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Docket No. 50-324

May 5, 1983

Mr. E. E. Utley  
Executive Vice President  
Carolina Power & Light Company  
P. O. Box 1551  
Raleigh, North Carolina 27602

Dear Mr. Utley:

The Commission has issued the enclosed Amendment No. 80 to Facility Operating License No. DPR-62 for the Brunswick Steam Electric Plant, Unit 2. The amendment consists of changes to the Technical Specifications in response to your application of July 21, 1982 as supplemented by letter dated April 28, 1983.

The amendment changes the Technical Specifications with regard to limiting values of the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR). The amendment abrogates a uniform reduction of 8.5 percent in the limiting values of the MAPLHGR and is based on the restoration of a cracked core spray sparger to its fully operational state.

As discussed with your staff, only the MAPLHGR limits for 8x8 fuel are being changed. Since there is no 7x7 fuel in the Brunswick Unit 2 core, all references to 7x7 fuel will be deleted at a later date.

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

Sam D. MacKay, Project Manager  
Operating Reactors Branch #2  
Division of Licensing

- Enclosures:
1. Amendment No.80 to DPR-62
  2. Safety Evaluation
  3. Notice

cc w/enclosures:  
See next page

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DATE	5/3/83	5/3/83	5/3/83	5/3/83	5/3/83		

Mr. E. E. Utley  
Carolina Power & Light Company

cc:

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Board of Commissioners  
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Region IV Office  
Regional Radiation Representative  
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Resident Inspector  
U. S. Nuclear Regulatory Commission  
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James P. O'Reilly  
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U.S. Nuclear Regulatory Commission  
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Atlanta, Georgia 30303



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.80  
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power & Light Company dated July 21, 1982 and supplemented by letter dated April 28, 1983 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-62 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 80, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: May 5, 1983

ATTACHMENT TO LICENSE AMENDMENT N° 80

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Revise the Appendix A Technical Specifications as indicated below.  
The changed area is indicated by vertical line.

Remove

3/4 2-1  
3/4 2-5  
3/4 2-6  
3/4 2-7  
3/4 2-8  
3/4 2-9  
3/4 2-9a

Insert

3/4 2-1  
3/4 2-5  
3/4 2-6  
3/4 2-7  
3/4 2-8  
3/4 2-9  
3/4 2-9a

## 3/4.2 POWER DISTRIBUTION LIMITS

### 3/4.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE

#### LIMITING CONDITION FOR OPERATION

3.2.1 All AVERAGE PLANAR LINEAR HEAT GENERATION RATES (APLHGR's) for each type of fuel as a function of AVERAGE PLANAR EXPOSURE shall not exceed the following limits:

- a. During two recirculation loop operation, the limits are shown in Figures 3.2.1-1, 3.2.1-2, 3.2.1-3, 3.2.1-4, 3.2.1-5, 3.2.1-6, 3.2.1-7, 3.2.1-8, or 3.2.1-9.

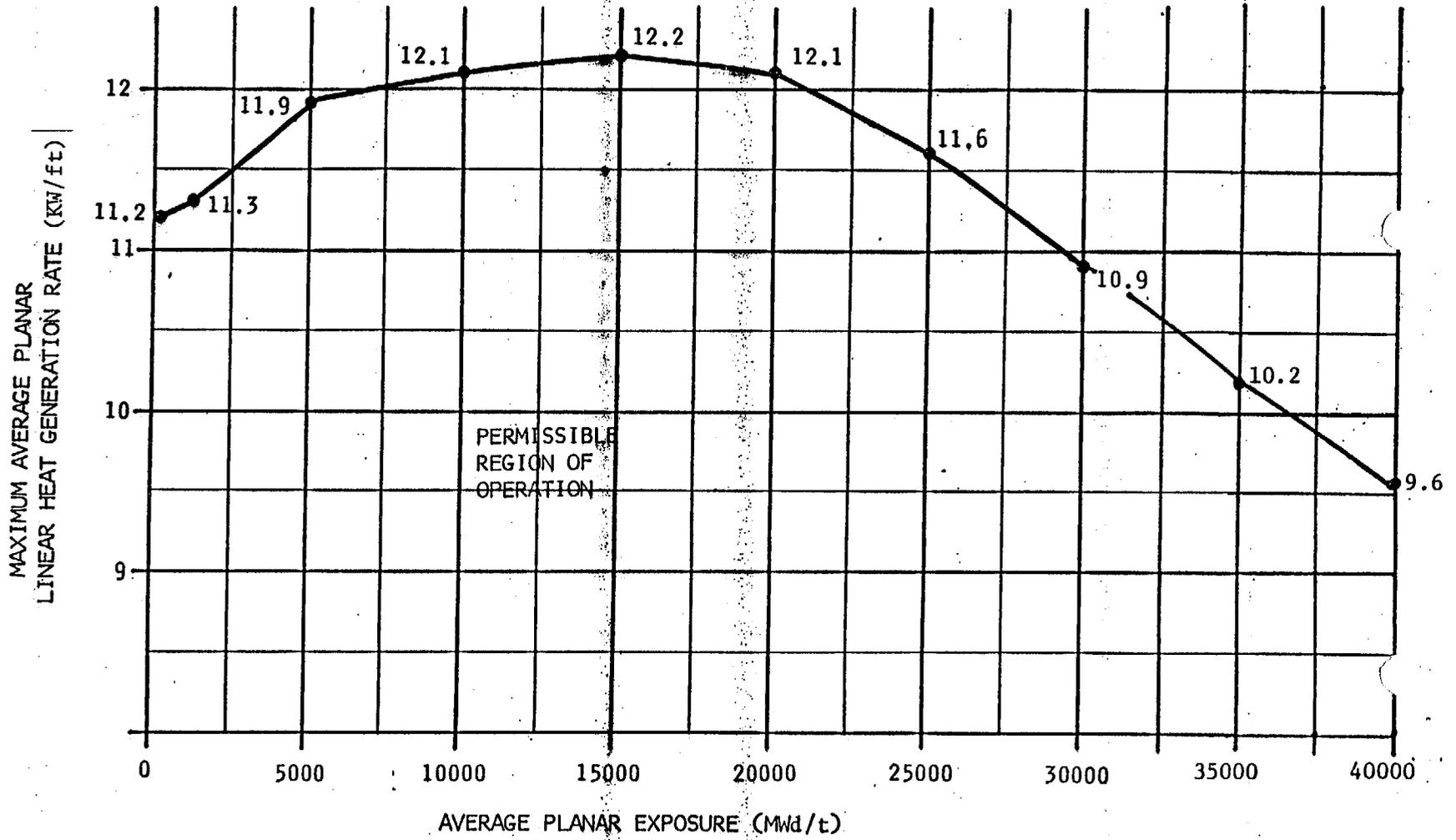
APPLICABILITY: CONDITION 1, when THERMAL POWER  $\geq$  25% of RATED THERMAL POWER.

ACTION: With an APLHGR exceeding the limits of Figures 3.2.1-1, 3.2.1-2, 3.2.1-3, 3.2.1-4, 3.2.1-5, 3.2.1-6, 3.2.1-7, 3.2.1-8, or 3.2.1-9, initiate corrective action within 15 minutes and continue corrective action so that APLHGR is within the limit within 4 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

#### SURVEILLANCE REQUIREMENTS

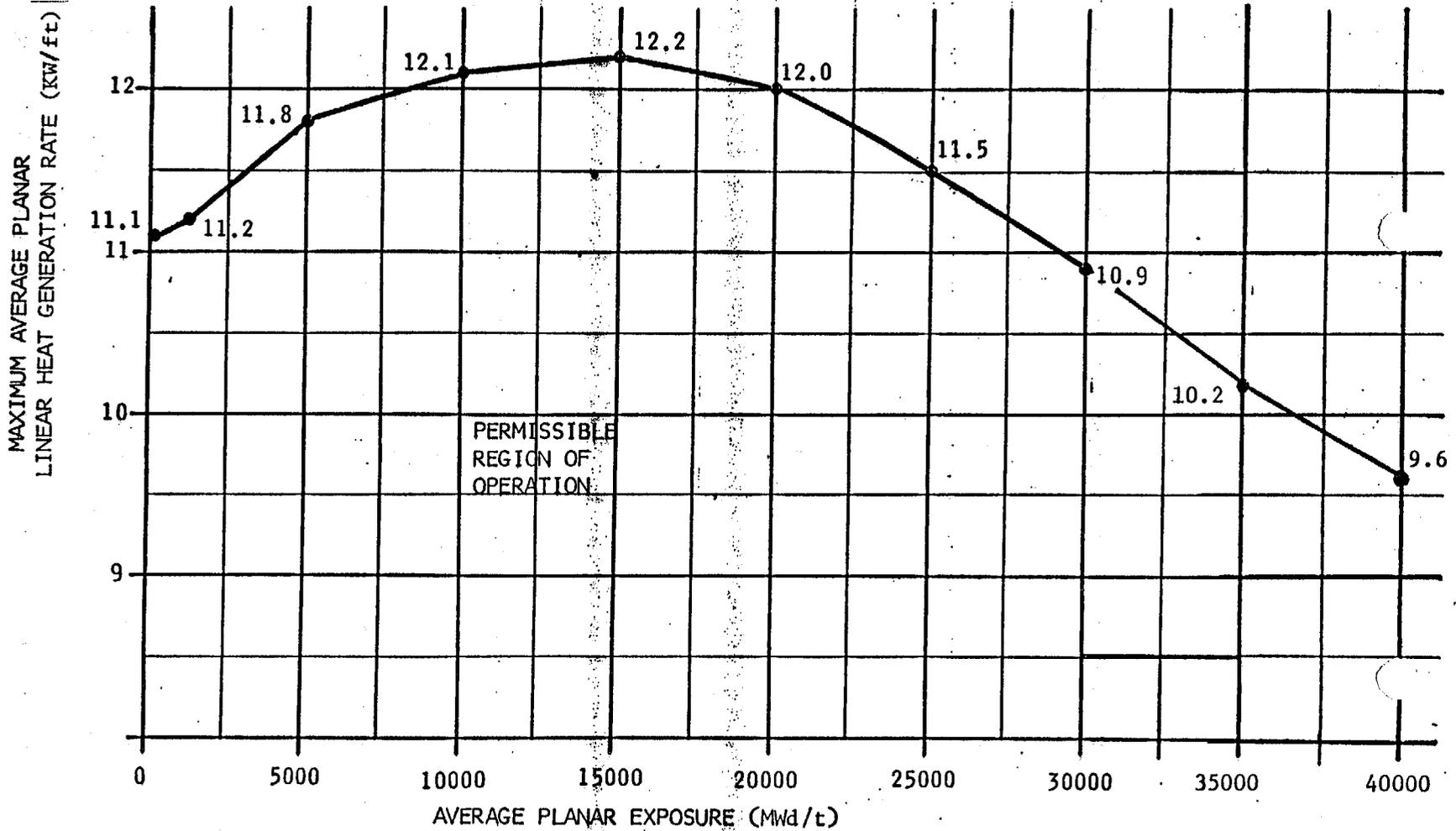
4.2.1 All APLHGR's shall be verified to be equal to or less than the applicable limit determined from Figures 3.2.1-1, 3.2.1-2, 3.2.1-3, 3.2.1-4, 3.2.1-5, 3.2.1-6, 3.2.1-7, 3.2.1-8 or 3.2.1-9:

- a. At least once per 24 hours,
- b. Within 12 hours after completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER, and
- c. Initially and at least once per 12 hours when the reactor is operating with a LIMITING CONTROL ROD PATTERN for APLHGR.



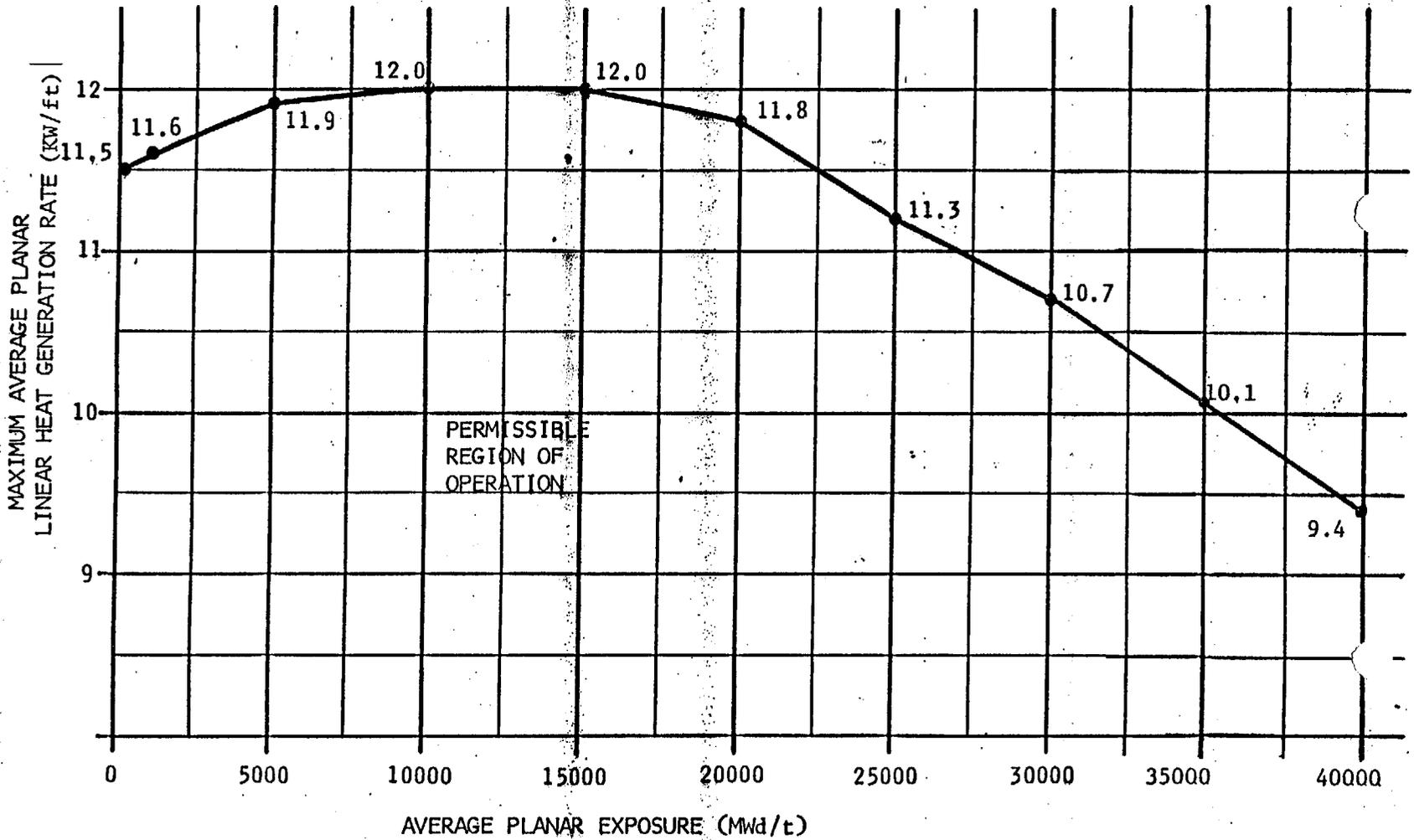
FUEL TYPE 8D274L (8X8)  
MAXIMUM AVERAGE PLANAR LINEAR HEAT  
GENERATION RATE (MAPLHGR)  
VERSUS AVERAGE PLANAR EXPOSURE

FIGURE 3.2.1-4



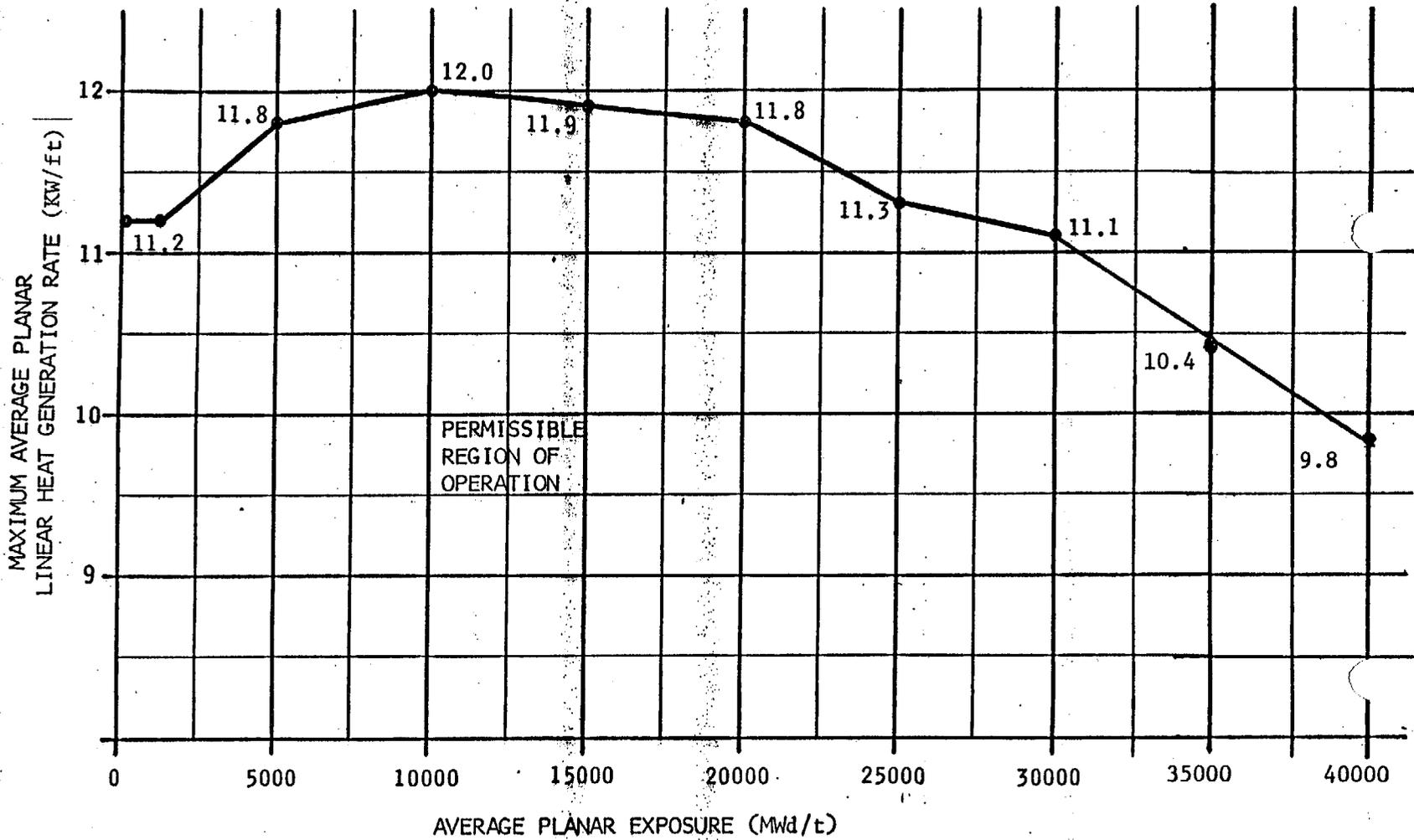
FUEL TYPE 8D274H (8x8)  
MAXIMUM AVERAGE PLANAR LINEAR HEAT  
GENERATION RATE (MAPLHGR)  
VERSUS AVERAGE PLANAR EXPOSURE

FIGURE 3.2.1-5



FUEL TYPE 8DRB265H  
MAXIMUM AVERAGE PLANAR LINEAR HEAT  
GENERATION RATE (MAPLHGR)  
VERSUS AVERAGE PLANAR EXPOSURE

FIGURE 3.2.1-6



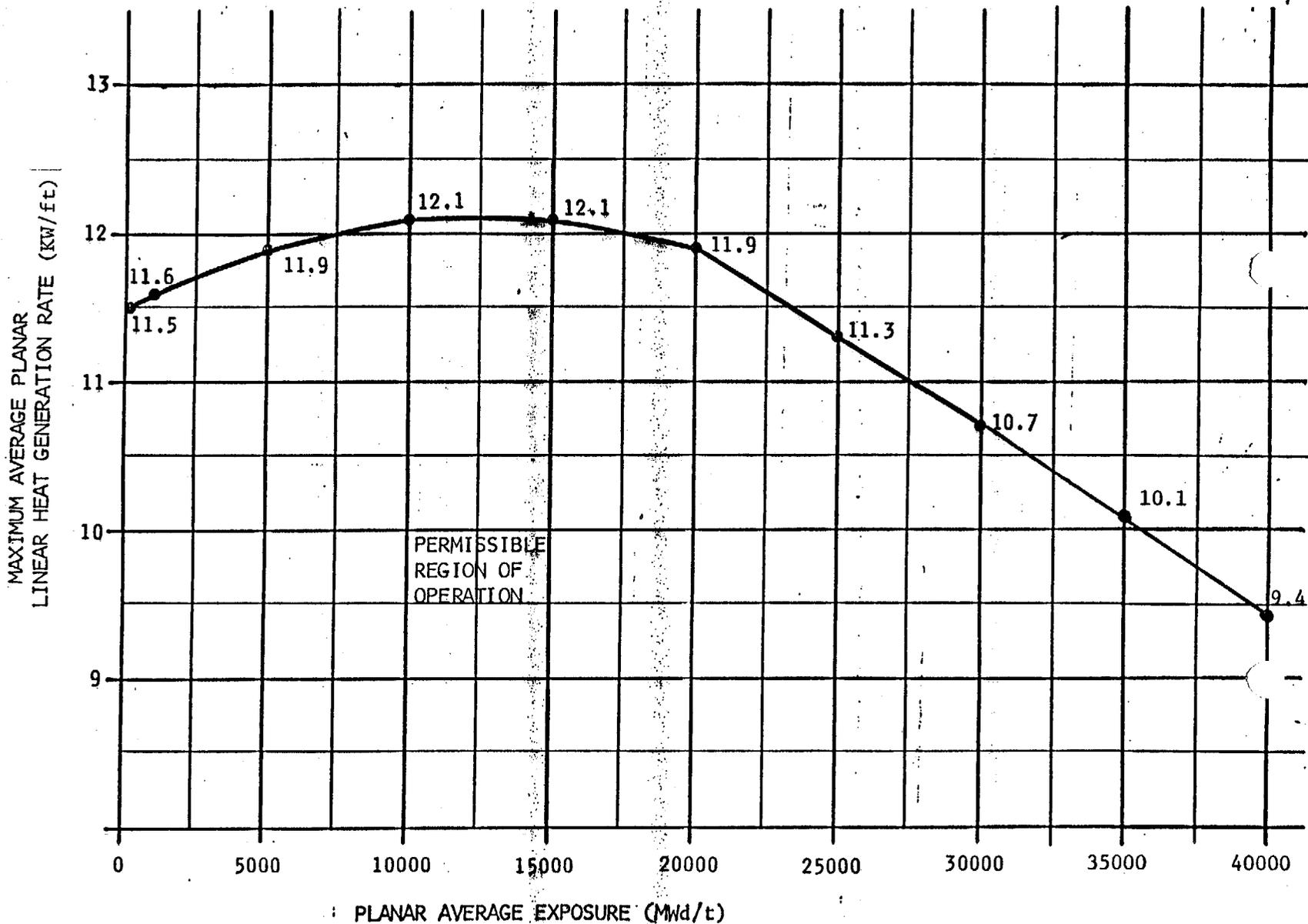
FUEL TYPE 8DRB283  
MAXIMUM AVERAGE PLANAR LINEAR HEAT  
GENERATION RATE (MAPLHGR)  
VERSUS AVERAGE PLANAR EXPOSURE

FIGURE 3.2.1-7

BRUNSWICK-UNIT 2

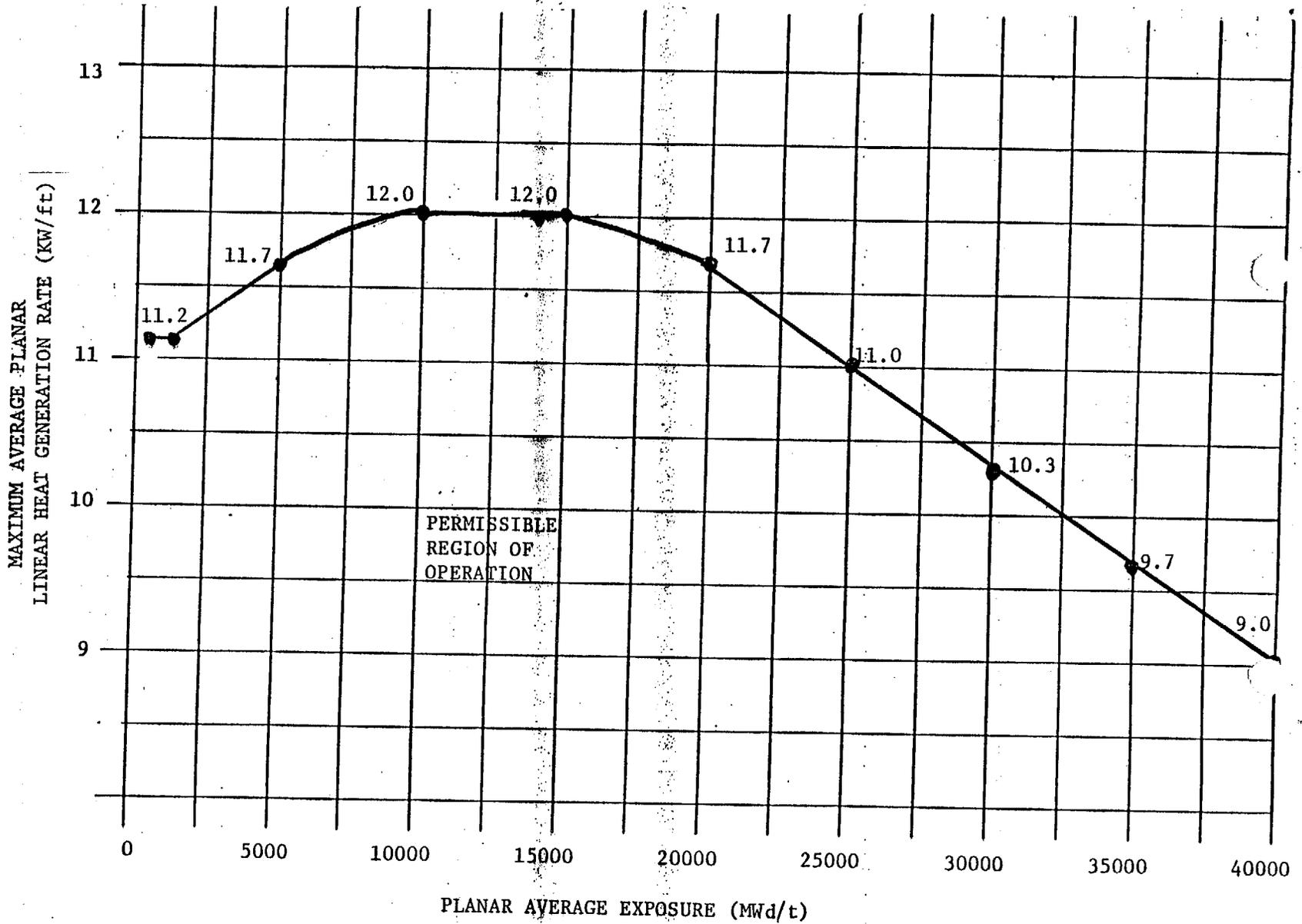
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Amendment No. 71, 80



FUEL TYPE P8DRB265H (P8X8R)  
MAXIMUM AVERAGE PLANAR LINEAR HEAT  
GENERATION RATE (MAPLHGR)  
VERSUS PLANAR AVERAGE EXPOSURE

FIGURE 3.2.1-8



FUEL TYPE P8DRB284H (P8X8R)  
MAXIMUM AVERAGE PLANAR LINEAR HEAT  
GENERATION RATE (MAPLHGR)  
VERSUS PLANAR AVERAGE EXPOSURE

FIGURE 3.2.1-9



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 80 TO FACILITY LICENSE NO. DPR-62

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

DOCKET NO. 50-324

1.0 Introduction

By letter dated July 21, 1982, as supplemented by letter dated April 28, 1982 the Carolina Power and Light Company (the licensee) requested a change to the limiting conditions for operation for Brunswick Unit 2 as set forth in the Technical Specifications of Facility Operating License No. DPR-62. The requested change would remove a uniform reduction of 8.5 percent in the limiting values of the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR). This 8.5% MAPLHGR reduction was established by the NRC staff after the licensee identified a crack in one of the two core spray spargers.

The MAPLHGR reduction was based on a standard approved analysis of a loss-of-coolant accident that assumed no cooling contribution from the cracked sparger before core reflooding. Removal of the MAPLHGR reduction is based on the restoration of the cracked sparger to a fully operational state by the installation of a clamp over the crack on the sparger and on assurance that no significant additional cracking will occur prior to the next inspection of the sparger.

2.0 Evaluation

To restore the cracked core spray sparger to a fully operational condition, a clamp has been installed over the crack in the sparger. This modification will provide additional structural margin to the upper sparger where the crack exists and will prevent significant opening of the crack under normal or core spray actuation conditions. We have reviewed the design specifications for the sparger modification. The mechanical design of the clamp is in accordance with the ASME Code, Section III Subsection N.F.

Based on our review, we found the design of the clamp to be adequate for the stated condition of the sparger.

We have also considered the possibility of additional cracking of the core spray sparger. The licensee has presented an analysis of the stresses in the sparger in a General Electric Company Report; NEDO 33171, "Core Spray Sparger Crack Analysis at Brunswick Steam Electric Plant Unit 2" the analysis was performed on the sparger without the clamp installed. The licensee's analysis concluded that no loadings have been identified which could result in stresses that cause the sparger to break during normal plant operation, transients, or postulated LOCAs. The licensee's analysis also concluded that the possibility of crack propagation was extremely remote in this case

since both crack ends extended into base metal. Thus, while the generally accepted and previously applied corrective actions included the installation of a clamp on the affected sparger, the licensee, because of the conclusions cited above, did not initially intend to install such a clamp. However, the licensee was subsequently in a position to, and did, install a clamp on the sparger.

The licensee will continue to monitor the core spray spargers for additional cracking. The next inspection will be performed during the next refueling outage which is scheduled for December of 1984.

Based on our review of the observed cracking, the stress analysis of the sparger and the installation of the clamp on the sparger, we have concluded that no significant additional cracking will occur prior to the next scheduled inspection of the sparger.

### 3.0 Summary

We have evaluated the installation of a clamp on the core spray sparger and the possibility of additional cracking of the sparger. We have concluded that the cracked core spray sparger has been restored to its fully operational condition and the margin of safety in the integrity of the sparger is not significantly different from that of the original design. Therefore, the 8.5% MAPLHGR reduction that was based on the loss of spray from this sparger is not necessary and the requested change to the technical specifications may be granted.

### 4.0 Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

### 5.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 5, 1983

Principal Contributors: S. Bhatt, S. MacKay

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-324CAROLINA POWER & LIGHT COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 80 to Facility Operating License No. DPR-62 issued to Carolina Power & Light Company (the licensee) which revised the Technical Specifications for operation of the Brunswick Steam Electric Plant, Unit 2 (the facility), located in Brunswick County, North Carolina. The amendment is effective as of the date of issuance.

The amendment revises the Technical Specifications to remove a uniform reduction of 8.5 percent in the limiting values of the Maximum Average Planar Linear Heat Generation Rate.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section 51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of the amendment.

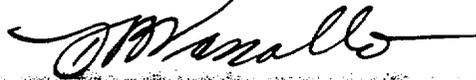
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For further details with respect to this action, see (1) the application for amendment dated July 21, 1982, as supplemented April 28, 1983 (2) Amendment No. 80 to License No. DPR-62, and (3) the Commission's related Safety Evaluation. These items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Southport Brunswick County Library, 109 West Moore Street, Southport, North Carolina 28461. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Date at Bethesda, Maryland, this 5th day of May 1983.

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing