TERA

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

October 11, 1979

POOR ORIGINAL

Ms. Tracey Hamrick
2752 - 130th St.
Toledo, Ohio 43611

Dear Ms. Hamrick:

Your letter of March 19, 1979 has only recently been brought to my attention. I apologize for our delay in responding to your concerns about decommissioning of nuclear power plants and other reactors.

The public is informed of decommissioning alternatives during the licensing process for nuclear power plants prior to our authorization of plant operation. This is accomplished in our Environmental Statement for each nuclear power plant. Environmental Statements in draft form are issued for comment to state and county officials as well as many federal agencies prior to their being finalized. Enclosure 1 is a copy of the information that was included in the Draft Environmental Statement for Davis-Besse Nuclear Power Station, Unit No. 1, in Ottawa County, Ohio, dated November 1972. Various alternatives for decommissioning are discussed.

Prior to our authorization of any decommissioning action of any reactor, we evaluate the potential effects of the decommissioning on the health and safety of the public and the environment. Your letter indicates that you may have particular interest in the Piqua Reactor in Piqua, Ohio. The Piqua Reactor was a small 45.5 megawatt organic cooled reactor that was decommissioned in 1969.

Enclosure 2 is a copy of the safety evaluation by the Atomic Energy Commission of the Piqua decommissioning. The Piqua Reactor was defueled and entombed as discussed in the enclosed safety evaluation. The Department of Energy continues to monitor the Piqua facility annually to verify adequate retention of residual radioactive material. There has been no evidence of release of any radioactivity to the environment. The City of Piqua uses the reactor containment building as a warehouse. Radiation levels in the warehouse are reduced to essentially background levels by concrete shielding which covers the remaining radioactive structures.

The NRC has published a "Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities" (NUREG 0436, dated December 1978) which is available

from the National Technical Information Service, Springfield, Virginia 22161.

We hope that this letter is responsive to your concerns.

Sincerely,

Darrell G. Eisenhut, Acting Director
Division of Operating Reactors
Office of Nuclear Reactor Regulation

Enclosures:
1. Draft Environ. Stmt. for Davis-Besse Unit No. 1
2. Safety Evalua. Re: Piqua Decommissioning

to about 250 millirem/year. For the 2,052,000 people living within 50 miles of the Davis-Besse Station (1970), this amounts to a total population dose of about 290,000 man-rem/yr. The results of a Public Health Service survey made in 1964 indicated that the dose to the population averaged about 55 millirem per year per individual from diagnostic radiation. This would contribute about 13,000 man-rem/yr to the population considered here. Thus, the total population dose attributed to the routine operation of this Station (22 man-rem/yr) is very small compared with the doses from natural background and medical diagnostic radiation.

8.3 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The marshlands along the Lake Erie shore are a valuable ecological resource that should be conserved. The use of the site for a generating station will not conflict with this goal. In fact, the arrangements which have been made between the applicant and the U. S. Bureau of Sport Fisheries and Wildlife will further the interests of conservation by increasing the extent and improving the quality of the marshland available as a wildlife refuge.

The removal of about 150 acres of marginal farmland from cultivation will have an insignificant effect on the agricultural productivity of the area, and this land could conceivably be restored to its original condition, at considerable expense, for use as farmland or for some other purpose such as public recreation. However, the expenditure of many millions of dollars for this purpose seems unlikely, even after the end of the useful life of the present equipment, if the need for power still demands the existence of a large generating station in this area. The Applicant points out that, historically, boilers become obsolescent before turbine generators. Advances in technology will undoubtedly produce more efficient nuclear generators during the design life of the present equipment (30 years) and the Applicant's tentative prediction is that the present reactor and steam generators will be replaced by an advanced design, operating at higher temperature and pressure, and driving a high pressure topping type turbine ahead of the existing turbine generator. Such improvements could extend the life of the station to 75 years or more. In that case, the following present-day estimates of decommissioning procedures and costs may be of doubtful validity.

8.3.1 Decommissioning Station After Operating Life

The Commission's current regulations contemplate detailed consideration of decommissioning near the end of a reactor's useful life. The licensee initiates such consideration by preparing a proposed decommissioning plan

which is submitted to the AEC for review. The licensee will be required to comply with Commission regulations then in effect and decommissioning of the facility may not commence without authorization from the AEC.

To date, experience with decommissioning of civilian nuclear power reactors is limited to six facilities which have been shut down or dismantled: Hallam Nuclear Power Facility, Carolina Virginia Tube Reactor (CVTR), Boiling Nuclear Superheater (BONUS) Power Station, Pathfinder Reactor, Piqua Reactor, and the Elk River Reactor.

There are several alternatives which can be and have been used in the decommissioning of reactors: (1) Remove the fuel (possibly followed by decontamination procedures); seal and cap the pipes; and establish an exclusion area around the facility. The Piqua decommissioning operation was typical of this approach. (2) In addition to the steps outlined in (1), remove the superstructure and encase in concrete all radioactive portions which remain above ground. The Hallam decommissioning operation was of this type. (3) Remove the fuel, all superstructure, the reactor vessel and all contaminated equipment and facilities, and finally fill all cavities with clean rubble topped with earth to grade level. This last procedure is being applied in decommissionin the Elk River Reactor. Alternative decommissioning procedures (1) and (2) would require long-term surveillance of the reactor site. After a final check to assure that all reactor-produced radioactivity has been removed, alternative (3) would not require any subsequent surveillance. Possible effect of erosion or flooding will be included in these considerations.

For Type 3 decommissioning of the plant the Staff estimates the cost of $30 million (1972 dollars). This figure is based on adjustment to a single unit of the estimate prepared by the Staff for the Consumer Power Co. Midland Plant Units 1 & 2.[8] The Midland estimate was made by careful scaling of the detailed estimates for the Elk River reactor.

8.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

As mentioned in Section 8.3, the arrangements involved in the acquisition of the site will enhance rather than detract from the ecological resources of the marshland. With the exception of the work on the intake canal, already completed, the construction work has not disturbed the marsh areas, and there is no evidence of any undesirable