January 30, 1981
Revision 1

Attachment 2

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
for the
SECOND FORTY MONTHS
of the
FIRST TEN YEAR INTERVAL

1.0 INTRODUCTION

Title 10, Chapter 1, Code of Federal Regulations-Energy, Part 50, Section 50.55a(g) sets forth the requirements for inservice inspection (ISI) of nuclear power plant components.

The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" is referenced by 10 CFR 50.55a(g) as the standard to be used for inservice inspection of nuclear class components and their supports. The Trojan Nuclear Plant Construction Permit was issued on February 8, 1971. ASME Section III, Class 1 and 2 components (and supports) for Trojan are committed to design and provision for access to enable the performance of inservice examination in accordance with the 1971 Edition and Addenda through the Winter of 1972. The commencement of the Inservice Inspection Program for Trojan began on the date of commercial operation; May 20, 1976. This program outlines the ISI requirements for the second forty months of the first ten year interval. The second forty-month period extends from September 20, 1979 through January 20, 1983. Inservice inspection of ASME Section III, Class 1, 2, and 3 components and their supports will meet the standards in the 1974 Edition and Addenda through the Summer of 1975 of ASME Section XI.

ASME Section XI makes reference to ASME Section III, "Nuclear Power Plant Components", Class 1, 2, and 3 standards. The United States Nuclear Regulatory Commission (NRC) Office of Standards Development, Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants" describes a quality group classification system for assigning standards to be used in

light-water-cooled nuclear power plants. The referenced standards are ASME Section III, Class 1, 2, and 3.

The application for a construction permit for the Trojan Nuclear Plant was submitted prior to the issuance of ASME Section III, Class 1, 2, and 3 standards and of NRC Regulatory Guide 1.26. Systems and components of Trojan are classified by quality group according to the criteria outlined in Section 3.2.2 of the Final Safety Analysis Report (FSAR). A review of this criteria relative to the criteria outlined in NRC Regulatory Guide 1.26 has been performed with the conclusion that the quality group classification system used for the design of Trojan is consistent with that outlined in NRC Regulatory Guide 1.26. Based on this conclusion, the following relation between Trojan quality groups and ASME Section III, Code Classes has been adopted for the purpose of defining inservice inspection requirements for the Trojan Nuclear Plant:

Trojan Quality Group	ASME Section III Code Class
1	1
2	2
3a	3
3b	3

The boundaries which define the applicable examination requirements for a given system or component are discussed in Section 2.0 below.

ASME Section XI has provisions for exempting components from inspection. The use of these exemptions for Trojan is discussed in Section 3.0 below.

In certain cases, strict compliance with ASME Section XI has been determined to be impractical for Trojan. 10 CFR 50.55a(g)(5)(iii) states that . . .

> "If the licensee has determined that conformance with certain code requirements is impractical for his facility the licensee shall notify the Commission and submit information to support his determination."

Exceptions to the ASME Section XI ISI standards for Quality Group 1, 2, and 3 components at Trojan are discussed in Section 4.0 below. Relief from the examination requirements is requested based upon the justification and alternate examination method provided.

Quality Group 1 and 2 components and supports to be inspected during this forty month period are outlined in Tables 1 and 2, respectively. Quality Group 3 components and supports will be inspected in accordance with Subsection IWD of ASME Section XI.

The ISI Program has been developed from an engineering review of the systems, components, and supports at Trojan. A provision in 10 CFR 50.55a(g) allows for taking exception to examination of components in the event that unforeseen difficulties are encountered. When an examination is determined to be impractical during the process of performing inspections or tests, the exception will be identified in the ISI outage summary and relief will be requested by revision to the ISI Program.

Examinations in addition to those required by ASME Section XI (1974 Edition and Addenda through the Summer of 1975) are incorporated into this program and are described below.

The Reactor Coolant Pump motor flywheels are to be examined in accordance with the requirements of NRC Regulatory Guide 1.14. Flywheels will be ultrasonically examined in place utilizing the access provided by the gage holes through the flywheels. Surface examinations will not be performed as accessible surfaces of the flywheels are painted.

Inservice inspection will be conducted to the extent practical on each of the Quality Group 2 welds located downstream of the external containment isolation valve on each main steam header.

Steam generator tubes are to be inspected by eddy current examination in accordance with the requirements of Standard Technical Specification 3.4.5.

Scheduling and performance of eddy current examinations will be controlled under a separate program. Reports of steam generator tube examinations will be included in each ISI outage summary.

System leakage and hydrostatic pressure tests will be scheduled and controlled under a separate program. Reports of tests will be included in each ISI outage summary.

Performance testing of safety-related pumps and valves will be scheduled and controlled under the Inservice Testing Program for Pumps and Valves, PGE Topical Report No. PGE-1022.

2.0 BOUNDARY DESIGNATIONS

Quality group classification of systems for the Trojan Nuclear Plant are outlined in Section 3.2.2 of the Final Safety Analysis Report (FSAR).

To provide a general view of how this classification system has been applied to Trojan, color-coded figures for the systems can be found in the FSAR section containing the applicable system description indicating as-built quality groups as represented by the applicable codes and standards. In these figures, red indicates those components built to the standards and codes of Quality Group 1. Orange indicates those components built to the standards and codes of Quality Group 2. Green indicates those components built to the standards and codes of Quality Group 3. These figures represent the as-built condition. Occasionally some components have been built to a higher classification than required because of convenience or economics of fabrication or construction.

The systems listed below encompass those Quality Group 1, 2, and 3 systems which have been included in this ISI program:

System	FSAR Figure No.	P&ID No.
Reactor Coolant System (RCS)	5.1-1	M-201
Chemical and Volume Control System (CVCS)	9.3-14	M-202
	9.3-15	M-203
	9.3-16	M-204
Residual Heat Removal System (RHRS)	5.5-7	M-205
Safety Injection System (SIS)	6.3-1	M-206
Containment Spray System (CSS)	6.4-1	M-207
Main Steam System (MSS)	10.2-3	M-208
Condensate and Feedwater System (FW)	10.4-2	M-213
Auxiliary Steam System (AS)	10.4-3	M-214
Component Cooling Water System (CCW)	9.2-4	M-215
Circulating Water and Turbine Cooling Water System	10.4-1	M-216
Service Water System (SSW)	9.2-1	M-218
Clean Radioactive Waste Treatment System (CRW)	11.2-9	M-220
Dirty Radioactive Waste Treatment System (DRW)	11.2-14	M-221

System	FSAR Figure No.	P&ID No.
Radioactive Gaseous Waste System (GRW)	11.3-4	M-222
Instrument and Service Air System	9.3-1	M-223
Diesel Fuel Oil System (DFO)	9.5-3	M-226
Spent Fuel Pool Cooling and Demineralizer System (SFP)	9.1-4	M-227
Make-Up Water Treatment System	9.2-8	M-228
Process Sampling System	9.3-2 9.3-4	M-231, Sheet 1 M-231, Sheet 3
Chilled Water System	9.4-2	M-248
Steam Generator Blowdown System	10.4-8	M-348

Additional safety-related systems to which a quality group does not apply are included in the ISI Program. This applies to portions of the containment ventilation and hydrogen vent systems which are a part of the containment isolation boundaries. Components in these systems are to be examined according to the requirements of ASME Section XI, Subsection IWC.

3.0 ASME SECTION XI EXEMPTIONS

ASME Section XI; Subsections IWB, IWC, and IWD allow for exempting certain components from examination.

Quality Group 1 components for Trojan are exempted from examination by Paragraph IWB-1220 according to the following criteria:

(a) Components may be exempted from volumetric and surface examination if they are located beyond any of the following:

(1) The outermost containment isolation valve, in system piping that penetrates primary reactor containment.

(2) The second of two valves normally closed during normal reactor operation in system piping that does not penetrate primary reactor containment.

(3) The reactor coolant safety and relief valves.

(b) Components may be exempted from examination if any of the following conditions are met:

(1) Under the postulated conditions of loss of coolant from the component during normal reactor operation, the reactor can be shut down and cooled down in an orderly manner assuming makeup is provided by the reactor coolant makeup sytem only. However, in no instance may the size exemption be more than three (3) in. nominal pipe size.

(2) 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, under the postulated condition of loss of coolant from the component during normal reactor operation, each valve remains operable and the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system only.

(3) Component connections, piping, and associated valves (and their supports) are one (1) in. nominal pipe size and smaller.

Quality Group 1 components and supports exempted under these guidelines will be visually examined at or near the end of each ten year inspection interval during system hydrostatic pressure testing.

Quality Group 2 components for Trojan are exempted from examination by Paragraph IWC-1220 according to the following criteria:

(a) Components in systems where both the design pressure and temperature are equal to or less than 275 psig and 200°F, respectively.

(b) Components in systems or portions of systems, other than emergency core cooling systems, which do not function during normal reactor operation.

(c) Component connections, piping, and associated valves, and vessels (and their supports), that are four (4) in. nominal pipe size and smaller.

Quality Group 2 components and supports exempted under these guidelines will be visually examined during system hydrostatic pressure tests. The hydrostatic pressure tests will be scheduled to meet the minimum percentage requirements of Paragraph IWC-2412 and to coincide with hydrostatic testing required for system modifications and repairs.

Based on an assumed 40 year plant life, Quality Group 2 components to be examined have been selected in accordance with the provisions for multiple loop systems in Paragraph IWC-2411.

Supports for Quality Group 3 components less than or equal to four (4) in. nominal pipe size are not required to be inspected by Paragraph IWD-2600(c).

4.0 ASME SECTION XI EXCEPTIONS

Under the proviso of 10 CFR 50.55a(g) for taking exception to examination and test requirements which are determined to be impractical, relief is requested from ASME Section XI (1974 Edition and Addenda through the Summer of 1975) examination requirements identified below. The relief requests are separated into general exceptions which encompass a broad spectrum of components as a class or into specific exceptions which are applicable to a limited number of components and/or a particular system. Section 4.1 identifies general exceptions and Section 4.2 identifies specific exceptions.

The general format used addresses specific items listed in Appendix B to "NRC Staff Guidance for Complying with Certion Provisions of 10 CFR 50.55a(g) 'Inservice Inspection Requirements'".

4.1 GENERAL EXCEPTIONS

4.1.1 Piping Systems Requiring Ultrasonic Examination (UT)

Quality Groups 1 and 2 piping systems requiring ultrasonic examinations are identified by color-coded figures in the FSAR. Table IWB-2500 Examination Category B-J and Table IWC-2520 Examination Categories C-F and C-G are applicable.

These piping systems function as pressure retaining boundaries for Quality Group 1 and 2 systems throughout the Trojan plant.

Paragraph IWA-2232 requires that when ultrasonic examination is used, the examinations are to be performed in accordance with Appendix I (Section XI) or Article 5 of Section V as applicable.

ASME Section XI, 1974 Edition through the Summer 1975 Addenda is applicable for the general ISI requirements at Trojan. However, exception is taken to use of Article 5 of Section V for the ultrasonic examination of piping. Instead, Appendix III of Section XI, 1974 Edition, Winter 1975 Addenda shall be used with the following additional requirements:

- Non-geometric indications 50% of DAC or greater shall be recorded.
- Any indication 100% of DAC or greater shall be investigated by a Level II or Level III examiner to the extent necessary to determine the size, shape, identity, and location of the reflector.
- Any non-geometric indication, 20% of DAC or greater, discovered during the ultrasonic (UT) examination shall be investigated by a Level II or Level III examiner to the extent necessary to determine the shape, identity, and location of the reflector.
- The owner shall evaluate the results of each examination and test as noted in IWA-1400(i).

It is recognized that Appendix III, Winter 1975 Addenda has not been officially endorsed by the NRC by reference in 10 CFR 50. However, Appendix III contains the first guidelines published by ASME for the ultrasonic examination of piping welds and its use is essential to obtain meaningful test data.

No additional examinations of welds in Quality Group 1 or 2 piping systems shall be required because one set of UT examination techniques is being substituted with a more meaningful set and the actual requirements to perform the UT examinations are not being excepted.

4.1.2 Piping Systems with Geometric Discontinuities or Limited Access

Quality Groups 1 and 2 piping systems with geometric discontinuities or limited access welds are covered in Table IWB-2500 Examination Category B-J and Table IWC-2520 Examination Category C-F and C-G.

The piping systems function as Quality Group 1 or 2 pressure retaining boundaries at various locations at Trojan.

Table IWB-2600 requires that the Quality Group 1 piping be examined volumetrically to the extent specified in Table IWB-2500. Also, Table IWC-2600 requires volumetric examinations for Quality Group 2 piping to the extent specified in Table IWC-2520.

Exception is taken to the requirement to perform complete ultrasonic examination on the general types of configurations and limited access piping welds described below.

The basis for this relief request is practical in nature in that the ultrasonic examinations cannot be fully performed to the extent required on the following general types of configurations:

(1) For pipe-to-fitting or pipe-to-vessel nozzle welds, ultrasonic examination can be performed from the weld surface and pipe surface and, depending upon the geometric configuration, limited examination from the fitting side;

(a) for elbows or tees, ultrasonic examination can be performed from the fitting side except where the inside corner radius prevents ultrasonic coupling;

(b) for [illegible]s and flanges, ultrasonic examination cannot be performed from the fitting side;

(2) for fitting-to-fitting welds, ultrasonic examination may be possible from the weld surface but is restricted on both sides of the weld; and

(3) for certain welds, hangers or seismic restraints may be so close to a given weld as to preclude or limit the ultrasonic examination.

When the general types of geometric configurations described above limit the accessibility of welds and their heat affected zones for examination by ultrasonic techniques, surface examinations will be performed to supplement the limited volumetric examination performed. Supplemental surface examinations shall be performed at the frequency required for the original volumetric examination in ASME, Section XI. As the specific limitations become known for a given weld, they will be identified in the Second 40-Month ISI program by revision.

4.1.3 Ferritic Vessels with Walls 2.5" Thick and Over

Quality Groups 1 and 2 ferritic vessels with walls 2.5" thick and over are included in Table IWB-2500 Examination Categories B-A, B-B, and B-C and Table IWC-2520 Examination Category C-A.

These vessels function as Quality Group 1 or 2 pressure retaining boundaries at various locations at Trojan.

Paragraph I-3121 of ASME Section XI requires that the ultrasonic calibration blocks for ferritic vessels 2.5" and over in wall thickness be fabricated ". . . from one of the following: (1) the component nozzle dropout; (2) the component prolongation; or (3) when it is

not possible to fabricate the block from material taken from the component, it may be fabricated from a material of a specification included in the applicable examination volumes of the component. The acoustic velocity and attenuation of such a block shall be demonstrated to fall within the range of straight beam longitudinal wave velocity and attenuation found in the unclad components".

Exception is taken to the block material to be used, as defined above, for ferritic vessels with walls 2.5" thick and over at Trojan. Instead, the blocks will be fabricated in accordance with the requirements of the ASME Section V, paragraph T-434.1.1.

None of the alternatives described above can be met because (1) the components are already clad and therefore, it is impossible to obtain a comparison of straight beam velocities and attenuation in the unclad component and (2) component nozzle dropouts and component elongations are not available for the fabrication of calibration blocks. However, material meeting the original construction specifications, as described above, is available and shall be used for the calibration blocks.

No additional examinations of ferritic vessels with walls 2.5" thick and over are necessary because the requirement to perform the ultrasonic examination is not being excepted, only the source of material for fabricating the calibration blocks. The calibration blocks used for Trojan, since they are made from the same specification as the vessel, are equally as valid as those described in Appendix I.

4.1.4 Quality Group 3 Components and Supports

Quality Group 3 standards are applied to Seismic Category I water, steam, and radioactive waste containing pressure vessels (other than turbines and condensers), storage tanks, piping, pumps, and valves not part of the reactor coolant pressure boundary nor included in Quality Group 2 but part of:

(1) Cooling water and auxiliary feedwater systems or portions of these systems that are required for (a) emergency cooling; (b) post-accident Containment heat removal; (c) post-accident Containment atmosphere cleanup; or (d) residual heat removal from the reactor and from the spent fuel storage pool. Portions of the systems required for their safety functions that do not operate during any mode of normal reactor operation or can not be tested adequately or classified as Quality Group 2.

(2) Cooling water and seal water systems or portions of these systems that are required for functioning of other systems or components important to safety such as residual heat removal pumps.

(3) Systems or portions of systems that are connected to the reactor coolant system and are capable of being isolated from that system during all modes of normal reactor operation by two valves, each of which is either normally closed or capable of automatic closure.

(4) Radioactive waste treatment, handling and disposal systems, and other systems where failure of components would result in release to the environment of radioactive gases required to be held for decay.

IWD-2400 requires visual examination of 100% of the Quality Group 3 components and supports while the system is in operation or undergoing system testing each 40-month period and during hydrostatic testing for each 10-year interval.

Exception is taken to visual examination of Quality Group 3 components and supports when the following criteria applies:

Radiation Exposure - In order to limit personnel exposure a limit of 0.1 man-Rem/inspection area is imposed. This limit will be used in determining which components, systems, portions of systems, or supports and hangers (for components exceeding 4-inch nominal pipe size) will be examined. Using known or estimated radiation levels and estimated required examination time, the extent of the system (if any) to be examined will be determined. Those components, systems or portions of systems, and supports and hangers (for components exceeding 4-in nominal pipe size) which were not examined will be recorded as exceptions due to radiation exposure.

Physical Constraints - Those components, systems, portions of systems, or supports and hangers (for components exceeding 4-inch nominal pipe size) which are not examined for the following reasons will be denoted as exceptions due to physical constraints.

(1) Horizontal pipe runs which are greater than 10 ft above, below or beyond the viewing platform, walkway, hallway, ladder, etc being used by the examiner.

(2) Areas which cannot be adequately seen by the examiner due to interference from other systems, components, etc.

(3) Components, uninsulated welds, hangers or supports which cannot be viewed for a 360° examination from a distance of less than or equal to 2 feet.

NOTE: Inspection mirrors will be used to gain the required 360° examination when possible.

In the event that accessibility is provided by reduction in the radiation levels or by other maintenance requirements the components will be examined to the extent possible.

As the specific limitations become known for a given component, system, or portion of systems, they will be identified in the Second 40 Month Program by revision.

4.2 SPECIFIC EXCEPTIONS

4.2.1 Reactor Vessel Closure Head Disc-to-Peel Segment Circumferential Weld

The reactor vessel, T-201, is a Quality Group 1 component which is part of the pressure retaining boundary for the Reactor Coolant System.

The closure head for the reactor vessel is a hemispherical unit constructed of a flange, seven peel segments, and a disc. The seven peel segments are joined to the disc by a full penetration circumferential weld.

Table IWB-2600 Item Number B1.2 (circumferential welds in the closure head) lists the examination method as volumetric. Table IWB-2500 Examination Category B-B (pressure retaining welds in vessels) requires examination of 5% of the length of each circumferential weld during each inspection interval.

This weld is completely enclosed within the pattern of control-rod drive mechanisms inside the shroud structure on the closure head, is not accessible for ultrasonic examination, and will not be volumetrically examined.

The weld will be visually examined for evidence of leakage during system leakage and hydrostatic testing.

Leakage tests are required to be performed at system operating pressure prior to startup following each refueling shutdown. Hydrostatic pressure tests are to be performed at or near the end of each 10-year inspection interval.

4.2.2 Reactor Vessel Closure Head Cladding

The reactor vessel, T-201, is a Quality Group 1 component which is part of the pressure retaining boundary for the Reactor Coolant System.

Table IWB-2600, Item Number B1.13 (closure head cladding) lists the examination methods as either (1) visual and surface or (2) volumetric. Table IWB-2500 Examination Category B-I-1 (interior clad surfaces of reactor vessels) requires that two clad patches (each 36 sq in.) be examined.

A separate ultrasonic examination of such patches will not be performed.

The cladding on the inside surface of the closure head is volumetrically examined concurrently with the ultrasonic examination of the closure head to flange weld. This examination covers a strip 13 in. wide and 1/3 the circumferential length of the closure head weld, more than the required 72 sq in. The ultrasonic examination performed from the outside surface would detect indications originating in the cladding which penetrated into the base metal. In addition, later issues of ASME Section XI have eliminated the requirement to inspect the reactor vessel closure head cladding.

Since the area is being ultrasonically examined, additional examinations do not need to be performed as area being examined is larger than the area required to be examined.

4.2.3 Reactor Vessel, Inner and Outer Seal Monitoring Tube Penetration Welds

The reactor vessel, T-201, is a Quality Group 1 component which is part of the pressure-retaining boundary for the Reactor Coolant System. The closure head is sealed to the vessel by two O-ring seals. The vessel flange has two penetrations for closure head seal leakage

monitoring. The inner monitoring tube detects leakage across the inner O-ring seal and the outer monitoring tube detects leakage across the outer O-ring seal. Each of these tubes are connected by a partial penetration weld on the vessel flange gasket seal surface which is weld overlaid with 5/32 in. thick stainless steel. These welds are outside the pressure boundary for normal operation and will only be pressurized if the closure head seals leak. The monitoring tubes are 1 in. nominal pipe size.

Table IWB-2600 Item B1.5 (vessel penetrations) requires visual examination of these welds during hydrostatic testing. Paragraph IWB-1220 exempts these components based on the size of the tubing, but again imposes a requirement for visual examination during hydrostatic pressure testing.

Volumetric (ultrasonic), surface, or visual examination of the welds cannot be performed due to the geometric configuration and inaccessibility due to the weld overlay. Hydrostatic pressure testing of the welds is not feasible due to their location outside of the pressure retaining O-ring seal on the vessel flange. These welds will only be pressurized in the event of loss of integrity of the seals. Failure of both the O-ring seal and the tube welds is considered unlikely. Loss of coolant due to complete severance of a monitoring tube can be made up by normal charging methods.

The welds will not be examined.

4.2.4 "Socolet-to-3" Pipe Cap Circumferential Weld
In the Boron Injection System Piping Header

This Quality Group 1 pressure-retaining weld is at the base of a 1" socolet connected to a 3" pipe cap. The joint is a drain point for the 3" boron injection header (3" SI-2501R-3-4).

Table IWB-2600 Item B4.5 (circumferential pipe welds) requires volumetric examination of this weld. Table IWB-2500 Examination

Category B-J (pressure-retaining welds in piping) requires that all of each selected weld be examined.

Ultrasonic examination of this weld will not be performed. The geometric configuration on the internal surface is not conducive to meaningful results from standard ultrasonic examination techniques.

An alternative component will be randomly selected for examintion as one of the 25% of welds to be examined under Category B-J.

Examination of this weld will be by surface examination and by visual examination during hydrostatic testing in accordance with the requirements of IWB-5000.

The frequency of examination will be in accordance with the schedule requirements of Examination Category B-J of Table IWB-2500 and the hydrostatic test requirements of IWB-5000.

4.2.5 Pipe-to-Pipe Circumferential Butt Weld (FW15762)

This weld is in the 3" letdown piping (3" RC-2501R-10-1) of Loop 3. This pressure retaining weld is part of a Quality Group 1 piping subassembly at the pipe-to-pipe joint preceding the letdown control valve, LCV-459, and is normally under Reactor Coolant System pressure.

Table IWB-2600 Item B4.5 (circumferential pipe welds) requires volumetric examination of this weld. Table IWB-2500 Examination Category B-J (pressure retaining welds in piping) requires that all of each selected weld be examined.

The weld is enclosed by a pipe support (SR-1001) and is inaccessible for examination. This weld was examined during the 1977 outage. Based on IWB-2500, Category B-J, only 25% of the welds need be examined during the 10-year inspection interval. This weld will not be eligible for reexamination until all welds have been examined.

The weld will be ultrasonically examined if the pipe support (SR-1001) is disassembled for maintenance and will be visually examined during hydrostatic testing in accordance with the frequency requirements of Paragraph IWB-5000.

Note: This weld was made accessible during the 1977 outage and ultrasonic examination of the weld was performed. The inaccessibility of the weld is excepted for reference.

4.2.6 Integrally Welded Supports for Quality Group 1 Piping

The following piping assemblies have integrally welded supports which are attached by fillet welds:

Loop 1 Accumulator Discharge (1)	10" SI-2501R-2-1
Loop 2 Accumulator Discharge (1)	10" SI-2501R-2-2
Loop 2 SIS & RHR Return (2)	8" SI-2501R-19-1
Loop 2 SIS & RHR Return (1)	6" SI-2501R-31-4
Loop 3 Accumulator Discharge (1)	10" SI-2501R-2-3
Loop 3 SIS & RHR Return (2)	6" SI-2501R-31-5
Loop 4 Accumulator Discharge (1)	10" SI-2501R-2-4
Loop 4 SIS & RHR Return (1)	8" SI-2501R-19-2
Loop 4 SIS & RHR Return (1)	6" SI-2501R-31-6
Loops 2 & 3 Pressurizer Spray (2)	4" RC-2501R-4-2
Loop 1 Boron Injection (1)	1-1/2" SI-2501R-3-60
Loop 2 Boron Injection (1)	1-1/2" SI-2501R-3-61
Loop 3 Boron Injection (2)	1-1/2" SI-2501R-3-64
Loop 4 Boron Injection (2)	1-1/2" SI-2501R-3-63
Loop 4 Auxiliary Spray (1)	2" CS-2501R-4-60

Table IWB-2600 Item No. B4.9 (integrally welded supports for piping pressure boundaries) requires volumetric examination of the support welds. Table IWB-2500 Examination Category B-K-1 (support members for piping, pumps, and valves) establishes the areas subject to examination as ". . .the welds to the pressure retaining boundary and the base metal beneath the weld zone and along the support attachment member for a distance of two support thicknesses."

The base material beneath a fillet weld cannot be examined by ultrasonic techniques due to geometric configuration. The base material of the pressure-retaining pipe wall and the support

attachment will be examined by ultrasonic techniques. Surface examination will be performed on the fillet weld to supplement the limited volumetric examination. The postulated failure for a fillet weld attachment is that cracking would initiate at the toe of the weld and as such would be detected by surface examination.

The examinations will be performed to the extent and frequency required by Table IWB-2500.

4.2.7 Reactor Coolant Pump Seal House Bolting

The reactor coolant pumps (RCP); P-201A, P-201B, P-201C, and P-201D are Quality Group 1 components which are part of the pressure-retaining boundary for the Reactor Coolant System. Each RCP has twelve (12) 2-inch diameter bolts which connect the seal housing to the pump.

Table IWB-2600 Item No. B5.1 (pressure retaining bolts and studs in place) requires a volumetric examination of the studs.

The bolts are of the socket head type and volumetric examination by standard ultrasonic examination techniques cannot be performed with the bolts in place.

Volumetric examination of the bolting will be performed in accordance with Table IWB-2600 Item B5.2 (pressure-retaining bolts, when removed) when the seal housing is disassembled for other reasons. As a minimum, one of the four reactor coolant pumps is to be disassembled each 10-year inspection interval.

4.2.8 Regenerative Heat Exchanger (RHX)

The Regenerative Heat Exchanger (RHX) is identified in the FSAR as E-206 and is classified as Quality Group 2.

The RHX is a pressure-retaining boundary in the Chemical and Volume Control System. It is used for heat transfer to reduce reactor coolant temperature prior to purification and to preheat the reactor

coolant prior to its return to the reactor coolant loops. Table IWC-2600 Item No. C1.1 (circumferential butt welds) requires volumetric examination of the circumferential welds. Table IWC-2520 Examination Category C-A (pressure retaining welds in pressure vessels) requires examination of ". . . the weld metal and base metal for one plate thickness beyond the edge of the weld joint" on 20% of each circumferential weld.

Exception to full volumetric examination of the welds on the RHX is taken as only a straight beam scan can be performed.

The RHX is a cast component; therefore, the calibration block for this component is also cast to the same specification and of the same material as the RHX. During ISI for refueling core outage (I-II) performed from March 17, 1978 through May 24, 1978, it was reported that the calibration block caused metallurgical noise signals that prevented angle beam calibration. The limited volumetric examination (straight beam only) was, therefore, supplemented by the addition of surface examination.

The welds in the cast RHX shall be ultrasonically examined by the straight-beam method and supplemented by surface examinations. The examination frequency shall be as required by ASME Section XI for the volumetric examinations on this component.

4.2.9 Quality Group 2 Thin-Walled Pressure Vessels

The reactor coolant filter is identified in the FSAR as F-204, the seal water return filter as F-209, and the seal water heat exchanger as E-203. All are classified as Quality Group 2.

The seal water heat exchanger and the seal water return filter are part of the pressure-retaining Class 2 boundary between the reactor coolant pumps and the charging pump suction, while the reactor coolant filter is part of the pressure-retaining Class 2 boundary between the demineralizers and the volume control tank.

Table IWC-2600 Item No. C1.1 (circumferential butt welds) requires volumetric examination of the vessel welds. Table IWC-2520 Examination Category C-A (pressure-retaining welds in vessels) requires examination of 20% of each weld.

The thickness (0.165 to 0.185 in.) of the material used to construct the thin-walled pressure vessels described above is such that the combined "dead zone" and "near-field" effect of the ultrasonic transducer would render ultrasonic examination meaningless. Volumetric examination of these welds will not be performed.

Surface and visual examinations of welds on these vessels shall be performed as an alternative method at the frequency and extent required in Tables IWC-2520 and IWC-2600 for volumetric examinations.

4.2.10 Nozzle-to-Vessel Welds on the Residual Heat Removal System (RHRS) Heat Exchangers

The RHRS heat exchangers, E-212A and E-212B, are of the tube and shell type with the tube side classified as Quality Group 2. The RHRS system transfers heat from the Reactor Coolant System to the Component Cooling Water System to reduce and maintain the temperature of the reactor coolant to cold shutdown temperature.

The nozzle-to-vessel welds on the tube side of the heat exchangers are listed under Table IWC-2600 Item No. C1.2 (nozzle to vessel welds) with a requirement for volumetric examination. Table IWC-2520 Examination Category C-B (pressure retaining nozzle welds in vessels) requires examination of 100% of the nozzle-to-vessel attachment.

Access for the ultrasonic examination of each RHRS heat exchanger nozzle-to-vessel weld is locally restricted by the adjacent vessel supports and tube sheet flange and examination cannot be performed on 100% of the weld.

Access for ultrasonic examination is estimated at 75% of the total weld. Surface examination will be performed on 100% of the weld to supplement the limited ultrasonic examination.

The welds will be examined at the frequency required by Paragraph IWC-2411 for multiple loop systems.

4.2.11 Residual Heat Removal System (RHRS) Pump Suction 14-in. Circumferential Butt Welds

These Quality Group 2 pressure retaining welds are on the spool piece on the suction of each RHRS pump, P-202A and P-202B, (14" RH-601R-5-2).

Table IWC-2600 Item C2.1 (circumferential butt welds) requires volumetric examination of the welds. Table IWC-2520 Examination Category C-F (pressure-retaining welds in piping which circulates reactor coolant) requires examination of 100% of each weld.

Accessibility of these welds is such that ultrasonic examination cannot be performed. In each case, there is a flange on one side of the weld and a support on the other side.

The weld will be ultrasonically examinted to the maximum extent possible if either support is removed for maintenance and will be visually examined during hydrostatic testing required by IWC-5000.

Note: These welds were not examined during preservice inspection and baseline data is not available.

4.2.12 Pump Casing Welds in the Coolant Charging Pumps

The centrifugal charging pumps, P-205A and P-205B, provide make up of reactor coolant during normal reactor operation. These pumps are part of the Quality Group 2 pressure-retaining boundary for the Chemical and Volume Control System.

Table IWC-2600 Item C3.1 (pump casing welds) requires volumetric examination of the welds. Table IWC-2520 Examination Category C-F (pressure-retaining welds in pumps which circulate reactor coolant) requires examination of 100% of each weld.

The pressure retaining welds in the charging pump casings are not accessible for examination. Volumetric or surface examination requires complete disassembly of the pump casing and removal of the inboard seal housing and rotor assembly.

Ultrasonic examination will be conducted whenever a pump is disassembled for maintenance reasons or near the end of each 10-year interval.

4.2.13 Quality Group 2 piping systems which cannot be isolated from a Quality Group 1 boundary.

Reactor Coolant System (RCS)

(1) Reactor coolant loop flow meter elbow taps for flow transmitters FT414, FT415, FT416, FT424, FT425, FT426, FT434, FT435, FT436, FT444, FT445, and FT446.

(2) Reactor coolant loop resistance temperature detector system (RTD) vent and drain lines (3/4" RC-2501R-17).

(3) RTD system return instrument lines for flow indicator switches FIS417, FIS427, FIS437, and FIS447.

(4) Reactor coolant loop sampling lines from loop 1 to manually-operated globe valve 8056 and from loop 3 to manually-operated globe valve 8077 (3/4" RC-2501R-30).

(5) Reactor vessel inner and outer seal monitoring tube piping to manually-operated globe valves 8069A and 8069B (3/4" RC-2501R-15).

(6) Pressurizer spray control valve by-pass lines (3/4" RC-2501R-4).

(7) Pressurizer instrument lines for level transmitters LT459, LT460, LT461, LT462 and pressure transmitters PT455, PT456, PT457, PT458, PT467A, and PT467B.

(8) Pressurizer steam space sampling line from the pressurizer power-operated relief valve piping to manually-operated globe valves 8078 and 8094 (3/4" RC-2501R-29).

(9) Pressurizer liquid space sampling line from the pressurizer to manually operated globe valve 8080 (3/4" RC-2501R-29).

(10) Pressurizer safety valve seal water drain lines to manually operated globe valve 8093 (3/4" RC-2501R-12).

Chemical and Volume Control System (CVCS)

(11) Reactor coolant pump (RCP) seal by-pass lines from flow orifices FO1957, FO1958, FO1959 and FO1960 to air-operated globe valve CV-8142 (3/4" CS-2501R-28).

(12) RCP seal leak off lines from the RCP to air-operated globe valves CV-8141A, CV-8141B, CV-8141C and CV-8141D (2" CS-2501R-28).

(13) RCP seal injection and seal bypass vent and drain lines from the Quality Group 1 piping to manually operated globe valves (8363A, 8363B, 8363C, 8363D, 8364A, 8364B, 8364C and 8364D.

Residual Heat Removal System (RHRS)

(14) RHR instrument sensing lines for pressure transmitters PT403 and PT405.

Safety Injection System (SIS)

(15) Accumulator discharge test line connections (3/4" SI-2501R-22) from the Quality Group 1 piping to air-operated globe valves CV-8877A, CV-8879A, CV-8877B, CV-8879B, CV-8877C, CV-8879C, CV-8877D, and CV-8879D.

(16) Boron injection tank, T-207, discharge to the RCS cold legs test line connections (1" SI-2501R-23 and 3/4" SI-2501R-1) from the Quality Group 1 piping to air-operated globe valve CV-8882.

(17) SIS pumps, P-203A and P-203B, discharge to the RCS loops hot legs test line connections (3/4" SI-2501R-22) from the Quality Group 1 piping to air-operated globe valves CV-8889A, CV-8889B, CV-8889C, and CV-8889D.

The pipelines are all Quality Group 2 penetrations into a Quality Group 1 pressure boundary without an isolation valve or other means for isolating the Quality Group 2 system from the Quality Group 1 system for hydrostatic testing. The transition between Quality Groups is made by a 3/8" diameter orificed connection. This hole size restricts flow such that loss of coolant due to severance of one of these lines can be made up by normal charging methods.

The components within each line are exempt from volumetric examination under the provisions of IWC-1220(d). The pipe lines are required to be visually examined during hydrostatic pressure testing by IWC-2412(a). Pressurizing the pipe lines to the hydrostatic test pressure required by IWC-5000 would require pressurizing the Quality Group 1 system to a pressure in excess of that required by IWB-5000. Pressurizing the

Reactor Coolant System is undesirable because of the limitations on the hydrostatic test pressure and the number of hydrostatic test cycles incorporated into the design of the system components (most notably the reactor vessel and fuel assemblies).

Visual examination for evidence of leakage will be conducted on the identified portions of these systems at the hydrostatic pressure required by Paragraph IWB-5221 for the adjoining Quality Group 1 systems.

Hydrostatic pressure tests will be performed at or near the end of each 10-year inspection interval in accordance with Paragraph IWB-5210.

4.2.14 Quality Group 2 piping systems which are connected to a Quality Group 1 boundary by a check valve oriented for flow into the Quality Group 1 System.

Chemical and Volume Control System (CVCS)

(1) Normal charging line and bypass line (3" CS-2501R-5 and 3/4" CS-2501R-4) from air-operated globe valve CV-8146 and manually operated globe valve 8393 to check valve 8378B.

(2) Alternate charging line (3" CS-2501R-6) from air-operated globe valve CV-8147 to check valve 8579B.

(3) Reactor coolant pump seal injection lines (2" CS-2501R-28) from manually operated globe valves 8352A, 8352B, 8352C and 8352D to check valves 8350A, 8350B, 8350C and 8350D.

Residual Heat Removal System

(4) RHR return to the RCS cold legs (8" SI-2501R-31) from motor-operated gate valve MO-8809A to check valves MO-8818A and MO-8818B; and from motor operated gate valve MO-8809B to check valves MO-8818C and MO-8818D.

(5) RHR discharge header to RCS Loops 2 and 4 (3/4" and 19" RH-2501R-19) from motor-operated globe valve MO-8703 and manually operated globe valve CV-8825 to check valves 8736A and 8736B. Not required as per IWC-5220(c).

Pipe lines listed under Items (1) and (2) are Quality Group 2 piping pressure boundaries which are part of the letdown return to the reactor coolant system and are normally pressurized to reactor coolant system pressure. Pipe lines listed under item (3) are Quality Group 2 piping pressure boundaries on the discharge of the charging pumps and are normally pressurized to reactor coolant system operating pressure. Pipe lines listed under Items (4) and (5) are Quality Group 2 piping pressure boundaries on the discharge of the RHRS pumps and are pressurized during operation of these pumps. The piping systems contain a Quality Group 2 to Quality Group 1 boundary change through a check valve.

The pipe lines are required to be visually examined during hydrostatic test by IWC-2510. Pressurizing the pipe lines to the hydrostatic pressure required by IWC-5000 would require pressurizing the Reactor Coolant System in excess of that required by IWB-5000 due to the flow direction of the check valve being from the Quality Group 2 system to the Quality Group 1 system. Pressurizing the Reactor Coolant System is undesirable because of the limitations on the hydrostatic test pressure and the number of hydrostatic test cycles incorporated into the design of the system components (most notably the reactor vessel and fuel assemblies).

Visual examination for evidence of leakage will be conducted on the identified portions of these systems at hydrostatic test pressures in accordance with the requirements of IWB-5221 for the adjoining Quality Group 1 systems.

IWB-5210 requires hydrostatic pressure tests at or near the end of each 10-year inspection interval.

Note: Similar pipe lines exist in the Safety Injection System.

Boron injection tank, T-207, discharge piping to the RCS loops cold legs (3" SI-2501R-3) and the test connection piping (3/4" and 1" SI-2501R-3) from motor-operated globe valves MO-8801A and MO-8801B and air-operated globe valves CV-8843 and CV-8925 to check valve 8815.

Safety injection pumps, P-203A and P-203B, discharge to the RCS loops hot legs (2" 2501R-1) from manually operated globe valves 8816A, 8816B, 8816C, and 8816D to check valves 8905A, 8905B, 8905C, and 8905D, respectively.

However, Paragraph IWC-5220(c) allows for testing these systems at normal operating pressure during inservice testing since they are not required to operate during reactor operation.

4.2.15 Nozzle-to-Head Weld

Nozzle Inner Radius on Steam Generators

These are four (4) steam generators of the vertical shell and U-tube evaporator type at the Trojan Nuclear Plant. The portions of each steam generator which contain reactor coolant pressure are classified Quality Group 1, and the portions which contain the steam generating system are classified Quality Group 2.

The Quality Group 1 portion of each steam generator consists of the hemispherical bottom head with inlet and outlet nozzles, a vertical partition plate for dividing the inlet and outlet chambers, a tube plate, and inverted U-tubes. Manways are provided in the bottom hemispherical head for access to both sides of the partitioned head.

Table IWB-2600 Item No. B3.2 (nozzle-to-head welds and nozzle inner radius section) lists the examination method as volumetric. Table IWB-2500 Category B-D requires examination of 100% of the nozzle-to-head welds and nozzle inner radius during each inspection interval.

The bottom head is cast with the nozzles as an integral part; therefore, there are no nozzle-to-head welds. The reactor coolant inlet and outlet nozzles are tapered with an inner radius section.

The general radiation in the area is 15-30 Rad per hour, gamma plus beta. The outer surface of the bottom head is in the as-cast condition which precludes performing an ultrasonic examination of the inner radius. The inner surface of the bottom head is clad which precludes performing an surface examination of the inner radius.

The nozzle inner radius will be visually examined from the manway opening using manual or remote techniques each time a steam generator ISI tube inspecton is performed.

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Reactor Vessel T-201

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B1.1	B-A	Longitudinal and circumferential welds in core region	(Third 40 months)		
B1.2	B-B	Closure head peel segment meridional welds (7)	3.3% (3") of each weld	Volumetric	4.1.3
B1.2	B-B	Closure head disc to peel segment weld			4.1.3, 4.2.1
B1.3	B-C	Closure head to flange weld	33% (190")	Volumetric	4.1.3
B1.3	B-C	Vessel to flange weld	33% (202")	Volumetric	4.1.3
B1.4	B-D	Outlet nozzle to vessel welds	100% of 2 welds	Volumetric	4.1.3
B1.5	B-E	Vessel penetrations	(Third 40 months)		
B1.6	B-F	Outlet nozzle to safe-end welds	100% of 2 welds	Volumetric & Surface	
B1.8	B-G-1	Closure head studs and nuts	18 studs and nuts	Volumetric & Surface	
B1.9	B-G-1	Vessel flange ligaments	18 ligaments	Volumetric	
B1.10	B-G-1	Closure washers	18 washers	Visual	
B1.11	B-G-2	Conoseal bolting assemblies	2 assemblies	Visual	
B1.12	B-H	Integrally welded vessel supports	N/A		
B1.13	B-I-1	Closure head cladding			4.2.2
B1.14	B-I-1	Vessel Cladding	2 patches	Visual	
B1.15	B-N-1	Vessel Interior	As accessible	Visual	
B1.16	B-N-2	Interior attachment and core support	N/A		
B1.17	B-N-3	Core support structures	(Third 40 months)		
B1.18	B-O	Control rod drive housings	(Third 40 months)		
B1.19	B-P	Exempted components	(Third 40 months)		

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Pressurizer T-202

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B2.1	B-B	Lower head to shell circumferential weld	1.67% (5")	Volumetric	4.1.3
B2.1	B-B	Lower intermediate to lower shell circumferential weld	1.67% (5")	Volumetric	4.1.3
B2.1	B-B	Upper to lower intermediate shell circumferential weld	1.67% (5")	Volumetric	4.1.3
B2.1	B-B	Upper intermediate to upper shell circumferential weld	1.67% (5")	Volumetric	4.1.3
B2.1	B-B	Upper head to shell circumferential weld	1.67% (5")	Volumetric	4.1.3
B2.1	B-B	Lower shell long seam weld	3.3% (5")	Volumetric	4.1.3
B2.1	B-B	Lower intermediate shell long seam weld	3.3% (5")	Volumetric	4.1.3
B2.1	B-B	Upper intermediate shell long seam weld	3.3% (5")	Volumetric	4.1.3
B2.1	B-B	Upper shell long seam weld	3.3% (5")	Volumetric	4.1.3
B2.1	B-B	Manway to vessel circumferential weld	3.3% (4")	Volumetric	4.1.3
B2.2	B-D	Nozzel to vessel welds (6)	100% of 2 welds	Volumetric	4.1.3
B2.3	B-E	Heater penetrations	(Third 40 months)		
B2.4	B-F	Nozzel to safe-end welds (6)	100% of 2 welds	Volumetric & Surface	
B2.5	B-G-1	Pressure retaining bolts and studs (in place)	N/A		
B2.6	B-G-1	Pressure retaining bolts and studs (when removed)	N/A		
B2.7	B-G-1	Pressure retaining bolting	N/A		

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Pressurizer (continued)

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B2.8	B-H	Integrally welded support skirt weld	3.3% (10")	Volumetric	
B2.9	B-I-2	Vessel cladding	(Third 40 months)		
B2.10	B-P	Exempted components	(Third 40 months)		
B2.11	B-G-2	Pressure retaining bolting	5 bolts	Visual	

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Steam Generators (4) E-201A, B, C, and D

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B3.1	B-B	Channel head to tubesheet weld	1.67% (7.5") each S/G	Volumetric	4.1.3
B3.2	B-D	Nozzle-to-head welds (inner radius)	100% each S/G	Visual	4.2.15
B3.3	B-F	Nozzle to safe-end welds	100% of 3 welds	Volumetric & Surface	
B3.4	B-G-1	Pressure retaining bolts and studs (in place)	N/A		
B3.5	B-G-1	Pressure retaining bolts and studs (when removed)	N/A		
B3.6	B-G-1	Pressure retaining bolting	N/A		
B3.7	B-H	Integrally welded vessel supports	N/A		
B3.8	B-I-2	Vessel cladding	(Third 40 months)		
B3.9	B-P	Exempted components	(Third 40 months)		
B3.10	B-G-2	Pressure retaining bolting (16 bolts in each manway)	5 bolts each manway	Visual S/G Manway	

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Piping Pressure Boundary

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B4.1	B-F	Pipe-to-safe end welds (22)	7 welds	Volumetric & Surface	
B4.2	B-G-1	Pressure retaining bolts and studs (in place)	N/A		
B4.3	B-G-1	Pressure retaining bolts and studs (when removed)	N/A		
B4.4	B-G-1	Pressure retaining bolting	N/A		
B4.5	B-J	Reactor coolant pipe welds (50)	4 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 14" pipe (27)	2 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 10" pipe (83)	7 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 8" pipe (57)	5 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 6" pipe (168)	14 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 4" pipe (70)	6 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 3" pipe (175)	15 welds	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 2" pipe (15)	1 weld	Volumetric	4.1.1, 4.1.2
B4.5	B-J	Circ. butt welds 1-1/2" pipe (12)	1 weld	Volumetric	4.1.1, 4.1.2
B4.6	B-J	Branch pipe connections >6"	(Third 40 months)		
B4.7	B-J	Branch pipe connections $\leq$ 6" (27)	2 welds	Surface	4.1.1, 4.1.2
B4.8	B-J	Socket welds (509)	43 welds	Surface	4.1.1, 4.1.2
B4.9	B-K-1	Integrally welded supports (20)	1 support	Volumetric	4.2.6
B4.10	B-K-2	Support components (418)	140 supports	Visual	
B4.11	B-P	Exempted components	(Third 40 months)		
B4.12	B-G-2	Pressure retaining bolting (148)	48 bolts	Visual	

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Pumps P-201A, B, C, and D

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B5.1	B-G-1	Flange bolting (in place)	24 bolts (1 pump)	Volumetric	
B5.1	B-G-1	Seal housing bolting (in place)	24 bolts (1 pump)	Volumetric	4.2.7
B5.2	B-G-1	Seal housing bolting (removed)	12 bolts (1 pump)	Volumetric & Surface	4.2.7
B5.3	B-G-1	Flange bolting	24 bolts (1 pump)	Visual	
B5.3	B-G-1	Seal housing bolting	12 bolts (1 pump)	Visual	
B5.4	B-K-1	Integrally welded supports	N/A		
B5.5	B-K-2	Support components	1 pump	Visual	
B5.6	B-L-1	Pump casing welds	(Third 40 months)		
B5.7	B-L-2	Pump casings	(Third 40 months)		
B5.8	B-P	Exempted components	(Third 40 months)		
B5.9	B-G-2	Pressure retaining bolting	N/A		

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 1 COMPONENTS

TABLE 1

Valves

IWB-2600 Item No.	IWB-2500 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
B6.1	B-G-1	Pressure retaining bolts and studs (in place)	N/A		
B6.2	B-G-1	Pressure retaining bolts and studs (when removed)	N/A		
B6.3	B-G-1	Pressure retaining bolting	N/A		
B6.4	B-K-1	Integrally welded supports	N/A		
B6.5	B-K-2	Support components (14)	6 supports	Visual	
B6.6	B-M-1	Valve body welds	N/A		
B6.7	B-M-2	Valve bodies	(Third 40 months)		
B6.8	B-P	Exempted components	(Third 40 months)		
B6.9	B-G-2	Pressure retaining bolting (552)	184 bolts	Visual	

TROJ/ NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 2 COMPONENTS

TABLE 2

Letdown Heat Exchanger, E-207

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Head to shell weld	2% (1")	Volumetric	
C1.1	C-A	Shell to flange weld	2% (1")	Volumetric	
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded supports	N/A		
C1.4	C-D	Pressure retaining bolting	N/A		

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 2 COMPONENTS

TABLE 2

Regenerative Heat Exchanger, E-206

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Head to shell welds (6 welds)	2% (1") each weld	Volumetric	4.2.8
C1.1	C-A	Shell to tubesheet welds (6 welds)	2% (1") each weld	Volumetric	4.2.8
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded supports	N/A		
C1.4	C-D	Pressure retaining bolting	N/A		

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 2 COMPONENTS

TABLE 2

RHR Heat Exchanger, E-212A and B

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Shell to flange weld	2% (3") of one Hx	Volumetric	
C1.1	C-A	Head to shell weld	2% (3") of one Hx	Volumetric	
C1.2	C-B	Nozzle-to-vessel welds	(First 40 months)	Volumetric	
C1.3	C-C	Integrally welded supports (2)	(First 40 months)	Surface	
C1.4	C-D	Tubesheet flange bolting	(First 40 months)	Volumetric	
C1.4	C-D	Tubesheet flange bolting	12 bolts of one Hx	Visual	

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 2 COMPONENTS

TABLE 2

Seal Water Heat Exchanger, E-203

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Flange to shell weld	2% (1")	Surface	4.2.9
C1.1	C-A	Head to shell weld	2% (1")	Surface	4.2.9
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded supports	N/A		
C1.4	C-D	Pressure retaining welds	N/A		

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 2 COMPONENTS

TABLE 2

Excess Letdown Heat Exchanger, E-208

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Head to flange weld	2% (1")	Volumetric	
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded supports	N/A		
C1.4	C-D	Tubesheet flange bolting (12)	4 bolts	Visual	
C1.4	C-D	Tubesheet flange bolting	(First 40 months)	Volumetric	

TROJAN NUCLEAR PLANT
INSERVICE INSPECTION PROGRAM
QUALITY GROUP 2 COMPONENTS

TABLE 2

Steam Generator, E-201A, B, C, and D

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Upper head to shell weld	2% (11") S/G E201D	Volumetric	4.1.3
C1.1	C-A	Upper shell to transition cone weld	2% (11") S/G E201C	Volumetric	4.1.3
C1.1	C-A	Transition cone to lower shell weld	2% (10") S/G E201B	Volumetric	4.1.3
C1.1	C-A	Lower shell to stub barrel weld	2% (10") S/G E201A	Volumetric	4.1.3
C1.1	C-A	Stub barrel to upper tubesheet weld	2% (10") S/G E201A	Volumetric	4.1.3
C1.2	C-B	Feedwater nozzle to shell weld	S/G E201C	Volumetric	4.1.3
C1.3	C-C	Integrally welded supports	N/A		
C1.4	C-D	Manway bolting (secondary side)	20 bolts S/G E201B	Visual	
C1.2	C-D	Manway bolting (secondary side)	6 bolts S/G E201B	Volumetric	

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TABLE 2

Reactor Coolant Filter, F-204

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Cover weldment to shell weld	2% (1")	Surface	4.2.9
C1.1	C-A	Shell to lower head weld	2% (1")	Surface	4.2.9
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded support (3 supports)	100% of 1 support	Surface	
C1.4	C-D	Pressure retaining bolting	N/A		

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TABLE 2

Seal Water Return Filter, F-209

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Cover weldment to shell weld	2% (1")	Surface	4.2.9
C1.1	C-A	Shell to lower head weld	2% (1")	Surface	4.2.9
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded support (3 supports)	(First 40 months)	Surface	
C1.4	C-D	Pressure retaining bolting	N/A		

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TABLE 2

Volume Control Tank, T-213

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Upper head to shell weld	2% (6")	Volumetric	
C1.1	C-A	Shell to lower head weld	2% (6")	Volumetric	
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded supports (4)	100% of 1 support	Surface	
C1.4	C-D	Pressure retaining bolting	2 bolts	Volumetric	
C1.4	C-D	Pressure retaining bolting	5 bolts	Visual	

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TABLE 2

Charging Pump Stabilizer X-219
Separator

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C1.1	C-A	Lower head to shell weld	5% (2")	Volumetric	
C1.1	C-A	Upper head to shell weld	5% (2")	Volumetric	
C1.2	C-B	Nozzle-to-vessel welds	N/A		
C1.3	C-C	Integrally welded supports	(First 40 months)	Surface	
C1.4	C-D	Pressure retaining bolting	N/A		

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TABLE 2

Piping Systems

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C2.1	C-G	Circ. butt welds, 28" pipe	15 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-G	Circ. butt welds, 14" pipe	2 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-G	Circ. butt welds, 8" pipe	4 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-G	Circ. butt welds, 6" pipe	18 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-F	Circ. butt welds, 14" pipe	5 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-F	Circ. butt welds, 12" pipe	2 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-F	Circ. butt welds, 8" pipe	13 welds	Volumetric	4.1.1, 4.1.2
C2.1	C-F	Circ. butt welds, 6" pipe	1 weld	Volumetric	4.1.1, 4.1.2
C2.2	C-F	Longitudinal welds	4 welds	Volumetric	4.1.1, 4.1.2
C2.3	C-F, C-G	Branch connection welds	N/A		
C2.4	C-D	Pressure retaining bolting	12 bolts	Visual	
C2.4	C-D	Pressure retaining bolting	2 bolts	Volumetric	
C2.5	C-E-1	Integrally welded supports	10 supports	Surface	
C2.6	C-E-2	Support components	32 supports	Visual	

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TABLE 2

Pumps

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
Charging Pumps P-205A and B					
C3.1	C-F	Pump casing welds		Volumetric	4.2.12
C3.2	C-D	Pressure retaining bolting	5 bolts	Visual	
C3.3	C-E-1	Integrally welded supports	N/A		
C3.4	C-E-2	Support components	(First 40 months)	Visual	
RHR Pumps P-202A and B					
C3.1	C-F	Pump casing welds	N/A		
C3.2	C-D	Pressure retaining bolting	8 bolts	Visual	
C3.3	C-E-1	Integrally welded suports	N/A		
C3.4	C-E-2	Support components	(First 40 months)	Visual	

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TABLE 2

Valves

IWC-2600 Item No.	IWC-2520 Exam. Cat.	Component Identification	Extent of Examination	Method of Examination	Exception
C4.1	C-F, C-G	Valve body welds	N/A		
C4.2	C-D	Pressure retaining bolting (Valve 8958)	24 bolts & 24 nuts	Visual	
C4.2	C-D	Pressure retaining bolting (Valve CV-2230)	12 bolts & 12 nuts	Visual	
C4.2	C-D	Pressure retaining bolting (Valve 8958)	3 bolts	Volumetric	
C4.2	C-D	Pressure retaining bolting (Valve CV-2230)	2 bolts	Volumetric	
C4.3	C-E-1	Integrally welded supports	N/A		
C4.4	C-E-2	Support Components	1 support	Visual	