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

October 8, 1986

Posted
Amdt. 151
to DPR-47

Dockets Nos. 50-269, 50-270
and 50-287

Mr. Hal B. Tucker
Vice President - Nuclear Production
Duke Power Company
P. O. Box 33189
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

The Commission has issued the enclosed Amendments Nos. 151, 151, and 148 to Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station, Units Nos. 1, 2 and 3. These amendments consist of changes to the Station's common Technical Specifications (TSs) in response to your request dated June 30, 1986, as superseded September 2, 1986.

These amendments revise the TSs to support the operation of Oconee Unit 2 at full rated power during the upcoming Cycle 9. In your September 2, 1986 letter, you also requested revisions to the Oconee Startup Physics Test Program. Since these revisions are not part of these license amendments, they will be addressed by separate correspondence.

These TS changes are being issued before the expiration of the notice period to preclude an unnecessary delay in plant startup from the current outage. In the original submittal, you proposed a novel concept to move the Rod Position Limits and the Operation Power Imbalance Envelope curves from the TSs into a separate Core Operational Limits Report. Since this novel approach affects NRC policy, and its resolution is unlikely to happen before plant startup, in your September 2, 1986 letter, you proposed TS changes consistent with traditional practice. In the meantime, the outage schedule was accelerated, making the startup date sooner than projected originally.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance and Final Determination of No Significant Hazards Consideration and Opportunity for Hearing will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Helen N. Pastis

Helen N. Pastis, Project Manager
PWR Project Directorate #6
Division of PWR Licensing-B

Enclosures:
1. Amendment No. 151 to DPR-38
2. Amendment No. 151 to DPR-47
3. Amendment No. 148 to DPR-55
4. Safety Evaluation

cc w/enclosures: See next page

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

DUKE POWER COMPANY

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151
License No. DPR-38

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duke Power Company (the licensee) dated June 30, 1986, as superseded September 2, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 3.B of Facility Operating License No. DPR-38 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 151, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Director
PWR Project Directorate #6
Division of PWR Licensing-B

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 8, 1986

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

DUKE POWER COMPANY

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151
License No. DPR-47

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duke Power Company (the licensee) dated June 30, 1986, as superseded September 2, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 3.B of Facility Operating License No. DPR-47 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 151, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Director
PWR Project Directorate #6
Division of PWR Licensing-B

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 8, 1986

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

DUKE POWER COMPANY

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 148
License No. DPR-55

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duke Power Company (the licensee) dated June 30, 1986, as superseded September 2, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 3.B of Facility Operating License No. DPR-55 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 148, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Director
PWR Project Directorate #6
Division of PWR Licensing-B

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 8, 1986

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 151 TO DPR-38

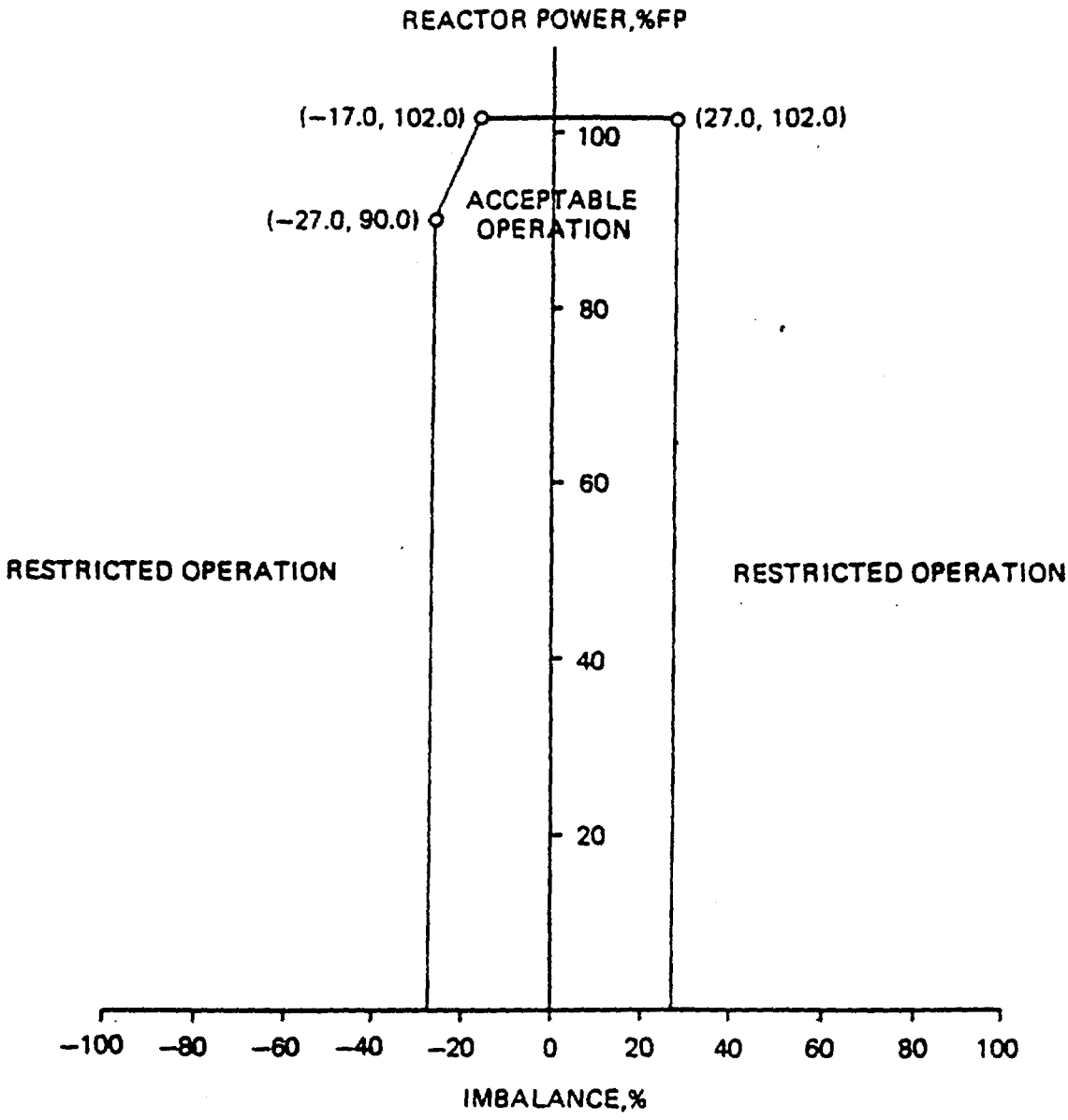
AMENDMENT NO. 151 TO DPR-47

AMENDMENT NO. 148 TO DPR-55

DOCKETS NOS. 50-269, 50-270 AND 50-287

Replace the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by amendment numbers and contains a vertical line indicating the area of change.

Remove Page	Insert Page
3.5-25	3.5-25



OPERATIONAL POWER
IMBALANCE ENVELOPE
FROM 0 EFPD TO EOC
UNIT 2

OCONEE NUCLEAR STATION

FIGURE 3.5.2-11
(1 of 1)

Amendments Nos. 151 , 151 , & 148

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. DPR-38

AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. DPR-47

AMENDMENT NO. 148 TO FACILITY OPERATING LICENSE NO. DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS NOS. 1, 2 AND 3

DOCKETS NOS. 50-269, 50-270 AND 50-287

INTRODUCTION

By letter dated June 30, 1986 (Ref. 1), as revised on September 2, 1986 (Ref. 2), Duke Power Company (the licensee) proposed changes to the Technical Specifications (TSs) of Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station, Units Nos. 1, 2 and 3. These amendments would consist of changes to the Station's common TSs; although these changes affect the operation of Unit 2 only, conforming changes are required in TSs for Units 1 and 3 as well. Oconee Unit 2 is currently completing a refueling outage and was originally scheduled for plant startup in mid October 1986. The licensee states that Oconee Unit 2 will startup ahead of schedule.

These amendments would authorize proposed changes to the Oconee Nuclear Station TSs which are required to support the operation of Oconee Unit 2 at full rated power during the upcoming Cycle 9. The proposed amendments would change the Power Imbalance Limits (TS 3.5.2).

To support the license amendment application, the licensee submitted (Ref. 3) "Oconee Unit 2, Cycle 9 Reload Report" as an attachment to Reference 1. A summary of the Cycle 9 operating parameters is included in the report, along with safety analyses.

The Cycle 9 core consists of 177 fuel assemblies, each of which is a 15 by 15 array containing 208 fuel rods, 16 control rod guide tubes, and one incore instrument guide tube. The fuel consists of dished-end, cylindrical pellets of uranium dioxide clad in cold-worked Zircaloy-4. The fuel assemblies in all batches have an average nominal fuel loading of 463.6 kg uranium. The undensified nominal active fuel lengths, theoretical densities, fuel and fuel rod dimensions, and other related fuel parameters are given in Table 4-1 (Ref. 3). The Cycle 9 core loading diagram, enrichments, control rods and burnable poison rod assembly (BPRA) locations and enrichments are also given in Reference 3.

Cycle 9 will operate in a rods-out, boron feed-and-bleed mode. Core reactivity control is supplied mainly by soluble boron and supplemented by 61 full-length Ag-In-Cd control rods and 60 BPRAs. In addition to the full-length control rods, eight Inconel gray axial power shaping rods (APSRs) are provided for additional control of axial power distribution. Since gray APSRs are being utilized, there are eight control rods in group seven and twelve in group five to reduce the negative offset response to the group seven rod movement.

The present reload involves no significant changes in core fuel design or methodology. Revisions to the TSs required for Cycle 9 operation were made in accordance with methods and procedures found acceptable in connection with previous reloads (Ref. 4) and are the result of minor cycle-to-cycle fuel changes.

EVALUATION

Evaluation of Fuel System Design

The types of fuel assemblies and pertinent fuel design parameters for Oconee Unit 2 Cycle 9 are listed in Table 4-1 (Ref. 3). All fuel assemblies are mechanically interchangeable. Two regenerative neutron sources will be used in the Mark BZ fuel assemblies. The Cycle 9 core contains only fuel designs which have been previously loaded in the Oconee Unit 2 reactor and have been previously approved by the NRC staff. The fuel rod design, cladding collapse, cladding stress and strain, and the thermal design fuel analyses for Cycle 9 fuel designs, including the gray APSRs, are either bounded by conditions previously analyzed for Oconee Unit 2 or were analyzed specifically for Cycle 9 using methods and limits previously reviewed and approved by the NRC staff. Therefore, the NRC staff concludes that the overall fuel system design for Oconee Unit 2 Cycle 9 is acceptable.

Nuclear Design

Table 5-1 (Ref. 3) compares the core physics parameters of Cycle 9 with those of the reference Cycle 8. The values for Cycle 8 and Cycle 9 were generated by Duke Power Company using the reload design methods described in Reference 5 which have been reviewed and approved by the NRC staff.

The NRC staff has determined that approved methods have been used, and the nuclear design parameters meet the acceptance criteria of Standard Review Plan, Section 4.3, part II, and, therefore, concludes that the nuclear design of Oconee Unit 2 Cycle 9 is acceptable.

Evaluation of Thermal-Hydraulic Design

The generic Mark B and Mark BZ thermal-hydraulic design analyses supporting Cycle 9 operation were performed by Duke Power Company using the methods described in Reference 5. The Cycle 8 and Cycle 9 thermal-hydraulic design conditions are summarized in Table 6-1 (Ref. 3).

The Cycle 9 core will include 60 fresh Mark BZ Batch 11 fuel assemblies, all of which will contain BPRAs. This results in a core bypass flow of 7.9% of the total system flow, which is the bypass flow assumed in the generic thermal-hydraulic analyses.

The Mark BZ fuel assembly has a slightly higher pressure drop than the Mark B assembly as a result of the increased flow resistance of the Zircaloy spacer grids. The presence of Mark BZ and Mark B assemblies in a core results in less coolant flow in the Mark BZ fuel than would occur in an all Mark BZ core. The generic Mark BZ analyses conservatively account for this transition core effect.

In a Mark BZ transition core, the limiting Mark B hot channel will receive more coolant and yield better departure from nucleate boiling (DNB) performance than would be predicted for a full Mark B core. Thus, the generic Mark B analyses, based on the B&W-2 critical heat flux (CHF) correlation, are bounding and are applicable to the Cycle 9 transition core.

The NRC staff has determined that approved methods have been used and the thermal-hydraulic design parameters meet the DNBR safety limit using approved CHF correlations and, therefore, concludes that the thermal-hydraulic design of Oconee Unit 2 Cycle 9 is acceptable.

Safety Analyses

The important kinetics parameters for Cycle 9 have been compared to the values used in the Final Safety Analysis Report (FSAR) and/or the densification report. The licensee has shown that the Cycle 9 values are bounded by those previously used. The licensee has also determined that the initial conditions of the transients in Cycle 9 are bounded by either the FSAR, the fuel densification report, previous reload analyses, or analyses using approved methods.

B&W has performed a generic loss of coolant accident (LOCA) analysis for the B&W 177-FA, lowered-loop nuclear steam supply system using the final acceptance criteria Emergency Core Cooling System evaluation model. The combination of average fuel temperature as a function of linear heat rate (LHR) and the lifetime pin pressure data used is conservative relative to those calculated for this cycle. These results are based upon a bounding analytical assessment of NUREG-0630 on LOCA and operating LHR limits performed by B&W. The B&W analyses have been approved by the NRC staff and the LHR limits are satisfactorily incorporated into the TSs for Cycle 9 through the operating limits on rod index and axial power imbalance and, therefore, are acceptable.

Technical Specification Modifications

Oconee Unit 2 Cycle 9 TSs have been modified to account for normal cycle-to-cycle fuel changes in power peaking and control rod worths. The NRC staff reviewed the proposed specification revisions for Cycle 9. These changes concern the Operational Power Imbalance Envelope of Specification 3.5.2. On the basis that approved methodology was used to obtain these limits which assure that General Design Criteria 10 and 12 are satisfied, the NRC staff finds these TS modifications acceptable.

EXIGENT CIRCUMSTANCES

These TS changes are being issued before the expiration of the notice period to preclude an unnecessary delay in plant startup from the current outage. In the original submittal, the licensee proposed a novel concept to move the Rod Position Limits and the Operation Power Imbalance Envelope curves from the TSs into a separate Core Operational Limits Report. Since this novel approach affects NRC policy, and its resolution is unlikely to happen before plant startup, in a September 2, 1986 letter, the licensee proposed TS changes consistent with traditional practice. In the meantime, the outage schedule was accelerated, making the startup date sooner than projected originally.

The Commission has determined that exigent circumstances exist in that swift action is necessary to avoid a delay in startup not related to safety and finds that for the reason stated above, and an accelerated outage schedule, exigent circumstances exist.

In connection with a request indicating an exigency, the Commission expects its licensees to apply for license amendments in a timely fashion. However, with this consideration in mind, it has been determined that a circumstance has arisen where the licensee and the Commission must act quickly, and the licensee has made a good effort to make a timely application.

FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility in accordance with the amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

The staff has confirmed the basis of the no significant hazards findings described in the notice published in the Federal Register on September 11, 1986 (51 FR 32383). The amendments change the TSs to reflect new operating limits based on the fresh fuel to be inserted into the core. There are no significant changes in the fuel being used, or the fuel assembly design. The staff has previously reviewed postulated fuel-related transients and accidents. As part of these analyses, bounding parameters were used, for example, power peaking limits and reactor system pressure. Accident analyses previously submitted by the licensee and approved by the staff for Oconee 2 utilized input values of physics parameters which are designed to be bounding for various operating cycles and operating conditions. The power imbalance limit curve for Cycle 9 was derived by the licensee so that the previous analyses for the postulated accidents would remain valid for Cycle 9. Therefore,

it was unnecessary to analyze any accident for Cycle 9 of Oconee 2. Since the postulated accidents previously analyzed remain applicable to the new core (i.e., continue to be bounding), the probability or consequences of an accident previously evaluated have not increased. Because of the fundamental identity of the new fuel in terms of its nuclear and fuel assembly design), the possibility of a new or different kind of accident from any accident previously evaluated has not been created. Finally, the power imbalance curve ensures that the licensed margin of safety has not been reduced. Therefore, we conclude that:

(1) Operation of the facilities in accordance with the amendments would not significantly increase the probability or consequences of an accident previously evaluated.

(2) Operation of the facilities in accordance with the amendments would not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Operation of the facilities in accordance with the amendments would not involve a significant reduction in a margin of safety.

Accordingly, we conclude that the amendments to Facility Operating Licenses DPR-38, DPR-47 and DPR-55 to support operation of Oconee Unit 2 at full rated power during the upcoming Cycle 9, involve no significant hazards considerations.

STATE CONSULTATION

In accordance with the Commission's regulations, consultation was held with the State of South Carolina by telephone. The State expressed no concern either from the standpoint of safety or of our no significant hazards consideration determination.

ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards finding with respect to these amendments. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such

activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: October 8, 1986

Principal Contributors: G. Schwenk

REFERENCES

1. Letter, H. B. Tucker (Duke) to H. R. Denton (NRC), "Oconee Nuclear Station Unit 2," June 30, 1986.

2. Letter, H. B. Tucker (Duke) to H. R. Denton (NRC), "Oconee Nuclear Station," September 2, 1986.

3. Report, "Oconee Unit 2, Cycle 9 Reload Report," DPC-RD-2007, Duke Power Company, June 1986.

4. Letter, H. Nicolaras (NRC) to H. B. Tucker (Duke), April 18, 1985.

5. Report, "Oconee Nuclear Station Reload Design Methodology II," DPC-NE-1002, Duke Power Company, Charlotte, North Carolina, March 1985.