

ENCLOSURE

SAFETY EVALUATION OF
REQUESTS FOR RELIEF FROM
INSERVICE EXAMINATION REQUIREMENTS

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT 2

BACKGROUND INFORMATION

By letter dated December 22, 1982, Virginia Electric and Power Company (the licensee) submitted the Inservice Inspection Program Plan for the second 10 year interval (April 28, 1983 to April 28, 1993), which requested relief from specific requirements of the 1980 Edition through Winter 1980 Addenda of Section XI of the ASME Code (the Code) for Surry Power Station, Unit 2. This report provides an evaluation of the licensee's request, supporting information, and alternative examinations or tests, as well as the staff's bases for granting or denying the requests pursuant to 10 CFR 50.55a(g). The program and reliefs granted remain in effect until April 28, 1993 unless revised or modified prior to that date.

EVALUATION OF RELIEF REQUESTS

The licensee has requested relief from an examination or test requirement which he has determined to be impractical to perform in accordance with the rules of the 1980 Edition of Section XI. We have evaluated the information provided in the referenced letter and have determined that the examination or test requirement is impractical to perform. The following paragraphs give specific details of the requests, code requirements, bases, and alternative examinations committed to be performed by the licensee.

I. CLASS 1 COMPONENTS

A. Reactor Vessel

B602050244 B60124
PDR ADOCK 05000281
PDR

No Relief Requests.

B. Pressurizer

1. Relief Request SR-5, Pressurizer Shell to Top Head Weld

Code Requirement

A volumetric examination of the pressurizer head to shell weld (Category B-B).

Code Relief Request

Relief is requested from the Code volumetric examination requirements.

Proposed Alternative Examination

A visual examination for evidence of leakage will be performed during system pressure tests.

Licensee Basis for Relief

The shell to top head circumferential weld is not accessible for volumetric or surface examination due to interference from the insulation support ring.

Evaluation

There were no drawings or sketches submitted with this relief request. Without additional information from drawings, etc. to support the licensee basis for relief, a complete evaluation cannot be made.

Conclusions and Recommendations

Without additional information, relief from Code requirements is denied. The licensee should submit drawings to support the basis for relief.

C. Piping

1. Relief Request SR-3, Reactor Coolant Branch Nozzle Connection Welds

Code Requirement

A volumetric and surface examination of branch pipe connection welds on piping having a nominal pipe size of four inches or greater (Category B-J).

Code Relief Request

Relief is requested from the Code volumetric examination of the weld root from the weld crown. Paragraph III-4430.

Proposed Alternative Examination

The volumetric examinations on these welds will be performed to the extent practical.

Licensee Basis for Relief

Due to the configuration of the weld crown, transducer contact cannot be maintained on the weld. The slope of the weld crown precludes examination of the weld root when scanning from the weld crown.

Evaluation

The weld can be examined from the nozzle forging side only. Reliable examinations from the reactor coolant pipe and the weld crown side are not possible due to component geometry. A complete surface examination and single-sided volumetric examination are judged to be adequate to ensure the structural integrity of the component.

Conclusions and Recommendations

Based on the above evaluation, Code requirements are impractical. This relief is granted.

D. Pumps

No Relief Requests.

E. Valves

1. Relief Request SR-1, Visual Examination of Valve Internals, Category B-M-2, Item B12.40

Code Requirement

A visual examination of the internal pressure boundary surfaces of one valve in each group of valves of the same structural design and manufacturing method that perform similar functions in the system. These examinations are required to be completed each inspection interval (Category B-M-2, Item B12.40).

Code Relief Request

Relief is requested from Code requirements.

Proposed Alternative Examination

An examination of the internal pressure boundary surfaces will be performed, to the extent practical, each time a valve is disassembled for maintenance purposes.

Licensee Basis for Relief

The requirement to disassemble primary system valves for the sole purpose of performing a visual examination of the internal pressure boundary surfaces has only a very small potential of increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

Performing these visual examinations, under such adverse conditions as high dose rates and poor as-cast surface condition, realistically, provides little additional information as to the valve casing integrity.

The performance of both carbon and stainless cast valve bodies has been excellent in PWR applications. Based on this experience and both industry and regulatory acceptance of these alloys, continued excellent service performance is anticipated.

A more practical approach that would essentially provide an equivalent sampling program and significantly reduced radiation exposure to plant personnel is to inspect the internal pressure boundary of only those valves that require disassembly for maintenance purposes. This would still provide a reasonable sampling of primary system valves and give adequate assurance that the integrity of these components is being maintained.

Evaluation

Disassembly of these valves for the sole purpose of a visual examination, in absence of other required maintenance, represents an unnecessary exposure to radiation and contamination.

Contamination levels in the valves are particularly high for valves located at the bottom of the system.

Class 1 valves are subject to system hydrostatic examination and containment isolation valves are leak-tested periodically. The licensee has agreed to visually examine any valves that are disassembled for routine maintenance.

Conclusions and Recommendations

Based on the evaluation and licensee discussion above, Code requirements are impractical. However, valve wall thickness measurements could be performed on any valves that are not examined for maintenance. Therefore, relief is granted from the visual examination requirements of B-M-2 provided that the licensee conducts a valve wall thickness examination on any valves that are not visually examined for routine maintenance.

II. CLASS 2 COMPONENTS

A. Vessels

1. Relief Request SR-2, Residual Heat Removal Heat Exchanger Nozzle-to-Vessel Welds

Code Requirement

A volumetric and surface examination of the nozzle inside radius section (Category C-B).

Code Relief Request

Relief is requested from Code requirements.

Proposed Alternative Examination

A visual examination for evidence of leakage will be performed in accordance with subsection IWC-5000 requirements.

Licensee Basis for Relief

The fabrication of these welds precludes any type of surface or volumetric examination. Additional assurance of the continued integrity of these welds is afforded by the fact that the reinforcement pads strengthen the welds and reduce stresses on the internal welds.

Evaluation

The nozzle-to-vessel weld of the residual heat exchanger is designed with a reinforcement pad. The reinforcement pad completely covers the weld subject to inspection; therefore, volumetric and surface examination of the required weld is physically not possible. However, the fillet weld on the reinforcement pad could be examined using surface methods.

Conclusions and Recommendations

Based on the above evaluation, Code requirements for the subject welds are impractical. However, the licensee could

perform surface examination on the fillet weld of the reinforcement pad. Therefore, relief is granted from performing Code required examinations, provided the licensee conducts a surface examination of the reinforcement pad fillet weld.

2. Relief Request SR-4, Reactor Coolant Filter Circumferential Welds

Code Requirements

A volumetric examination of circumferential shell welds (Category C-A).

Code Relief Request

Request relief from Code required volumetric examination.

Proposed Alternative Examination

A surface examination will be performed in lieu of the volumetric examination.

Licensee Basis for Relief

The stainless steel material and thickness (0.188") preclude any type of meaningful examination by ultrasonic examination.

Evaluation

The manual ultrasonic volumetric examination of thin-walled stainless steel components does not produce reliable results.

Conclusions and Recommendations

Based on the above evaluation, Code requirements for the subject weld are impractical. This relief is granted.

B. Piping

No Relief Requests.

C. Pumps

No Relief Requests.

D. Valves

No Relief Requests.

III. CLASS 3 COMPONENTS

No Relief Requests.

IV. PRESSURE TESTING

1. Relief Requests RR-1, RR-5, RR-10, RR-11 and RR-12, Class 1 and Class 2 Piping between the following double check valve combinations

Class 1 Piping

- o Safety Injection System

2-SI-79 and 2-SI-235, 2-SI-241

2-SI-82 and 2-SI-236, 2-SI-242

2-SI-85 and 2-SI-237, 2-SI-243
2-SI-88 and 2-SI-226, 2-SI-227 and 2-SI-238
2-SI-91 and 2-SI-226, 2-SI-227 and 2-SI-239
2-SI-94 and 2-SI-226, 2-SI-227 and 2-SI-240
1-CH-312 and HCV-2310A, 2-CH-310

o Chemical and Volume Control System

HCV-2311 to 2-CH-313

Class 2 Piping

o Safety Injection System

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
MOV-2890C	10"-SI-352-1502 to 6"-SI-353-1502 to 6"-SI-345-1502 to 6"-SI-344-1502	2-SI-243 2-SI-241 2-SI-242
MOV-2890A	6"-SI-249-1502	2-SI-229
MOV-2890B	6"-SI-248-1502 to 6"-SI-343-1502 to 6"-SI-248-1502 to 6"-SI-250-1502	2"-SI-281-1502 6"-SI-249-1502 2"-SI-240
2-SI-174 and MOV-2869A	3"-SI-272-1503	2-SI-227
MOV-2869B	3"-SI-347-1503	2-SI-226

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-SI-150	3"-SI-270-1503	
MOV-2867C	to 2"-SI-270-1503	2-SI-237
	2"-SI-275-1502	2-SI-250
MOV-2867D	3"-SI-90-1503/ 3"-SI-270-1503	
	2"-SI-276-1503	2-SI-236
	2"-SI-285-1502	2-SI-248
MOV-2842	3"-SI-346-1503	2-SI-235
	to 2"-SI-271-1503/ 2"-SI-274-1502	2-SI-245
MOV-2865A	12"-SI-245-1502	2-SI-107
2-SI-105	3/4"-SI-233-1502	2-SI-107
MOV-2865B	12"-SI-246-1502	2-SI-128
2-SI-126	3/4"-SI-234-1502	2-SI-128
MOV-2865C	12"-SI-247-1502	2-SI-145
2-SI-143	3/4"-SI-235-1502	2-SI-145

o Chemical and Volume Control System

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-CH-311	3/4"-CH-540-1502	2-CH-311

Code Requirement

Class 1: Class 1 System Hydrostatic Test, IWB-5222

The system hydrostatic test pressure shall be 1.10 times the system nominal operating pressure P_o that corresponds with 100% rated power.

Class 2: Class 2 System Hydrostatic Test, IWC-5222

The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{SV} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{SV} for systems with Design Temperature above 200°F(93°C). The system pressure P_{SV} 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.

Code Relief Request

Relief is requested from the Code required test pressures.

Proposed Alternative Examination

Class 1:

The alternative test proposed is to pressurize the primary system to 2335 psig while the reactor is in a shutdown condition. The reactor will be borated to equal to or greater than cold shutdown Boron Concentration. The pressurized primary will act as a boundary for the test forcing closed the first check valve in the pressure boundary. A charging test pump will provide test pressure and a VT-2 examination will be conducted on the area.

Class 2:

As an alternative these systems will be tested in conjunction with the Class I Hydrostatic test at pressure of 2335 psig. A VT-2 examination will be performed on the components and piping listed above.

Licensee Basis for Relief

Class 1:

The double check valve combination prevents pressurization of the area in between the check valves when conducting IWB-5222 on the primary system.

Class 2:

Check valve boundaries between Class 2 and Class 1 systems make it impractical to establish hydrostatic test boundaries so that the primary system is not included. Design pressure for this piping is 2800 psig (P_d), therefore normal test pressure would be 3080 psig (T 200°F). This pressure would over-pressurize the primary since it cannot be isolated.

The valves listed below will be tested as follows:

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
MOV-2865A	12"-SI-245-1502	2-SI-107
2-SI-105	3/4"-SI-233-1502	2-SI-107
MOV-2865B	12"-SI-246-1502	2-SI-128
2-SI-126	3/4"-SI-234-1502	2-SI-128
MOV-2865C	12"-SI-247-1502	2-SI-145
2-SI-143	3/4"-SI-235-1502	2-SI-145

The check valve boundary prevents isolation of the adjoining Class 1 system from the Class 2 system mentioned. The lack of overpressure protection within the boundary requires a P_d (Design Pressure) equal to 2485 psig times 1.1 (T 200°F) for a test pressure of

2733.5 psig. The nominal operating pressure P_0 for the adjoining Class 1 system is 660 psig which at 100°F requires a test pressure of 726 psig. As is evident since isolation is not practical, the normal Class 2 test pressure will be far in excess of the test pressure for the Class 1 system.

Evaluation

For the Class 1 portion of the subject piping, system design causes pressure to be retained by the first valve in a series of two check valves. Therefore, pressurization of the piping between valves is not possible. The alternate test pressure proposed by the licensee is judged to be adequate to detect structural degradation.

For the Class 2 piping, isolation of Class 1 and Class 2 systems at the boundary cannot be accomplished. To prevent overpressurization of the Class 1 portions of these systems, these portions of the piping systems are examined volumetrically under Category B-J. It is judged that these examinations and alternate testing will be acceptable in providing for adequate assurance of the systems' integrity for safe operation of the facility during this inspection period.

Conclusions and Recommendations

Based on the above evaluation, Code requirements are impractical. This relief is granted.

2. Relief Request RR-2

Relief Request Withdrawn.

3. Request Request RR-3, Piping Leading to the Seal of Reactor Coolant Pumps

2-RC-P-1A

2-RC-P-1B

2-RC-P-1C

Piping associated from the flange to the pump.

Code Requirement

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.
- (c) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from Code test pressure requirements.

Proposed Alternative Examination

The normal system leakage tests and VT-2 examination of the piping from the flanges to the pumps will be adequate, and an alternative test is not necessary.

Licensee Basis for Relief

The number one seal return is the pressure boundary for the reactor coolant pumps. The nature of the design of this system precludes the use of an external pressure source for this test; as excessive pressure could damage the seal.

Evaluation

The design of the reactor coolant pump seal supply system does not allow isolation of the reactor pumps' seals. Testing the subject piping at Code required pressure could damage the pump seals. The alternative test pressure (i.e., normal operating pressure) is judged adequate to ensure structural integrity.

Conclusions and Recommendations

Based on the above evaluation, Code requirements are impractical. This relief is granted.

4. Relief Request RR-4, Piping and Valves Associated with the Pressurizer as listed below:

2-CH-323 to the flange prior to 2-RC-P-1A
2-CH-333 to the flange prior to 2-RC-P-1B
2-CH-349 to the flange prior to 2-RC-P-1C

Code Requirement

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.
- (c) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested to test subject piping and components to 1.25 times pressurizer safety set point.

Proposed Alternative Examination

Test piping and components to 1.25 times pressurizer safety set point.

Licensee Basis for Relief

It is requested that the piping and valves described be examined during the Class 2 hydrostatic test which will be conducted on the attached piping. This hydrostatic test will be conducted at 1.25 times the pressurizer safety set point (2485 psig). The hold time

for this hydro is the same as a Class 1 hydro. It is felt that a Class 2 hydrostatic test will be the more restrictive test.

Evaluation

The licensee has provided no justification for the subject relief request. An evaluation of the requested relief cannot be completed until the licensee provides justification for requesting relief.

Conclusions and Recommendations

The licensee has not provided any technical justification for requesting relief. Therefore, this relief is denied until justification is presented for review.

5. Relief Requests RR-6, and RR-7, Testing Between Two Normally Closed Motor Operated Valves

o Residual Heat Removal

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
MOV-2701	14"-RH-101-1502	MOV-2700

Code Requirement

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 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.
- (c) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from meeting the pressure requirements in testing the subject piping.

Proposed Alternative Examination

Alternative to System Hydrostatic Test:

MOV-2701 and the piping between MOV-2701 and MOV-2700 will be tested in accordance with the Class 2 hydrostatic test to be administered to 14"-RH-118-602 on the suction side of the residual heat removal pumps. This piping is protected from overpressure by RV-2721 which is set at 600 psig. Class 2 test pressure will be 750 psig. It is felt that a VT-2 examination at this test pressure

will identify any leakage and eliminate the overpressurization risk the Class 1 hydrostatic test presented.

Alternative to System Leakage Test:

During the conduct of the Class 2 functional test on 14"-RH-118-602, MOV-2701 will be open as well as MOV-2700. This piping will be examined to the normal VT-2 requirements at the functional test conditions.

Licensee Basis for Relief

During a normal hydrostatic test of the primary, MOV-2700 is closed in addition to MOV-2701. This prevents pressurization of MOV-2701 and the piping between the two MOVs. Both valves are closed to prevent possible overpressurization of the residual heat removal system.

Evaluation

The system design prevents pressurization of the piping between the subject valves. Opening MOV-2700 could be done; however, this would require over-riding an interlock and violation of technical specifications. The alternative testing proposed by the licensee is judged to be adequate to determine system leak tightness. Ultrasonic examination of the pipe welds in the lines will help provide assurance of structural integrity.

Conclusions and Recommendations

Based on the above evaluation, Code requirements are impractical. This relief is granted.

6. Relief Requests RR-8 and RR-9, 4 Hour Holding Time for Pressure Testing for the following components and piping:

o Steam Generators and Piping Located on Station Prints:

11548-FM-64A
11548-FM-64B
11548-FM-68A
11548-FM-124A
11548-FM-138A
11548-FM-123A

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-RC-E-1A	30"-SHP-101-601 to 30"-SHP-122-601 to 4"-SHP-137-601	SV-MS-201A SV-MS-202A SV-MS-203A SV-MS-204A SV-MS-205A RV-MS-201A
2-RC-E-1A	30"-SHP-101-601 to 2"-GN-123-601	2-GN-1
2-RC-E-1A	30"-SHP-101-601 to 6"-SHP-145-601	NRV-MS-201A 2-MS-80,81, 266,74
2-RC-E-1A	30"-SHP-101-601 to 30"-SHP-122-601 to 3"-SDHV-101-601 to 4"-SDHB-104-601	HCV-MS-204

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-RC-E-1A	30"-SHP-101-601	2-MS-87, 2-MS-379
2-RC-E-1A	14"-WFPD-117-601	2-FW-27
		2-FW-10
		2-WT-10
2-RC-E-1A		2-BD-1
		2-BD-2
		2-BD-4
		2-RT-1
2-RC-E-1B	30"-SHP-102-601 to 30"-SHP-123-601 to 4"-SHP-138-601	SV-MS-201B
		SV-MS-202B
		SV-MS-203B
		SV-MS-204B
		SV-MS-205B
		RV-MS-201B
2-RC-E-1B	30"-SHP-102-601 to 2"-GN-124-601	2-GN-2
2-RC-E-1B	30"-SHP-102-601 to 6"-SHP-146-601	NRV-MS-201B
		2-MS-112,268
		113,106
2-RC-E-1B	30"-SHP-102-601 to 30"-SHP-123-601 to 3"-SDHV-102-601 to 4"-SDHV-104-601	HCV-MS-204
2-RC-E-1B	30"-SHP-102-601	2-MS-120, 2-MS-378

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-RC-E-1B	14"-WFPD-113-601	2-FW-41,58 2-WT-177
2-RC-E-1B		2-BD-11 2-BD-12 2-BD-14 2-RT-20
2-RC-E-1C	30"-SHP-103-601 to 30"-SHP-124-601 to 4"-SHP-139-601	SV-MS-201C SV-MS-202C SV-MS-203C SV-MS-204C SV-MS-205C RV-MS-201C
2-RC-E-1C	30"-SHP-103-601 to 2"-GN-125-601	2-GN-3
2-RC-E-1C	30"-SHP-103-601 to 6"-SHP-147-601	NRV-MS-201C 2-MS-152 149,208 143
2-RC-E-1C	30"-SHP-103-601 to 30"-SHP-124-601 to 3"-SDHV-103-601 to 4"-SDHV-104-601	HCV-MS-204
2-RC-E-1C	30"-SHP-103-601	2-MS-158 2-MS-377

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-RC-E-1C	14"-WFPD-109-601	2-FW-72 2-FW-89 2-WT-182
2-RC-E-1C		2-BD-21 2-BD-22 2-BD-24 2-BD-39

o Feedwater and Auxiliary Feedwater Connections

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-FW-12	14"-WFPD-117-601	2-FW-10
2-FW-43	14"-WFPD-113-601	2-FW-41
2-FW-74	14"-WFPD-109-601	2-FW-72
2-FW-31	3"-WAPD-110-601 to 3"-WAPD-109-601	2-FW-27
2-FW-30	3"-WAPD-109-601	2-FW-27
2-FW-62	3"-WAPD-112-601 to 3"-WAPD-111-601	2-FW-58
2-FW-61	3"-WAPD-111-601	2-FW-58
2-FW-93	3"-WAPD-114-601 to 3"-WAPD-113-601	2-FW-89
2-FW-92	3"-WAPD-113-601	2-FW-89

Code Requirement

IWA 5213(d) System Hydrostatic Tests

Four hour holding time required after attaining test pressure and temperature conditions for insulated systems.

Code Relief Request

Relief is requested from Code requirements.

Proposed Alternative Examination

The requirements of 3.10.2 of the Westinghouse Technical Manual require the following: "The secondary side hydrostatic test shall be conducted in accordance with the ASME Code Section XI for Class 2 Components. The secondary side pressure is to be raised to 1356 psig, held for 30 minutes and then returned to 1085 psig for a time sufficient to permit proper examination of welds, closures and surfaces for leakage or weeping."

Licensee Basis for Relief

Westinghouse requires specific testing requirements in order to maintain integrity and warranty of the steam generators. These requirements are found in the Westinghouse Technical Manual Steam Generator Vepco Surry Power Station Units 1 & 2 Volume 1, March 1979, Section 3.10.2, "Secondary Side Hydrostatic Test."

Evaluation

Testing hold time requirements of the Code are in conflict with testing requirements recommended by the manufacturer. Requiring the licensee to conform to Code requirements would void the warranty of the steam generators. It is judged that the manufacturer's requirements for hydrostatic testing will be adequate to ensure leak tight integrity of the steam generator and associated piping.

Conclusions and Recommendations

Based on the above evaluation, Code requirements are impractical. This relief is granted.

7. Relief Request RR-13, Piping Attached to the Refueling Water Storage Tank as follows:

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-CS-48	6"-CS-115-152	2-CS-47
	6"-CS-114-152	2-CS-46
	2"-CS-119-152	2-CS-45

Code Requirement

IWC-5222 System Hydrostatic Test

- (a) The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{SV} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{SV} for systems with Design Temperature above 200°F (93°C). The system pressure P_{SV} 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 (0-103kPa) storage tanks, the test pressure shall be 1.1 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) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from the pressure requirements of IWC-5222(a).

Proposed Alternative Examination

As an alternative, it is requested that the piping and components mentioned be tested to the requirements of IWC-5222(b,c) associated with 2-CS-TK-1 (RWST).

Licensee Basis for Relief

Tank 2-CS-TK-1 (RWST) and piping up to 2-CS-48 will be tested to system hydrostatic test criteria of IWC-5222(b,c). The piping and components listed attach to the system and are included only to the requirements of Reg. Guide 1.26 (Feb. 1976) to include piping up to the first valve that is either normally closed or capable of automatic closure. Since the requirements of IWC-5222(b,c) can only be applied from the RWST to 2-CS-48, the piping mentioned must be tested in accordance with IWC-5222(a). This test would be excessive since the piping would only see pressure associated with the RWST when performing its safety function.

Evaluation

The licensee has not provided sufficient justification for the relief requested. The piping can be tested in accordance with

Code requirements and will not impose undue hardship on the licensee.

Conclusions and Recommendations

Based on the above evaluation, this relief is denied.

8. Relief Request RR-14, Components and Associated Piping on the Circulating and Service Water System as follows:

o Circulating and Service Water System

<u>Recirculation Spray Heat Exchangers</u>	<u>Associated Piping Between Below Listed Valves Con- necting Heat Exchangers</u>
2-RS-E-1A	MOV-SW-205A, MOV-SW-204A
2-RS-E-1B	MOV-SW-205B, MOV-SW-204B
2-RS-E-1C	MOV-SW-205C, MOV-SW-204C
2-RS-E-1D	MOV-SW-205C, MOV-SW-204D

Code Requirement

IWD-5223 System Hydrostatic Test

- (a) The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{sv} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{sv} for systems with Design Temperature above 200°F (93°C). The system pressure P_{sv} 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 hydrostatic head, developed with the tank filled to its design capacity, shall be acceptable as the test pressure. For 0-15 psi (0-103 kPa) storage tanks, the test pressure shall be 1.1 P_G , Design Pressure of vapor or gas space above liquid level for which overpressure protection is provided by relief valve.
- (c) For the purpose of the test, open ended portions of suction or drain lines 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 nonclosed systems, any test or observation during system operation that demonstrates unimpaired flow shall be acceptable in lieu of a system pressure test.

- (d) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from the letter of the Code requirements for test pressure to be 1.10 times system design pressure.

Proposed Alternative Examination

As an alternative, it is requested that the test pressure for IWD-5223 Class III system hydrostatic test be the design pressure 25 psig. The normal VT-2 examination will be conducted at this pressure.

Licensee Basis for Relief

The design specification for this component (station #NUS 85) limits the recirculation spray coolers to design pressure (25 psig) and temperature between 42 and 95°F. Under the conditions specified in IWD-5223(a) a value 1.1 times the design pressure or 27.5 psig must be used as test pressure. It is felt no substantial gain would be realized at the required test pressure of 27.5 psig considering the design limitation of 25 psig.

Evaluation

The licensee has not provided adequate justification for granting relief from Code requirements. The subject piping apparently can be tested without imposing undue hardship on the licensee.

Conclusions and Recommendations

Based on the above evaluation, This relief is denied.

9. Relief Requests RR-15 and RR-16, Open Ended Intake Piping Before the First Shutoff Valve in Non-closed Systems Located on 11548-FM-71A and Non-isolable Class 3 Piping as follows:

- o Circulating and Service Water System

Components and piping as listed located on station print 11548-FM-71B, 11448-FM-72F, and 11448-FM-72C.

- o Component Cooling Water

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
2-CC-241	6"-CC-154-151	2-CC-242

<u>Component</u>	<u>Connected Piping</u>	<u>Component</u>
TV-CC-210A	6"-CC-156-151	RO-CC-200, 2-CC-246
2-CC-232	6"-CC-155-151	2-CC-233
TV-CC-210B	6"-CC-158-151	
TV-CC-210C	6"-CC-160-151	RO-CC-201, 2-CC-228
2-CC-223	6"-CC-153-151	2-CC-224

Code Requirement

IWD-5223 System Hydrostatic Test

- (a) The system hydrostatic test pressure shall be at least 1.10 times the system pressure P_{SV} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{SV} for systems with Design Temperature above 200°F (93°C). The system pressure P_{SV} 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 hydrostatic head, developed with the tank filled to its design capacity, shall be acceptable as the test pressure. For 0-15 psi (0-103 kPa) storage tanks, the test pressure shall be 1.1 P_G , Design Pressure of vapor or gas space above liquid level for which overpressure protection is provided by relief valve.
- (c) For the purpose of the test, open ended portions of suction or drain lines 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 nonclosed systems, any test or observation during system operation that demonstrates unimpaired flow shall be acceptable in lieu of a system pressure test.

- (d) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from the pressure requirements of IWD-5223(a).

Proposed Alternative Examination

Non-closed Systems

As an alternative, the requirements applied to open ended portions of discharge lines (IWD-5223(d)) will be applied in this case; that is confirmation of adequate flow during system operation shall be acceptable in lieu of system hydrostatic test.

Non-isolable Piping

As an alternative to two separate Class 2 and Class 3 hydrostatic tests, it is requested that a Class 3 hydro be run utilizing the relief valves RV-CC-212A, B, C set at 146 psig as P_{sv} for the test. This test will encompass the components and piping listed and a normal VT-2 examination will take place.

Licensee Basis for Relief

Non-closed Systems

The Code addresses the problem of performing hydrostatic test on open ended portions of discharge lines beyond the last shut-off valve in non-closed systems in IWD-5223(d) of the Code. A similar problem exists for the intake piping at Surry Unit 2 as it is non-isolatable for the increased pressure requirements of a hydrostatic test.

Non-isolable Piping

The piping and components listed above cannot be isolated from the Class III system encompassing the reactor containment air recirculation coolers. Since the Class II boundary contains no safety or relief valve, P_D (150 psig) will be used in determining test pressure or 165 psig. This pressure is higher than the test pressure to be used on the Class III side which is based on P_{SV} of 146 psig for a test pressure of 160.6 psig.

Evaluation

Due to system design, the subject piping cannot be isolated from an open ended tank for testing at Code required pressure. Requiring the licensee to test at Code pressure would impose an undue hardship by forcing a redesign of the system. The alternate testing proposed by the licensee is judged adequate to assure system leaktight integrity.

Conclusions and Recommendations

Based on the licensee's discussion, Code requirements are impractical and relief is granted.

10. Relief Request RR-17, Steam Generators - Primary to Secondary Leakage Detection

2-RC-E-1A

2-RC-E-1B

2-RC-E-1C

Code Requirement

IWA-5240

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

Code Relief Request

Relief is requested from direct visual observation for primary to secondary leakage.

Proposed Alternative Examination

The normal primary to secondary leakage surveillance requirements of the plant's technical specifications provide the necessary intended Code examination requirements for leakage identification.

Licensee Basis for Relief

Primary to secondary leakage detection using Code described visual detection techniques would be limited in usefulness and hazardous to conduct.

Evaluation

The Code does not intend direct visual examination of steam generator tubing during hydrostatic testing. Technical specification requirements for tube leakage limits and tubing inspections provide necessary assurance of tubing integrity.

Conclusions and Recommendations

The Code requirements for visual inspections were not intended to cover tubing in steam generators or other heat exchangers. Relief from this requirement is not necessary.

11. Relief Request RR-18, Class 3 Piping in the Component Cooling Water System

Code Requirement

IWD-5223 System Hydrostatic Test

- (a) The system hydrostatic test P_{SV} for systems pressure shall be at least 1.10 times the system pressure P_{SV} with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{SV} for systems with Design Temperature above 200°F (93°F). The system pressure P_{SV} 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 hydrostatic head, developed with the tank filled to its design capacity, shall be acceptable as the test pressure. For 0-15 psi (0-103 kPa) storage tanks, the test pressure shall be 1.1 P_G , Design Pressure of vapor or gas space above liquid level for which overpressure protection is provided by relief valve.

- (c) For the purpose of the test, open ended portions of suction or drain lines 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 nonclosed systems, any test or observation during system operation that demonstrates unimpaired flow shall be acceptable in lieu of a system pressure test.
- (d) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from pressure test requirements of IWD-5223 for portions of the Component Cooling Water System.

Proposed Alternative Test

As an alternative, systems which can be isolated from the main flow path and which do not place the station in violation of its technical specifications, while the core is loaded, will be hydrostatically tested in accordance with IWD-5223. Systems which cannot be isolated will be tested in accordance with IWD-5221, which will be normally conducted, and will be more than sufficient. Determination of testing will be done with emphasis on practicality, and in conducting IWD-5223 System Hydrostatic Test whenever possible; it should be noted that this is an upgrade of testing requirements over the first 10 year interval.

Licensee Basis for Relief

Component Cooling is utilized for cooling important safety related components associated with the nuclear core. This system cannot be isolated in most instances without removing fuel totally from the core. This action would be time consuming and delay unnecessarily the refueling process.

Evaluation

The Component Cooling Water System provides cooling water to vital plant components during plant operation as well as during plant shut-down. It is impractical to isolate portions of the system to perform the required hydrostatic test without causing possible damage to some components for which the system provides necessary cooling. In such cases, these portions of the system should not be isolated. The alternative testing proposed by the licensee is adequate to provide assurance of the structural integrity of the system.

Conclusion and Recommendations

Relief from the pressure test requirements for the portions of the Component Cooling Water System that cannot be isolated without having adverse affects on other plant components is granted as requested.

12. Relief Request RR-19, Class 3 Piping in the Service Water System

Code Requirement

IWD-5223 System Hydrostatic Test

- (a) The system hydrostatic test P_{SV} for systems pressure shall be at least 1.10 times the system pressure P_{SV} for systems with Design Temperature of 200°F (93°C) or less, and at least 1.25 times the system pressure P_{SV} for systems with Design Temperature above 200°F (93°C). The system pressure P_{SV} 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 hydrostatic head, developed with the tank filled to its design capacity, shall be acceptable as the test pressure. For 0-15 psi (0-103 kPa) storage tanks, the test pressure shall be 1.1 P_G , Design Pressure of vapor or gas space above liquid level for which overpressure protection is provided by relief valve.
- (c) For the purpose of the test, open ended portions of suction or drain lines 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 nonclosed systems, any test or observation during system operation that demonstrates unimpaired flow shall be acceptable in lieu of a system pressure test.
- (d) The pressure measuring instrument used for measuring system hydrostatic or pneumatic test pressure shall meet the requirements of IWA-5260.

Code Relief Request

Relief is requested from the test pressure requirement for the portion of the service Water System used for cooling the component cooling for the charging pumps and lube oil for the charging pumps.

Licensee Basis for Relief

This portion of the service water system is used for cooling component cooling for the charging pumps and lube oil for the charging pumps. The system was designed without the use of a safety or relief valve due to the low pressure output of the charging pump service water pumps which is 29 psig (max.) The maximum possible pressure source for the system would occur if an extensive heat exchanger leak occurred at either 2-SW-E-1A or 1B between component cooling and service water. This pressure could be no more than 50 psig the maximum discharge pressure of 2-CC-P-2A or 2B. It is felt that having to use P_d or 100 psig would be excessive for this system as the maximum pressure potential is 50 psig.

Proposed Alternative Test

As an alternative, it is requested that 50 psig be used as this systems PD valve until a safety or relief valve is placed within the systems to make use of PSV.

Evaluation

Section III of the ASME Code states that pressure relief devices shall be installed in pump discharge lines unless the lines and pumps are designed for the maximum pressure to which they may be subjected. Section XI requires Class 3 systems and components to be hydrostatically tested at 1.1 times P_{SV} , where P_{SV} is the lowest setting of a safety or relief valve provided for overpressure protection of the system or component. If a relief or safety valve were installed in the pump discharge line, its setting would probably be at or lower than 50 psig.

Conclusion and Recommendations

Based on the above evaluation, the alternate test pressure requested to be used by the licensee is acceptable. Relief from the Code requirement is granted.