Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

JUN 29 2006

10 CFR 50.55a

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - INSERVICE PRESSURE TEST (ISPT) PROGRAM UPDATE AND ASSOCIATED REQUEST FOR RELIEF, ISPT-01, FOR SECOND TEN-YEAR INSERVICE INSPECTION INTERVAL

The purpose of this letter is to provide WBN's updated ISPT Program and the associated Request for Relief, ISPT-01, for WBN's Second Ten Year Inservice Inspection Interval to maintain system pressure boundary integrity. This request for relief is being submitted to NRC for review and approval in accordance with 10 CFR 50.55a(a)(3)(ii).

The Updated ISPT Program is provided in the Enclosure. One relief request is also provided in Appendix B of the Enclosure:

ISPT-01 - Class 1, 2, and 3 Bolting Visual Examinations.

This request for relief was ISPT-03 in WBN's First Ten Year Interval Program and was approved by NRC in a letter dated September 23, 1997.

The Updated ISPT Program has been developed using the American Society of Mechanical Engineers (ASME), Section XI, 2001 Edition through 2003 Addenda.

WBN's Second Ten Year Inservice Inspection Interval begins December 27, 2006. TVA requests NRC review and approval of the enclosed relief request to support the December 27, 2006 interval start date.

A047

JUN 29 2006

There are no regulatory commitments associated with this submittal. If you have any questions concerning this matter, please call me at (423) 365-1824.

Sincerely,

P. L. Pace
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Enclosure
cc (Enclosure):
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TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

PO Box 2000
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SECOND INSERVICE INTERVAL
SYSTEM PRESSURE TESTING PROGRAM

Unit 1

Commercial Service -- May 27, 1996

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1.0 INTRODUCTION

1.1 Purpose

Title 10, Part 50, Section 55a of the Code of Federal Regulations (10CFR50.55a) and the Watts Bar Technical Requirements Manual stipulate that the Inservice Inspection requirements of ASME Section XI be met throughout the service life of the nuclear power plant and updated at the beginning of each Inservice Inspection Interval. This document has been prepared for the Watts Bar Nuclear Plant Second Inservice Inspection Interval. The start and stop dates for the Second Inservice Inspection Interval are defined in and controlled by 1-TRI-0-10.

1.2 Objectives

The objectives of the Inservice System Pressure Testing [ISPT] Program are to maintain system pressure boundary integrity by satisfying Technical Requirements Manual TSR 3.4.5.2. This procedure defines the scope and requirements for the ISPT Program. Testing is accomplished through individual Technical Requirements Instructions [TRIs]. A listing of the implementing TRIs is contained in TI-100.008.

1.3 Requirements

Except as documented in approved Requests for Relief, Inservice System Pressure Testing at Watts Bar Nuclear Plant will be performed in accordance with the requirements of 2001 Edition with Addenda through 2003 of the ASME Boiler and Pressure Vessel Code, Section XI. In addition, the following ASME Code Cases will be applicable during the second inspection interval:

- ASME Code Case N-416-3, Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3 Section XI, Division 1. [Approved for use via NRC Reg. Guide 1.147]

- ASME Code Case N-522, Pressure Testing of Containment Penetration Piping [Approved for use via NRC Reg. Guide 1.147]

- ASME Code Case N-533-1, Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure-Retaining Bolted Connections, Section XI, Division 1 [Approved for use with conditions via NRC Reg. Guide 1.147]

- ASME Code Case N-616, Alternative Requirements for VT-2 Visual Examination of Classes 1, 2, and 3 Insulated Pressure Retaining Bolted Connections, Section XI, Division 1 [Approved for use with conditions via NRC Reg. Guide 1.147]

2.0 PROGRAM

2.1 Definitions

A. INSPECTION INTERVAL

The time interval during which a specific ASME Code Edition and Addenda shall be in effect. Nominally equal to 120 months, except as modified in accordance with paragraphs IWA-2430 (d) and (e).

B. INSPECTION PERIOD

The three Inspection Periods into which a given Inspection Interval is divided. Approximately 3 years, 4 years and 3 years in length (per Tables IWB-2412-1, IWC-2412-1 and IWD-2412-1), except as modified in accordance with paragraphs IWA-2430 (d) and (e).

C. DESIGN PRESSURE AND TEMPERATURE

The applicable design pressure and temperature of a specific system, piping segment, of component. Design temperature and pressure are specified on the applicable system flow diagrams.

D. NOMINAL PRESSURE AND TEMPERATURE

The pressure and temperature conditions to which a system or component is exposed when aligned for normal plant operation. For standby systems, the nominal pressure and temperature are the conditions achieved when the system or component is aligned for and placed in service for Inservice System Pressure Testing.

E. BURIED COMPONENT

For purposes of Inservice System Pressure Testing, a buried component is a component that is buried beneath the ground or encased in concrete. [See the definition of Inaccessible.]

F. INACCESSIBLE

Piping which penetrates a wall or floor, or passes through an enclosed penetration. [See IWA-5241(b).]

G. OPEN ENDED

Piping that permits free discharge of fluid to the atmosphere, either inside or outside of containment.

2.2 Scope

ASME Section XI, Tables IWB-2500-1, IWC-2500-1 and IWD-2500-1 identify those components and test frequency applicable to the Inservice System Pressure Test Program requirements. The applicable tables and examination categories in relation to code class are as follows:

ASME Code Class	TVA Piping Class	Table	Examination Category
1	A	IWB-2500-1	B-P
2	B	IWC-2500-1	C-B and C-H
3	C	IWD-2500-1	D-B

Additionally, pressure retaining components which have been repaired or replaced shall be pressure tested prior to or as part of the return to service as required by IWA-4540. Alternatively, the requirements of Code Case N-416-3 may be used to satisfy the pressure test requirement in lieu of Code required hydrostatic testing.

Table 1 provides a tentative Inservice System Pressure Test Program schedule. This schedule gives general information about the systems, boundaries, and the tests required by Inspection Periods for the Second Inservice Inspection Interval. This schedule may be amended as needed as long as compliance with all the Code requirements for system pressure testing is maintained.

2.3 Plan

A. The Inservice System Pressure Test Program will be conducted in accordance with approved written instructions and witnessed/verified by the Authorized Nuclear Inservice Inspector (ANII).

B. The Inservice System Pressure Test instructions shall be developed, reviewed, approved and conducted in accordance with the ASME Section XI Inservice Pressure Test Program and applicable WBN procedures.

C. The ASME pressure test records shall be reviewed by the Pressure Test Program Engineer and maintained in accordance with Subsections IWA-1400, IWA-5300 and IWA-6000.

3.0 REGULATORY REQUIREMENTS

10CFR50.55a(g) requires the Inservice Inspection and Inservice System Pressure Testing of Code Class 1, 2, and 3 components be performed in accordance with the NRC approved Edition and Addenda of ASME Section XI in affect on the date one year prior to the start of the Inspection Interval. For the Watts Bar Second Inservice Interval, this is the 2001 Edition with Addenda through 2003. Portions of later Editions and Addenda pursuant to paragraph 50.55a(g)(4)(iv), Requests for Relief from Code requirements pursuant to paragraph 10CFR50.55a(g)(5)(iii), alternatives pursuant to 10CFR50.55a(a)(3), and ASME Code Cases pursuant to footnote 6 to 10CFR50.55a may also be applied. ASME Section XI Subsections IWB, IWC and IWD identify those components which shall be tested. The requirements for Inservice System Pressure Tests are contained within Subsection IWA-5000.

4.0 PRESSURE TEST REQUIREMENTS

4.1 Test Description

The pressure retaining components within each system boundary shall be subject to system pressure tests, when required. While system conditions are stable and following the completion of any required hold times a visual examination, VT-2, shall be performed to detect any evidence of leakage.

A. Class 1 Systems

A System Leakage Test shall be conducted in accordance with IWB-5220. The system leakage test shall be conducted at a pressure not less than the pressure corresponding to 100% rated reactor power. The system test pressure and temperature shall be attained at a rate in accordance with the heat-up limitations specified for the system.

B. Class 2 Systems

A System Leakage Test shall be conducted in accordance with IWC-5220. The system leakage test shall be conducted at the system pressure obtained while the system, or portion of the system, is in service performing its normal operating function or at the system pressure developed during a test conducted to verify system operability (e.g., to demonstrate system safety function or satisfy Technical Specification Surveillance Requirements).

C. Class 3 Systems

A System Leakage Test shall be conducted in accordance with IWD-5220. The system leakage test shall be conducted at the system pressure obtained while the system, or portion of the system, is in service performing its normal operating function or, for standby systems, at the system pressure developed during a test conducted to verify system operability (e.g., to demonstrate system safety function or satisfy Technical Specification Surveillance Requirements).

D. A System Hydrostatic Test conducted during plant shutdown at a pressure above nominal operating pressure or system pressure for which overpressure protection is provided. When performing a system hydrostatic test a 4 hour holding time is required after attaining the test pressure and temperature conditions for insulated systems and 10 minutes for non-insulated systems or components. System hydrostatic tests shall be conducted at the test conditions of pressure and temperature specified in IWB-5000, IWC-5000, and IWD-5000.

E. In accordance with the provisions of Code Case N-522, testing in accordance with 10CFR50, Appendix J, will be used as an alternative to the rules of Table IWC-2500-1, Category C-H, for pressure testing piping that penetrates a containment vessel, when the piping and isolation valves that are part of the containment boundary are Class 2, but the balance of the piping system is outside the scope of Section XI.

4.2 Insulation Removal

A. The provisions of Code Case N-616 may be utilized to perform VT-2 visual examinations for leakage of bolted connections in systems borated for the purposes of reactivity control without removing insulation provided the following requirements are met:

1. Insulation must be removed for VT-2 examinations during the system pressure test for any 17-4 Precipitation Hardening stainless steel stud or bolt aged at a temperature below 1,100°F, or 410 stainless steel stud or bolt aged at a temperature below 1,100°F or with a hardness above RC 30.

2. For A-286 stainless studs or bolts [or similar material specifications], the preload must be verified to be below 100 ksi or the thermal insulation must be removed and the joint visually examined.

3. Prior to conducting the VT-2 examination of Class 2 and Class 3 components not required to operate during normal plant operation, a 10-minute holding time is required after attaining pressure. Prior to conducting the VT-2 examination of Class 2 and Class 3 components required to operate during normal plant operation, no holding time is required, provided the system has been in operation for at least 4 hours for insulated components or 10 minutes for uninsulated components.

B. Where insulation removal is required, the provisions of Code Case N-533-1 may be applied, provided that prior to conducting the VT-2 examination of Class 2 and Class 3 components not required to operate during normal plant operation, a 10-minute holding time is required after attaining test pressure. Prior to conducting the VT-2 examination of Class 2 and Class 3 components required to operate during normal plant operation, no holding time is required, provided the system has been in operation for at least 4 hours for insulated components or 10 minutes for non-insulated components.

4.3 Test Pressurization Boundaries

The following test pressurization and examination boundaries are applicable when performing those periodic tests identified in Tables IWB-2500-1, IWC-2500-1 and IWD-2500-1. The boundary limits, as discussed in the following, are generally defined by the location of the safety class interface valves within the system.

A. The pressure retaining boundary during the Code Class 1 System Leakage Test shall correspond to the reactor coolant boundary, with all valves in the position required for normal reactor operation startup. The visual examination boundary shall extend to and include the second closed valve at the boundary extremity.

B. During the Class 1 System Leakage Test conducted at or near the end of the inspection interval all Class 1 components shall be pressurized, in accordance with paragraph IWB-5222(b).

C. The pressure retaining boundary and the visual examination boundary during Code Class 2 or 3 System Leakage Tests includes only those portions of the system required to operate or support the safety function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required. Items outside these boundaries, and open ended discharge piping, are excluded from the examination requirements.

The ASME Section XI Code class 1, 2, & 3 boundaries are defined as:

ASME Code Class 1 is equivalent to TVA Class A
ASME Code Class 2 is equivalent to TVA Class B
ASME Code Class 3 is equivalent to TVA Class C and D

4.4 Corrective Action

The source of leakage detected during the performance of system pressure tests shall be evaluated for corrective measures as follows:

A. Buried components with leakage losses in excess of limits acceptable for continued service shall be repaired or replaced.

B. If leakage occurs at a bolted connection, corrective action shall be initiated in accordance with the requirements of Relief Request ISPT-01.

C. Repairs or replacement of components shall be performed in accordance with IWA-4000 or IWA-7000, respectively.

D. When leakage or boric acid residue is detected on components, the leakage source and/or areas of general corrosion shall be located. Components with local areas of general corrosion which reduce the wall thickness by more than 10% shall be evaluated to determine whether the component may be acceptable for continued service, or whether repair or replacement is required. This evaluation shall be consistent with the guidelines of SPP-3.1, Corrective Action Program.

4.5 Instrument Requirements For Hydrostatic Tests

Any pressure measuring instrument or sensor, analog or digital, including the normal operating system instrumentation may be used provided the following requirements are met.

A. Accuracy

The pressure measuring instrument or sensor used shall provide results accurate to within 0.5% of full scale for analog gages and 0.5% over the calibrated range for digital instruments.

B. Calibration

All pressure measuring instruments shall be calibrated against a standard deadweight tester or calibrated master gage. The gages shall be calibrated before each test or series of tests. A series of tests is a group of tests that use the same pressure measuring instruments and that are conducted within a period not exceeding 2 weeks.

C. Ranges

Analog gages shall have a graduated range of at least 1.5 times, but not more than 4 times the intended maximum test pressures. Digital pressure instruments shall be selected such that the intended maximum test pressure shall not exceed 70% of the calibrated range of the instrument.

D. Location

The pressure measuring instrument shall be connected close to the component when testing an isolated component. When testing a group of components or system the instrument shall be connected to any point in the boundary such that the imposed pressure on any component, including static head, will not exceed 106% of the specified test pressure for the system.

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Tentative Pressure Test Schedule

NOTES:

1) The design of the Component Cooling System [CCS] includes provisions to power the C-S CCS Pump from either Train A or Train B electrical power and to allow realignment of that pump to either the 1A or 2A headers. During certain accident scenarios, CCS supply to the Spent Fuel Pool [SFP] Cooling heat exchangers may be suspended. For two unit operation, under the circumstance of one unit in the recirculation phase of a LOCA, concurrent with a loss of off-site power, and a loss of the B train shutdown power, it would be necessary to make this realignment in order to restore cooling to the Spent Fuel Pit. However, with only unit one licensed and operating, the only loads on CCS Pump 2A-A are the SFP Cooling heat exchanger B-B, one waste gas compressor, and the flow path [no heat load present] through the 2A-A centrifugal charging pump gear coolers. With this low heat load, and the absence of any Unit 2 heat load at all, it is not necessary to suspend cooling to SFP heat exchanger B-B. Under the above described circumstances, cooling can be continuously maintained to the SFP via the CCS 2A-A pump and heat exchanger, the C-S SFP Cooling System pump [which can be powered from either electrical train], and the B-B SFP Cooling heat exchanger without realigning the pump. Therefore, there is no situation where these normally closed and locked valves are required to open.

2) These Code Class 3 portions of CVCS are not required to operate in support of: [1] reactor shutdown, [2] emergency core cooling, [3] containment heat removal, [4] atmosphere cleanup, [5] reactor residual heat removal, or [6] residual heat removal from the spent fuel storage pool and therefore are not required to be included in the scope of the System Pressure Testing Program.

3) Boundary includes interfacing piping out to the first normally closed valve, sampling piping through the Code boundary or the first valve maintained in the closed position, vent and drain piping through the first normally closed valve, and instrument sense lines back to the panel isolation valve.

4) Open ended portions of Code Class 2 piping systems are exempt from periodic pressure testing by note 1 of Table IWC-2500-1. Pressure testing of open ended portions of Code Class 2 piping following repair or replacement will be accomplished by verification of unimpaired flow in accordance with paragraph IWC-5222(d).

TABLE 1
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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
1	47W801-1 47W801-2 47W803-2 47W803-3	2	Main Steam System piping and components:	Leakage	Leakage	Leakage
			From Steam Gen. 1 to 1-FCV-1-4, 1-FCV-1-15, 1-FCV-1-147, 1-PCV-1-5, 1-SFV-1-522, 1-SFV-1-523, 1-SFV-1-524, 1-SFV-1-525, 1-SFV-1-526, 1-DRV-1-537, and 1-ISV-1-542;			
			From Steam Gen. 2 to 1-FCV-1-11, 1-FCV-1-148, 1-PCV-1-12, and 1-SFV-1-517, 1-SFV-1-518, 1-SFV-1-519, 1-SFV-1-520, 1-SFV-1-521, 1-DRV-1-535, and 1-ISV-1-541;			
			From Steam Gen. 3 to 1-FCV-1-22, 1-FCV-1-149, 1-PCV-1-23, and 1-SFV-1-512, 1-SFV-1-513, 1-SFV-1-514, 1-SFV-1-515, 1-SFV-1-516, 1-DRV-1-532, 1-ISV-1-540;			
			From Steam Gen. 4 to 1-FCV-1-16, 1-FCV-1-29, 1-PCV-1-30 and 1-SFV-1-527, 1-SFV-1-528, 1-SFV-1-529, 1-SFV-1-530, 1-SFV-1-531, 1-DRV-1-539, 1-ISV-1-543;			
			From 1-FCV-1-15 and 1-FCV-1-16 through 1-FCV-1-18;			
		3	From 1-FCV-1-18 to the TDAFW Pump A-S trip and throttle valve 1-FCV-1-51;			
			From the TDAFW Pump A-S trip and throttle valve 1-FCV-1-51 through the turbine to the roof exhaust, including the steam traps at the drain tank.			
		2	Steam Generator Blowdown System piping and components:			
			From Steam Gen. 1 to 1-FCV-1-7			
			From Steam Gen. 2 to 1-FCV-1-14			
			From Steam Gen. 3 to 1-FCV-1-25			
			From Steam Gen. 4 to 1-FCV-1-32			
3	47W803-2	2	Auxiliary Feed Water System piping and components:			
			From 1-CKV-3-830 to 1-CKV-3-871 and 1-CKV-3-921.	Leakage	Leakage	Leakage
			From 1-CKV-3-831 to 1-CKV-3-872 and 1-CKV-3-922.	Leakage	Leakage	Leakage
		3	From 1-CKV-3-805 to 1-FCV-3-116B and through MDAFW Pump 1A-A to 1-LCV-3-156, 1-LCV-3-156A, 1-LCV-3-164, and 1-LCV-3-164A	Leakage	Leakage	Leakage

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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
3	47W803-2	3	Auxiliary Feed Water system piping and components:	Leakage	Leakage	Leakage
			From 1-LCV-3-156, 1-LCV-3-156A, 1-LCV-3-164, and 1-LCV-3-164A to 1-CKV-3-831 and 1-CKV-3-832			
			From 1-CKV-3-806 to 1-FCV-3-126B and through MDAFW Pump 1B-B to 1-LCV-3-148, 1-LCV-3-148A, 1-LCV-3-171, and 1-LCV-3-171A.			
			From 1-LCV-3-148, 1-LCV-3-148A, 1-LCV-3-171, and 1-LCV-3-171A to 1-CKV-3-830 and 1-CKV-3-833.			
			From 1-CKV-3-810 to 1-FCV-3-136B/1-FCV-3-179B, and through TDAFW Pump A-S to 1-LCV-3-172, 1-LCV-3-173, 1-LCV-3-174, and 1-LCV-3-175.			
			From 1-LCV-3-172, 1-LCV-3-173, 1-LCV-3-174, and 1-LCV-3-175 to 1-CKV-3-871, 1-CKV-3-872, 1-CKV-3-873, and 1-CKV-3-874.			
			From 1-FCV-3-116A to 1-FCV-3-116B			
			From 1-FCV-3-136A to 1-FCV-3-136B			
			From 1-FCV-3-126A to 1-FCV-3-126B.			
			From 1-FCV-3-179A to 1-FCV-3-179B.			
3	47W803-1 47W862-2	2	Main Feed Water system piping and components:	Leakage	Leakage	Leakage
			From Steam Gen. 1 through penetration X-12A to the flued head at the valve vault wall and 1-ISV-41-588.			
			From Steam Gen. 2 through penetration X-12B to the flued head at the valve vault wall and 1-ISV-41-591.			
			From Steam Gen. 3 through penetration X-12C to the flued head at the valve vault wall and 1-ISV-41-594.			
			From Steam Gen. 4 through penetration X-12D to the flued head at the valve vault wall and 1-ISV-41-597			
			From SG 1 through penetration X-12A to the valve vault wall, to 1-CKV-3-832, and to 1-CKV-3-873.			

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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
3	47W803-1 47W862-2	2	Main Feed Water system piping and components: (continued) From SG 2 through penetration X-12B to the valve vault wall, and to 1-CKV-3-925. From SG 3 through penetration X-12C to the valve vault wall, and to 1-CKV-3-921. From SG 4 through penetration X-12D to the valve vault wall, to 1-CKV-3-833, and 1-CKV-3-874.	Leakage	Leakage	Leakage
26	47W850-9	2	Fire Protection system piping and components: From 1-FCV-26-240 to 1-CKV-26-1260 From 1-FCV-26-243 to 1-CKV-26-1296	N-522		
31	47W865-5	2	Chilled Water system piping and components: From 1-FCV-31-305 to 1-FCV-31-306 and 1-CKV-31-3421; From 1-FCV-31-308 to 1-FCV-31-309 and 1-CKV-31-3407; From 1-FCV-31-326 to 1-FCV-31-327 and 1-CKV-31-3392; From 1-FCV-31-329 to 1-FCV-31-330 and 1-CKV-31-3378	N-522		
	47W865-3	3	Main Control Room Chilled Water subsystem train A; Main Control Room Chilled Water subsystem train B;	Leakage	Leakage	Leakage
	47W865-7		Electric Board Room Chilled Water subsystem Train A; Electric Board Room Chilled Water subsystem Train B;			
	47W865-8		Shutdown Board Room Chilled Water subsystem Train A; Shutdown Board Room Chilled Water subsystem Train B			
40	47W851-1	3	Station Drainage system piping from the El. 693' floor drains through the crane wall.	Unimp. Flow	Unimp. Flow	Unimp. Flow
43	47W625-15	2	Post accident sampling piping and components: From 1-FSV-43-341 through penetration X-28 to 1-CKV-43-834; From 1-FSV-43-342 through penetration X-86C to 1-CKV-43-831	N-522		
59	47W856-1	2	Demineralized Water system piping and components from 1-ISV-59-522 through penetration X-77 to 1-ISV-59-698.	N-522		

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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
61	47W814-2	2	Ice Condenser system piping and components:	N-522		
			From 1-FCV-61-191 through penetration X-47A to 1-FCV-61-192 and 1-CKV-61-533;			
			From 1-FCV-61-193 through penetration X-47B to 1-FCV-61-194 and 1-CKV-61-680;			
			From 1-FCV-61-96 through penetration X-115 to 1-FCV-61-97 and 1-CKV-61-692;			
			From 1-FCV-61-110 through penetration X-114 to 1-FCV-61-122 and 1-CKV-61-745;			
		3	Ice condenser floor drain piping from the floor to the check valve flapper	Unimp. Flow	Unimp. Flow	Unimp. Flow
62	47W809-1 47W809-2 47W809-5 47W809-9 47W810-1 47W811-1 47W813-1	2	Chemical and Volume Control system piping and components	Leakage	Leakage	Leakage
			From 1-FCV-62-70 through the regenerative heat exchanger to penetration X-15.			
			From penetration X-44 to the number 1 seal leak off orifice and the number 2 seal leak off flange for all four RCPs, and through the excess letdown heat exchanger to RCS Loop 3;			
			From penetration X-16 through the regenerative heat exchanger to 1-CKV-62-659, 1-CKV-63-660, and 1-FCV-62-84;			
			From penetration X-43A to 1-CKV-62-562;			
			From penetration X-43B to 1-CKV-62-565;			
			From penetration X-43C to 1-CKV-62-563;			
			From penetration X-43D to 1-CKV-62-564;			
			From penetration X-44 through the seal water HX to the connection to the charging pump suction header;			
			From the charging pumps suction flanges to the 24" SIS suction line coming from the RWST, the wall of the VCT room, 1-FCV-63-8, 1-FCV-63-6, and 1-FCV-63-7;			

TABLE 1
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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
62	47W809-2 47W809-5 47W809-9 47W810-1 47W811-1	2	Chemical and Volume Control system piping and components (continued)	Leakage	Leakage	Leakage
			From the charging pump suction flanges through the charging pumps [including the miniflow line] to penetrations X-43A, X-43B, X-43C, X-43D, X-16, and high head safety injection valves 1-FCV-63-25 and 1-FCV-63-26.			
			From penetration X-15 through the letdown heat exchanger, 1-TCV-62-79, the reactor coolant filter, and 1-LCV-62-118 to the VCT room;			
			Piping and components located in the VCT room.			
		3	Boric Acid Tanks A and C through Boric Acid Transfer Pumps 1A-A and 1B-B and the Boric Acid Blender to 1-FCV-62-138, 1-ISV-62-929, 1-CKV-62-935, 1-ISV-62-936, and 1-FCV-62-144.			
			From 1-TCV-62-79 through Mixed Bed Demineralizers A and B and Cation Bed Demineralizer to 1-ISV-62-1075 (in return line to Reactor Coolant Filter);	Not Required [Note 2]		
			From 1-LCV-62-118 (and various other inputs) through Holdup Tanks A and B, Holdup tank Recirculation Pump and Gas Stripper Pumps A, B and C;			
			Flood mode boration piping and components.			
63	47W811-1	2	Safety Injection system piping and components:	Leakage	Leakage	Leakage
			From the RWST to the 8" CCP suction line, 1-FCV-63-6, 1-FCV-63-7, 1-FCV-63-48, 1-FCV-63-153, 1-CKV-63-502, 1-FCV-72-21, 1-FCV-72-22, 1-ISV-72-500, 1-ISV-72-502, and 1-HCV-74-34; through SIS Pump 1A-A to penetrations X-30, X-32, and X-33; and back to the RWST via the SIS Pump 1A-A minimum flow recirculation line;			
			From 1-FCV-63-25 and 1-FCV-63-26 through penetration X-22 to 1-CKV-63-581 and 1-FCV-63-174;			

TABLE 1
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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
63	47W809-1 47W811-1 47W812-1 47W830-1	2	Safety Injection system piping and components (continued): From penetration X-21 to RCS 1-CKV-63-547, 1-CKV-63-549, and 1-FCV-63-187; From 1-FCV-63-48 and 1-FCV-63-11 through Safety Injection Pump B-B to 1-FCV-63-175 and 1-FCV-63-153, and through 1-FCV-63-157 to penetration X-21; From penetration X-33 to 1-CKV-63-551, 1-CKV-63-553, 1-CKV-63-555 and 1-CKV-63-557 and to 1-FCV-63-121; From penetration X-32 to 1-CKV-63-543, 1-CKV-63-545, and 1-FCV-63-21. From penetration X-20B to 1-CKV-63-632, 1-CKV-63-634, and 1-FCV-63-111; From penetration X-20A to 1-CKV-63-633, 1-CKV-63-635, and 1-FCV-63-112; From 1-FCV-63-172 through penetration X-17 to 1-CKV-63-640, 1-CKV-63-643, and 1-FCV-63-158; Penetration X-93 [Accumulator sample]; 1-CKV-68-559 through penetration X-24 to 1-RFV-62-505, 1-RFV-62-1220, 1-RFV-62-1221, 1-RFV-62-1222, 1-RFV-63-28, 1-RFV-63-511, 1-RFV-63-534, 1-RFV-63-535, 1-RFV-63-536, 1-RFV-63-626, 1-RFV-63-627, 1-RFV-63-637, 1-RFV-63-835, 1-RFV-72-508, and 1-RFV-72-509; Cold leg accumulator 1 to 1-FCV-63-118 and the first normally closed valve in all attached lines. Cold leg accumulator 2 to 1-FCV-63-98 and the first normally closed valve in all attached lines; Cold leg accumulator 3 to 1-FCV-63-80 and the first normally closed valve in all attached lines; Cold leg accumulator 4 to 1-FCV-63-67 and the first normally closed valve in all attached lines.	Leakage	Leakage	Leakage

TABLE 1
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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
67	47W845-1 47W845-2 47W845-3 47W845-4 47W845-5 47W845-6	3	ERCW system piping and components: From ERCW Pumps A-A, B-A, C-A, and D-A through the train A ERCW strainer to the point where the train A supply piping enters the IPS wall; From ERCW Pumps E-B, F-B, G-B, and H-B through the train B ERCW strainer to the point where the train B supply piping enters the IPS wall; From ERCW Screen Wash Pumps 1A-A, and 1B-B through the associated traveling screens. From ERCW Screen Wash Pumps 2B-B and 2A-A through the associated traveling screens; Train A ERCW piping and components from the point where the supply headers enter the pipe tunnel from the IPS, through the contained heat exchangers and coolers (except Containment Spray) to CIVs 1-FCV-67-83, 1-FCV-67-91, 1-FCV-67-130, and 1-FCV-67-133, and Train A discharge header from 1-FCV-67-88, 1-FCV-67-96, 1-FCV-67-131, and 1-FCV-67-134 to the point where the discharge piping enters the auxiliary building wall; Train B ERCW piping and components from the point where the supply headers enter the pipe tunnels from the IPS, through the contained heat exchangers and coolers (except Containment Spray) to CIVs 1-FCV-67-99, 1-FCV-67-107, 1-FCV-67-138, and 1-FCV-67-141 and Train B discharge header (from CIVs 1-FCV-67-104, 1-FCV-67-112, 1-FCV-67-139, and 1-FCV-67-142 to the point where the discharge piping enters the auxiliary building wall; From the point where the ERCW piping enters DG room 1A through the diesel generator cooling water heat exchangers to the point where the piping becomes buried.	Leakage	Leakage	Leakage

TABLE 1
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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
67	47W845-1 47W845-2 47W845-3 47W845-4 47W845-5 47W845-6	3	ERCW system piping and components (continued):	Leakage	Leakage	Leakage
			From the point where the ERCW piping enters DG room 1B through the diesel generator cooling water heat exchangers to the point where the piping becomes buried;			
			From the point where the ERCW piping enters DG room 2A through the diesel generator cooling water heat exchangers to the point where the piping becomes buried;			
			From the point where the ERCW piping enters DG room 2B through the diesel generator cooling water heat exchangers to the point where the piping becomes buried;			
			From 1-FCV-67-125 through Containment Spray Heat Exchanger 1A-A to 1-FCV-67-126;			
			From 1-FCV-67-123 through Containment Spray Heat Exchanger 1B-B to 1-FCV-67-124			
		2	From 1-FCV-67-83 through penetration X-58A to 1-FCV-67-89 and 1-CKV-67-1054A;	N-522		
			From 1-FCV-67-88 through penetration X-59A to 1-FCV-67-87 and 1-CKV-67-575A;			
			From 1-FCV-67-91 through penetration X-62A to 1-FCV-67-97 and 1-CKV-67-1054C;			
			From 1-FCV-67-96 through penetration X-63A to 1-FCV-67-95 and 1-CKV-67-575C;			
			From 1-FCV-67-99 through penetration X-60A to 1-FCV-67-106 and 1-CKV-67-1054B			
			From 1-FCV-67-104 through penetration X-61A to 1-FCV-67-103 and 1-CKV-67-575B;			
			From 1-FCV-67-107 through penetration X-56A to 1-FCV-67-113 and 1-CKV-67-1054D;			
			From 1-FCV-67-112 through penetration X-57A to 1-FCV-67-111 and 1-CKV-67-575D:			

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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
67	47W845-1 47W845-2 47W845-3 47W845-4 47W845-5 47W845-6	2	ERCW system piping and components (continued):	N-522		
			From 1-FCV-67-130 through penetration X-69 to 1-CKV-67-580A;			
			From 1-FCV-67-131 through penetration X-73 to 1-FCV-67-295 and 1-CKV-67-585A'			
			From 1-FCV-67-133 through penetration X-75 to 1-CKV-67-580C;			
			From 1-FCV-67-134 through penetration X-71 to 1-FCV-67-296 and 1-CKV-67-585C;			
			From 1-FCV-67-138 through penetration X-74 to 1-CKV-67-580B;			
			From 1-FCV-67-139 through penetration X-70 to 1-FCV-67-297 and 1-CKV-67-585B;			
			From 1-FCV-67-141 through penetration X-68 to 1-CKV-67-580D;			
		3	From 1-CKV-67-580A through upper compartment cooler 1A to 1-FCV-67-295;	Leakage	Leakage	Leakage
			From 1-CKV-67-580B through upper compartment cooler 1B to 1-FCV-67-297;			
			From 1-CKV-67-580C through upper compartment cooler 1C to 1-FCV-67-296;			
			From 1-CKV-67-580D through upper compartment cooler 1D to 1-FCV-67-298;			
			From 1-FCV-67-89 through lower compartment cooler 1A-A, RCP motor cooler 1, and CRDM cooler 1A-A to 1-FCV-67-87;			
			From 1-FCV-67-97 through lower compartment cooler 1C-A, RCP motor cooler 3, and CRDM cooler 1C-A to 1-FCV-67-95;			
			From 1-FCV-67-105 through lower compartment cooler 1B-B, RCP motor cooler 2, and CRDM cooler 1B-B to 1-FCV-67-103;			

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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
67	47W845-1 47W845-2 47W845-3	3	ERCW system piping and components (continued): From 1-FCV-67-113 through lower compartment cooler 1D-B, RCP motor cooler 4, and CRDM cooler 1D-B to 1-FCV-67-111.	Leakage	Leakage	Leakage
			Buried portions of the ERCW Supply piping	Flow loss	Flow loss	Flow loss
			Buried portions of the ERCW Discharge piping	Unimp. Flow	Unimp. Flow	Unimp. Flow
68	47W809-1 47W810-1	1	Reactor Coolant system piping and components: All Class 1 piping and components [including piping and components associated with interfacing systems].	Leakage (each RFO)	Leakage (each RFO)	Leakage (each RFO, See also Step 4.3.B)
	47W811-1 47W813-1	2	System 68 Class 2 piping and components, including sampling and instrument connections.	Leakage	Leakage	Leakage
70	47W859-1 47W859-2 47W859-3 47W859-4	3	Component Cooling system piping and components: From CCS Pumps 1A-A and 1B-B through Train 1A supply header, associated heat exchangers and coolers located outside containment, Surge Tank, Thermal Barrier Booster Pumps and Train 1A return header to CCS pumps;	Leakage	Leakage	Leakage
			From CCS Pump C-S and 2B-B through Train B supply header, associated heat exchangers, coolers, Surge Tank and Train B return header to CCS pumps;			
			From CCS Pump 2A-A through Train 2A supply header, associated heat exchangers that are NOT isolated or interfaced out, surge tank, and Train 2A-A return header to CCS pumps.			
			Piping between normally closed valve pairs on the CCS pump discharge header and CCS heat exchanger discharge header.	Not Required [Note 1]		
		2	From 1-FCV-70-143 through penetration X-53, the Excess Letdown Heat Exchanger, and penetration X-35 to 1-FCV-70-85.	Leakage	Leakage	Leakage

TABLE 1
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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
70	47W859-1 47W859-2 47W859-3 47W859-4	2	Component Cooling system piping and components: (continued)	Leakage	Leakage	Leakage
			From 1-FCV-70-134 through penetration X-50B to 1-CKV-70-679;			
			From 1-FCV-70-140 through penetration X-52 to 1-FCV-70-100 and 1-CKV-70-790;			
			From 1-FCV-70-90 through penetration X-50A to 1-FCV-70-97 and 1-CKV-70-687;			
			From 1-FCV-70-85 through penetration X-29 to 1-FCV-70-89 and 1-CKV-70-698.			
72	47W812-1	2	Containment Spray system piping and components:	Leakage	Leakage	Leakage
			From 1-FCV-72-22 and 1-FCV-72-44 through CS Pump A-A and CS Heat Exchanger A-A to 1-FCV-72-39;			
			From 1-FCV-72-45 and 1-FCV-72-21 through CS Pump B-B and CS Heat Exchanger B-B to 1-FCV-72-2;			
			Containment Spray ring headers from 1-FCV-72-39 and 1-FCV-72-2 to spray nozzles:	Not Required [Note 4]		
			RHR Spray ring headers from 1-FCV-72-41 and 1-FCV-72-40 to the spray nozzles.			
74	47W810-1 47W811-1 47W812-1	2	Residual Heat Removal system piping and components:	Not Required [Note 4]		
			From the containment sump, including piping and components, to the first isolation valve FCV-63-72 and FCV-63-73.			
			From 1-FCV-63-72 to 1-CKV-63-502, 1-FCV-74-2, 1-FCV-74-8, and 1-FCV-74-21, through RHR Pump 1A-A to 1-FCV-63-8, 1-FCV-62-83, 1-FCV-63-172, 1-HCV-74-34, 1-HCV-74-37, 1-FCV-74-35, 1-SPV-74-531, 1-FCV-72-40, and penetration X-20B; and the 1A-A pump minimum flow recirculation line;	Leakage	Leakage	Leakage

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SYSTEM	DRAWING	ASME CLASS	BOUNDARY [Note 3]	TYPE OF PRESSURE TEST FIRST PERIOD	SECOND PERIOD	THIRD PERIOD
74	47W810-1 47W811-1 47W812-1	2	Residual Heat Removal system piping and components: (continued) From 1-FCV-74-21 to 1-FCV-63-73; through RHR Pump 1B-B to 1-FCV-63-11, 1-FCV-72-41, 1-FCV-74-35, 1-HCV-74-37, 1-SPV-74-531, and penetration X-20A; and the 1B-B pump minimum flow recirculation line.	Leakage	Leakage	Leakage
77	47W809-7 47W830-1 47W851-1	2	Waste Disposal system piping and components: From 1-FCV-77-9 to 1-FCV-77-10 and 1-CKV-84-530; From 1-FCV-77-127 to 1-FCV-77-128.	N-522		
78	47W855-1	3	Spent Fuel Pool Cooling system piping and components: From Train A suction inlet in the Spent Fuel Pool and 0-ISV-78-581 through Spent Fuel Pool Circulation Pump A-A, and Spent Fuel Pool Heat Exchanger A-A to 0-ISV-78-588 and the common return header; From Train B suction strainer in the Spent Fuel Pool and 0-ISV-78-582 through Spent Fuel Pool Circulation Pump B-B, Spent Fuel Pool Heat Exchanger B-B and the common return header to the Spent Fuel Pool to 0-ISV-78-587 and the Spent Fuel Pool; From 0-ISV-78-581 and 0-ISV-78-582 through Spent Fuel Pool Circulation Pump C-S to 0-ISV-78-587 and 0-ISV-78-588.	Leakage	Leakage	Leakage
		2	From 1-ISV-78-557 through penetration X-83 to 1-ISV-78-558; From 1-ISV-78-560 through penetration X-82 to 1-ISV-78-561.	N-522		
81	47W819-1	2	Primary Water system piping and components from 1-FCV-81-12 through penetration X-42 to 1-CKV-81-502.	N-522		

Appendix A
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Requests For Relief

Pursuant to 10CFR50.55a relief from the requirements of Section XI of the ASME Boiler and Pressure Vessel Code may be granted by the regulatory authority. TVA will request relief from the requirements of ASME Section XI for the following:

A. To propose alternatives to the code requirements which TVA has determined results in unusual difficulty or hardship without a compensating increase in the level of quality or safety, in accordance with paragraph 10CFR50.55a(a)(3)(ii),

B. When TVA has determined that a requirement of the Code is impractical for Watts Bar Nuclear Plant Unit 1, in accordance with paragraph 10CFR50.55a(g)(5)(iv).

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Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1
Second 10-Year Interval
Request for Relief Number ISPT - 01

I. Systems/Components For Which Relief Is Requested

All bolting associated with Class 1, 2, and 3 bolted connections which receive a visual examination (VT-2) during the performance of system pressure testing.

II. Code Requirement

IWA-5250(a)(2), "If leakage occurs at a bolted connection in a system borated for the purpose of controlling reactivity, one of the bolts shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100. The one selected shall be the one closest to the source of leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100." The ASME Section XI Code of Record for the Second Inservice Interval is 2001 Edition with Addenda through 2003.

III. Code Requirement From Which Relief Is Requested

Relief is being requested from removing and performing VT-3 visual examinations of bolting where the bolting and other materials involved in the leaking bolted connection are corrosion resistant.

IV. Basis for Relief

ASME Section XI inservice pressure tests are typically performed with the system inservice. In particular, the Code Class 1 leakage tests and several system leakage tests for Code Class 2 systems that interface with the reactor coolant system are performed as the unit is returning to service following each refueling outage. The requirement to immediately remove bolting from a mechanical connection when evidence of leakage is detected can create a significant hardship on the plant which is not commensurate with the increase in the level of quality and safety that is provided. For systems that are aligned to normal plant operating configuration during testing, compliance with the requirements of IWA-5250(a)(2) may require the system to be taken out of service and depressurized to permit removal of one of the bolts prior to any type of engineering analysis of the connection. For some systems, this would also mean removing the unit from operation. Operating experience has indicated that it is not always possible to remove a single bolt from a joint. In the case of bolting being removed from a valve bonnet joint or a pump casing joint, it is not always possible to remove the bolt without incurring damage [galled threads] to the component, thus necessitating an additional repair prior to return to service. Removal and inspection of a fastener is not always necessary to evaluate the structural integrity of the bolted connection.

The structural integrity of the bolted connection is dependent upon several factors, including the amount of leakage, the duration of leakage from inception to correction, the corrosiveness of the fluid, the corrosion resistance properties of the bolting and flange materials involved, the number of bolts and the number of bolts exposed to the leak, and a visual evaluation of the assembled

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IV. Basis for Relief (continued)

connection for corrosion and material loss. An engineering evaluation of the leak and the affected mechanical connection can determine whether sufficient strength exists in the connection to preserve its structural integrity until the next system outage without a reduction in component safety margin or whether removal of bolting for visual examination in compliance with paragraph IWA-5250(a)(2) must be performed at the present time.

V. Alternative Examinations

When evidence of leakage is discovered at a bolted connection during a Section XI inservice pressure test, the connection will be evaluated for corrosion resistance and structural integrity with consideration of the following factors, at a minimum:

1. Size of leak (including impact on the affected system's functionality)
2. Duration of leak
3. The cause of the leak
4. Bolting and flange material
5. Visual evidence of corrosion with the connection assembled
6. Corrosive properties of the fluid in relation to the bolting and flange material
7. Experience with similar bolting material in similar environments
8. Location of the leak, including degradation of other components in the vicinity of the leakage
9. History of leakage at this location

When the evaluation of the above variables establishes that the leaking bolted connection is not susceptible to degradation from corrosion by the leaking fluid, no further action is necessary. Reasonable attempts to stop the leakage shall be taken. If the evaluation of the above variables cannot establish that the leaking bolted connection is not susceptible to degradation from corrosion by the leaking fluid, the bolt most affected by the leakage will be removed and examined. The bolt will receive a visual VT-1 examination, and be evaluated in accordance with IWB-3140, 'Inservice Visual Examinations.' When the removed bolting shows evidence of rejectable degradation, all remaining bolting material in the joint shall be removed and receive a visual VT-1 examination and evaluation in accordance with IWB-3140.

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VI. Justification for the Granting of Relief

Based upon the above discussion, the alternative test provides an acceptable level of quality and safety. Authorization to implement the proposed alternative is requested in accordance with 10CFR50.55a(a)(3)(ii).

This relief request was approved for the first ten year interval as ISPT-03.

VII. Implementation Schedule

Relief is requested for the Second Inservice Interval beginning December 27, 2006 through December 26, 2016 and is described in Section 1.0 of the Program Description.