TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
830 Power Building

DEC 7 19[illegible]

Director of Nuclear Reactor Regulation
Attention: Mr. S. A. Varga, Chief
Light Water Reactors Branch No. 4
Division of Project Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Varga:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

Your letter to N. B. Hughes, dated February 23, 1978, transmitted a request for additional information regarding the inservice inspection program for the Watts Bar Nuclear Plant. The initial draft of our preservice baseline and inservice inspection program for the Watts Bar Nuclear Plants units 1 and 2 is enclosed. This draft, along with our submission of a request for exceptions is intended to be of sufficient detail to support your safety evaluation report finding. The request for exceptions, pursuant to 10 CFR 55a(g)(6)(i), will be provided by separate letter.

We anticipate that minor revisions to the program documentation may be required. We intend to complete all revisions before September 1, 1979. As revisions are developed they will be submitted for your review.

Very truly yours,

J. E. Gilleland
Assistant Manager of Power

Enclosure

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WATTS BAR NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

SI-4.4.10.1.p

PRESERVICE BASELINE INSPECTION
AND INSERVICE INSPECTION PROGRAM FOR
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT

UNITS 1 AND 2

Prepared By G. L. Belew

Submitted By E. R. Ennis

PORC Review Supervisor 10-25-78 Date

Approved By _____ Superintendent

Date Approved 10-25-78

1C	Plant Master File
	Superintendent
1U	Assistant Superintendent
1U	Maintenance Supervisor
1C	Results Supervisor
1C	Operations Supervisor
1C	Quality Assurance Supervisor
1C	Health Physicist
	Administrative Supervisor
	Chemical Laboratory
	Instrument Shop
1C	Shift Engineer's Office
1C	Unit Control Room
	Health Physics Laboratory
	Chief Storekeeper
1C	Mechanical Engineer
	Reactor Engineer
	Chemical Engineer
	Instrument Engineer
3U	Chief, Nuclear Generation Br[illegible]
1C	Assistant Maintenance Supervisor
	DPP Central Office File
1C	Supervisor, Metallurgy and NDT Section, 505 EB-C
1U	NRC
1C	P PROD Training Center
*1C	PPMB Plant Representative
2C	Industrial Engineer

Rev. No.	Date	Revised Pages
0	10/25/78	All

*Revision 0 10/31/78

The last page of this instruction is number 58

1. Estimate of inspection area dose rates.
2. Insert number of Class A welds subject to examination; all systems.
3. Insert number of Class B welds subject to examination.
4. Component fabrication codes.
5. Complete Tables A and B; Appendix A.
6. Include all drawings; Complete Appendix A.
7. Appendix B.
8. Appendix C.
9. PPMB and NGB review of detailed program.
10. Baseline program review by CONST and EN DES.
11. Westinghouse Standard Technical Specifications, dated June 1978.
12. Reference to all contracts not included.

Eddie G Simms, 10/25/78
Maintenance Supervisor Date

TABLE OF CONTENTS

		PAGE NO.
SECTION 1.0	INTRODUCTION	1
SECTION 2.0	INSERVICE INSPECTION PROGRAM	2
SECTION 3.0	BASELINE AND ISI PROGRAM EXAMINATIONS - TVA CLASS A COMPONENTS	3
SECTION 4.0	BASELINE AND ISI PROGRAM EXAMINATIONS - TVA CLASS B COMPONENTS	22
SECTION 5.0	BASELINE AND ISI PROGRAM EXAMINATIONS - TVA CLASSES C AND D COMPONENTS	28
SECTION 6.0	REPAIRS	28
SECTION 7.0	SYSTEM PRESSURE TESTS	28
SECTION 8.0	PUMP AND VALVE TESTING	28
SECTION 9.0	AUTHORIZED INSPECTOR	28
SECTION 10.0	EXAMINATION METHODS	28
SECTION 11.0	ACCEPTANCE CRITERIA	30
SECTION 12.0	EXAMINATION REPORTING	31
SECTION 13.0	REFERENCES	31

APPENDIX A	TABLE AND DRAWINGS
APPENDIX B	CALIBRATION BLOCKS
APPENDIX C	PHOTOGRAPHS

1.0 STATEMENT OF APPLICABILITY

Watts Bar Nuclear Plant is a two-unit plant having Westinghouse pressurized water reactors. Each unit has an electrical output of 1200 MW.

The plant site is located in southeastern Tennessee on the west shore of Chickamauga Lake, approximately 50 miles northeast of Chattanooga and 31 miles northeast of the Sequoyah Nuclear Plant site.

The purpose of this program is to outline details for planning and performing the nondestructive examination of the Watts Bar Nuclear Plant ASME Code Class 1, 2 and components. The program has been organized to fulfill examination requirements of the Watts Bar Operational Quality Assurance Manual, Part II, Section 5.1 and essentially comply with the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components (through summer 1975 addenda; Summer 1976 addenda For steam generator tube examinations). The program reflects the built-in limitations caused by original plant design, geometry, materials of construction of the components, and the current technology or state-of-art of nondestructive testing.

In addition, this program satisfies the requirements of Surveillance Requirements 4.4.5.0, 4.4.5.1, 4.4.5.2, 4.4.5.3, 4.4.5.4, and 4.4.5.5, and partially satisfies the requirements of Surveillance Requirements 4.4.10.1 and 4.0.5.

The pump and valve testing program and system pressure test program for safety class A, B, and C components will be presented as separate surveillance instructions.

The information presented in this program reflects TVA's philosophy in regard to inspection requirements and includes provisions for performance of a preservice baseline inspection as required by the code and future periodic inservice inspections.

The preservice inspection program, in addition to essentially fulfilling code requirements, will also permit verification of the inspection methods selected and finalization of detailed procedures and will establish baseline examination data to be used as a reference for later inservice examinations.

This program defines the inspection requirements for the preservice baseline inspection and the inservice inspection during the first ten-year inspection interval. The program defines in detail the following:

A. Exact locations to be inspected by photographs, annotated drawings, sketches, or word description.

B. Method of examination to be performed on each location and calibration standards used for comparison.

C. Method of data collection and reporting.

D. A schedule chart including:

1. Item(s) to be inspected each inspection interval.

2. Sizes of inspection areas (linear feet of weld, square inches, etc.)

3. Type of examination (visual, liquid penetrant, ultrasonic, etc.) and specific procedure to be used.

4. Estimate of inspection area dose rate.

5. Welds known to be inaccessible for inservice inspection.

2.0 INSERVICE INSPECTION PROGRAM

The selection of specific areas for inspection during each 40-month cycle will be made considering and optimizing the various factors affecting performance of the program. Of prime consideration is the fulfillment of the requirements outlined in Section 5.2.8 of the Watts Bar FSAR, and as closely as possible to Section XI of the ASME Boiler and Pressure Vessel Code, Rules for Inservice Inspection of Nuclear Plant Components (through summer 1975 addenda and summer 1976 addenda for steam generator tube examination.) Other factors considered will be as follows:

A. Areas of the most severe service conditions, i.e., radiation exposure, thermal gradient, cycling stresses, and high operating stresses.

B. In order to limit the radiation exposure of employees, those areas where the dose rate progresses to a higher level each year are to be inspected early in the inspection period where allowable under the program.

C. Manpower economics were also considered; i.e., when several areas can be inspected in the same general location, this will be done to minimize scaffolding and exposure to employees.

Various portions of the baseline and inservice program will be performed by either Power Plant Maintenance Branch (PPMB) personnel or contractors retained as required. Contract preparation and administration will be the responsibility of the PPMB.

Inspection plans and/or Quality Assurance Programs submitted by outside contractors shall be reviewed and approved by the PPMB and submitted to the plant superintendent for approval prior to use. All specific NDE procedures used during the inspection program shall be reviewed and approved in accordance with OQAM Part II, Section 6.3.

Whenever inspection requirements are being accomplished a PPMB representative shall be onsite to coordinate activities. The PPMB representative's responsibilities shall include but are not limited to: coordinating with Health Physics Section when work is to be accomplished in radiation areas, to ensure scaffolding and lighting is provided as required, to coordinate insulation removal in inspection areas and to interface with the Shift Engineer in regards to cold shutdown status of the unit. He will be the designated TVA representative to ensure contract compliance, proper disposition of needed procedure changes to both TVA and/or contractor procedures in accordance with approved vendor QA programs and Section 6.3. Part II of the OQAM.

During conduct of the preservice and inservice inspection, the PPMB representative shall report inspection progress and results to the Plant QA supervisor who is responsible for ensuring the proper conduct of baseline and inservice inspection activities.

3.0 BASELINE AND INSERVICE INSPECTION PROGRAM EXAMINATION - TVA CLASS A COMPONENTS

The areas to be inspected during the first 10-year inspection interval are tabulated in Table A of appendix A. The planned inspection areas are outlined in Table A for each 40-month inspection period during this inspection interval.

Tabulations are presented on a per-unit basis.

A further elaboration of the inspection of the various components will be discussed in the following paragraphs.

3.1 Reactor Vessel

3.1.1 Reactor Pressure Vessel Seam Welds

3.1.1.1 Circumferential Shell Welds - Beltline Region

There are three circumferential seam welds, each approximately 50 feet in length, totaling 150 feet, in the vessel cylinderical shell located behind the thermal shield. These welds will be accessible for inspection from the vessel I.D. with the core internals removed and will be inspected from the I.D. as part of the preservice baseline and inservice inspection using remote inspection devices.

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

3.1.1.2 Circumferential Shell Weld

There is one circumferential seam weld, approximately 50 feet in length, in the vessel cylinderical shell located outside of the beltline region. The weld will be inspected from the vessel I.D. with the core internals removed and will be inspected as part of the preservice baseline and inservice inspection using remote inspection devices.

3.1.1.3 Lower Head Seam Welds

There are six orange peel seam welds (21 feet) and one circumferential seam weld (40 feet), for a total of approximately 61 feet, which will be accessible for future examination from the vessel I.D. with the core internals removed. The welds will be inspected as part of the preservice baseline and inservice inspection.

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

3.1.1.4 Closure Head Seam Weld

The head cap weld is approximately 41 feet in length and shall be inspected for the preservice baseline and inservice inspection from the head outside surface. The head does not have any orange peel welds.

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

3.1.1.5 Vessel-to-Flange Weld and Head-to-Flange Weld

The vessel-to-flange weld is approximately 50 feet in length and will be accessible for future examination. The preservice baseline shall be performed from the vessel inside diameter with vessel remote inspection tools. The technique used for the baseline will also be used for future inservice inspection.

The head-to-flange weld is approximately 45 feet in length and shall be inspected for the baseline and inservice inspections from the head outside surface.

The vessel and closure head flange sections are fabricated of A-508, class 2, manganese-molybdemum steel and are clad internally and on the gasket face with weld-deposited austenitic stainless steel.

3.1.2 Reactor Vessel Nozzles

There are four inlet nozzles (27.441 inch I.D.) and four outlet nozzles (28.937 inch I.D.). All eight nozzle-to-vessel welds will be examined for the preservice baseline and inservice inspection from the I.D. using remote inspection devices. The four outlet nozzles shall be inspected when the upper internals are removed. The inlet nozzles are not accessible until the core barrel is removed.

The nozzle inside radii inspection, as well as the nozzle-to-safe end inspection, may be performed at the same time as the vessel-to-nozzle weld inspection.

The nozzle forgings are fabricated of A-508, class 2, manganese-molybdenum steel and are clad with weld deposited austenitic stainless steel. The nozzle ends are extended with a stainless steel safe end ring of SA-182, type 304.

3.1.3 Vessel Penetrations and Attachments

The control rod drive (78), upper head injection (4), vent pipe (1), and instrumentation (58) penetrations shall be visually examined for leakage during system leakage or hydrostatic tests.

3.1.4 Reactor Vessel Closure Studs, Nuts, and Washers

The vessel flange studs (54) will be inspected either in place when under tension, or when the bolting is removed, or when the closure head is removed. A visual examination will be given to washers and bushings, and an ultrasonic examination will be given to flange ligaments between threaded stud holes and to the nuts and studs from the exposed ends for the preservice inspection.

The nuts and washers will be transferred to dry storage during each refueling outage when removed. A surface examination will be given to studs and nuts when removed, and an ultrasonic examination will be given to the studs from the exposed ends. The nuts will also be given an ultrasonic examination. The washers shall be visually examined for cracking, signs of distress, or deformation.

Care should be exercised to prevent interchangement of studs, nuts, washers, or any combination of these.

Studs, nuts, and washers are fabricated of SA-540, Gr. B.24, nickel-chrome-molybdenum steel with a manganese-phosphate surface treatment.

3.1.5 Integrally-Welded Vessel Supports

There are no integrally-welded supports. The vessel is supported by four support pads located on the bottom of two outlet nozzles (15 and 17) and two inlet nozzles (13 and 14, reference drawing _____).

3.1.6 Reactor Vessel and Closure Head Cladding

These are six patches in the vessel cladding that will be visually examined using the underwater closed-circuit television system. This will be coordinated with the refueling activities to prevent unnecessary conflicts.

There are six patches in the closure head cladding which will undergo visual and liquid penetrant examinations. All patches will be inspected during the 10-year inspection interval. Color photographs, video tapes, or other recording systems of the inspection areas may be used for comparison with earlier visual records.

Reactor vessel and closure head cladding is of weld-deposited austenitic stainless steel.

3.1.7 Reactor Vessel Internals

An overall general surveillance of the reactor internals, interior surfaces, and support attachments will be accomplished as a routine refueling procedure. Weld zones or internal load-carrying components whose failure could propogate into pressure vessel wall or adversely affect core integrity will be examined for signs of cracking or distress. The areas normally examined shall be those made accessible by the removal of components during normal refueling outages. (This shall be performed at the first refueling and at subsequent refueling outages at approximately 3-year intervals.) However, when the core barrel and vessel internals are removed, a more complete examination of the highly stressed areas will be visually examined using the remote television and/or boroscopes.

If any condition should merit a detail record of a given condition, either color photographs or video tape records will be made. If nothing notable should be present, only a word description or checkoff sheet record will be maintained.

3.1.8 Control Rod Drive Housings

There are 78 control rod housings penetrating the closure heads. The housings consist of a 6-inch O.D. adapter (A-182, 304SS) and a 4-inch O.D. body (SB-167, Inconel).

For the preservice baseline, approximately 17 CRD housing welds will be ultrasonically examined (17 peripheral CRD housing). Two welds shall be examined during the first inspection interval.

3.2 Pressurizer

3.2.1 Longitudinal and Circumferential Seam Welds

There are five circumferential seam welds, each approximately 24 feet in length, totaling 120 feet, and four vertical welds, totaling approximately 44 feet in the shell cylinderical region. All seam welds are accessible from the exterior surface and will be inspected from the O.D. as part of the preservice baseline and inservice inspection. There are no circumferential or meriodional head welds.

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

3.2.2 Nozzle-to-Vessel Welds and Nozzle Safe Ends

There are four 6-inch nozzles, one 4-inch nozzle, and one 14-inch nozzle and one 16-inch I.D. manway pad which will be examined ultrasonically from the O.D. for the preservice baseline and inservice inspection interval. The inside radii of each of these will be examined at the time the nozzle-to-vessel welds are being inspected.

Nozzle safe ends are welded forgings and will undergo a liquid penetrant and an ultrasonic examination.

Nozzle and manway forgings are fabricated of SA-508, class 2, manganese-molybdenum steel. Safe-end connections are SA-182, Gr. F-316L forgings.

3.2.3 Penetrations

There are 78 heater penetrations in the lower head. These areas will be visually inspected for signs of leakage during system leakage or hydrostatic tests.

3.2.4 Pressure-Retaining Bolting

The bolting on the manway cover shall be visually examined for signs of leakage and/or distress (16 bolts @ 1.88 inches in diameter).

3.2.5 Pressurizer Support Skirt Weld

The support skirt-to-vessel weld, approximately 23 feet in length, will be ultrasonically examined for the preservice baseline and inservice inspection.

The support skirt is fabricated of SA-516, Gr. 70, carbon steel plate.

3.2.6 Interior Clad Surface

A patch (36 square inches) of the interior cladding will be visually examined for the preservice baseline and inservice inspection when the manway cover is removed.

Interior cladding is of austenitic stainless steel.

3.3 Steam Generators (4)

3.3.1 Primary Head-to-Tube Sheet Weld

The primary head-to-tube sheet weld is approximately 36 feet in length, totaling 144 feet for the four steam generators. All these will be examined ultrasonically from the O.D. for the preservice baseline examination and during the inservice inspection interval.

The tube plate is SA-508, class 2, steel forging, clad on the primary side with NiCrFe alloy (Inconel). The hemispherical chamber is a SA-216, Gr. Wcc, casing, clad with austenitic stainless steel.

3.3.2 Steam Generator Primary Nozzles

The steam generator primary nozzles and manway pads are an integral part of the vessel. The safe ends of all eight primary nozzles on the four generators shall be liquid penetrant and ultrasonically examined from the O.D. for the preservice baseline inspection at the same time as the nozzle-to-safe end pipe welds are being inspected. In addition, the inside radii of all nozzles and manways shall be ultrasonically examined for the preservice baseline inspection.

All safe ends and inside radii shall be examined during the 10-year inspection interval.

The nozzles and manway pads are fabricated to SA-216, Gr. Wcc. The nozzles have buttered 308L safe ends.

3.3.3 Pressure-Retaining Bolting

The bolting on the manway covers (2) on the primary side of all the generators shall be visually examined during the preservice baseline and the inservice inspection interval for signs of leakage or distress. Each manway has 16 bolts ~~at~~ 1.88 inches, diameter.

The bolts are fabricated to SA-183, Gr. B7.

3.3.4 Integrally-Welded Vessel Supports

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.

3.3.5 Interior Cladding

The manway covers on each steam generator primary head shall be removed and a patch (36 square inches) of cladding near each manway shall be visually examined for the preservice baseline examination. All these will be examined again during the inspection interval.

3.3.6 Steam Generator Tubing

Each steam generator tube bundle consists of 4,674 NiCrFe alloy (Inconel SB-163) U-tubes of 0.750 O.D. by 0.042 average wall thickness.

During the preoperational baseline and inservice inspection, steam generator tubing shall undergo eddy current examination. Baseline examination of steam generator tubing shall be performed in accordance with the Summer 1976 Addenda of Section XI.

3.3.6.1 Steam Generator Sample Selection and Inspection

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

3.3.6.2 Steam Generator Tube Sample Selection and Inspection

The steam generator tube minimum sample size, inspection result classification, and the corresponding action required shall be as specified in Table 2. The inservice

inspection of steam generator tubes shall be performed at the frequencies specified in Paragraph 3.3.6.3 and the inspected tubes shall be verified acceptable per the acceptance criteria of Paragraph 3.3.6.3. The tubes selected for each inservice inspection shall include at least 3% 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 50% of the tubes inspected shall be from these critical areas.

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

   1. All nonplugged tubes that previously had detectable wall penetrations (>20%).

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

   3. A tube inspection (pursuant to Paragraph 3.3.6.4.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) during each inservice inspection 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.

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

Category	Inspection Results
C-1	Less than 5% 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% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.
C-3	More than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected tubes are defective.

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

3.3.6.3 Inspection Frequencies

The above required inservice inspections of steam generator tubes shall be performed at the following frequencies:

a. The first inservice inspection shall be performed after 6 Effective Full Power Months but within 24 calendar months of initial criticality. Subsequent inservice inspections 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 AVT conditions, not including the preservice inspection, 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 inservice inspection of a steam generator conducted in accordance with Table 2 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 Paragraph 3.3.6.3.a; the interval may then be extended to a maximum of once per 40 months.

c. Additional, unscheduled inservice inspections shall be performed on each steam generator in accordance with the first sample inspection specified in Table 2 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.

3.3.6.4 Acceptance Criteria

a. As used in Section 3.3.6:

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% 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 occuring on either inside or outside of a tube.

3. Degraded Tube means a tube containing imperfections $\geq$ 20% of the nominal wall thickness caused by degradation.

4. Percent Degradation means the percentage of 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% 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 3.3.6.3.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 top support of the cold leg.

9. Preservice Inspection 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 inservice inspections.

NOTE: 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.

3.3.6.5 Reports

a. 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.

b. The complete results of the steam generator tube inservice inspection shall be included in the Annual Operating Report for the period in which this inspection was completed. This 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. Results of steam generator tube inspections which fall into Category C-3 and require prompt notification of the Commission shall be reported 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 taken to prevent recurrence.

3.4 Piping

3.4.1 Nozzle-to-Pipe Welds

There are 8 nozzles which have buttered safe-end welds. These are the steam generator primary nozzles. These nozzle safe end-to-pipe welds (stainless to stainless) will be ultrasonically examined at the same time as the nozzle-to-safe ends welds and are included in the total in section 3.4.2.1

Steam generator nozzle-to-safe end welds are assigned identical weld numbers as the respective nozzle safe-end to piping welds. ("SE" suffix added to nozzle-to-safe end welds.) Reactor vessel and pressurizer safe-ends are separate forgoings.

3.4.2 Circumferential Pipe Joint Welds and Branch Pipe Connection Welds

All class A circumferential and longitudinal pressure boundary welds in piping, within the scope of Section XI, shall be ultrasonically examined from the O.D. for the preservice baseline. (See drawings 30A616-1 and 30A616-4.)

Class A branch pipe connection welds exceeding 6 inches in diameter shall be ultrasonically examined from the O.D. for the preservice baseline and inservice inspection intervals. Class A branch pipe connection welds 6 inches in diameter or smaller shall be liquid penetrant examined for the preservice baseline and inservice inspection interval.

In the case of longitudinal-welded pipe, inservice examinations (at the circumferential joint) will be extended to include at least one foot of the longitudinal weld(s) which intersects the circumferential joint.

3.4.2.1 Reactor Coolant Recirculation Piping (RC)

There are class A pressure boundary pipe welds which require ultrasonic or liquid penetrant examination. All these welds will be examined for the preservice baseline and some 25 percent of this total will be inspected during the inservice inspection interval.

The entire system is stainless steel. The straight lengths are centrifugal cast and the elbows are static cast.

In appendix A, Table A lists the pipe size, number of welds, scheduled inspections, and types of examinations.

3.4.2.2 Chemical and Volume Control Piping (CVC)

There are class A welds which require ultrasonic or liquid penetrant examination. All of these welds will be examined for the preservice baseline and some 25 percent

of the total will be inspected during the inservice inspection interval.

The entire system is stainless steel.

In appendix A, Table A lists the pipe size, number of welds, scheduled inspections, and types of examinations.

3.4.2.3 Residual Heat Removal and Safety Injection Piping (RHR, SI)

There are class A welds which require ultrasonic or liquid penetrant examination. All of these welds will be examined for the preservice baseline and approximately 25 percent of these welds will be examined during the inservice inspection interval.

Each system is entirely stainless steel.

In appendix A, Table A lists the pipe size, number of welds, scheduled inspections, and types of examinations.

3.4.2.4 Upper Head Injection Piping (UHI)

There are class A welds which require ultrasonic or liquid penetrant examination. All of these welds will be examined for the preservice baseline, and approximately 25 percent of these welds will be examined during each inservice inspection interval.

The entire system is stainless steel except for the lower portion of each UHI auxiliary head adapter which is Inconel.

In appendix A, Table A lists the pipe size, number of welds, scheduled inspections, and type of examinations

3.4.3 Pressure-Retaining Bolting

Any class A pressure-retaining bolting 2 inches in diameter and larger shall be visually and ultrasonically examined. Class A bolting less than 2 inches shall be visually examined.

3.4.4 Integrally-Welded Supports and Support Components

Class A integrally-welded supports shall be ultrasonically examined for the preservice baseline and during the ISI intervals. Support components shall be visually examined for the baseline and during the ISI interval.

Unless a condition exists which should merit a detail record of the condition, only a checkoff sheet record will be maintained verifying visual inspection of supports and hangers.

3.5 Reactor Coolant Pumps (4)

3.5.1 Pressure Retaining Bolting

The main flange on each pump includes 24 bolts (4-1/2 inches in diameter).

Each bolt will be visually and ultrasonically examined for the preservice baseline and during the ISI intervals.

The main flange bolts are fabricated from SA-450, Gr. B24.

3.5.2 Support Components

Each pump has three bolted support components. Each support component shall be visually examined during the preservice baseline and inservice inspection interval.

3.5.3 Casing Welds

Each pump includes a two-piece welded Type 304 SST casing. The pump circumferential seam weld is approximately 19 feet in length, totaling 76 feet for the four pumps. All four welds will be ultrasonically examined for the preservice baseline and one weld will be ultrasonically examined during each inspection interval.

3.5.4 Pump Casings

TVA shall perform on site visual inspections for the preservice baseline.

If during each inspection interval a pump from either unit 1 or 2 is disassembled for maintenance, the internal pressure boundary surfaces shall be visually examined. If a pump from either unit is not disassembled during the inspection interval, ultrasonic thickness measurements shall be taken from the outside diameter on one pump

At approximately 3-year intervals each pump flywheel shall undergo an inplace ultrasonic examination of areas of higher stress concentration at the bore and keyway. A complete inplace ultrasonic examination shall be conducted at approximately 10-year intervals along with a surface examination of exposed surfaces.

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

3.6 Valves

3.6.1 Pressure-Retaining Bolting

Any pressure-retaining bolting 2 inches in diameter and larger shall be visually and ultrasonically examined for the preservice baseline and inservice inspection interval. Bolting less than 2 inches shall be visually examined for the baseline and inspection interval.

3.6.2 Integrally-Welded Supports and Support Components

Integrally-welded supports shall be ultrasonically examined for the preservice baseline and during the inservice inspection intervals. All support components shall be visually examined for the baseline and during each inspection interval.

3.6.3 Valve Bodies

When it becomes necessary to disassemble any valve(s) for normal maintenance purposes, the interior surface of the valve casing(s) will be visually inspected by TVA and the results recorded. Disassembly of valves solely for visual inspection will not be performed.

3.7 Exempted Components

Exempted components shall be visually examined during system pressure tests in accordance with IWA-5000 and IWB-5000. (See Section 7.0).

4.0 BASELINE AND INSERVICE INSPECTION PROGRAM - TVA CLASS B COMPONENTS

The areas to be inspected during the first 10-year inspection interval are tabulated in Table B of appendix A. The planned inspection areas are outlined in Table B for each 40-month inspection period during this inspection interval.

Tabulations are presented on a per-unit basis.

A further elaboration of the inspection of the various components will be discussed in the following paragraphs.

4.1 Steam Generators (4)

4.1.1 Circumferential Welds - Secondary Side

There are 5 circumferential seam welds, totaling 198 feet or 792 feet for the 4 steam generators. A total of approximately 45 feet of 5 welds will be ultrasonically examined from the O.D. for the preservice baseline examination and during the 4 inspection intervals. Approximately 18 feet of 2 welds will be examined during the first inservice inspection interval (see appendix A, Table B).

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

4.1.2 Steam Generator Secondary Nozzles

There is one feedwater nozzle (16-inch I.D.), one auxiliary feedwater nozzle (6-inch I.D.), one main steam nozzle (32-inch I.D.), and two manway pads (16-inch I.D.) per steam generator. Five nozzle (manway)-to-vessel welds will be ultrasonically examined for the preservice baseline and during the four inspection intervals. A total of two nozzles will be inspected during the first inservice inspection interval (see appendix A, Table B).

Nozzles are fabricated of SA-508, class 2, steel.

4.1.3 Pressure Retaining Bolting

Bolting on two manway covers on the secondary side shall be visually examined for the preservice baseline and during each inservice inspection interval (see appendix A, Table B). A total of four bolts shall be ultrasonically examined for the preservice baseline and four intervals. One bolt shall be examined for the first inspection interval. Each manway has 20 bolts (1-1/4 inches diameter).

The bolts are fabricated to SA-183, Gr. B7.

4.2 RHR Heat Exchangers (2)

4.2.1 Circumferential Seam Welds

There are two circumferential welds on the tube side of each heat exchanger, totaling approximately 20 feet for each heat exchanger. A total of 6 feet of the two welds will be ultrasonically examined from the O.D. for the preservice baseline and during the 4 intervals. Approximately 2 feet of the welds will be inspected for the first inservice inspection interval. The welds include the channel cylinder section to channel flange weld and the channel cylinder section to channel head weld.

The channel flange is fabricated from SS, SA-336-F8. The channel cylinder section and channel head are from SS, SA-240, TP-304.

4.2.2 Nozzle-to-Vessel Welds

The channel cylinder section includes one inlet nozzle (14-inch I.D.) and one outlet nozzle (14-inch I.D.). Two nozzle welds will be ultrasonically examined from the O.D. for the preservice baseline and during the four intervals. A total of 1 nozzle will be examined during the first inservice inspection interval.

The nozzles are fabricated from SS, SA-336-F8.

4.2.3 Integrally-Welded Supports

There are 2 integrally-welded support attachments per vessel. Two support pad-to-vessel welds will be liquid penetrant tested during the preservice baseline and for the 4 intervals. A total of 1 support will be inspected during the first inservice inspection interval.

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

4.2.4 Pressure-Retaining Bolting

The channel flange on each vessel includes 52 studs (1-1/8" in diameter) with nuts. A total of 52 studs and 104 nuts will be visually examined during the preservice baseline and for each inspection interval. A total of 6 studs and 12 nuts shall be ultrasonically examined for the preservice baseline and 4 intervals. A total of 2 studs and 4 nuts shall be ultrasonically examined for the first inspection interval.

The studs and nuts are fabricated from SA-193, Gr. B7 and SA-194, GR 2H, respectively.

4.3 Piping

4.3.1 Circumferential and Longitudinal Pipe Joint Welds and Branch Pipe Connection Welds

Class B circumferential and branch pipe connection pressure boundry welds in piping, within the scope of Section XI and as defined in IWC-1200 and IWC-2400, shall be ultrasonically examined for the preservice baseline and inservice inspection intervals (see drawings 30A616-1 and 30A616-4).

Longitudinal weld joints in pipe fittings (tees, elbows, reducers, etc.) shall also be ultrasonically examined in accordance with IWC-1200 and IWC-2400.

In some cases, it may be impractical to inspect all welds from both sides or from either side; i.e., hanger interference, concrete or steel walls, or case stainless-steel valve and pump casing adjoining the weld(s). 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 or examine the entire weld cross section.

4.3.1.1 Residual Heat Removal and Safety Injection Piping (RHR, SI)

There are class B welds subject to examination. Approximately of these welds will be examined during the first inspection interval and welds during the 4 intervals and for the preservice baseline.

Each system is entirely stainless steel. In appendix A, Table B lists the weld size, number of welds, scheduled inspections, and type of examinations.

4.3.1.2 Main Steam

There are class B circumferential welds subject to examination. Approximately welds will be examined for the preservice baseline and during the 4 intervals. Approximately of these welds will be examined during the first inservice inspection interval.

The entire system is carbon steel.

In appendix A, Table B lists weld size, number of welds, scheduled inspections, and type of examinations.

TVA intends to terminate main steam class B on each main steam loop after the MSIV (FCV 1-4, 1-11, 1-22, 1-29) for baseline and ISI purposes. This is consistant with Regulatory Guide 1.26.

4.3.1.3 Feedwater

There are class B circumferential welds subject to examination. Approximately of these welds will be examined during the first inservice inspection interval, and welds during the 4 intervals and for the preservice baseline.

The entire system is carbon steel.

In appendix A, Table B lists the weld size, number of welds, scheduled inspections, and type of examinations.

TVA intends to terminate feedwater class B on each feedwater loop after the outermost containment isolation valve (FCV 3-33, 3-47, 3-87, 3-100) for baseline and ISI purposes. This is consistant with Regulatory Guide 1.26.

4.3.2 Pressure-Retaining Bolting

Pressure-retaining bolting larger than 1 inch in diameter shall be visually examined for the preservice baseline and each inservice interval in accordance with IWC-2100 and IWC-2411 of Section XI. Ten percent of the pressure-retaining bolting (or 2 bolts or studs whichever is greater) in each joint selected for examination in accordance with IWC-2100 and IWC-2411 shall be ultrasonically examined for the preservice baseline and 4 inspection intervals.

4.3.3 Integrally-Welded Supports and Support Components

Integrally-welded supports shall be surface examined for the preservice baseline and during the inservice inspection intervals in accordance with IWC-2100 and IWC-2411.

All nonintegrally welded supports selected for examination in accordance with IWC-2100 and IWC-2411 shall be visually examined for the baseline and each inspection interval.

Unless a condition exists which should merit a detail record of the condition, only a checkoff sheet record will be maintained verifying visual inspection of supports.

4.4 RHR Pumps (2)

4.4.1 Pressure-Retaining Bolting

The stuffing box extension to pump casing connection includes 24 studs (2 inches in diameter) with washers and nuts.

A total of 24 studs and nuts shall be visually examined for the preservice baseline and for each inservice interval. A total of 3 studs and nuts shall be ultrasonically examined during the 4 intervals and for the preservice baseline.

The studs are fabricated to SA-453, Gr. 660, and the nuts to SA-194, Gr. 6.

4.4.2 Support Components

Each pump has three bolted support components (pump feet). Three pump feet shall be visually examined for the preservice baseline and during each inservice inspection interval.

4.5 Valves

4.5.1 Pressure-Retaining Bolting

Pressure-retaining bolting greater than one inch in diameter shall be visually examined for the preservice baseline and each inservice interval in accordance with IWC-2100 and IWC-2411 of Section XI. Ten percent of the pressure-retaining bolting (or 2 bolts or studs whichever is greater) in each joint selected for examination in accordance with IWC-2100 and IWC-2411 shall be ultrasonically examined during the preservice baseline and 4 inspection intervals.

4.5.2 Integrally-Welded Supports and Support Components

Integrally-welded supports shall be surface examined for the preservice baseline and during the inservice inspection intervals in accordance with IWC-2100 and IWC-2411.

All nonintegrally-welded supports selected for examination in accordance with IWC-2100 and IWC-2411 shall be visually examined for the baseline and each inspection interval. Unless a condition exists which should merit a detail record of the condition, only a checkoff sheet record will be maintained verifying visual inspection of supports.

4.6 Exempted Components

Exempted components shall be visually examined during system pressure tests in accordance with IWA-5000 and IWC-5000 (See Section 7.0).

5.0 BASELINE AND INSERVICE INSPECTION PROGRAM EXAMINATION - TVA CLASS C AND D COMPONENTS

Class C and D components shall undergo a leak test while in operation or during system inservice testing in accordance with IWA-5240 by expiration of each 40-month cycle during the inservice inspection interval. The components shall also undergo a system pressure test in accordance with IWA-5000 and IWD-5000 by the expiration of each inspection interval (See Section 7.0).

Class C and D component supports and hangers for components specified in IWD-2600 shall be visually examined during the tests specified above.

6.0 REPAIRS

All repairs shall be performed in accordance with Section XI and implemented by approved written procedures.

7.0 SYSTEM PRESSURE TESTS

System pressure test programs for TVA safety classes A, B, C, and D components will be presented as separate surveillance instructions.

8.0 PUMP AND VALVE TESTING

Pump and valve testing programs for TVA safety classes A, B, and C will be presented as separate surveillance instructions.

9.0 AUTHORIZED INSPECTOR

TVA shall employee an authorized inspector in accordance the ASME Code, Section XI. The inspector 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.

10.0 EXAMINATION METHODS

10.1 Visual Examination

A visual examination is employed to provide a report of the general condition of the part, component, or surface to be examined, including such conditions as scatches,

wear, cracks, corrosion, or erosion on the surfaces; misalignment or movement of the part of component; or evidence of leaking.

Visual examination shall be conducted in accordance with Article 9, Section V, of the ASME Code, except that lighting shall be sufficient to resolve the 1/32-inch wide black line on an 18 percent neutral gray background.

10.2 Surface Examination (Magnetic Particle)

Magnetic particle examination shall be conducted in accordance with Article 7, Section V, of the ASME Code.

10.3 Surface Examination (Liquid Penetrant)

Liquid penetrant examination shall be conducted in accordance with Article 6, Section V, of the ASME Code.

10.4 Volumetric Examination (Radiographic)

Radiographic techniques, employing penetrating radiation such as X-rays, gamma rays, or thermalized neutrons, may be utilized with appropriate image recording devices such as photographic film or papers, electrostatic systems, direct-image orthicons, or image converters. For radiographic examinations employing either X-ray equipment or radioactive isotopes and photographic films, the procedure shall be as specified in Article 2, Section V, of the ASME Code.

10.5 Volumetric Examination (Ultrasonic)

Ultrasonic examination shall be conducted in accordance with the provisions of Appendix I of Section XI of the ASME Code. Where Appendix I (I-1200) is not applicable, the provisions of Appendix III, Section XI (1974 Edition), of the ASME Code shall apply.

10.6 Volumetric Examination (Eddy Current)

Eddy current examination of heat exchanger tubing shall be conducted in accordance with the provisions of Section XI, Appendix IV, of the ASME Boiler and Pressure Vessel Code (Summer 1976 Addenda).

11.0 ACCEPTANCE CRITERIA

All acceptance standards for class A and class B components shall be in accordance with IWA - 3000.

To assist in establishing acceptance criteria, the following is a tabulation of fabrication codes for major equipment.

Component	TVA Contract	Contract Date	Code
MSIV			
Principle Piping			
Reactor Vessel			
Steam Generator			
Pressurizer			
Reactor Coolant Pump			
Reactor Coolant Piping			
RHR Heat Exchangers			
RHR Pumps			

12.0 EXAMINATION REPORTING

A detailed report of all examinations shall be prepared by the performing organization and shall contain but not be limited to the following information:

A. Date and time of examination.

B. Identification of part examined including wall thickness, type material, part temperature, and unit identification.

C. Identification of TVA's or contractor's examiner and personnel certification.

D. Type of examination (PT, UT, etc.) and specific NDT procedure used.

E. Results of examination.

F. M&TE and inspection equipment used and their calibration due dates.

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.

A marked drawing or sketch shall indicate the weld or part examined. Information should also include all other pertinent information that would later permit duplication or relocation of a flaw, such as transducer type, size, shape, frequency beam angle, couplant, and distances from some given reference points.

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 by the contractor with all pertinent and required information. The contractor shall furnish TVA 10 copies of this report for inclusion in the inspection records. This report shall be submitted within 60 calendar days after completion of the inspection. TVA will retain the original copies of all raw data taken.

Completed reports are reviewed by the Power Plant Maintenance Branch and submitted to the plant superintendent for approval. Completed reports are filed at the plant with other surveillance data sheets.

13.0 REFERENCES

The following references were used in the preparation of this instruction and may be helpful additional information.

13.1 ASME Boiler and Pressure Vessel Code - Section XI through Summer 1975 addenda, Summer 1976 addenda.

13.2 ASME Boiler and Pressure Vessel Code - Section V through Summer 1975 addenda.

13.3 Instruction Manual - 173-inch I.D. Reactor Pressure Vessel - Rotterdam Dockyard Company, Contract No. 71C62-54114-1, N3M-2-3.

13.4 Watts Bar Nuclear Plant Administrative Instruction 3.

13.5 Watts Bar Nuclear Plant Final Safety Analysis Report.

13.6 Westinghouse Technical Manual - Pressurizer, TM 1440-C225,

13.7 Westinghouse Technical Manual - Vertical Steam Generators, TM 1440-C254, Contract No. 71C62-54114-1, N3M-2-4.

13.8 Westinghouse Instruction Manual - Auxiliary Heat Exchangers, Contract No. 71C62-54114-1, N3M-2-30.

13.9 Westinghouse Instruction Book - Reactor Coolant Pump, Contract No. 71C62-54114-1, N3M-2-5.

13.10 Ingersoll-Rand Instruction Manual - Residual Heat Removal Pumps, Contract No. 71C62-54114-1, N3M-2-30.

13.11 WBNP, TVA Health Physics Manual.

13.12 TVA Contract 78P64-148315 - to Southwest Research Institute for Reactor Vessel.

13.13 TVA Contract 78P25-145175-1 - to Lambert, McGill & Thomas Inc. IQT for NDE.

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.

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-3	Perform action for C-3 result of first sample	C-2	Plug defective tubes
					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. Prompt notification to NRC pursuant to specification 6.9.1	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
			Additional S. G. is C-3	Inspect all tubes in each S. G. and plug defective tubes. Prompt notification to NRC pursuant to specification 6.9.1	N/A	N/A

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

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
A. Reactor Vessel									
1. Circumferential shell welds - beltline region	150 ft.	7.5 ft.	UT	-	-	7.5 ft	B-A	* Examination from inside when core barrel is removed	SWRI 700-6
2. Circumferential shell weld	50 ft.	2.5 ft	UT	-	-	2.5 ft.	B-B	* Examination from inside when core barrel is removed	SWRI 700-6
3. Lower head seam welds (Orange peel seam)	21 ft.	3 ft	UT	-	-	3 ft	B-B	* Examination from inside when core barrel is removed	SWRI 700-6
4. Lower head seam weld	40 ft.	2 ft.	UT	-	-	2 ft.	B-B	* Examination from inside when core barrel is removed	SWRI 700-6
5. Closure head seam weld	41 ft.	2 ft.	UT	-	-	2 ft.	B-B	* Examination from outside diameter	SWRI 600-15
6. Vessel-to-flange circumferential weld	50 ft.	50 ft.	UT	16 ft.	17 ft.	17 ft.	B-C	* Examination from Inside diameter	SWRI 700-6

* See Attachment 1

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

	Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
7.	Head-to-flange circumferential weld	45 ft.	45 ft.	UT	15 ft.	15 ft.	15 ft.	B-C	* Examination from outside diameter	SWRI 600-1
8.	Primary nozzle-to-vessel welds and inside radiused sections	8	8	UT	2	2	4	B-D	* Four inlet and four outlet nozzles from vessel I.D.	SWRI 700-6 700-5
9.	Vessel penetrations, including control rod drive, upper head injection, vent pipe, and instrumentation penetrations	141	37	VT	12	12	13	B-E	** Outside for signs of leakage or distress (IWA-5000)	N-VT-1
10.	Nozzle-to-safe end welds	8	8	PT UT	2	2	4	B-F	* From O.D. From I.D.	SWRI 200-1 700-5
11.	Nuts	54	54	MT, UT	18	18	18	B-G-1	*	SWRI 300-2, 600-19
12.	Pressure-retaining studs	54 54	54 --	UT MT	18 When removed	18	18	B-G-1	* From Ends	SWRI 600-18 SWRI 300-2
13.	Ligaments between threaded stud holes	54	54	UT	18	18	18	B-G-1	* Flange surface access	SWRI 600-5
14.	Closure washers and bushings	54	54	VT	18	18	18	B-G-1	N/A	N-VT-1
15.	Closure head cladding	6 Patches		VT & PT	2	2	2	B-I-1	* From I.D.	SWRI 900-1, 200-1

* See Attachment 1
** See Section 3.1.3 and Section 7.0

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
16. Vessel cladding	6 Patches		VT	2	2	2	B-I-1	N/A	N-VT-1
17. Vessel interior surfaces and core support structures			VT	General Surveillance			B-N-1 B-N-3	N/A	N-VT-1
18. Control rod drive housings	17	2	UT	1	1	-	B-G	From O.D.	
B. Pressurizer									
1. Circumferential welds	120 ft.	7.5 ft.	UT	1.5 ft	3 ft.	3 ft.	B-B	From O.D.	LMT-UT-2
2. Longitudinal welds	44 ft.	4 ft.	UT	1 ft.	1 ft.	2 ft.	B-B	From O.D.	LMT-UT-2
3. Nozzle-to-vessel welds and nozzle-to-vessel inside radiused sections	7	7	UT	2	3	2	B-D	From O.D.	LMT-UT-2
4. Heater penetrations	78	20	VT	6	7	7	B-E	From exterior (IWA-5000)	N-VT-1
5. Nozzle-to-safe end welds	6	6	UT PT	2	2	2	B-F	From O.D.	WB-UT-1 WB-PT-1
6. Pressure-retaining bolting	16	16	VT	5	5	6	B-G-2		N-VT-1
7. Vessel support skirt weld	23 ft.	2.5 ft.	UT	.5 ft.	1 ft.	1 ft	B-H	From O.D.	LMT-UT-2
8. Vessel cladding	1 Patch		VT	1	--	--	B-I-2	Remote viewing	N-VT-1

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
C. Steam Generators									
1. Primary head-to-tube sheet weld	144 ft.	8 ft.	UT	2 ft.	2 ft.	4 ft.	B-B	From O.D.	LMT-UT-2
2. Primary nozzle-to-vessel inside radii	16	16	UT	5	6	5	B-D	From O.D.	LMT-UT-2
3. Nozzle-to-safe end welds	8	8	UT PT	2	2	4	B-F	From O.D.	WB-UT-1 WB-PT-1
4. Pressure retaining bolting	128	128	VT	32	48	48	B-G-2		N-VT-1
5. Vessel cladding	8 Patches		VT	3	2	3	B-I-2	Remote viewing	N-VT-1
6. Steam generator tubing	18,696		ET	See Section 3.3.6					WB-ET-1 WB-ET-2 WB-ET-3
D. Piping									
1. Reactor coolant system									
Circumferential and socket welds								From O.D.	
31" I.D. SS	24	6	UT	2	2	2	B-J	* CH-M-2547-B	WB-UT-1
29" I.D. SS	8 } 12		UT }	1	1	1	B-J	* CH-M-2547-B	WB-UT-1
29" I.D. SS	4 }	3	UT }				B-J	See Attachment 1	SWRI 700-5

*See attachment 2

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
27.5" I.D. SS	8	4	UT	1	1	2	B-J	Attachment 1	SWRI 700-5
27.5" I.D. SS	4		UT					* CH-M-2547-B	WB-UT-1
27.5" I.D. SS	4		UT					Attachment 1	SWRI 800-17
14" SS			UT				B-J		WB-UT-1
6" SS			UT				B-J		WB-UT-1
4" SS			UT				B-J		WB-UT-1
3" SS			UT				B-J		WB-UT-1
2" SS			PT				B-J		WB-PT-1

*See attachment 2

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
Branch pipe connection welds								From O.D.	
14" SS			UT				B-J		WB-UT-1
4" SS			PT				B-J		WB-UT-1
3" SS			PT				B-J		WB-UT-1
2" SS			PT				B-J		WB-PT-1
2. Chemical and volume control system									
Circumferential and socket welds								From O.D.	
3" SS			UT				B-J		WB-UT-1
2" SS			PT				B-J		WB-PT-1
Branch pipe connection welds								From O.D.	
3" SS			PT				B-J		WB-PT-1
2" SS			PT				B-J		WB-PT-1
Socket welds								From O.D.	
2" SS			PT				B-J		WB-PT-1
1-1/2" SS			PT				B-J		WB-PT-1

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
3. Residual heat removal system									
Circumferential and socket welds								From O.D.	
14" SS			UT				B-J		WB-UT-1
8" SS			UT				B-J		WB-UT-1
6" SS			UT				B-J		WB-UT-1
2" SS			PT				B-J		WB-PT-1
Branch pipe connection welds								From O.D.	
14" SS			UT				B-J		WB-UT-1
6" SS			PT				B-J		WB-PT-1
2" SS			PT				B-J		WB-PT-1
Safety injection system									
Circumferential and socket welds								From O.D.	
10" SS			UT				B-J		WB-UT-1
6" SS			UT				B-J		WB-UT-1
3" SS			UT				B-J		WB-UT-1
2-1/2" SS			PT				B-J		WB-PT-1
2" SS			PT				B-J		WB-PT-1
1-1/2" SS			PT				B-J		WB-PT-1

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
Branch pipe connection welds								From O.D.	
10" SS			UT				B-J		WB-UT-1
6" SS			PT				B-J		WB-PT-1
2" SS			PT				B-J		WB-PT-1
1-1/2" SS			PT				B-J		WB-PT-1
4. Upper head injection system									
Circumferential and socket welds								From O.D.	
12" SS			UT				B-J		WB-UT-1
11" SS			PT				B-J		WB-PT-1
8" SS			UT				B-J		WB-UT-1
6" Inc.			PT				B-J		WB-PT-1
5" SS			UT				B-J		WB-UT-1
2" SS			PT				B-J		WB-PT-1
Branch pipe connection welds								From O.D.	
2" SS			PT				B-J		WB-PT-1
5. Pressure-retaining bolting									

TABLE A

Watts Bar Inservice Inspection Program - Class "A" Components

Component	Total Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWB-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
E. Reactor Coolant Pumps									
1. Pressure-retaining bolting	96	96	VT, UT	24	24	48	B-G-1		N-VT-1
2. Support components	12	12	VT	4	4	4	B-K-2		N-VT-1
3. Pump casing welds	76 ft.	19 ft.	UT	-	-	19 ft.	B-L-1	From O.D.	LMT-UT-2
4. Pump casing	4	1	VT or UT	-	-	1	B-L-2	From I.D. or O.D.	N-VT-1
5. Flywheel	4	4	MT or PT, UT	-	-	4		Regulatory Guide 1.14	
			UT	4	4	4			-
F. Exempted Components									
			VT	Inspection during system pressure tests			B-P	IWA-5000 IWB-5000	

TABLE B

Watts Bar Inservice Inspection Program - Class "B" Components

Component	40-Year Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWC-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
A. Steam Generators									
1. Circumferential welds	45 ft.	18 ft.	UT	6 ft.	6 ft.	6 ft.	C-A	From O.D.	LMT-UT-2
2. Nozzle-to-vessel welds	5	2	UT	1	--	1	C-B	From O.D.	LMT-UT-2
3. Pressure	40	40	VT	14	12	14	C-D		N-VT-1
Retaining bolting	4	1	UT	1	--	--	C-D		
B. RHR Heat Exchangers									
1. Circumferential welds	6 ft.	2 ft.	UT	1 ft.	--	1 ft.	C-A	From O.D.	-
2. Nozzle-to-vessel welds	2	1	UT	1	--	--	C-B	From O.D.	-
3. Integrally-welded supports	2	1	PT	1	--	--	C-C	From O.D.	WB-PT-1
4. Pressure-retaining studs	52	52	VT	17	17	18	C-D		N-VT-1
	6	2	UT	1	1	-	C-D		-
nuts	104	104	VT	34	34	36	C-D		N-VT-1
	12	4	UT	2	2	--	C-D		-

TABLE B

Watts Bar Inservice Inspection Program - Class "B" Components

Component	40-Year Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWC-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
C. Piping									
1. Residual heat removal system									
Circumferential welds								From O.D.	
12" SS			UT				C-F		WB-UT-1
8" SS			UT				C-F		WB-UT-1
2. Safety Injection System									
Circumferential welds								From O.D.	
8" SS			UT				C-F		WB-UT-1
6" SS			UT				C-F		WB-UT-1
3. Main Steam									
Circumferential welds								From O.D.	
36-1/4" CS			UT				C-G		WB-UT-1
32" CS			UT				C-G		WB-UT-1
9" CS			UT				C-G		WB-UT-1
6" CS			UT				C-G		WB-UT-1
4. Feedwater									
Circumferential welds								From O.D.	
18" CS			UT				C-G		WB-UT-1
16" CS			UT				C-G		WB-UT-1

TABLE B

Watts Bar Inservice Inspection Program - Class "B" Components

Component	40-Year Sample	Sample Tested	Method of Inspection	Quantity Inspected 40 Month	80 Month	120 Month	Examination Category From Table IWC-2600, Section XI	Reference Drawing Number and Remarks	Procedure Number
D. RHR Pumps									
1. Pressure-retaining studs	24	24	VT	8	8	8	C-D		N-VT-1
	3	1	UT	-	1	-	C-D		-
nuts	24	24	VT	8	8	8	C-D		N-VT-1
	3	1	UT	-	1	-	C-D		-
2. Support Components	3	3	VT	1	1	1	C-E-2		N-VT-1
E. Exempted Components			VT	Inspection during system pressure Tests				IWA-5000	N-VT-1

REACTOR PRESSURE VESSEL (See Appendix A, Figure A-1)

ASME SEC. XI ITEM NO.	ASME SEC. XI CATGY.	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM. SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
		CIRCUMFERENTIAL WELDS								
B1.1	B-A	W03-04 Lower Shell-to-Lower Middle Shell	Mech UT	700-6/1						02-WAT.
B1.1	B-A	W04-05 Lower Middle Shell-to-Upper Middle Shell	Mech UT	700-6/1						02-WAT.
B1.1	B-A	W05-06 Upper Middle Shell-to-Upper Shell	Mech UT	700-6/1						02-WAT.
B1.1	B-B	W02-03 Bottom Head-to-Lower Shell	Mech UT	700-6/1						01-WAT.
B1.2	B-B	W01-02 Bottom Head Cap-to-Bottom Head Spherical Ring	Mech UT	700-6/1						01-WAT.
B1.3	B-C	W06-07 Upper Shell-to-Flange	Mech UT	700-6/1						03-WAT.
		MERIDIONAL WELDS IN LOWER HEAD								
B1.2	B-B	W2A Lower Head at 0°	Mech UT	700-6/1						01-WAT.
B1.2	B-B	W2B Lower Head at 60°	Mech UT	700-6/1						01-WAT.
B1.2	B-B	W2C Lower Head at 120°	Mech UT	700-6/1						01-WAT.
B1.2	B-B	W2D Lower Head at 180°	Mech UT	700-6/1						01-WAT.
B1.2	B-B	W2E Lower Head at 240°	Mech UT	700-6/1						01-WAT.
B1.2	B-B	W2F Lower Head at 300°	Mech UT	700-6/1						01-WAT.

REACTOR PRESSURE VESSEL (Cont'd) (See Appendix A, Figure A-1)

ASME SEC. XI ITEM NO	ASME SEC. XI CATGY.	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
		NOZZLE-TO-VESSEL AND VESSEL-TO-NOZZLE WELDS								
B1.4	B-D	N-18 Outlet Nozzle at 22°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-14 Inlet Nozzle at 67°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-12 Inlet Nozzle at 113°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-17 Outlet Nozzle at 158°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-16 Outlet Nozzle at 202°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-13 Inlet Nozzle at 247°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-11 Inlet Nozzle at 293°	Mech UT	700-6/1						To be examined from the vessel wall and nozzle bore. 03-WAT and NS-CSCL-1-WAB.
B1.4	B-D	N-15 Outlet Nozzle at 338°	Mech UT	700-6/1						To be examined from the vessel wall and the nozzle bore. 03-WAT and NS-CSCL-1-WAB.
		NOZZLE INSIDE RADIUS SECTIONS								
B1.4	B-D	N-18-IRS Outlet Nozzle at 22°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-14-IRS Inlet Nozzle at 67°	Mech UT	700-5/1						IR-CSCL-2-WAB.

REACTOR PRESSURE VESSEL (Cont'd) (See Appendix A, Figure A-1)

ASME SEC XI ITEM NO.	ASME SEC. XI CATGY.	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM. SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
		NOZZLE INSIDE RADIUS SECTIONS (Cont'd)								
B1.4	B-D	N-12-IRS Inlet Nozzle at 113°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-17-IRS Outlet Nozzle at 158°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-16-IRS Outlet Nozzle at 202°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-13-IRS Inlet Nozzle at 247°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-11-IRS Inlet Nozzle at 293°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-15-IRS Outlet Nozzle at 338°	Mech UT	700-5/1						IR-CSCL-2-WAB.
		NOZZLE INTEGRAL EXTENSIONS								
B1.4	B-D	N-18-IE Outlet Nozzle at 22°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-17-IE Outlet Nozzle at 158°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-16-IE Outlet Nozzle at 202°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.4	B-D	N-15-IE Outlet Nozzle at 338°	Mech UT	700-5/1						IR-CSCL-2-WAB.
B1.5	B-E	VESSEL PENETRATIONS, INCLUDING CONTROL ROD DRIVE AND INSTRUMENTATION PENETRATIONS	VT	N/A						Examinations to be performed by others.
		VESSEL FLANGE LIGAMENT AREAS								
B1.9	B-G-1	RPV-Lig-1 thru 54	UT	600-5/25						7-1-8-CS-3-WAB.

REACTOR PRESSURE VESSEL (Cont'd) (See Appendix A, Figure A-1)

ASME SEC. XI ITEM NO.	ASME SEC. XI CATGY.	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM. SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
B1.14	B-I-1	VESSEL CLADDING	VT	N/A						Examinations to be performed by others.
B1.15	B-N-1	VESSEL INTERIOR	VT	N/A						Examinations to be performed by others.
B1.17	B-N-3	CORE-SUPPORT STRUCTURES	VT	N/A						Examinations to be performed by others.
B1.18	B-O	CONTROL ROD DRIVE HOUSINGS	UT	N/A						Examinations to be performed by others.

RPV CLOSURE HEAD (See Appendix A, Figures A-2 and A-3)

ASME SEC. XI ITEM NO.	ASME SEC. XI CATGY.	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
		CIRCUMFERENTIAL WELDS								
B1.2	B-B	W09-10 Dollar Plate Weld	UT	600-15/37 Dev. 2						05-WAT.*
B1.3	B-C	W08-09 Closure Head-to-Flange	UT	600-15/37 Dev. 2						05-WAT.*
		CLOSURE STUDS								
B1.8	B-G-1	RPV-Stud-1 thru 54	MT UT	300-2/21 600-18/24						7-1-8-CS-3-WAB.
		CLOSURE NUTS								
B1.8	B-G-1	RPV-Nut-1 thru 54	MT UT	300-2/21 600-19/24						10.5-7-8-CS-4-WAB.
		CLOSURE WASHERS								
B1.10	B-G-1	RPV-Washer-1 thru 54	VT	N/A						Examinations to be performed by others.
		CLOSURE HEAD CLADDING								
B1.13	B-I-1	Closure Head Patch No. 1 6-in. by 6-in. Patch	VT PT	900-1/42 200-1/42						
B1.13	B-I-1	Closure Head Patch No. 2 6-in. by 6-in. Patch	VT PT	900-1/42 200-1/42						
B1.13	B-I-1	Closure Head Patch No. 3 6-in. by 6-in. Patch	VT PT	900-1/42 200-1/42						
B1.13	B-I-1	Closure Head Patch No. 4 6-in. by 6-in. Patch	VT PT	900-1/42 200-1/42						
B1.13	B-I-1	Closure Head Patch No. 5 6-in. by 6-in. Patch	VT PT	900-1/42 200-1/42						
B1.13	B-I-1	Closure Head Patch No. 6 6-in. by 6-in. Patch	VT PT	900-1/42 200-1/42						

*After examining the weld in accordance with NDT Procedure 600-15/37, additional data will be obtained in accordance with Deviation 2.

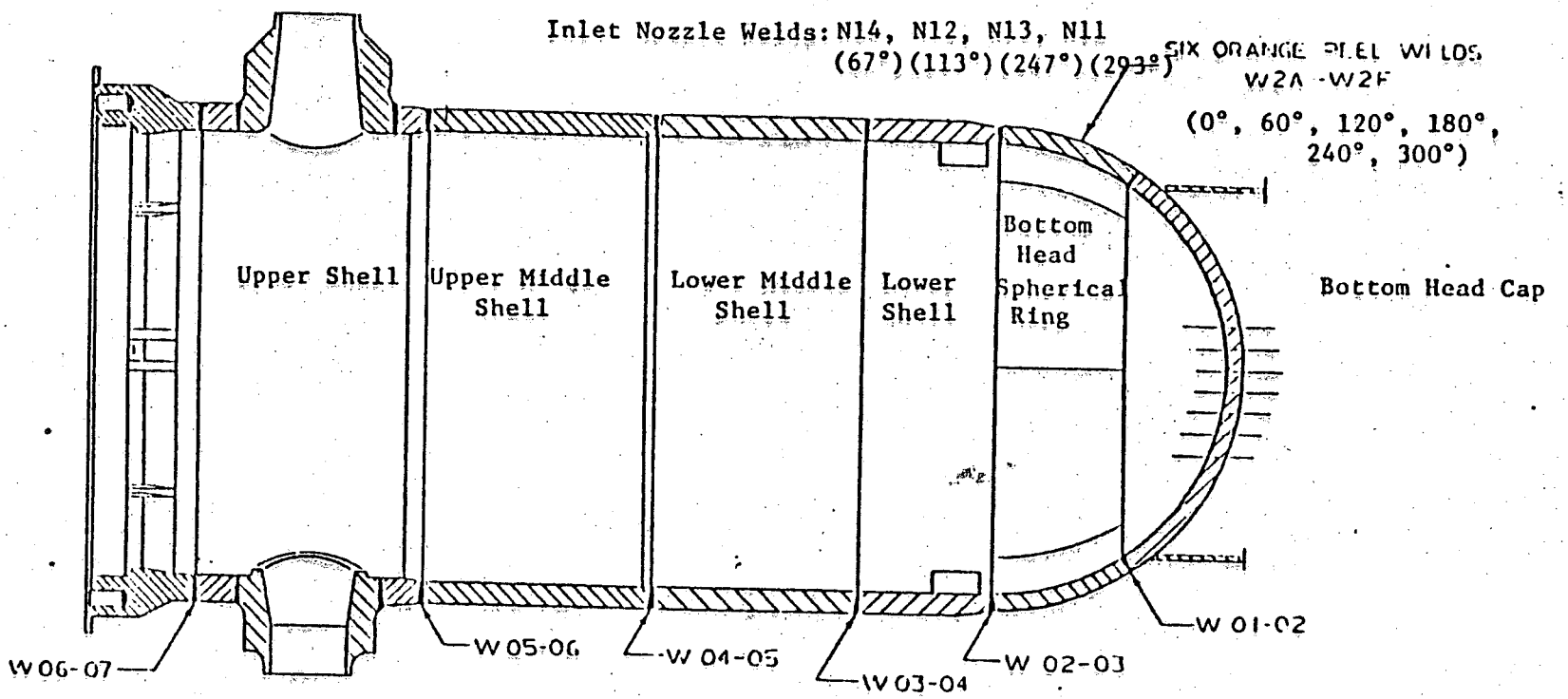
REACTOR COOLANT SYSTEM (See Appendix A, Figure A-4)

ASME SEC. XI ITEM NO.	ASME SEC. XI CATGY.	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
		NOZZLE-TO-SAFE END AND SAFE END-TO-NOZZLE WELDS								
B1.6	B-F	N15-SE Nozzle-to-Safe End	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N11-SE Safe End-to-Nozzle	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N12-SE Safe End-to-Nozzle	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N16-SE Nozzle-to-Safe End	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N17-SE Nozzle-to-Safe End	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N13-SE Safe End-to-Nozzle	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N14-SE Safe End-to-Nozzle	PT Mech UT	200-1/42 700-5/1						WB-16.
B1.6	B-F	N18-SE Nozzle-to-Safe End	PT Mech UT	200-1/42 700-5/1						WB-16.
		SAFE END-TO-PIPE AND ELBOW-TO-SAFE END WELDS								
B4.5	B-J	RCF-D1-1 Safe End-to-Pipe	Mech UT	700-5/1						WB-16.
B4.5	B-J	RCF-B1-1 Elbow-to-Safe End	Mech UT	700-5/1						WB-16.
B4.5	B-J	RCF-B2-1 Elbow-to-Safe End	Mech UT	700-5/1						WB-16.
B4.5	B-J	RCF-D2-1 Safe End-to-Pipe	Mech UT	700-5/1						WB-16.
B4.5	B-J	RCF-D4-4 Safe End-to-Pipe	Mech UT	700-5/1						WB-16.
B4.5	B-J	RCF-B3-1 Elbow-to-Safe End	Mech UT	700-5/1						WB-16.

REACTOR COOLANT SYSTEM (Cont'd) (See Appendix A, Figure A-4)

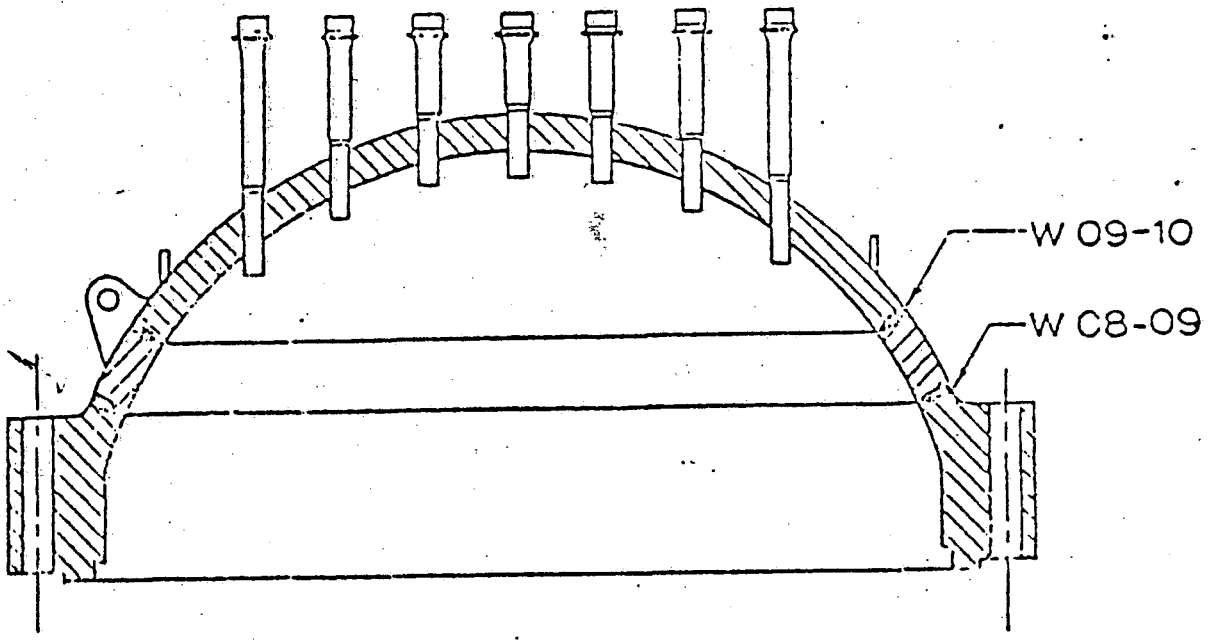
ASME SEC XI ITEM NO	ASME SEC. XI CATGY	EXAMINATION AREA IDENTIFICATION	EXAM. METHOD	SwRI PROCEDURE NO./REV.	WELD EXAM. SUM SHEET NO.	INDICATIONS				REMARKS
						NO RECORDABLE	INSIGNIFICANT	GEOMETRIC	OTHER	
		SAFE END-TO-PIPE AND ELBOW-TO-SAFE END WELDS (Cont'd)								
B4.5	B-J	RCP-B4-1 Elbow-to-Safe End	Mech UT	700-5/1						WB-16.
B4.5	B-J	RCP-DS-1 Safe End-to-Pipe	Mech UT	700-5/1						WB-16.
		PIPE-TO-ELBOW WELDS								
B4.5	B-J	RCS-1-4 Pipe-to-Elbow	UT	800-17/17 Dev. 1						WB-16.*
B4.5	B-J	RCS-2-4 Pipe-to-Elbow	UT	800-17/17 Dev. 1						WB-16.*
B4.5	B-J	RCS-3-4 Pipe-to-Elbow	UT	800-17/17 Dev. 1						WB-16.*
B4.5	B-J	RCS-4-4 Pipe-to-Elbow	UT	800-17/17 Dev. 1						WB-16.*

*After examining the weld in accordance with NDT Procedure 800-17/17, additional data will be obtained in accordance with Deviation 1.



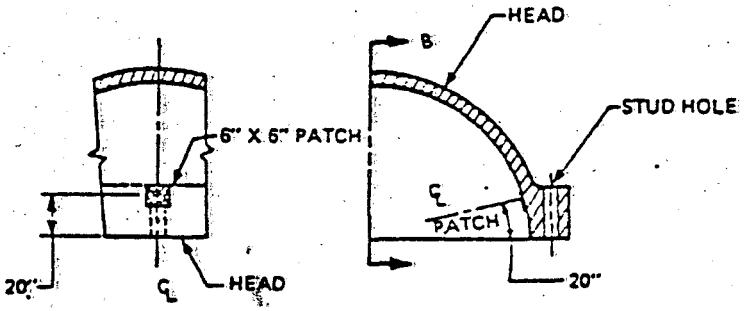
REACTOR PRESSURE VESSEL WELD IDENTIFICATION

FIGURE A-1



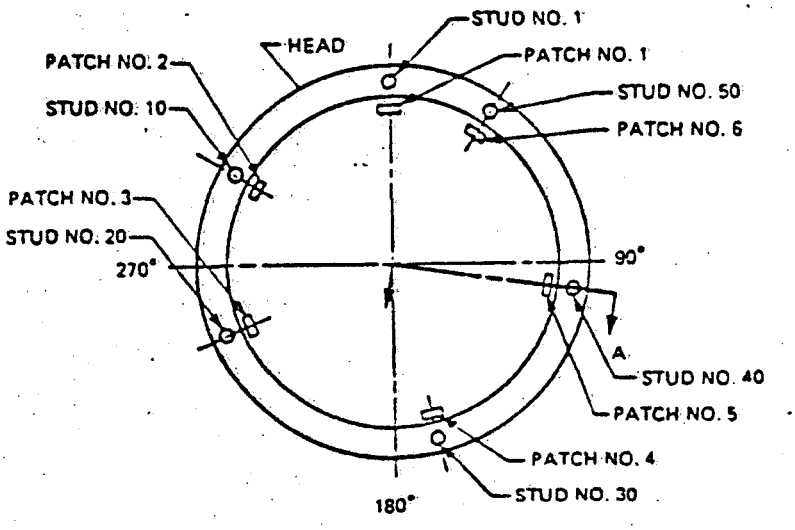
RPV CLOSURE HEAD CIRCUMFERENTIAL WELD IDENTIFICATION

FIGURE A-2



VIEW B-B SECT. A-A

CLADDING PATCHES EXAMINED	
PATCH NO.	STUD NO.
1	1
2	10
3	20
4	30
5	40
6	50



LOOKING INSIDE HEAD

FIGURE A-3

LOCATION OF CLOSURE HEAD CLADDING PATCHES

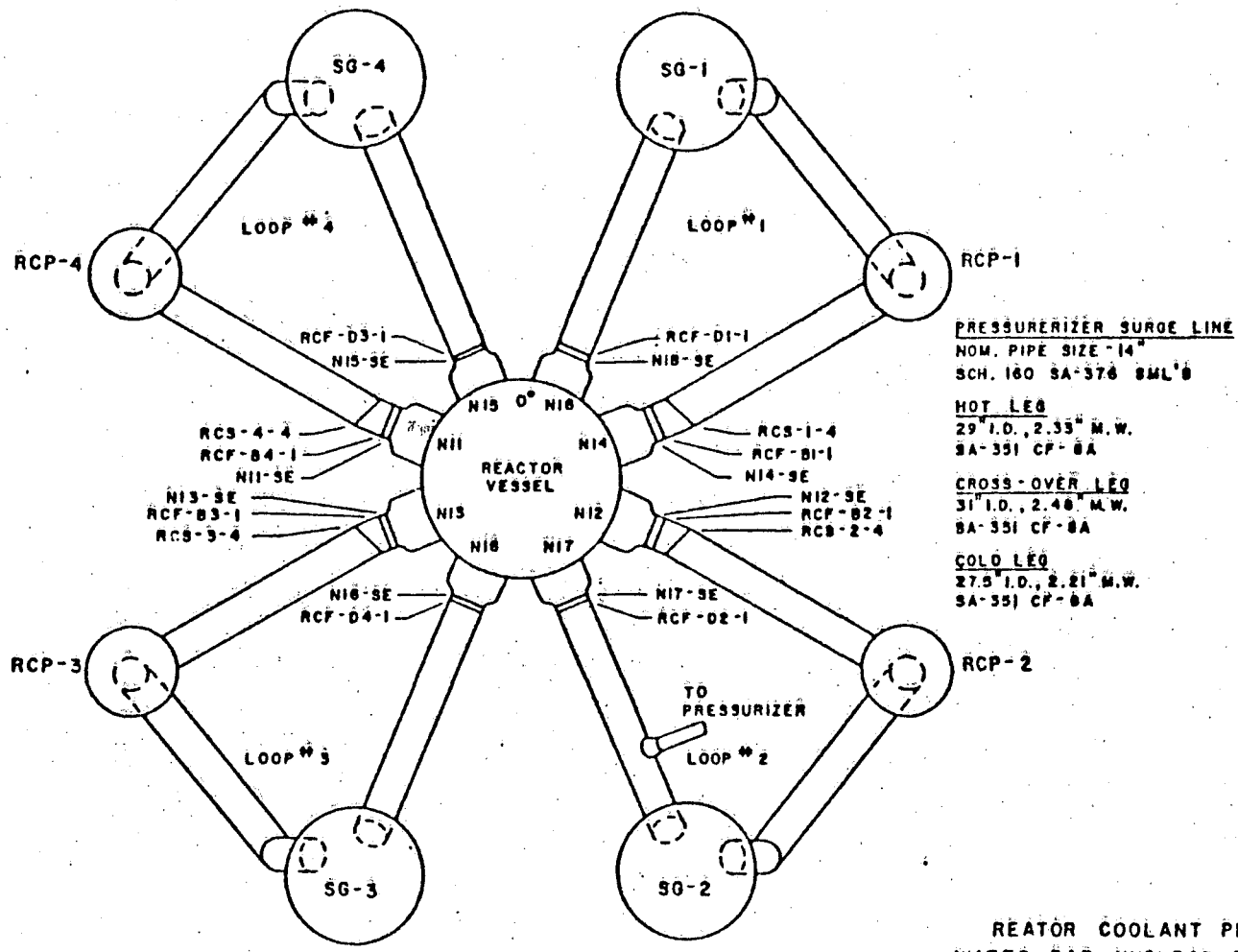
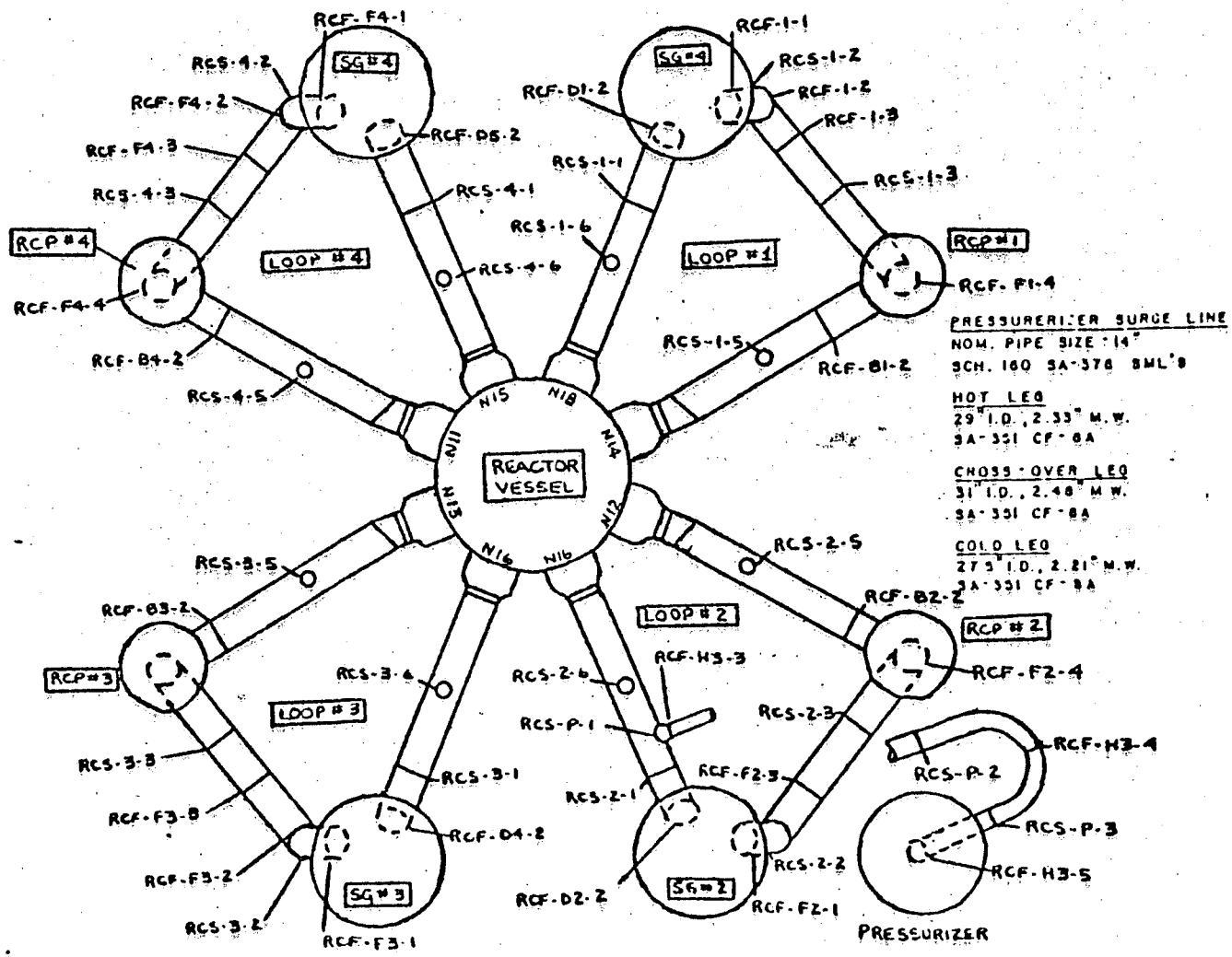


FIGURE A-4

REACTOR COOLANT PIPING WELD IDENTIFICATION



PRESSURERIZER SURGE LINE
NOM. PIPE SIZE 14"
SCH. 160 SA-376 SML'S

HOT LEG
29" I.D., 2.33" M.W.
SA-351 CF-8A

CROSS-OVER LEG
31" I.D., 2.48" M.W.
SA-351 CF-8A

COLD LEG
27.5" I.D., 2.81" M.W.
SA-351 CF-8A

Reactor Coolant Piping
Watts Bar Nuclear Plant
CH-M-2547-B