



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
WASHINGTON 25, D. C.

Mr. Harold L. Price
Director of Regulations
U. S. Atomic Energy Commission
Washington, D. C. 20545

APR 24 1967

Dear Mr. Price:

This is in reply to Mr. Case's letter of December 30, 1966, requesting our comments on the application by Duke Power Company for a construction permit and operating license for the proposed Oconee Nuclear Station, Units 1 and 2, Oconee County, South Carolina, Docket Nos. 50-269 and 50-270.

The plant would be located adjacent to the company's proposed Keowee Dam and Hydroelectric Station, on Keowee River just upstream from Hartwell Reservoir. The plant would employ two pressurized water reactors designed for a combined power output of 5,136 mw thermal, or an equivalent net capacity of 1,748 mw electrical. A radioactive waste disposal system, fuel handling system and all auxiliaries, structures, and other onsite facilities required for a complete and operable nuclear power plant would be provided.

Condenser cooling water would be conveyed to the station from the Little River arm of Lake Keowee through an intake conduit by 8 circulating water pumps, with a combined capacity of approximately 2,900 cfs. The intake canal would have a skimmer wall across its mouth with a 20-foot opening located 70 feet below full pool elevation. Normal cooling water discharges would be into the Keowee River arm of Lake Keowee about 3,700 feet from the hydroelectric station intake. Emergency discharge of cooling waters and normal discharge of liquid effluent from the waste treatment facilities would be into the Keowee Dam tailrace at the headwaters of Hartwell Reservoir.

Fishery resources of Hartwell Reservoir include largemouth bass, crappies, carp, and suckers. In addition, striped bass and walleye have been stocked in the reservoir and trout in the tail water area. These resources support moderate sport fishing and a minor commercial fishery. The proposed Keowee and Jocassee Reservoirs will support fishery resources very similar to those of Hartwell Reservoir, with a good possibility for a second-layer cold-water fishery in Jocassee Reservoir. These proposed reservoirs will provide additional sport fishing opportunity in this area. Commercial fishing is minor in the project area and is not expected to increase significantly as a result of the company's proposed hydroelectric project.

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The application indicates that the release of radioactive wastes would not exceed maximum permissible limits prescribed in Title 10, Part 20, of the Code of Federal Regulations. Although these limits refer to maximum levels of radioactivity that can occur in drinking water for man without resulting in any known harmful effects, operation within the limits may not always guarantee that fish and wildlife will be protected from adverse effects. If the concentration in the receiving water were the only consideration, maximum permissible limits would be adequate criteria for determining the safe rate of discharge. However, radioisotopes of many elements are concentrated and stored by organisms that require these elements for their normal metabolic activities. Some organisms concentrate and store radioisotopes of elements not normally required but which are chemically similar to elements essential for metabolism. In both cases, the radionuclides are transferred from one organism to another through various levels of the food chain just as are the nonradioactive elements. These transfers may result in further concentration of radionuclides and a wide dispersion from the project area particularly by migratory fish, mammals, and birds.

In view of the above, we believe that pre- and post-operational radiological surveys should be conducted by the applicant and include studies of the effects of radionuclides on selected organisms which require the waste elements or similar elements for their metabolic activities. These surveys should be planned in cooperation with the Fish and Wildlife Service, the Federal Water Pollution Control Administration, and the South Carolina Wildlife Resources Department.

If the post-operational surveys establish that the release of radioactive effluent at levels permitted under Title 10, Part 20, Code of Federal Regulations, results in harmful concentrations of radioactivity in fish and wildlife, the data from the radiological surveys should serve as a guide to reduce the discharge of radioactivity to acceptable levels.

In view of the importance of the sport fishery of Hartwell Reservoir and the fishery potential of Lakes Keowee and Jocassee, it is imperative that every possible effort be made to protect these valuable resources from radioactive contamination. Therefore, it is recommended that the Duke Power Company be required to:

1. Cooperate with the Fish and Wildlife Service, the Federal Water Pollution Control Administration, the South Carolina Wildlife Resources Department, and other interested State agencies in developing plans for radiological surveys.
2. Conduct or arrange for the conduct of pre-operational radiological surveys of selected organisms that concentrate and store radioactive isotopes, and of the environment including water and sediment samples. These surveys should be conducted by scientists knowledgeable in the fish and wildlife field.

3. Prepare a report of the pre-operational radiological survey and provide five copies to the Secretary of the Interior for evaluation prior to project operation.
4. Conduct radiological surveys, similar to those specified in recommendation 2 above, analyze the data, and prepare and submit reports every three months during the first year of reactor operation and every six months thereafter or until it has been conclusively demonstrated that no significant adverse conditions exist. Submit five copies of these reports to the Secretary of the Interior for distribution to the appropriate State and Federal agencies for evaluation.
5. Reduce the discharge of radioactive wastes to acceptable levels, if the post-operational surveys establish that the release of radioactive effluent at levels permitted under Title 10, Part 20, Code of Federal Regulations, results in harmful concentrations of radioactivity in fish and wildlife.

We understand it is the Commission's opinion that its regulatory authority involves only those hazards associated with radioactive materials. We have recommended in past applications that thermal pollution and other detrimental effects from plant construction and operation be called to the attention of the applicant. In this case, however, we believe that the applicant is aware of the problem, since an analysis of thermal effects resulting from the operation and of the proposed nuclear plant was conducted by the Fish and Wildlife Service in conjunction with the Duke Power Company application for a license from the Federal Power Commission for the Keowee-Toxaway hydroelectric project, FPC Project No. 2503.

This evaluation was based on condenser cooling water intake from the Keowee River arm of Lake Keowee and discharge into Little River arm. Under these conditions the only anticipated detrimental effects upon the prospective fishery resources within Lake Keowee were the limitation of productivity in a relatively small area around the discharge point. No significant harmful effects were expected in Hartwell Reservoir or the proposed Jocassee Reservoir. The present plans for the proposed nuclear plant contains several modifications to the plan originally evaluated by the Fish and Wildlife Service. This application is for license of Units 1 and 2 of a total of three considered in the prior analysis. The volume of cooling water required will be less, but the condenser's cooling water intake and discharge points have been reversed and discharge outlets have been provided into the tailrace of Keowee Dam for emergency cooling water release and for routing discharge of liquid effluents from the nuclear plant's waste treatment facilities.

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With the present plan it is not anticipated that there will be any change in the effects of the project upon fishery resources in Lakes Keowee and Jocassee. However, it is obvious that these project alterations change the consideration that must be given to possible damages to fishery resources in the Keowee tailrace and in Hartwell Reservoir. Duke Power Company has joined with a group of industries which, under the guidance of John Hopkins University, is investigating problems relating to the dissipation of waste heat in the aquatic environment. Preproject surveys of physical and biological conditions are in progress in the Keowee-Jocassee area, and firm plans have been made for their continuance when the project is in operation. The applicant has expressed the desire to cooperate fully with the Fish and Wildlife Service and the South Carolina Wildlife Resource Department in planning and carrying out these studies, and to make their findings available to these organizations.

We commend the applicant for its initiative in planning the pre- and post-operational surveys of the environment, and for their cooperation. If the post-operational surveys establish that the heated water discharged into Lake Keowee or its tailrace results in any changes in the environment of the tailrace or Hartwell Reservoir that are significantly detrimental to fish and wildlife, as determined by the Secretary of the Interior or the South Carolina Wildlife Resources Department, corrective measures should be taken to reduce the temperature of the effluent to an acceptable level.

We request that the Commission urge the Duke Power Company to:

1. Conduct pre- and post-operational surveys of the environment and include sufficient monitoring programs on effluents and receiving waters of Lake Keowee and Hartwell Reservoir, and collect related climatological data necessary for the Secretary of the Interior to evaluate the effects of the operation of the two units, prior to the approval of additional units.
2. Make any modifications in project structure and operations as may be determined necessary as a result of the surveys.

The opportunity for presenting our views is appreciated.

Sincerely yours,


Acting Commissioner