CP&L

Carolina Power & Light Company
P.O. Box 10429
Southport, NC 28461-0429

DEC 1 8 2000

10 CFR 50.55a(a)(3)(i)

SERIAL: BSEP 00-0176

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
ADDITIONAL INFORMATION IN SUPPORT OF REQUEST FOR APPROVAL OF RELIEF REQUEST FOR THE THIRD 10-YEAR INSERVICE INSPECTION PROGRAM
(NRC TAC NOS. MB0248 AND MB0249)

Gentlemen:

By letter dated October 12, 2000 (Serial: BSEP 00-0089), in accordance with 10 CFR 50.55a(a)(3)(i), Carolina Power & Light (CP&L) Company submitted a request for relief from the requirements of the 1989 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. As an alternative to the requirements of the ASME Code, Section XI, CP&L proposed to verify the structural integrity of portions of the Containment Atmosphere Control (CAC) system and the entire Standby Gas Treatment (SGT) system through walkdowns performed by plant personnel. CP&L designated this request as Relief Request RR-26.

In response to telephone discussions with the NRC on November 21, 2000, regarding the basis for the proposed alternative, CP&L has revised Relief Request RR-26 to expanded and clarify the basis supporting the proposed alternative. While preparing the revised relief request, CP&L determined that the tag numbers identifying the CAC system Code boundary valves were incorrect. The correct identification numbers for these valves has been included in the revised relief request. A revised version of Relief Request RR-26 is enclosed.

During the November 21, 2000, discussions, the NRC asked CP&L to review and confirm the regulation under which the relief request was being submitted. CP&L does not believe that performance of the system functional test and visual (VT-2) examination, as required by the ASME Code, provides an effective method of detecting leakage or structural distress in the applicable portions of the SGT or CAC systems. Although these examinations require significant outage resources and scheduling coordination to accomplish, CP&L does not currently believe that sufficient basis exists to submit a request for relief based on hardship. Furthermore, these examinations can be performed and thus are not impractical. For these reasons, CP&L does not believe that the proposed request meets the conditions in

A047

10 CFR 50.55a(a)(3)(ii) regarding hardship or unusual difficulty nor the conditions in 10 CFR 50.55a(g)(5)(iii) regarding impracticality. CP&L considers the proposed structural integrity walkdown as an acceptable alternative to the Code requirements. The performance of this walkdown each refueling outage will ensure system integrity and provide an acceptable level of quality and safety. As a result, this request for relief is being submitted in accordance with 10 CFR 50.55a(a)(3)(i).

Please refer any questions regarding this submittal to Mr. Leonard R. Beller, Supervisor - Licensing, at (910) 457-2073.

Sincerely,

David C. DiCello
Manager - Regulatory Affairs
Brunswick Steam Electric Plant

WRM/wrm

Enclosure: Relief Request RR-26, Revision 0

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Luis A. Reyes, Regional Administrator
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303-8931

U. S. Nuclear Regulatory Commission
ATTN: Mr. Theodore A. Easlick, NRC Senior Resident Inspector
8470 River Road
Southport, NC 28461-8869

U. S. Nuclear Regulatory Commission
ATTN: Mr. Donnie J. Ashley (Mail Stop OWFN 8G9)
11555 Rockville Pike
Rockville, MD 20852-2738

Ms. Jo A. Sanford
Chair - North Carolina Utilities Commission
P.O. Box 29510
Raleigh, NC 27626-0510

Division of Boiler and Pressure Vessel
North Carolina Department of Labor
ATTN: Mr. Jack Given, Assistant Director of Boiler & Pressure Vessels
4 West Edenton Street
Raleigh, NC 27601-1092

ENCLOSURE

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
ADDITIONAL INFORMATION IN SUPPORT OF REQUEST
FOR APPROVAL OF RELIEF REQUEST FOR THE
THIRD 10-YEAR INSERVICE INSPECTION PROGRAM
(NRC TAC NOS. MB0248 AND MB0249)

Relief Request RR-26, Revision 0

RELIEF REQUEST: RR-26 (Rev. 0)

SUBJECT: RELIEF FROM PRESSURE TESTING PORTIONS OF THE CONTAINMENT ATMOSPHERE CONTROL AND STANDBY GAS TREATMENT SYSTEMS

COMPONENTS FOR WHICH RELIEF IS REQUESTED:

This request for relief is applicable to the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2, for a portion of the Containment Atmosphere Control (CAC) system and the entire Standby Gas Treatment (SGT) system subject to examination in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Table IWC-2500-1, Examination Category C-H.

The portion of CAC system that this relief request applies to is from the inboard isolation valves (i.e., CAC-V7, CAC-V172, CAC-V9, and CAC-V49) to the Code boundary valve (i.e., 1I-BFV-RB for Unit 1, 2I-BFV-RB for Unit 2) immediately prior to the purge exhaust fans. NOTE: When CAC is referred to throughout this request, reference is only being made to that portion of the CAC system that is described above and identified on Attachment 1.

ASME SECTION XI CODE REQUIREMENT:

The third 10-year Inservice Inspection (ISI) Program for the BSEP, Units 1 and 2, began May 11, 1998. The code of record for the third 10-year ISI Program for BSEP, Units 1 and 2, is the ASME Code, Section XI, 1989 Edition with no addenda.

The ASME Code, Subarticle IWC-2500, requires that Class 2 components be examined and pressure tested as specified in Table IWC-2500-1, Examination Category C-H. Table IWC-2500-1 requires the CAC and SGT systems to be pressure tested and visually (VT-2) examined once per Inspection Period.

REQUESTED RELIEF AND PROPOSED ALTERNATIVE:

In accordance with 10 CFR 50.55a(a)(3)(i), Carolina Power & Light (CP&L) Company requests approval of an acceptable alternative to verify the structural integrity of the subject components. Structural integrity of the CAC and SGT systems will be verified, each refueling outage, by performing a structural integrity walkdown of accessible surfaces of the systems during each refueling outage. Certified and trained personnel will perform the structural integrity walkdowns.

RELIEF REQUEST: RR-26 (Rev. 0)

SUBJECT: RELIEF FROM PRESSURE TESTING PORTIONS OF THE CONTAINMENT ATMOSPHERE CONTROL AND STANDBY GAS TREATMENT SYSTEMS

BASIS FOR REQUESTING RELIEF:

System Characteristics

The SGT system and supporting CAC components consists of suction piping, two parallel 100 percent capacity filter trains and blowers, and a discharge vent. See Attachment 1 for a simple diagram.

The SGT system and supporting CAC components perform several functions following a design basis Loss-Of-Coolant Accident (LOCA) and during other conditions when the Reactor Building Ventilation System is isolated. Their safety related functions include: (1) maintaining the Secondary Containment structure at a negative pressure of 0.25 inches of water by controlled venting of the building atmosphere at a rate of 100 percent of the structure volume per day, and (2) removing the halogens and other fission products from the atmosphere vented from the Drywell and/or Suppression Chamber following a LOCA. These components also perform several non-safety related functions.

During normal plant operation, the SGT system is in a standby mode and aligned to take suction on the Reactor Building atmosphere in case an automatic start signal is received. In the unlikely event this system is needed for mitigation of a potential release, the system would be aligned to draw the radioactive material from either primary or secondary containment through a series of HEPA/charcoal filters. Once drawn through the filters, the material would be exhausted to an elevated release point (i.e., 100-meter tall plant stack). During normal operation, the affected components will experience minimal pressures.

In summary, the SGT system and supporting CAC components are used to satisfy General Design Criteria 41, Containment Atmosphere Cleanup, and classified as an Engineered Safety Feature System. These safety related components were constructed to standards commensurate to ASME Section III Code, Class 2. For these reasons, the safety-related components associated with the SGT system and supporting CAC system have been classified as ISI Class 2 and included in the ISI Program. Their inclusion followed the guidance provided in Standard Review Plan, Section 6.6, Inservice Inspection of Class 2 and 3 Components.

Existing Testing and Examination

As required by IWC-2500 of the ASME Code, Section XI, these ISI Class 2 components are to be examined and pressure tested as specified in Table IWC-2500-1. In accordance with Examination Category C-H of Table IWC-2500, the pressure retaining components are to be periodically pressure tested and visually (VT-2) examined once per Inspection Period. Since the SGT system and supporting CAC components are not required to operate during normal plant operation, a system functional test is to be

performed in accordance with Table IWA-5210-1 during the First and Second Inspection Period. Since ASME Code Case N-498-1 is being implemented during the Third Inspection Interval, a system functional test is also performed in lieu of the system hydrostatic test.

The purpose of the system functional test is to periodically pressurize the system and to provide a systematic approach to locate evidence of leakage. This is accomplished by operating the system in its normal lineup under system operating pressure. Once the system operation pressure is maintained for at least ten minutes, a visual (VT-2) examination is performed.

The purpose of the visual (VT-2) examination is to locate leakage or evidence of leakage from the pressure retaining components. The methodology for specifying this type of visual examination is that the examiner would be able to observe any source of leakage or evidence of structural distress during the pressure test.

With most ISI Class 2 systems, this type of visual examination is beneficial. Unlike the SGT system, the components associated with most ISI Class 2 systems contain water or steam and are pressurized during the system functional test. As such, leakage can be observed during the pressure test. However, for the SGT system, the affected components will experience minimal or negative pressure during a system functional test. As such, leakage exiting the piping is unlikely during this test.

During the system functional test, the SGT system will take suction on the Reactor Building atmosphere via the open "D" and "H" valves (see Attachment 1). Once the fan blower is started, the test medium (i.e., Reactor Building atmosphere) is drawn through one of the filter banks and exhausted to the plant stack.

Because the fan blower is creating suction to draw the atmosphere through the filters, the components upstream of the fan blower will experience little-to-no pressure during the system functional test. In the unlikely event that a structural distress had occurred, the process fluid would not escape since it would be drawn into the system.

Since the fan blower is exhausting the filtered atmosphere to the stack, the components downstream of the blower could be slightly pressurized during the test. Again, it would be unlikely that leakage would be detected during the test since it is an open-path to the plant stack and the test medium would take the path of least resistance.

In summary, the purpose of the system functional test is to pressurize the affected boundary to allow the detection of leakage caused by structural distress. Because of how this system operates, this Code-required pressure test does not provide an affective method to detect leakage. As such, the performance of this test and visual examination provides no compensating increase in quality and safety.

CP&L has determined that the proposed alternative will provide an acceptable level of quality and safety for the following reasons:

1. Since the system functional test is not an affective method for identifying structural distress, CP&L will perform a structural integrity walkdown of accessible surfaces once each refueling outage. CP&L considers this structural integrity walkdown a superior and proven method for identifying potential degradation. Similar walkdowns are also performed on other safety significant components.

   Performing a structural integrity walkdown once each refueling outage would detect and correct potential degradation. The performance of this walkdown at this frequency is also considered an acceptable alternative to the current test frequency specified in the ASME Code, which is once every Inspection Period (i.e., approximately every other refueling outage).

   CP&L considers this walkdown a more comprehensive inspection and an acceptable alternative to the Code requirement for the following reasons. The structural integrity walkdown will not be limited to those components within the system functional test system boundary. Because of the normal lineup of this system, some of the safety-related components would not be examined during the First and Second Inspection Period. The ASME Code, Section XI, does not require a visual (VT-2) examination of components that are outside the normal system lineup and are not pressurized.

   The structural integrity walkdown will be controlled in accordance with a plant approved process and will be performed by qualified personnel. The plant approved process will delineate examination methods that will allow the detection of degradation mechanisms and timely correction of any unacceptable indications.

   Certified and properly trained personnel will perform the structural integrity walkdowns. Personnel performing these inspections will be certified in accordance with ANSI/ASME N45.2.6. This level of certification will ensure that the capability and visual acuity of the personnel is sufficient to detect evidence of potential degradation. This level of certification will also provide an acceptable alternative to the Code requirement for VT-2 examiners.

   For those components whose external surfaces are inaccessible for direct line of sight inspection, the surrounding areas will be inspected for evidence of structural distress. In addition, CP&L will perform an evaluation of acceptability of these inaccessible areas when degradation exists in accessible surfaces that could indicate the presence of or result in degradation of an inaccessible area. Since the ASME Code, Section XI, does not address the evaluation of

inaccessible areas, CP&L considers this as an enhancement to maintain the integrity of these components.

Any evidence of structural distress identified during the structural integrity walkdown will be recorded and dispositioned. If correction actions are needed, they will be performed in accordance with an approved procedure and documented.

Because the system functional test does not provide an effective method to detect leakage or structural distress for this system, the performance of a structural integrity walkdown by qualified personnel is considered an acceptable alternative. This walkdown of all accessible surfaces once each refueling outage will ensure the integrity of this system and provide an acceptable level of quality and safety.

2. Not performing the system functional test or the visual (VT-2) examination of the SGT system and supporting CAC components will not compromise quality or safety.

   The SGT and CAC systems were designed and constructed and tested commensurate to ASME Code, Section III, Class 2 and for seismic forces in accordance with seismic class I requirements.

   In addition to the non-destructive examinations performed on the components by their manufacturer, each butt weld associated with this piping had a surface and volumetric examination performed. Following completion of the construction, the piping was also hydrostatically tested. As such, these components were constructed and tested to high quality standards.

   The temperature and pressure design parameters for the CAC system piping are 300°F and 62 psig, respectively. The temperature and pressure design parameters for the SGT system are 150°F and 5 psig, respectively. The design of these components also includes allowance for corrosion and/or erosion for a design life of forty years. The large bore piping was constructed to an American National Standards Institute (ANSI) rating of 150 pounds, using carbon steel with a nominal thickness of 0.375 inch.

   During routine operation of this system, the affected components are not subject to a harsh environment. These components are located inside the Reactor Building and are not exposed to any environment that would be harmful to carbon steel materials. Since the process medium is the Reactor Building atmosphere during normal plant operation, the interior surfaces of these components are also not subject to a harsh environment. Although some condensation may be present, these components were designed with adequate

corrosion margin. Any such condensation would be expected to collect in the bottom interior of these components. If this condensation were to result in sufficient corrosion to cause structural distress of these components, this distress would be expected to be observable on the accessible portions of the piping components during the structural integrity walkdowns.

Because of the operational characteristics of the SGT system, these components are subject to minimal distress during operation. During normal plant operation, this system is typically only operated to perform required surveillance tests. These tests are performed as quickly as possible to minimize system unavailability. Because of the low operation pressures and operating time, operational related distress of these components is considered minimal.

In addition to the structural integrity walkdowns, these components are periodically tested commensurate with the safety function to be performed. The operability of these safety-related components is assured by the performance of a series of surveillance requirements specified in BSEP, Unit 1 and 2 Technical Specification Surveillance Requirements 3.6.4.3.1 and 3.6.4.3.2. These surveillance requirements demonstrate acceptable operation of this system by verifying system flow, differential pressure across the various filters including the heaters and moisture separators, mechanical efficiency of the filters, the ability of the heaters to maintain relative humidity, and the ability of the charcoal to remove the appropriate amount of radionuclide. Since these requirements are verified with the system in operation, the test results are an indicator of actual system performance and operability. In addition to these periodic surveillances, during each 12-hour shift, plant operators conduct general checks of the areas containing these components. These operation checks include monitoring the status of all equipment in the area and identification of any type of leaks, abnormal sounds, or other equipment changes.

3. The SGT and CAC systems are classified as standby systems under the Maintenance Rule (i.e., 10 CFR 50.65) based on their classification as safety related and their design function of mitigating the consequences of design basis accidents and transients.

   Performance monitoring groups, along with performance criteria, have been established for the affected components. Using this criterion, the System Engineer periodically monitors performance data to evaluate the effectiveness of maintenance. This data is reviewed at a frequency commensurate with the safety significance of the system.

   In addition to assessing performance data, the structural condition of these systems is also periodically monitored as part of the Maintenance Rule Program. This condition monitoring inspection is outlined in a approved plant procedure

and is consisted with the guidance provided in Revision 2 of Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" and NUMARC 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."

Any structural or component not meeting the established performance criteria will be evaluated for (a)(1) classification and goal setting.

Since the system operability is verified by surveillance requirements and the walkdowns each refueling outage will ensure structural integrity, there is no safety significance associated with not performing the system functional test or the visual (VT-2) examination. Because of the SGT system operating characteristics, the performance of the system functional test is not an effective method for assuring integrity of these components. As such, the described alternative will provide an acceptance level of quality and safety pursuant to 10 CFR 50.55a(a)(3)(i).

REFERENCES:

ASME Code, Section XI, *Rules for Inservice Inspection of Nuclear Power Plants Components*, 1989 Edition.
DBD-10, *Standby Gas Treatment System.*
DBD-24, *Containment Atmospheric Control System.*
Plant Procedure 1OI-03.4.2, "Unit 1 Reactor Building Auxiliary Operator Daily Check Sheets"
Plant Procedure 2OI-03.4.2, "Unit 2 Reactor Building Auxiliary Operator Daily Check Sheets"
Updated Final Safety Analysis Report, Section 3.2.2, "System Quality Group Classifications."
Updated Final Safety Analysis Report, Section 6.2.5, "Combustible Gas Control In Containment."
ADM-NGGC-0101, "Maintenance Rule Program."
EGR-NGGC-0351, "Condition Monitoring of Structures."

RELIEF REQUEST: RR-26 (Rev. 0)

SUBJECT: RELIEF FROM PRESSURE TESTING PORTIONS OF THE CONTAINMENT ATMOSPHERE CONTROL AND STANDBY GAS TREATMENT SYSTEMS

ATTACHMENT 1
SYSTEM FLOW DIAGRAM