September 5, 2000

Mr. Stephen I. Miller, Reactor Facility Director
Armed Forces Radiobiology Research Institute
Naval Medical Center
8901 Wisconsin Avenue
Bethesda, MD 20889-5603

SUBJECT: ISSUANCE OF AMENDMENT NO. 23 TO FACILITY OPERATING LICENSE NO. R-84 ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE RESEARCH REACTOR (TAC NO. MA8428)

Dear Mr. Miller:

The Commission has issued the enclosed Amendment No. 23 to Facility Operating License No. R-84 for the Armed Forces Radiobiology Research Institute Research Reactor. The enclosed amendment consists of changes to the facility license in response to a letter dated February 28, 2000.

The amendment extends the license expiration date to be 20 years from the issuance of the last license renewal (it would change the expiration date from November 8, 2000, to August 1, 2004).

A copy of the related safety evaluation supporting Amendment No. 23 is enclosed.

Sincerely,

/RA/
Marvin M. Mendonca, Senior Project Manager
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-170

Enclosures: 1. Amendment No. 23
2. Safety Evaluation

cc w/enclosures: Please see next page

cc:

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301 West Preston Street
Baltimore, MD 21201

County Executive
Montgomery County Government
Rockville, MD 20850

Mr. Stephen I. Miller
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ACCESSION NO: ML003732136 **TEMPLATE #: NRR-058**

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ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE RESEARCH REACTOR

DOCKET NO. 50-170

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 23
Licensee No. R-84

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application filed by Armed Forces Radiobiology Research Institute (the licensee), dated February, 28, 2000, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the regulations of the Commission as stated in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;

   E. This amendment is issued in accordance with 10 CFR Part 51 of the regulations of the Commission and all applicable requirements have been satisfied; and

   F. Prior notice of this amendment was not required by 10 CFR 2.105 and publication of notice for this amendment is not required by 10 CFR 2.106.

2. Accordingly, the license is amended by changes to paragraph 3 to read as follows:

   3. This license is effective as of the date of issuance. This license shall expire 20 years from August 1, 1984, the date of issuance of the Amendment 18 license renewal.

3. This license amendment is effective on the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/
Ledyard B. Marsh, Chief
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Date of Issuance: September 5, 2000

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 23 TO

FACILITY OPERATING LICENSE NO. R-84

ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE RESEARCH REACTOR

DOCKET NO. 50-170

1.0 INTRODUCTION

By letter dated February 28, 2000, the Armed Forces Radiobiology Research Institute (the licensee) submitted a request for extension of the license expiration date from November 8, 2000, to August 1, 2004. This extension would make the license term 20 years from the issuance date of the previous license renewal instead of 20 years from the expiration date of the previous license.

2.0 EVALUATION

The licensee indicated that it was an oversight that the requested license expiration date was for 20 years from the previous license expiration date rather than 20 years from the issuance date of the license renewal. The licensee stated " . . . that granting a license for 20 years from the date of issuance is common and had never lead to a safety problem." Further, the licensee indicated that the requested change would remove a premature, heavy, undue burden from the licensee's staff and the NRC's staff, i.e., going through a time consuming and labor intensive license renewal process only about 16 years after the previous license renewal.

The licensee indicated that there are no safety considerations dependent on the duration of operations. Because of the moderate licensed power (1000 kW) and low usage (500 MW-hr since the last license renewal), no fuel burn-up or material damage issues exist. Further, the licensee stated that in the 1988 to 1994-time frame, Technical Specifications, Emergency Plan, and the Safety Analysis Report were reviewed and approved by the NRC staff as part of the license amendments and NRC staff reviews.

The NRC staff has considered the application, the safety analysis, the Technical Specifications, inspection observations, and other regulatory–required documents, and has concluded that extension of the license would maintain acceptable assurance of protection of the public health and safety and the environment. The reactor safety functions consist solely of the passive insertion of the control rods for this research reactor. The rods have been observed through inspection activities to perform as required. Further, Technical Specifications ensure both control rod reactivity values and drop times as required for safety.

No aging effects on this passive safety feature of the research reactor are considered credible for the extended period of the license. Potential aging failure of the system would result in a safe condition. The NRC staff has reviewed maintenance and surveillance records since initial operations in 1961 and concluded that they have proved effective in ensuring that all

components are acceptable as required by safety analyses and Technical Specifications. Only the fuel at this research reactor is subjected to relatively high temperatures and fluence. Fuel cladding is required to be maintained considerably below potential damaging conditions. Reactor pool water conditions are controlled to limit corrosion. Further, fuel examination by the licensee has shown that fuel condition is and will be acceptably maintained. These findings have been verified through the inspection program.

The NRC staff reviewed the safety analysis and concluded that the extension would not change any key safety parameters or potential accident consequences. This 1000 kilowatt, pool type research reactor design uses many fail safe and redundant and diverse design features. The extended license period would not require any reactivity limit, or instrumentation or equipment changes. The Technical Specifications would ensure that all conditions assumed in the safety analysis would be maintained during the extended license period.

The NRC staff has renewed other licenses beginning with the term of the license at the time of issuance of the license. This practice has not resulted in any safety problem as the licensee has also noted. The NRC has also extended the license for the University of Missouri, Rolla research reactor (Amendment No. 16, August 6, 1999) to provide a similar license extension.

Further, the NRC staff considered that the facility has had and in all likelihood will continue to have limited use. In accordance with the licensee's environmental report, submitted with the extension request, the facility has operated on average less than 30 MW-hours per year since 1981. The NRC staff safety evaluations in the past assume more reactor usage. Therefore, operations have been conservative in this regard.

Additionally, the NRC staff reviewed the programs that are already in place to maintain operator proficiency, radiation protection conditions, and emergency protection and concluded that they provide additional assurance of safety during the extended license period.

The NRC staff also finds that the change would limit unnecessary regulatory burden on the licensee and improve NRC staff effectiveness and efficiency in this regulatory process. The NRC staff concludes that the design, operation, testing, and monitoring of the NRR facility ensures that the extended license period is acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

The Commission has prepared an Environmental Assessment and Finding of No Significant Impact (EA), which was published in the Federal Register on July 10, 2000, (65FR42398).

On the basis of the EA and this safety evaluation, the Commission has determined that no environmental impact statement is required and that issuance of this amendment approving license extension will have no significant adverse effect on the quality of the human environment.

4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously evaluated, or create the possibility of a new or different kind of accident from any accident previously evaluated, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is

reasonable assurance that the health and safety of the public will not be endangered by the proposed activities, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or the health and safety of the public.

Principal Contributor: Marvin M. Mendonca

Date: September 5, 2000