



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

IN REPLY REFER TO:

FEB 23 1967

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

Dear Mr. Price:

This is in reply to your letter of August 17, 1966, requesting our comments on the application of the Northern States Power Company for a construction permit and facility license for its proposed Monticello nuclear generating plant, Wright County, Minnesota, Docket No. 50-263.

The plant site is located on a 1925-acre tract of company-owned land on the west bank of the Mississippi River, approximately 3 miles northwest of Monticello, Minnesota. The area around the site is used for agriculture.

A direct-cycle boiling water reactor designed for an output of approximately 1469 thermal megawatts and a net electrical output of 471.7 megawatts would be used as a power source. Condenser cooling water would be pumped from the Mississippi River and returned to the river through discharge canals after absorption of heat wastes from the plant. During low stream flow conditions, a cooling tower would be operated on a closed cycle and only make-up requirements would be drawn from the river. During times of substantial flow, but with high temperature conditions, the cooling tower would be employed in an open cycle to control the temperature of discharged water. However, it is anticipated that stream flow would be sufficient most of the time to allow a straight-through discharge not involving cooling tower operation.

The waste disposal system would provide for the disposal of all radioactive liquid, gaseous, and solid wastes. Solid wastes would be prepared for off-site disposal; gaseous wastes would be released to the ventilation stack; and liquid wastes would be released to the discharge canal at controlled rates.

The application states that a study of environmental radiation levels will be initiated approximately 2 years before the scheduled operation of the nuclear power plant and will be continued after operation. The study program will be coordinated with studies conducted by concerned public agencies. Radiological analyses will be made of air, river and well water, soil, milk, and food crops and other vegetation.

9211200387 670412
PDR ADOCK 05000263
0 PDR

The average annual river flow at the Monticello site is estimated to be 4,000 cfs. The minimum flow is estimated to be 120 cfs, and the maximum 54,000 cfs. River flow past the Monticello site is expected to exceed 1,100 cfs 90 percent of the time and 300 cfs 99 percent of the time.

The application indicates that the release of radioactive waste would not exceed maximum permissible limits prescribed in Title 10, Part 20 of the Code of Federal Regulations. These limits refer to maximum levels of radioactivity that can occur in drinking water for man without resulting in any harmful effects. Maximum permissible concentrations, however, 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 the pre- and post-operational radiological surveys planned by the applicant should 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 U. S. Fish and Wildlife Service and the Minnesota Department of Conservation.

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

In view of the great value of the fish and wildlife resources that inhabit the Mississippi River, it is imperative that every possible effort be made to protect them from radioactive contamination. In order to provide for the conservation and development of fish and wildlife resources, it is recommended that the Northern States Power Company be required to:

1. Cooperate with the Fish and Wildlife Service, the Minnesota Department of Conservation 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 and of the environment by competent scientists knowledgeable in the fish and wildlife field, to include, but not limited to the following:
 - a. Water and sediment samples, which should be collected within 500 feet of the reactor effluent outfall (need be measured only for gamma radioactivity).
 - b. Selected plants and animals, which should be collected as near the reactor effluent outfall as possible (should be analyzed for both beta and gamma radioactivity).
3. Prepare a report of the pre-operational radiological survey and provide 5 copies to the Secretary of the Interior for evaluation prior to project operations.
4. Conduct radiological surveys, similar to those specified in recommendation 2 above, analyze the data, and prepare and submit reports every 3 months during the first year of reactor operation and every 6 months thereafter or until it has been conclusively demonstrated that no significant adverse conditions exist. Five copies of these reports shall be submitted to the Secretary of the Interior for distribution to the appropriate State and Federal agencies for evaluation.
5. Make such reasonable modifications of project structures and operations as may be ordered by the Atomic Energy Commission upon its own motion or upon the recommendations of the Secretary of the Interior or the Minnesota Department of Conservation.

We understand it is the Commission's opinion that its regulatory authority over nuclear power plants involves only those hazards associated with radioactive materials. However, we recommend and urge that thermal pollution and other possible detrimental effects to fish and wildlife which may result from plant construction and operation be called to the attention of the applicant. We further recommend that the applicant be requested to discuss this matter with appropriate State conservation officials and the Fish and Wildlife Service to develop measures to minimize these hazards.

One problem we foresee is the possible effects of increased water temperature on aquatic organisms. Large volumes of heated water discharged into an aquatic environment may not be sufficient to cause mortality among the organisms present, but subtle biological changes could occur causing long term changes in the environment. To measure biological changes in aquatic organisms and long term changes in the environment, ecological surveys should be carried out prior to and following plant operation so that comparative data will be available for analysis. These surveys should be planned in cooperation with the Fish and Wildlife Service and the Minnesota Department of Conservation.

If the ecological surveys establish that the heated water discharged into the river results in changes in the environment that are significantly detrimental to fish and wildlife, as determined by the Fish and Wildlife Service or the Minnesota Department of Conservation, it is probable that increased use of the cooling tower, or some other corrective measure, will need be made to reduce the temperature of the effluent.

In view of the Administration's policy to maintain, protect, and improve the quality of our environment and most particularly the water and air media, we request that the Commission urge the Northern States Power Company to:

1. Cooperate with the Fish and Wildlife Service and the Minnesota Department of Conservation and other interested State agencies in developing plans for ecological surveys; and initiate these surveys at least two years before reactor operations and continue them on a regular basis during operations until it has been conclusively demonstrated that no significant adverse conditions exist.
2. Meet with Fish and Wildlife Service and State of Minnesota agencies at frequent intervals to discuss new plans and to evaluate results of existing surveys.
3. Make such modifications in project structure and operation as may be determined necessary as a result of the surveys.

The opportunity for presenting our views on this project is appreciated.

Sincerely yours,

Clarence F. Pautzke
Commissioner