CP&L

Carolina Power & Light Company

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APR 14 1988

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Senior Vice President
Operations Support

SERIAL: NLS-88-096
10CFR50.55a

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

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324/LICENSE NO. DPR-62
IN-SERVICE INSPECTION - ASME CODE RELIEF REQUEST

Gentlemen:

Carolina Power & Light Company (CP&L) hereby requests an exemption from the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, IWA-5214(e), for the Brunswick Steam Electric Plant, Unit 2 (BSEP-2). IWA-5214(e) requires a system pressure test as described in IWA-5211(a), (b) or (c) if mechanical joints of a component are disassembled and reassembled. The provisions of 10CFR50.55a.a(3) allow for exemptions when compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

BACKGROUND

During the hydrostatic test performed on March 19, 1988 on the BSEP-2 reactor coolant system, a seat leakage problem was detected in the reactor vessel head vent valve area. A flange on the line leading to the head vent valves was opened to perform a leak test to determine whether the manual valves (B21-F001 and B21-F002) on the bypass line around the remote operated valves (B21-F003 and B21-F004), or the remote operated valves were leaking. It was determined that both the F003 and the F004 valves were leaking due to bad seats. One replacement valve was found on site, and procurement of a second replacement valve would take approximately 90 days. Therefore, it was decided to attempt to repair one valve and replace the other. In the course of this action, it was determined that a repair could not be effected and both valves would need to be replaced in order to maintain redundancy and necessary leak requirements.

The purpose of these two remote operated valves is to vent noncondensible gases from the reactor vessel head during startup and while shutdown. The valves are normally opened at reactor coolant temperatures below 212 degrees F. They are closed during normal operation. There are also two manual valves that can serve the same

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function. The configuration of these lines and valves is shown in Updated Final Safety Analysis Report Figure 5.1.1-1. The manual valves can be manually opened and closed as the system temperature reaches 212 degrees F. The dose rate in the vicinity of the manual valves is approximately 30 mR/hour. Operational control of the automatic and manual valves is administered through plant procedures; there are no Technical Specification requirements on the operation of these valves.

On April 5, 1988, after being unable to repair the F003 and F004 valves, it was decided that the best solution would be to remove the F003 and F004 valves and place two caps on the 1/2 inch line. This was completed April 7, 1988. The system configuration is shown in Figure 1, and the system after the capping is shown in Figure 2. The line on the F003 side was capped with a stainless steel cap, and the line on the F004 side with a carbon steel cap. The piping is carbon steel. Use of the Class 1 stainless steel cap was necessary because a Class 1 carbon steel cap was not available. A liquid penetrant examination was satisfactorily performed on the bi-metallic stainless to carbon steel weld. A VT-2 inspection of the caps installed will be performed at operational pressure.

TEST REQUIREMENT

The ASME Boiler and Pressure Vessel Code, Section XI, IWA-5214(e) requires a system pressure test if mechanical joints of a component are disassembled and reassembled. The flange, which is 2-inches in diameter, was disassembled and reassembled after the reactor coolant system hydrostatic test was performed on March 19, 1988. IWA-5214(e) references system pressure tests described in IWA-5211(a), (b) or (c). The system pressure test associated with IWA-5211(a), which requires a VT-2 examination be performed while the system is in service at operating pressure (1005 psig), applies to the flange that was opened.

JUSTIFICATION

The VT-2 examination at normal operating pressure requires visual observation of the flange at approximately 1005 psig. This would require a drywell entry at approximately 5 to 8 percent power. At that power, the ambient temperature in the reactor vessel head area is typically 170-190 degrees F, which represents a significant personnel safety concern. Due to radiological conditions in the confined area in which the flange is located, at least two people would be required to make the entry. It is anticipated that such an entry would take approximately 30 minutes and that the total radiation exposure would be approximately 1 man-rem. Each person would be required to wear protective clothing, possibly including a wet suit, and a Scott air pack. There is no installed lighting or power outlet in the area; therefore, lighting and power necessary for the inspection would need to be carried. Since the area can be accessed only through an 18 inch diameter manway and a Scott air pack could not be worn through the manway, the air pack would have to be taken off the back and passed

through the manway while still providing breathing air. The task of holding an air tank over one's head while climbing up a ladder through an 18 inch diameter manway in a highly contaminated area while maintaining a proper seal between the mask and face would be difficult. In the event something should happen to the personnel while performing the inspection, these conditions, along with the unusually high temperatures, could easily result in personnel casualties or injuries. Any required rescue would be equally hazardous.

CP&L requests an exemption from performing a VT-2 inspection at a reactor pressure of 1005 psig due to these severe personnel safety hazards. Since the flange is located inside the drywell, any leakage will be directed to the drywell equipment sump. The Company is required to monitor leakage to the drywell sump at least every 4 hours. The unit would be shutdown per Technical Specification requirements if there was unidentified leakage greater than 5 gallons per minute averaged over a 24 hour period, or any unidentified leakage increase of more than 2 gallons per minute over any 24 hour period, or if the total leakage averaged over any 24 hour period exceeds 25 gallons per minute. There is no equipment in the immediate area of the flange that could be damaged by leakage from the flange. There is also temperature monitoring instrumentation in the area that would aid in leak detection.

The flange gasket is an asbestos filled, spiral wound 304 stainless steel Flexitallic gasket. This type of gasket is used in the majority of flanges at BSEP. Operational experience has shown this type of flange to be very reliable. In addition, torque on the flange bolts was verified upon reassembly of the flange in accordance with approved plant procedures.

ALTERNATE TEST

Carolina Power & Light Company proposes a VT-2 examination of the 2-inch flange at a lower pressure of approximately 100 psig. This would allow observation of the flange at approximately 1 to 2 percent power when the temperature would not be as severe and the dose rate would be lower.

ADMINISTRATIVE

Carolina Power & Light Company has reviewed this request in accordance with 10CFR170.12 and determined that an application fee is required. A check for $150.00 is enclosed in payment of this fee.

Approval of this request is necessary to support startup of BSEP-2 from the current refueling outage. Therefore, NRC approval is requested by April 18, 1988.

Please refer any questions regarding this submittal to Mr. Stephen D. Floyd at (919) 836-6901.

Yours very truly,

L. W. Eury

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Enclosures

cc: Dr. J. Nelson Grace
Mr. W. H. Ruland
Mr. E. D. Sylvester

FIGURE 1

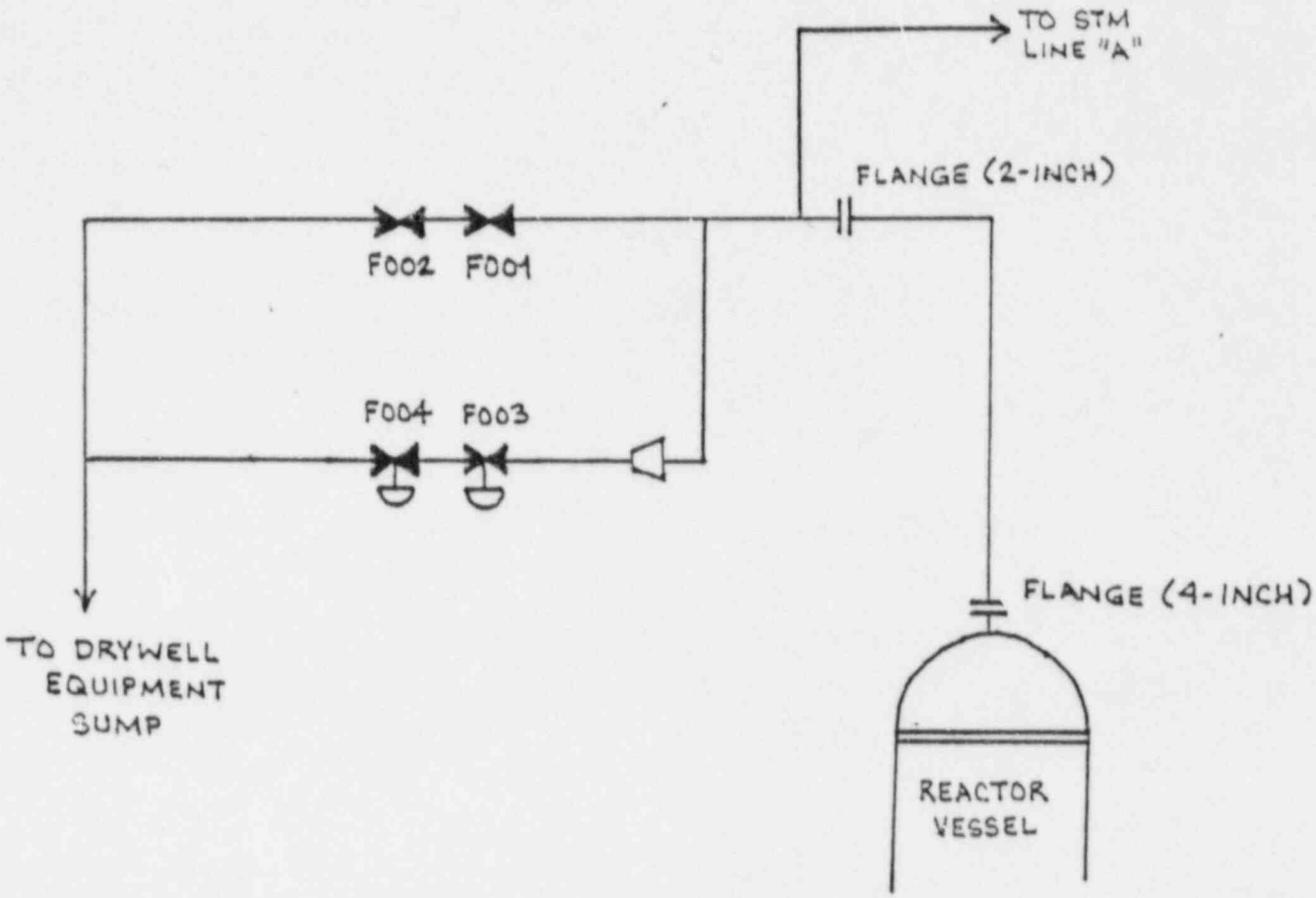
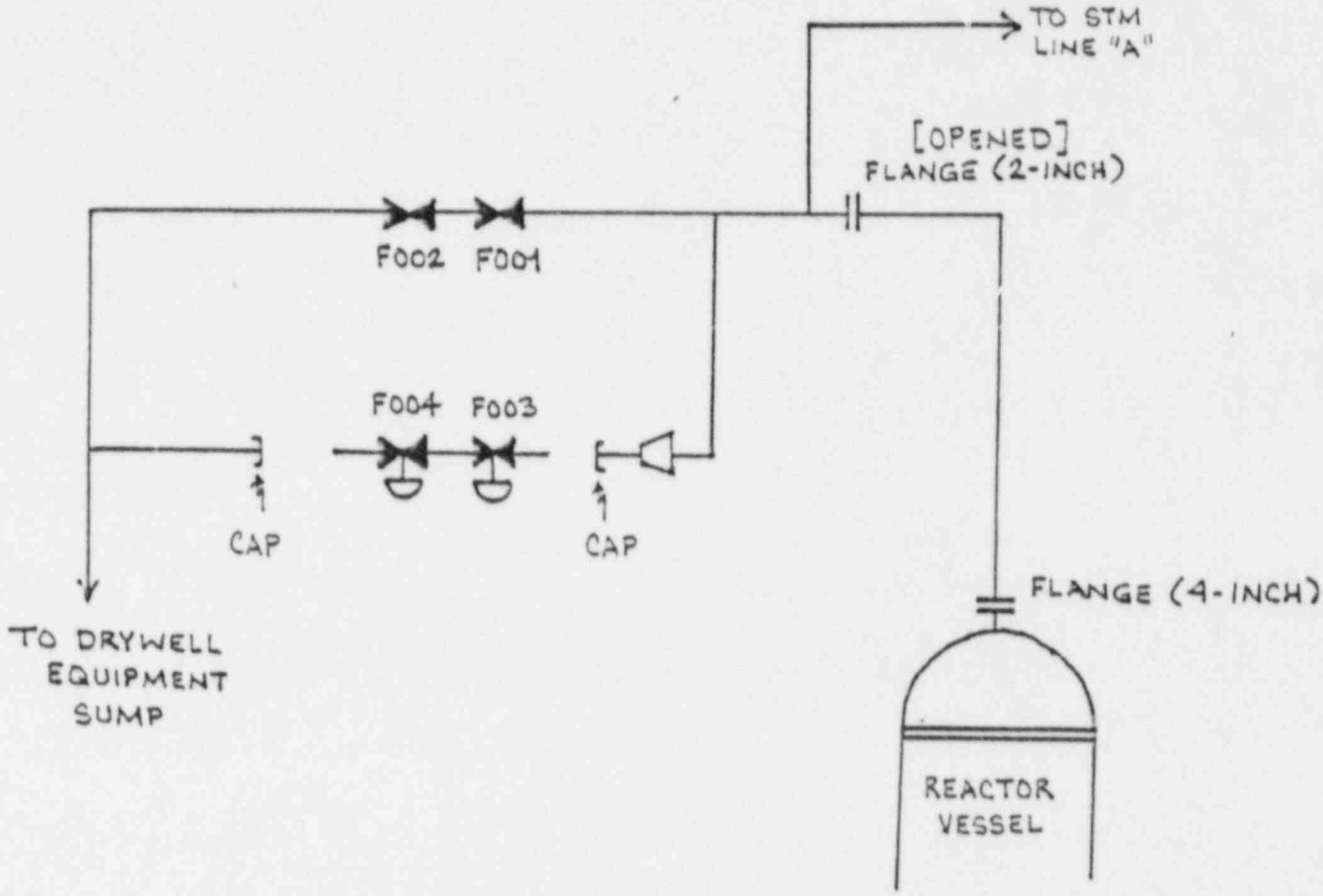

TO STM
LINE "A"
FLANGE (2-INCH)
F002
F001
F004
F003
FLANGE (4-INCH)
TO DRYWELL
EQUIPMENT
SUMP
REACTOR
VESSEL

FIGURE 2


TO STM
LINE "A"
[OPENED]
FLANGE (2-INCH)
F002
F001
F004
F003
CAP
CAP
TO DRYWELL
EQUIPMENT
SUMP
FLANGE (4-INCH)
REACTOR
VESSEL