WATTS BAR NUCLEAR PLANT

TECHNICAL INSTRUCTION

TI-50A

ASME SECTION XI PRESERVICE INSPECTION PROGRAM

UNIT 1

CURRENT REVISION LEVEL: 20

Responsible Section ISI

Prepared By Jeffery C. Goulart

Revised By Jeffery C. Goulart

Submitted By _____
Supervisor

PORC Review Date 3/25/87

Approved By _____
Plant Manager

Date Approved 3/25/87

Last page of this instruction: 454

1C+1C Doc Control Unit, LP 4S 160D-C
NRC
1C NSRS, E3A 12C-K
1C Plant Master File
Plant Manager
Supt (O&E)
Supt (Maint)
ASE Duty Station
Building Services Supvv
Chem Engg Unit Supv
Chief, Nuclear Safety Staff
1C Chief, Nuclear Training Branch
Chief, Quality Audits Branch
Compliance Unit
Component Engg & Svs Group
1C DNE
1C Dwg & Vendor Manual Supv
1C Elect Engr Br-K
Engg Section Supv
Health Physics Supv
Industrial Safety Supv
Instr Maint Supv
Materials Unit Supv
1C Mech Maint Supv
1C Mech Maint Shop Office
Modifications Manager
Operating Instruction Coordinator
Operations Supv
1C Operations Training Sect Supv
Operator Training Classroom
2C Plant QA Supv
Power Stores Unit Supv
Preop Test Supv
Reactor Engg Unit Supv
1C Shift Engr's Office
Staff Reference Copy
Support Svs Supv
Tech Support Center
1C Unit 1 Control Rm
Unit 2 Control Rm
1C John Raulston, NEB, W10A63 C-K
1C Site Procedures
Watts Bar Tech Svs
Design Svs Manager
1C Inservice Inspection Group - C
2C ISI Programs Section - C
1C NDE Engineering Section - C
NDE Engineering Section - WBNP
1C NDE Inspection Section - C
2C NDE Inspection Section - WBNP
1C DCU-B-WBNP-CC - Kenny Cole
1C ANI-WB
1C DCU - 8 hr sta
1C DCU - 24 hr sta

HISTORY OF REVISION/REVIEW

REV. NO.	DATE	REVISED PAGES	REASON FOR CURRENT REVISION (INCLUDE ALL TEMPORARY CHANGE NUMBERS)
19	10/03/86	Cover sheet, Table, of Contents, 1-4, 4a, 5, 7, 10, 15, 30, 32, 34-43, 87-141, 271, 280, 282, 290, 294, 295, 304, 307, 311, 314-316, 319, 320, 326, 334, 335, 341, 401, 408, 413-417, 417a, 417b, 417c, 418, Added Page 37A.	Revised notes and added welds UHIF-D039-15A, RCW-14 and RCW-15 to request for relief ISI-4. Added check-offs for USQD and condition potentially significant and/or potentially reportable to the notification of indication form. Also made minor corrections and clarifications, and incorporated NQAM Part II, Section 5.1 revision dated 6/20/86 changes. Revised weld and component numbers and made minor changes to the piping weld maps.
20	3/25/87	2, 4, 6, 36, 37, 37a, 38, 408 Added Punchlist	NOI Section and NOI form revised to incorporate the requirements of NQAM, Part I, Section 2.16 Revision 2, Corrective Action. Added the use of Code Case N-416. Made minor corrections and clarifications.

Punchlist

(1) The requirement contained in paragraph 7 of Section 16.0 "Notification of Indication" to issue an Unreviewed Safety Question Determination (USQD) for each NOI which is dispositioned "use-as-is" cannot be physically implemented until 30 days prior to fuel load due to the punchlist to AI-2.18. NOI's which will be dispositioned "use-as-is" will be held open until Watts Bar AI-2.18 is implemented. Once AI-2.18 is implemented, USQD's will be prepared in accordance with AI-2.18 and the NOI's will be closed.

3/25/87

This program was prepared to meet the requirements of the 1974 Edition, Summer 1975 Addenda of Section XI of the ASME Boiler and Pressure Vessel Code.

Procedures for eddy current examination of heat exchanger tubing, which the Summer 1975 Addenda of ASME Section XI has no provisions for, meets the requirements of the 1974 Eddition, Summer 1976 Addenda of ASME Section XI. Steam generator tubing examination requirements are in accordance with a modification of Regulatory Guide 1.83, Revision 1.

The following categories shall be in accordance with the 1977 Edition, Summer 1978 Addenda of Section XI:

(1) Class 2 pressure retaining bolting

(2) Class 2 valve body weld examinations

(3) Component support integrally welded attachment examinations for piping, pumps, valves and pressure vessels.

(4) Component support examinations for piping, pumps and valves.

(5) Technique for ultrasonic examination of piping welds shall be in accordance with IWA-2232(b) and IWA-2232(c) for examinations performed after 9/16/81. (See Request for Relief ISI-1, ISI-4 and ISI-13)

(6) Standards for examination evaluation following ultrasonic examination of piping welds (IWA-3000) (See Request for Relief ISI-1)

(7) Interior clad surfaces of reactor vessels and other vessels examination are not required.

(8) Reactor vessel interior and core support structure examinations.

The repair and replacement program is in accordance with plant instruction AI-9.15 and Program Procedure 1402.02.

The use of code cases N-234, N-235, N-401, and N-416 have been approved for TVA use by NRC.

4.0 METHOD OF IMPLEMENTATION AND RESPONSIBILITIES

Preliminary weld maps and other pertinent component drawings and tables are included in Appendix A of this program to define areas subject to examination (in addition to sections 5.0, 6.0, 7.0, and 8.0). The preliminary piping weld maps should be established by ISI Programs Section of the Inservice Inspection Group, Mechanical Services Branch, Operations Engineering Services, Division of Nuclear Engineering from Division Nuclear Construction's latest revision weld maps.

procedures shall be obtained by the NDE Engineering Section for reference (excluding pressure test procedures), and a random sample review of records shall be done by the NDE Engineering Section.

Additionally, the Inservice Inspection Group representative will be responsible for notifying the Plant Manager of all unacceptable indications as soon as practical. Whenever an unacceptable indication is discovered, this procedure (section 16.0) and the Notification of Indication (NOI) form in Appendix C shall be utilized. In those cases where an outside contractor is furnishing preservice examination services, the contractor will normally initiate the form in Appendix C under the supervision of the Inservice Inspection Group representative. See section 16.0 of this program.

Computer monitor programs are used to identify any welds or supports that have been reworked by Division of Nuclear Construction after the preservice examination has been done. The plant shall include provisions for notifying inservice inspection group in any work instruction written to modify or rework welds or supports after the preservice examination has been done.

The NDE Inspection Section shall maintain the status of completed examinations for each weld or component support required to be examined. Individual component status is kept by transferring all the information from the scan plan to a master plan, as examinations are preformed they are recorded in the master plan for status.

As sections are completed, the NDE Inspection Section representative shall sign for completion the appropriate sections of Data Sheet 1 in Appendix B of this program. When all examinations of this program have been completed, Data Sheet 1 shall be signed for completion by the NDE Inspection Section representative and reviewed by the NDE Engineering Section Supervisor, ISI Programs Section supervisor, and approved by Inservice Inspection Group supervisor. In the event system or component repairs are made which require component reexamination, or components are reexamined for other reasons, (new NDE techniques, augment examination required by NRC, .etc.) following sign-off of Data Sheet 1, the appropriate sections of Data Sheet 2 in Appendix B shall be completed and signed by the NDE Inspection Section representative and reviewed by NDE Engineering Section supervisor, ISI Program Section supervisor, and approved by Inservice Inspection Group supervisor.

All preservice examinations shall be completed prior to initial plant startup (Operational Mode 2). Prior to initial plant startup, Data Sheet 2, in addition to Data Sheet 1, in Appendix B shall be signed by the NDE Inspection Section representative and reviewed by the NDE Engineering Section Supervisor, and the ISI Programs Supervisor, and approved by the Supervisor of the Inservice Inspection Group. After the data sheets 1 and 2 have been approved, the data package cover sheet shall be signed by the Mechanical Services Branch Chief and the Plant Manager. These data sheets shall be filed at the plant site with PSI examination data and final reports discussed in Section 15.0 of this program.

PSI program preparation is the responsibility of ISI Programs Section. Any revisions initiated by other groups shall be submitted to the ISI Programs Section for approval prior to incorporating the revisions into this program.

When examinations have been completed on the various components, the data sheet(s) in Appendix B shall be completed.

Table A in Appendix A supplies additional information such as reference drawing numbers and Section XI, Table IWB-2600, examination categories.

6.1 Reactor Vessel

6.1.1 Reactor Vessel Seam Welds

6.1.1.1 Circumferential Shell Weld - Beltline Region

There is one circumferential weld in the vessel cylinderical shell located behind the neutron shield pads. This weld will be ultrasonically examined using remote inspection devices from the vessel I.D. with the core internals removed. The vessel shell sections are machined forgings fabricated of SA-508, Class 2, manganese-molyedenum steel and are clad with weld deposited austenitic stainless steel.

There are no base metal repair welds in the beltline region where repair dept exceeds 10% nominal of vessel wall.

6.1.1.2 Circumferential Shell Welds

There are three circumferential welds in the vessel cylinderical shell located outside of the beltline region. These welds will be ultrasonically examined using remote inspection devices from the vessel I.D. with the core internals removed.

The vessel shell section material is identified in section 6.1.1.1.

6.1.1.3 Lower Head Welds

There are six meridional welds and one circumferential weld in the lower head. The welds will be ultrasonically examined using remote inspection devices from the vessel I.D. with the core internals removed.

Base metal below the lower head circumferential weld is inaccessible for examination from the vessel I.D. due to instrumentation penetrations (weld No. WO1-02). A manual ultrasonic examination of this area will be conducted from the vessel O.D. (see Request for Relief ISI-6).

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

16.0 NOTIFICATION OF INDICATION

Plant management shall be formally notified of the presence of unacceptable indications detected during the performance of nondestructive examinations (Excluding VT-2, visual examinations performed during system pressure tests). Unacceptable indications are defined by the applicable NDE procedure. Formal notification shall consist of completing and submitting to the Plant Manager the "Notification of Indication" (NOI) form in Appendix C of this program. The NOI form shall only be used to report unacceptable indications of components within the scope of Section XI and which have been scheduled for examination. Any other discrepancies should be reported in accordance with the appropriate plant procedure (e.g. MR, WR, etc.)

NOIs initiated prior to the requirement of a Condition Adverse to Quality Report (CAQR) and the implementation of Revision 20 of this instruction shall be handled as NOIs for which no Condition Adverse to Quality has been identified.

Part I of the NOI form shall be completed and signed by the NDE Level II or III examiner detecting the indication. The examiner detecting the indication can initiate a CAQR at this time or defer the decision to the individual responsible for the disposition in Part II of the NOI form. The NOI form and the CAQR are to be processed together. The ISI GROUP (NDE Inspection Section) representative shall assign a sequential number and review and sign the NOI form. If the indication is detected by an outside contractor, the contractor's field supervisor shall review and sign the NOI form. An NOI log shall be maintained on a plant/unit/cycle basis by the NDE Inspection Section for each NOI issued. This log shall contain as a minimum: NOI No., component I.D., date issued, examination report No., unsatisfactory condition, MR/WR No., and work instruction and/or DCR numbers as applicable. The original shall be sent to the plant manager and a copy to the ISI Group (ISI Programs Section).

In the case of NOIs for which no Condition Adverse to Quality (CAQ) has been identified the Nuclear Site Director's organization shall be responsible for determining which organization (construction, modifications, plant maintenance, etc.) shall be responsible for preparing a disposition in Part II of the NOI form and performing the associated corrective action. If the organization assigned responsibility for disposition is unable to determine a satisfactory disposition then the NOI form should be sent to the Mechanical Services Branch for disposition.

The organization assigned responsibility for the disposition shall evaluate the NOI for the need of a CAQR in accordance with the NQAM Part I, Section 2.16 and plant instruction AI-2.8.5, the CAQR shall be processed in accordance with AI-2.8.5. If a CAQR is needed, enter the identifying number of the CAQR in the space shown on the NOI form. The NOI form and the CAQR are to be processed together.

The individual responsible for preparation of the disposition shall sign and date Part II of the NOI form and ensure that the disposition agrees with the corrective action proposed in the CAQR if one was initiated. The cognizant supervisor of the appropriate organization shall review and approve the disposition and sign and date Part II of the NOI form. Copies of the NOI form shall be distributed to the plant manager and the ISI Group (ISI Programs Section). The original shall be returned to the ISI Group (NDE Inspection Section) representative. One copy shall be filed with the examination report.

Dispositions to correct the condition under the plant maintenance program shall be processed in accordance with NQAM, Part II, Section 2.1 and Plant Instruction AI-9.2. Dispositions other than restoring to original requirements shall be processed as modifications in accordance with NQAM, Part II, Section 3.0 and Plant Instruction AI-8.5 before licensing and AI-8.8 after licensing. Repair and replacement, activities, including coordination with the Authorized Inspection Agency (AIA), shall be performed in accordance with the requirements of NQAM, Part II, Section 2.3 and Plant Instruction AI-9.15. Dispositions to accept the condition as-is shall include in Part II of the NOI form the basis for the disposition. In addition for dispositions to accept the condition as-is, a USQD shall be prepared by the appropriate organization in accordance with established procedures and a copy submitted along with the NOI form.

If the Division of Nuclear Construction is responsible for corrective action, it shall be performed in accordance with the disposition on the NOI form and to the satisfaction of the ISI Group (NDE Inspection Section) representative. The organization responsible for corrective action shall include preservice examination requirements in the repair or replacement work instruction described in NQAM, Part II, Section 2.3 and Plant Instruction AI-9.15.

Upon completion of corrective action the ISI Group (NDE Inspection Section) representative shall verify completion of corrective action, enter the work instruction and/or Design Change Request (DCR) numbers on the NOI form, enter the examination report number if reexamination was performed, and sign and date the NOI form, Part III. The signed NOI form shall remain with the examination report for use as a quality assurance record. If reexamination was performed, a copy of the signed NOI form shall also remain with the reexamination report. Copies of the NOI form shall also be distributed to the plant manager and the ISI Group (ISI Programs Section).

17.0 CALIBRATION BLOCKS

Calibration blocks will be used for ultrasonic examinations (a calibration tube will be used for eddy current examination of steam generator tubing). The blocks will be fabricated to the general requirements of ASME Section V and ASME Section XI. The blocks shall be fabricated of the material to be examined or equivalent P numbers. Mill test reports shall be obtained and retained by the NDE Inspection Section for all calibration blocks. The blocks shall employ drilled holes and/or notches for calibration reflectors (see Request For Relief ISI-1).

The NDE Inspection Section shall ensure that as built calibration block drawings are prepared. The calibration block drawings shall be maintained in accordance with NQAM, Part III, Section 3.3.

18.0 REQUESTS FOR RELIEF

Where TVA has determined that certain code requirements or examinations are impractical, Mechanical Services Branch will submit these requests for relief to the NRC for approval via ONP, Nuclear Safety and Licensing with information to support the determinations and any proposed alternate examinations. The impractical code requirements or examinations shall be identified in this program, and references to particular requests for relief shall be included.

When impractical examination requirements are identified in the field, the NDE Inspection Section or NDE Engineering Section shall notify the ISI Programs Section such that the information may be included in this program and requests for relief may be prepared if necessary. The NDE Inspection Section or NDE Engineering Section shall submit sketches to the ISI Programs Section to identify areas which cannot be examined in accordance with code requirements.

19.0 AUGMENTED INSPECTIONS

19.1 Steam Generator Tubes

The augumented examination requirements of the steam generator tubing are included in Technical Specification 4.4.5.0 and Section 6.3.8 of this program.

20.0 REFERENCES

20.1 Source Documents

20.1.1 ASME Boiler and Pressure Vessel Code - Section XI through Summer 1975 addenda, Summer 1976 addenda, Summer 1978 addenda.

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

20.1.3 Watts Bar Nuclear Plant Final Safety Analysis Report.

20.1.4 Nuclear Quality Assurance Manual, Part I, Section 2.16.

20.1.5 Nuclear Quality Assurance Manual Part II, Sections 2.1, 2.3, 4.1, 5.1 and 6.3.

20.1.6 Nuclear Quality Assurance Manual Part III Section 1.1.

20.1.7 Code of Federal Regulation, Title 10, Part 50.55a.

20.1.8 U.S. Nuclear Regulatory Commission Regulatory Guides 1.14, 1.26 and 1.83.

20.1.9 Watts Bar Nuclear Plant Technical Specifications

20.2 Other Documents

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

20.2.2 Westinghouse Technical Manual - Pressurizer, TM 1440-C225, Contract No. 71C60-54114-1, N3M-2-6.

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

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

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

APPENDIX C

NOTIFICATION OF INDICATION

PART I - FINDINGS

NOI No. _____ Plant/Unit _____

Examination Report No. _____ Component ID _____

Drawing No. _____ CAQR No. _____

Description of Indication: (Sketch/Photograph if needed)

_____

_____

Condition Adverse to Quality Report (CAQR) initiated? ___ No, ___ deferred to Part II below, ___ Yes, CAQR No. entered above and CAQR processed in accordance with NQAM Part I, Section 2.16 and Plant Instruction AI7.3.

Signature of Examiner/Certif. Level _____
Date

Signature of Field Supervisor (Contractor) _____
Date

ISI Group Representative _____
Date

Assigned to: _____ By _____
Nuclear Site Director's Organization Representative

PART II - DISPOSITION

_____

_____

Condition Adverse to Quality Report (CAQR) required? ___ (See Part I Above), ___ No, ___ Yes, and processed in accordance with NQAM Part I, Section 2.16 and Plant Instruction AI-7.3.

Unreviewed Safety Question Determination (USQD) required ___ No, ___ Yes copy attached.

Disposition Prepared By _____
Date

Disposition Approved By _____
Date

PART III - VERIFICATION

Verification of Completed Corrective Action and/or Examination By ISI Group Representative

_____

_____

Work Instruction No. _____ DCR No. _____ Reexamination Report No. _____

Signature _____ Date _____