

Docket Nos. 50-269  
 50-270  
 and 50-287

FEBRUARY 9 1978

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Duke Power Company  
 ATTN: Mr. William O. Parker, Jr.  
 Vice President  
 Steam Production  
 Post Office Box 2178  
 422 South Church Street  
 Charlotte, North Carolina 28242

Gentlemen:

The Commission has issued the enclosed Amendment Nos. 56, 56 and 53 for License Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station, Units 1, 2 and 3. These amendments consist of changes to the Stations common Technical Specifications and are in response to your request dated September 14, 1977.

These amendments revise the common Oconee Technical Specifications to incorporate changes to the Oconee Unit No. 3 pressurization heatup and cooldown limitations.

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

Sincerely,  
 Original Signed By

A. Schwencer, Chief  
 Operating Reactors Branch #1  
 Division of Operating Reactors

Enclosures:

1. Amendment No. 56 to DPR-38
2. Amendment No. 56 to DPR-47
3. Amendment No. 53 to DPR-55
4. Safety Evaluation
5. Notice of Issuance

cc w/enclosures:  
 See next page

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February 8, 1978

cc: Mr. William L. Porter  
Duke Power Company  
P. O. Box 2178  
422 South Church Street  
Charlotte, North Carolina 28242

J. Micheal McGarry, III, Esquire  
DeBevoise & Liberman  
700 Shoreham Building  
806-15th Street, NW.,  
Washington, D.C. 20005

Oconee Public Library  
201 South Spring Street  
Walhalla, South Carolina 29691

Honorable James M. Phinney  
County Supervisor of Oconee County  
Walhalla, South Carolina 29621

Chief, Energy Systems  
Analyses Branch (AW-459)  
Office of Radiation Programs  
U. S. Environmental Protection Agency  
Room 645, East Tower  
401 M Street, S. W.  
Washington, D. C. 20460

U. S. Environmental Protection Agency  
Region IV Office  
ATTN: EIS COORDINATOR  
345 Coutland Street, N. E.  
Atlanta, Georgia 30308

Chrys Baggett  
State Clearinghouse  
Division of Policy Development  
116 West Jones Street  
Raleigh, N.C. 27603



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. 56  
License No. DPR-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendments by Duke Power Company, (the licensee) dated September 14, 1977, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Facility License No. DPR-38 is hereby amended to read as follows:

"3.B Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 56 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications."

3. This license amendment is effective within 30 days after the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 8, 1978



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. 56  
License No. DPR-47

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendments by Duke Power Company (the licensee) dated September 14, 1977, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Facility License No. DPR-47 is hereby amended to read as follows:

"3.B Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 56 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications."

3. This license amendment is effective within 30 days after the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 8, 1978



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. 53  
License No. DPR-55

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendments by Duke Power Company (the licensee) dated September 14, 1977, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Facility License No. DPR-55 is hereby amended to read as follows:

"3.B Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 53, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications."

3. This license amendment is effective within 30 days after the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 8, 1978



ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 56 TO DPR-38

AMENDMENT NO. 56 TO DPR-47

AMENDMENT NO. 53 TO DPR-55

DOCKET NOS. 50-269, 50-276 AND 50-287

Revise Appendix A as follows:

Remove the following pages and insert pages

3.1-3  
3.1-3a  
3.1-4  
3.1-5  
3.1-6b  
3.1-7b  
3.1-8

Add page

3.1-7e

### 3.1.2 Pressurization, Heatup, and Cooldown Limitations

#### Specification

3.1.2.1 The reactor coolant pressure and the system heatup and cooldown rates (with the exception of the pressurizer) shall be limited as follows:

##### Heatup:

Heatup rates and allowable combinations of pressure and temperatures shall be limited in accordance with Figure 3.1.2-1A Unit 1  
3.1.2-1B Unit 2  
3.1.2-1C Unit 3.

##### Cooldown:

Cooldown rates and allowable combinations of pressure and temperature shall be limited in accordance with Figure 3.1.2-2A Unit 1  
3.1.2-2B Unit 2  
3.1.2-2C Unit 3.

#### 3.1.2.2 Leak Tests

Leak test required by Specification 4.3 shall be conducted under the provisions of 3.1.2.1.

#### 3.1.2.3 Hydro Tests

For thermal steady state system hydro test the system may be pressurized to the limits set forth in Specification 2.2 when there are fuel assemblies in the core under the provisions of 3.1.2.1 and to ASME Code Section III limits when no fuel assemblies are present provided the reactor coolant system is to the right of and below the limit line in Figure 3.1.2-3A Unit 1  
3.1.2-3B Unit 2  
3.1.2-3C Unit 3.

3.1.2.4 The secondary side of the steam generator shall not be pressurized above 237 psig if the temperature of the vessel shell is below 110°F.

3.1.2.5 The pressurizer heatup and cooldown rates shall not exceed 100°F/hr. The spray shall not be used if the temperature difference between the pressurizer and the spray fluid is greater than 410°F.

3.1.2.6 Pressurization heatup and cooldown limitations and hydro test limits shall be updated based on the results of the reactor vessel materials surveillance program. These revised limits shall be submitted to the NRC at least 90 days prior to exceeding four effective full power years of operation.

### Bases - Units 1, 2 and 3

All components in the Reactor Coolant System are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, startup and shutdown operations, and inservice leak and hydrostatic tests. The various categories of load cycles used for design purposes are provided in Table 4.8 of the FSAR.

The major components of the reactor coolant pressure boundary have been analyzed in accordance with Appendix G to 10CFR50. Results of this analysis, including the actual pressure-temperature limitations of the reactor coolant pressure boundary, are given in BAW-1421<sup>(1)</sup>, BAW-1437<sup>(2)</sup> and BAW-1438<sup>(3)</sup>.

The figures specified in 3.1.2.1, 3.1.2.2 and 3.1.2.3 present the pressure-temperature limit curves for normal heatup, normal cooldown and hydrostatic test, respectively. The limit curves are applicable up to the indicated effective full power years of operation. These curves are adjusted by 25 psi and 10°F for possible errors in the pressure and temperature sensing instruments. The pressure limit is also adjusted for the pressure differential between the point of system pressure measurement and the limiting component for all operating reactor coolant pump combinations.

The pressure-temperature limit lines shown on the figure specified in 3.1.2.1 for reactor criticality and on the figure specified in 3.1.2.3 for hydrostatic testing have been provided to assure compliance with the minimum temperature requirements of Appendix G to 10CFR50 for reactor criticality and for inservice hydrostatic testing.

The actual shift in  $RT_{NDT}$  of the beltline region material will be established periodically during operation by removing the evaluating, in accordance with Appendix H to 10CFR50, reactor vessel material irradiation surveillance specimens which are installed near the inside wall of this or a similar reactor vessel in the core region.

The limitation on steam generator pressure and temperature provide protection against nonductile failure of the secondary side of the steam generator. At metal temperatures lower than the  $RT_{NDT}$  of +60°F, the protection against nonductile failure is achieved by limiting the secondary coolant pressure to 20 percent of the preoperational system hydrostatic test pressure. The limitations of 110°F and 237 psig are based on the highest estimated  $RT_{NDT}$  of +40°F and the preoperational system hydrostatic test pressure of 1312 psig. The average metal temperature is assumed to be equal to or greater than the coolant temperature. The limitations include margins of 25 psi and 10°F for possible instrument error.

The spray temperature difference is imposed to maintain the thermal stresses at the pressurizer spray line nozzle below the design limit.

## REFERENCES

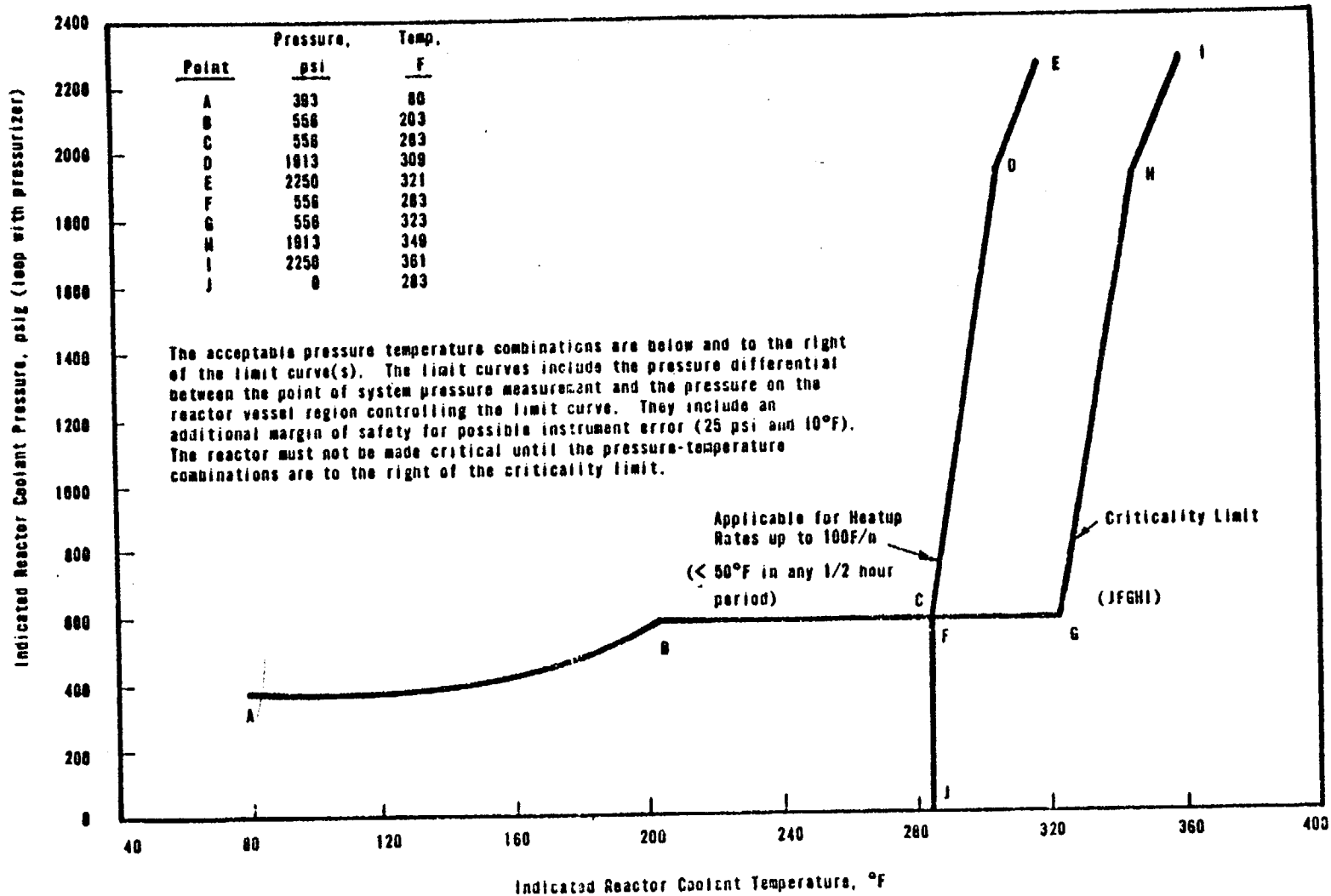
- (1) Analysis of Capsule OC1-F from Duke Power Company Oconee Unit 1 Reactor Vessel Materials Surveillance Program, BAW-1421 Rev. 1, September 1975.
- (2) Analysis of Capsule OC2-1C from Duke Power Company Oconee Unit 2 Reactor Vessel Materials Surveillance Program, BAW-1437, April, 1977.
- (3) Analysis of Capsule OCIII-A from Duke Power Company Oconee Unit 3 Reactor Vessel Materials Surveillance Program, BAW-1438, July, 1977.

ENTIRE PAGE

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3.1-5

Amendments 56, 56 & 53

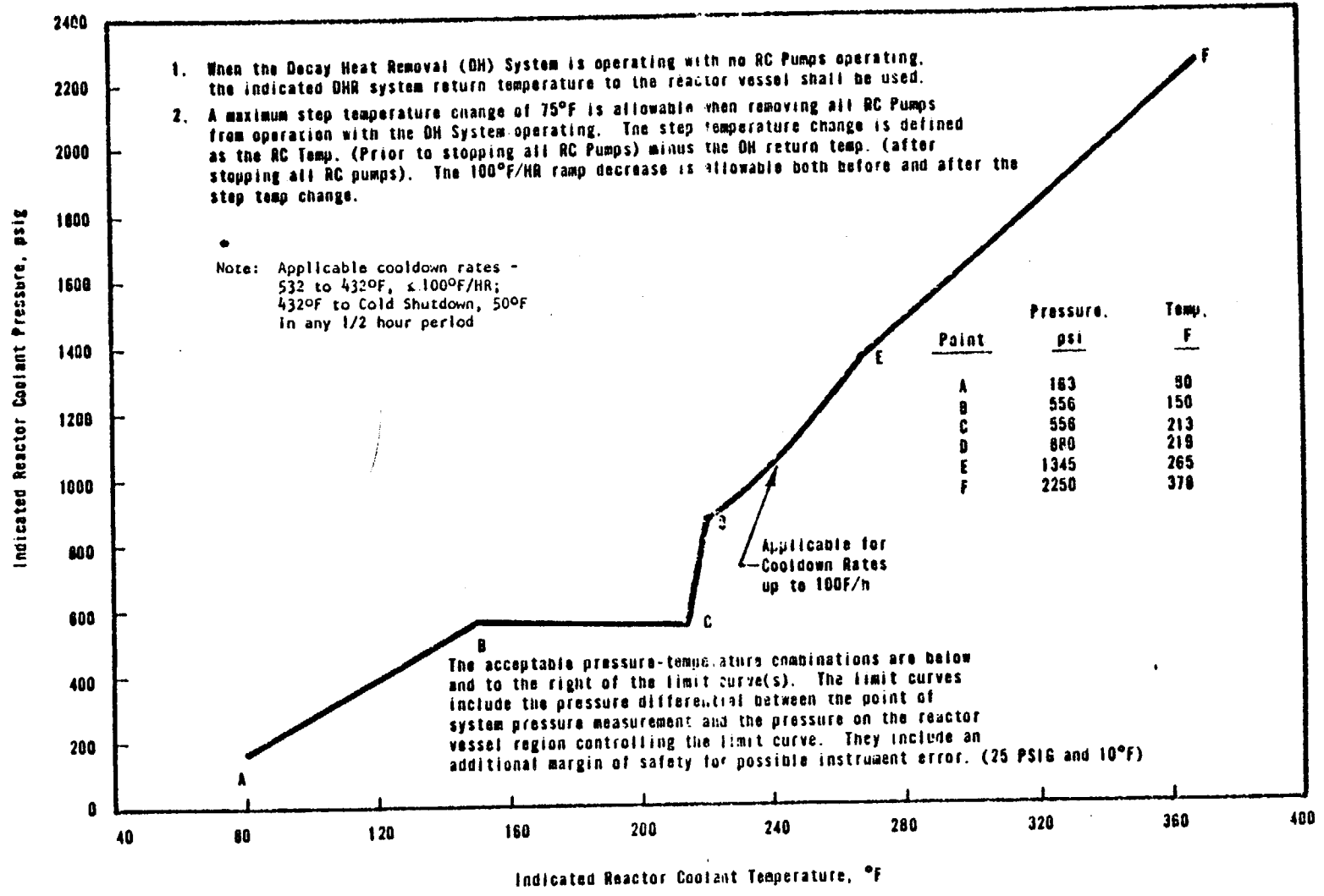


UNIT 3  
 REACTOR COOLANT SYSTEM  
 NORMAL OPERATION HEATUP LIMITATIONS  
 APPLICABLE FOR FIRST 4.0 EFY



OCONEE NUCLEAR STATION

Figure 3.1.2-1C

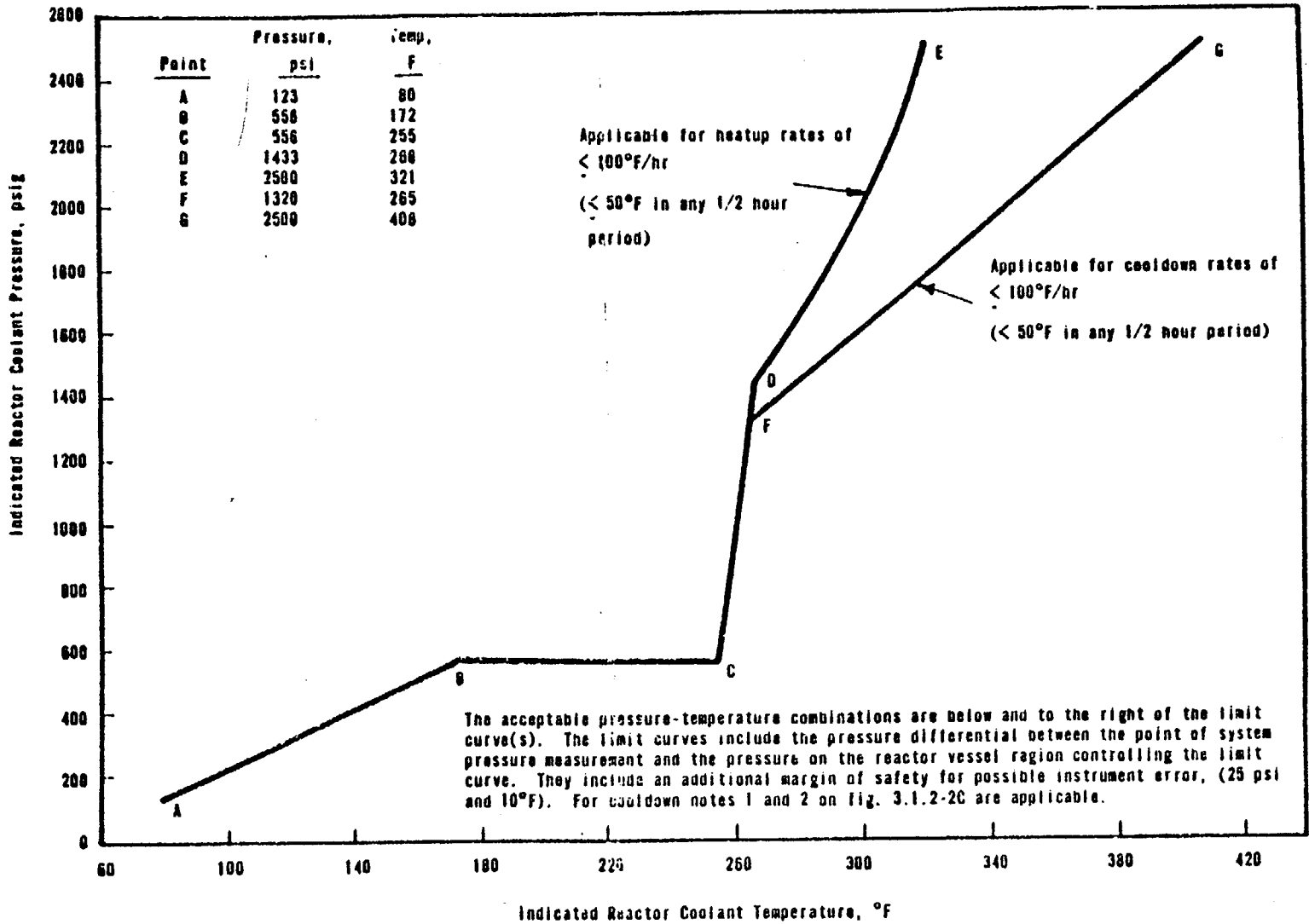


UNIT 3  
 REACTOR COOLANT SYSTEM  
 NORMAL OPERATION COOLDOWN LIMITATIONS  
 APPLICABLE FOR FIRST 4.0 EFY



OCONEE NUCLEAR STATION

Figure 3.1.2-2C



3.1-7e

Amendments 56, 56 & 53

UNIT 3  
 REACTOR COOLANT SYSTEM  
 INSERVICE LEAK AND HYDROSTATIC  
 TEST AND COOLDOWN LIMITATIONS  
 APPLICABLE FOR FIRST 4.0 EFY



OCONEE NUCLEAR STATION

Figure 3.1.2-3C



### 3.1.3 Minimum Conditions for Criticality

#### Specification

- 3.1.3.1 The reactor coolant temperature shall be above 525°F except for portions of low power physics testing when the requirements of Specification 3.1.9 shall apply.
- 3.1.3.2 Reactor coolant temperature shall be above the criticality limit of 3.1.2-1A (Unit 1)  
3.1.2-1B (Unit 2)  
3.1.2-1C (Unit 3)
- 3.1.3.3 When the reactor coolant temperature is below the minimum temperature specified in 3.1.3.1 above, except for portions of low power physics testing when the requirements of Specification 3.1.9 shall apply, the reactor shall be subcritical by an amount equal to or greater than the calculated reactivity insertion due to depressurization.
- 3.1.3.4 The reactor shall be maintained subcritical by at least 1% $\Delta k/k$  until a steam bubble is formed and a water level between 80 and 396 inches is established in the pressurizer.
- 3.1.3.5 Except for physics tests and as limited by 3.5.2.1, safety rod groups shall be fully withdrawn prior to any other reduction in shutdown margin by deboration or regulating rod withdrawal during the approach to criticality. The regulating rods shall then be positioned within their position limits defined by Specification 3.5.2.5 prior to deboration.

#### Bases

At the beginning of the initial fuel cycle, the moderator temperature coefficient is expected to be slightly positive at operating temperatures with the operating configuration of control rods.<sup>(1)</sup> Calculations show that above 525°F, the consequences are acceptable.

Since the moderator temperature coefficient at lower temperatures will be less negative or more positive than at operating temperature,<sup>(2)</sup> startup and operation of the reactor when reactor coolant temperature is less than 525°F is prohibited except where necessary for low power physics tests.

The potential reactivity insertion due to the moderator pressure coefficient<sup>(2)</sup> that could result from depressurizing the coolant from 2100 psia to saturation pressure of 900 psia is approximately 0.1 $\Delta k/k$ .

During physics tests, special operating precautions will be taken. In addition, the strong negative Doppler coefficient<sup>(1)</sup> and the small integrated  $\Delta k/k$  would limit the magnitude of a power excursion resulting from a reduction of moderator density.

The requirement that the reactor is not to be made critical below the limits of Specification 3.1.2.1 provides increased assurance that the proper relationship between primary coolant pressure and temperature will be maintained relative to the NDTT of the primary coolant system. Heatup to this temperature will be accomplished by operating the reactor coolant pumps.



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

January 18, 1978

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 56 TO LICENSE NO. DPR-38

AMENDMENT NO. 56 TO LICENSE NO. DPR-47

AMENDMENT NO. 53 TO LICENSE NO. DPR-55

DUKE POWER COMPANY

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

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

Introduction

By letter dated September 14, 1977, Duke Power Company (licensee) requested revisions to the Oconee Nuclear Station Technical Specifications which would incorporate changes to the Oconee Unit No. 3 pressurization, heatup and cooldown limitations (pressure-temperature operating limit curves) and to the reactor vessel material surveillance program.

Discussion

The existing Oconee Nuclear Station Technical Specifications curves for heatup and cooldown are applicable for  $1.7 \times 10^6$  thermal megawatt-days (1.8 effective full power years). The proposed change will extend this time to 4 effective full power years (EFPY).

Evaluation

Heatup and Cooldown Limitations

The proposed revised Oconee Unit No. 3 pressure-temperature operating limit curves, Figures 3.1.2-1C, 3.1.2-2C and 3.1.2-3C are based on data from Babcock & Wilcox Report, "Analysis of Capsule OCIII-A From Duke Power Company Oconee Nuclear Station, Unit No. 3, Reactor Vessel Materials Surveillance Program," BAW-1438, dated July 1977. The proposed curves are projected for 8 EFPY.

We have reviewed BAW-1438 and the proposed pressure-temperature operating limit curves. Capsule A from Unit No. 3 contained specimens of weld metal WF 209-1. This weld is not identical to the welds in Oconee Unit No. 3. However, this weld has a similar chemical composition and was made using weld procedure similar to those for high copper Oconee vessel welds. Therefore, we conclude that the properties of the limiting weld metals in the Oconee reactor vessels will be affected by irradiation in a manner similar

to these WF 209-1 specimens. Also, the Oconee Unit No. 3, Unit No. 2, and Unit No. 1 neutron flux, flux spectrum and weld material mechanical properties are similar. The Oconee Unit No. 1 pressure-temperature limits were approved on February 23, 1977, and were applicable for 4 EFPY. The Oconee Unit No. 2 pressure-temperature limits were approved on November 4, 1977, and were also applicable for 4 EFPY. For the reasons stated in our Safety Evaluation Report issued February 23, 1977 on Oconee Unit No. 1, and on November 4, 1977 for Oconee Unit No. 2 we have concluded that the proposed temperature operating limit curves for Unit No. 3 should also be limited to 4 EFPYs of operation.

Based on our review of the Oconee Unit No. 3 pressure-temperature limits and the similarity of the Oconee Unit No. 3, Unit No. 2, and Unit No. 1 designs, materials and operating conditions, we conclude that the operating limits proposed for Unit No. 3 are in conformance with Appendix G, 10 CFR Part 50, and are therefore acceptable.

#### Environmental Consideration

We have determined that these amendments do 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 these amendments involve 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, negative declaration, or environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

#### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 8, 1978

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-269, 50-270 AND 50-287DUKE POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY  
OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos. 56, 56 and 53 to Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55, respectively, issued to Duke Power Company which revised Technical Specifications for operation of the Oconee Nuclear Station Unit Nos. 1, 2 and 3, located in Oconee County, South Carolina. The amendments are effective within 30 days of the date of issuance.

These amendments revise the common Oconee Technical Specifications to incorporate changes to the Oconee Unit No. 3 pressurization heatup and cooldown limitations.

The application for these amendments 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 amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

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

For further details with respect to this action, see (1) the application for amendments dated September 14, 1977, (2) Amendment Nos. 56, 56 and 53 to Licenses Nos. DPR-38, DPR-47 and DPR-55, respectively, (3) the Commission's related Safety Evaluation and (4) the Commission's Safety Evaluations dated February 23, 1977 and November 4, 1977. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. 20555 and at the Oconee County Library, 201 South Spring, Walhalla, South Carolina 29691. A copy of items (2), (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 8th day of February 1978.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors