



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

AUG 06 2007

SERIAL: BSEP 07-0070

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

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2  
Docket Nos. 50-325 and 50-324/License Nos. DPR-71 and DPR-62  
Request for Relief – Use of the Boiling Water Reactor Vessel and Internals  
Project (BWRVIP) Guidelines In Lieu of Specific ASME Code Requirements

Ladies and Gentlemen:

In accordance with 10 CFR 50.55a(a)(3)(i), Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., is requesting relief from specific portions of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*, on the basis that the proposed alternative provides an acceptable level of quality and safety. Specifically, this proposed alternative concerns the use of the Boiling Water Reactor Vessel and Internals Project (BWRVIP) guidelines in lieu of specific ASME Section XI Code requirements. The relief request, designated as RR-39, is enclosed.

Approval of the relief request is requested by February 1, 2008, to support preparation activities for the Unit 1 refueling outage which is currently scheduled to begin March 15, 2008.

No regulatory commitments are contained in this letter. Please refer any questions regarding this submittal to Ms. Annette H. Pope, Supervisor - Licensing/Regulatory Programs, at (910) 457-2184.

Sincerely,

A handwritten signature in cursive script that reads 'Randy C Ivey'.

Randy C. Ivey  
Manager - Support Services  
Brunswick Steam Electric Plant

Progress Energy Carolinas, Inc.  
Brunswick Nuclear Plant  
PO Box 10429  
Southport, NC 28461

A047

NRR

WRM/wrm

Enclosure: 10 CFR 50.55a Relief Request Number RR-39

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II  
ATTN: Dr. William D. Travers, Regional Administrator  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, GA 30303-8931

U. S. Nuclear Regulatory Commission  
ATTN: Mr. Eugene M. DiPaolo, NRC Senior Resident Inspector  
8470 River Road  
Southport, NC 28461-8869

U. S. Nuclear Regulatory Commission **(Electronic Copy Only)**  
ATTN: Mr. Stewart N. Bailey (Mail Stop OWFN 8B1)  
11555 Rockville Pike  
Rockville, MD 20852-2738

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

Mr. Jack Given, Bureau Chief  
North Carolina Department of Labor  
Boiler Safety Bureau  
1101 Mail Service Center  
Raleigh, NC 27699-1101

## **10 CFR 50.55a Relief Request Number RR-39**

Proposed Alternative In Accordance with 10 CFR 50.55a(a)(3)(i)

- Alternative Provides Acceptable Level of Quality and Safety -

### **1. ASME Components Affected**

This request for relief is applicable to the American Society of Mechanical Engineers (ASME) Section XI Code Category B-N-1, Interior of Reactor Vessel and Code, Code Item No. B13.10 – Vessel Interior; and Category B-N-2, Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels, Code Item Nos. B13.20 – Interior Attachments within Beltline Region, B13.30 – Interior Attachments beyond Beltline Region, and B13.40 – Core Support Structure.

### **2. Applicable Code Edition and Addenda**

This relief request is applicable to the 1989 Edition of ASME Code, Section XI, with no addenda.

The third 10-year inservice inspection interval began May 11, 1998, and will conclude on May 10, 2008.

### **3. Applicable Code Requirement**

ASME Code, Section XI requires the examination of components within the Reactor Pressure Vessel. The examinations are included in Table IWB-2500-1, Code Categories B-N-1 and B-N-2, and identified with the following item numbers:

B13.10 Examine accessible areas of the reactor vessel interior each period by the VT-3 method (B-N-1).

B13.20 Examine interior attachment welds within the beltline region each interval by the VT-1 method (B-N-2).

B13.30 Examine interior attachment welds beyond the beltline region each interval by the VT-3 method (B-N-2).

B13.40 Examine the core support structure by the VT-3 method (B-N-2).

These examinations are performed to assess the structural integrity of components within the boiling water reactor (BWR) pressure vessel.

#### 4. Reason for Request

In accordance with 10 CFR 50.55(a)(3)(i), Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., is requesting a proposed alternative to the Code requirements provided above on the basis that the use of the Boiling Water Reactor Vessel and Internals Project (BWRVIP) guidelines, discussed below, will provide an acceptable level of quality and safety.

The BWRVIP Inspection and Evaluation (I&E) guidelines have recommended aggressive specific inspection by BWR operators to completely identify material condition issues with BWR components. A wealth of inspection data has been gathered during these inspections across the BWR industry. I&E guidelines focus on specific and susceptible components, specify appropriate inspection methods capable of identifying anticipated degradation mechanisms, and require examination at conservative intervals. In contrast, the ASME Code inspection requirements were prepared before the BWRVIP initiative and have not evolved with BWR inspection experience.

Use of the proposed alternative will maintain an adequate level of quality and safety and avoid unnecessary inspections while conserving radiological dose.

#### 5. Proposed Alternative

In lieu of the requirements of ASME Section XI, the proposed alternative is detailed in the attached Table 1 for Examination Categories B-N-1 and B-N-2.

CP&L will satisfy the Examination Categories B-N-1 and B-N-2 requirements, as described in Table 1, in accordance with BWRVIP guideline requirements. This relief request proposes to use the identified BWRVIP guidelines in lieu of the associated ASME Code requirements including examination method, examination volume, frequency, training, successive and additional examinations flaw evaluations, and reporting.

The particular guidelines that are applicable to those components are:

BWRVIP-18-A, *BWR Core Spray Internal Inspection and Flaw Evaluation Guidelines*

BWRVIP-26-A, *BWR Top Guide Inspection and Flaw Evaluation Guidelines*

BWRVIP-38, *BWR Shroud Support Inspection and Flaw Evaluation Guidelines*

BWRVIP-41, Revision 1, *BWR Jet Pump Assembly Inspection and Flaw Evaluation*

BWRVIP-42-A, *LPCI Coupling Inspection and Flaw Evaluation Guidelines*

BWRVIP-47-A, *BWR Lower Plenum Inspection and Flaw Evaluation Guidelines*

BWRVIP-48-A, *Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines*

*BWRVIP-76, BWR Core Shroud Inspection and Flaw Evaluation Guidelines*  
(BWRVIP-76 replaced BWRVIP-01, -07, and -63).

The attached Table 1 compares the present ASME Examination Category B-N-1 and B-N-2 requirements with the above current BWRVIP guideline requirements as applicable to the Brunswick Steam Electric Plant (BSEP), Units 1 and 2.

In addition, where guidance in existing BWRVIP documents has been supplemented or revised by subsequent correspondence approved by the BWRVIP executive committee, the most recent approved guidance will be implemented. Therefore, the attached Table 1 only represents a current comparison.

For the duration of the proposed alternative, any deviations from the referenced BWRVIP Guidelines will be appropriately documented and communicated to the NRC in accordance with the BWRVIP Deviation Disposition Process.

Inspection services of an Authorized Inspection Agency will be applied to the proposed alternative actions of this relief request.

**6. Basis for Use**

BWRs now examine reactor vessel internals in accordance with BWRVIP guidelines. These guidelines have been written to address the safety significant vessel internal components and evaluate the examination results for these components using appropriate methods and re-examination frequencies. The BWRVIP has established a reporting protocol for examination results and deviations. The NRC has agreed to the BWRVIP approach, in principle, and has issued Safety Evaluations for these Guidelines (i.e., see References 3 through 12 below). Therefore, use of these guidelines as an alternative to the subject code requirements provides an acceptable level of quality and safety and will not adversely impact the health and safety of the public.

**7. Duration of the Proposed Alternative**

The duration of the proposed alternative is for the remainder of the third Inspection Interval for both BSEP units.

**8. Precedence**

Similar relief requests were approved for Vermont Yankee Nuclear Power Station, as discussed in Reference 1, and the James A. Fitzpatrick Nuclear Power Plant, as discussed in Reference 2.

## 9. References

1. Letter from U.S. Nuclear Regulatory Commission (USNRC) to Entergy Nuclear Operations, Inc., Safety Evaluation of Relief Request RI-01, Vermont Yankee Nuclear Power Station (TAC No. MC0690), dated September 19, 2005, ADAMS Accession Number ML052370244).
2. Letter from USNRC to Entergy Nuclear Operations, Inc., James A. Fitzpatrick Nuclear Power plant - Relief Request No. RR-39, Implementation of BWRVIP Guidelines In Lieu of ASME Section XI Code Requirements on Reactor Vessel Internals and Components Inspection (TAC No. MC8587), dated August 30, 2006, ADAMS Accession Number ML062200226).
3. Letter from USNRC to BWRVIP dated April 27, 1998, Final Supplement to the Safety Evaluation of the Boiling Water Reactor Vessel Internal Project, BWRVIP-07 Report (TAC No. M94959).
4. Letter from USNRC to BWRVIP dated October 6, 1999, Staff Reevaluation of Table 1 in BWRVIP-07 Report (TAC No. M94959).
5. Letter from USNRC to BWRVIP, dated September 6, 2005, NRC Approval Letter of BWRVIP-18-A, BWR Vessel and Internal Project Boiling Water Reactor Core Spray Internals Inspection and Flaw Evaluation Guideline.
6. Letter from USNRC to BWRVIP, dated September 9, 2005, NRC Approval Letter of BWRVIP-26-A, BWR Vessel and Internals Project Boiling Water Top Guide Inspection and Flaw Evaluation Guidelines.
7. Letter from USNRC to BWRVIP, dated July 24, 2000, Final Safety Evaluation the BWR Vessel and Internals Project, BWR Shroud Support Inspection and Flaw Evaluation Guidelines (BWRVIP-38), EPRI Report TR-108823 (TAC No. M99638).
8. Letter from USNRC to BWRVIP, dated February 4, 2001, Final Safety Evaluation of the BWR Vessel and Internals Project, BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines (BWRVIP-41), (TAC No. M99870).
9. Letter from USNRC to BWRVIP, dated September 9, 2005, NRC approval letter of BWRVIP-42-A, BWR Vessel and Internals Project Boiling Water Reactor Low Pressure Coolant Injection and Flaw Evaluation Guidelines.
10. Letter from USNRC to BWRVIP, dated September 9, 2005, NRC approval letter of BWRVIP-47-A, BWR Vessel and Internals Project Boiling Water Reactor Lower Plenum Inspection and Flaw Evaluation Guidelines.
11. Letter from USNRC to BWRVIP, dated July 25, 2005, NRC approval letter of BWRVIP-48-A, BWR Vessel and Internals Project Vessel ID Attachment Weld Inspection and Flaw Evaluation Guideline.
12. Letter from USNRC to BWRVIP, dated August 20, 2001, Final Safety Evaluation of BWR Vessel and Internals Project Shroud Vertical Weld Inspection and Flaw Evaluation Guidelines (BWRVIP-63), (TAC No. MA6015).

**TABLE 1**

ASME Item Number	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Scope	BWRVIP Exam	BWRVIP Frequency
B13.10	Reactor Vessel Interior	Accessible Areas (Non-specific)	VT-3	Each Period	BWRVIP-18, 26, 38, 41, 47, 48, 76	Overview examinations of components during BWRVIP examinations are performed to satisfy Code VT-3 inspection requirements.		
B13.20	Interior Attachments within Beltline - Riser Braces	Accessible welds	VT-1	Each 10-year Interval	BWRVIP-48 Table 3-2	Riser Brace Attachment	EVT-1	100% in first 12 years, 25% during each subsequent 6 years
	Lower Surveillance Specimen Holder Brackets	Accessible welds	VT-1	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	VT-1	Each 10-year Interval
B13.30	Interior Attachments Beyond Beltline - Steam Dryer Hold-down Brackets	Accessible welds	VT-3	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval
	Guide Rod Brackets	Accessible welds	VT-3	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval
	Steam Dryer Support Brackets	Accessible welds	VT-3	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	EVT-1	Each 10-year Interval
	Feedwater Sparger End Brackets	Accessible welds	VT-3	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	EVT-1	Each 10-year Interval
	Core Spray Piping Brackets	Accessible welds	VT-3	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	EVT-1	Every 4 Refueling Cycles

ASME Item Number	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Scope	BWRVIP Exam	BWRVIP Frequency
B13.30	Upper Surveillance Specimen Holder Brackets	Accessible welds	VT-3	Each 10-year Interval	BWRVIP-48 Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval
	Shroud Support Legs (H12) Welds	Accessible welds (Rarely accessible)	VT-3	Each 10-year Interval	BWRVIP-38 3.2.3	Weld H12	Per BWRVIP-38 NRC SER (7/24/00) inspect with appropriate method	When accessible
B13.40	Core Support Structure -- Shroud	Accessible surfaces	VT-3	Each 10-year Interval	BWRVIP-76	Weld H1-H7  Weld V11-V11  (H2,H3 repaired/replaced)	UT	Maximum of 10 years
	Shroud Support (Weld H9)	Accessible surfaces	VT-3	Each 10-year Interval	BWRVIP-38 3.1.3.2, Figure 3-5	Weld H9	EVT-1 or UT	Maximum of 6 years for EVT-1, Maximum of 10 years for UT
	CRD Guide Tube	Accessible surfaces	VT-3	Each 10-year Interval	BWRVIP-47	CRGT-1  CRGT-2  CRGT-3  FS/GT-APIN-1	EVT-3  EVT-1  EVT-1  VT-3	10% of components in 12 years, 5% in first 6 years -- if no cracking found no further inspections