



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING ORDER AUTHORIZING DISMANTLING OF FACILITY AND

DISPOSITION OF COMPONENT PARTS

NORTH CAROLINA STATE UNIVERSITY

DOCKET NO. 50-111

Introduction

By application dated June 5, 1980, as revised by letters dated February 19 and March 27, 1981, the North Carolina State University at Raleigh (the licensee) requested authorization to dismantle the 10 Kw Research and Training Reactor (the facility) and dispose of its component parts in accordance with a proposed dismantling plan.

Discussion

This 10 Kw reactor is a graphite reflected, tank-type reactor which used 18 plate, MTR-type fuel assemblies. The reactor operated from 1960 to 1973 for a total of 52.5 megawatt hours. All irradiated fuel assemblies have been shipped to the U. S. Department of Energy Savannah River Plant for reprocessing. The four remaining unirradiated fuel assemblies and a remaining neutron source have been moved to the licensee's PULSTAR reactor facility for dry storage in accordance with Amendment No. 6 to License No. R-120 dated September 17, 1980. In addition to removal of all fuel and radiation sources from the reactor, all reactor systems have been drained and are dry.

Evaluation

University personnel completed radiation measurements of core components (fuel removed). In June 1978, the maximum radiation from core components was found to be 61 mR/hr on contact. In June 1976, radiation measurements were taken at the beam ports nearest the core. The maximum exposure rate was found to be 20 mR/hr. Swipe tests in the beam ports indicated removable contamination to be less than 120 dpm per 100 cm².

The activated core components will be disposed of as radioactive material. Also, the bottom section of the reactor tank and some concrete from the biological shield may have to be disposed of as radioactive material because of activation.

All dismantling work will be supervised by the licensee's Nuclear Reactor Program. Qualified health physics personnel from the adjacent PULSTAR reactor facility will be responsible for health physics control of dismantling operations. The low levels of radiation involved combined with good health physics practices will assure that exposures to personnel are as low as reasonably achievable and well within 10 CFR Part 20 requirements.

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Airborne contamination during dismantling operations will be monitored and controls established by the University's Nuclear Reactor Program to assure that potential exposure to personnel and the public complies with 10 CFR Part 20 requirements.

During our review of the licensee's June 5, 1980 proposed criteria for release of the facility to unrestricted access, we determined that the criteria must be revised to be acceptable. By letter dated March 6, 1981, we informed the licensee of release criteria that would be acceptable in the dismantling of the facility. By letter dated March 27, 1981, the licensee agreed to our revised release criteria. The criteria will assure that potential exposure to radiation from the dismantled facility will be a small fraction of natural background exposure.

Conclusion

We have concluded, based on the considerations discussed above, that dismantling the North Carolina State 10 Kw Research and Training Reactor and disposing of component parts as described in the dismantling plan will not be inimical to the common defense and security or to the health and safety of the public.

Dated: June 1, 1981