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SUBJECT: Requests relief from requirements of 1977 Edition,Summer 1978 Addenda,of ASME Boiler & Pressure Vessel Code,Section XI re second 10-yr interval hydrostatic test program.

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Vice President
Nuclear Services Department

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RELIEF REQUESTS - SECOND 10-YEAR INTERVAL HYDROSTATIC TEST PROGRAM

Gentlemen:

In accordance with 10CFR50.55a(g)(5), Carolina Power & Light Company (CP&L) requests specific relief from the requirements of the 1977 Edition, Summer 1978 Addenda, of the ASME Boiler and Pressure Vessel Code, Section XI. The reliefs requested relate to the Second 10-Year Interval Hydrostatic Test Program at H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2), which is to be completed during Refueling Outage 14, scheduled to begin March 28, 1992. The enclosures to this submittal identify the specific reliefs requested, including the Code requirements, the bases for the relief, and the alternative testing proposed. The text of the ASME Code Articles referenced are included, following Relief Request No. 4, as an aid for your review.

Planning and scheduling for Refueling Outage 14 have progressed significantly, and application of these reliefs is expected to provide an opportunity to not only simplify the scheduling of this outage, but also significantly reduce the projected radiation exposures for, and to reduce the duration of, this outage. Approval of these reliefs by December 16, 1991 is requested to minimize the effects on outage planning. CP&L will arrange to meet with the NRC staff to facilitate the review if needed. Should you have any questions regarding this matter, please contact Mr. R. W. Prunty at (919) 546-7318.

Yours very truly,

G. E. Vaughn

DCS/JSK/jbw (1388RNP)

Enclosures

cc: Mr. S. D. Ebneter
Mr. L. Garner
Mr. R. Lo

A047

RELIEF REQUEST NO. 1

System(s): ASME Code Class 1 and 2 Systems

Component Identification:

All pressure-retaining components, Examination Category B-P for Class 1 and Examination Category C-H for Class 2.

ASME Section XI Code Class: 1 and 2

Code Requirement(s):

Table IWB-2500-1, Category B-P and IWB-5222 (Reference 1 and 2, respectively)
Table IWC-2500-1, Category C-H and IWC-5222 (Reference 3 and 4, respectively)

Basis for Relief:

This relief would allow CP&L to employ the alternative methods of Code Case N-498 in lieu of those required by Section XI, Division 1, Table IWB-2500-1, Category B-P and Table IWC-2500-1, Category C-H, for the 10-year hydrostatic pressure testing under the Second 10-Year Interval Hydrostatic Test Program.

The system hydrostatic test requirements for the applicable code article for HBR2 require system pressurization which exceeds nominal system operating pressure. In order to achieve static pressures of this level, abnormal system alignments and configurations are required. When these lineups are performed in radiation areas, the accumulative exposure would significantly increase. In addition to valve manipulations, certain relief valves are required to be gagged and pipe hangers on Main Steam System are required to be pinned to withstand static water loading versus steam loads. Using valves for hydro boundary isolation when they are not normally isolation valves potentially results in the need for additional maintenance due to abnormal wear from exceeding normal pressure conditions.

Performing elevated-pressure hydrostatic tests can also generate a significant amount of wastewater, requiring processing and disposal. For example, the hydro of the RHR system at the CV Sump isolation valves could result in significant leakage into the CV Sump due to the configuration of these double-disc gate valves, which have pressure equalization holes drilled in the upstream disc. Pressurizing the downstream side of these valves would tend to unseat the downstream disc, which would fill the disc innerspace and leak through the drilled disc into the CV Sump. The nominal operating pressure test would significantly reduce, if not eliminate, this backleakage of water entering the sump. Maintenance actions to clean up or preclude this leakage would be exposure-intensive jobs. Hydrotesting other portions of systems with high/low-pressure system interfaces also requires additional maintenance actions to preclude overpressurization of the lower-pressure components and generation of additional unwarranted exposure and wastewater.

Code Case N-498, "Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems, Section XI, Division 1," which was approved for use by its Committee on May 13, 1991, has not yet been incorporated in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." Since the Regulatory Guide does not list this Code Case at this time, further Commission action is required. As stated in Footnote 6 of 10CFR50.55a, the approval of the Director of the Office of Nuclear Reactor Regulation pursuant to 10CFR50.55a(a)(3) is required.

Code Case N-498 effectively allows a nominal operating pressure, pressure test in lieu of an elevated pressure hydrostatic pressure test, to be performed.

Alternative Testing:

The proposed alternative is that addressed by Code Case N-498 (Reference 7).

RELIEF REQUEST NO. 2

System(s): Residual Heat Removal

Component Identification:

The Residual Heat Removal System from the reactor building sump through penetrations P-46 and P-47 to containment isolation valves SI-860A and 860B. (Reference Drawing 5379-1082, Sheet 5, enclosed.)

ASME Section XI Code Class: 2

Code Requirement(s):

IWC-5222(c) - Reference 4

IWA-5244(b) - Reference 5

Basis for Relief:

There is no isolation method designed inside containment that will allow pressurization of these lines with water, nor is there any method available to provide sufficient water flow to these lines or means necessary to evaluate a flow difference between the ends of each line. Although an annulus is available, it is sealed such that even if water pressure could be applied, inspection for water leakage would be precluded by design.

Alternative Testing:

The subject piping will be pressurized and tested at the containment post-accident design pressure of 42 psig during the containment integrated leak rate test. This is the maximum credible pressure that these lines will be subjected to during accident conditions. This test is more sensitive than the hydrostatic test of IWC-5222 and is performed for a longer duration. There are no relief valves in these sections of piping that govern system pressure.

RELIEF REQUEST NO. 3

System(s): Various nonsafety-related systems at containment penetrations

Component Identification: Refer to Attachment 1.

ASME Section XI Code Class: 2

Code Requirement(s): IWC-5222(a) System Hydrostatic Test - Reference 4.

Basis for Relief:

Due to the vintage of HBR2, the piping within these penetration boundaries was not constructed to Class 2 requirements. Regulatory Guide 1.26, Revision 2, "Quality Group Classifications and Standards For Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants," which is the basis used for classification of components for ISI testing at HBR2, does not require these penetrations to be classified as Quality Group B or Class 2; however, CP&L has optionally classified these lines as Class 2 solely on the basis that they are required to assure containment integrity. These reclassifications were done to assure that testing commensurate with the safety function of the component in question was performed. For later Section XI, ASME Code editions than that used for HBR2's second 10-year interval hydrostatic test program, rules have been addressed with regard to these optionally "upgraded/reclassified" components which indicate that it is the option of the Owner and not a requirement of Division 1 of Section XI to apply all the rules of the Division to these components. For example, see IWA-1320(e) of the 1986 Edition of Section XI attached as Reference 6. Since the components identified in Attachment 1 serve a containment isolation function only, the testing of the containment penetration portion of these systems should be consistent with the need for containment integrity, which is demonstrated by periodic containment leak rate tests as required by 10CFR50, Appendix J.

Alternative Testing:

Testing of these components will be accomplished in accordance with 10CFR50, Appendix J, reactor containment leakage testing. This test is performed at 42 psig, which is the design accident pressure for HBR2, and will provide adequate assurance of system integrity. This piping is also subject to the Section XI repair and replacement requirements.

RELIEF REQUEST NO. 3

ATTACHMENT 1

System	Penetration	Description	Drawing(s)
Liquid Waste Disposal System	P-4	From sleeve No. S-29 inside containment to outboard isolation valves WD-1787, IVSW-84, and WD-1713	5379-920, sheet 3 190262, sheet 1
	P-5	From sleeve No. S-13 inside containment to outboard isolation valves WD-1789 and IVSW-93	5379-920, sheet 3 190262, sheet 1
	P-6	From sleeve No. S-20 inside containment to outboard isolation valves WD-1722 and IVSW-76	5379-920, sheet 3 190262, sheet 1
	P-61	From sleeve No. S-13 inside containment to outboard isolation valves WD-1723 and IVSW-89	5379-920, sheet 3 190262, sheet 1
Containment Pressure Sampling System	P-67	From sleeve No. S-25 inside containment to outboard isolation valve VCT-13	HBR2-6490, sheet 1
	P-68	From sleeve No. S-32 inside containment to PT-954 and PT-955 and isolation valves PAS-5 and PAS-6	HBR2-6490, sheet 1
	P-69	From sleeve No. S-32 inside containment to outboard isolation valves PAS-3 and PAS-4 and PT-952, PT-953, and PT-957	HBR2-6490, sheet 1
	P-70	From sleeve No. S-32 inside containment to PT-950, PT-950B, PT-956, PT-951, and isolation valves PAS-1 and PAS-2	HBR2-6490, sheet 1

RELIEF REQUEST NO. 3

ATTACHMENT 1

System	Penetration	Description	Drawing(s)
Fire Protection System	P-73	From sleeve No. S-18 inside containment to second outboard isolation valve FP-256	HBR2-8255, sheet 3 HBR2-8255, sheet 2
	P-74	From sleeve No. S-18 inside containment to second outboard isolation valve FP-248	HBR2-8255, sheet 3 HBR2-8255, sheet 2
Heating, Ventilation, and Air Conditioning System	P-37	From inboard isolation V12-7 through pipe sleeve S-37 to outboard isolation valve V12-6	190304, sheet 1 190261, sheet 4
	P-38	From inboard isolation V12-9 through pipe sleeve S-38 to outboard isolation valve V12-8	190304, sheet 1 190261, sheet 4
	P-42	From inboard isolation V12-13 through pipe sleeve S-39 to outboard isolation valve V12-12	190304, sheet 1 190261, sheet 4
Penetration Pressurization System	P-35	From sleeve No. S-23 inside containment to outboard isolation valve RMS-4	190261, sheet 4
	P-36	From sleeve No. S-23 inside containment to outboard isolation valve RMS-2	190261, sheet 4
	P-71	From sleeve No. S-31 inside containment to outboard isolation valve PP-274D	190261, sheet 2
Post-Accident Containment Venting and H_2 Recombiner System	P-33	From sleeve No. S-12 inside containment to second outboard isolation valve PCV-1716	HBR2-6933, sheet 1
	P-34A	From sleeve No. S-31 inside containment to second outboard isolation valve PAV-38	HBR2-6933, sheet 1
	P-34B	From sleeve No. S-31 inside containment to second outboard isolation valve PAV-36	HBR2-6933, sheet 1

RELIEF REQUEST NO. 3

ATTACHMENT 1

System	Penetration	Description	Drawing(s)
Post-Accident Containment Venting and H_2 Recombiner System (continued)	P-34C	From sleeve No. S-31 inside containment to second outboard isolation valve PAV-34	HBR2-6933, sheet 1
	P-34D	From sleeve No. S-3 inside containment to second outboard isolation valve PAV-32	HBR2-6933, sheet 1
	P-39	From sleeve No. S-25 inside containment to second outboard isolation valve SA-43	HBR2-6933, sheet 1
	P-40	From inside isolation valve V12-18 through sleeve No. S-46 to outside isolation valve V12-19	HBR2-6933, sheet 1
	P-41	From inside isolation valve V12-11 through sleeve No. S-21 to outside isolation valves V12-15 and V12-10	HBR2-6933, sheet 1 190304, sheet 1
Gaseous Waste Disposal System Gas Analyzer Line From Pressurizer Relief Tank	P-1	From sleeve No. S-32 inside containment to outboard isolation valves RC-516 and IVSW-82	5379-1971, sheet 2

RELIEF REQUEST NO. 4

System(s): Safety Injection

Component Identification:

Safety Injection piping from valves SI-868A, SI-868B, and SI-868C through penetrations P-64, P-62, and P-63 to check valves SI-873D, SI-873E, and SI-873F, respectively. (Reference Drawing 5379-1082, Sheets 1 and 4.)

ASME Section XI Code Class: 2

Code Requirement(s): IWC-5222(a) - Reference 4

Basis for Relief:

The subject Code section requires that this portion of the system be tested at a pressure of 1.25 times the lowest relief valve setting that is provided for overpressure protection. This results in a test pressure of 2187.5 psig. Since no isolation is provided between these sections of piping and the RCS, this hydrostatic test must be performed with the RCS at or above the normal system pressure/temperature to avoid injection into the primary loop piping.

The lines in question are provided with relief protection at 1750 psi by valve SI-857B. The piping has a design pressure of 2500 psi downstream of valves SI-868A, B, and C and 1500 psi upstream. The downstream boundary for pressurization would be valves SI-875A, B, and C, which are check valves held closed by RCS pressure. The upstream pressurization boundary would be the valves SI-868A, B, and C. However, closing these normally locked open valves would require entry into the Limiting Condition for Operation for Technical Specification 3.3.1.3 in that the Safety Injection flowpaths would be isolated by closing the SI-868 valves. Alternatively, the test could be performed with the upstream pressurization boundary being motor-operated valves SI-870A and B. This would require substantially overpressurizing the upstream portion of the system with the SI-868 valves open, since the existing relief protection (valve SI-857B) would need to be gagged to achieve the required 2187.5 psi test pressure.

Additionally, in either case, testing at elevated pressures and temperatures using the RCS as one of the test boundaries is not considered prudent since the required test conditions leave little margin between the RCS pressure and the test pressure, leading to difficulty in controlling the test and creating the possibility of injecting into the primary. Further, potential for damage to SI pumps exists if the SI-870 valves should open due to an SI signal during the test.

Alternative Testing:

These lines will be VT-2 examined during the conditions of a functional test at operating pressure (approximately 1450 psig). This testing is consistent with the requirements of IWC-5210(a)(1) and IWC-5210(a)(2) for systems not required to operate during normal reactor operation. (See Reference 3.)

This testing, coupled with the design pressure of the piping being much greater than the system relief valve setting, will provide adequate verification of system integrity.

REFERENCES

1. Table IWB-2500-1, Category B-P

2. Article IWB-5000, System Pressure Tests

3. Table IWC-2500-1, Category C-H

4. Article IWC-5000, System Pressure Tests

5. Article IWA-5240, Visual Examinations

6. Article IWA-1320, Classifications

7. Code Case N-498, Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and Class 2 Systems, Section XI, Division 1

NOTE: References 1-5 are taken from the 1977 Edition, through the Summer 1978 Addenda of Section XI of the ASME Code. Reference 6 is taken from the 1986 Edition of Section XI.

TABLE IWB-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY B-P, ALL PRESSURE RETAINING COMPONENTS							
					Extent and Frequency of Examination		
Item No.	Parts Examined	Test Requirements[1]	Examination Method[2]	Acceptance Standard	1st Inspection Interval	Successive Inspection Intervals, 2nd, 3rd, 4th	Deferral of Inspection to End of Interval
	Reactor Vessel						
B15.10	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.11	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible
	Pressurizer						
B15.20	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.21	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible
	Steam Generators						
B15.30	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.31	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible
	Heat Exchangers						
B15.40	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.41	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible

NOTES:
Notes at end of Examination Category B-P.

TABLE IWB-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY B-P—CONTINUED							
					Extent and Frequency of Examination		
Item No.	Parts Examined	Test Requirements[1]	Examination Method[2]	Acceptance Standard	1st Inspection Interval	Successive Inspection Intervals, 2nd, 3rd, 4th	Deferral of Inspection to End of Interval
	Piping						
B15.50	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.51	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible
	Pumps						
B15.60	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.61	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible
	Valves						
B15.70	Pressure Retaining Boundary	System Leakage Test IWB-5221	Visual, VT-2	IWA-5250	Each refueling outage	Each refueling outage	
B15.71	Pressure Retaining Boundary	System Hydro-test IWB-5222	Visual, VT-2	IWA-5250	One test	One test per interval	Permissible

NOTES:
(1)Entire pressure retaining boundary of the reactor coolant system is subject to system pressure test conducted in accordance with IWA-5000 with the exceptions specified in IWA-5214 when system pressure tests are conducted for repaired, replaced or altered components.
(2)Visual examination of IWA-5240.

REFERENCE 1
CON'T

ARTICLE IWB-5000
SYSTEM PRESSURE TESTS

IWB-5200 SYSTEM TEST REQUIREMENTS

IWB-5210 TEST

(a) The pressure retaining components within each system boundary shall be subjected to the following system pressure tests at the frequency stated in Table IWB-2500, Examination Category B-P, and visually examined by the method specified in Table IWB-2600 for Examination Category B-P:

(1) system leakage test, IWA-5211(a);

(2) system hydrostatic test, IWA-5211(d).

(b) The system pressure tests and visual examinations shall be conducted in accordance with IWA-5000 and this Article. Reactor coolant shall be used as the pressurizing medium.

IWB-5220 PRESSURE

IWB-5221 System Leakage Test

(a) The system leakage test shall be conducted at a test pressure not less than the nominal operating pressure associated with 100% rated reactor power.

(b) The system test pressure and temperature shall be attained at a rate in accordance with the heat-up limitations specified for the system.

IWB-5222 System Hydrostatic Test

(a) The system hydrostatic test shall be conducted at a test pressure of 1.10 times the system nominal operating pressure, P_o, that corresponds with 100% rated reactor power except when the test is conducted at temperatures above 100 F (38 C) to meet the requirements of IWB-5230.

(b) The system hydrostatic test may be conducted at the reduced test pressure of Table IWB-5220-1 to meet the requirements of IWB-5230.

IWB-5230 TEMPERATURE

(a) The system test temperature shall meet the requirements as specified by fracture prevention criteria applicable to ferritic materials of system components.

(b) The system test temperature shall be modified as required by the results obtained from each set of material surveillance specimens withdrawn from the reactor vessel during the service lifetime.

TABLE IWB-5220-1
TEST PRESSURE

Test Temperature	Test Pressure
100 F	1.10 P_o
200 F	1.08 P_o
300 F	1.06 P_o
400 F	1.04 P_o
500 F	1.02 P_o

TABLE IWC-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY C-H, ALL PRESSURE RETAINING COMPONENTS						
Item No.	Parts Examined[1]	Test[2] Required	Examination[3] Method	Acceptance Standard	Extent of Examination[4]	Frequency of Examination[5]
	Pressure Vessels					
C7.10	Pressure Retaining Components	IWC-5221 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection period
C7.11	Pressure Retaining Components	IWC-5222 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection interval
	Piping					
C7.20	Pressure Retaining Components	IWC-5221 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection period
C7.21	Pressure Retaining Components	IWC-5222 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection interval
	Pumps					
C7.30	Pressure Retaining Components	IWC-5221 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection period
C7.31	Pressure Retaining Components	IWC-5222 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection interval
	Valves					
C7.40	Pressure Retaining Components	IWC-5221 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection period[6]
C7.41	Pressure retaining components	IWC-5222 Test	Visual, VT-2	IWA-5250	Pressure retaining boundary	Each inspection interval[5]

NOTES:
(1) Other than open-ended portions of systems.
(2) System pressure tests of IWA-5000 and IWC-5000.
(3) Visual examination of IWA-5240.
(4) There are no exemptions of exclusions from these requirements except as specified in IWA-5214.
(5) The system hydrostatic test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B.
(6) A system functional test (IWC-5221) serves as a required system pressure test.

ARTICLE IWC-5000
SYSTEM PRESSURE TESTS

IWC-5200 SYSTEM TEST REQUIREMENTS

IWC-5210 TEST

(a) The pressure retaining components within each system boundary shall be subjected to the following system pressure tests as specified in Table IWC-2500-1, Examination Category C-H, and visually examined by the method specified in Table IWC-2600-1, for Examination Category C-H:

(1) a system pressure test conducted during a system functional test of those [IWA-5211(b)] systems or portions of systems not required to operate during normal reactor operation but for which periodic system or component functional tests are performed to meet the Owner's requirements;

(2) a system hydrostatic pressure test [IWA-5211(d)] for those systems or portions of systems not included in (1) above, and for repaired or replaced components, or altered portions of a system.

(b) The system pressure tests and visual examinations shall be conducted in accordance with IWA-5000 and this Article. The contained fluid in the system shall serve as the pressurizing medium, except that in steam systems either water or air may be used. Where air is used, the test procedure shall permit the detection and location of through-wall leakages in components of the system tested.

IWC-5220 PRESSURE

IWC-5221 System Pressure Test During System or Component Functional Test

(a) The nominal operating pressure of the system functional test shall be acceptable as the system test pressure.

(b) The nominal operating pressure of a component functional test shall be acceptable as the test pressure.

IWC-5222 System Hydrostatic Test

(a) The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_s for systems with Design Temperature of 200 F (93 C) or less, and at least 1.25 times the system pressure P_s for systems with Design Temperature above 200 F (93 C). The system pressure P_s shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested.

(b) In the case of atmospheric storage tanks, the nominal hydrostatic pressure developed with the tank filled to its design capacity shall be acceptable as the system test pressure. For 0–15 psi (0–103 kPa) storage tanks, the test pressure shall be 1.1 times P_G, Design Pressure of vapor or gas space above liquid level for which overpressure protection is provided by relief valves.

(c) For the purpose of the test, open ended portions of a suction or drain line from a storage tank extending to the first shutoff valve shall be considered as an extension of the storage tank. For open ended portions of discharge lines in nonclosed systems (such as containment spray header), any test that demonstrates unimpaired flow shall be acceptable in lieu of a system pressure test.

(d) W-78 p. 2

IWC-5230 TEMPERATURE

(a) The system test temperature during a system hydrostatic test in systems containing ferritic steel components shall meet the requirements specified by fracture prevention criteria.

(b) In systems containing ferritic steel components for which fracture toughness requirements were neither specified nor required in the construction of the components, the system test temperature shall be determined by the Owner.

(c) No limit on system test temperature is required for systems comprised of components constructed entirely of austenitic steel materials.

Table IWA-5210-1 *Add as shown on pp. 16 of this Addenda.*

IWA-5240 *Revise in its entirety to read:*

IWA-5240 VISUAL EXAMINATION

IWA-5241 Noninsulated Components

(a) The visual examination, VT-2, shall be conducted by examining the accessible external exposed surfaces of pressure retaining components for evidence of leakage.

(b) For components whose external surfaces are inaccessible for direct visual examination, VT-2, only the examination of surrounding area, including floor areas or equipment surfaces located underneath the components, for evidence of leakage shall be required.

IWA-5242 Insulated Components

(a) The visual examination, VT-2, may be conducted without the removal of insulation by examining the accessible and exposed surfaces and joints of the insulation. Essentially vertical surfaces of insulation need only be examined at the lowest elevation where leakage may be detectable. Essentially horizontal surfaces of insulation shall be examined at each insulation joint.

(b) For components whose external insulation surfaces are inaccessible for direct examination, only the examination of surrounding area, including floor areas or equipment surfaces located underneath the components, for evidence of leakage, or other areas to which such leakage may be channelled, shall be required.

(c) Discoloration or residue on surfaces examined shall be given particular attention to detect evidence of boric acid accumulations from borated reactor coolant leakage.

IWA-5243 Components With Leakage Collection Systems

Where leakages from components are normally expected and collected (such as valve stems, pump seals, or vessel flange gaskets) the visual examination, VT-2, shall be conducted by verifying that the leakage collection system is operative.

IWA-5244 Buried Components

(a) In nonredundant systems where the buried components are isolable by means of valves, the visual examination, VT-2, shall consist of a leakage test that determines the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components. The acceptable rate of pressure loss or flow shall be established by the Owner.

(b) In redundant systems where the buried components are nonisolable, the visual examination, VT-2, shall consist of a test that determines the change in flow between the ends of buried components. In cases where an annulus surrounds the buried components, the areas at each end of the buried components shall be visually examined for evidence of leakage in lieu of a flow test.

(c) In nonredundant systems where the buried components are nonisolable such as return lines to the heat sink, the visual examination, VT-2, shall consist only of a verification that the flow during operation is not impaired.

IWA-5245 Elevated Temperature Tests

The visual examination of system components requiring a test temperature above 200 F (93 C) during the system pressure test may be conducted after the pressure holding period of IWA-5213 is satisfied, and the pressure is lowered to the level corresponding with a temperature of 200 F (93 C), in accordance with allowable cooldown rates established by fracture prevention criteria.

IWA-5246 Repaired or Replaced Components and Alteration of a System

The visual examination, VT-2, following a repair or replacement of a component, or the alteration of a system, may be limited to the repaired or replaced components, or the altered portion of the system, but shall include any connection made to the existing system.

IWA-5250 *Revise as follows:*

(a) Revise IWA-5250 *to read:*

IWA-5250 CORRECTIVE MEASURES

(a) The source of leakages detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows:

(1) buried components with leakage losses in excess of limits acceptable for continued service shall be repaired or replaced;

ARTICLE IWA-1000
SCOPE AND RESPONSIBILITY

IWA-1100 SCOPE

(a) This Division provides the rules and requirements for inservice inspection and inservice testing of light-water cooled nuclear power plants. The rules and requirements identify as a minimum the areas subject to inspection, responsibilities, provisions for accessibility and inspectability, examination methods and procedures, personnel qualifications, frequency of inspection, record keeping and report requirements, procedures for evaluation of inspection results and subsequent disposition of results of evaluations, and repair requirements.

(b) This Division provides for the design, fabrication, installation, and inspection of replacements.

IWA-1200 JURISDICTION

The jurisdiction of this Division covers individual components and complete power plants that have met all the requirements of the Construction Code, commencing at that time when the Construction Code requirements have been met, irrespective of physical location. When portions of systems or plants are completed at different times, jurisdiction of this Division shall cover only those portions on which all of the construction requirements have been met.

IWA-1300 APPLICATION

IWA-1310 COMPONENTS SUBJECT TO INSPECTION AND TESTING

Components identified in this Division for inspection and testing shall be included in the inservice inspection plan. These components include nuclear power plant items such as vessels, containments, piping systems, pumps, valves, core support structures, and storage tanks, including their respective supports. The selection of components for the inservice inspection plan is subject to review by the regulatory and enforcement authorities having jurisdiction at the plant site.

IWA-1320 CLASSIFICATIONS

(a) Application of the rules of this Division shall be governed by the group classification criteria of the regulatory authority having jurisdiction at the plant site as follows.

(1) The rules of IWB shall be applied to those systems whose components are classified ASME Class 1 (Quality Group A).

(2) The rules of IWC shall be applied to those systems whose components are classified ASME Class 2 (Quality Group B).

(3) The rules of IWD shall be applied to those systems whose components are classified ASME Class 3 (Quality Group C).

(b) Optional construction of a component within a system boundary to a classification higher than the minimum class established in the component Design Specification (either upgrading from Class 2 to Class 1 or from Class 3 to Class 2) shall not affect the overall system classification by which the applicable rules of this Division are determined.

(c) Where all components within the system boundary or isolable portions of the system boundary are classified to a higher class than required by the group classification criteria, the rules of (a) above may be applied to the higher classification, provided the rules of the applicable Subsection are applied in their entirety.

(d) The portion of piping that penetrates a containment vessel, which is required by Section III to be constructed to Class 1 or 2 rules for piping and which may differ from the classification of the balance of the piping system, need not affect the overall system classification that determines the applicable rules of this Division.

(e) If systems safety criteria permit a system to be nonnuclear safety Class and an Owner optionally classifies and constructs that system, or a portion thereof, to Class 2 or Class 3 requirements, the application of the rules of (a) above is at the option of the Owner and is not a requirement of this Division.

IWA-1400 OWNER'S RESPONSIBILITY

The responsibilities of the Owner of the power system[1] shall include the following:

(a) determination of the appropriate Code class(es) for each component[2] of the power plant, and identification of the system boundaries for each class of components subject to inspection and the components exempt from examination requirements;

(b) design and arrangement of system components to include allowances for adequate access and clearances for conduct of the examination and tests;

(c) preparation of plans and schedules and filing of these plans and schedules with enforcement and regulatory authorities having jurisdiction at the plant site;

(d) preparation of written examination instructions and procedures, including diagrams or system drawings identifying the extent of areas of components subject to examination;

(e) verification of qualification to the required level of responsibility of personnel who perform the examinations;

(f) possession of an arrangement with an Authorized Inspection Agency to provide inspection services;

(g) performance of required examinations and tests;

(h) recording of examination and test results that provide a basis for evaluation and facilitate comparison with the results of subsequent examinations;

(i) evaluation of examination and test results;

(j) performance of repairs and installation of replacements;

(k) maintenance of adequate inspection, examination, test, and repair and replacement records such as radiographs, diagrams, drawings, examination and test data, description of procedures used, and evidence of personnel qualifications;

(l) retention of all inspection, examination, test, and repair and replacement records for the service lifetime of the component or system;

(m) the retention and maintenance of all basic calibration blocks used for ultrasonic examination of the components;

(n) documentation of a Quality Assurance Program in accordance with the following:

(1) Title 10, Code of Federal Regulations, Part 50; or

(2) ANSI/ASME NQA-1, Parts II and III, Basic Requirements and Supplements.

(o) recording of regions in ferritic steel components where acceptance standards have been modified as required in IWB-3410.2.

IWA-1500 ACCESSIBILITY

Provisions for accessibility shall include the following considerations:[3]

(a) access for the Inspector, examination personnel, and equipment necessary to conduct the examinations;

(b) sufficient space for removal and storage of structural members, shielding, and insulation;

(c) installation and support of handling machinery (e.g., hoists) where required to facilitate removal, disassembly, and storage of equipment, components, and other materials;

(d) performance of examinations alternative to those specified in the event structural defects or indications are revealed that may require such alternative examinations;

(e) performance of necessary operations associated with repairs or installation of replacements.

IWA-1600 REFERENCED STANDARDS AND SPECIFICATIONS

When standards and specifications are referenced in this Division, their revision date or indicator shall be as shown in Table IWA-1600-1.

[1] *Power system* is that part of a nuclear power plant or unit that serves the purpose of producing or controlling the output of nuclear energy from nuclear fuel.

[2] Classification criteria are specified in 10 CFR 50.

[3] Design considerations other than access provisions may be needed for specific system components to render inservice inspections practical (such as surface finish of components subject to crud or corrosion product buildup, material selection to minimize activation in service, and shielding from irradiation effects).

Approval Date: May 13, 1991

See Numerical Index for expiration and any reaffirmation dates.

Case N-498

Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems Section XI, Division 1

Inquiry: What alternative rules may be used in lieu of those required by Section XI, Division 1, Table IWB-2500-1, Catogory B-P, and Table IWC-2500-1, Category C-H, for the 10-year hydrostatic pressure test?

Reply:

(a) It is the opinion of the Committee that as an alternative to the 10-year hydrostatic pressure test required by Table IWB-2500-1, Category B-P, the following rules shall be used.

(1) A system leakage test (IWB-5221) shall be conducted at or near the end of each inspection interval, prior to reactor startup.

(2) The boundary subject to test pressurization during the system leakage test shall extend to all Class 1 pressure retaining components within the system boundary.

(3) Prior to performing VT-2 visual examination, the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination.

(4) Test temperatures and pressures shall not exceed limiting conditions for hydrostatic test curve as contained in the plant Technical Specifications.

(5) The VT-2 visual examination shall include all components within the boundary identified in (2) above.

(b) It is also the opinion of the Committee that, as an alternative to the 10-year hydrostatic pressure test required by Table IWC-2500-1, Category C-H, the following rules shall be used.

(1) A system pressure test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B.

(2) The boundary subject to test pressurization during the system pressure test shall extend to all Class 2 components included in those portions of systems required to operate or support the safety system 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.

(3) Prior to performing VT-2 visual examination, the system shall be pressurized to nominal operating pressure for a minimum of 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination.

(4) The VT-2 visual examination shall include all components within the boundary identified in (2) above.