CP&L

Carolina Power & Light Company
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville SC 29550

Serial: RNP-RA/00-0205

JAN 2 4 2001

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

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

SUPPLEMENTAL INFORMATION TO
REQUEST FOR RELIEF FROM ASME BOILER AND
PRESSURE VESSEL CODE, SECTION XI, REGARDING
SYSTEM PRESSURE TESTING - REQUEST NO. 25, REVISION 1

Ladies and Gentlemen:

This letter contains supplemental information regarding Carolina Power & Light (CP&L) Company's request for relief in accordance with 10 CFR 50.55a(a)(3) from the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." The relief request involves alternatives to hydrostatic testing for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 and was submitted by letter dated July 28, 2000, with a response to an NRC Request for Additional Information (RAI) submitted by letter dated November 16, 2000. This information is submitted in response to a telephone conversation conducted between CP&L and the NRC on December 15, 2000.

The attachment to this letter contains supplemental information in support of alternative examinations from those specified in Code Case N-498-1, "Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems," relating to pressure testing of Class 1 systems. Please note that in the attached discussion, CP&L withdraws its request for relief for the system pressure test requirement for the Pressurizer Spray Line and Pressurizer Auxiliary Spray Line.

A047

If you have any questions concerning this matter, please contact Mr. H. K. Chernoff.

Sincerely,

B. L. Fletcher III
Manager - Regulatory Affairs

ALG/alg
Attachment

c: Mr. L. A. Reyes, NRC, Region II
Mr. R. Subbaratnam, NRC, NRR
NRC Resident Inspector, HBRSEP

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

SUPPLEMENTAL INFORMATION IN SUPPORT
OF ALTERNATIVE EXAMINATIONS FROM THOSE SPECIFIED
IN CODE CASE N-498-1 RELATING TO PRESSURE TESTING OF CLASS 1 SYSTEMS

Carolina Power & Light (CP&L) Company has requested relief involving alternatives to hydrostatic testing for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 by letter dated July 28, 2000. The NRC issued a Request for Additional Information (RAI) regarding Carolina Power & Light (CP&L) Company's request for relief, and CP&L responded by letter dated November 16, 2000. A telephone call was held between representatives of CP&L and the NRC on December 15, 2000, relating to the request for relief for Class 1 system pressure testing. The relief request involves alternatives to accepted Code Case N-498-1, "Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems," for hydrostatic testing. The alternatives are to not pressurize to the second Class 1 isolation device and to pressurize certain portions of Class 2 and 3 systems with reduced hold times.

Small Size Class 1 System Vent, Drain, Test and Fill Lines

CP&L has requested relief from fully pressurizing piping between the first and second isolation device on small size vent and drain lines. There are twenty-six vent, drain, test and fill lines in the Reactor Coolant System (RCS) ranging in size from ¾ inch to two inches. These piping configurations were identified by CP&L letters dated July 28, 2000, and November 16, 2000. The configurations are either two small isolation valves in series, a valve and blind flange, or a valve and cap. In some configurations, the piping between the two vent and drains will tee to a third valve that is also the second isolation boundary. The piping segments provide the design required double isolation barrier for the reactor coolant pressure boundary. The Code Case system pressurization test would be performed in MODE 3 at the normal operating pressure of 2235 psig at a nominal temperature of about 547°F. Pressure testing of these piping segments at nominal operating pressure in MODE 3 would require the opening of the inboard isolation valve at the normal operating RCS temperature and pressure conditions. In so doing, the design requirement for two primary coolant pressure boundary isolation devices would be violated. Additionally, opening of these valves introduces the potential risk for spills and personnel contamination. For configurations where blind flanges or caps are installed as the isolation device, opening of the inboard valve introduces the possibility of a personnel safety hazard if a flange or cap fails in the presence of inspection personnel.

Hydrostatic pressure testing in MODEs 5 and 6 would require a hydrostatic pump to be connected at each segment location. Code case pressure testing while defueled would require re-installation of the reactor vessel head and re-pressurizing the RCS out to the second isolation valve. For vent, drain, test, and fill lines that consist of only a first and second primary isolation device for the reactor coolant pressure boundary, and do not have a third

"tee" connection, a modification for installation of a pump connection would be required to pressurize the segment.

For vent, drain, test, and fill lines located overhead and away from normal personnel access areas, ladders or scaffolding would have to be installed to provide access to the piping segment in order to open the valve. This process would add to the radiation exposure dose associated with pressure testing these lines.

The RCS vent, drain, test, and fill lines are located in areas involving occupational radiation exposure, and pressure testing of these lines would increase occupational radiation dose. A breakdown of the occupational does estimates for each type of line is provided below.

1. Pressurizer safety valve drain legs and spray line vent (4 items)	160 mrem
2. RCS Loop drain legs (3 items)	400 mrem
3. Reactor Vessel Head Vents (1 item)	150 mrem
4. Reactor Coolant Pump (RCP) Seal injection and leakoff vents and drains (10 items)	240 mrem
5. Chemical and Volume Control (CVCS) letdown vent and drains (3 items)	300 mrem
6. Safety Injection Loop vents (3 items)	330 mrem

Based upon these estimated dose rates, a total dose estimate of 1580 mrem is predicted to be required to pressure test small vents, drains, test, and fill lines by opening the primary inboard isolation device. This dose is exclusive of the dose incurred to install scaffolding, which is approximately 3.84 rem. These occupational radiation exposure estimates are based on a pressure test in MODE 5 or 6 when each of the blind flanges, caps, or outboard isolation valves is removed or opened, a test flange installed, and a hydrostatic pump connected. Personnel would be in the area to install scaffolding where necessary, connect and disconnect the test equipment, perform the test, and restore the system to the pre-test configuration.

These piping segments are VT-2 inspected through the entire length as part of the Class 1 system inspection at the conclusion of each refueling outage. The proposed system pressure tests will not specifically pressurize past the first isolation valve for this inspection. No external or visible leakage will be allowed for a test to be successful. Since this type of test will assure that the combined first and second isolation devices are effective in maintaining the reactor coolant pressure boundary at normal operating temperature and pressure, the increase in safety achieved from the required Code Case pressure test is not commensurate with the hardship of performing such testing.

Larger Size Class 1 Piping Segments

Pressurizer Spray and Auxiliary Spray Lines

CP&L withdraws its request for relief for the Pressurizer Spray and Auxiliary Spray lines. During MODE 3, the Pressurizer is at the high point of the RCS at normal operating pressure and temperature. In such a condition, the Pressurizer level is normally in automatic pressure control, which will result in system pressurization of the spray lines. The Auxiliary Spray line need only be actuated sufficiently to result in a spray to pressurize that line.

14 Inch Residual Heat Removal Motor Operated Valves

This piping segment consists of 42 feet of 10 inch piping between Residual Heat Removal (RHR) inlet valves RHR-750 and RHR-751. These valves are interlocked at a required setpoint of ≤ 474 psig to avoid over-pressurization of the RHR system. The interlock prevents manual opening of the valves from the Control Room with RCS pressure above the setpoint. There are no test connection points in this segment of the line. This segment was last tested during the second ten-year Inservice Inspection interval, with the vessel defueled, as part of the RCS hydrostatic test.

The piping segment is VT-2 inspected through the entire length as part of the Class 1 system inspection at the conclusion of each refueling outage. The proposed system pressure test will not specifically pressurize past the first isolation valve for this inspection. It is possible that the piping becomes pressurized due to minor leakage past the first isolation valve. No external or visible leakage will be allowed for the test to be successful. This test will provide assurance that the combined first and second isolation valves are effective in maintaining the reactor coolant pressure boundary at normal operating temperature and pressure. The segment is inspected again once per period as part of the Class 2 system inspection for the RHR system.

Safety Injection Loops Low Head Check Valves SI-875A/B/C and Upstream Piping

These three piping segments consist of a 3 foot 8 inch piping span connected by a tee to a 10 inch piping span along with a short ¾ inch connection. These lines are for injecting low head Emergency Core Cooling System (ECCS) water from the accumulators and the low head safety injection system (i.e., RHR system in ECCS configuration). The primary isolation and secondary isolation devices for the 8 inch and 10 inch lines are check valves oriented to flow into the RCS. The piping segments provide the design required double isolation barrier for the reactor coolant pressure boundary. Pressure testing of these piping segments in MODEs 5 and 6 would require a modification to the plant to allow pressurizing the piping segments between the primary and secondary isolation devices at the hydrostatic pressure without pressurizing the RCS.

Pressure testing in MODE 3 would require a hydrostatic pump be connected at each segment location. In so doing, the design requirement for two primary coolant pressure boundary

isolation devices would be violated. For test locations located overhead and away from normal personnel access areas, ladders or scaffolding would have to be installed to provide access to the piping segment and open the valve. This process would add to the occupational dose associated with pressure testing these lines.

These lines are located in areas involving occupational radiation exposure and pressure testing of these lines would increase occupational radiation dose. A total dose estimate of 600 mrem is predicted to pressure test these lines by installation of test lines and pressurizing the segments. These occupational radiation exposure estimates are based on a pressure test in MODE 3 when a test connection is installed and a hydrostatic pump connected. Personnel would be in the area to install scaffolding where necessary, connect and disconnect the test equipment, perform the test, and restore the system to the pre-test configuration.

The piping segments are VT-2 inspected through the entire length as part of the Class 1 system inspection at the conclusion of each refueling outage. The proposed system pressure test will not specifically pressurize past the first isolation valve for this inspection. It is possible that the piping becomes pressurized due to minor leakage past the first isolation valve. Otherwise, the pressure in the segment will be at least at the operating pressure of the Accumulators, which are pressurized to between 600 and 660 psig. No external or visible leakage will be allowed for the test to be successful. Since this test will assure that the combined first and second isolation devices are effective in maintaining the reactor coolant pressure boundary at normal operating temperature and pressure, the increase in safety achieved from the required Code Case pressure test is not commensurate with the hardship of performing such testing. The segment is inspected again once per period as part of the Class 2 system inspection for the SI system.

Safety Injection Loop "B" and "C" High Head Check Valves SI-874A/B and Upstream Piping

These two piping segments consist of a 2 inch piping span between two check valves oriented toward the RCS. These lines are for injecting high head ECCS water into the hot legs after an accident. The primary and secondary isolation devices are an inboard check valve oriented to flow into the RCS and an outboard motor-operated valve. The piping segments provide the design required double isolation barrier for the reactor coolant pressure boundary. Pressure testing of these piping segments at nominal operating pressure in MODE 3 would require a modification to allow pressurizing to the normal operating RCS temperature and pressure conditions. Pressure testing in MODEs 5 and 6 would require a modification to allow a hydrostatic pump to be connected at each segment location.

The piping segments are VT-2 inspected through the entire length as part of the Class 1 system inspection at the conclusion of each refueling outage. The proposed system pressure test will not specifically pressurize past the first isolation valve for this inspection. It is possible that the piping becomes pressurized due to minor leakage past the first isolation valve. No external or visible leakage will be allowed for the test to be successful. This test will assure that the combined first and second isolation valves are effective in maintaining the reactor coolant

pressure boundary at normal operating temperature and pressure. The segment is inspected again once per period as part of the Class 2 system inspection for the SI system.