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(2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-269

FILE NUMBER

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TO: Mr. Edson G. Case

FROM: Duke Power Company
Charlotte, North Carolina
William O. Parker, Jr.

DATE OF DOCUMENT 6/21/77

DATE RECEIVED 6/27/77

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DESCRIPTION

Ltr. notorized 6/21/77.....trans the following:

ACKNOWLEDGED

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(2-P)

PLANT NAME: Oconee Unit No. 1

RJL 6/30/77

ENCLOSURE

Amdt. to OL/change to tech specs..... concerns operation of Oconee 1 Cycle 4 operation with revised page 3-1 for report BAW-1447, "Oconee Unit 1, Cycle 4 Reload Report"...

(2-P)

FOR ACTION/INFORMATION

SAFETY		ENVIRONMENTAL	
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NAT LAB		771810160
REG IV (J. HANCHETT)		
✓ 16 CYS ACRS SENT CATEGORY B		

DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

June 21, 1977

Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Oconee Unit 1
Docket No. 50-269

Dear Sir:

My letter of March 30, 1977 provided proposed Technical Specification amendments and supporting documentation to assure operation of the Oconee Unit 1 Cycle 4 core within applicable fuel design and performance criteria. Subsequent to this submittal, a program has been initiated to remove one of the axial power shaping rod (APSR) assemblies for destructive examination in order to obtain more information relative to the effects of irradiation on the material properties. Since this assembly has seen three cycles of irradiation exposure, a replacement APSR assembly with an equivalent poison worth will be inserted in its place. To compensate for this poison worth loss, the new component will be identical to the standard B&W design except that it will have fifteen silver-indium-cadmium (Ag-In-Cd) poison rods and one Inconel-718 rod.

An evaluation of the nuclear, mechanical and thermal hydraulic considerations of this program have been conducted and it is considered that safe operation of the reactor will not be adversely affected.

It is requested that this letter be considered as a supplement to the March 30, 1977 letter supporting the operation of Oconee 1 Cycle 4 operation. Additionally, pursuant to 10CFR50.90, it is requested that Technical Specification 5.3.3.1 be revised as indicated on the attached Technical Specification replacement page to incorporate this change.

A revised page 3-1 is also attached for report BAW-1447, "Oconee Unit 1, Cycle 4 Reload Report".

Very truly yours,

William O. Parker, Jr.

William O. Parker, Jr.

MST:ge

Attachment

WILLIAM O. PARKER, JR., being duly sworn, states that he is Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this request for amendment of the Oconee Nuclear Station Facility Operating Licenses DPR-38, DPR-47, and DPR-55; and that all statements and matters set forth therein are true and correct to the best of his knowledge.

William O. Parker, Jr.

William O. Parker, Jr., Vice President

Subscribed and sworn to before me this 21st day of June, 1977.

Vivian B. Robbins

Notary Public

My Commission Expires:

Feb. 15, 1982

3. GENERAL DESCRIPTION

The Oconee Unit 1 reactor core is described in detail in section 3 of the Oconee Nuclear Station, Unit 1, Final Safety Analysis Report[1].

The Cycle 4 core, comprising batches 4, 5, and 6, contains 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 pin cladding is cold-worked Zircaloy-4 with an OD of 0.430 inch and a wall thickness of 0.0265 inch. The fuel consists of dished-end, cylindrical pellets of uranium dioxide which are 0.370 inch in diameter. (See Tables 4-1 and 4-2 for additional data.) The fuel assemblies in batches 4, 5, and 6 have an average nominal fuel loading of 463.6 kg of uranium. The undensified nominal active fuel lengths and theoretical densities vary between batches and are presented in Tables 4-1 and 4-2.

Figure 3-1 is the core loading diagram for Oconee 1, Cycle 4. The initial enrichments of batches 4A and 4B were 2.60 and 3.20 wt % ^{235}U, respectively. Batches 5 and 6 are enriched to 2.75 and 2.795 wt % ^{235}U, respectively. All the batch 3 assemblies will be discharged at the end of Cycle 3. The batch 4A, 4B, and 5 assemblies will be shuffled to new locations at the beginning of Cycle 4. The fresh batch 6 assemblies will occupy the periphery of the core. Figure 3-2 is an eighth-core map showing the assembly burnup and enrichment distribution at the beginning of Cycle 4.

Reactivity control is supplied by 61 full-length Ag-In-Cd control rods and by soluble boron shim. In addition to the full-length control rods, eight axial power shaping rods are provided for additional control of the axial power distribution. One APSR will be a new control rod assembly identical to the standard design except that it will have fifteen Ag-In-Cd poison rods and one Inconel-718 rod. The Cycle 4 locations of the 69 control rods and the group designations are indicated in Figure 3-3. The core locations of the total pattern (69 control rods) for Cycle 4 are identical to those of the reference cycle indicated in the Oconee 1, Cycle 3 Reload Report.[2] The group designations, however, differ between Cycle 4 and the reference cycle in order to minimize power peaking.

The nominal system pressure is 2200 psia, and the densified nominal heat rate is 5.80 kW/ft at the rated core power of 2568 MWt.

5.3 REACTOR

Specification

5.3.1 Reactor Core

5.3.1.1 The reactor core contains approximately 93 metric tons of slightly enriched uranium dioxide pellets. The pellets are encapsulated in Zircaloy-4 tubing to form fuel rods. The reactor core is made up of 177 fuel assemblies, all of which are prepressurized with Helium.

5.3.1.2 The fuel assemblies shall form an essentially cylindrical lattice with an active height of 144 in. and an equivalent diameter of 128.9 in. (2)

5.3.1.3 There are 61 full-length control rod assemblies (CRA) and 8 axial power shaping rod assemblies (APSR) distributed in the reactor core as shown in FSAR Figure 3-46. The full-length CRA and the APSR shall conform to the design described in the FSAR or reload report.

5.3.1.4 Initial core and reload fuel assemblies and rods shall conform to design and evaluation described in FSAR or reload report and shall not exceed an enrichment of 3.5 percent of U-235.

5.3.2 Reactor Coolant System

5.3.2.1 The design of the pressure components in the reactor coolant system shall be in accordance with the code requirements.(3)

5.3.2.2 The reactor coolant system and any connected auxiliary systems exposed to the reactor coolant conditions of temperature and pressure, shall be designed for a pressure of 2,500 psig and a temperature of 650°F. The pressurizer and pressurizer surge line shall be designed for a temperature of 670°F.(4)

5.3.2.3 The maximum reactor coolant system volume shall be 12,200 ft^3.

REFERENCES

(1) FSAR Section 3.2.1

(2) FSAR Section 3.2.2

(3) FSAR Section 4.1.3

(4) FSAR Section 4.1.2