

MAY 27 1975

Daniel R. Muller, Assistant Director for Environmental Projects, RL
RESPONSE TO TAR NO. 1435

PLANT NAME: Oconee Units 1, 2 and 3
LICENSING STAGE: OL
DOCKET NUMBERS: 50-269, 50-270 and 50-287
RESPONSIBLE BRANCH: Environmental Projects Branch No. 2
PROJECT MANAGER: Mark Au
DATE REQUEST RECEIVED BY ESB: February 20, 1975
DESCRIPTION OF RESPONSE: Comments on Significance of Impingement Losses
at Oconee and Adequacy of Current Impingement
Technical Specification
REVIEW STATUS: Environmental Specialists Branch Review Complete

This is in response to your request (TAR No. 1435) to evaluate the significance of fish impingement at Oconee and the adequacy of the existing impingement technical specification.

Dr. John J. Bolen of the ESB staff met with Duke Power representatives at the Oconee site to review the fish impingement problem and observe screen monitoring techniques. He later talked with Department of Interior's Fish and Wildlife Service (Southeast Reservoir Investigations) and South Carolina State Wildlife and Marine Resources Department personnel regarding fish impingement at Oconee and threadfin shad population levels in Lake Keowee.

Our review indicates that at the present time there is inadequate data available to determine the significance of impingement losses on the Lake Keowee fishery. Our conclusion is based on the uncertain reliability of past screen counts and insufficient information on the threadfin shad population in Lake Keowee. The basis of our conclusion is more fully described in the enclosure.

To provide an adequate estimate of fish mortality at the station and to determine the significance of impingement losses on the reservoir fishery it is recommended that the following actions be implemented by the licensee at an early date:

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- (1) Submission of a proposed revised fish impingement monitoring specification which includes provisions for continuing the current monitoring of the six selected fixed screens at an increased frequency of at least two to three times per week. In addition, a special study should be conducted to correlate total screen kills with those on the six screens being routinely monitored. Number, weight and length of impinged fish should be determined for each species with respect to year class. Delete the current specification requirements for weekly visual inspections of the intake structure, quarterly underwater visual inspections of the screens, and a report when more than 100 fish are collected. A revised requirement reflecting the fish impingement level that shall initiate a formal report should be proposed.
- (2) A study should be initiated immediately to estimate the threadfin shad population in Lake Keowee. The population should be estimated during each season and be based on data developed by midwater trawl and townet techniques. This program should be designed to complement other ongoing surveys being conducted by the Fish and Wildlife Service's Southeast Reservoir Investigations.

Our review was conducted by Dr. John J. Bolen of the Environmental Specialists Branch.

Original Signed by
H. R. Denton

Harold R. Denton, Assistant Director
for Site Safety
Division of Technical Review
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

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Daniel R. Muller

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Docket File 50-269/270/287 ✓

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STAFF EVALUATION

Our evaluation of the significance of fish impingement at Oconee and the adequacy of the existing impingement technical specification is based on (1) a site visit to the Oconee station on February 27, 1974 to confer with Duke Power biologists and observe the impingement monitoring procedure, (2) telephone conversations with the U. S. Fish and Wildlife Service and South Carolina State Wildlife and Marine Resources Department personnel regarding the present and future plans for the Lake Keowee fishery and their opinions on the fish losses currently being experienced at Oconee, and (3) review of data describing impingement losses at the station for the period July 11, 1974 through April 10, 1975.

Duke Power biologists indicated that they did not believe the current impingement levels of threadfin shad were adversely affecting Lake Keowee populations. However, they could not provide any documentation to support their contention. The State of South Carolina in a letter to Duke Power dated February 25, 1975 expressed the opinion that if fish mortalities continued at the February level (about 95,000/2 weeks) there would definitely be an adverse impact on the Lake Keowee fishery resource. Further contact with the State of South Carolina indicated that no data were available to support this opinion either. The State also indicated that present plans were to maintain a largemouth bass fishery in Lake Keowee but no additional stocking of sport fish would

be considered until the effects of Oconee operation were evaluated. The Fish and Wildlife Service's Southeast Reservoir Investigations representative indicated that population estimates for threadfin shad, either absolute or relative, would be necessary for a definitive evaluation of Oconee impingement effects. He reported that field gear needed to sample threadfin shad for population estimates was already in use at Lake Keowee and with one to two additional staff members the necessary sampling could be conducted.

The licensee has been counting, weighing and sizing fish collected on six of the twenty-four fixed screens every two weeks since May 16, 1974 in conjunction with FWPCA 316(a) and 316(b) exemption procedures. In our judgement, the reliability of these data is questionable because sufficient information is not available on (1) fish losses from the screens due to decomposition during the two week period between measurements, (2) loss of impinged fish from the screens during pump outage between the two week measurements, and (3) the number and variability of impinged fish on the unexamined screens. Between July 11, 1974 and April 10, 1975, the licensee reported about 250,000 fish impinged on the fixed screens routinely examined. Based on the licensee's data, a conservative value for the number of fish that could have been impinged during this period assuming normal plant operation (3 pump operation per unit on a year-round basis) has been estimated. The

estimate assumes that (1) impingement is proportional to volume flow, (2) the average number of fish on the two screens routinely measured at each unit are representative of the impinged fish occurring on the unit's remaining six unmonitored screens, and (3) the unidentifiable decomposed fish on the screens are of the same species composition as those that are identifiable. Our estimate for this period is about 2.5 million fish with 92%, 6% and 1.5% being threadfin shad, yellow perch and bluegill, respectively. Although the assumptions may be overly simplistic the estimate does provide a shad impingement number that is of the same order of magnitude that has been observed and predicted at other reservoir-sited plants similar to Oconee.

Reliable estimates for the threadfin shad population in Lake Keowee are not available. A single cove rotenoning effort approximately six months after the initial stocking of the lake with threadfin shad, in August, 1974, yielded 457 threadfin shad per acre from an approximately 10 acre area. Extrapolation of this value to Lake Keowee total acreage gives a population estimate of about 8.5 million threadfin shad; however, cove rotenoning is known to provide unreliable shad population estimates.

Based on the foregoing analysis we conclude that unless the licensee can demonstrate to the staff's satisfaction that the existing impingement monitoring program is providing reliable estimates of screen mortalities and number, weight and size of impinged fish with respect to year class, the program modifications recommended in our transmittal should be

implemented. We also conclude that our position transmitted to you on April 30, 1975 (response to TAR Nos. 1563 and 1419 on shad impingement at Arkansas One) which stated "...in the absence of design or operating modifications to minimize impingement, the licensee is obligated to demonstrate that no appreciable damage is being sustained by the reservoir fishery." is applicable to Oconee.