

A 09/15/78

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50-2697270787

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DUKE FWR

DOCDATE: 09/11/78  
DATE RCVD: 09/14/78

DOCTYPE: LETTER NOTARIZED: NO COPIES RECEIVED  
SUBJECT: LTR 1 ENCL 40  
RESPONSE TO NRC REQUEST OF 08/02/78. FORWARDING ADDL INFO WITH RE TO  
APPLICANT'S PROPOSED DELETION OF PORTIONS OF SUBJECT FACILITY'S APPENDIX B  
TECH SPECS.

PLANT NAME: OCONEE - UNIT 1  
OCONEE - UNIT 2  
OCONEE - UNIT 3

REVIEWER INITIAL: XJM  
DISTRIBUTER INITIAL: RTW

\*\*\*\*\* DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS \*\*\*\*\*

NOTES:  
1. M. CUNNINGHAM - ALL AMENDMENTS TO FSAR AND CHANGES TO TECH SPECS

CHANGE REQUESTS FOR ENVIRON TECH SPECS (APPEND B)  
(DISTRIBUTION CODE C004)

FOR ACTION: BR CHIEF ORB#4 BC\*\*W/5 ENCL

INTERNAL:	REG FILE**W/ENCL	NRC PDR**W/ENCL
	I & E**W/2 ENCL	OELD**W/ENCL
	GOSSICK & STAFF**W/ENCL	OAB**W/ENCL
	AD FOR SYS & PROJ**LTR ONLY	EEB**W/ENCL
	J MCGOUGH**W/ENCL	DIRECTOR DSE**LTR ONLY
	ENVIRO SPEC BR**W/ENCL	AD FOR SITE ANALYS**LTR ONLY
	EFFLUENT TREAT SYS**W/ENCL	RAD ASSESSMENT BR**W/ENCL

EXTERNAL: LPDR'S  
WALHALLA, SC\*\*W/ENCL  
NATL LAB ORNL\*\*W/3 ENCL  
NSIC\*\*W/ENCL  
TERA\*\*W/1 ENCL  
ACRS CAT B\*\*W/16 ENCL

DISTRIBUTION: LTR 43 ENCL 40  
SIZE: 1P+4P

CONTROL NBR: 782080056

\*\*\*\*\* THE END \*\*\*\*\*

AA 2  
P

REGULATORY DOCKET FILE COPY  
DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.  
VICE PRESIDENT  
STEAM PRODUCTION

September 11, 1978

TELEPHONE: AREA 704  
373-4083

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Mr. R. W. Reid, Chief  
Operating Reactors Branch #4

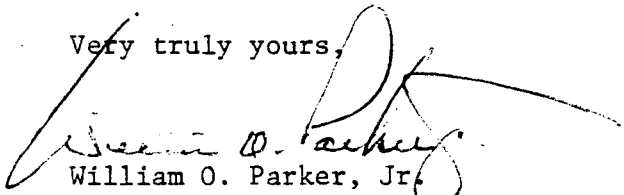
Re: Oconee Nuclear Station  
Docket Nos. 50-269, -270, -287

Dear Sir:

Your letter of August 2, 1978 requested additional information with regard to the proposed deletion of portions of Appendix B of the Oconee Nuclear Station Technical Specifications. In response to that request, please find attached additional information on this concern.

This submittal is considered to supplement my request of December 2, 1977 and as such no license fees are enclosed. Forty copies of this letter are provided.

Very truly yours,

  
William O. Parker, Jr.

RLG:scs  
Attachment (40)

782080056

Coat  
5/40\*

# DUKE POWER COMPANY

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION CONCERNING TERMINATION OF NON-RADIOLOGICAL STUDIES

### ITEM 1

On an annual basis, compare the fish impingement and entrainment rate to the studies of fishing catch rates for all age classes and important species defined by the Final Environmental Statement (FES) to determine whether the plant is killing an amount of fish comparable to that killed by fishing. (e.g. Mathur, D., Heisey, P. G., Manusson, N. C., Impingement of Fishes at Peach Bottom Atomic Power Station, Pennsylvania. Trans. Amer. Fisheries Soc. Vol. 106, No. 3, May 1977.)

### RESPONSE

Angler success compared to fish impingement at Oconee Nuclear Station.

Angler	Largemouth Bass (fish caught/day/angler)	Black Crappie (fish caught/day/angler)	Bluegill (fish caught/day/angler)
1974	1.50	0.51	2.48
1975	0.95	0.79	1.29
Mean (1974 & 1975)	1.22	0.65	1.38
ONS Impingement (fish per day, 1974 & 1975)	0.19	0.15	24.60

The angler catch was based on the average length of fishing trips (6.8 hours in 1974 and 6.7 hours in 1975) times the number of fish caught per hour in the respective years. (Creel census data from South Carolina Wildlife and Marine Resources Department).

Oconee Nuclear Station impingement rates were computed from data collected on a biweekly basis from May 1974 through April 1975. A total impingement rate per day for the station was estimated from the representative screens inspected.

We feel that this represents a negligible loss due to impingement. The number of largemouth bass and black crappie impinged per day was less than 25% of the catch of one angler in one day of fishing. The daily impingement loss of bluegill equaled approximately 10 angler days of fishing in 1974 and 19 angler days in 1975.

All bluegills impinged were 2-6 cm in length. Loss of bluegill in this size range does not constitute a direct loss to the creel. During the interval from the time bluegill are within the 2-6 cm size range and until they are large enough to be included in the creel, natural mortality will decrease the population size. In this case, impingement loss of bluegills in terms of angler-days (based on 2-6 cm size range) is an overestimate.

## ITEM 2

Regarding fisheries studies, on page 117 of the FES, it is stated that: "It is clear that to determine ecological significance of condenser effluents, the observed effects must be related to the population density, dynamics, and regeneration times of the aquatic organisms present in the affected areas. Additional information is needed before expanded, detailed assessments of impacts on terrestrial and aquatic biota in and around Keowee Lake and Hartwell Reservoir can be made." The effects of both condenser effluents and intake effects should be compared to the population density determined in these studies.

## RESPONSE

- a. Entrainment of fish eggs and larvae through the ONS condenser colling water system.

Entrainment studies conducted from 1973 through 1977 show entrainment to be minimal at ONS. As stated on page 382 of the Environmental Summary Report, "In 17 months of sampling, through four spawning seasons, {1973-1976}, only 1 fish larvae (threadfin shad) and no fish eggs were collected."

- b. Impingement of fish on the condenser cooling water intake screens.

The table below shows the percentage of the fish standing crop of Lake Keowee impinged at the ONS intake screens. Standing crop data was calculated from Rotenone samples collected by the U. S. Fish and Wildlife Service (Southeast Reservoir Investigations).

Percent of Lake Keowee Standing Crop Impinged by ONS Annually

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Largemouth bass	<0.01%	<0.01%	<0.01%	0%
Black crappie	0	<0.01	<0.01	<0.01
Bluegill	<0.01	0.11	<0.01	<0.01
Yellow perch	<0.01	0.03	0.13	0.05
Warmouth	<0.01	0.01	0	0
Flat bullhead	0	<0.01	<0.01	0
Threadfin shad	0	0.13	0.83	0.28
Carp	<0.01	<0.01	0	0

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All species impinged	<0.01%	0.07%	0.19%	0.16%
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All numbers of fish impinged were less than 1% by number of the standing crop for the species shown.

- c. Condenser effluent effects.

Four studies (Rotenone, gill netting, seining, and larval trawling) in the discharge area by Southeast Reservoir Investigations, U. S. Fish and Wildlife Service are used to evaluate the effects of the heated effluent.

- 1) Rotenone data (Reference 1) collected from the skimmer wall station

(approximately 2.8 river kilometers from discharge) show numbers of fish collected at this station to be similar to those at other sampling stations.

- 2) Gill netting (Reference 2) show numbers of fish and species collected in the discharge area to be similar to those at other sampling stations.
- 3) Seining (Reference 3) shows numbers of fish collected to be higher near the discharge than at any other sampling station on Lake Keowee.
- 4) Larval trawling (Reference 4) revealed that the numbers of larval fish in the discharge were comparable to those at the other sampling stations.

#### REFERENCES

1. Duke Power Company 1977. Oconee Nuclear Station Environmental Summary Report, 1971-1976. Vol. 2 p. 490.
2. *ibid.* p. 489.
3. *ibid.* p. 487-488.
4. *ibid.* p. 503.

#### ITEM 3

In discussing population dynamics of young-of-the-year fish in a reservoir receiving heated effluent, page 492 of your submittal, you conclude that, "Because changes from the fish populations resulting from heated effluents from the Oconee Nuclear Station are still occurring in the Keowee Reservoir, the total impact of the plant's operation on young fish stocks cannot yet be assessed . . . . The decline appears to be due to heated water." Elaborate on this conclusion and describe whether or not it is premature to draw conclusions as to the impact of operation of the plant.

#### RESPONSE

The citation in question is from "Population Dynamics of Young-of-the-Year fish in a Reservoir Receiving Heated Effluent" by Richard Ruelle, William Lorenzen and James Oliver. It should first be pointed out that this is a U. S. Fish and Wildlife Service publication. This paper was submitted because it deals with data collected on Lake Keowee and addresses the effects of Oconee Nuclear Station operation.

Ruelle et al. (p. 493) have stated that "Because changes in the fish populations resulting from heated effluents from the Oconee Nuclear Station are still occurring in Keowee Reservoir, the total impact of the plant's operation on young fish stocks cannot yet be assessed," and on page 507, "The decline . . . appear(s) to be related to increased water temperatures." We feel that this statement can be misleading since it is not conclusively supported by data presented in the paper. The statements as quoted imply that all changes in larval fish stocks during the study can be attributed to heated discharges from Oconee Nuclear Station.

Ruelle et al. (p. 507), recognized that "Declining numbers of young also may have resulted from trends repeatedly demonstrated to be associated with the aging of a reservoir (Jenkins 1970)." The density of larval fish in trawl samples did decrease throughout the study period as temperatures increased; however, other factors were likely involved. There has been some conclusive work done by R. M. Jenkins (U.S. Fish and Wildlife Service) that shows that dramatic changes in fish populations are likely to occur

in a reservoir, particularly during the first 10 years after filling (Keowee was filled between 1968 and 1971). These changes are associated with altering conditions of the aquatic environment which typically occur as a reservoir ages.

We feel that changes occurring in the fish populations of Lake Keowee are typical of those described by Jenkins. These changes have been shown to occur in many reservoirs independent of the effects of heated effluents. We do not feel that it is premature to point out that the operation of Oconee Nuclear Station has not altered the biological chain of events that are expected to take place in a newly filled reservoir.