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Fish and Wildlife Service  
Washington, D. C. (C. Pautzke)

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TO: Harold Price

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Ltr. replying to Boyd's 12-11-67 ltr. with their comments on the appl. filed by Arkansas Power & Light Co...

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| Info copies to:        |      |                 |      |
| H. Price & Staff       |      | Levine          |      |
| Dr. Morris/Schroeder   |      | Dr. Beck        |      |
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| Boyd                   |      |                 |      |

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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
WASHINGTON, D.C. 20240

MAY 29 1968

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

Dear Mr. Price:

This is in reply to Mr. Boyd's letter of December 11, 1967, requesting our comments on the application by the Arkansas Power and Light Company for construction permit for the proposed Russellville Nuclear Unit, Pope County, Arkansas, AEC Docket No. 50-313.

The project would be located on a 1,100-acre site on a peninsula at Dardanelle Reservoir, Pope County, Arkansas. A pressurized water reactor would be used as a power source and the plant is designed for an ultimate output of 2,568 thermal (880 gross electrical) Mwt. Cooling and dilution water will be withdrawn from a small inlet embayment west of the plant at a rate of approximately 1,700 c.f.s. and be discharged into the large Illinois Bayou embayment east of the plant, after receiving radioactive and heat wastes. As currently designed, the temperature of the cooling water would be raised approximately 15° at the condenser when the plant is operating at full capacity. The applicant is cooperating with the Fish and Wildlife Service and the Arkansas Game and Fish Commission in the development of an environmental surveillance program.

Dardanelle Reservoir, especially the Illinois Bayou embayment, supports valuable fish and wildlife resources. The large embayment is a productive nursery and harvest area for fish. Waterfowl make extensive use of the reservoir for resting during the migration period. Public and private use facilities on Federal and private land around the embayment are highly developed. Indications are that future development around the embayment will probably result in higher recreational use there than any comparable area of the reservoir. Sport fishing is presently, and will continue to be, one of the chief recreational use attractions in the embayment. Commercial fishing is limited but moderately valuable.

The application indicates that the release of radioactive wastes would not exceed maximum permissible limits prescribed under 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, operations within these limits may not always guarantee that fish and wildlife will be protected from adverse effects.

If concentrations in 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.

In view of the above, we believe that the environmental monitoring program planned by the applicant should include pre- and post-operational radiological monitoring of 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 and the appropriate Federal and State agencies.

In view of the extensive sport fishery and the potential value of the commercial fishery in the project area, it is imperative that every possible effort is to be made to protect the valuable resources from radioactive contamination. Therefore, it is recommended that the Arkansas Power and Light Company be required to:

1. Include in their pre-operational environmental surveillance program radiological monitoring of water and sediment samples and of organisms indigenous to the project area that concentrate and store radioactive isotopes. Water and sediment samples should be collected within 500 feet of the reactor effluent outfall site and be measured for gamma radioactivity. Aquatic plants, mollusks, crustaceans and fish should be collected as near as possible to the reactor effluent outfall site and be analyzed for both beta and gamma radioactivity.
2. Prepare a report of pre-operational radiological monitoring and provide five copies to the Secretary of the Interior for evaluation prior to project operation.
3. Continue a radiological monitoring program similar to that specified in recommendation 1 above, analyze the data, and prepare and submit reports every six months during reactor operation or until it is conclusively demonstrated that no significant adverse conditions exist. Five copies of these reports should be submitted to the Fish and Wildlife Service for distribution to the appropriate State and Federal agencies for evaluation.

4. Make modifications in project structures and operations to reduce the discharge of radioactive wastes to acceptable levels if it is determined by the monitoring program that the release of radioactive effluent might result in harmful concentrations of radioactivity in fish and wildlife.

We understand that the Commission's regulatory authority over nuclear power plants involves only those hazards associated with radioactive materials. However, we recommend and urge that before a construction permit is issued, the possibility of thermal and other detrimental effects on fish and wildlife which may result from plant construction and operation be called to the applicant's attention.

We are concerned particularly with the possibility of damages to aquatic life from the heated effluent. Large volumes of heated water discharged into an aquatic environment may not only be detrimental to fish directly, but may also affect these resources indirectly through changes in the environment. The proposed heat load may adversely affect fish habitat and productivity in the Illinois Bayou embayment during the periods (spring and summer) when fish reproduce and have a maximum growth rate. It is likely that the use of the area for spawning will be greatly reduced. It is likely that fish will disperse and avoid the heat-affected area during the maximum temperature months of June through September. Conversely, it is expected that fish will be attracted to the discharge channel and heat-affected area during winter months, resulting in high fisherman-use there.

A General Plan for use of project lands and waters for wildlife conservation and management has been approved for Dardanelle Reservoir by the Secretary of the Army, the Secretary of the Interior, and the Director of the Arkansas Game and Fish Commission. The Russellville Nuclear Unit would occupy land and water covered, in part, by the General Plan. The General Plan provides for a subsequent management agreement between the Department of the Army and the Arkansas Game and Fish Commission. It further provides that the subsequent agreement may make adjustments in the boundaries of the areas shown in the General Plan by the addition or deletion of tracts mutually agreed upon by the parties making the agreement. We understand that the Department of the Army and the Arkansas Game and Fish Commission are now negotiating an agreement pursuant to the General Plan. The Company should be made aware of these documents and plan its operations so that they are in accordance with the Arkansas Game and Fish Commission's fish and wildlife management plan for the reservoir.

The applicant has given assurance that additional studies will be carried out, and has to date cooperated fully with the Fish and Wildlife Service and the Arkansas Game and Fish Commission in discussing and developing plans for the protection of fish and wildlife in the area. This study

program should complement the radiological monitoring program recommended above, should be designed to measure habitat changes in the affected area of Dardanelle Reservoir, and should be carried out prior to and during plant operation, so that comparative data will be available for analysis.

In view of the above, we recommend that the Atomic Energy Commission urge the Arkansas Power and Light Company to:

1. Continue to cooperate with the Fish and Wildlife Service, Arkansas Game and Fish Commission, and other interested Federal and State agencies in developing plans for ecological surveys, initiate these studies at least two years before reactor operation, and continue them during project operation on a regular basis or until it has been conclusively demonstrated that no significant adverse conditions exist.
2. Meet with the above-mentioned Federal and State agencies at frequent intervals to discuss new plans and to evaluate results of the ecological surveys.
3. Make such modifications in plant structures and operations, including but not limited to facilities for cooling discharge waters, as may be determined necessary to protect the fish and wildlife resources of the area.

The opportunity to present our views is appreciated.

Sincerely yours,

Commissioner