March 26, 1976

Docket Nos. 50-269/270/287

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:

By letter dated March 16, 1976, you requested an exemption from the requirements of 10 CFR Part 50, Appendix H, Section II.C.2, to permit the operation of Oconee Unit 1 Cycle 3 with the reactor vessel surveillance specimens removed from the reactor vessel. You additionally requested corresponding Technical Specification changes to reflect the removal of the surveillance capsules during Cycle 3 and to establish provisions to revise the capsule withdrawal schedule prior to Cycle 4 operation.

As required by 10 CFR Part 50, Appendix H, and as discussed in your letter of March 16, 1976, the surveillance specimens, contained within the surveillance capsules, receive a higher neutron flux than the reactor vessel inner surface. As noted in the attached Safety Evaluation, for Oconee Unit 1, this difference results in the surveillance specimens being irradiated at a rate 2.4 times higher than the vessel. At this rate the specimens would continue to lead the vessel in accumulated neutron flux exposure even if removed for Cycle 3 operation.

We have therefore concluded that if the reactor vessel surveillance specimens are removed from Oconee Unit 1 for Cycle 3 operation and reinstalled prior to Cycle 4 operation, the reactor vessel surveillance program would continue to fulfill the purpose of 10 CFR Part 50, Appendix H, and the actions requested by your letter of March 16, 1976, are hereby approved. In addition, the Commission has issued the enclosed Amendments No. 21, 21, and 18 for Licenses No. DPR-38, DPR-47, and DPR-55, for the Oconee Nuclear Station, Units 1, 2, and 3. These amendments provide for the removal of the surveillance capsules during Cycle 3 operationand require that the capsule withdrawal schedule be revised prior to Cycle 4.

9

OFFICE ➤						
SURNAME ➤						
DATE ➤						

Copies of the Safety Evaluation and the Federal Register Notice are enclosed.

Sincerely,

/s/ Edson G. Case

for Victor Stello, Jr., Director
Division of Operating Reactors
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 21 to DPR-38
2. Amendment No. 21 to DPR-47
3. Amendment No. 18 to DPR-55
4. Safety Evaluation
5. Federal Register Notice

cc w/encl:
See next page

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

Mr. Troy B. Conner
Conner & Knotts
1747 Pennsylvania Avenue, NW
Washington, D. C. 20006

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

Honorable Reese A. Hubbard
County Supervisor of Oconee County
Walhalla, South Carolina 29621

cc w/enclosures & incoming:
Office of Intergovernmental
Relations
116 West Jones Street
Raleigh, North Carolina 27603

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

DUKE POWER COMPANY

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 21
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 March 16, 1976, 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. An environmental statement or negative declaration need not be prepared in connection with the issuance of this amendment.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the
Technical Specifications

Date of Issuance: March 26, 1976

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-38

AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-47

AMENDMENT NO. 18 TO FACILITY LICENSE NO. DPR-55

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

Revise Appendix A as follows:

Remove page 4.2-3 and insert revised page 4.2-3.

4.2.10 For Unit 1 Cycle 3 operation, the surveillance capsules will be removed from the reactor vessel and the provisions of Specification 4.2.9 will be revised prior to Cycle 4 operation.

4.2.11 During the first two refueling periods, two reactor coolant system piping elbows shall be ultrasonically inspected along their longitudinal welds (4 inches beyond each side) for clad bonding and for cracks in both the clad and base metal. The elbows to be inspected are identified in B&W Report 1364 dated December 1970.

Bases

The surveillance program has been developed to comply with Section XI of the ASME Boiler and Pressure Vessel Code, Inservice Inspection of Nuclear Reactor Coolant Systems, 1970, including 1970 winter addenda, edition. The program places major emphasis on the area of highest stress concentrations and on areas where fast neutron irradiation might be sufficient to change material properties.

The reactor vessel specimen surveillance program for Unit 1 and Unit 2 is based on equivalent exposure times of 1.8, 19.8, 30.6 and 39.6 years. The contents of the different type of capsules are defined below.

A Type	B Type
Weld Material	HAZ Material
HAZ Material	Baseline Material
Baseline Material	

For Unit 3, the Reactor Vessel Surveillance Program is based on equivalent exposure times of 1.8, 13.3, 26.7, and 30.0 years. The specimens have been selected and fabricated as specified in ASTM-E-185-72.

Early inspection of Reactor Coolant System piping elbows is considered desirable in order to reconfirm the integrity of the carbon steel base metal when explosively clad with sensitized stainless steel. If no degradation is observed during the two annual inspections, surveillance requirements will revert to Section XI of the ASME Boiler and Pressure Vessel Code.

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

DUKE POWER COMPANY

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 21
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 March 16, 1976, 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. An environmental statement or negative declaration need not be prepared in connection with the issuance of this amendment.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the
Technical Specifications

Date of Issuance: March 26, 1976

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-38

AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-47

AMENDMENT NO. 18 TO FACILITY LICENSE NO. DPR-55

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

Revise Appendix A as follows:

Remove page 4.2-3 and insert revised page 4.2-3.

4.2.10 For Unit 1 Cycle [illegible] operation, the surveillance [illegible]sules will be removed from the reactor vessel and the provisions of Specification 4.2.9 will be revised prior to Cycle 4 operation.

4.2.11 During the first two refueling periods, two reactor coolant system piping elbows shall be ultrasonically inspected along their longitudinal welds (4 inches beyond each side) for clad bonding and for cracks in both the clad and base metal. The elbows to be inspected are identified in B&W Report 1364 dated December 1970.

Bases

The surveillance program has been developed to comply with Section XI of the ASME Boiler and Pressure Vessel Code, Inservice Inspection of Nuclear Reactor Coolant Systems, 1970, including 1970 winter addenda, edition. The program places major emphasis on the area of highest stress concentrations and on areas where fast neutron irradiation might be sufficient to change material properties.

The reactor vessel specimen surveillance program for Unit 1 and Unit 2 is based on equivalent exposure times of 1.8, 19.8, 30.4 and 39.6 years. The contents of the different type of capsules are defined below.

A Type	B Type
Weld Material	HAZ Material
HAZ Material	Baseline Material
Baseline Material	

For Unit 3, the Reactor Vessel Surveillance Program is based on equivalent exposure times of 1.8, 13.3, 26.7, and 30.0 years. The specimens have been selected and fabricated as specified in ASTM-E-185-72.

Early inspection of Reactor Coolant System piping elbows is considered desirable in order to reconfirm the integrity of the carbon steel base metal when explosively clad with sensitized stainless steel. If no degradation is observed during the two annual inspections, surveillance requirements will revert to Section XI of the ASME Boiler and Pressure Vessel Code.

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

DUKE POWER COMPANY

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 18
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 March 16, 1976, 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. An environmental statement or negative declaration need not be prepared in connection with the issuance of this amendment.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the
Technical Specifications

Date of Issuance: March 26, 1976

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-38

AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-47

AMENDMENT NO. 18 TO FACILITY LICENSE NO. DPR-55

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

Revise Appendix A as follows:

Remove page 4.2-3 and insert revised page 4.2-3.

4.2.10 For Unit 1 Cycle 3 operation, the surveillance capsules will be removed from the reactor vessel and the provisions of Specification 4.2.9 will be revised prior to Cycle 4 operation.

4.2.11 During the first two refueling periods, two reactor coolant system piping elbows shall be ultrasonically inspected along their longitudinal welds (4 inches beyond each side) for clad bonding and for cracks in both the clad and base metal. The elbows to be inspected are identified in B&W Report 1364 dated December 1970.

Bases

The surveillance program has been developed to comply with Section XI of the ASME Boiler and Pressure Vessel Code, Inservice Inspection of Nuclear Reactor Coolant Systems, 1970, including 1970 winter addenda, edition. The program places major emphasis on the area of highest stress concentrations and on areas where fast neutron irradiation might be sufficient to change material properties.

The reactor vessel specimen surveillance program for Unit 1 and Unit 2 is based on equivalent exposure times of 1.8, 19.8, 30.6 and 39.6 years. The contents of the different type of capsules are defined below.

A Type	B Type
Weld Material	HAZ Material
HAZ Material	Baseline Material
Baseline Material	

For Unit 3, the Reactor Vessel Surveillance Program is based on equivalent exposure times of 1.8, 13.3, 26.7, and 30.0 years. The specimens have been selected and fabricated as specified in ASTM-E-185-72.

Early inspection of Reactor Coolant System piping elbows is considered desirable in order to reconfirm the integrity of the carbon steel base metal when explosively clad with sensitized stainless steel. If no degradation is observed during the two annual inspections, surveillance requirements will revert to Section XI of the ASME Boiler and Pressure Vessel Code.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-38

SUPPORTING AMENDMENT NO. 21 TO FACILITY LICENSE NO. DPR-47

SUPPORTING AMENDMENT NO. 18 TO FACILITY LICENSE NO. DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

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

Introduction

By letter dated March 16, 1976, Duke Power Company (the licensee) requested an exemption from the requirements of 10 CFR Part 50, Appendix H. Section II.C.2 to permit the operation of Oconee Unit 1, Cycle 3 with the reactor vessel surveillance capsules removed from the reactor vessel. The licensee requested corresponding changes to the Technical Specifications appended to Facility Operating Licenses No. DPR-38, DPR-47, and DPR-55 for the Oconee Nuclear Station, Units 1, 2, and 3. These changes would reflect the removal of the reactor vessel surveillance capsules for Cycle 3 operation and would require the submittal of a revised surveillance capsule withdrawal schedule prior to Cycle 4 operation.

Discussion

The Oconee Unit 1 design includes three reactor vessel surveillance capsule holder tubes located adjacent to the reactor vessel inside wall. Each holder tube contains two surveillance capsules which hold the specimens to be irradiated in accordance with the requirements of the reactor vessel material surveillance program as described in Appendix H to 10 CFR Part 50. The purpose of the surveillance program is to monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region resulting from their exposure to neutron irradiation and the thermal environment.

In a recent inspection of the surveillance capsule holder tubes, conducted during the current refueling outage, evidence of wear was observed at several locations within the holder tubes. The damage was evidently caused by flow-induced relative motion between the holder tubes and various components of the surveillance capsule train which positions and holds the

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

surveillance capsules in place during reactor operation. Although there are indications of significant wear, all three holder tubes are intact and the licensee has indicated that the structural integrity has been retained. To preclude the possibility of additional wear during Cycle 3, the licensee is proposing that:

1. The surveillance capsules and push rod assemblies be removed during Cycle 3 operation, and

2. The holder tubes be secured from motion by a spring-loaded retaining device, similar to the existing holddown device, which would be loaded into the upper end of each holder tube.

The licensee has indicated that the above proposed action would allow time for the engineering of modifications to the holder tube and push rod assembly design and the procurement of material prior to the resumption of the surveillance capsule irradiation program in Cycle 4.

Evaluation

As required by Paragraph II.C.2 of Appendix H to 10 CFR Part 50, the surveillance capsules of Oconee Unit 1 are positioned during reactor operation such that the neutron flux received by the specimens is at least as high but not more than three times as high as that received by the vessel inner surface. More specifically, as reported in Babcock and Wilcox Topical Report BAW-10100A, February 1975, the specimen capsule locations in the Unit 1 reactor vessel provide a neutron flux 2.4 times greater than the inside 1/4 wall thickness (1/4 t) location of the reactor vessel beltline. The lead factor between the center of the specimens and the 1/4 t vessel wall location is considered when determining the relative fracture toughness properties of the beltline region materials. Cycles 1 and 2 have accumulated 1.64 effective full power years (EFPY) of actual exposure for an equivalent capsule irradiation of 3.94 EFPY. Cycle 3 operation is planned for 292 EFPD (0.8 EFPY) of operation, and therefore a margin will exist between the present capsule irradiation of 3.94 EFPY and the reactor vessel irradiation at the end of Cycle 3 of 2.4 EFPY. The irradiation effects accumulated by the specimens during Cycles 1 and 2 will not be altered and appropriate allowances can be made to revise the capsule withdrawal schedule and thus insure that the required data is obtained. Based on the above we conclude that the licensee's proposed action to remove the reactor vessel surveillance capsules during Cycle 3 operation will not adversely affect the Unit 1 surveillance program. In addition, sufficient data presently exists from the irradiation of specimens during Cycles 1 and 2 to establish a revised withdrawal schedule which will take into account the removal of the specimens during Cycle 3 operation and which will meet the requirements of 10 CFR Part 50, Appendix H.

In a meeting held on March 23, 1976, with representatives from Duke Power Company and Babcock & Wilcox, we discussed the safety implications involved with the licensee's proposed action. Of major concern was the mechanical integrity of the holder tubes which would remain in the core after removal of the surveillance capsules and push rod assemblies. As discussed earlier areas of significant wear were observed on the internal surfaces of the holder tubes. The wear does penetrate through the holder tube wall of all three tubes at three of four spacer locations along the length of the push rod assemblies. The worst wear involves the loss of material over two circumferencial lengths of approximately 2" and 2 1/4" each of the total circumference of about 11". The two worn through areas are separated by an undamaged ligament of material. We reviewed the stress loadings incurred by the holder tubes during the Unit 1 Hot Functional Tests and agree that they are very low compared to the allowable loads. A comparison of these loads is provided in BAW Topical Report BAW-10039, April 1973. A fatigue evaluation was also performed by the licensee using the as-measured strains and included appropriate allowances for the reduction in cross-sectional area and notch effect associated with the wear sites on the holder tubes. We reviewed the results of this evaluation and agree that the maximum alternating stress levels during continued operation are well below the high cycle endurance limit for the material involved.

The data presented by B&W and the licensee strongly indicates that the wear incurred on the holder tubes was caused by flow-induced motion between the holder tubes and push rod assemblies. By removing the surveillance capsules and push rod assemblies, we agree that the source of wear would be removed and any further damage highly unlikely.

The spring-loaded retaining device proposed by the licensee to be loaded onto the upper end of each holder tube would be compressed by the plenum flange as the plenum is lowered into the core support shield. The spring force would thus prevent holder tube movement or vibration during reactor operation.

In the unlikely event that the holder tubes might fail at one or more of the wear locations, the loose parts monitoring system would detect the resultant noise and appropriate action would then be taken.

In view of the above, we consider it acceptable to allow the holder tubes to remain in the Unit 1 reactor vessel during Cycle 3 operation with the surveillance capsules and push rod assemblies removed and the spring-loaded retaining devices installed to provide proper holder tube restraint.

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 environmetal impact and pursuant to 10 CFR §51.5(d)(4) that an environmental 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 change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the changes 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: March 26, 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

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

DUKE POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

Notice is hereby given that the U.S. Nuclear Regulatory Commission (the Commission) has issued Amendments No. 21, 21, and 18 to Facility Operating Licenses No. DPR-38, DPR-47, and DPR-55, respectively, issued to Duke Power Company which revised Technical Specifications for operation of the Oconee Nuclear Station, Units 1, 2, and 3, located in Oconee County, South Carolina. The amendments are effective as of the date of issuance.

These amendments allow the removal of the reactor vessel surveillance capsules from the Oconee Unit 1 reactor during Cycle 3 operation.

The application for the 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 is 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 statement, negative declaration or environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to the action, see (1) the application for amendment dated March 16, 1976, (2) Amendments No. 21, 21 ,and 18 to Licenses No. DPR-38, DPR-47, and DPR-55, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. 20555, and at the Oconee County Library, 201 South Spring Street, Walhalla, South Carolina 29691.

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 Operating Reactors.

Dated at Bethesda, Maryland, this 26th day of March 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Operating Reactors