

November 20, 2001

Mr. Gary N. Nugent
Chief Executive Officer
Department of Veterans Affairs
Nebraska - Western Iowa Health Care System
4101 Woolworth Avenue
Omaha, NE 68105

SUBJECT: DEPARTMENT OF VETERANS AFFAIRS A. J. BLOTCKY REACTOR FACILITY
- ENVIRONMENTAL ASSESSMENT RE: AMENDMENT FOR LICENSE
RENEWAL (TAC NO. M88345)

Dear Mr. Nugent:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendment of Facility Operating License No. R-57 for the Department of Veterans Affairs, Nebraska - Western Iowa Health Care System, Alan J. Blotcky Reactor Facility submitted on May 10, 1993, as supplemented on March 1, 1995, December 17, 1997, March 12, April 5, July 29, November 24 and December 2, 1999, January 4, September 25, October 2 and October 24, 2000, and August 8 and October 16, 2001. The proposed amendment would renew Facility Operating License No. R-57 for twenty years from its date of issuance.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Alexander Adams, Jr., Senior Project Manager
Operational Experience and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-131

Enclosure: Environmental Assessment

cc w/enclosures:
Please see next page

Veterans Administration
Medical Center

Docket No. 50-131

cc:

Mayor
City of Omaha
Omaha, NE 68102

Mr. John P. Claassen
Reactor Manager/Supervisor
Omaha Veterans Administration
Medical Center
4101 Woolworth Avenue
Omaha, NE 68105

Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

Julia Schmitt, Program Manager
Department of Health and Human Services
P.O. Box 95007
Lincoln, NE 68509-5007

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UNITED STATES NUCLEAR REGULATORY COMMISSION
DEPARTMENT OF VETERANS AFFAIRS
NEBRASKA - WESTERN IOWA HEALTH CARE SYSTEM
DOCKET NO. 50-131
ALAN J. BLOTCKY REACTOR FACILITY
ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment for Facility Operating License No. R-57, issued to the Department of Veterans Affairs, Nebraska - Western Iowa Health Care System (the licensee or VA) for operation of the Alan J. Blotcky Reactor Facility (AJBRF) located in Omaha, Douglas County, Nebraska.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action

The proposed action would renew the license for the AJBRF for 20 years from the date of issuance of the license amendment. The proposed action is in accordance with the licensee's application for amendment dated May 10, 1993, as supplemented on March 1, 1995, December 17, 1997, March 12, April 5, July 29, November 24 and December 2, 1999, January 4, September 25, October 2 and October 24, 2000, and August 8 and October 16, 2001. In accordance with 10 CFR 2.109, the license remains in effect until the NRC takes final action on the renewal application.

Need for the Proposed Action

The proposed action is needed to allow continued operation of the AJBRF in order to continue educational training and academic research beyond the current term of the license.

Environmental Impact of the Proposed Action

The AJBRF is located in the basement of the Department of Veterans Affairs, Nebraska - Western Iowa Health Care System, Omaha Division (formerly known as the VA Medical Center Omaha) in Omaha, Nebraska. The main hospital building is 11 stories high and is constructed of brick and reinforced concrete construction, including the ceilings and floors. The hospital building is built on a knoll in a commercial area within the city limits. To the north is a large county hospital, to the south a commercial district, to the west a residential area, and to the east a golf course. The medical center grounds are sufficiently large so that the nearest offsite dwelling is more than 520 ft. (158 m) away.

The reactor is located near the bottom of a cylindrical pool 20 ft (6.1 m) below the floor of the reactor room. The only access to the reactor pool is from the top. The reactor control console is located near the reactor pool in the reactor room.

On June 24, 1959, the U.S. Atomic Energy Commission (AEC) issued VA a Construction Permit (CPRR-36) authorizing construction of a General Atomics TRIGA-type research reactor. On June 26, 1959, Facility Operating License No. R-57 was issued authorizing VA to operate the TRIGA reactor at steady-state power levels up to 10 kW(t). The reactor first reached criticality on June 30, 1959. Amendment No. 2 to the license issued in September 1963 increased the steady-state thermal power level of the reactor to 18 kW(t) and Amendment No. 9 issued in April 1991 increased the power level to 20 kW(t). The license has been renewed twice prior to this renewal with the last renewal issued in August 1983. The licensee submitted an updated safety analysis report and technical specifications as part of the application for license renewal. Over the last ten years the facility has operated an average of 344 full power hours per year. Facility modifications have been minor. The licensee has not indicated any plans to significantly change the design of the facility.

The radioactive releases from the AJBRF have been well within regulatory limits of 10 CFR Part 20. Argon-41, a product from neutron irradiation of air during operation, is the principle airborne radioactive effluent from the AJBRF during routine operations. During the last 10 years, the licensee has calculated that the amount of argon-41 discharged from the facility to the environment has ranged from 1 mCi (37 MBq) to 300 mCi (11,100 MBq) per year. The maximum dose to members of the public has been less than 1 mrem (0.01 mSv) per year. The staff calculates that even given continuous operation of the reactor, the maximum dose to members of the public would still be less than 1 mrem (0.01 mSv) per year.

Over the last ten years the licensee has released no liquid or solid waste from the AJBRF. Any future releases would be performed within the requirements of the regulations.

Currently, there are no plans to change any operating or radiological release practices or characteristics of the reactor during the license renewal period. The NRC concludes that conditions are not expected to change and that the radiological effects of operation during the renewal period will continue to be minimal. The radiological exposures for facility operations have been within regulatory limits and should continue to remain so.

The proposed action will not significantly increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released off site, and there is no significant increase to occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not involve any historic sites. It does not affect non-radiological facility effluents and has no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

In addition, the environmental impact associated with operation of research reactors has been generically evaluated by the staff and is discussed in the attached generic evaluation. This evaluation concludes that no significant environmental impact is associated with the operation of research reactors licensed to operate at power levels up to and including 2 megawatts thermal. The NRC staff has determined that this generic evaluation is applicable to operation of the AJBRF and that there are no special or unique features that would preclude reliance on the generic evaluation.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Alternatives to the Proposed Action

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the “no-action” alternative). If the NRC denied license renewal, AJBRF operations would stop and decommissioning would be required with no significant benefit to the environment. The environmental impacts of the proposed action and alternative are similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the safety analysis and evaluation for the operating license renewal in 1983.

Agencies and Persons Contacted

In accordance with its stated policy, on June 19, 2001, the staff consulted with the Nebraska State official, Ms. Julia Schmitt of the Nebraska Department of Health and Human Services Regulation and Licensure, regarding the environmental impact of the proposed action. The State official had no comment.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated May 10, 1993, as supplemented on March 1, 1995, December 17, 1997, March 12, April 5, July 29, November 24 and December 2, 1999, January 4, September 25, October 2 and October 24, 2000, and August 8 and October 16, 2001. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. The NRC maintains an Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. Documents from November 24, 1999, may be accessed through the NRC's Public Electronic Reading Room on the internet at <http://www.nrc.gov/NRC/ADAMS/index.html>. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737 or by email to pdr@nrc.gov.

Dated at Rockville, Maryland, this 20th day of November 2001.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Eugene V. Imbro, Acting Chief
Operational Experience, and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Attachment:

Environmental Considerations

ENVIRONMENTAL CONSIDERATIONS REGARDING THE LICENSING OF RESEARCH REACTORS AND CRITICAL FACILITIES

Introduction

This discussion deals with research reactors and critical facilities which are designed to operate at low power levels, 2 MWt and lower, and are used primarily for basic research in neutron physics, neutron radiography, isotope production, experiments associated with nuclear engineering, training and as a part of a nuclear physics curriculum. Operation of such facilities will generally not exceed a 5-day week, 8-hour day, or about 2000 hours per year. Such reactors are located adjacent to technical service support facilities with convenient access for students and faculty.

Sited most frequently on the campuses of large universities, the reactors are usually housed in already existing structures, appropriately modified, or placed in new buildings that are designed and constructed to blend in with existing facilities. However, the environmental considerations discussed herein are not limited to those facilities which are part of universities.

Facility

There are no exterior conduits, pipelines, electrical or mechanical structures or transmission lines attached to or adjacent to the facility other than for utility services, which are similar to those required in other similar facilities, specifically laboratories. Heat dissipation, if required, is generally accomplished by a heat exchanger whose secondary side includes a cooling tower located on the roof of or nearby the reactor building. The size of these cooling towers typically are on the order of 10 ft by 10 ft by 10 ft (3 m by 3 m by 3 m) and are comparable to cooling towers associated with the air-conditioning systems of large office buildings. Heat dissipation may also be accomplished by transfer through a heat exchanger to water flowing directly to a sewer or a chilled water system. Make-up for the cooling system is readily available and usually obtained from the local water supply.

Radioactive gaseous effluents during normal operations are usually limited to argon-41. The release of radioactive liquid effluents can be carefully monitored and controlled. Liquid wastes are collected in storage tanks to allow for decay and monitoring prior to dilution and release to the sanitary sewer system or the environment. This liquid waste may also be solidified and disposed of as solid waste. Solid radioactive wastes are packaged and shipped offsite for storage or disposal at NRC-approved sites. The transportation of such waste is done in accordance with existing NRC-DOT regulations in approved shipping containers.

Chemical and sanitary waste systems are similar to those existing at other similar laboratories and buildings.

Environmental Effects of Site Preparation and Facility Construction

Construction of such facilities invariably occurs in areas that have already been disturbed by other building construction and, in some cases, solely within an already existing building. Therefore, construction would not be expected to have any significant effect on the terrain,

vegetation, wildlife or nearby waters or aquatic life. The societal, economic and aesthetic impacts of construction would be no greater than those associated with the construction of an office building or similar research facility.

Environmental Effects of Facility Operation

Release of thermal effluents from a reactor of less than 2 MWt will not have a significant effect on the environment. This small amount of waste heat is generally rejected to the atmosphere by means of small cooling towers. Extensive drift and/or fog will not occur at this low power level. The small amount of waste heat released to sewers, in the case of heat exchanger secondary flow directly to the sewer, will not raise average water temperatures in the environment.

Release of routine gaseous effluents can be limited to argon-41, which is generated by neutron activation of air. In most cases, this will be kept as low as practicable by using gases other than air for supporting experiments. Experiments that are supported by air are designed to minimize production of argon-41. Yearly doses to persons in unrestricted areas will be at or below established 10 CFR Part 20 limits. Routine releases of radioactive liquid effluents can be carefully monitored and controlled in a manner that will ensure compliance with the regulations. Solid radioactive wastes will be shipped in approved containers to an authorized disposal site or to a facility licensed to treat and consolidate radioactive waste. These wastes should not require more than a few shipping containers a year.

Based on experience with other research reactors, specifically TRIGA reactors operating in the 1 to 2 MWt range, the annual release of gaseous and liquid effluents to unrestricted areas should be less than 30 curies (1,110,000 MBq) and 0.01 curies (370 MBq), respectively.

No release of potentially harmful chemical substances will occur during normal operation. Small amounts of chemicals and/or high-solid content water may be released from the facility through the sanitary sewer during periodic blowdown of the cooling tower or from laboratory experiments. The quality of secondary cooling water may be maintained using biocides, corrosion inhibitors and pH control chemicals. The use of these chemicals for this purpose is approved by the Environmental Protection Agency (EPA). The small amounts of laboratory chemicals that may be used in research laboratories are disposed of in accordance with EPA and state requirements.

Other potential effects of the facility, such as aesthetics, noise, societal or impact on local flora and fauna are expected to be too small to measure.

Environmental Effects of Accidents

Accidents ranging from the failure of experiments up to the largest core damage and fission product release considered possible result in doses that are less than 10 CFR Part 20 limits and are considered negligible with respect to the environment.

Unavoidable Effects of Facility Construction and Operation

The unavoidable effects of construction and operation involve the materials used in construction that cannot be recovered and the fissionable material used in the reactor. No adverse impact on the environment is expected from either of these unavoidable effects.

Alternatives to Construction and Operation of the Facility

To accomplish the objectives associated with research reactors, there are no suitable alternatives. Some of these objectives are training of students in the operation of reactors, production of radioisotopes, and use of neutron and gamma ray beams to conduct experiments.

Long-Term Effects of Facility Construction and Operation

The long-term effects of research facilities are considered to be beneficial as a result of the contribution to scientific knowledge and training. Because of the relatively small amount of capital resources involved and the small impact on the environment, very little irreversible and irretrievable commitment is associated with such facilities.

Costs and Benefits of Facility Alternatives

The costs are on the order of several millions of dollars with very little environmental impact. The benefits include, but are not limited to, some combination of the following: conduct of activation analyses, conduct of neutron radiography, training of operating personnel, and education of students. Some of these activities could be conducted using particle accelerators or radioactive sources which would be more costly and less efficient. There is no reasonable alternative to a nuclear research reactor for conducting this spectrum of activities.

Conclusion

The staff concludes that there will be no significant environmental impact associated with the licensing of research reactors or critical facilities designed to operate at power levels of 2 MWt or lower and that no environmental impact statements are required to be written for the issuance of construction permits, operating licenses or license renewals for such facilities.

Revised June 2001