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POLICY ISSUE (Information)

September 30, 1997

SECY-97-219

FOR: The Commissioners
FROM: L. Joseph Callan
Executive Director for Operations

SD-223

SUBJECT: ORDER MODIFYING LICENSE TO CONVERT FROM HIGH-ENRICHED
TO LOW-ENRICHED URANIUM FUEL (UNIVERSITY OF
MASSACHUSETTS LOWELL)

PURPOSE:

To inform the Commission of a conversion order issued under 10 CFR 50.64, which requires that non-power reactors convert from high-enriched uranium (HEU) fuel to low-enriched uranium (LEU) fuel, and the status of HEU to LEU conversions.

BACKGROUND:

On March 27, 1986, 10 CFR 50.64, "Limitations on the Use of Highly Enriched Uranium (HEU) in Domestic Non-Power Reactors," became effective. In part, the regulation requires conversion from the use of HEU fuel to LEU fuel, provided suitable fuel and funding are available through the Department of Energy (DOE) or another appropriate Federal agency. The regulation in 10 CFR 50.64(c)(3) requires that the conversion be implemented by an order issued by the Office of Nuclear Reactor Regulation (NRR). In the development of 10 CFR 50.64(c)(3) (51 FR 6517), the Commission decided that an order was appropriate for conversion to avoid litigation expenses that could be incurred by the licensee if a hearing were requested. In the event of a hearing, the staff would participate fully in the proceeding and would have the burden of defending the order. The licensee need not participate in the hearing.

CONTACT:
Theodore S. Michaels, NRR/PDND
415-1102

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DISCUSSION:

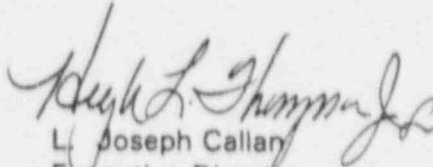
In SECY-87-171, the NRC staff informed the Commission that an order to convert from HEU fuel to LEU fuel had been issued to the Rensselaer Polytechnic Institute. In COMLZ-87-43, the Commission requested that NRR inform it of subsequent conversion orders issued similar to the one discussed in SECY-87-171. To comply with this request, we have attached the order that NRR issued for the conversion of the University of Massachusetts Lowell research reactor. The required 20-day period for hearing requests has expired and a request for hearing has not been received.

In addition to SECY 87-171, we have informed the Commission of other orders in SECY 89-001, 90-184, 90-402, 91-122, 93-154, 93-208, and 95-222. In SECY-90-184, the staff summarized the status of the conversions from HEU fuel to LEU fuel. The attached table updates this summary. It is noted that 6 of the original 25 non-power reactors have been decommissioned and had their license terminated, are in the process of decommissioning, or have ceased operation.

DOE is not planning to fund the following facilities because they are commercial entities, no appropriate fuel is available, or a unique-purpose exemption application has been submitted: General Electric Company Nuclear Test Reactor in Pleasanton, California (commercial); the Massachusetts Institute of Technology (no appropriate fuel); and the National Institute of Standards and Technology (NIST) and the University of Missouri-Columbia (unique-purpose exemption). In addition, DOE is not planning to fund NIST in any case because it maintains that the Department of Commerce should fund NIST.

Coordination:

The Office of the General Counsel has reviewed this paper and has no legal objection to it.


L. Joseph Callan
Executive Director
for Operations

Attachments: 1. Order
2. Table

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of
UNIVERSITY OF MASSACHUSETTS LOWELL
(University of Massachusetts Lowell
Research Reactor)

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Docket No. 50-223

ORDER MODIFYING FACILITY OPERATING LICENSE NO. R-125

I.

The University of Massachusetts Lowell (the licensee) is the holder of Facility Operating License No. R-125 (the license) issued on December 24, 1974, by the U.S. Atomic Energy Commission, and subsequently renewed on November 21, 1985, by the U.S. Nuclear Regulatory Commission (the NRC or the Commission). The license authorizes operation of the University of Massachusetts Lowell Research Reactor (the facility) at a power level up to 1 megawatt thermal (MW(t)). The facility is a research reactor located in the center of the North Campus of the University of Massachusetts Lowell, in the city of Lowell, Middlesex County, in northeastern Massachusetts, approximately 5 miles from the New Hampshire border. The mailing address is Radiation Laboratory, University of Massachusetts Lowell, One University Avenue, Lowell, Massachusetts 01854.

II.

On February 25, 1986, the Commission promulgated a final rule in Section 50.64 of Title 10 of the Code of Federal Regulations (10 CFR 50.64) limiting the use of high-enriched uranium (HEU) fuel in domestic research and

test reactors (non-power reactors) (see 51 FR 6514). The rule, which became effective on March 27, 1986, requires that if Federal Government funding for conversion-related costs is available, each licensee of a non-power reactor replace HEU fuel at its facility with low-enriched uranium (LEU) fuel acceptable to the Commission unless the Commission has determined that the reactor has a unique purpose. The Commission issued the rule to reduce the risk of theft and diversion of HEU fuel used in non-power reactors.

Paragraphs 50.64(b)(2)(i) and (ii) require that a licensee of a non-power reactor (1) not acquire more HEU fuel if LEU fuel that is acceptable to the Commission for that reactor is available when the licensee proposes to acquire HEU fuel and (2) replace all HEU fuel in its possession with available LEU fuel acceptable to the Commission for that reactor in accordance with a schedule determined pursuant to 10 CFR 50.64(c)(2).

Paragraph 50.64(c)(2)(i) requires, among other things, that each licensee of a non-power reactor authorized to possess and to use HEU fuel develop and submit to the Director of the Office of Nuclear Reactor Regulation (Director) by March 27, 1987, and at 12-month intervals thereafter, a written proposal for meeting the requirements of the rule. The licensee shall include in its proposal a certification that Federal Government funding for conversion is available through the U.S. Department of Energy or other appropriate Federal agency and a schedule for conversion, based upon availability of replacement fuel acceptable to the Commission for that reactor and upon consideration of other factors such as the availability of shipping casks, implementation of arrangements for available financial support, and reactor usage.

Paragraph 50.64(c)(2)(iii) requires the licensee to include in the proposal, to the extent required to effect conversion, all necessary changes to the license, to the facility, and to licensee procedures. This paragraph also requires the licensee to submit supporting safety analyses in time to meet the conversion schedule.

Paragraph 50.64(c)(2)(iii) also requires the Director to review the licensee proposal, to confirm the status of Federal Government funding, and to determine a final schedule, if the licensee has submitted a schedule for conversion.

Section 50.64(c)(3) requires the Director to review the supporting safety analyses and to issue an appropriate enforcement order directing both the conversion and, to the extent consistent with protection of public health and safety, any necessary changes to the license, the facility, and licensee procedures. In the Federal Register notice of the final rule (51 FR 6514), the Commission explained that in most, if not all, cases, the enforcement order would be an order to modify the license under 10 CFR 2.204.

Section 2.714 states the requirements for a person whose interest may be affected by any proceeding to initiate a hearing or to participate as a party.

III.

On May 21, 1993, as supplemented on March 17, 1994, May 16, 1997, and June 6, 1997, the NRC staff received the licensee's conversion proposal, including its proposed modifications and supporting safety analyses. HEU fuel elements are to be replaced with LEU fuel elements. The fuel elements contain fuel plates, typical of material test reactors, with the fuel meat consisting

of uranium silicide dispersed in an aluminum matrix. These plates contain the uranium-235 isotope at an enrichment of less than 20 percent. The NRC staff reviewed the licensee's proposal and the requirements of 10 CFR 50.64 and has determined that public health and safety and common defense and security require the licensee to convert the facility from the use of HEU to LEU fuel in accordance with the attachment to this Order and the schedule included herein. The attachment to this Order specifies the changes to the license conditions and discusses the changes to Technical Specifications that are needed to amend the facility license.

IV.

Accordingly, pursuant to Sections 51, 53, 57, 101, 104, 161b, 161i, and 161o of the Atomic Energy Act of 1954, as amended, and to Commission regulations in 10 CFR 2.204 and 10 CFR 50.64, IT IS HEREBY ORDERED THAT:

Facility Operating License No. R-125 is modified by amending the license conditions and technical specifications as stated in the attachment to this Order on the later date of either (1) the day the licensee receives an adequate number and type of LEU fuel elements to operate the facility as specified in the licensee proposal or (2) 30 days after the date of publication of this Order in the Federal Register.

V.

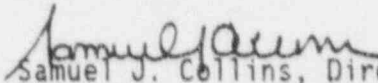
Pursuant to the Atomic Energy Act of 1954, as amended, the licensee or any other person adversely affected by this Order may request a hearing within 30 days of the date of this Order. Any request for a hearing shall be submitted

to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, with a copy to the Assistant General Counsel for Hearings and Enforcement at the same address. If a person other than the licensee requests a hearing, that person shall set forth with particularity in accordance with 10 CFR 2.714 the manner in which his or her interest is adversely affected by this Order.

If a hearing is requested by the licensee or a person whose interest is adversely affected, the Commission shall issue an order designating the time and place of any hearing. If a hearing is held, the issue to be considered at such hearing is whether this Order should be sustained.

This Order shall become effective on the later date of either the day the licensee receives an adequate number and type of LEU fuel elements to operate the facility as specified in the licensee proposal or 30 days after the date of publication of this Order in the Federal Register or, if a hearing is requested, on the date specified in an order after further proceedings on this Order.

FOR THE NUCLEAR REGULATORY COMMISSION


Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland.
this 31st day of July 1997

Attachment:
As stated

NON-POWER REACTOR HEU TO LEU CONVERSION PROGRAM

Status a/o Sep 97	Licensee	Date	HEU Fuel Off-Site	Estimated LEU Fuel Availability	Remarks
HEU to LEU Conversions					
Converted from HEU to LEU	RPI	Sep 87	Yes	Not Applicable (NA)	
	Ohio State	Dec 88	Yes	NA	
	WPI	Dec 88	Yes	NA	
	Iowa State	Aug 91	No	NA	Ship HEU FY98
	Manhattan	Mar 92	Yes	NA	
	U. of Mo. Rolla	Jul 92	Yes	NA	
	Rhode Island AEC	Aug 93	Yes	NA	
	U. of Virginia	Apr 94	Yes	NA	
Conversion Order	U. of Mass. Lowell	Jul 97	No	CY 97	
Reactors to be Converted	Purdue	—	No	FY-98	
	U. of Fla.	—	No	FY-99	
	Oregon State	—	No	FY-02	
	Texas A&M	—	No	FY-02	
	U. of Wisc.	—	No	FY-04	
	Washington State	—	No	FY-07	
Commercial NPR	General Electric	—	No	NA	
Unique Purpose Applications	NIST	—	No	NA	
	U. of Mo. Columbia	—	No	NA	
No suitable LEU Fuel	MIT	—	No	NA	
Licensees Who Operated with HEU That Have Ceased Operation					
License Terminated	Westinghouse	Oct 88	Yes	NA	
Decommission Orders Issued	Cintichem	Nov 91	Yes	NA	
	Virginia Cavalier	Feb 92	Yes	NA	
	U. of Wash.	May 95	Yes	NA	
Ceased Operation	General Atomic	Dec 94	No	NA	PO License, Mar 95
	Georgia Tech	Jul 97	Yes	NA	Conv. Order Jun 95