CP&L
A Progress Energy Company

John S. Keenan
Vice President
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MAR 0 4 2002

SERIAL: BSEP 02-0054
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 19, 2002, the NRC provided an electronic version of a Request for Additional Information (RAI) concerning the accident analysis performed in support of extended power uprate. 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

John S. Keenan

MAT/mat

A001

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Enclosures:

1. Response to Request for Additional Information (RAI) 19 - **Proprietary**
2. General Electric Affidavit of Proprietary Information
3. Non-Proprietary Version of Response to Request for Additional Information (RAI) 19

John S. Keenan, 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.

Dean S. Mash
Notary (Seal)

My commission expires: August 29, 2004

cc: **(with Enclosures except as noted)**

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Luis A. Reyes, Regional Administrator
Sam Nunn Atlanta Federal Center
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U. S. Nuclear Regulatory Commission
ATTN: Mr. Theodore A. Easlick, NRC Senior Resident Inspector
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U. S. Nuclear Regulatory Commission **(Electronic Copy Only)**
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U. S. Nuclear Regulatory Commission
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Ms. Jo A. Sanford **(w/o Enclosure 1)**
Chair - North Carolina Utilities Commission
P.O. Box 29510
Raleigh, NC 27626-0510

Mr. Mel Fry **(w/o Enclosure 1)**
Director - Division of Radiation Protection
North Carolina Department of Environment and Natural Resources
3825 Barrett Drive
Raleigh, NC 27609-7221

ENCLOSURE 2

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General Electric Affidavit of Proprietary Information

General Electric Company

AFFIDAVIT

I, George B. Stramback, state as follows:

(1) I am Project Manager, Regulatory Services, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is contained in Attachment 2 to letter GE-KB0-AEP-347P, *Response to NRC Request for Additional Information (RAI) – 19-1 and 19-2*, dated February 28, 2002. The proprietary information in Attachment 2 (*GE-KB0-AEP-347P, GE Responses to NRC RAIs 19-1 and 19-2,* (GE Company Proprietary)), is identified by bars marked in the margin adjacent to the specific material.

(3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information", and some portions also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;

d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;

e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs (4)a. and (4)b., above.

(5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2), above, is classified as proprietary because it contains further details regarding the GE proprietary report NEDC-33039P, *Safety Analysis Report for Brunswick Steam Electric Plant Units 1 and 2 Extended Power Uprate,* Class III (GE Proprietary Information), dated August 2001, which contains detailed results of analytical models, methods and processes, including computer codes, which GE has developed, obtained NRC approval of, and

applied to perform evaluations of transient and accident events in the GE Boiling Water Reactor ("BWR").

The development and approval of these system, component, and thermal hydraulic models and computer codes was achieved at a significant cost to GE, on the order of several million dollars.

The development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GE asset.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 28th day of February 2002.

George B. Stramback
General Electric Company

ENCLOSURE 3

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Non-Proprietary Version of Response to Request for Additional Information (RAI) 19

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 19, 2002, the NRC provided an electronic version of a RAI concerning the accident analysis performed in support of extended power uprate (EPU). The response to this RAI follows.

NRC Question 19-1

Appendix K of 10 CFR Part 50 requires that a spectrum of possible break sizes to be considered. However, only limited number of break spectrum (1 large and 3 small breaks) were analyzed. Justify how the Brunswick extended power uprate ECCS-LOCA analysis complies with the regulatory requirements in 10 CFR Part 50, Appendix K.I.C.1.

Response to NRC Question 19-1

[Redacted]

The basic break spectrum response is not affected by power uprate. There are two limiting points on the break spectrum; the full sized recirculation line break, and the worst small break with failure of the high pressure Emergency Core Cooling System (ECCS). The break spectrum response is determined by the ECCS network design and is common to all Boiling Water Reactors (BWRs). Power uprate evaluation experience shows that the basic break spectrum response is not affected by changes in core power. Experience to date has shown that a power uprate with no pressure increase has only a small effect on the Licensing Basis Peak Clad Temperature (PCT) (i.e., typically less than 20°F). [Redacted]

NRC Question 19-2

In the SAFER/GESTR-LOCA methodology, the licensing PCT and the upper bound PCT are calculated as follows.

$$(PCT)_{Licensing} = (PCT)_{nominal} + ADDER$$

$$(PCT)_{upper\ bound} = (PCT)_{nominal} + \Delta 4\text{-max generic} + (\Delta 3 + 2s\ \Delta 3)$$

Where: $(ADDER)^2 = [\ (PCT)_{Appendix\ K} - (PCT)_{nominal}\ ]^2 + \Sigma\ (\ \delta\ PCT)^2$

$(PCT)_{Appendix\ K}$	Peak cladding temperature from the Appendix K specified model calculations.
$(PCT)_{nominal}$	Peak cladding temperature from nominal case.
$(\ \delta\ PCT)^2$	Plant variable uncertainty term.
$(\Delta 3 + 2s\ \Delta 3)$	Plant variable uncertainties that accounts for the uncertainties due to inputs to the model.
$\Delta 4$-max generic	Modeling bias that accounts for errors in modeling processes for which experimental data is available for comparison.
$+2s\ \Delta 3$	Plant-specific 2 sigma plant variable uncertainty that provides the 95th percentile upper bound.
$\Delta 3$	Generic "mean-nominal bias" adder used to adjust the nominal results to achieve the mean PCT.

Justify why the CPPU approach does not represent a change in the SAFER/GESTR-LOCA methodology. In addition, NEDC-33004P, "Constant Pressure Power Uprate," states that the use of the most limiting of the nominal or Appendix K PCT changes for both the licensing basis PCT and upper bound PCT will ensure continued compliance with the NRC SER requirements for the SAFER/GESTR-LOCA application methodology. Please, explain this statement further.

Response to Question 19-2

[Redacted]

Experience to date has shown that a power uprate with no pressure increase has only a small effect on the licensing basis PCT (i.e., typically less than 20°F). [Redacted]

Therefore, the adder approach is appropriate for determining the upper bound PCT and licensing basis PCT for power uprate and does not represent a change in the SAFER/GESTR-LOCA methodology.

The primary NRC Safety Evaluation Report (SER) requirements for the SAFER/GESTR-LOCA application methodology that are being addressed in the CPPU PCT adder approach are: (1) the licensing basis PCT be below 2200°F, (2) the licensing basis PCT be above the upper bound PCT, and (3) the upper bound PCT be below 1600°F. [Redacted]

Compliance with the remaining SER requirements is addressed in the base full-scope SAFER analysis and is incorporated into the power uprate evaluation by reference.