NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

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DOCKET NUMBER: 50-269/270/287 (LTR)

FILE NUMBER:

TO: MR B C RUSCHE

FROM: DUKE POWER CO
CHARLOTTE, NC
W O PARKER, JR

DATE OF DOCUMENT: 5-13-76

DATE RECEIVED: 5-17-76

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DESCRIPTION: LTR RE OUR 4-6-76 LTR....TRANS THE FOLLOWING..

ENCLOSURE: RESPONSE TO MR R A PURPLE'S REQUEST DTD 4-6-76 WITH ATTACHED DRAWINGS.....

ACKNOWLEDGED

DO NOT REMOVE

PLANT NAME: OCONEE 1-2-3

FOR ACTION/INFORMATION 6-3-76 RB

	ASSIGNED AD:			ASSIGNED AD:	
X	BRANCH CHIEF: ENCL	PURPLE		BRANCH CHIEF:	
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Regulatory Docket File

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

May 13, 1976

Mr. Benard C. Rusche
Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. R. A. Purple, Chief
Operating Reactors Branch No. 1

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Sir:

In response to your letter dated April 6, 1976 which requested additional information regarding the ECCS analysis for the Oconee Nuclear Station Units 2 and 3, the attached information is provided. This information is also applicable to Oconee 1.

The review of all equipment which may become submerged as a result of a loss of coolant accident (question 4) has not yet been completed. It is expected that this information will be transmitted to you no later than May 21, 1976.

Very truly yours,

William O. Parker, Jr.

MST:mmb

Attachment

Response to Mr. R. A. Purple's Letter dated April 6, 1976

QUESTION:

1. Describe the design of the ECCS actuation system. Identify any non-conformance of this design with the single failure requirements of IEEE Std 279-1971. Describe any changes proposed for meeting these requirements.

RESPONSE:

The design of the Oconee Nuclear Station Engineered Safeguards Protective System (ESPS) is described in FSAR Section 7.1.3. The ESPS includes the Emergency Core Cooling System in addition to the Reactor Building Isolation, Spray and Cooling Systems. The system logic for the ESPS is described in FSAR Section 7.1.3.2.1, and the specific discussion for the ECCS components is provided in FSAR Section 7.1.3.2.2. The safety evaluation for the ESPS is provided in FSAR Section 7.1.3.3.

The Oconee ECCS actuation system conforms to the single failure requirements of IEEE 279-1971.

QUESTION:

2. Describe the design of the onsite emergency power system, a-c and d-c. Identify any non-conformance of this design with the single failure requirements of IEEE Std 279-1971. Describe any changes proposed for meeting these requirements.

RESPONSE:

The Oconee Nuclear Station onsite emergency AC power sources and distribution system are described in FSAR Section 8.2.3. The emergency power distribution through the switchboards is described in FSAR Sections 8.2.2.4, 8.2.2.5, and 8.2.2.6. The onsite emergency DC power system is described in FSAR Section 8.2.2.7. A single failure analysis of these systems is provided in Table 8.7.

The design of the Oconee onsite emergency AC and DC power systems conforms to the single failure requirements of IEEE 279-1971.

QUESTION:

3. Identify all the electrical equipment required for the ECCS and supporting subsystems to enable performance of the ECCS safety function. Define the qualification status (ability to withstand the design basis seismic and environmental conditions) of this equipment, and the basis for such qualification, to provide reasonable assurance that the equipment will be capable of performing its safety function. Describe any proposed design modifications, analyses, or test programs for meeting the environmental and seismic qualification requirements.

RESPONSE:

The electrical equipment required for the ECCS and supporting subsystems to enable performance of the ECCS safety function is identified in FSAR Tables 6.2a and 6.2b for equipment located outside and inside containment respectively. The qualifications of this equipment to meet the seismic and environmental and provide reasonable assurance that the equipment will be capable of performing its safety functions is provided in the FSAR in the following references:

Equipment	Environmental	Seismic
Actuated Equipment	6.1.2.12	6.1.2.4
Actuation Equipment	7.1.1.7 and Appendix 7A	7.1.1.8 and Appendix 7A
Power Equipment	6.1.2.12	8.2.3.5 and Table 8.8

QUESTION:

5. Identify any single electrically operated fluid system component, including manually-controlled electrically-operated valves, whose failure could result in loss of capability of the ECCS to perform its safety function. Failure in both the "fail to function" sense and in the "undesirable function" sense should be considered, and this should apply even though the component may not be required to function in a given safety operational sequence.

RESPONSE:

In a letter dated July 9, 1975 to Mr. Angelo Giambusso, NRC, it was stated that a single failure analysis for manually-controlled, electrically-operated ECCS valves had been performed. The core flood tank discharge isolation valves 1CF-1, 2CF-1, 3CF-1 and 1CF-2, 2CF-2 and 3 CF-2 are ECCS valves which are currently required to have power disconnected during reactor operation.

In attachment 2 to an October 31, 1975 letter to Mr. B. C. Rusche, the response to question 1(e) stated that ES actuated ECCS valves were analyzed for the effect of single failure in Table 6-2 of the FSAR. In the response to question 1(a), it was confirmed that analyses have been performed to evaluate the effects of a single failure or operator error which could cause any manually-controlled, electrically-operated valve to move to a position that could adversely affect ECCS performance and that no such valves were identified.

An analysis of fluid system components, other than valves, has also been performed, and it has been determined that no such failure of components could result in loss of capability of the ECCS to perform its safety function regardless of whether the failure is in the "fail to function" or in the "undesirable function" sense.

QUESTION:

6. With regard to the equipment identified in item (5), provide a detailed description of any proposed design changes deemed necessary by your analysis for meeting the single failure criterion. Your response should specifically address but should not be limited to changes made to meet the single failure criterion by conformance to Branch Technical Position EICSB 18, "Application of the Single Failure Criterion to Manually-Controlled Electrically-Operated Valves", of Appendix 7A of the Regulatory Standard Review Plan. This position establishes the acceptability of disconnecting power to the electrical components of a fluid system as one means of meeting the single failure criterion.

RESPONSE:

The Technical Specifications require that power be disconnected from the core flood tank discharge isolation valves and from the core flood tank vent valves in order to protect against a single failure which might cause an undesirable component action.

With regard to the core flood tank discharge isolation valves CF-1 and CF-2, these valves are provided with position indicating lights in the control room derived from limit switches in the valve operators. Power for these indicators is independent of the valve's control power. In addition, an independent stem mounted limit switch provides redundant indication by alarm in the control room if the valve is not fully open. It is considered that these valves meet the requirements of Branch Technical Position EICSB-18.

With regard to the core flood tank vent valves CF-5 and CF-6, these valves are provided with indicating lights in the control room derived from limit switches in the valve operators. Power for these indicators is from the valve's control power. Redundant indication of a mispositioning of these valves is provided by the core flood tank pressure instrumentation which would alarm upon low core flood tank pressure if these valves failed in the open position. It is considered that these valves meet the intent of Branch Technical Position EICSB-18.

No proposed design changes are considered necessary as a result of the single failure analysis requested by question (5).

QUESTION:

7. Identify any electrical interlocks between redundant portions of the ECCS and supporting subsystems. Define the consequence of failure of any interlock on the capability of the ECCS to perform its safety function. Describe any proposed design modifications resulting from this review.

RESPONSE:

There are no electrical interlocks between redundant portions of the ECCS and supporting subsystems.

QUESTION:

8. Provide the electrical and physical separation criteria for your design of redundant safety equipment and functions. Include the features in your design that minimize the vulnerability of the ECCS and supporting subsystems to common failure modes.

RESPONSE:

The electrical and physical separation criteria for redundant safety equipment and functions and features which minimize the vulnerability of the ECCS and supporting subsystems to common failures are provided in FSAR Sections 7.1.1.3, 7.1.1.4, 7.1.3.3 and 8.2.2.13.

QUESTION:

9. Provide the following drawings for the ECCS and supporting subsystems:

   a. One Line Diagram of the Onsite AC Power Distribution System.

   b. One Line Diagram of the DC Power Distribution System.

   c. One Line Diagram of the Vital Instrument Power Distribution System.

RESPONSE:

One line drawings of the onsite AC, DC and vital instrument power distribution systems are provided in the attached Oconee drawings:

   a. 6900 VAC and 4160 VAC Station Auxiliary Systems (0-702-A and 0-1702)

   b. Station Auxiliary Circuits 600 VAC (0-1703-G)

   c. 120 VAC and125 VAC Station Auxiliary Circuits - Instrumentation Vital Buses (0-705)

These drawings are typical for all Oconee units.