CP&L

Carolina Power & Light Company

SEP 15 1992

SERIAL: NLS-92-236
10 CFR 50.55a

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62
INSERVICE TESTING PROGRAM
REQUESTS FOR PUMP AND VALVE RELIEF

Gentlemen:

The purpose of this letter is to request U.S. Nuclear Regulatory Commission approval of relief from certain Inservice Testing (IST) program requirements for the Brunswick Steam Electric Plant, Units 1 and 2.

The Code of Federal Regulations, 10 CFR 50.55a(g) requires that inservice testing of ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure vessel Code and applicable addenda, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(a)(3)(i), (a)(3)(ii), or (g)(6)(i). 10 CFR 50.55a(g)(6)(i) authorizes the NRC to grant relief from these requirements upon determining that (1) the proposed alternatives provide an acceptable level of quality and safety, (2) compliance would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety, or (3) conformance with certain requirements of the applicable Code edition and addenda is impractical.

By letter dated January 4, 1990, the NRC staff accepted Carolina Power & Light Company's IST Program for the second ten-year interval. Enclosed are two pump-related relief requests (PR-06 and PR-07) and six valve-related relief requests (VR-32, VR-33, VR-34, VR-35, VR-36, and VR-37) applicable to the second ten-year interval IST Program for the Brunswick Plant. Each relief request includes a list of the affected component(s), the functions provided by the affected component(s), the Code class of the affected component(s), the test requirement from which relief is requested, a description of the basis for the relief requested, and the proposed alternate testing requirement.

To support component and system testing activities prior to start-up of the Brunswick Plant, Unit 1 and 2 following the current outage, CP&L requests that the NRC complete review and approval of the relief requests provided herein by October 15, 1992.

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Please refer any questions regarding this submittal to Mr. M. R. Oates at (919) 546-6063.

Yours very truly,

M.R Oates for DCM

D. C. McCarthy
Manager
Nuclear Licensing Section

WRM/wrm (list2relf.wpf)

Enclosures

cc: Mr. S. D. Ebneter
Mr. R. H. Lo
Mr. R. L. Prevatte

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2
NRC DOCKET NOS. 50-325 & 50-324
OPERATING LICENSE NOS. DPR-71 & DPR-62
INSERVICE TESTING PROGRAM
REQUESTS FOR PUMP AND VALVE RELIEF

RELIEF REQUESTS:
PR-06
PR-07
VR-32
VR-33
VR-34
VR-35
VR-36
VR-37

RELIEF REQUEST NO. PR-06

COMPONENTS:

Nuclear Service Water Pumps:
1-SW-N-P-1A, 1B
2-SW-N-P-2A, 2B

Conventional Service Water Pumps:
1-SW-C-P-1A, 1B, 1C
2-SW-C-P-2A, 2B, 2C

Core Spray Pumps:
1-CS-P-1A, 1B
2-CS-P-2A, 2B

Residual Heat Removal Service Water Pumps:
1-RHR-SW-P-1A, 1B, 1C, 1D
2-RHR-SW-P 2A, 2B, 2C, 2D

Standby Liquid Control Pumps:
1-SLC-P-1A, 1B
2-SLC-P-2A, 2B

High Pressure Coolant Injection Main and Booster Pumps:
1-HPCI-P-MN-1, 1-HPCI-P-BST-1
2-HPCI-P-MN-2, 2-HPCI-P-BST-2

Service Water Lubrication Water Pumps:
1-SW-LW-P-1A, 1B
2-SW-LW-P-2A, 2B

Diesel Fuel Oil Transfer Pumps:
2-DG-OIL-P-1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B

Residual Heat Removal Pumps:
1-RHR-P-1A, 1B, 1C, 1D
2-RHR-P-2A, 2B, 2C, 2D

Reactor Core Isolation Cooling Pumps:
1-RCIC-P-1, 2-RCIC-P-2

FUNCTION:

Emergency Core Cooling
Safety-related equipment cooling
Safe reactor shutdown
Diesel generator fuel oil supply

CLASS:

2, 3, and NC

TEST REQUIREMENT:

Vibration testing requirement in accordance with IWP-4500.

BASIS FOR RELIEF:

The Brunswick Plant has previously committed to implementing OM-6 for vibration monitoring in pump relief request PR-01, approved by the

NRC in a Safety Evaluation issued January 4, 1990 for the Second Ten Year Inservice Testing Program. ANSI/ASME Operation and Maintenance standard (OM-6) is now incorporated into the 1989 edition of ASME Code, Section XI. Relief request PR-01 states the alternate testing, in lieu of bearing temperature, to be vibration testing in accordance with the 1987 Edition of ASME/ANSI OM, Operation and Maintenance of Nuclear Power Plants, Part 6, Inservice Testing of Pumps in Light-water Reactor Power Plants. The vibration testing in accordance with this standard is more stringent and is technically more accurate than that which is required in IWP-4500.

ALTERNATE TESTING: Perform vibration testing in accordance with the 1987 Edition of ASME/ANSI OM, Operation and Maintenance of Nuclear Power Plants, Part 6, Inservice Testing of Pumps in Light-water Reactor Power Plants.

RELIEF REQUEST NO. PR-07

COMPONENTS:

Nuclear Service Water Pumps:
1-SW-N-P-1A, 1B
2-SW-N-P-2A, 2B

Conventional Service Water Pumps:
1-SW-C-P-1A, 1B, 1C
2-SW-C-P-2A, 2B, 2C

Core Spray Pumps:
1-CS-P-1A, 1B
2-CS-P-2A, 2B

Residual Heat Removal Service Water Pumps:
1-RHR-SW-P-1A, 1B, 1C, 1D
2-RHR-SW-P-2A, 2B, 2C, 2D

High Pressure Coolant Injection Main and Booster P
1-HPCI-P-MN-1, 1-HPCI-P-BST-1
2-HPCI-P-MN-2, 2-HPCI-P-BST-2

Residual Heat Removal Pumps:
1-RHR-P-1A, 1B, 1C, 1D
2-RHR-P-2A, 2B, 2C, 2D

Reactor Core Isolation Cooling:
1-RCIC-P-1, 2-RCIC-P-2

FUNCTION: Emergency Core Cooling
Safety-related equipment cooling
Safe reactor shutdown

CLASS: 2 and 3

TEST REQUIREMENT: In accordance with Table IWP-3100-2, for differential pressure, the upper limit for the acceptable range is 1.02 times the reference differential pressure and the upper limit for the alert range is 1.03 times the reference differential pressure.

BASIS FOR RELIEF: High differential pressure detected during pump testing is a poor indicator of pump degradation as pump performance does not improve with time. Adherence to the Code specified alert and required action ranges can result in unnecessary pump retesting and/or repair. ANSI/ASME Operation and Maintenance standard (OM-6), now incorporated into the 1989 edition of ASME Code, Section XI, has raised the upper required action range to 1.1 times the reference differential pressure for all pump types. This higher limit was based in part on the recognition that improved vibration monitoring is a better indicator of pump degradation.

The Brunswick Plant has previously committed to implementing OM-6 for vibration monitoring in pump relief request PR-01, approved by the NRC in a Safety Evaluation issued January 4, 1990 for the Second Ten Year Inservice Testing Program.

ALTERNATE TESTING: The upper limit for the acceptable range will be 1.07 times the reference differential pressure. The upper limit for the alert range will be 1.1 times the reference differential pressure.

RELIEF REQUEST NO. VR-32

SYSTEM:	Feedwater
COMPONENT:	B21-F010A and B21-F010B
FUNCTION:	Feedwater containment isolation check valves which are required to open during an accident to admit flow from the HPCI and RCIC Systems.
CATEGORY:	A/C
CLASS:	1
TEST REQUIREMENT:	Full-stroke valve to the open position quarterly.
BASIS FOR RELIEF:	There is no external/remote means to verify valve position during system operation nor is there an external means to manually cycle the valves. NRC Generic Letter 89-04 requires verification of full-stroke to the open position by passing maximum accident flow through the check valve. The HPCI and RCIC Systems inject into the feedwater lines upstream of these valves (HPCI in A loop and RCIC in B loop). The HPCI System accident flow requirement is 4250 gpm; the RCIC System accident flow requirement is 400 gpm. During normal plant operation, the feedwater flow is approximately 12,500 gpm per loop. Since normal plant operation passes 12,500 gpm, which is greater than the maximum accident flow of either the HPCI or RCIC Systems, through these check valves, full-stroking of valves to the open position is verified by normal plant operation.
ALTERNATE TESTING:	None. Full stroke exercising of valves to open position inherently verified during normal plant operation.

RELIEF REQUEST NO. VR-33

SYSTEM:	Reactor Core Isolation Cooling
COMPONENT:	E51-V88
FUNCTION:	RCIC injection containment isolation check valve
CATEGORY:	A/C
CLASS:	1
TEST REQUIREMENT:	Full-stroke exercise valve to the open and closed position quarterly.
BASIS FOR RELIEF:	There is no external/remote means to verify valve position. The only way to full-stroke this valve to the open position during plant operation is to initiate the RCIC System and inject into the reactor vessel. Introducing non-preheated water into the reactor vessel requires the vessel shell temperature to be less than 200°F to limit possibility of thermal shock, which could cause reactor vessel nozzle cracking. During normal cold shutdown, the reactor vessel shell temperature does not fall below 200°F. The RWCU System, which is normally operating, also injects through this valve. RWCU System design flow is 200 gpm; the RCIC System design flow is 425 gpm. Therefore, partial valve stroke is inherently verified during plant operation.
ALTERNATE TESTING:	The valve closed position is verified by 10 CFR 50, Appendix J leak testing during refueling. The check valve is incorporated into a disassembly program which meets the guidance of NRC Generic Letter 89-04. Upon disassembly, the valve will be visually examined and manually cycled. NOTE: For grouping characteristics/groupings reference Engineering Procedure ENP-16.7, Procedure for Administrative Control of the Check Valve Disassembly Program.

RELIEF REQUEST NO. VR-34

SYSTEM:	High Pressure Coolant Injection
COMPONENT:	E41-V159
FUNCTION:	HPCI injection isolation check valve
CATEGORY:	C
CLASS:	1
TEST REQUIREMENT:	Full-stroke exercise valve to the open and closed position quarterly.
BASIS FOR RELIEF:	The only way to cycle valve during plant operation is to initiate the HPCI System and inject into the reactor vessel. Introducing non-preheated water into the reactor vessel requires the vessel shell temperature to be less than 200°F to limit possibility of thermal shock, which could cause reactor vessel nozzle cracking. During normal cold shutdown, the reactor vessel shell temperature does not fall below 200°F. During unit shutdown, the valve can be manually exercised; however, the valve is located in the MSIV pit. Access requires the lifting of the MSIV plug, which is not a normal cold shutdown activity.
ALTERNATE TESTING:	Manually full-stroke exercise valve to the open and closed position at each refueling.

RELIEF REQUEST NO. VR-35

SYSTEM:	Service Water System
COMPONENT:	SW-V144, SW-V148
FUNCTION:	Isolate Service Water System from well water and isolate service water in case of a well water line break.
CATEGORY:	C
CLASS:	3
TEST REQUIREMENT:	Full-stroke exercise valves to the closed position quarterly.
BASIS FOR RELIEF:	There is no external/remote means to verify valve position during system operation, nor is there an external means to manually cycle the valves. There are no vent paths upstream of the check valves to perform a reverse flow test. The testing of these valves requires opening the system upstream of the valves. Downstream of the valves there are no isolation valves to isolate the Service Water System in case a check valve fails to close.
ALTERNATE TESTING:	The valve will be incorporated in a disassembly program, which meets the guidance of NRC Generic Letter 89-04. Upon disassembly, the valve will be visually examined and manually cycled. NOTE: For grouping characteristics/groupings reference Engineering Procedure ENP-16.7, Procedure for Administrative Control of the Check Valve Disassembly Program.

RELIEF REQUEST NO. VR-36

SYSTEM: Reactor Water Cleanup

COMPONENT: G31-F039

FUNCTION: To close for RCIC injection

CATEGORY: C

CLASS: 1

TEST REQUIREMENT: Full stroke exercise to the closed position quarterly.

BASIS FOR RELIEF: This valve has to close upon RCIC System injection to ensure water is not directed into the Reactor Water Cleanup System.

There is no external/remote means to verify the check valve's position during normal operation, nor is there any external means to cycle the valve while the system is shut down.

To verify the valve's ability to close requires pressurizing downstream of the valve and observing the pressure upstream. There are no test connections that will allow this pressurization. Pressurizing the piping will require initiating the RCIC System and injecting into the reactor vessel. In order to initiate the RCIC System, the plant is required to be operating (producing steam). Introducing non-preheated water into the reactor during operation could reduce power and cause reactor vessel nozzle cracking due to thermal shock. During cold shutdowns, the shell temperature does not normally fall below 200°F, which is the upper temperature limit to avoid thermal shock when introducing non-preheated water.

ALTERNATE TESTING: The valve will be incorporated in a disassembly program which meets the guidance of NRC Generic Letter 89-04. Upon disassembly, the valve will be visually examined and manually cycled.

NOTE:
For grouping characteristics/groupings reference Engineering Procedure ENP-16.7, Procedure for Administrative Control of the Check Valve Disassembly Program.

RELIEF REQUEST NO. VR-37

SYSTEM:	Nitrogen and Air Supply Systems
COMPONENT:	Check Valves in the Nitrogen and Air Supply Systems
FUNCTION:	Open to allow air or nitrogen flow.
CATEGORY:	C
CLASS:	1, 2, and 3
TEST REQUIREMENT:	There is no external/remote means to verify valve position. IWV-3500 requires a quarterly full-stroke exercise. Position 1 of NRC Generic Letter 89-04 defines full-stroke as the valve's ability to pass maximum accident condition flow.
BASIS FOR RELIEF:	Relief is requested from defining and verifying maximum accident condition flow for all nitrogen and air supply check valves. Defining and verifying full flow through small check valves in air and gas systems is typically impractical. The design function of check valves installed in air and gas systems is to regulate pressure, not flow. These valves will only open when a differential pressure exists across the valve, in which case the valve is only required to open enough to re-establish the pressure. The valves are functionally tested during their associated component and/or system test. Defining and trying to verify maximum accident flow through the check valve would not provide additional assurance of the associated components operability. Disassembly of these check valves to verify full stroke is not practical due to their size (i.e., primarily 1/4 inch valves) and design.
ALTERNATE TESTING:	All safety related check valves in air and/or gas systems will be functionally tested during their associated component and/or systems test. Opening and/or closing of these valves will be verified, as applicable, during these tests.