



John S. Keenan  
Vice President  
Brunswick Nuclear Plant

**FEB 25 2002**

SERIAL: BSEP 02-0048  
TSC-2001-09

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  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING  
REQUEST FOR LICENSE AMENDMENTS - EXTENDED POWER UPRATE  
(NRC TAC NOS. MB2700 AND MB2701)

Ladies and Gentlemen:

On August 9, 2001 (Serial: BSEP 01-0086), Carolina Power & Light (CP&L) Company requested a revision to the Operating Licenses (OLs) and the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed license amendments increase the maximum power level authorized by Section 2.C.(1) of OLs DPR-71 and DPR-62 from 2558 megawatts thermal (MWt) to 2923 MWt. Subsequently, on February 14, 2002, the NRC provided an electronic version of a Request for Additional Information (RAI) concerning environmental impacts of the planned condensate cooling modification supporting extended power uprate (EPU). Additionally, during a conference call held on February 15, 2002, the NRC questioned the expected size of the isotherm mixing zones post-EPU. The response to this RAI is enclosed.

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

Sincerely,

John S. Keenan

MAT/mat

P.O. Box 10429  
Southport, NC 28461

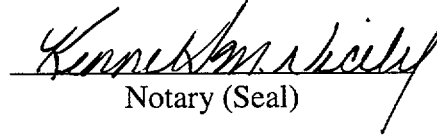
T > 910.457.2496  
F > 910.457.2803

A001

Enclosure:

Response to Request for Additional Information (RAI) 18

C. J. Gannon, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, and agents of Carolina Power & Light Company.

  
Notary (Seal)

My commission expires: *MAY 18, 2003*

cc: 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 (**Electronic Copy Only**)  
ATTN: Mr. Allen G. Hansen (Mail Stop OWFN 8G9)  
11555 Rockville Pike  
Rockville, MD 20852-2738

U. S. Nuclear Regulatory Commission  
ATTN: Mr. Mohammed Shuaibi (Mail Stop OWFN 8H4A)  
11555 Rockville Pike  
Rockville, MD 20852-2738

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

Mr. Mel Fry  
Director - Division of Radiation Protection  
North Carolina Department of Environment and Natural Resources  
3825 Barrett Drive  
Raleigh, NC 27609-7221

ENCLOSURE

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING  
REQUEST FOR LICENSE AMENDMENTS - EXTENDED POWER UPRATE  
(NRC TAC NOS. MB2700 AND MB2701)

Response to Request for Additional Information (RAI) 18

**Background**

On August 9, 2001 (Serial: BSEP 01-0086), Carolina Power & Light (CP&L) Company requested a revision to the Operating Licenses (OLs) and the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed license amendments increase the maximum power level authorized by Section 2.C.(1) of OLs DPR-71 and DPR-62 from 2558 megawatts thermal (MWt) to 2923 MWt. Subsequently, on February 14, 2002, the NRC provided an electronic version of a RAI concerning environmental impacts of the planned condensate cooling modification supporting extended power uprate (EPU). Additionally, the NRC questioned the expected size of the isotherm mixing zones post-EPU. The response to this RAI follows.

**NRC Question 18-1a**

The application indicates that three cooling towers will be constructed on the roof of the Radwaste Building to service the new condensate cooling system. While the application indicated that these cooling towers will be relatively small (24 feet by 24 feet), it did not indicate the amount of heat that will be removed by these cooling towers.

**Response to Question 18-1a**

The system will consist of three cooling towers, each of which has four cells. The towers will have a footprint of 24 feet by 24 feet and be approximately 16 feet tall. At peak conditions, it is expected that two towers will be operating at full capacity and the third could have one or two cells operating. Based on the design heat balance for the condensate system following power uprate, the maximum anticipated heat rejection rate is approximately 51 MBTU/hour per Unit during the summer (i.e., a maximum total of 102 MBTU/hour when both BSEP Units are in service).

**NRC Question 18-1b**

The environmental impacts of fog, drift, icing, and discharge of chemicals and particulate matter in the plume from these towers need to be addressed.

Response to Question 18-1b

Based on long-term operation of two mechanical draft cooling towers, of similar capacity, for the turbine building ventilation system, it is concluded that there will be insignificant fog, drift, and icing associated with the plume from the condensate cooling mechanical draft towers. The condensate cooling mechanical draft towers will be located in the center of the plant's power block area; thus, any chemicals and particulates in the plume are anticipated to be retained on-site and will be captured in the existing plant storm drain system, as is the case with the turbine building ventilation system cooling towers.

NRC Question 18-1c

The impact of the increased noise level from operation of these towers needs to be addressed.

Response to Question 18-1c

Per manufacturer's data for the condensate cooling mechanical draft towers, the anticipated noise level for operation of a cooling tower fan is approximately 84 db/cell measured at a distance of five feet from the air inlet face. At peak conditions, it is expected that two towers will be operating at full capacity (i.e., four cells per tower) and the third could have one or two cells operating. Considering the location of these towers, centralized within the protected area, there will be no off-site noise impact.

NRC Question 18-1d

The visual and aesthetic impacts of the new cooling towers needs to be addressed.

Response to Question 18-1d

As noted above, the condensate cooling mechanical draft towers will be located in the plant's power block area. Due to the proximity of other, larger buildings and the distance to the site boundary, these towers will not be readily visible off-site.

NRC Question 18-1e

The application indicates that the source of make-up water for the cooling system will be the Brunswick County water system. The impact of the increased use of water from the Brunswick County water system needs to be addressed.

Response to Question 18-1e

The anticipated peak make-up demand for the condensate cooling mechanical draft towers is 375 gpm. Discussions have been held with the Brunswick County water system management, and continuous make-up at a flow rate of 510 gpm would be well within the system's capability.

**NRC Question 18-1f**

The impacts of construction of the towers need to be addressed, such as noise, dust, odors, vibration, traffic, and vehicle exhaust.

**Response to Question 18-1f**

The condensate cooling mechanical draft towers are modular in design. Thus, installation will be relatively simple. The assembly will be performed with site craft and will not require manpower or equipment beyond that normally on-site for plant modification activities. Therefore, there will be no additional noise, dust, odors, vibration, traffic, or vehicle exhaust due to construction of the towers.

**NRC Question 18-2a**

The application indicates that no new hazardous substances will be used as a result of the power uprate. However, the application also indicates that a biocide called ChemTreat CL-216 and a dispersant called ChemTreat CL-4800 will be used in the water of the new condensate cooling system. Are these two chemicals already in use on-site?

**Response to Question 18-2a**

These two chemicals are not already in use on-site. Other related applications of chemicals on-site include:

- The Turbine Building Ventilation system cooling towers use a similar biocide, although a dispersant is not used.
- The Service Water and Circulating Water systems are treated with chlorine.

**NRC Question 18-2b**

The potential environmental impacts of a spill or accidental release of these chemicals needs to be addressed.

**Response to Question 18-2b**

The injection system for these chemicals will use a small capacity tank for each chemical (i.e., 150 gallons maximum for each); each of these tanks will be provided with a containment dike, sized to contain the complete contents of a postulated tank leak. It is anticipated that approximately 108 gallons of biocide and 414 gallons of dispersant will be used each year in the system. The Material Safety Data Sheet (MSDS) for each chemical provides guidance for clean-up of a spill, should that occur. Additionally, due to the location of the injection system, any residue from a potential spill should be captured in the Storm Drain system.

**NRC Question 18-2c**

Are these chemicals covered by the NPDES, or will the NPDES need to be revised?

**Response to Question 18-2c**

The renewal of the National Pollutant Discharge Elimination System (NPDES) permit is currently in the approval process. It is anticipated that the draft revised NPDES permit will be issued for review and comment by March 1, 2002. The revised NPDES permit will address the installation of the condensate cooling mechanical draft towers, as well as the use of appropriate biocide and dispersant chemicals in the tower blowdown.

**NRC Question 18-3**

Section 7.2.4 of the Environmental Assessment discusses the proposed change to the NPDES permit to increase the existing NPDES approved mixing zones with those proposed as a result of EPU. Please provide a comparison of the existing mixing zones with those proposed for EPU.

**Response to Question 18-3**

The following table provides the requested information.

<b>Equivalent NPDES Mixing Zone Limits for Uprate Operation</b>				
	<b>Surface</b>		<b>Bottom</b>	
	<b>Area of <math>\Delta T = 7^{\circ}F</math> Isotherm (acres)</b>	<b>Area of <math>\Delta T = 3.96^{\circ}F</math> Isotherm (acres)</b>	<b>Area of <math>\Delta T = 7^{\circ}F</math> Isotherm (acres)</b>	<b>Extent of <math>\Delta T = 7^{\circ}F</math> Isotherm (feet)</b>
Current NPDES Limit	60	1,000	2	500
Calculated Isotherm Area Post-EPU	113	1,848	4	729
Requested NPDES Uprate Limit	120	2,000	4	1,000