1st Insp. Interval No. Welds/	Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
b. Safety Injection System											
1. SIS Circs >1/2" Nom. Wall Thickness	8.9.4.2	UT,PT	C-F	40[1]		10[1]		3	3	4	CHM-2333-C
2. SIS Circs ≤1/2" Nom. Wall Thickness	8.9.4.2	PT	C-F	54[1]		14[1]		4	5	5	CHM-2333-C
3. SIS Long. ≤1/2" Nom. Wall Thickness	8.9.4.2	PT	C-F	24[1]		6[1]		1	1	4	CHM-2333-C
c. Main Steam System											
1. MS Circs >1/2" Nom. Wall Thickness	8.9.4.3	UT,MT	C-F	16[1]		4[1]		1	1	2	CHM-2340-C
2. MS Long. >1/2" Nom. Wall Thickness	8.9.4.3	UT,MT	C-F	5		2		0	2	0	CHM-2340-C
d. Feedwater System											
1. FW Circs >1/2" Nom. Wall Thickness	8.9.4.4	UT,MT	C-F	15		4		1	2	1	CHM-2339-C
2. FW Long >1/2" Nom. Wall Thickness	8.9.4.4	UT,MT	C-F	1		1		0	0	1	CHM-2339-C

[1]The change in weld numbers was due to new code class boundaries.

APPENDIX A
TABLE B
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 2 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of	40 Yr. Sample Length Weld	1st Insp. Interval No. Welds/of	1st Insp. Interval Length Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
D. Piping (cont'd)											
d. Feedwater System (cont'd)											
3. FW Circs ≤1/2" Nom. Wall Thickness	8.9.4.4	MT	C-F	1		0		See Note 1			
e. Containment Spray System											
1. CS Circs ≤1/2" Nom. Wall Thickness	8.9.4.5	PT	C-F	6		1		0	1	0	CHM-2422-C
2. CS Long. ≤1/2" Nom. Wall Thickness	8.9.4.5	PT	C-F	2		1		0	0	1	CHM-2422-C
E. Pumps											
1. Residual Heat Removal (2) RHRP											
a. RHRP Component Supports	8.10.1.2	VT-3	C-E	2		2		0	1	1	ISI-0353-B
F. System Pressure Test	8.12	VT-2	C-H	See Program Section 8.12							

[1]Examination not scheduled this interval.

APPENDIX A
TABLE C
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 3 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds/of Weld	40 Yr. Sample Length of Weld	1st Insp. Interval No. Welds/of Weld	1st Insp. Interval Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
A. Piping											
1. All ASME Class 3 (Equivalent)	9.0	VT-2	D-A, D-B, D-C	N/A		N/A		100%	100%	100%	N/A
B. Component Supports											
1. Auxiliary Feedwater System	9.1.1	VT-3, VT-4	D-A	38[1]		38[1]		38	38	38	ISI-0113-C
2. Chemical and Volume Control System	9.1.2	VT-3, VT-4	N/A	0[1,2]		0[1,2]		0	0	0	
3. Component Cooling System	9.1.3	VT-3, VT-4	D-A, D-B	233[1]		233[1]		231	231	233	ISI-0126-C
4. Containment Spray System	9.1.4	VT-3, VT-4	D-B	0[1]		0[1]		0	0	0	
5. essential Raw Cooling Water System	9.1.5	VT-3, VT-4	D-A, D-B	345[1, 4]		345[1, 4]		248[1,4] 87[3]	331	345	ISI-0123-C

[1]The change in support numbers was due to new code class boundaries.
[2]The supports are not required to be examined, due to no examination category for this piping, TVA Safety Class D.
[3]Examinations performed during cycle 3B corrective actions for CAQRs CHS-8700-06 and CHS-8700-10 for support examinations not performed during the first period.
[4]Change in support number due to removal of supports in later periods.

APPENDIX A
TABLE C
SEQUOYAH INSERVICE INSPECTION PROGRAM
CLASS 3 COMPONENTS

Component	Program Reference Section	Exam Method	Section XI Exam Category	40 Yr. Sample No. Welds	40 Yr. Sample Length of Weld	1st Insp. Interval No. Welds	1st Insp. Interval Length of Weld	Inspection Periods 3 yrs.	7 yrs.	10 yrs.	Reference Dwg. No.
B. Component Supports (Continued)											
6. Fuel Pool Cooling System	9.1.6	VT-3,	D-C	44[1]		44[1]		44	44	44	ISI-0127-C
7. Residual Heat Removal System	9.1.7	VT-3, VT-4	D-B	0[1]		0[1]		0	0	0	
8. Safety Injection System	9.1.8	VT-3, VT-4	D-B	0[1]		0[1]		0	0	0	
9. Equipment Component Supports	9.2	VT-3	D-A, D-B D-C	81[1, 2, 3]		81[1, 2, 3]		19[1,3] 43[2]	77	81	See Attachment 1

[1]The change in support numbers was due to new code class boundaries.
[2]Examinations performed during cycle 3B as corrective actions for CAQR's CHS-8700-06 and CHS 8700-10 for support examinations not identified during the first period.
[3]Change in support number due to CCHX modification.

APPENDIX A
TABLE D
SEQUOYAH INSERVICE INSPECTION PROGRAM
SUCCESSIVE EXAMINATIONS

Component	Program Reference Section	Exam Method	Exam Category	Successive Exam Program Reference Section	Examined U/C	Successive Examination Periods 1st U/C	2nd U/C	3rd U/C	Reference Dwg. No./Sh.
W09-10B-FLAW	7.1.1.3	UT	B-A	7.8	PSI	U1C2	U1C4	U1C6	CHM-2358-A
RCW-28-SE	7.2.6	PT	B-F	7.8	U1C5	U1C7	U1C9	U1C11	ISI-0394-C

APPENDIX A
TABLE E
SEQUOYAH INSERVICE INSPECTION PROGRAM
AUGMENTED EXAMINATIONS

Component	Program Reference Section	Exam Method	Exam Schedule Cycle1	Cycle2	Cycle3	Cycle4	Cycle5	Cycle6	Ref. Dwg. No.
Feedwater Nozzle-To-Pipe Welds and Adjacent Pipe and Nozzle Areas	20.1	UT	(See Program Section 20.1)		X		X	X	CHM-2339-C
RPV Nozzle Safe Ends	20.2	UT,PT		X				X	CHM-2343-B
Reactor Coolant Pump Flywheel	20.3		X (Note: See Dwg. ISI-0403-A for examinations that have been performed.)		X	X	X	X	CHM-2333-C ISI-0403-A
Steam Generator Tubing	20.4		See Program Section 20.4.						
RPV Nozzle Cladding	20.5	UT						X	CHM-2343-B CHM-2360-A CHM-2361-A
Steam Generator Feedring and J-Tubes	20.6	UT	See Program Section 20.6.						
Control Rod Guide Tube Flexures	20.7	VT	Each Refueling Outage						
Rod Control Cluster Assembly (RCCA) Cladding Wear Measurements	20.8	ET	See Program Section 20.8.						

APPENDIX A
TABLE E
SEQUOYAH INSERVICE INSPECTION PROGRAM
AUGMENTED EXAMINATIONS

Component	Program Reference Section	Exam Method	Exam Schedule Cycle1	Cycle2	Cycle3	Cycle4	Cycle5	Cycle6	Ref. Dwg. No.
Accelerated Field Weld Program	20.9		Complete						
Thimble Tube Guide	20.10	ET	Each refueling outage. See Program Section 20.10.						
Examination of Piping connected to the Reactor Coolant System Due to Thermal Stresses	20.11		Complete						
Examination of Pressurizer Surge Line Due to Occurence of Thermal Stratification	20.12		Complete						
Pressurizer Relief Line Repair Weld and Adjoining Areas	20.13	UT	See Program Section 20.13						ISI-0369-C
RPV Closure Head Circumferential Weld (W09-10)	20.14	UT		X		X		X	CHM-2358-A
Main Feedwater Isolation Valves	20.15	MT	Complete						

APPENDIX A

TABLE 1
Minimum Number of Steam Generators To Be
Inspected During Inservice Inspection Only

No. of Steam Generators per Unit	Four
First Inservice Inspection	Two
Second & Subsequent Inservice Inspections	One[1]

Table Notation:

1. Each of the other two steam generators not inspected during the first inservice inspections shall be inspected during the second and third inspections. The fourth and subsequent inspections shall follow the instructions described below:

   1 - The inservice inspection may be limited to one steam generator on a rotating schedule encompassing 12% of the tubes if the results of the first or previous inspections indicate that all steam generators are performing in a like manner. Note that under some circumstances, the operating conditions in one or more steam generators may be found to be more severe than those in other steam generators. Under such circumstances the sample sequence shall be modified to inspect the most severe conditions.

APPENDIX A

TABLE 2

Steam Generator Tube Inspection

1st Sample Inspection			2nd Sample Inspection		3rd Sample Inspection	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of S Tubes per S.G.	C-1	None	N/A	N/A	N/A	N/A
	C-2	Plug defective tubes and inspect additional 2S tubes in this S.G.	C-1	None	N/A	N/A
			C-2	Plug defective tubes and inspect additional 4S tubes in this S.G.	C-1	None
					C-2	Plug defective tubes
			C-3	Perform action for C-3 result of first sample	C-3	Perform action for C-3 result of first sample
	C-3	Inspect all tubes this S.G., plug defective tubes and inspect 2S tubes in each other S.G	All other S.G.s are C-1	None	N/A	N/A
			Some S.G.s C-2 but no additional S.G. are C-3	Perform action for C-2 result of second sample	N/A	N/A
		Prompt notification to NRC pursuant to technical specification 6.6.1	Additional S.G. is C-3	Inspect all tubes in each S.G. and plug defective tubes. Prompt notification to NRC pursuant to technical specification 6.6.1	N/A	N/A

$S = \frac{12n}{n}$ Where n is the number of steam generators inspected during an inspection.

APPENDIX B
DATA SHEET 1

SEQUOYAH NUCLEAR PLANT

UNIT 1, CYCLE _____

S E FINAL REPORT

Prepared by: _____

Approved by: _____

APPENDIX C
NOTIFICATION OF INDICATION

PART I - FINDINGS

NOI No. _____ Plant/Unit _____ ISI Dwg./Sh. No. _____

Examination Report No. _____ Component ID _____

Description of Indication (Sketch/Photograph if Required for Clarification):

_____

_____

_____

_____

Signature of Examiner/Certification Level: _____
Date

Signature of Field Supervisor (Contractor): _____
Date

Signature of SQO Representative: _____
Date

PART II-DISPOSITION

_____

_____

_____

_____

_____

_____

DCN NO. _____ WR/WO NO. _____ PER NO. _____
FIR NO. _____ SCAR NO. _____ Other _____

Disposition Prepared/Recorded By _____
Date

PART III
ADDITIONAL EXAMINATIONS

Additional Sample Required: ____ Yes ____ No

Attach list of items in additional sample, if required.

VERIFICATION OF CLOSURE

Verification of Completed Corrective Action Required by Disposition Reexamination Report Number, if Applicable: _____

Comments: _____

_____

_____

Signature of SQO Representative: _____
Date

APPENDIX D

GUIDELINES FOR DETERMINING PIPING

COMPONENT SUPPORT EXAMINATION BOUNDARIES

APPENDIX D

1.0 PURPOSE

This instruction defines and establishes the controls and responsibilities for the determination of ASME Section XI component support examination boundaries.

2.0 SCOPE

This instruction applies only to the piping component supports included in the appropriate plant instruction for preservice/in-service inspection (hereafter, ISI Program) for Sequoyah Nuclear Plant.

3.0 REFERENCES

3.1 Memorandum from W. E. Pennell to R. A. Sessoms dated August 10, 1987 (B41 870810 003)

3.2 Memorandum from J. A. Kirkebo to Site Directors dated June 24, 1987 (L29 870528 815)

4.0 DEFINITIONS

4.1 Intervening Element: Items that lie in the component support load path between the pressure retaining component and the component supports, between two component supports, or between the component support and the building structure. Items such as: diesel engines, electric motors, pumps, valve operators, coolers, access structures, etc. For the purposes of this instruction, an intervening element is to be considered the same as "existing steel."

4.2 Existing Steel: Building steel that is identified on a support drawing as "existing."

4.3 Type A Examination Boundary: The type of boundary to be used for those supports that are attached to building floor, walls, ceiling, or embedded plate.

4.4 Type B Examination Boundary: The type of boundary to be used for those supports that are attached to another existing support.

4.5 Type C Examination Boundary: The type of boundary to be used for those supports that are attached to existing steel.

4.6 Type D Examination Boundary: The type of boundary to be used for those supports that are attached to an intervening element.

5.0 RESPONSIBILITIES

5.1 ISI Programs is responsible for the initial review of ASME Section XI component support drawings and determining the examination boundary for those supports. The Site Quality Organization (SQO) shall be responsible for determining the

examination boundary for new or modified supports. This instruction shall be revised by ISI Programs when deemed necessary by ISI Programs Supervisor or his designee.

5.2 ISI Programs or its designee is responsible for determining the acceptance range for all component supports in the ISI Program that require acceptance ranges.

5.3 SQO is responsible for examination of component supports within the examination boundary as set forth by this instruction. Any examiner, inspector, or engineer may request boundary clarification where questions exist by submitting the Component Support Examination Boundary Clarification Request Form to ISI Programs.

6.0 IMPLEMENTATION

6.1 Determination of Component Support Examination Boundary

6.1.1 General

6.1.1.1 ISI Programs and SQO shall use the following methodology to determine the component support examination boundary.

1. In all cases involving attachments welded to pressure retaining components and/or supports welded to building structure/existing steel, the weld shall be included within the examination boundary.

2. Concrete bolt anchors, such as "red-head" or "rawl" anchors, are not included within the Section XI code boundary and, therefore, do not fall within the examination boundary. Even though anchors may be listed on a support bill of materials, they are not required to be examined. (This note pertains to anchors only, not the associated bolting.)

3. All shims and lugs adjacent to the supported pipe shall be examined. Even though the shims and lugs may not be listed on the support bill of materials, they are required to be examined.

4. For component supports that do not have a bill of materials, items to be examined shall be described in the PRISIM data base with the specific ISI support number.

5. Notification of Indication (NOI) forms shall be used to report unacceptable indications on component supports only if the criteria in A, B, and C, below, are met.

APPENDIX D

A. the component support falls within the scope of ASME Section XI.

B. the component support is part of the inservice inspection examination sample.

C. the indication falls within the component support's examination boundary as set forth by this instruction.

Indications that do not meet the criteria in A, B, and C, above, should be noted by other means, such as, MR's, WR's, etc.

6. This instruction is intended to deal with piping supports only. Therefore, equipment support drawings will be provided in the ISI Program that depict the examination boundary for each equipment support.

6.1.1.2 For each component support to be reviewed for examination boundary determination, obtain the latest configuration controlled drawing (CCD) of the support. If a CCD does not exist, obtain the latest as-constructed drawing of the support. If an as-constructed drawing does not exist, obtain the latest as-designed drawing of the support. For new or modified supports, the drawing included in the work instruction may be utilized. Using the drawing, classify the support in one of the following categories:

1. Support is shown as being attached to building floor, wall, ceiling or embedded plate.

2. Support is shown as being attached to "existing support."

3. Support is shown as being attached to "existing steel."

4. Support is shown as being attached to an intervening element.

After classifying the support in one of the categories, proceed to the corresponding section to complete the boundary determination.

6.1.1.3 As each support is categorized, the category identifier, as defined below, will be input with the respective support in the PRISIM data base.

APPENDIX D

6.1.1.4 As supports are added or revised in the PRISIM data base, this instruction shall be used to determine or revise the examination boundary for that support.

6.1.2 Supports Attached to Building Floor, Wall, Ceiling, or Embedded Plate

For supports attached to building floor, wall, ceiling or embedded plates, the boundary shall be defined as the point(s)/area(s) of contact between the support and the building structure, along the support load path(s), up to, but not including the pressure retaining component. In addition to the requirements of 6.1.1.1, each item in the support bill of materials, except concrete anchors, is to be included within the boundary.

This category of supports shall be considered Examination Boundary Type A and so designated in the PRISIM data base.

6.1.3 Supports Attached to Existing Supports

NOTE: For clarity, Support A is the support being reviewed for boundary determination and Support B is the "existing support" to which Support A is attached.

The boundary of Support A shall be defined as the point(s)/area(s) of contact between Support A and Support B, along the support load path(s), up to, but not including, the pressure retaining component. In addition to the requirements of 6.1.1, each item in Support A bill of materials is to be included within the boundary.

This category of supports shall be considered Examination Boundary Type B and so designated in the PRISIM data base. In the PRISIM data base, Support B will be identified as the support to which Support A is attached. ("Examine to Support B.")

6.1.4 Supports Attached to Existing Steel

For supports attached to existing steel, the boundary shall be defined as the point(s)/area(s) of contact between the support and "existing steel", along the support load path(s), up to, but not including the pressure retaining component. In addition to the requirements of 6.1.1, all items listed on the support bill of materials are to be included within the boundary.

This category of supports shall be considered Examination Boundary Type C and so designated in the PRISIM data base.

APPENDIX D

6.1.5 Supports Attached to Intervening Element

For supports attached to an intervening element, the boundary shall be defined as the attachment portion (i.e., welds, bolting, pins, clamps, etc.) to the pressure retaining component and all support members up to, but not including, the intervening element. In addition to the requirements of 6.1.1, all items listed in the support bill of materials are to be included within the boundary.

This category of supports shall be considered Examination Boundary Type D and so designated in the PRISIM data base.

6.1.6 Supports Attached to Various Structures

In many cases, one component support is attached to more than one type of structure. These supports will have more than one Examination Boundary Type designator in the PRISIM data base. In all cases, however, the examination boundary for each component support shall include:

1. All items listed on the support's bill of materials, except concrete anchors.

2. All shims and lugs adjacent to the supported pipe.

6.2 Site Implementation

6.2.1 NQA shall obtain the latest CCD of the support. If a CCD does not exist, the latest as-constructed drawing shall be obtained. If an as-constructed drawing does not exist, the latest as-designed drawing shall be obtained. If during the performance of an examination, significant differences are identified between the support drawing and the support field configuration, NQA shall access the Design Change Document Tracking System (DCDTS) to identify any outstanding change documents on that component support.

For each component support that does have an outstanding change documented listed on the DCDTS, NQA shall determine through the work package project engineer if the work has been completed on that particular support. If the work has been completed, NQA shall obtain the change document support drawing. If the work has not been completed, the examination shall be delayed until the work has been completed.

6.2.2 For variable spring hangers, constant force supports, and snubbers, the examiner or engineer shall use the drawing obtained per 6.2.1 above to verify that the thermal movement and support model information given on the support drawing matches the corresponding information given in the Scan Plan or implementing instruction (WR, WP, etc.). If the movement and model information do not match:

APPENDIX D

a. The examiner as NQA Representative shall contact ISI Programs. When immediate action is required ISI Programs may provide verbal instructions to the requesting examiner or NQA Representative to enable them to perform the examination. Verbal instructions shall be confirmed within 14 working days using the Component Support Clarification Request Form, following the guidelines as stated in paragraph (b) below.

b. The examiner or engineer may submit a Component Support Examination Boundary Clarification Request Form to ISI Programs. SQO or ISI Programs, upon receipt of a request, shall review the discrepancy and make any necessary changes to the examination boundary. If a request has been submitted, the request will be completed and returned to the requesting examiner or engineer to enable them to perform the examination. A support shall not be examined until any discrepancies on that support are eliminated. Any changes in the Examination Boundary Type will be incorporated in the PRISIM data base.

NOTE: See Examples 2-5 of Section 7.0 example boundaries of each examination boundary type.

7.0 EXAMPLES

Form - Component Support Examination Boundary Clarification Request Form

Example 2 - Type A Examination Boundary

Example 3 - Type B Examination Boundary

Example 4 - Type C Examination Boundary

Example 5 - Type D Examination Boundary

APPENDIX D

COMPONENT SUPPORT EXAMINATION BOUNDARY CLARIFICATION

REQUEST FORM

Plant: _____ Unit: _____ Date: _____

Component Support No.: _____ Rev.: _____

Person Requesting: _____

Request:

****

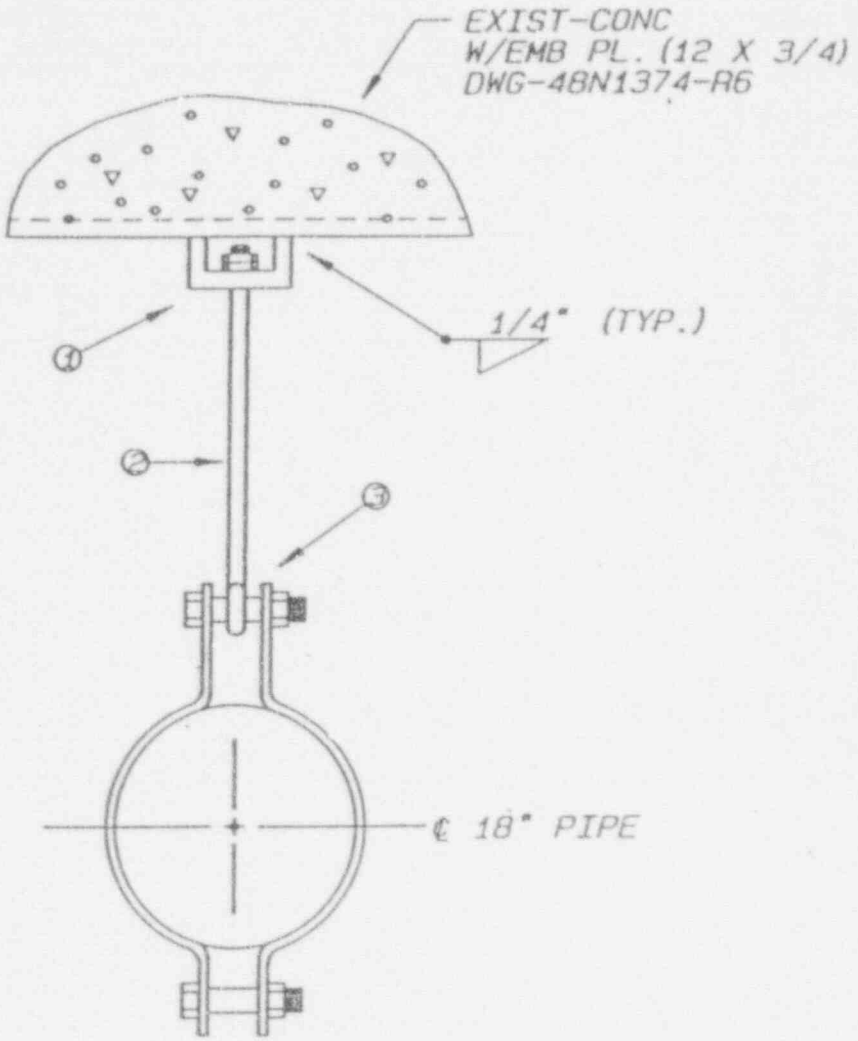
Responding ISI Programs Representative: _____ Date: _____

Response:

Did "Examination Boundary Type" change: _____ Yes _____ No

APPENDIX D

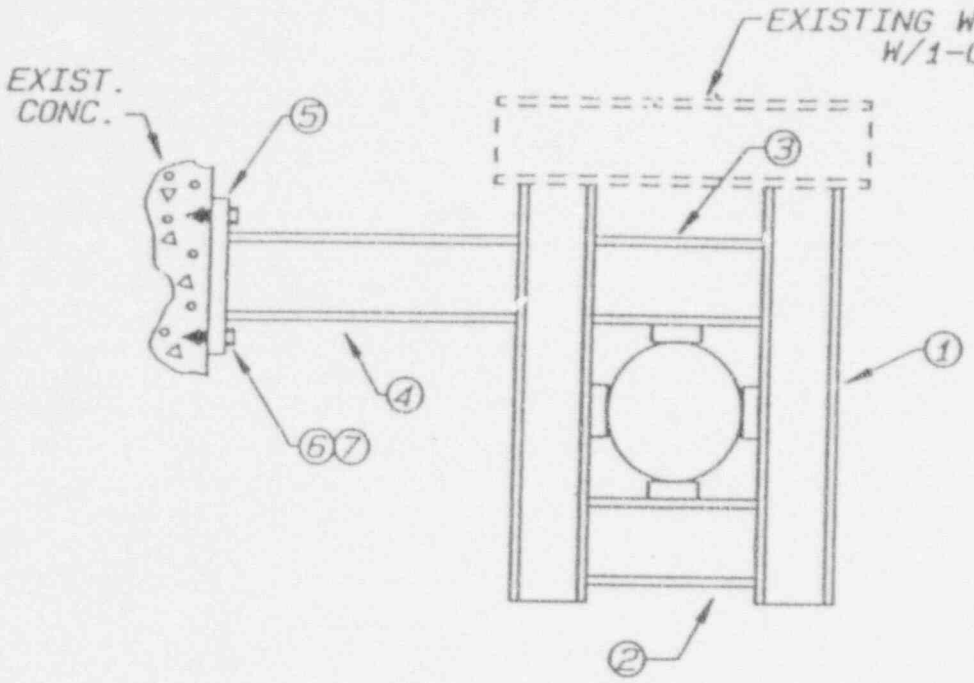
EXAMPLE 2



PCS	FOR 1 UNIDIRECTIONAL SUPPORT
1	① 1" BEAM ATTACH LESS BOLT BE-200 (INVERTED)
1	② 1" Φ ROD X 3'4" W/JN & HN TOE-10" EOE-1 1/4" Φ
1	③ 18" PIPE CLAMP BE-124

BOUNDARY: EXAMINE WELD TO EMBEDDED PLATE AND ALL BILL OF MATERIALS ITEMS.

APPENDIX D



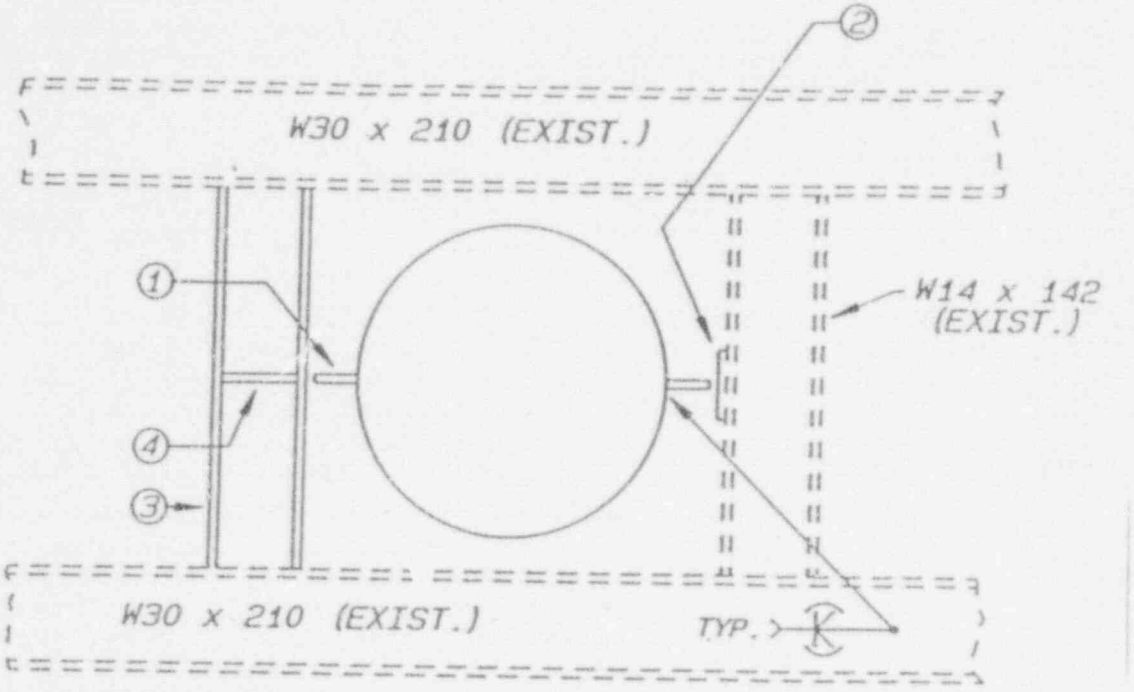
EXAMPLE 3

PCS	FOR 1 UNIDIRECTIONAL SUPPORT	
2	①	W6 x 20 x 3'-11 3/8"
1	②	W6 x 20 x 1'-7 1/8"
1	③	W6 x 20 x 1'-7 1/8"
1	④	TS 5 x 5 x 1/2 x 4'-0"
1	⑤	PL. 3/4" x 10" x 0'-10" LG W/4 13/16" Φ HOLES
4	⑥	3/4" Φ BOLTS
4	⑦	3/4" RAWLS S.O.E.F. #6010

BOUNDARY: EXAMINE ALL ITEMS ON BILL OF MATERIALS EXCEPT #7 (ANCHORS). ALSO EXAMINE SHIMS.

DO NOT EXAMINE "EXISTING" W10 x 25.

APPENDIX D

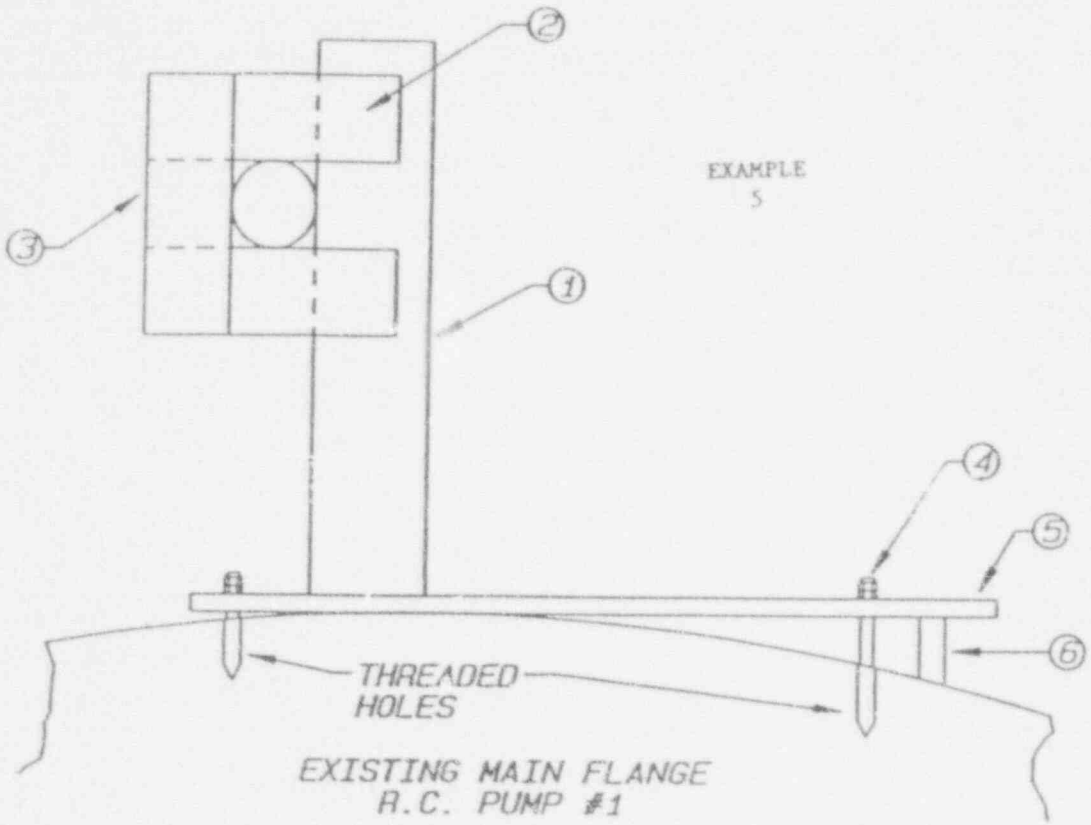


EXAMPLE
4

PCS	FOR 1 HORIZONTAL RESTRAINT ⊥ TO PIPE
2	① 1 1/2" x 2 15/16", C.S. PLATE, 6" LG. (A212-A)
1	② 7/8" x 6", C.S. PLATE 8" LG.
1	③ W12 x 27 x 3'-9 5/8" LG.
2	④ 3/8" C.S. STIFFENER PLATE FOR W12 x 27

BOUNDARY: EXAMINE WELD BETWEEN LUG AND PIPE AND ALL BILL OF MATERIALS ITEMS.

APPENDIX D



PCS	FOR 1 GUIDE	
1	①	T.S. 6"x 6" x 3/8", 4'-1/2" LG.
2	②	1/2" x 3" C.S. PLATE, 9 3/16" LG.
1	③	1/2" x 3" C.S. PLATE, 9" LG.
4	④	7/8"Φ S.S. STUD, 3 7/8" LG. W/(2) HEX NUTS
1	⑤	1" x 12" C.S. PLATE, 20 1/2" LG.
1	⑥	1" x 4 1/2" C.S. PLATE, 12" LG.

BOUNDARY: EXAMINE ALL BILL OF MATERIALS ITEMS.

APPENDIX E

FIELD CORRECTED DRAWING(S) TRANSMITTAL

TO: ISI Programs, NM

Transmittal Number: _____
(Year) (Sequential)

Plant: SQN

Unit/Outage or Date: U1/

The drawing(s) listed below from SI-114.1 have been field marked with variations in configuration which were discovered during the course of inservice or preservice examinations. Please revise the controlled copy of this/these drawing(s) in the SI prior to the next refueling outage.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10 _____
5. _____ 11. _____
6. _____ 12. _____

Signature of Examiner/Date _____

Signature of Field Supervisor _____

RETURN TO: SITE QUALITY ORGANIZATION

Drawings have been revised as necessary to reflect the appropriate changes.

_____ _____
Signature of ISI Programs Representative Date

SOURCE NOTES

Requirements Statement	SOURCE DOCUMENT	IMPLEMENTING STATEMENT
All	STD 6.10	All
All Applicable Articles	ASME Boiler and Pressure Vessel Code - Section XI 1974 Edition, Summer 1975 Addenda, 1977 Edition, Summer 1978 Addenda	All
All Applicable Articles	ASME Boiler and Pressure Vessel Code - Section V	All
All Applicable Chapters	FSAR - SQN	All
Surveillance Requirements 4.0.5, 4.4.5.0 - 4.4.5.5, 4.4.3.2.4, 4.4.10	Technical Specifications Unit 1 - SQN	All
10CFR50.55a	Code Federal Regulations 10CFR50	All
As Applicable	U.S.N.R.C. Regulatory Guides 1.14, 1.26, 1.83, 1.147, and 1.150	All
Provide a revised ISI Program to NRC within 6 mos. following Unit restart NCO 870 038 004 Docket Nos. 50-327 and 50-328	Response to NRC dated 1/30/87 R. L. Gridley to NRC L44 870130 804	C.1
Revise the ISI Program to reflect full-length Steam Generator Tube Inspections NCO 850 284 004	Response to NRC dated 6/17/85 J. A. Domer to NRC L44 850617 801	C.2
All	Code Cases: N-209, N-234, N-235, N-307-1, N-308, N-401-1, N-402, N-416, N-426, N-435-1, N-461, N-341, N-356, N-460	All

ISI Programs

A. **MAINTAIN** a listing of drawings for ISI examinations.

B. **UPDATE** listing as necessary.

C. **OBTAIN** concurrence from Site Quality Manager or his designee.

SQM

D. **CONCUR** with listing by signing below.

ISI Programs

E. **FORWARD** to SPS for updating Table of Contents, etc.

SPS

F. **FORWARD** to DCRM.

DCRM

G. **DISTRIBUTE** per SSP-2.7.

GGWade , 12/20/91

Site Quality Manager/Designee Date

LIST OF DRAWINGS - UNIT 1

The drawings listed below are for the performance of ISI examinations. These drawings are issued through Document Control and Records Management (DCRM). These drawings shall receive controlled distribution. Individual copies may be obtained from DCRM.

Reactor Vessel

Drawing No.	
CHM-2341-B	Reactor Vessel Stud Locations and Details
CHM-2343-B	Reactor Vessel Seam Welds
CHM-2358-A	Reactor Vessel Closure Head
CHM-2359-A	Control Rod Drive Housing
CHM-2360-A	Reactor Vessel Inlet Nozzles
CHM-2361-A	Reactor Vessel Outlet Nozzles
CHM-2651-C	CRD, UPI and Vent Pipe Penetrations
ISI-0014-A	Auxiliary Head Adapter/UHI Cap Welds
MSG-0004-C	Reactor Vessel Bottom Head Penetrations

Pressurizer

Drawing No.	
ISI-0394-C	Pressurizer
MSG-0002-B	Pressurizer and Steam Generator Manway Bolting
MSG-0006-A	Pressurizer Heater Penetrations

Steam Generators

Drawing No.	
ISI-0397-C	Vertical Steam Generators Tube Sheet Arrangement
ISI-0399-C	Steam Generator
MSG-0002-B	Pressurizer and Steam Generators Manway Bolting
MSG-0005-A	Steam Generator/Feedwater Transition Spool Piece
ISI-0357-A	Steam Generator Feedwater Ring Header

Heat Exchangers

Drawing No.	
CHM-2404-A	Residual Heat Removal Heat Exchanger Channel Welds and Support
ISI-0231-B	Centrifugal Charging Pump Oil & Gear Cooler Support
ISI-0235-A	Safety Injection Pump Oil Cooler Support
ISI-0232-B	CCS Waste Gas Compressor Heat Exchanger Support
ISI-0230-A	CCS Gross Failed Fuel Detector Heat Exchanger Support
ISI-0229-A	CCS Positive Displacement Pump Oil Cooler Support
ISI-0237-A	CCS Seal Water Heat Exchanger Support
ISI-0233-B	Centrifugal Charging Pump Mechanical Seal Cooler Support

LIST OF DRAWINGS - UNIT 1

Drawing No.	Heat Exchangers (Continued)
ISI-0234-C	RHR Pump Seal Cooler Support
ISI-0236-A	Safety Injection Pump Seal Cooler Support
ISI-0215-A	Containment Spray Heat Exchanger Support
ISI-0226-B	Gas Stripper & Boric Acid Evaporator Package Support
ISI-0216-A	Non-Regenerative Letdown Heat Exchanger Support
ISI-0284-B	Component Cooling Heat Exchanger
ISI-0285-A	Essential Raw Cooling Water Strainer Support
ISI-0287-B	Spent Fuel Pit Heat Exchanger
ISI-0290-B	RHR Heat Exchanger Secondary Side Support

Drawing No.	Piping and Valve Weld Isometrics
CHM-2333-B	Reactor Coolant Piping (Main Loops)
CHM-2333-C	Safety Injection System
ISI-0369-C	Reactor Coolant System
CHM-2335-C	Chemical and Volume Control System
CHM-2336-C	Residual Heat Removal System
CHM-2338-C	Seal Water Injection (Chemical and Volume Control System)
CHM-2339-C	Feedwater System
CHM-2340-C	Main Steam System
CHM-2422-C	Containment Spray System

Drawing No.	Class 1 and 2 Piping and Valve Support Drawings
ISI-0370-C	Reactor Coolant System
CHM-2433-C	Chemical and Volume Control System
CHM-2434-C	Seal Water Injection (Chemical and Volume Control)
CHM-2435-C	Residual Heat Removal System
CHM-2436-C	Safety Injection System
CHM-2438-C	Main Steam System
CHM-2439-C	Feedwater System
CHM-2440-C	Containment Spray System
ISI-0303-C	Reactor Coolant System Main Loop Support Locations

LIST OF DRAWINGS - UNIT 1

Class 3 Piping and Valve Support Drawings

Drawing No.	
ISI-0113-C	Auxiliary Feedwater System
ISI-0123-C	Essential Raw Cooling Water System
ISI-0126-C	Component Cooling Water System
ISI-0127-C	Fuel Pool Cooling System
ISI-0283-A	Essential Raw Cooling Water System Diesel Generator Support Detail

Pumps

Drawing No.	
CHM-2675-B	Reactor Coolant Pump Main Flange and Lower Seal House Bolt Pattern
MSG-0003-B	Reactor Coolant Pump Casing Weld
ISI-0325-B	Reactor Coolant Pump Support
ISI-0305-B	Reactor Coolant Pump Motor Flywheel Examination
ISI-0353-B	RHR Pump Support Locations
ISI-0238-A	CCS Thermal Barrier Booster Pump Support
ISI-0256-B	Turbine Driven Auxiliary Feedwater Pump Support
ISI-0262-B	Motor Driven Auxiliary Feedwater Pump Support
ISI-0281-A	Component Cooling Water Pump Support
ISI-0286-B	ERCW Pump Support
ISI-0288-B	Spent Fuel Pump Support
ISI-0296-B	ERCW Screen Wash Support

Tanks

Drawing No.	
ISI-0069-A	Centrifugal Charging Pump Tank (Formerly BIT Tank)
ISI-0227-B	Component Cooling Surge Tank

Miscellaneous

Drawing No.	
ISI-0403-A	Reactor Coolant Pump Flywheel Schedule
ISI-0404-A	Component Support Acceptance Ranges
ISI-0402-A	Valve Internal Examinations

LIST OF DRAWINGS

ASME Section XI Boundary Classification Drawings

Drawing No.	
17W600-3-ISI	Mechanical Instruments and Controls
17W600-6-ISI	Mechanical Instruments and Controls
17W600-13-ISI	Mechanical Instruments and Controls
47W600-26-ISI	Mechanical Instruments and Controls
1,2-47W600-27-ISI	Mechanical Instruments and Controls
1-47W600-28-ISI	Mechanical Instruments and Controls
2-47W600-28-ISI	Mechanical Instruments and Controls
47W600-29-ISI	Mechanical Instruments and Controls
47W600-30-ISI	Mechanical Instruments and Controls
47W600-31-ISI	Mechanical Instruments and Controls
47W600-32-ISI	Mechanical Instruments and Controls
47W600-34-ISI	Mechanical Instruments and Controls
47W600-35-ISI	Mechanical Instruments and Controls
47W600-62-ISI	Mechanical Instruments and Controls
47W600-64-ISI	Mechanical Instruments and Controls
47W600-65-ISI	Mechanical Instruments and Controls
47W600-75-ISI	Mechanical Instruments and Controls
47W600-80-ISI	Mechanical Instruments and Controls
47W600-82-ISI	Mechanical Instruments and Controls
47W600-88-ISI	Mechanical Instruments and Controls
47W600-92-ISI	Mechanical Instruments and Controls
47W600-93-ISI	Mechanical Instruments and Controls
47W600-102-ISI	Mechanical Instruments and Controls
47W600-113-ISI	Mechanical Instruments and Controls
47W600-114-ISI	Mechanical Instruments and Controls
47W600-115-ISI	Mechanical Instruments and Controls
47W600-116-ISI	Mechanical Instruments and Controls
47W600-117-ISI	Mechanical Instruments and Controls
47W600-118-ISI	Mechanical Instruments and Controls
47W600-128-ISI	Mechanical Instruments and Controls
47W600-129-ISI	Mechanical Instruments and Controls
47W600-130-ISI	Mechanical Instruments and Controls
47W600-131-ISI	Mechanical Instruments and Controls
47W600-132-ISI	Mechanical Instruments and Controls
47W600-134-ISI	Mechanical Instruments and Controls
47W600-136-ISI	Mechanical Instruments and Controls
47W600-137-ISI	Mechanical Instruments and Controls
47W600-142-ISI	Mechanical Instruments and Controls
47W600-143-ISI	Mechanical Instruments and Controls
47W600-144-ISI	Mechanical Instruments and Controls
47W600-152-ISI	Mechanical Instruments and Controls
47W600-154-ISI	Mechanical Instruments and Controls
47W600-159-ISI	Mechanical Instruments and Controls
47W600-163-ISI	Mechanical Instruments and Controls
47W600-164-ISI	Mechanical Instruments and Controls
47W600-165-ISI	Mechanical Instruments and Controls
47W600-167-ISI	Mechanical Instruments and Controls

LIST OF DRAWINGS

ASME Section XI Boundary Classification Drawings

Drawing No.	
47W600-168-ISI	Mechanical Instruments and Controls
47W600-169-ISI	Mechanical Instruments and Controls
1,2-47W600-171-ISI	Mechanical Instruments and Controls
47W600-172-ISI	Mechanical Instruments and Controls
47W600-174-ISI	Mechanical Instruments and Controls
47W600-175-ISI	Mechanical Instruments and Controls
47W600-181-ISI	Mechanical Instruments and Controls
47W600-200-ISI	Mechanical Instruments and Controls
47W600-227-ISI	Mechanical Instruments and Controls
47W600-228-ISI	Mechanical Instruments and Controls
47W600-241-ISI	Mechanical Instruments and Controls
47W600-244-ISI	Mechanical Instruments and Controls
47W600-276-ISI	Mechanical Instruments and Controls
47W600-279-ISI	Mechanical Instruments and Controls
47W600-285-ISI	Mechanical Instruments and Controls
47W600-286-ISI	Mechanical Instruments and Controls
47W600-287-ISI	Mechanical Instruments and Controls
47W600-289-ISI	Mechanical Instruments and Controls
47W600-294-ISI	Mechanical Instruments and Controls
47W625-1-ISI	Radiation Sampling System
47W625-2-ISI	Radiation Sampling System
47W625-3-ISI	Radiation Sampling System
47W625-4-ISI	Radiation Sampling System
47W625-7-ISI	Radiation Sampling System
47W625-15-ISI	Radiation Sampling System
1,2-47W801-1-ISI	Main and Reheat Steam
1,2-47W801-2-ISI	Steam Generator Blowdown System
1,2-47W803-1-ISI	Feedwater
1,2-47W803-2-ISI	Auxiliary Feedwater System
1,2-47W803-3-ISI	Auxiliary Feedwater System
1-47W809-1-ISI	Chemical and Volume Control System
2-47W809-1-ISI	Chemical and Volume Control System
1,2-47W809-2-ISI	CVCS Chemical Control
1,2-47W809-3-ISI	CVCS
1,2-47W809-4-ISI	CVCS
1,2-47W809-5-ISI	CVCS Chemical Control
1,2-47W809-7-ISI	Flood Mode Boration Makeup System
1,2-47W810-1-ISI	Residual Heat Removal System
1-47W811-1-ISI	Safety Injection System
2-47W811-1-ISI	Safety Injection System
1-47W811-2-ISI	SIS Upper-Head Injection System
2-47W811-2-ISI	SIS Upper-Head Injection System
1,2-47W812-1-ISI	Containment Spray System
1,2-47W813-1-ISI	Reactor Coolant System
1,2-47W819-1-ISI	Primary Water

LIST OF DRAWINGS

ASME Section XI Boundary Classification Drawings

Drawing No.	
1,2-47W830-1-ISI	Waste Disposal System
1,2-47W832-3-ISI	Fire Protection and Raw Service Water
1,2-47W845-1-ISI	Essential Raw Cooling Water System
1,2-47W845-2-ISI	Essential Raw Cooling Water System
1-47W845-3-ISI	Essential Raw Cooling Water System
2-47W845-3-ISI	Essential Raw Cooling Water System
1,2-47W845-4-ISI	Essential Raw Cooling Water System
1,2-47W845-5-ISI	Essential Raw Cooling Water System
1,2-47W845-6-ISI	Essential Raw Cooling Water System
1,2-47W850-10-ISI	Fire Protection
1,2-47W851-1-ISI	Floor and Equipment Drains
1,2-47W855-1-ISI	Fuel Pool Cooling and Cleaning System
1,2-47W856-1-ISI	Demineralized Water and Cask Decon System
1,2-47W859-1-ISI	Component Cooling System
1,2-47W859-1-1-ISI	Component Cooling System
1-47W859-2-ISI	Component Cooling System
2-47W859-3-ISI	Component Cooling System
1,2-47W859-4-ISI	Component Cooling System
1,2-47W860-1-ISI	Sodium Hypochlorite System
1,2-47W862-1-ISI	Steam Generator Layup Water Treatment
1,2-47W865-5-ISI	Air-Conditioning Chill Water

ISI Programs

A. **MAINTAIN** a listing of valves requiring ISI examinations.

B. **UPDATE** listing as necessary.

C. **OBTAIN** concurrence from Site Quality Manager or his designee.

SQM

D. **CONCUR** with listing by signing below.

ISI Programs

E. **FORWARD** to SPS for updating Table of Contents, etc.

SPS

F. **FORWARD** to DCRM.

DCRM

G. **DISTRIBUTE** per SSP-2.7.

G. H. Wade / 12/20/91

Site Quality Manager/Designee Date

ATTACHMENT 2
TABLE 1
Class 1 Valve Information

Valve No.	Code Class	Valve Act.	Piping System	Valve Size	Valve Type	Valve Act	Group No.	ISI Dwg No (Weld Map)	Vendor Dwg No.	Vendor	Material Spec.	Valve Function	forging/ Casting
63-560	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-561	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-562	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-563	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-622	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-623	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-624	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-625	1	AC-Act	SIS	10"	Ck	SA	2	CHM-2333-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-640	1	AC-Act	SIS/RHR	8"	Ck	SA	2	CHM-2336-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-643	1	AC-Act	SIS/RHR	8"	Ck	SA	2	CHM-2336-C	94-12892	Darling	ASIM A516[1]	PSIV	
63-558	1	AC-Act	SIS	6"	Ck	SA	3	CHM-2333-C	78704	Velan	ASIM A182	PSIV	Forging
63-559	1	AC-Act	SIS	6"	Ck	SA	3	CHM-2333-C	78704	Velan	ASIM A182	PSIV	Forging
63-632	1	AC-Act	SIS	6"	Ck	SA	3	CHM-2333-C	78704	Velan	ASIM A182	PSIV	Forging
63-633	1	AC-Act	SIS	6"	Ck	SA	3	CHM-2333-C	78704	Velan	ASIM A182	PSIV	Forging
63-634	1	AC-Act	SIS	6"	Ck	SA	3	CHM-2333-C	78704	Velan	ASIM A182	PSIV	Forging
63-635	1	AC-Act	SIS	6"	Ck	SA	3	CHM-2333-C	78704	Velan	ASIM A182	PSIV	Forging
63-641	1	AC-Act	SIS/RHR	6"	Ck	SA	3	CHM-2336-C	78704	Velan	ASIM A182	PSIV	Forging
63-644	1	AC-Act	SIS/RHR	6"	Ck	SA	3	CHM-2336-C	78704	Velan	ASIM A182	PSIV	Forging
68-563	1	C-Act	RCS	6"	Rel	SA	4	ISI-G369-C	H51688	Crosby	ASIM A182/ A351[2]		See Note 2
68-564	1	C-Act	RCS	6"	Rel	SA	4	ISI-0369-C	H51688	Crosby	ASIM A182/ A351[2]		See Note 2
68-565	1	C-Act	RCS	6"	Rel	SA	4	ISI-0369-C	H51688	Crosby	ASIM A182/ A351[2]		See Note 2
FCV 74-1	1	A-Act	RHR	14"	Gate	MO	5	CHM-2336-C	E-1-144831	Copes-Vulcan	ASIM A182	PSIV	Forging
FCV 74-2	1	A-Act	RHR	14"	Gate	MO	5	CHM-2336-C	E-1-144831	Copes-Vulcan	ASIM A182	PSIV	Forging

NOTES: 1. Seal plate manufactured to ASIM A240 F304; bonnet manufactured to ASIM A516.
2. Nozzle manufactured to ASIM A182 F316 - Forging, Body manufactured to ASIM A351 CF8M - Casting.

ATTACHMENT 2
TABLE 2
Class 1 Valve Information

SYS	Vlv No.	Size (In)	Type	ISI DWG No.	Vendor	Vendor Dwg No.	Valve <=2"	Bolting > 2"	Vlv Body Welds	IA
CVC	62-560	2	CKV	CHM-2338-C/1	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-561	2	CKV	CHM-2338-C/2	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-562	2	CKV	CHM-2338-C/4	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-563	2	CKV	CHM-2338-C/3	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-564	2	GATE	CHM-2338-C/1	Edward	D-464532 R5	N/A	N/A	None	N/A
CVC	62-565	2	GATE	CHM-2338-C/2	Edward	D-464532 R5	N/A	N/A	None	N/A
CVC	62-566	2	GATE	CHM-2338-C/4	Edward	D-464532 R5	N/A	N/A	None	N/A
CVC	62-567	2	GATE	CHM-2338-C/3	Edward	D-464532 R5	N/A	N/A	None	N/A
CVC	62-576	2	CKV	CHM-2338-C/1	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-577	2	CKV	CHM-2338-C/2	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-578	2	CKV	CHM-2338-C/3	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-579	2	CKV	CHM-2338-C/4	Edward	D-464529 R5	N/A	N/A	None	N/A
CVC	62-659[1]	3	CKV	CHM-2335-C/1	Borg-Wagner	80290	5/16"	N/A	None	N/A
CVC	62-660[1]	3	CKV	CHM-2335-C/1	Borg-Wagner	80290	5/16"	N/A	None	N/A
CVC	62-661	2	CKV	CHM-2335-C/1	Edward	C-464529 R5	N/A	N/A	None	N/A
CVC	62-716[1]	3	CKV	CHM-2335-C/1	Borg-Wagner	80290	5/16"	N/A	None	N/A
CVC	62-717[1]	3	CKV	CHM-2335-C/1	Borg-Wagner	80290	5/16"	N/A	None	N/A
CVC	68-580	3	GATE	CHM-2335-C/2	Veland	13920	N/A	N/A	None	N/A
CVC	FCV-62-69[1]	3	GATE	CHM-2335-C/2	Masoneilan/Worthington	CPI 1855, A84257	7/8"	N/A	None	N/A
CVC	FCV-62-70[1]	3	GATE	CHM-2335-C/2	Masoneilan/Worthington	CPI 1855, A84757	7/8"	N/A	None	N/A
CVC	FCV-62-84[1]	2	GATE	CHM-2335-C/1	Masoneilan	A8474, A8475	7/8"	N/A	None	N/A
RCS	68-549	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-550	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-553	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-554	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-557	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-558	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-563	6	RELF	ISI-0369-C/3	Crosby	H-51688	1"	N/A	None	N/A
RCS	68-564	6	RELF	ISI-0369-C/3	Crosby	H-51688	1"	N/A	None	N/A
RCS	68-565	6	RELF	ISI-0369-C/3	Crosby	H-51688	1"	N/A	None	N/A
RCS	68-581	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A
RCS	68-582	2	GATE	ISI-0369-C/1	Edward	D-464532	N/A	N/A	None	N/A

1. Exempt from Examination Requirements of Category B-G-2 in accordance with Code Case N-426

ATTACHMENT 2
TABLE 2 (Continued)
Class 1 Valve Information

SYS	Vlv No.	Size (In)	Type	ISI DWG No.	Vendor	Vendor Dwg No.	Valve ≤2"	Bolting > 2"	Vlv Body Welds	IA
RCS	FCV-68-332[1]	3	GATE	ISI-0369-C/3	Velan	88406	3/4"	N/A	None	N/A
RCS	FCV-68-333[1]	3	GATE	ISI-0369-C/3	Velan	88406	3/4"	N/A	None	N/A
RCS	PCV-68-340D[1]	4	BALL	ISI-0369-C/2	Fisher	50A2159	7/8"	N/A	None	N/A
RCS	PCV-68-340A	3	GLB	ISI-0369-C/3	Target Rock	1052020-3	N/A	N/A	None	N/A
RCS	PCV-68-340B[1]	4	BALL	ISI-0369-C/2	Fisher	50A2159	7/8"	N/A	None	N/A
RCS	PCV-68-334	3	GLB	ISI-0369-C/3	Target Rock	1052020-3	N/A	N/A	None	N/A
RHR	63-543	2	CKV	CHM-2336-C/6	Edward	C-464529 R5	N/A	N/A	None	N/A
RHR	63-545	2	CKV	CHM-2336-C/6	Edward	C-464529 R5	N/A	N/A	None	N/A
RHR	63-640	8	CKV	CHM-2336-C/6	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
RHR	63-641	6	CKV	CHM-2336-C/6	Velan	78704	1 1/4"	N/A	None	N/A
RHR	63-643	8	CKV	CHM-2336-C/6	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
RHR	63-644	6	CKV	CHM-2336-C/6	Velan	78704	1 1/4"	N/A	None	N/A
RHR	FCV-74-1	14	GATE	CHM-2336-C/1	Copes-Vulcan	E-1-144B31 R4	1 3/4"	N/A	None	N/A
RHR	FCV-74-2	14	GATE	CHM-2336-C/1	Copes-Vulcan	E-1-144B31 R4	1 3/4"	N/A	None	N/A
SIS	63-547	2	CKV	CHM-2333-C/7	Edward	C-464529 R5	N/A	N/A	None	N/A
SIS	63-549	2	CKV	CHM-2333-C/7	Edward	C-464529 R5	N/A	N/A	None	N/A
SIS	63-551	2	CKV	CHM-2333-C/9	Edward	C-464529 R5	N/A	N/A	None	N/A
SIS	63-553	2	CKV	CHM-2333-C/10	Edward	C-464529 R5	N/A	N/A	None	N/A
SIS	63-555	2	CKV	CHM-2333-C/10	Edward	C-464529 R5	N/A	N/A	None	N/A
SIS	63-557	2	CKV	CHM-2333-C/9	Edward	C-464529 R5	N/A	N/A	None	N/A
SIS	63-558	6	CKV	CHM-2333-C/7	Velan	78704	1 1/4"	N/A	None	N/A
SIS	63-559	6	CKV	CHM-2333-C/7	Velan	78704	1 1/4"	N/A	None	N/A
SIS	63-560	10	CKV	CHM-2333-C/9	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-561	10	CKV	CHM-2333-C/10	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-562	10	CKV	CHM-2333-C/10	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-563	10	CKV	CHM-2333-C/9	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-581[1]	3	CKV	CHM-2333-C/1	Velan	78409	3/4"	N/A	None	N/A
SIS	63-582	1.5	GATE	CHM-2333-C/1	Rockwell International	D-478072	N/A	N/A	None	N/A
SIS	63-583	1.5	GATE	CHM-2333-C/2	Rockwell International	D-478072	N/A	N/A	None	N/A
SIS	63-584	1.5	GATE	CHM-2333-C/2	Rockwell International	D-478072	N/A	N/A	None	N/A

1. Exempt from Examination Requirements of Category B-G-2 in accordance with Code Case N-426.

ATTACHMENT 2
TABLE 2 (Continued)
Class 1 Valve Information

SYS	Vlv No.	Size (In)	Type	ISI DWG No.	Vendor	Vendor Dwg No.	Valve <2"	Bolting > 2"	Vlv Body Welds	IA
SIS	63-585	1.5	GATE	CHM-2333-C/1	Rockwell International	D-478072	N/A	N/A	None	N/A
SIS	63-586	1.5	CKV	CHM-2333-C/1	Edward	C-465347 R2	N/A	N/A	None	N/A
SIS	63-587	1.5	CKV	CHM-2333-C/2	Edward	C-465347 R2	N/A	N/A	None	N/A
SIS	63-589	1.5	CKV	CHM-2333-C/1	Edward	C-465347 R2	N/A	N/A	None	N/A
SIS	63-588	1.5	CKV	CHM-2333-C/2	Edward	C-465347 R2	N/A	N/A	None	N/A
SIS	63-622	10	CKV	CHM-2333-C/9	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-623	10	CKV	CHM-2333-C/10	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-624	10	CKV	CHM-2333-C/10	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-625	10	CKV	CHM-2333-C/9	Anchor/Darling	94-12892	1 3/8"	N/A	None	N/A
SIS	63-632	6	CKV	CHM-2333-C/10	Velan	78704	1 1/4"	N/A	None	N/A
SIS	63-633	6	CKV	CHM-2333-C/9	Velan	78704	1 1/4"	N/A	None	N/A
SIS	63-634	6	CKV	CHM-2333-C/10	Velan	78704	1 1/4"	N/A	None	N/A
SIS	63-635	6	CKV	CHM-2333-C/9	Velan	78704	1 1/4"	N/A	None	N/A

ATTACHMENT 2
TABLE 3
Class 2 Valve Information

SYS	Vlv No.	Size (In)	Type	ISI DWG No.	Vendor	Vendor Dwg No.	Valve <=2"	Bolting > 2"	Vl. Body Welds	IA
CS	FCV-72-20	12	GATE	CHM-2422-C/1	Aloyco	E-48840	Yes	N/A	None	N/A
CS	FCV-72-23	12	GATE	CHM-2422-C/1	Aloyco	E-488[illegible]	Yes	N/A	None	N/A
FW	3-508	16	CKV	CHM-2339-C/2	Walworth	A-11334 A-32A	1 3/4"	N/A	None	N/A
FW	3-509	16	CKV	CHM-2339-C/2	Walworth	A-11332-M-32A	1 3/4"	N/A	None	N/A
FW	3-510	16	CKV	CHM-2339-C/1	Walworth	A 11332-M-32A	1 3/4"	N/A	None	N/A
FW	3-511	16	CKV	CHM-2339-C/1	Walworth	A-11332-M-32A	1 3/4"	N/A	None	N/A
FW	FCV-3-033	18	GATE	CHM-2339-C/1	Walworth	A-6614-M-150	1 1/2"	N/A	None	N/A
FW	FCV-3-047	18	GATE	CHM-2339-C/2	Walworth	A-6614-M-150	1 1/2"	N/A	None	N/A
FW	FCV-3-087	18	GATE	CHM-2339-C/2	Walworth	A-6614-M-150	1 1/2"	N/A	None	N/A
FW	FCV-3-100	18	GATE	CHM-2339-C/1	Walworth	A-6614-M-150	1 1/2"	N/A	None	N/A
MS	1-512	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-513	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-514	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-515	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-516	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-517	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-518	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-519	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-520	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-521	6	SAF	CHM-2340-C/2	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-522	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-523	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-524	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-525	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-526	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-527	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-528	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-529	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-530	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A

ATTACHMENT 2
TABLE 3 (Continued)
Class 2 Valve Information

SYS	Vlv No.	Size (In)	Type	ISI DWG No.	Vendor	Vendor Dwg No.	Valve <=2"	Bolting > 2"	Vlv Body Welds	IA
MS	1-531	6	SAF	CHM-2340-C/1	Crosby	H-55095	1 3/8"	N/A	None	N/A
MS	1-619	6	GATE	CHM-2340-C/1	Walworth	A-6609-M-128B	7/8"	N/A	None	N/A
MS	1-620	6	GATE	CHM-2340-C/2	Walworth	A-6609-M-128B	7/8"	N/A	None	N/A
MS	1-621	6	GATE	CHM-2340-C/2	Walworth	A-6609-M-128B	7/8"	N/A	None	N/A
MS	1-622	6	GATE	CHM-2340-C/1	Walworth	A-6609-M-128B	7/8"	N/A	None	N/A
MS	FCV-1-04	32	GATE	CHM-2340-C/1	Atwood and Morrill Co	21245-H	2"	N/A	None	N/A
MS	FCV-1-11	32	GATE	CHM-2340-C/2	Atwood and Morrill Co	21245-H	2"	N/A	None	N/A
MS	FCV-1-22	32	GATE	CHM-2340-C/2	Atwood and Morrill Co	21245-H	2"	N/A	None	N/A
MS	FCV-1-29	32	GATE	CHM-2340-C/1	Atwood and Morrill Co	21245-H	2"	N/A	None	N/A
MS	PCV-1-05	6	GATE	CHM-2340-C/1	Copes-Vulcan	B-149093 R7	Yes	N/A	None	N/A
MS	PCV-1-12	6	GATE	CHM-2340-C/2	Copes-Vulcan	B-149093 R7	Yes	N/A	None	N/A
MS	PCV-1-23	6	GATE	CHM-2340-C/2	Copes-Vulcan	B-149093 R7	Yes	N/A	None	N/A
MS	PCV-1-30	6	GATE	CHM-2340-C/1	Copes-Vulcan	B-149093 R7	Yes	N/A	None	N/A
RHR	74-514	8	CKV	CHM-2336-C/3	Crane	K-7422	7/8"	N/A	None	N/A
RHR	74-515	8	CKV	CHM-2336-C/3	Crane	K-7422	7/8"	N/A	None	N/A
RHR	74-520	8	GATE	CHM-2336-C/3	Aloyco	E-47381	3/4"	N/A	None	N/A
RHR	74-521	8	GATE	CHM-2336-C/3	Aloyco	E-47381	3/4"	N/A	None	N/A
RHR	74-524	8	GATE	CHM-2336-C/3	Aloyco	E-47381	3/4"	N/A	None	N/A
RHR	74-525	8	GATE	CHM-2336-C/3	Aloyco	E-47381	3/4"	N/A	None	N/A
RHR	FCV-63-172	12	GATE	CHM-2336-C/4	Velan	88907-3	1 7/8"	N/A	None	N/A
RHR	FCV-63-72	18	GATE	CHM-2336-C/2	Anchor/Darling	94-13300	1 1/4"	N/A	None	N/A
RHR	FCV-63-73	18	GATE	CHM-2336-C/2	Anchor/Darling	94-13300	1 1/4"	N/A	None	N/A
RHR	FCV-74-03	14	GATE	CHM-2336-C/5	Anchor/Darling	94-13298	1 1/8"	N/A	None	N/A
RHR	FCV-74-16	8	BUTF	CHM-2336-C/3	Fisher Governor Co	F-41304	5/8"	N/A	None	N/A
RHR	FCV-74-21	14	GATE	CHM-2336-C/5	Anchor/Darling	94-13298	1 1/8"	N/A	None	N/A
RHR	FCV-74-28	8	BUTF	CHM-2336-C/3	Fisher Governor Co	F-41304	5/8"	N/A	None	N/A
RHR	FCV-74-32	8	BUTF	CHM-2336-C/3	Fisher Governor Co	F-41304	5/8"	N/A	None	N/A
RHR	FCV-74-33	8	GLOB	CHM-2336-C/3	Anchor/Darling	93-13435	3/4"	N/A	None	N/A

ATTACHMENT 2
TABLE 3 (Continued)
Class 2 Valve Information

SYS	Vlv No.	Size (In)	Type	ISI DWG No.	Vendor	Vendor Dwg No.	Valve <=2"	Bolting > 2"	Vlv Body Welds	IA
RHR	FCV-74-36	8	GATE	CHM-2336-C/3	Anchor/Darling	93-14074	3/4"	N/A	None	N/A
RHR	HCV-74-37	8	GATE	CHM-2336-C/3	Anchor/Darling	93-13435	3/4"	N/A	None	N/A
SIS	63-502	12	CKV	CHM-2333-C/6	Aloyco	D48376 K74221C	1"	N/A	None	N/A
SIS	FCV-63-01	16	GATE	CHM-2333-C/6	Crane	K-7634-15,16	7/8"	N/A	None	N/A
SIS	FCV-63-08	8	GATE	CHM-2333-C/6	Anchor/Darling	94-13295	7/8"	N/A	None	N/A
SIS	FCV-63-11	8	GATE	CHM-2333-C/6	Anchor/Darling	94-13295	7/8"	N/A	None	N/A
SIS	FCV-63-118	10	GATE	CHM-2333-C/4	Velan	88926 R.01	1 3/8"	N/A	None	N/A
SIS	FCV-63-67	10	GATE	CHM-2333-C/4	Velan	88926 R.01	1 3/8"	N/A	None	N/A
SIS	FCV-63-80	10	GATE	CHM-2333-C/5	Velan	88926 R.01	1 3/8"	N/A	None	N/A
SIS	FCV-63-93	8	GATE	CHM-2333-C/3	Velan	88806-1	1 3/8"	N/A	None	N/A
SIS	FCV-63-94	8	GATE	CHM-2333-C/3	Velan	88806-1	1 3/8"	N/A	None	N/A
SIS	FCV-63-98	10	GATE	CHM-2333-C/5	Velan	88926 R.01	1 3/8"	N/A	None	N/A
SIS	FCV-72-40	8	GATE	CHM-2333-C/6	Aloyco	E-48836	Yes	N/A	None	N/A
SIS	FCV-72-41	8	GATE	CHM-2333-C/6	Aloyco	E-48836	Yes	N/A	None	N/A
RHR	FCV-74-35	8	GATE	CHM-2336-C/3	Anchor/Darling	93-13435	3/4"	N/A	None	N/A
RHR	HCV-74-34	8	GATE	CHM-2336-C/3	Anchor/Darling	93-13435	3/4"	N/A	None	N/A

ISI Programs

A. MAINTAIN a listing of Requests for Relief.

B. UPDATE listing as necessary.

C. OBTAIN concurrence from Site Quality Manager or his designee.

SQM

D. CONCUR with listing by signing below.

ISI Programs

E. FORWARD to SPS for updating Table of Contents, etc.

SPS

F. FORWARD to DCRM.

DCRM

G. DISTRIBUTE per SSP-2.7.

G J Wade , 1/28/92
Site Quality Manager/Designee Date

REQUEST FOR RELIEF ISI-1

Components: Reactor coolant pumps (four per unit)

Class: ASME Code Class 1 (Equivalent)

Function: Circulates reactor coolant.

Inspection Requirement: ASME Section XI, Table IWB-2500-1, examination category B-L-2, item no. B12.20, visual examination of pump internal pressure boundary surfaces.

Basis for Relief: In absence of required maintenance, disassembly of a reactor coolant pump solely to perform a visual examination of internal surfaces is impractical. This would [illegible] unnecessary employee exposure to [illegible] contamination areas and an excessive [illegible] ALARA.

Time required for this major task of disassembly, examination, and reassembly would consume at least three weeks of 24-hours-per-day work. Radiation dose rates of the pump exterior will average 100-300 mrem/hour, and pump internal dose rates will average 10-20 rem/hour.

The benefit received from this major effort is minimal considering employee exposure, potential damage to safety-related equipment, and cost in dollars.

In addition, the two units at Sequoyah Nuclear Plant will operate under similar conditions. Therefore, we feel that if a pump from one of the units is disassembled for maintenance during a 10-year interval, the visual examination performed will be representative of the pump condition for each unit. This would avoid unnecessary employee exposure to the high radiation dose rates noted above. We conclude that if one pump is disassembled for maintenance during the 10-year interval, the visual examination performed satisfies examination category B-L-2 requirements for both units. Disassembly of the pump solely for visual examination is impractical.

(Continued)

REQUEST FOR RELIEF ISI-1
(Continued)

Alternate Inspection: The internal surfaces of the reactor coolant pump casing will be visually examined whenever the surfaces are made accessible when a pump is disassembled for maintenance purposes. If during the 10-year interval a pump from either unit is not disassembled for maintenance, a pump from one unit shall be examined from the exterior. This shall be accomplished by ultrasonic thickness measurements of the pump casing.

Safety Evaluation Summary:

Request for Relief ISI-1 has been approved with the following additional augmented requirements.

(a) the required visual examinations are conducted under Category B-L-2 if a reactor coolant pump from one of two units is disassembled for maintenance;

(b) If during the 10-year interval, a pump from either unit is not disassembled for maintenance, a pump from one unit shall be examined from the exterior by ultrasonic thickness measurements;

(c) Visual examination of the pump casing for leakage is conducted in conjunction with system leakage and hydrostatic tests under Category B-P.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

REQUEST FOR RELIEF ISI-2

Components: Valves exceeding 4-inch nominal pipe size

Class: ASME Code Class 1 (Equivalent)

Function: Various functions.

Inspection Requirement: ASME Section XI, Table IWB-2500-1, examination category B-M-2, item no. B12.40, visual examination of valve internal pressure boundary surfaces.

Basis for Relief: During routine maintenance, visual examinations of valve body internal pressure boundary surfaces are performed and documented under existing plant administrative procedures. Most Class 1 valves, particularly containment isolation valves, are disassembled frequently for maintenance. In addition, the two units at Sequoyah Nuclear Plant will operate under similar conditions. If a valve from one of the units is disassembled for maintenance within a 10-year interval, we feel that the visual examination performed would be representative of both units and would be sufficient to satisfy the examination requirements for both units for that particular valve classification as defined in examination category B-M-2.

We conclude that if one valve in each group of valves of the same constructional design and manufacturer that perform similar functions is disassembled from either unit during the 10-year interval, the visual examination performed satisfies examination category B-M-2 requirements for both units.

Alternate Inspection: If a valve from a particular classification has not been disassembled as the end of the inspection interval approaches, a case-by-case study will be made to determine the practicality of disassembling a valve from one of the units solely for visual examination (determine if draining the vessel would be required, etc.). If necessary, a request for relief will be issued at that time.

(Continued)

REQUEST FOR RELIEF ISI-2
(Continued)

Safety Evaluation Summary:

Request for Relief ISI-2 has been approved with the following additional augmented requirements.

(a) one comparable valve in either unit is examined. If a certain type of valve is not examined at either unit, relief should be requested on a case-by-case basis near the end of the interval,

(b) periodic inservice testing of the valves is conducted in accordance with IWV, and

(c) visual examination of the valves for leakage is conducted in conjunction with system leakage and hydrostatic tests under Category B-P.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

REQUEST FOR RELIEF ISI-3

Components: Pressure-retaining welds in piping

Class: ASME Code Class 1 and 2 (Equivalent)

Function: Pressure-retaining component.

Inspection Requirement: ASME Section XI, Table IWB-2500-1, examination categories B-F (item no. B5.50), B-J (item nos. B9.10, B9.20, and B9.30), and C-F (item nos. C5.10, C5.20, and C5.30), volumetric examination of longitudinal, circumferential, and pipe branch connection welds.

Basis for Relief: In some cases it will be impractical to inspect all welds from both sides, i.e., nonremovable hanger interference or valve and pump casings adjoining the welds. These welds will be noted on the ultrasonic examination data sheets. (See the attached listing)

Alternate Inspection: In addition to the visual examination performed during system leakage and hydrostatic pressure tests, a "best effort" ultrasonic examination will be performed. Where there is interference or problems from one direction only, consideration will be given to performing an angle beam examination for 2T + (greater than two wall thicknesses from one edge of weld) from the accessible side of the weld in order to examine the entire weld cross-section.

Safety Evaluation Summary:

Request for Relief ISI-3 has been approved in the following manner:

Exam Category	
B-F	Approved with no additional augmented requirements.
B-J	Approved with no additional augmented requirements
C-F	Relief was not necessary.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

REQUEST FOR RELIEF ISI-3
(Continued)

1,2 WELD NUMBER	3 CODE CAT.	MATL	DRAWING NUMBER	4 PHY. CONF.	5 SCAN/LIMITATIONS	6 CODE SCAN	7 9 REMARKS
RHRF-125	BJ	SS	CHM2336 SHT#4	E/N	4/ No scan 3/5:00-7:00	83%	No scan 4 due to nozzle geometry No scan 3 from 5:00-7:00 due to inner rad.
RCF-23	BJ	SS	CHM2334 SHT#6	E/SE	4/No scan 3/Limited	75%	No scan 4 due to SE geometry Scan 3 inner rad 4" pipe elbow
FDSW-17A	CF	CS	CHM2339 SHT#2	P/PEN	3,5,&6/11:30, 12:30, 5:30, 6:30 4/No scan	96%	No scan 3,5,&6 at 11:30, 12:30, 5:30 6:30 due to lugs; No scan 4 due to penetration
RCW-26-SE	BF	CS/SS	CHM2363 SHT#1	N/SE	3&4/limited	80%	Scan 3&4 limited to 1/2 node due to SE & nozzle geometry 20% of weld not scanned
RCW-25-SE	BF	CS/SS	CHM2363 SHT#1	N/SE	3&4/limited	80%	Scan 3&4 limited to 1/2 node due to SE & nozzle geometry 20% of weld not scanned
RHRF-109	BJ	SS	CHM2336 SHT#4	V/E	3/No scan 4/5:00-7:00	83%	No scan 3 due to valve geometry No scan 4 from 5:00-7:00 due to inner rad.
MSF-11	CF	CS	CHM2340 SHT#2	N/E	3/No scan 4/270°, 1"	99%	No scan 3 due to nozzle geometry No scan 4 at 270° for 1"
RC-3	BJ	SS	CHM2333 SHT#1	E/SE	3/No scan	50%	(Note 8) No scan 3 due to nozzle geometry
RC-151	BJ	SC	CHM2333 SHT#1	P/E	4/2:30 to 3:30	92%	(Note 8) No scan 4 from 2:30 to 3:30 due to permanent restraint
RCF-19	BJ	SC	CHM2334 SHT#6	V/E	3/No scan 4/2:00-4:00	83%	No scan 3 due to valve geometry No scan 4 from 2:00-4:00 due to inner rad.

REQUEST FOR RELIEF ISI-3
(Continued)

NOTES:

1. LS following seam number indicates longitudinal seam.
2. SE following seam number indicates safe end weld.
3. Categories determined in accordance with ASME XI 77S78.
4. P=Pipe, V=Valve, E=ELL, T=TEE, R=Reducer, F=Flange, N=Nozzle, Pen P=Penetration Process Pipe, Pen F=Penetration Flued Head, and SE=Safe End.
5. Scans 3 and 4 are perpendicular to circumferential welds. Scans 5 and f are parallel to circumferential welds. Scans 7 and 8 are perpendicular to longitudinal welds. Scans 9 and 10 are parallel to longitudinal welds.
6. Limitations are expressed in o'clock references. In general, the exact limitation is noted rather than a percentage of the required examinations.
7. Actual percentages indicate the approximate area of examination coverage obtained.
8. Because of the attenuation resulting from inherent coarse grain structure in cast stainless steel the examination is limited to the 1/2V technique. Also physical restrictions prevent the exam from both sides of the weld.
9. Detail description of limitations are noted.

REQUEST FOR RELIEF ISI-4

Component: Steam generator (four per unit)

Class: ASME Code Class 2 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWB-2500-1, examination category C-A, item no. C1.10, volumetric examination of circumferential shell welds.

Basis for Relief: One circumferential shell weld on each generator is inaccessible due to the upper steam generator support brackets (weld Nos. SGW-D1, SGW-D2, SGW-D3, and SGW-D4). See attached drawing CH-M-2345-B for weld location. Also attached are drawings showing arrangements of the support brackets. One weld on one generator will be examined on a "best effort" basis for the baseline inspection and during the four inservice inspection intervals in accordance with IWC-2411 and Table IWC-2500-1.

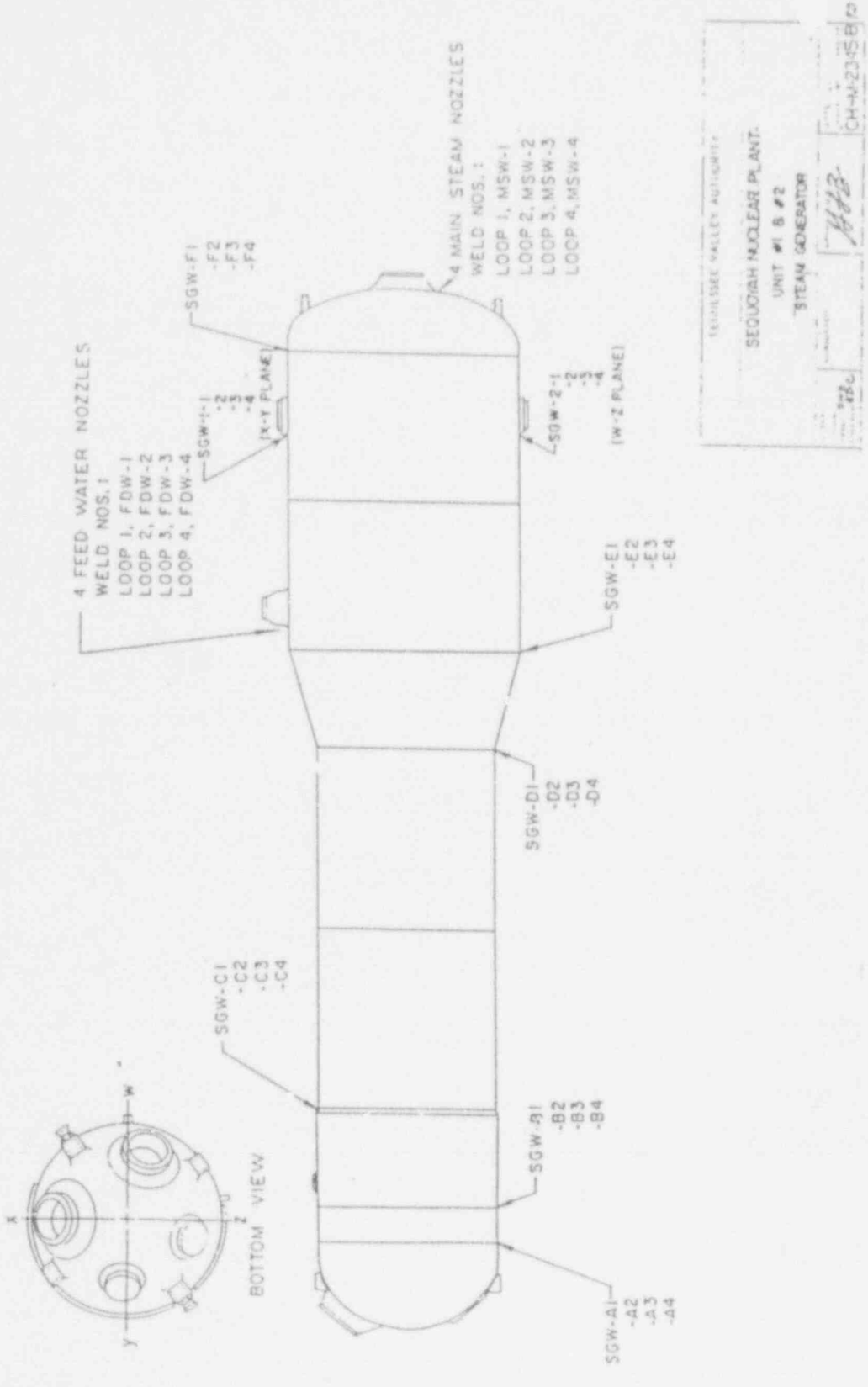
Alternate Inspection: None.

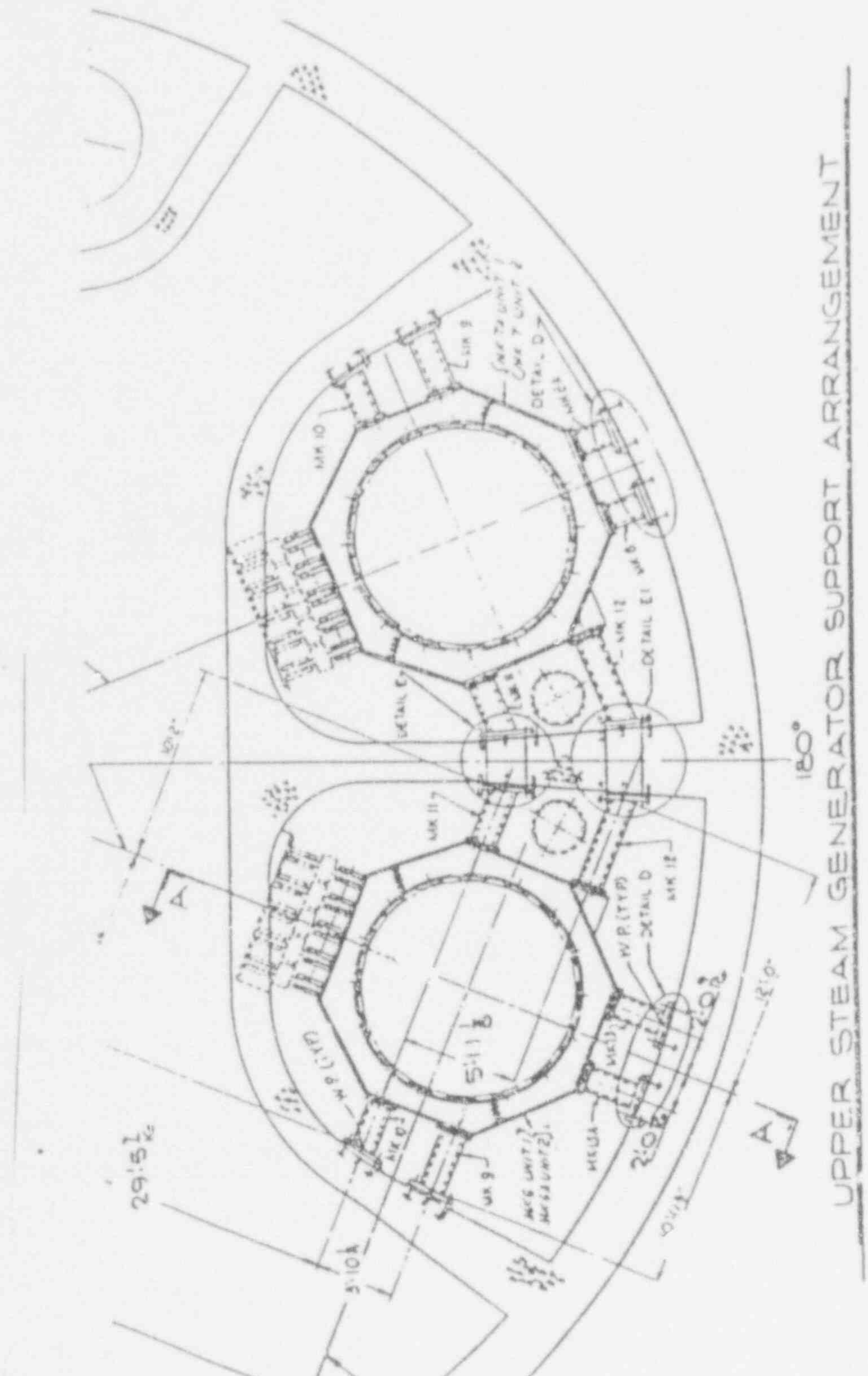
Safety Evaluation Summary:

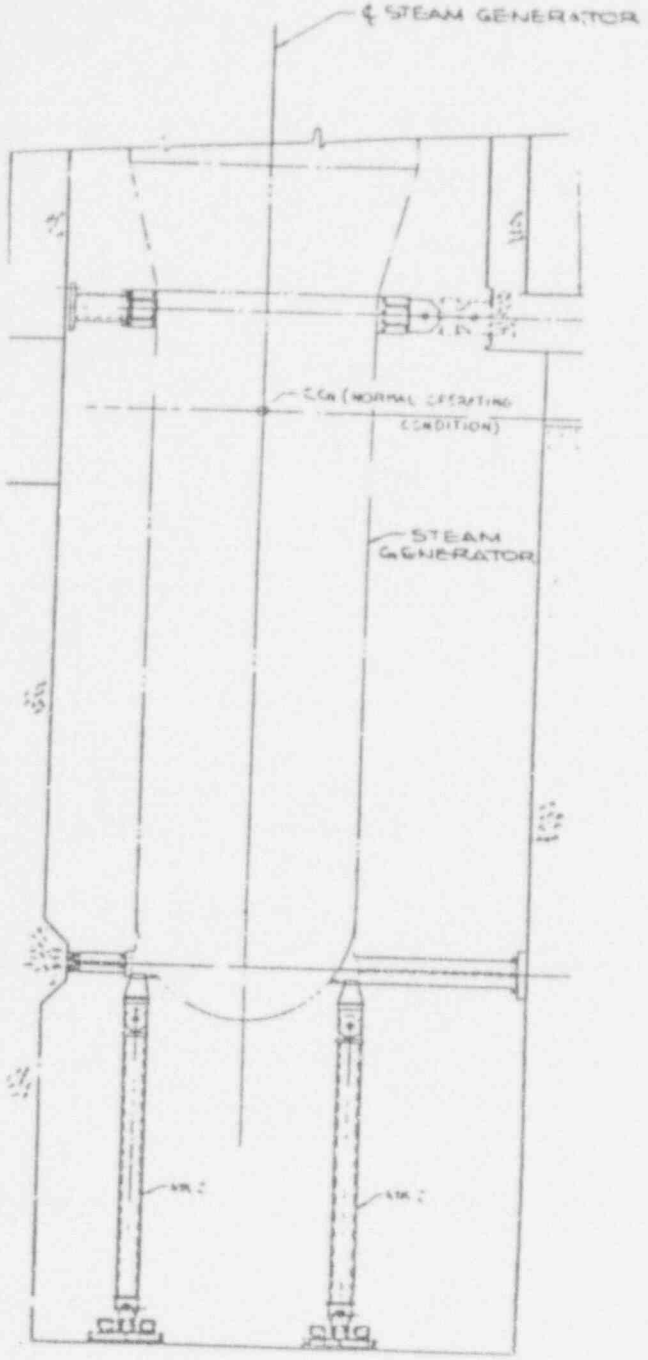
Request for Relief ISI-4 has been approved with no additional augmented requirements.

References: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

Memorandum from F. J. Hebdon, NRC, to D. A. Nauman, TVA, dated October 21, 1991 (A02 911024 003).


4 FEED WATER NOZZLES
WELD NOS.:
LOOP 1, FDW-1
LOOP 2, FDW-2
LOOP 3, FDW-3
LOOP 4, FDW-4
4 MAIN STEAM NOZZLES
WELD NOS.:
LOOP 1, MSW-1
LOOP 2, MSW-2
LOOP 3, MSW-3
LOOP 4, MSW-4
SGW-F1 -F2 -F3 -F4
SGW-E1 -E2 -E3 -E4
SGW-D1 -D2 -D3 -D4
SGW-C1 -C2 -C3 -C4
SGW-B1 -B2 -B3 -B4
SGW-A1 -A2 -A3 -A4
(X-Y PLANE)
(W-Z PLANE)
BOTTOM VIEW
SEQUOYAH NUCLEAR PLANT
UNIT #1 & #2
STEAM GENERATOR
CH-4-2345


UPPER STEAM GENERATOR SUPPORT ARRANGEMENT
180°
DETAIL D
DETAIL E1
DETAIL E
29'5½
5'10⅜


℄ STEAM GENERATOR
℄ SG (NORMAL OPERATING CONDITION)
STEAM GENERATOR

SECTION - A - A

REQUEST FOR RELIEF ISI-5

Component: Reactor Pressure Vessel

Class: ASME Code Class 1 (Equivalent)

Inspection Requirements: ASME Section XI, Table IWB-2500-1, examination category B-A, item no. B1.20, 100-percent preservice volumetric examination of lower head dollar weld, under conditions and with equipment and techniques equivalent to those expected to be employed during inservice inspection.

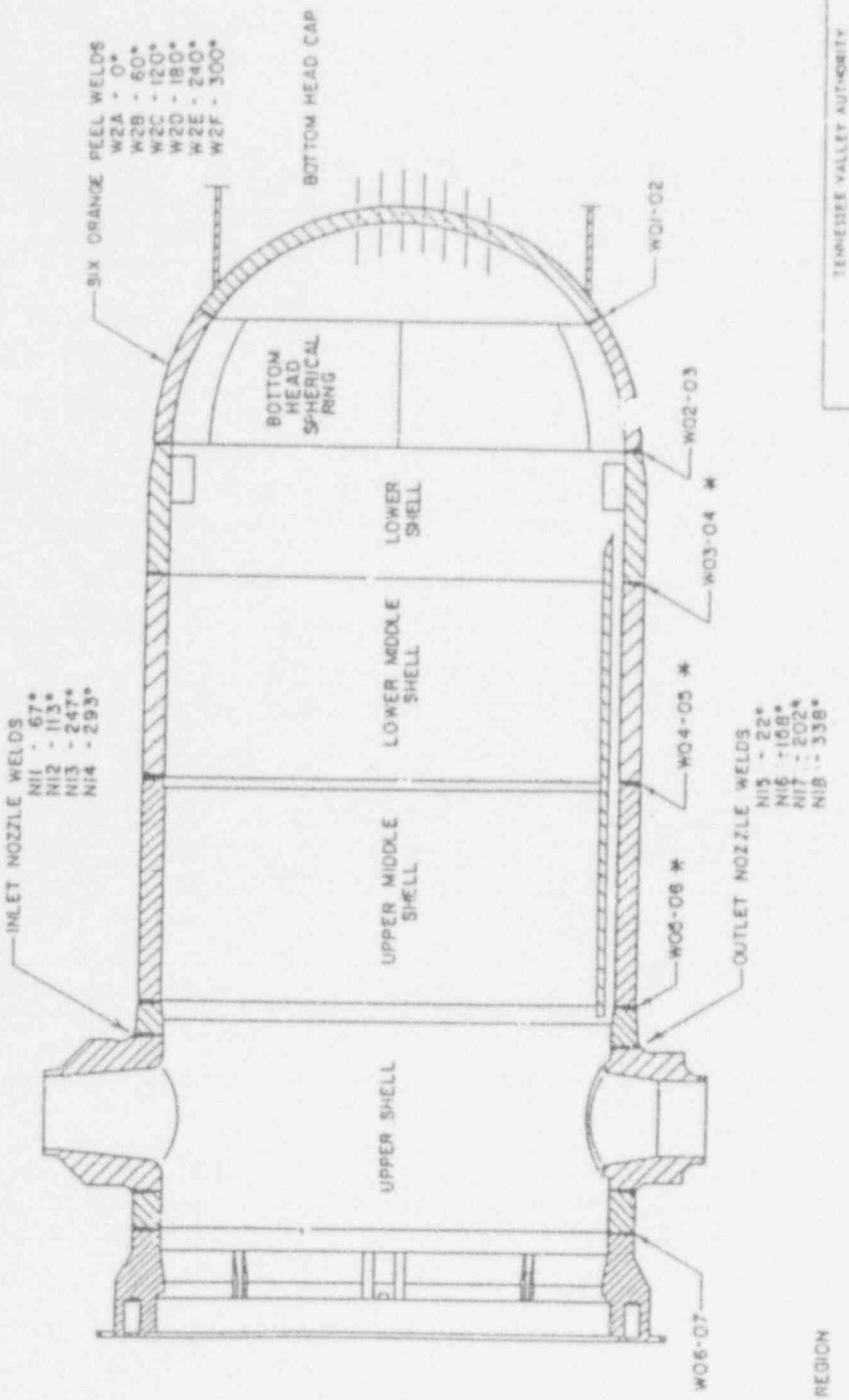
Basis for Relief: TVA will employ automated remote inspection devices to examine most of the reactor vessel welds. These examinations will be conducted from the vessel inside diameter. However, the lower head weld on each reactor pressure vessel is partially inaccessible for examination from the vessel inside diameter due to instrumentation tubes which penetrate the lower head (weld No. W01-02 - see attached drawings). Portions of the weld can be examined from one side (as permitted by T-441.4, Article 4 of Section XI) and will include 100 percent of the examination volume in accordance with IWB-3511.1 of Section V. These portions of the weld will be reexamined during the inservice intervals in accordance with examination category B-A of Table IWB-2500-1.

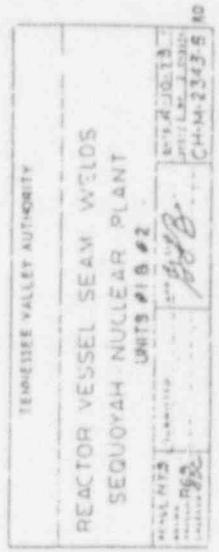
Alternate Inspection: A 100-percent preservice examination of the weld will be conducted from the vessel outside diameter. This will be accomplished by performance of a manual ultrasonic examination. A remote ultrasonic examination will be conducted from the vessel inside diameter on all accessible areas of the weld.

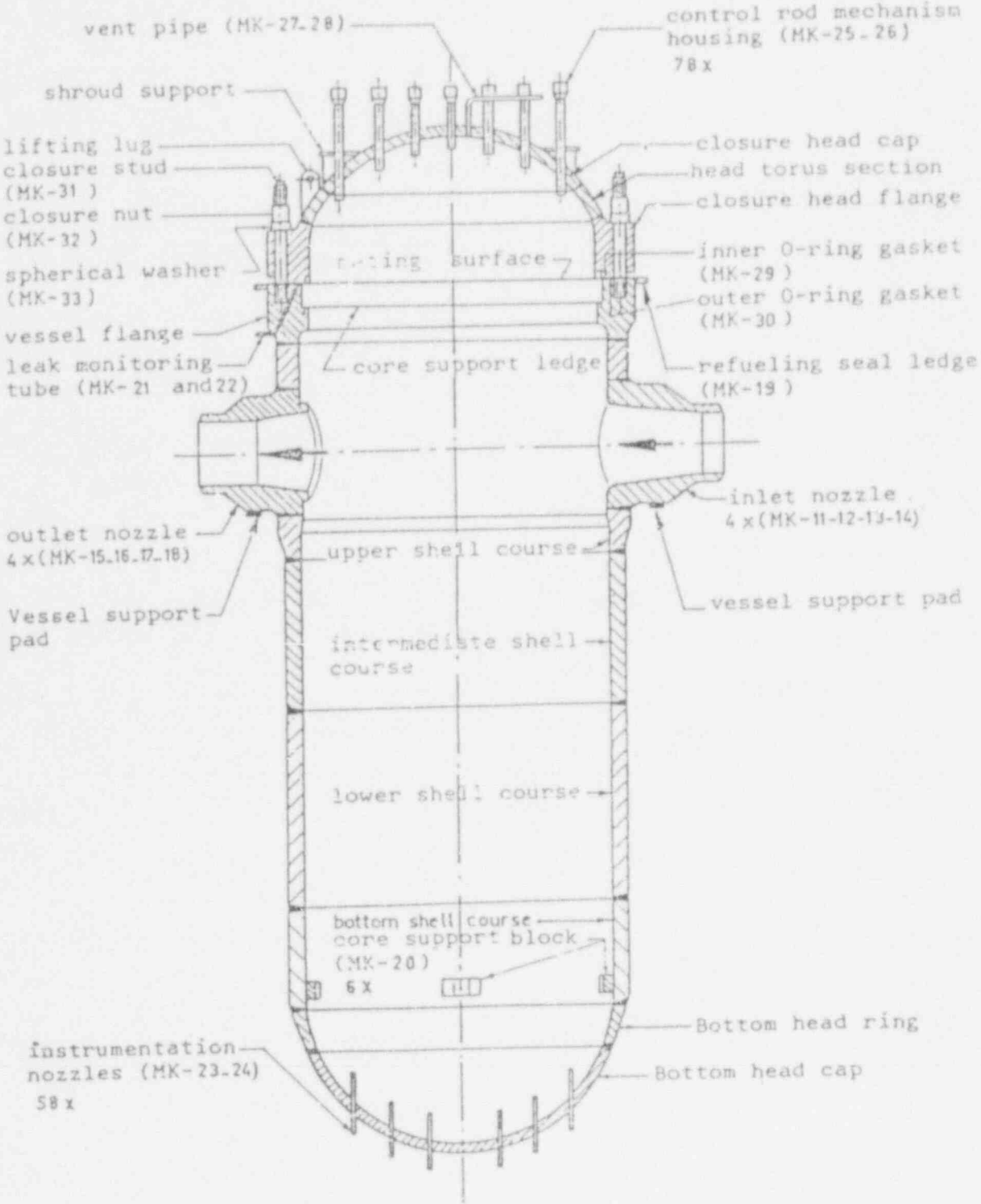
Safety Evaluation Summary:

Request for Relief ISI-5 has been approved with no additional augmented requirements except to notify NRC of the percentage examined.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).


SIX ORANGE PEEL WELDS
W2A - 0°
W2B - 60°
W2C - 120°
W2D - 180°
W2E - 240°
W2F - 300°
BOTTOM HEAD CAP
W01-02
BOTTOM HEAD SPHERICAL RING
W02-03
LOWER SHELL
W03-04 *
LOWER MIDDLE SHELL
W04-05 *
UPPER MIDDLE SHELL
W05-06 *
UPPER SHELL
W06-07
INLET NOZZLE WELDS
N11 - 67°
N12 - 113°
N13 - 247°
N14 - 293°
OUTLET NOZZLE WELDS
N15 - 22°
N16 - 158°
N17 - 202°
N18 - 338°
* BELTLINE REGION


TENNESSEE VALLEY AUTHORITY
REACTOR VESSEL SEAM WELDS
SEQUOYAH NUCLEAR PLANT
UNITS 1 & 2
CH-M-2343-S


vent pipe (MK-27.28)
control rod mechanism housing (MK-25.26) 78x
shroud support
lifting lug
closure stud (MK-31)
closure nut (MK-32)
spherical washer (MK-33)
vessel flange
leak monitoring tube (MK-21 and 22)
closure head cap
head torus section
closure head flange
inner O-ring gasket (MK-29)
outer O-ring gasket (MK-30)
refueling seal ledge (MK-19)
core support ledge
inlet nozzle 4x(MK-11-12-13-14)
outlet nozzle 4x(MK-15.16.17.18)
upper shell course
vessel support pad
Vessel support pad
intermediate shell course
lower shell course
bottom shell course
core support block (MK-20) 6x
Bottom head ring
Bottom head cap
instrumentation nozzles (MK-23.24) 58x

REQUEST FOR RELIEF ISI-6

Component: Steam Generator (four per unit)

Class: ASME Code Class 1 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWB-2500-1, examination category B-D, item no. B3.140, volumetric examination of nozzle inside radius section on the primary side.

Basis for Relief: Each steam generator consists of two integrally cast nozzles and two integrally cast manways. Relief from the inspection requirement above is based on EPRI report NP-4242, "Long-Term Inspection Requirements for Nuclear Power Plants", dated March 1986. This report presents a linear fracture mechanics analysis which predicts that cracks of size .025 in (which is greater than the allowable reference flow size) will propagate to only slightly greater than one sixteenth of the nozzle wall thickness during the entire life of the plant. The report proposes that the nozzle inner radius be examined at least at half the plant life, and subsequently, at the regular code inspection intervals.

The primary chamber radiation exposure dose rate is generally on the order of 30 rem/hr. As a result, individual "stay-time in the chamber would be limited to a degree where meaningful results from alternative surface and visual examinations could not be achieved. In addition, the presence of the interior surface austenitic stainless steel cladding which has a higher ductility than the base ASME-SA-216 grade WCC casting material raises the possibility of under cladding cracking which would not be visible with a surface examination.

Alternate Inspection: TVA will initiate examination of the steam generator nozzle inner radius sections in accordance with the applicable Section XI Code during the second inspection interval. This will provide for examination of all the steam generator nozzle inner radii by the period ending at half the plant life.

(Continued)

REQUEST FOR RELIEF ISI-6 (Continued)

Safety Evaluation Summary:

Request for Relief ISI-6 has been approved in the following manner:

(a) Delaying the volumetric examination of the nozzle sections until the third inspection period of the first inspection interval and then following the Code requirements is acceptable.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

REQUEST FOR RELIEF ISI-7

Component: Reactor Coolant Loop Piping Welds (2)

Class: ASME Code Class 1 (Equivalent)

Inspection Requirements: ASME Section XI, IWB-2500-1, examination category B-J, item no. B9.10, volumetric examination of circumferential welds.

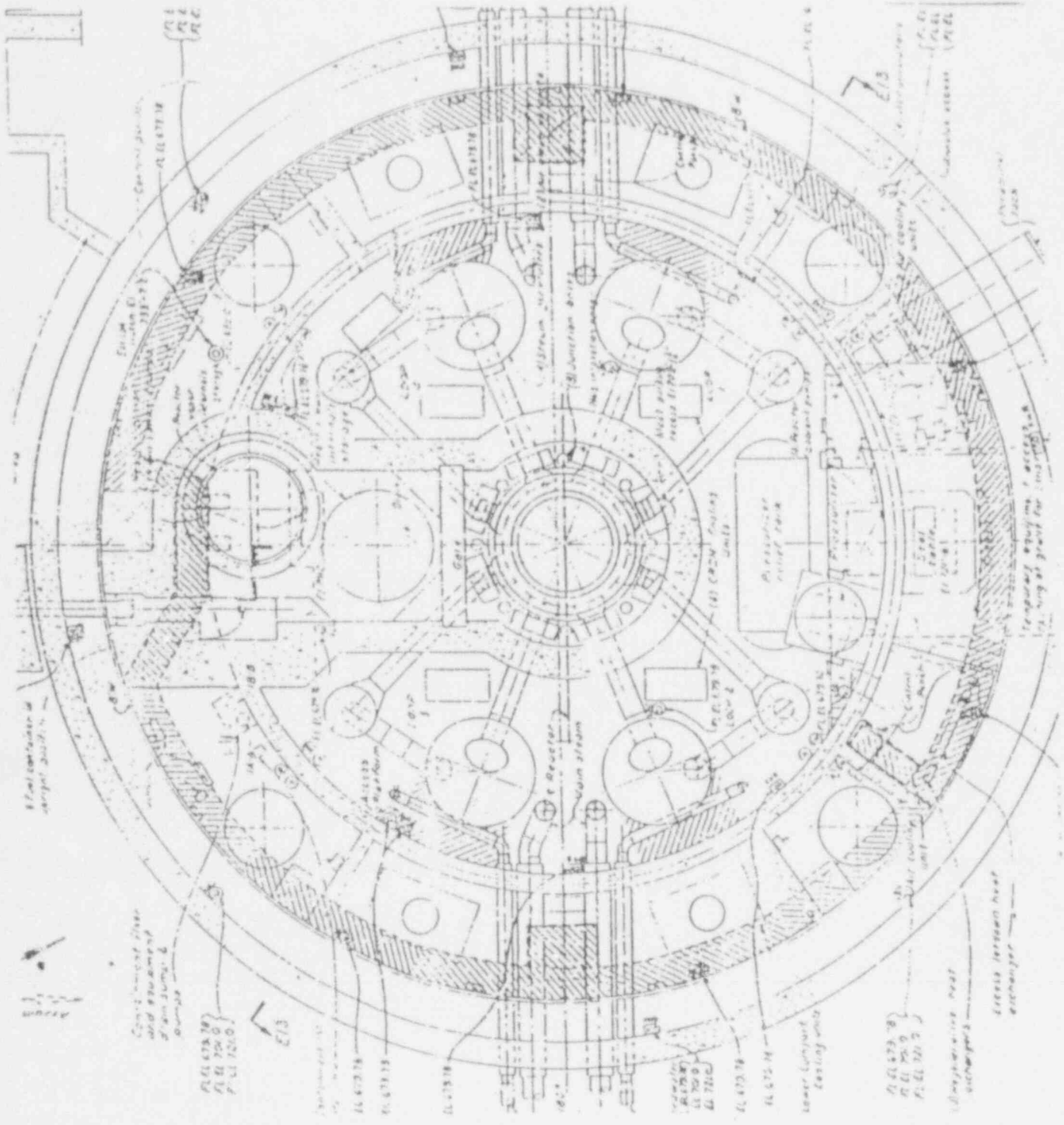
Basis for Relief: Two circumferential shell welds in the reactor coolant loop piping (RC-23S1 and RC-31S1, loops 3 and 4) are located inside the reactor vessel shield wall and are inaccessible for preservice and inservice examination (see attached drawings). Both welds have undergone shop radiographic examinations. Since the preservice inspection serves as a reference to future inservice inspections and both welds will be inaccessible for inservice inspections, the shop radiographic examinations coupled with the ASME Section III hydrostatic test will provide adequate proof of integrity of the system welds. Inservice system leakage and hydrostatic testing will prove weld integrity during the life of the plant.

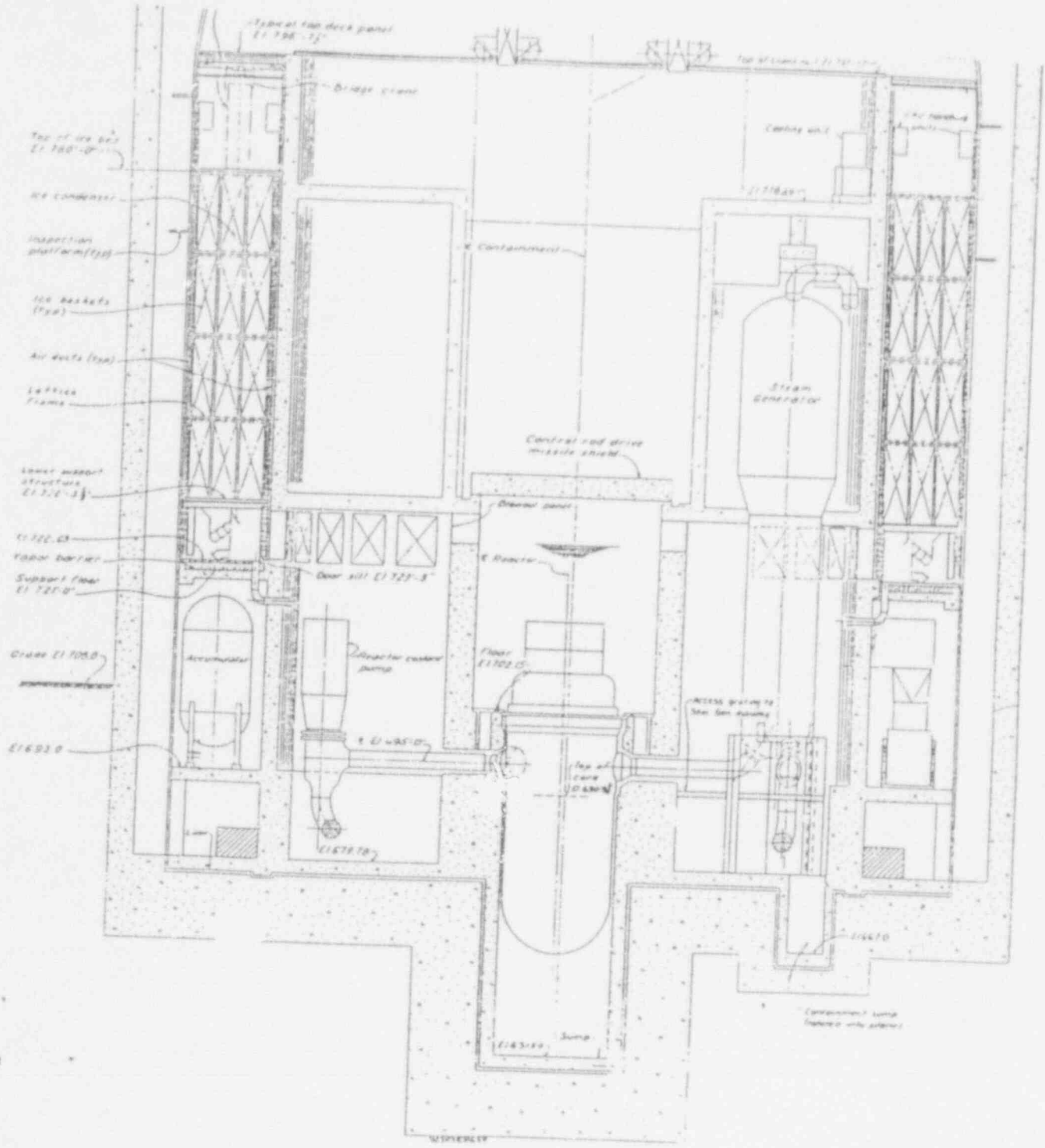
Alternate Inspection: None.

Safety Evaluation Summary:

Request for Relief ISI-7 was concluded that relief was not necessary at this time. Relief should not be requested until the fourth inspection interval ISI Plan is made.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).




Bridge crane
Ice condenser
Inspection platforms (typ)
Ice baskets (typ)
Air ducts (typ)
Lattice frame
Lower support structure
Refueling floor
Support floor
Grade El 708.0
Accumulator
Reactor coolant pump
Steam Generator
Control rod drive missile shield
Reactor
Floor El 702.0
Sump

REQUEST FOR RELIEF ISI-8

Component: Reactor coolant pumps (four per unit)

Class: ASME Code Class 1 (Equivalent)

Inspection Requirement: ASME Section XI, IWB-2500-1, examination category B-L-1, item no. B12.10, volumetric examination of pressure-retaining welds in pump casing.

Basis for Relief: Each reactor coolant pump casing consists of a two-piece welded type 304 SST casting. The present capability of ultrasonic testing is not sufficient to examine cast material of this thickness and achieve meaningful results.

Alternate Inspection: All four welds will be surface examined during the preservice inspection, and one weld will be surface examined during each inspection interval.

Safety Evaluation Summary:

Request for Relief ISI-8 has been approved with the following additional augmented requirements:

(a) One reactor coolant pump casing weld is surface examined during each inspection interval.

(b) The pump casing is visually inspected for leakage in conjunction with system leakage and hydrostatic tests under Category B-P.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

Memorandum from Suzanne Black, NRC, to O. D. Kingsley, TVA, dated April 19, 1990 (A02 900426 005).

REQUEST FOR RELIEF ISI-9

Component: Uncladded vessel welds in ferritic material less than 2 inches in thickness.

Class: ASME Code Class 1 and 2 (Equivalent)

Inspection Requirement: Ultrasonic examination of welds, paragraph T-530 of ASME Section V, Article 5, 1977 Edition, Summer 1978 Addenda as referenced in paragraph IWA-2232 (c) of ASME Section XI 1977 Edition Summer 1978 Addenda.

Basis for Relief: Paragraph T-533.2(a) of Article 5 of ASME Section V requires that the basic calibration block include a basic calibration hole drilled parallel to the contact surface. However, paragraph T-533.2(b) permits the use of other calibration reflectors provided equivalent responses to that from the basic calibration hole are demonstrated.

TVA currently uses 5% notches in lieu of side drilled holes. Although the use of the 5% notch cannot be shown to be equivalent in all cases to the applicable side-drilled holes, TVA considers that examinations are technically acceptable based on the calibration requirements of paragraph III-3430 of Appendix III, 1977 Edition, Summer 1978 Addenda of ASME Section XI. The calibration notches for ferritic material are 10%t when t is less than .312" and .104t-.009t for material .312"-6" thick. TVA's use of 5% notches is considered equivalent to the latest approved code examination techniques.

Alternate Inspection: TVA proposes to continue the use of notches located on the I.D. and O.D. surfaces at a nominal depth of 5%t as reference reflectors.

Safety Evaluation Summary:

Request for Relief ISI-9 has been approved with no additional augmented requirements.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

REQUEST FOR RELIEF ISI-10

Components: Reactor vessel flange to upper shell weld

Class: ASME Code Class 1 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWB-2500-1, examination category B-A, item no. B1.30, volumetric from flange face.

Basis for Relief: The reactor vessel flange-to-upper shell weld is located behind the core barrel and is therefore inaccessible until the core barrel is removed. The vessel flange-to-upper shell weld is 41.9 inches below the flange face. Due to the location of the vessel flange-to-upper shell weld, TVA intends to address the weld as a reactor vessel shell weld.

We have reviewed the Sequoyah Reactor Vessel Stress Report entitled Analysis of the Main Closure Including Core Support Ledge (Document No. 30616-1105) purposely to determine a fatigue usage factor for the vessel flange to shell weld. This analysis does not provide a usage factor specifically for the weld because the analysis considers weld and base material to be homogeneous and equal in elasticity, strength, and fatigue properties. Instead, the analysis provides usage factors at critical locations.

The maximum fatigue usage factor in the vessel in the vicinity of the flange to shell weld as found in the above analysis is 0.00662 and this value can be conservatively used for the weld. We consider the value of 0.00662 to be extremely low compared to the code allowed fatigue usage factor of 1.0.

We conclude that the distance (41.9") from the flange face to the flange-to-upper shell weld coupled with present ultrasonic techniques and the very low fatigue usage factor that the flange-to-upper shell weld should be treated as a reactor vessel shell weld.

Alternate Inspection: A remote ultrasonic examination of the weld will be conducted from the vessel inside diameter near the end of the inspection interval.

(Continued)

REQUEST FOR RELIEF ISI-10
(Continued)

Safety Evaluation Summary:

Request for Relief ISI-10 has been approved with no additional augmented requirements.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).

REQUEST FOR RELIEF ISI-11

This Request has been Withdrawn

REQUEST FOR RELIEF ISI-12

This Request For Relief was not needed. See NRC Safety Evaluation Report dated February 7, 1991 (A02 910214 009).

Components: 1. Excess Letdown Heat Exchanger - Chemical and Volume Control System (CVCS)
2. Regenerative Heat Exchanger - CVCS

Class: ASME Code Class 2 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWC-2500-1, Examination Category C-A, item Nos. C1.10, C1.20, and C1.30, volumetric examination of essentially 100 percent of each circumferential weld at gross structural discontinuities (head-to-shell and tubesheet-to-shell weld) and categories C-C and C-E, item Nos. C3.10, surface examinations of integrally welded support attachments.

Basis for Relief: The excess letdown heat exchanger (ELHX) and the regenerative heat exchanger (RHX) were scheduled for examination during the first inspection period in accordance with the In-service Inspection (ISI) Programs SI-114.1 and SI-114.2. The ELHX circumferential head weld was scheduled for ultrasonic (UT) examination in the first three-year inspection period. For the RHX there are six circumferential head welds and six circumferential tubesheet-to-shell welds. Of these, two each of the circumferential head welds and tubesheet-to-shell welds were to be examined in the first period by UT examination. ASME Section XI 1977 Edition, Summer 1978 Addenda, Table IWC-2500-1 Examination Category C-A requires a volumetric examination of 100 percent of the required welds.

The ELHX weld was examined ultrasonically from one side for almost the entire length, except where the head's flanged nozzle-inlet and outlet welds interfered with the examination (see attached drawing). This allowed for an UT examination of 90 percent of the weld from the one side. From the opposite side, the head taper and head closure studs and nuts severely restricted access to the weld area and as a result no meaningful results could be obtained. The UT was performed on a best-effort basis and supplemented with a liquid-penetrant test (PT) over 100 percent of the weld area.

(Continued)

REQUEST FOR RELIEF ISI-12

(Continued)

In the case of the RHX when examinations were performed, the state-of-the-art UT examination capabilities did not allow the achievement of meaningful results because of the component fabrication processes involved.

The RHX is a centrifugally cast stainless steel, SA-351, CF8 vessel. In addition, the examinations were hindered by supports which were essentially nonremovable from the area of two of the four welds because of the location in the heat exchanger room and their position on the vessel (see attached drawings). As a result, a PT was performed in place of the required UT. On the two restricted welds examined, only 75 percent of the weld lengths were surface examined because of supports covering part of the weld areas.

In accordance with 10 CFR 50.2(v) of the Code of Federal Regulations, the RHX and the ELHX are defined to be within the reactor coolant pressure boundary (RCPB) (ASME Class 1). Secondly, 10 CFR 50.55(c) further states: "(2) Components which are connected to the reactor coolant system and are part of the reactor coolant pressure boundary defined in 50.2(v) need not meet these requirements (Class 1 requirements), provided: (ii) The component is or can be isolated from the reactor coolant system by two valves (both closed, both open, or one closed and the other open). Each open valve must be capable of automatic actuation and, assuming the other valve is open, its closure time must be such that, in the event of postulated failure of the component during normal reactor operation, each valve remains operable and the reactor can be shutdown and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system only." As a result of this paragraph, the RHX, ELHX, and the connecting piping to the Reactor Coolant System (RCS) and piping out to the containment isolation valves would be exempt from ASME Class 1 examination requirements.

REQUEST FOR RELIEF ISI-12

(Continued)

Sequoyah Nuclear Plant units 1 and 2 ISI programs, SI-114.1 and SI-114.2, classify components for examination in accordance with Regulatory Guide 1.26, Revision 3. The guidelines of Regulatory Guide 1.26, paragraph C.1, classify components which are exempted by 10 CFR 50.55A(c)(2)ii from ASME Class 1 examination requirements (such as the RHX, ELHX, and associated piping) as ASME Class 2 equivalent. The Sequoyah Final Safety Analysis Report (FSAR), Section 9.3.4.1.7, further describes the RHX, ELHX, and associated piping as "not required to function during a loss-of-coolant accident."

Additional system design considerations are the following:

1. The ELHX is not used during normal plant operations and is isolated from the RCS by three valves, two normally closed gate valves and a check valve.

2. The RHX is isolated from the RCS by two check valves. Leakage from the RCS is prevented by the two check valves in series which were leak tested during the preoperational test program. Leakage also can be detected by monitoring for signs of system incoming leakage and by monitoring the RCS for signs of outgoing leakage (FSAR 6.3-26).

3. There are no leakage problems into the CVCS from the RCS because of the higher pressure at which the CVCS is generally maintained (FSAR 6.3-27).

In addition, the inlet and outlet piping (one inlet and one outlet) associated with the ELHX is 1-inch nominal pipe size (NPS) and 3-inch NPS for the RHX. Both of these are less than the 4-inch NPS which, in accordance with IWC-1220(c), is exempt from the examination requirements in Table IWC-2500-1 (Class 2) of ASME Section XI. Also note that the Winter 1980 Addenda, paragraph IWB-1220(b)(2) exempts from examination components and their connections in piping of 1-inch nominal pipe size and smaller. (Having one inlet and one outlet pipe, each 1-NPS or smaller.)

REQUEST FOR RELIEF ISI-12

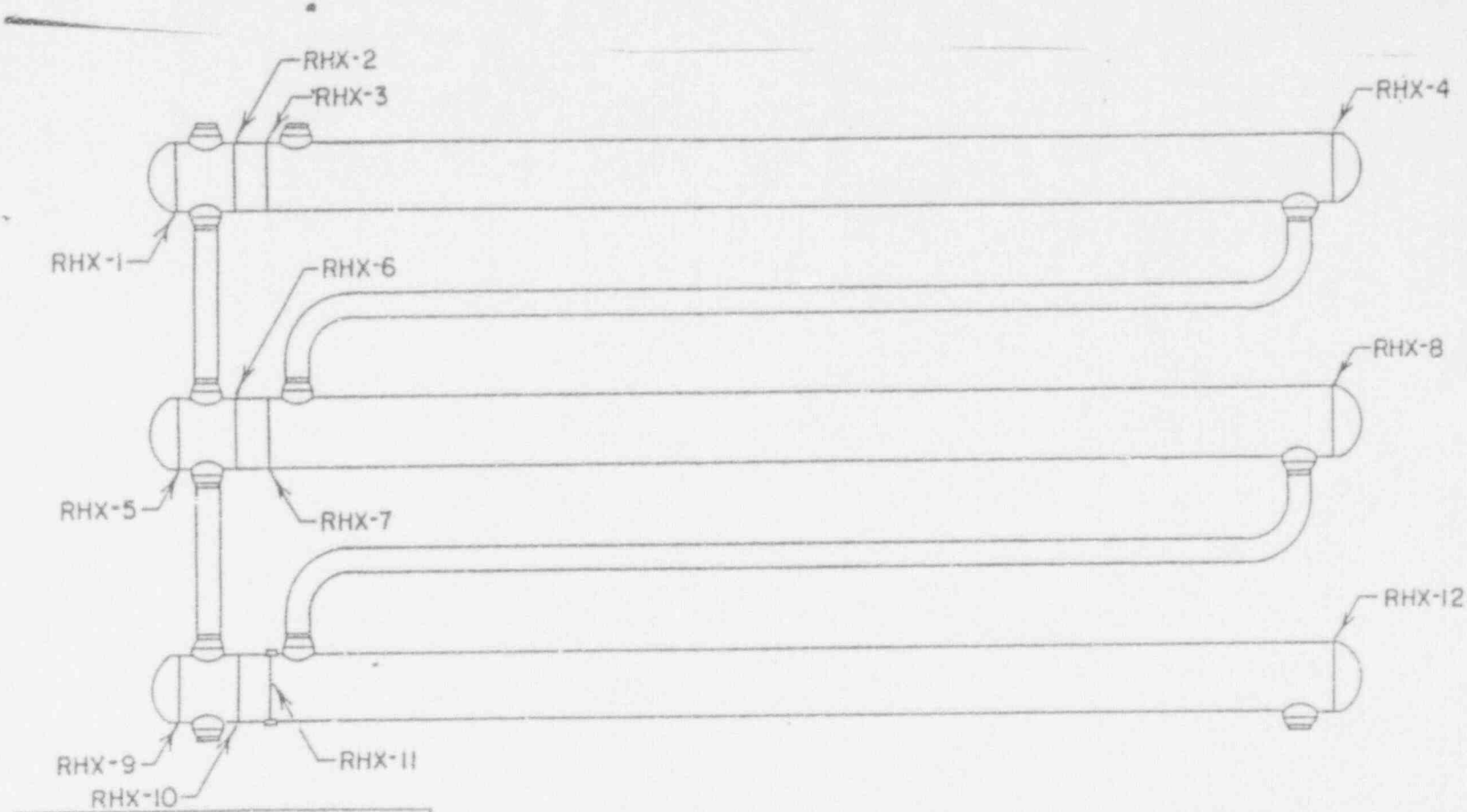
(Continued)

TVA also feels that the ALARA considerations to perform the liquid penetrant (PT) examinations on the ELHX and RHX are excessive for the benefits received from the inspections. The actual radiation exposures to perform the first inspection period examinations alone were 2,200 MREM and 6,600 MREM respectively.

Note that, in addition to the requirements in Examination Category C-A, Table IWC-2500-1, Examination Category C-H requires that all pressure retaining components be pressure tested in accordance with IWC-5000. This results in a system pressure test conducted each 10-year interval during a system functional test for the ELHX and a system hydrostatic test performed each inspection interval for the RHX.

Based on the component classifications as defined in 10 CFR 50.55, the nonsafety related function as stated in Sequoyah FSAR, the design of the heat exchangers and their supports preventing 100-percent examination coverage, and the ALARA considerations in view of the small benefit realized, TVA requests relief from the ASME Section XI examination requirements as shown in Table IWC-2500-1, Examination Category C-A only (Class 2).

Alternate Inspection: None.



MATERIAL SPECIFICATIONS
CLASS B
SHELL
SA 351 CF 8
HEADS
SA 240 TP 304
TUBE SHEET
SA 182 F 304

NOTES
1. SEE SHEET 2 FOR SHELL DETAILS AND DIMENSIONS

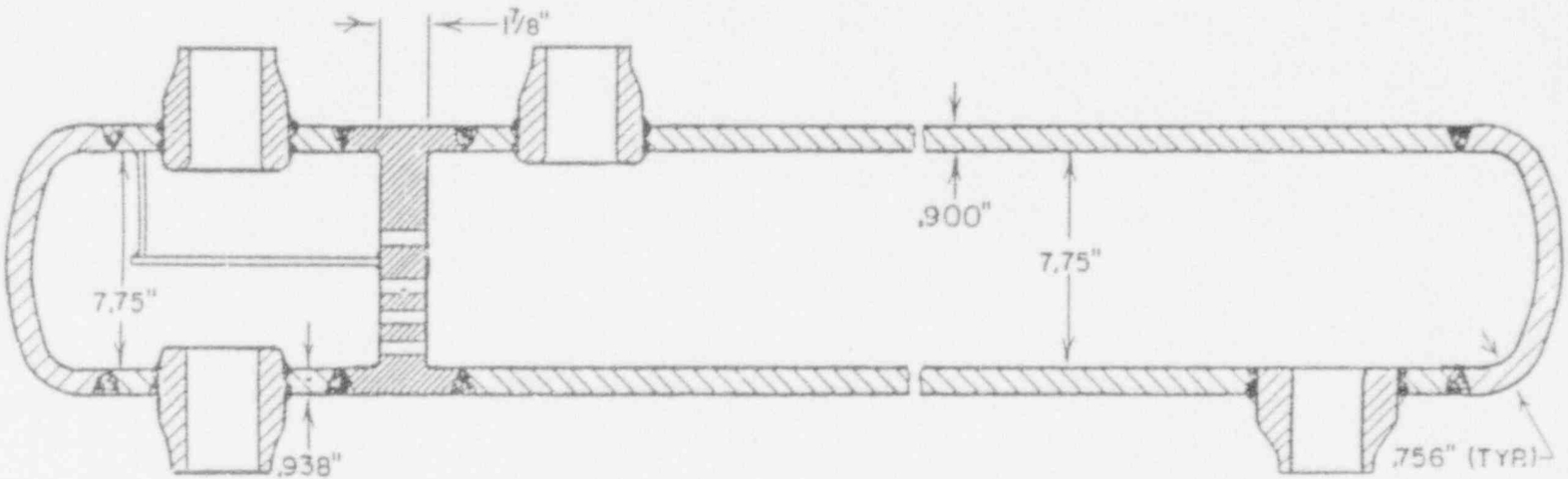
REFERENCE DRAWINGS
4961
4964

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT
UNITS #1 & #2
REGENERATIVE HEAT EXCHANGER
WELD LOCATIONS

SCALE: NTS | SUBMITTED | APPROVED | DATE 4-27-73
DRAWN | | | SHEET 1 OF 3 SHEETS
TRACED BGS | | | SI-0066-A
CHECKED EPC | | | RD

Standard Sheet
TVA 40963 (NP 2811)
1503C/COC3

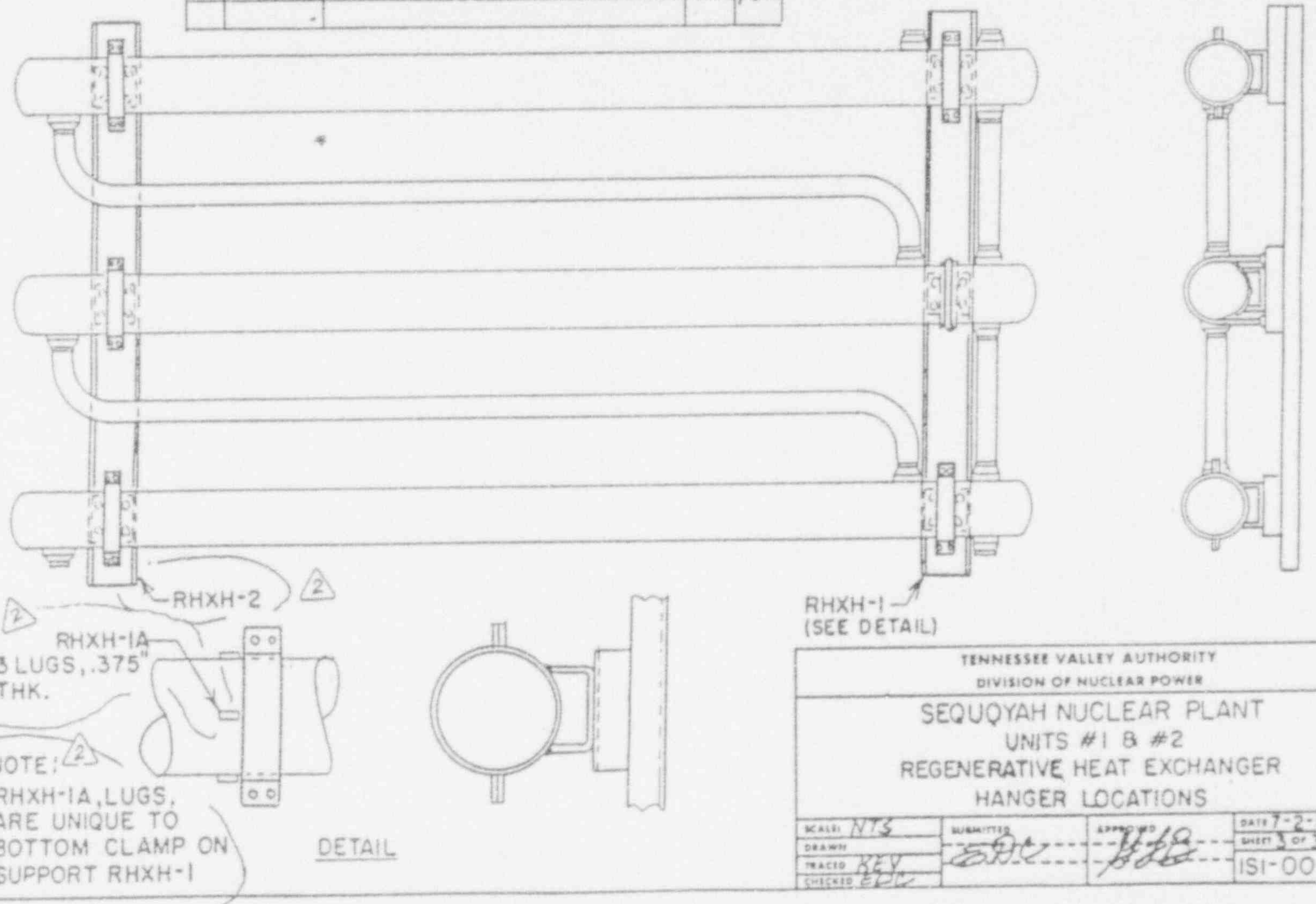


TENNESSEE VALLEY AUTHORITY
DIVISION OF NUCLEAR POWER

SEQUOYAH NUCLEAR PLANT
UNITS #1 & #2
REGENERATIVE HEAT EXCHANGER
WELD LOCATIONS

SCALE: NTS	SUBMITTED	APPROVED	DATE 7-82
DRAWN			SHEET 2 OF 3 SHEETS
TRACED KEV			ISI-0066-A R0
CHECKED CBL			

NO.	DATE	REVISIONS	CK'D	APP.
1	2-24-84	CORRECTED DWG. SIZE JAA	[illegible]	[illegible]
2	12-12-85	ADD NOTES & HANGER NO.	[illegible]	[illegible]



TENNESSEE VALLEY AUTHORITY
DIVISION OF NUCLEAR POWER

SEQUOYAH NUCLEAR PLANT
UNITS #1 & #2
REGENERATIVE HEAT EXCHANGER
HANGER LOCATIONS

SCALE: NTS | DRAWN | TRACED KEV | CHECKED [illegible] | SUBMITTED [illegible] | APPROVED [illegible] | DATE 7-2-82 | SHEET 3 OF 3 SHEETS

ISI-0066-A R-2

REFERENCE DRAWINGS

D-2031-6

MATERIAL SPECIFICATIONS

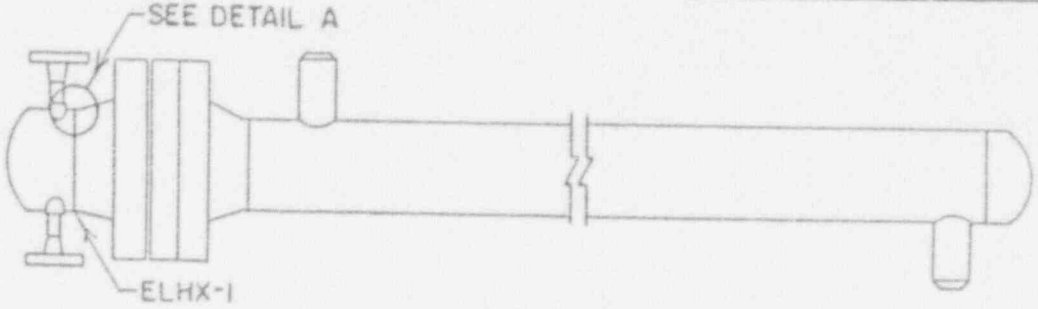
CLASS B

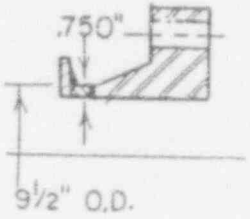
HEAD

SA 240 TP 316

FLANGES

SA 182 F 316





DETAIL A

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT
UNITS #1 & #2
EXCESS LETDOWN HEAT EXCHANGERS
WELD LOCATIONS

SCALE: NTS	SUBMITTED	APPROVED	DATE 4-27-73
DRAWN			SHEET 1 OF 1 SHEETS
TRACED RGS	EDC	GJB	ISI-0067-A
CHECKED EDC			

RO

REQUEST FOR RELIEF ISI-13

Components: Residual Heat Removal Heat Exchanger (two per unit)

Class: ASME Code Class 2 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWC-2500-1, examination category C-B, item no. C2.20, nozzles in vessels with over 1/2-inch in nominal wall thickness; surface and volumetric examination.

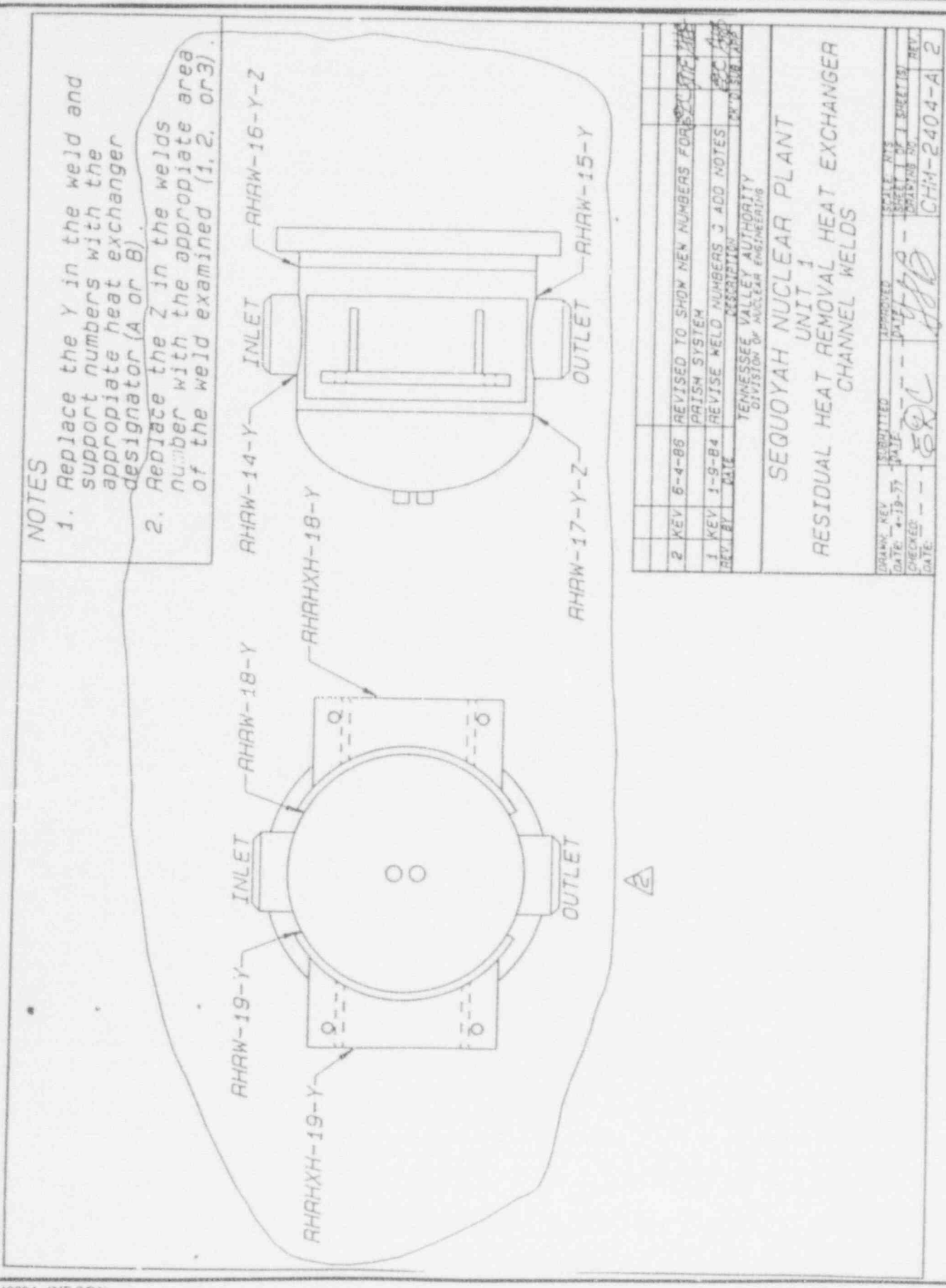
Basis for Relief: Each heat exchanger consists of an inlet-outlet head chamber with one inlet and one outlet nozzle and two integrally attached support brackets. Volumetric examination of the nozzle-to-vessel welds and the nozzle inner radii is inhibited by the shell-to-tubesheet weld, shell-to-head weld, and the integral supports as shown in the attached sketches. Proximity of the welds and inner radius sections do not allow for the achievement of meaning results from a volumetric examination.

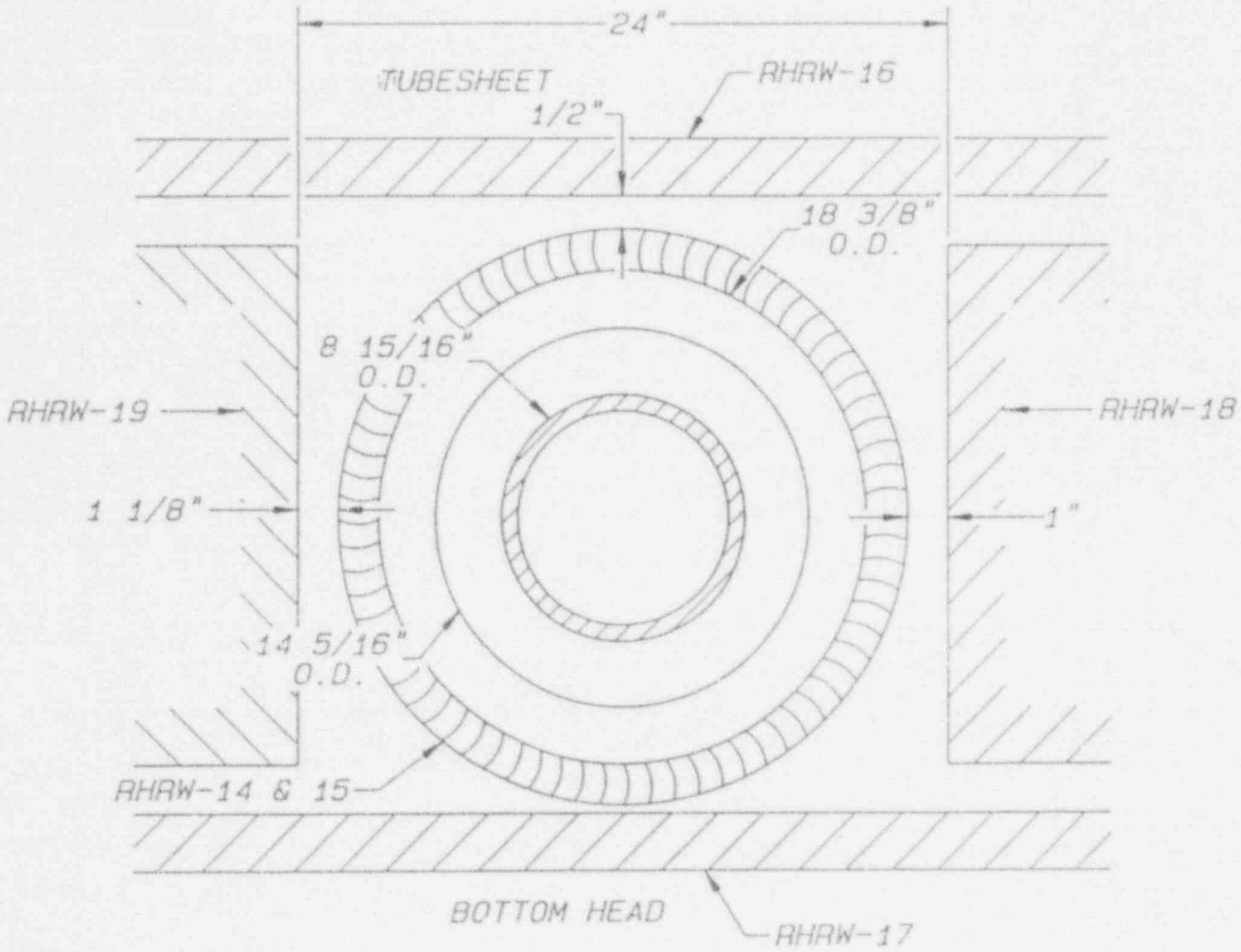
Alternate Examination: The nozzle-to-vessel welds will be examined utilizing a surface only examination.

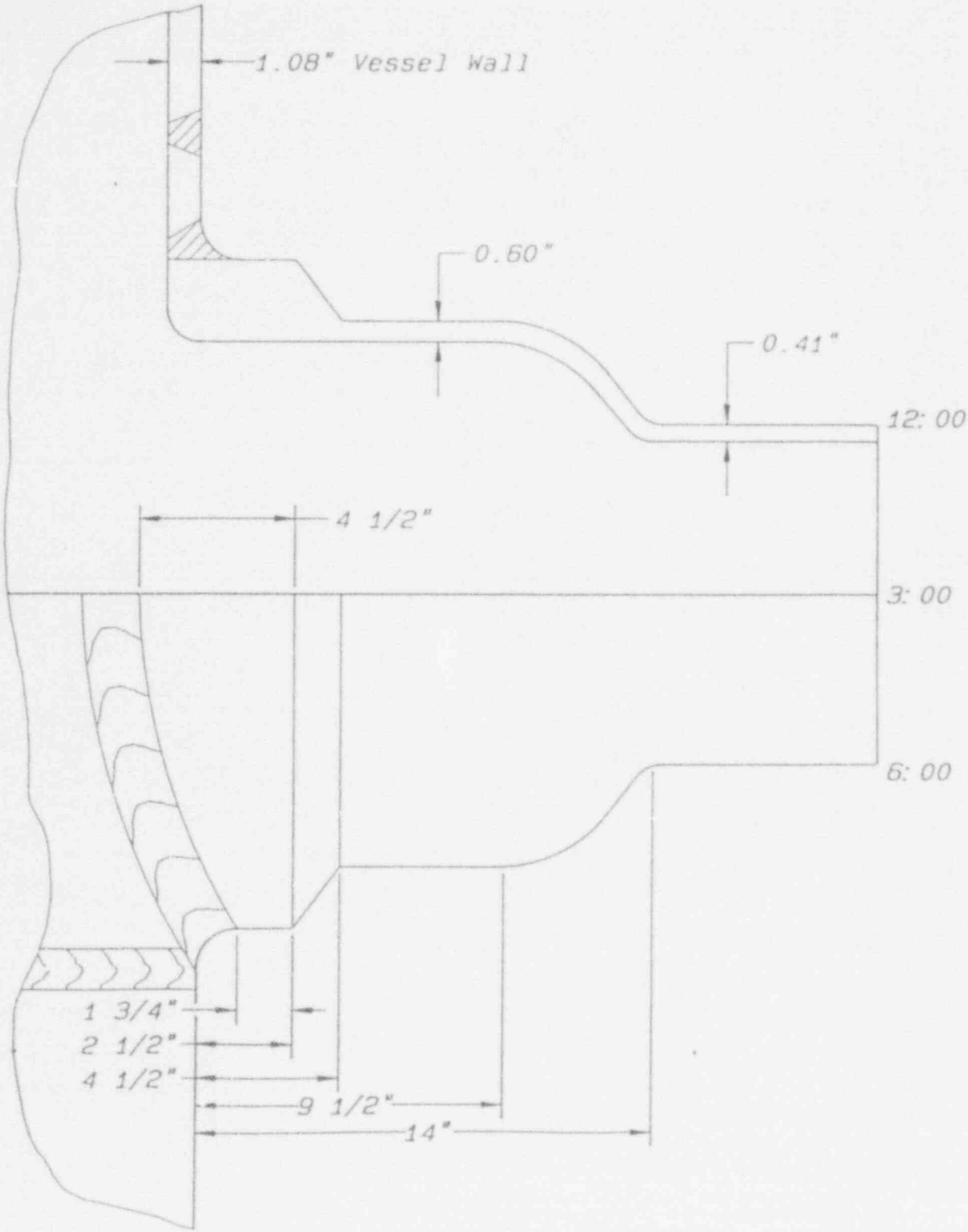
Safety Evaluation Summary:

Request for Relief ISI-13 has been approved with no additional augmented requirements.

Reference: Memorandum from F. J. Hebdon, NRC, to O. D. Kingsley, TVA, dated February 7, 1991 (A02 910214 009).


NOTES
1. Replace the Y in the weld and support numbers with the appropiate heat exchanger designator (A or B).
2. Replace the Z in the welds number with the appropiate area of the weld examined (1, 2, or 3).
AHAW-16-Y-Z
INLET
AHAW-15-Y
OUTLET
AHAW-14-Y
AHAW-17-Y-Z
AHAHXH-18-Y
AHAW-18-Y
INLET
OUTLET
AHAW-19-Y
AHAHXH-19-Y
2 KEV 6-4-86 REVISED TO SHOW NEW NUMBERS FOR
PAISH SYSTEM
1 KEV 1-9-84 REVISE WELD NUMBERS & ADD NOTES
REV BY DATE DESCRIPTION
TENNESSEE VALLEY AUTHORITY
DIVISION OF NUCLEAR ENGINEERING
SEQUOYAH NUCLEAR PLANT
UNIT 1
RESIDUAL HEAT REMOVAL HEAT EXCHANGER
CHANNEL WELDS
DRAWN KEV
DATE 4-19-77
CHECKED
DATE
APPROVED
DATE
SCALE NTS
DRAWING NO. CHH-2404-A
REV 2


24"
TUBESHEET
1/2"
RHRW-16
18 3/8"
O.D.
8 15/16"
O.D.
RHRW-19
RHRW-18
1 1/8"
1"
14 5/16"
O.D.
RHRW-14 & 15
BOTTOM HEAD
RHRW-17


1.08" Vessel Wall
0.60"
0.41"
12: 00
4 1/2"
3: 00
6: 00
1 3/4"
2 1/2"
4 1/2"
9 1/2"
14"

REQUEST FOR RELIEF ISI-14

Components: Reactor Vessel (RV) Outlet Nozzle-to-Vessel Welds, RV Nozzle Inside Radius Section, and RV Nozzle-to-Safe End Welds

Class: American Society of Mechanical Engineers (ASME) Code Class 1

Inspection Requirement: Table IWB-2500-1

Examination Category B-D; Full Penetration Welds of Nozzles in Vessels

Item No. B3.90 Nozzle-to-Vessel Welds
Item No. B3.100 Nozzle Inside Radius Section

Footnote 3 (1st Inspection Interval) - "At least 25 percent but not more than 50 percent (credited) of the nozzles shall be examined by the end of 1st inspection period and remainder by the end of inspection interval."

Footnote 4 (Successive Inspection Intervals 2nd, 3rd, and 4th) - "At least 25 percent but not more than 50 percent (credited) of the nozzles shall be examined by the end of 1st inspection period and the remainder by the end of 3rd inspection period of each inspection interval."

Footnote 5 (Deferral of Inspection to End of Interval) - "If examinations are conducted from inside the component and the nozzle weld is examined by straight beam ultrasonic method from the nozzle bore the remaining examinations required to be conducted from the shell inside diameter may be performed at or near the end of each inspection interval."

Examination Category B-F; Pressure Retaining Dissimilar Metal Welds

Item No. B5.10 Nozzle-to-Safe End Welds

Footnote 2 (Successive Inspection Intervals 2nd, 3rd, and 4th) - "For the reactor vessel nozzle safe-ends, the examinations may be performed coincident with the vessel nozzle examinations required by Examination Category B-D."

(Continued)

REQUEST FOR RELIEF ISI-14
(Continued)

Basis for Relief:

Sequoyah Nuclear Plant (SQN) is a four-loop pressurized water reactor with four inlet and four outlet RV nozzles. The RV nozzle-to-vessel welds and inside radius sections are ultrasonically examined from the RV inside diameter using automated inspection devices. With the RV core barrel in place, the outlet nozzles are accessible for examination from the nozzle bore only. The inlet nozzles are inaccessible for examination until the core barrel is removed.

SQN is in the second period of the first ten-year inspection interval. During the first period, the accessible volumes of the nozzle-to-vessel welds and inside radius sections on SQN's four outlet nozzles were ultrasonically examined from the nozzle bore. The remaining examinations for the four inlet and four outlet nozzles are to be completed during the third period, thus satisfying the requirements of Table IWB-2500-1, Examination Category B-D, Item Nos. B3.90 and B3.100, Footnotes 3, 4, and 5.

In addition to the RV nozzle examinations, the RV nozzle-to-safe end welds are ultrasonically examined using an automated inspection device when the nozzle is examined from the bore. During the first period, the nozzle-to-safe end welds on four outlet nozzles were ultrasonically examined from the inside diameter and surface examined from the outside diameter. The nozzle-to-safe end welds on the four inlet nozzles will be similarly examined during the third inspection period. This will satisfy the requirements of Table IWB-2500-1, Examination Category B-F, Item No. B5.10, Footnote 2.

The ASME Code provides for the continuation of the first and third period examinations during the second, third, and fourth inspection intervals, thus establishing a ten-year examination frequency. TVA proposes to alter the inspection schedule by performing an additional examination of the RV nozzle-to-vessel welds and inside radius sections for SQN's four outlet nozzles during the third inspection period of the first inspection interval. In addition, the nozzle-to-safe end welds for the outlet nozzles would also be examined during the third inspection period of the first interval. Performance of these additional examinations will thereby establish a new ten-year examination schedule for the second, third, and fourth inspection intervals. The ten-year examination frequency required by the code

(Continued)

REQUEST FOR RELIEF ISI-14
(Continued)

Basis for Relief:
(Continued)

would continue to be maintained. Additional benefits include:

- One-time installation and removal of the automated inspection device from the RV flange rather than twice during and inspection interval.
- Performance of additional RV outlet nozzle examinations during the first inspection interval.
- Performance of additional RV outlet nozzle-to-safe end weld examinations during the first inspection interval.
- An overall reduction in personnel radiation exposure (one automated examination versus two), thus supporting as low as reasonably achievable considerations.
- A reduction in the number of times automated devices and associated materials and equipment must be decontaminated (reduces generation of radwaste).
- A cost saving to TVA of 1.8 million dollars over the 40-year life of the plant.

In consideration of TVA's performance of additional examinations during the first interval and the radiation exposure required to perform inspections under the current Section XI examination schedule (second, third, and fourth intervals), it is concluded that compliance with the specified requirements would result in an unnecessary hardship without a compensating increase in the level of quality and safety.

Alternate Inspection:

SQN's four RV outlet nozzles will be ultrasonically examined twice during the first inspection interval. The second examination would occur during the third period. This includes examination of the outlet nozzle-to-vessel welds by the straight beam ultrasonic method from the nozzle bore and examination of the outlet nozzle inner radius sections. These examinations will be in addition to the examinations required to be conducted on the

(Continued)

REQUEST FOR RELIEF ISI-14
(Continued)

Alternate Inspection: outlet nozzle-to-vessel welds and inner radius section from the RV shell inside diameter during the third inspection period.

SQN's four RV outlet nozzle-to-safe end welds will also be examined twice during the first inspection interval (third period). The examinations will include an automated ultrasonic examination from the inside diameter and a surface examination from the outside diameter.

During the second, third, and fourth inspection intervals all RV nozzle-to-vessel welds, inside radius sections and RV nozzle-to-safe end welds will be examined during the third inspection period.

Status:

Request for Relief ISI-14 was submitted to the NRC on August 21, 1991, with a request for a response by June 1, 1992.

Reference: Memorandum from J. L. Wilson, TVA, to the NRC, dated August 21, 1991 (S10 910821 848).

REQUEST FOR RELIEF ISI-15

Components: Main Steam System Integrally Welded Support Attachments

Class: ASME Code Class 2 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWC-2500-1, Examination Category C-C, Item No. C3.40, Piping Integrally Welded Support Attachments, Surface Examination.

Basis for Relief: It will be impractical to surface examine certain integrally welded attachment welds due to the design configuration of the Main Steam System supports. Examination of piping integrally welded support attachments 1-MSH-303-IA, 1-MSH-343-IA, 1-MSH-383-IA, and MSH-423-IA is prohibited for the following reasons:

(1) The physical location of the supports is very close to the wall.

(2) Disassembly of the supports is prohibited without cutting the support.

(3) The integral attachment welds are obscured behind bars. Therefore, a surface examination is not possible and only a small percentage of the integral attachment weld is accessible for a visual examination,

(4) SQN outage personnel worked five shifts attempting to remove the support clamp for 1-MSH-303-IA without success. After removal of the clamp bolting, there was not sufficient clearance to remove the brackets that clamp around the pipe due to the building structure and design configuration of the supports.

Alternate Inspection: TVA will perform a VT examination of the component supports as practical.

Status: Request for Relief ISI-15 submitted to the NRC as a part of Revision 17 of this program.

REQUEST FOR RELIEF ISI-16

Components: Residual Heat Removal Heat Exchanger (two per unit)

Class: ASME Code Class 2 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWC-2500-1, Examination Category C-A, Item No. C1.10, Volumetric Examination of Circumferential Shell Welds.

Basis for Relief: Each heat exchanger consists of an inlet-outlet head chamber with one inlet and one outlet nozzle and two integrally attached support brackets and a circumferential vessel shell-to-flange weld. The design configuration of the nozzles and support brackets restricts examination of the vessel-to-flange weld (see attached drawing). The vessel shell weld is 113 inches in length. The weld examinations are distributed in three segments, identified as: RHRW-16-A-1, 37 in.; RHRW-16-A-2, 38 in.; and RHRW-16-A-3, 38 in. RHRW-16-A-1 was ultrasonically examined in the first inspection period and achieved approximately 81% examination coverage. RHRW-16-A-2 was examined in the second period and achieved approximately 71% examination volume coverage. RHRW-16-A-3 is scheduled for examination during the third period with an estimated examination volume coverage of 82%. Based on the examinations performed and an estimation of the remaining third period examination, approximately 78% examination volume coverage of the RHR heat exchanger circumferential weld will be achieved.

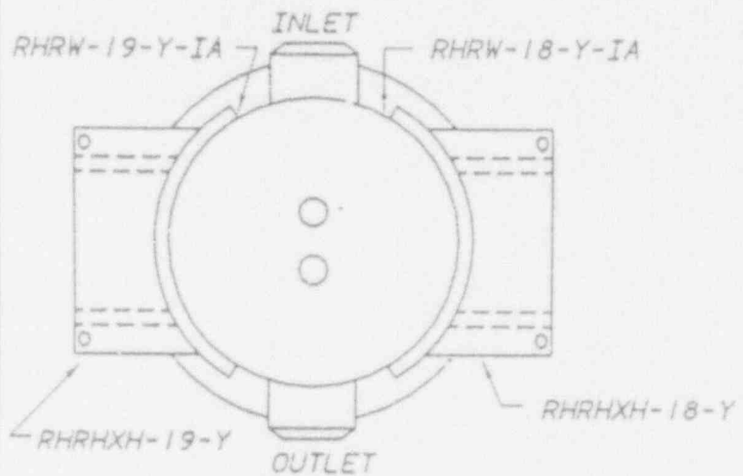
Alternate Inspection: In addition to the visual examination performed during system leakage and hydrostatic pressure tests, TVA will perform a best-effort ultrasonic examination on one vessel-to-flange weld on one heat exchanger to achieve as much Code coverage as possible and achieve meaningful results.

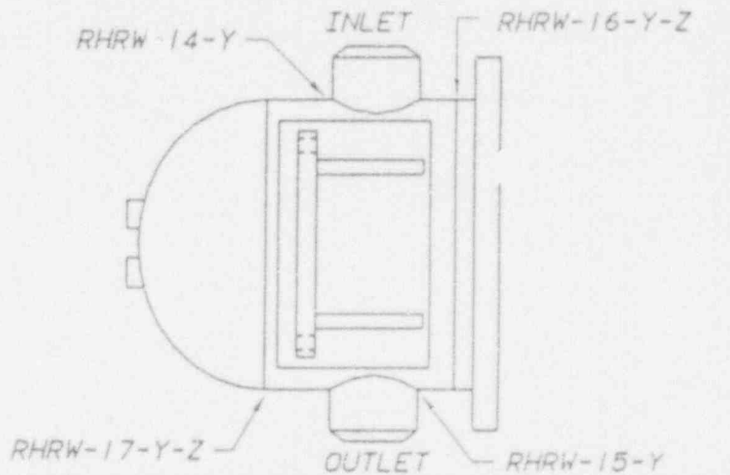
Status: Request for Relief ISI-16 submitted to the NRC as a part of Revision 17 of this program.

NOTE: 0° FOR VESSEL WILL BE ESTABLISHED AT ℄ INLET NOZZLE. PORTION OF WELD EXAMINED AS FOLLOWS: #1 (0" TO 37"); #2 (37" TO 75"); #3 (75" TO 113"); (IN A CLOCKWISE DIRECTION)

REFERENCE DRAWINGS
CONTRACT NO. 68C60-91934 (N2M-2-25)
AUX. HEAT EXCHANGER MANUAL
DRAWING NO. 15588

ASME CC-2 (EQUIVALENT) 5





RHRHXH OR RHRW-XX-Y-Z
WELD/ID SUPPORT
A OR B HX
PORTION OF WELD EXAMINED (1,2,OR3) FOR WELDS RHRW-16-Y-Z & RHRW-17-Y-Z

5

REV	BY	DATE	DESCRIPTION	CK'D	PCB	APP
5	RPG	8-23-91	ADD REFERENCE DWGS	KEC	MRA	GLB
4	RPG	1-31-89	ADDED NOTE	KEC	JCG	GLB
3	RPG	11-20-87	ADDED CODE CLASS & MADE CAD	KEC	RME	GLB
2	JAA	9-17-86	CORRECT DWG FOR PRISIM	MRA		GLB
1	KEV	1-9-84	REVISE WELD NOS. & ADD NOTES	EDC		GLB

HARDWARE: IBM 5085 | SOFTWARE: CADAM | USER: ISICMP

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT
UNIT 1
RESIDUAL HEAT REMOVAL HEAT EXCHANGER CHANNEL WELDS AND SUPPORT

DRAWN: KEV	SUBMITTED	APPROVED	SCALE NTS	
DATE: 4-19-87	DATE	DATE	SHEET 1 OF 1 SHEET(S)	
CHECKED: EDC	EDC	GLB	DRAWING NO.	REV.
DATE:			CHM-2404-A	05

REQUEST FOR RELIEF ISI-17

Components: Integrally Welded Support Attachments

Class: ASME Code Class 2 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWC-2500-1, Examination Category C-C, Item No. C3.40, Piping Integrally Welded Support Attachments, Surface Examination.

Basis for Relief: Due to the design vintage of Sequoyah Nuclear Plant it will be impractical to inspect all of the integrally welded attachments of certain component supports. The integrally welded support attachments may have access limitations as well as nonremovable hanger (pipe clamp) interference. These limitations will be noted on the examination data sheet and on the attached listing of this Relief Request.

Alternate Inspection: TVA will perform a best-effort surface examination. In addition, the supports shall receive a visual examination (VT-3) as practical.

Status: Request for Relief ISI-17 submitted to the NRC as a part of Revision 17 of this program.

REQUEST FOR RELIEF ISI-17

System	Component ID	Exam Cat.	Drawing No.	Code Coverage	Limitations
Feedw[illegible]r	FDH-204-IA	C-C	CHM-2439-C	0%	Access limited due to penetration at wall in valve room. Support design: snubber stiffener plate prohibits access to integral attachments for surface exam and allows only a best effort visual examination.

REQUEST FOR RELIEF ISI-18

Components: Reactor Pressure Vessel Closure Head-to-Flange Weld

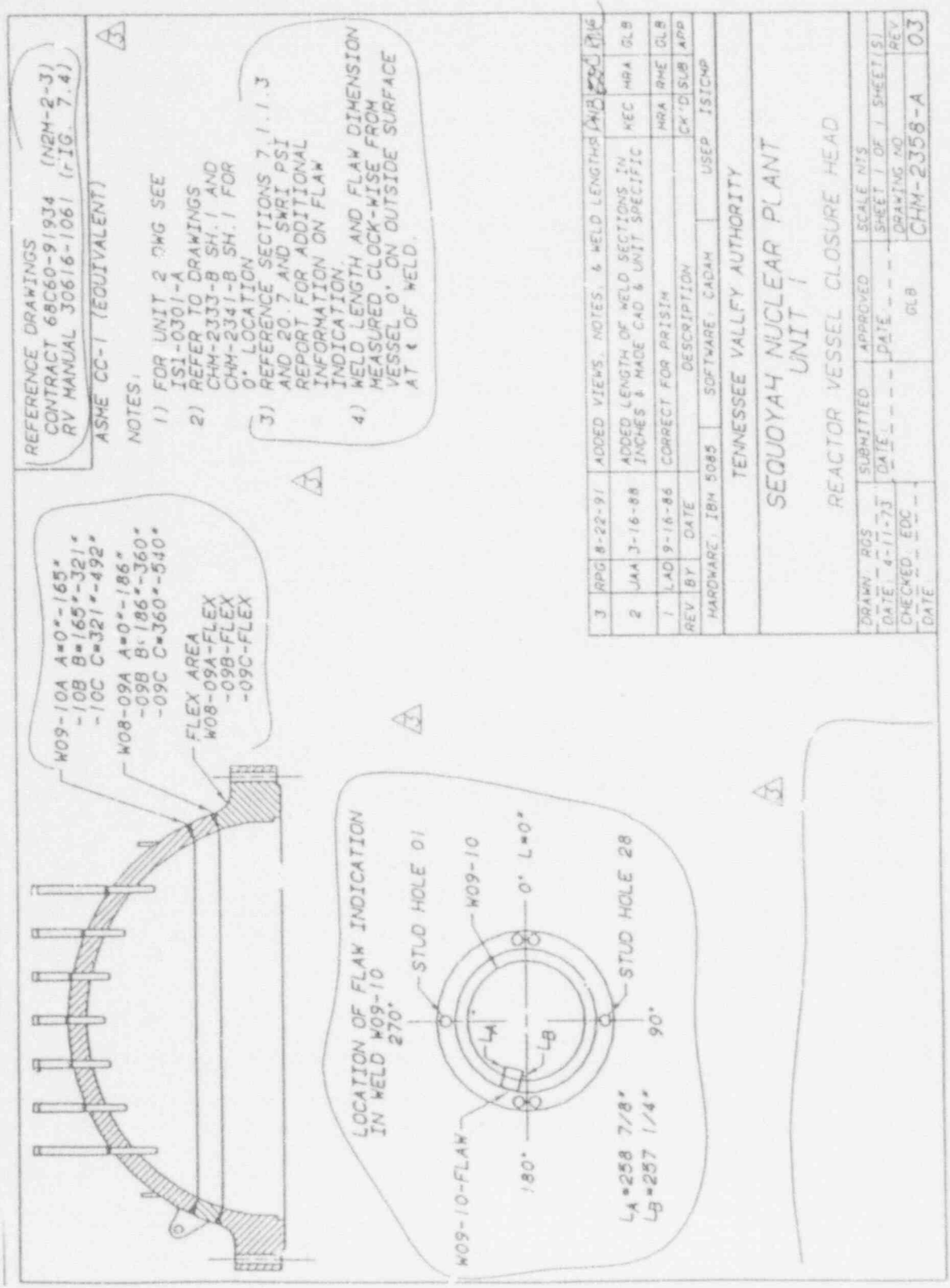
Class: ASME Code Class 1 (Equivalent)

Inspection Requirement: ASME Section XI, Table IWB-2500-1, Examination Category B-A, Item No. B1.40, Volumetric Examination.

Basis for Relief: The Reactor Pressure Vessel (RPV) closure head-to-flange weld, W08-09, is 45 feet in length. The weld examinations are performed from the OD surface and distributed in three segments of 15 feet lengths each inspection period. The weld segments are identified as: W08-09A (0" - 180"), W08-09B (180" - 360") and W08-09C (360" - 540"). Due to the design configuration of the closure head, no examinations may be performed from the flange side. Limited examinations from the ring side are due to the head lifting lugs located at 0°, 120°, and 240° (see attached drawing). These limitations are denoted on the examination data sheets. W08-09A was ultrasonically examined in the first inspection period and achieved approximately 40% examination volume coverage. W08-09B was examined in the second inspection period and achieved approximately 40% examination volume coverage. W08-09C is scheduled for examination during the third period with an estimated examination volume coverage of 40% It should be noted that approximately 100% of the weld volume was examined from the OD surface from the closure head ring side. However, the required 1/2T base metal area was not completely examined on the flange side. Due to extreme limited scanning area, TVA will be able to achieve approximately 40% examination coverage of the RPV closure head-to-flange weld.

Alternate Inspection: In addition to the visual examination performed during system leakage and hydrostatic pressure tests, TVA will perform a best-effort ultrasonic examination to achieve as much code coverage as possible and achieve meaningful results. In addition TVA will perform a 100% surface examination (MT) of the closure head-to-flange weld flex area, of all accessible areas, in the third inspection period.

Status: Request for Relief ISI-18 submitted to the NRC as a part of Revision 17 of this program.


REFERENCE DRAWINGS
CONTRACT 68C60-91934 (N2M-2-3)
RV MANUAL 30616-1061 (FIG. 7.4)
ASME CC-1 (EQUIVALENT)
NOTES:
1) FOR UNIT 2 DWG SEE IS1-0301-A
2) REFER TO DRAWINGS CHM-2333-B SH. 1 AND CHM-2341-B SH. 1 FOR 0° LOCATION
3) REFERENCE SECTIONS 7.1.1.3 AND 20.7 AND SWRI PSI REPORT FOR ADDITIONAL INFORMATION ON FLAW INDICATION.
4) WELD LENGTH AND FLAW DIMENSION MEASURED CLOCK-WISE FROM VESSEL 0° ON OUTSIDE SURFACE AT ℄ OF WELD.
W09-10A A=0"-165"
-10B B=165"-321"
-10C C=321"-492"
W08-09A A=0"-186"
-09B B=186"-360"
-09C C=360"-540"
FLEX AREA
W08-09A-FLEX
-09B-FLEX
-09C-FLEX
LOCATION OF FLAW INDICATION IN WELD W09-10
270°
STUD HOLE 01
W09-10
0° L=0°
STUD HOLE 28
90°
180°
W09-10-FLAW
LA=258 7/8"
LB=257 1/4"
3 RPG 8-22-91 ADDED VIEWS, NOTES, & WELD LENGTHS KEC HRA GLB
2 JAA 3-16-88 ADDED LENGTH OF WELD SECTIONS IN INCHES & MADE CAD & UNIT SPECIFIC KEC HRA GLB
1 LAD 9-16-86 CORRECT FOR PRISM HRA RHE GLB
REV BY DATE DESCRIPTION CK'D SUB APP
HARDWARE: IBM 5085 SOFTWARE: CADAM USER ISICAD
TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT
UNIT 1
REACTOR VESSEL CLOSURE HEAD
DRAWN RGS SUBMITTED APPROVED SCALE NTS
DATE 4-11-73 DATE DATE SHEET 1 OF 1 SHEET(S)
CHECKED EDC DRAWING NO REV
DATE GLB CHM-2358-A 03