

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

830 Power Building

NOV 8 1978

Director of Nuclear Reactor Regulation  
Attention: Mr. Thomas A. Ippolito, Chief  
Branch No. 3  
Division of Operating Reactors  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Ippolito:

In the Matter of the ) Docket No. 50-296  
Tennessee Valley Authority )

Enclosed is the hydrostatic pressure testing program for Browns Ferry Nuclear Plant unit 3 developed in accordance with ASME Section XI and 10 CFR Part 50.55a(g). This program addresses concerns raised in letters from George Lear to N. B. Hughes dated May 31, 1978, and from you to N. B. Hughes dated August 8, 1978, which resulted in meetings between the NRC and TVA on August 15 and 16, 1978, in Bethesda, Maryland. Included in the enclosure is a tentative schedule for hydrostatic testing at Browns Ferry unit 3.

Very truly yours,

*J. E. Gilleland*  
J. E. Gilleland  
Assistant Manager of Power

Enclosure

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ENCLOSURE

- Attachment 1 - Systems to be tested, code class, referenced drawings, and required testing.
- Attachment 2 - Requests for Relief from the hydrostatic testing requirements of subsections IWA, IWB, IWC, and IWD of section XI.
- Attachment 3 - Listing of tests tentatively scheduled to be performed at the end of the unit 3 refueling outage.

ATTACHMENT 1

This table lists the systems to be pressure tested in accordance with ASME Section XI, Articles IWA-5000, IWB-5000, IWC-5000, and IWD-5000. The tabulation identifies Systems, Code Class, drawings, and specific references to Code Sections for test requirements.

This material was prepared by T. Chinn, Browns Ferry.  
10/23/78

Test	Systems	Referenced Drawings	Code Class	Test Requirements				
				IWB-5210(a)	IWB-5210(b)	IWC-3020	IWD-2410(b)	IWD-2410(c)
1	Reactor Vessel Main Steam, and associated portions of RCIC, HPCI, Core Spray, RHR CRD, Feedwater, SLC.	47W817-1 47W801-1 47W811-1 47W812-1 47W813-1 47W854-1 47W820-2 47W814-1 47W803-1 47W817-1	1	X				
2	Reactor Vessel, Main Steam, and associated portions of: Turbine Drains and Misc. Piping, Sampling, RCIC, HPCI Core Spray CRD, RHR Feedwater, SLC	47W801-1 47W801-2 47W817-1 47W807-2 47W610-43-1 47W803-1 47W812-1 47W811-1 47W813-1 47W814-1 47W854-1	1,2		X		X	
3	SLC	47W854-1	1,2		X		X	
4	Core Spray	47W814-1	2				X	
5	CRD Hydraulic System	47W820-2	1, 2		X		X	
6	RHR	47W811-1	2				X	

<u>Test</u>	<u>Systems</u>	<u>Referenced Drawings</u>	<u>Code Class</u>	<u>Test Requirements</u>				
				<u>IWB-5210(a)</u>	<u>IWB-5210(b)</u>	<u>IWC-5000</u>	<u>IWD-2410(b)</u>	<u>IWD-2410(c)</u>
7	HPCI	47W812-1	2			X		
8	RCIC	47W813-1	2			X		
9	RHRSW	47W858-1 47W610-43-1	3				X	X
10	EECW and associated portions of RCW	47W859-1 47W859-2 47W844-2 47W866-7	3				X	X

- NOTES:
1. IWB-5210(a) is a system leakage test performed prior to startup following each refueling and as required by maintenance.
  2. IWB-5210(b) is a system hydrostatic pressure test performed at 10 year intervals and as required by maintenance.
  3. IWC-5000 is a system hydrostatic pressure test performed at 10 year intervals, to be scheduled at various times in the interval for the various systems in accordance with IWC-2412 and as required by maintenance.
  4. IWD-2410(b) is a system hydrostatic pressure test performed at 10 year intervals and as required by maintenance.
  5. IWD-2410(c) is a system leakage test performed within every one-third of an inspection interval (one-third of ten years).

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ATTACHMENT 2

Attachment 2 consists of Requests for Relief from various portions of ASME Section XI. Subsections IWA, IWB, IWC, and IWD, as they apply to system pressure tests. Relief requests are numbered H(Hydrostatic) -1 through -11.

REQUEST FOR RELIEF H-1

SYSTEM - All Systems

CLASS - 1, 2, and 3

TEST REQUIREMENT - Qualified inspector in accordance with IWA-2130.

BASIS FOR RELIEF - Present TVA policy is to provide its own inspection services. TVA is a federal agency and, as other federal agencies, acts as its own inspector and is not subject to state or other non-federal inspectors.

ALTERNATE TESTING - TVA will provide its own independent review of the Section XI program through its central office staff in Chattanooga.

REQUEST FOR RELIEF H-2

SYSTEM - All Systems

CLASS - 1, 2, 3

TEST REQUIREMENT - Maintaining test pressure and temperature for four hours prior to examination per IWA-5210(a).

BASIS FOR RELIEF - 1977 Edition of Section XI, Article 3WA-5000, allows pressure and temperature to be maintained for 10 minutes prior to examination on exposed piping.

ALTERNATE TESTING - Exposed piping will be maintained at pressure and temperature for 10 minutes before beginning examination.



REQUEST FOR RELIEF H-3

- SYSTEM - Main Steam beyond out-board MEIV; steam to Reactor Feed Pump Turbines, SJAE, Off-Gas Preheater; Core Spray (high pressure piping downstream of FCV 75-23 and FCV 75-51); RHR (high pressure piping downstream of FCV 74-52 and FCV 74-66); HPCI (piping downstream of FCV 73-44); RCIC (piping downstream of FCV 71-39).
- CLASS - 2
- TEST REQUIREMENT - Hydro at 1.25 x Design Pressure
- BASIS FOR RELIEF - This piping will be tested at the same time as the hydro for the Class 1 Reactor Vessel and associated piping, due to valve locations and insufficient test connections to test to higher pressures.
- ALTERNATE TESTING - Hydro test, with reactor vessel, at 1020 or 1040 psig, dependent on vessel temperature.

REQUEST FOR RELIEF H-4

- SYSTEM - Standby Liquid Control, Core Spray, CRD Hydraulic System, RHR, HPCI, RCIC
- CLASS - 2
- TEST REQUIREMENT - Maintaining test temperatures at 100°F per IWC-5220(a)
- BASIS FOR RELIEF - Standby Liquid Control, Core Spray, HPCI, and RCIC are tested only at 100% of the pressure seen during periodic surveillance testing, per IWC-5220(c), and as such are not subject to brittle fracture at those pressures.
- CRD and RHR piping will be run at essentially ambient temperatures (approx. 80-85°F) and are not subject to fracture at this temperature. Testing at this temperature, however, is more stringent than testing at 100°F and above.
- ALTERNATE TESTING - Testing at available test temperatures as stated above.

REQUEST FOR RELIEF H-5

SYSTEM - RHRSW

CLASS - 3

TEST REQUIREMENT - Providing isolation valves for buried piping and conducting a loss of pressure test for component leakage.

BASIS FOR RELIEF - There are no installed connections for providing a loss-of-pressure test on buried piping. Also, the downstream isolation valve (butterfly) on each section of buried pipe is not designed for minimal leakage to conduct this type of test.

ALTERNATE TESTING - This piping has water flow and pressure for long periods of time during cold shutdowns. Any substantial leakage in buried piping would be evidenced at this time.

Also, the pressure test for this piping is performed by deadheading an RHRSW pump. The pump not developing at or near design deadhead pressure would indicate leaking piping. Also, pump testing required by Subsection IWP of the Code would identify substantial leakage based on degradation of pump performance on two different pumps supplying the same piping (A1 and A2, B1 and B2, C1 and C2, D1 and D2).

REQUEST FOR RELIEF H-6

SYSTEM - EECW

CLASS - 3

TEST REQUIREMENT - Providing isolation valves for buried piping and conducting a loss of pressure test for component leakage.

BASIS FOR RELIEF - The downstream isolation valve (butterfly) on each section of buried pipe is not designed for minimal leakage to conduct this type of test.

ALTERNATE TESTING - This piping has water flow and pressure at all times during normal operation. Any substantial leakage in buried piping would be evidenced at this time. Also, the pressure test for this piping is performed by deadheading an EECW pump. The pump not developing at or near design deadhead pressure would indicate leaking piping. Also, pump testing required by Subsection IWF of the Code would identify substantial leakage based on degradation of pump performance on two different pumps supplying the same piping (A3 and C3, B3 and D3).

REQUEST FOR RELIEF H-1

SYSTEM - RHRSW (Low Pressure Piping Only)

CLASS - 3

TEST REQUIREMENT - System test pressure at 1.10 x design pressure.

BASIS FOR RELIEF - There are no suitable test connections for installing a hydro pump to pressurize to 1.10 x design pressure. Also, to do this testing both pumps supplying a header would have to be isolated. This is not acceptable in accordance with Technical Specification 4.5.C.2.

ALTERNATE TESTING - Piping will be tested at the dead-head pressure of one RHRSW pump.

REQUEST FOR RELIEF H-8

SYSTEM - EECW

CLASS - 3

TEST REQUIREMENT - System test pressure at 1.10 x design pressure.

BASIS FOR RELIEF - There are not suitable test connections for installing a hydro pump to pressurize to 1.10 x design pressure. In addition, there is no postulated event that could cause overpressurization of this piping except for massive tube failure of an RHR Pump Seal Heat Exchanger.

ALTERNATE TESTING - Piping will be tested at the dead-head pressure of one EECW pump.

REQUEST FOR RELIEF H-9

SYSTEM - EECW

CLASS - 3

TEST REQUIREMENT - Hydro testing of short sections of piping to/from the following components:

Control Bay Chillers - Between:

3-67-763 & 3-67-765

3-67-770 & 3-67-772

Unit 3 Diesels - Between:

3-67-692 & 3-67-696

3-67-701 & 3-67-704

3-67-712 & 3-67-716

3-67-721 & 3-67-724

BASIS FOR RELIEF - The Control Bay Chillers are not safety related equipment, and the EECW serves only as an alternate heat sink for the Chiller Condenser. There is no way to postulate overpressurization of this piping. Due to the valving arrangement there is no practical way to test this piping. The piping to the Diesels can't be practically tested without removing all four diesels from service at the same time, which violates Technical Specifications. There is no postulated event which could overpressurize this piping.

ALTERNATE TESTING - None

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REQUEST FOR RELIEF H-10

SYSTEM - All Systems

CLASS - 1, 2, and 3

TEST REQUIREMENT - Pressure tests following repair to components in accordance with IWA-4210.

BASIS FOR RELIEF - Performance of a hydrostatic pressure test after minor repairs by welding is unnecessary. An increase in the level of safety of the component is not realized. In addition, other nondestructive tests (PT, UT, etc.), if applicable, shall be employed on a case-by-case basis in accordance with documented TVA repair procedures which are maintained by a QA program in accordance with IWA-4100(b).

ALTERNATE TESTING - The guidelines set forth in IWA-4400 of the 1977 Edition, Summer 1978 Addenda, of Section XI shall be followed. Components which require repairs as a result of a pressure test shall be pressure tested. The reactor pressure vessel shall remain under the guidelines set forth in IWA-4210 of the 1974 Edition, Summer 1975 Addenda, of Section XI.

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REQUEST FOR RELIEF H-11

SYSTEM - All Systems

CLASS - 1

TEST REQUIREMENT - Pressure tests following repair to components which cannot be isolated from the reactor vessel, IWA-4400, 1977 Edition, Summer 1978 Addenda.

BASIS FOR RELIEF - Performance of a hydrostatic pressure test on components, following repairs by welding, which cannot be isolated from the reactor vessel is impractical. This would involve pressure testing the reactor vessel and all portions of Class 1 piping.

ALTERNATE TESTING - The component will be leak tested in accordance with IWA-5000 and IWB-5221.

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ATTACHMENT 3

The following is a list of the tests now tentatively scheduled to be performed at the end of the Browns Ferry unit 3 refueling outage.

1. SI-3.3.1.A (Reactor Leak Check)
2. SI-3.3.9 (HPCI - Class 2 Hydrostatic Pressure Test)
3. SI-3.3.10 (RCIC - Class 2 Hydrostatic Pressure Test)
4. SI-3.3.14.A and B (EECW Unit 3, North and South Headers - Hydrostatic Pressure Test)