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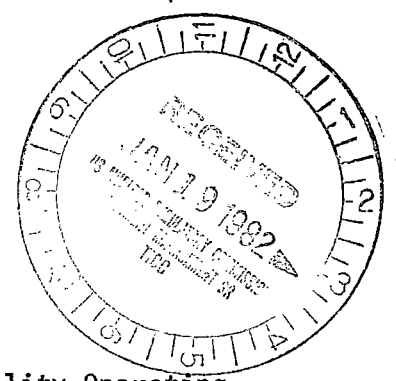
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Docket No.: 50-223

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Mr. Leon E. Beghian  
 Vice President for Academic  
 Services & Technical Research  
 University of Lowell  
 One University Avenue  
 Lowell, Massachusetts 01854



Dear Mr. Beghian:

The Commission has issued the enclosed Amendment No. 5 to Facility Operating License No. R-125 for the University of Lowell Research Reactor. The amendment consists of changes to the operating license and Appendix A Technical Specifications as requested in your letter dated October 20, 1981 and supplemented by letter telecopied November 2, 1981. This amendment was authorized by telephone on November 3, 1981.

This amendment authorizes receipt, possession, use and transfer of a Cobalt-60 source of up to 1,500,000 curies. It also places additional limiting conditions for operation and monitoring requirements in the technical specifications in connection with the cobalt source.

The granting of the requested amendment does not involve a significant hazards consideration, does not constitute an unreasonable risk to the health and safety of the public, and is not inimical to the common defense and security. The bases for these conclusions are set forth in the enclosed Safety Evaluation.

A copy of a related notice has been forwarded to the Office of the Federal Register for publication and is also enclosed.

Sincerely,

ORIGINAL SIGNED BY:

James R. Miller, Chief  
 Standardization & Special  
 Projects Branch  
 Division of Licensing

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 PDR

Enclosures:  
 As Stated

cc: See next page  
 DL/LB/1-M. Rushbrock 11/30/81

*see concurrence on PR Notes*

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SURNAME	JWilson/cc	JMiller		RTedesco		
DATE	11/24/81	11/30/81	12/ /81	12/11/81		

UNIVERSITY OF LOWELL

DOCKET NO. 50-223

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5  
License No. R-125

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The facility will operate in conformity with the provisions of the Atomic Energy Act of 1954, as amended, and the rules and regulations of the Commission;
  - B. 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 Commission's regulations;
  - C. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
  - D. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
  - E. Prior public notice of this amendment was not required since it did not involve a significant hazards consideration nor amendment of a license of the type described in 10 CFR Section 2.106(a)(2).
2. Accordingly, Facility Operating License No. R-125 is hereby amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and by changing paragraphs 2.B.(2) and 2.C.(2) to read as follows:
  - 2.B.(2) "Pursuant to the Act and 10 CFR 30 and 70, to possess, but not separate, such by-product and special nuclear materials as may be produced by the operations of the reactor and to receive, possess, use and transfer by-product materials activated in reactors other than the University of Lowell Reactor, in the form of Cobalt-60 in quantities not to exceed 1,500,000 curies at any time.

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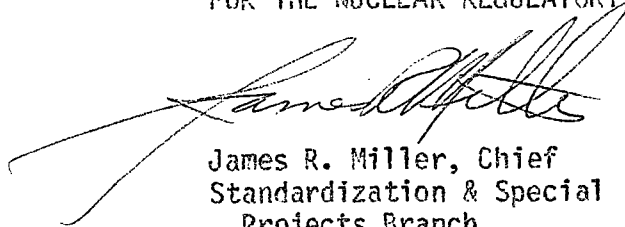
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2.C.(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 5, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of November 3, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION



James R. Miller, Chief  
Standardization & Special  
Projects Branch  
Division of Licensing

Date of Issuance: JAN 15 1982

*DL/BH1  
m. Rushlow  
11/30/81*



*See concurrence  
in FR Notice*

OFFICE	SSPB:DL <i>(initials)</i>	SSPB:DL	AD <sup>DL</sup> DL	OELD			
SURNAME	JHWilson:kab	JRMiller	RTedesco				
DATE	11/30/81	12/1/81	1/11/81	1/11/81			

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-223

UNIVERSITY OF LOWELL

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY

OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 5 to Facility Operating License No. R-125, which consists of revised Technical Specifications to the operating license for a research reactor located in the University of Lowell in Lowell, Massachusetts.

The amendment is effective as of its date of issuance.

The amendment permits receipt, possession, use and transfer of Cobalt-60 sources.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to

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10 CFR §51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated October 20, 1981 and supplemental information dated November 2, 1981, (2) Amendment No. 5 to License No. R-125, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, located at 1717 H Street, N.W., Washington, D.C. 20555. A copy of items 2 and 3 may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Division of Technical Information Document Control.

Dated at Bethesda, Maryland, this 15<sup>th</sup> day of January 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY:

James R. Miller, Chief  
Standardization & Special  
Projects Branch  
Division of Licensing

**A AMENDMENT  
FR NOTICE**

OFFICE ▶	DL:SSPBC JWilson	DL:SSPB JMiller	OELD N. J. H. H. H.	DL:AD/L RTedesco			
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*DL/LOH1  
M. P. [Signature]  
11/30/81*

SAFETY EVALUATION

BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 5 TO

FACILITY OPERATING LICENSE NO. R-125

UNIVERSITY OF LOWELL

DOCKET NO. 50-223

Introduction

By letter dated October 20, 1981, as supplemented by letter telecopied November 2, 1981, the University of Lowell (the licensee) applied for an amendment to Facility Operating License No. R-125 for their pool-type reactor. The licensee has requested that they be allowed to receive, possess, use and transfer byproduct materials, activated in other reactors, in the form of Cobalt-60 in quantities up to 1,500,000 curies. Because this material is to be stored and used in the same pool as the reactor, it is being placed under the Part 50 reactor license.

The Appendix A Technical Specifications for the University of Lowell research reactor have been amended to: prohibit the irradiation of explosive material; prohibit operation of the reactor when any portion of the cobalt source is in the same end of the pool as the reactor; and to specify monitoring, limits and corrective action associated with possession and use of the cobalt source.

The NRC Licensing Project Manager for the University of Lowell Research Reactor is Mr. James H. Wilson. Mr. Wilson may be contacted by calling (301) 492-9797 or by writing the U. S. Nuclear Regulatory Commission, Division of Licensing, Washington, D.C. 20555.

Evaluation

The University of Lowell is transferring 1,500,000 Curies of Cobalt-60 from the Army's Radiation Laboratory at Natwick Massachusetts to their reactor facility. This cobalt source was previously controlled by NRC Byproduct Material License No. 20-00 315-003, and will be stored and used in the opposite end of the same pool as the University's 1 MW(t) pool-type research reactor.

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The Appendix A Technical Specification has been amended by adding Section 3.6.9, which prohibits the operation of the reactor when any part of the Cobalt source is in the same end of the reactor pool as the reactor core. This will preclude the possibility of interference, either instrumental or procedural, between the reactor and the cobalt source.

Section 3.6.4 of the technical specifications has been amended to prohibit irradiation of any explosive material in the reactor pool or experimental facilities. This will prevent damage to the source, experimental facilities, reactor pool or reactor due to accidental explosion of explosive materials.

The sealed strips of the cobalt source are double encapsulated and each strip has been leak tested prior to shipment from the Natwick Radiation Laboratory. To ensure continued integrity of the source cladding, Section 4.5.2 of the technical specifications has been amended to require weekly monitoring of the reactor pool water for Cobalt-60, with analysis capable of detecting  $1 \times 10$  microcuries per milliliter of water. If a sample analysis reveals a significant increase of activity in the water, with respect to previous samples, or a contamination level greater than  $1 \times 10$  microcuries per milliliter of water, the licensees are required to take prompt action to prevent further contamination of the pool water and to notify the NRC. (It should be noted that this monitoring frequency, level of detection, and action level are at least as stringent as those required by the NRC Part 30 license for the same source while at Natwick).

Weekly monitoring of reactor pool reactor for conductivity is already required by Section 4.5.1 of the technical specifications, therefore water purity will continue to be insured.

Because the location for storage and use of the Cobalt-60 source was designed for operation of a 5 MW(t) core, shielding for the source will be more than adequate for the pool, gamma cave and experimental facilities.

The licensee is required to develop and implement procedures describing: inventory and records log maintenance; training and certification of source operators; health physics procedures associated with the source; experimental program(s); and movement, storage and monitoring of the source.

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Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is significant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have 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 considered and 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 operation in the proposed manner, 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 to the health and safety of the public.

**ORIGINAL SIGNED BY:**

James H. Wilson, Project Manager  
Standardization & Special  
Projects Branch  
Division of Licensing

**ORIGINAL SIGNED BY:**

James R. Miller, Chief  
Standardization & Special  
Projects Branch  
Division of Licensing

Dated: January 15, 1982

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SURNAME ▶	JWilson/cc	VPAnderson	JMiller				
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