

November 1, 2016

Dr. Robert Bean, Director
Purdue University Radiation Laboratory
School of Nuclear Engineering
400 Central Drive
West Lafayette, IN 47907-2017

SUBJECT: PURDUE UNIVERSITY – ISSUANCE OF RENEWED FACILITY OPERATING
LICENSE NO. R-87 FOR THE PURDUE UNIVERSITY RESEARCH REACTOR
(TAC NO. ME1594)

Dear Dr. Bean:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Renewed Facility Operating License No. R-87 for the Purdue University Research Reactor in response to the application for license renewal dated July 7, 2008, as supplemented by letters dated June 4, 2010; November 15, 2011; January 4, January 30, January 31, June 1, June 15, June 29, July 13, and August 11, 2012; April 10, 2013; July 24, 2015; and January 29, February 26, March 31, May 9, July 7, July 19, September 19, and September 29, 2016 (the renewal application). The renewed facility operating license is effective on the date of issuance, and shall expire at midnight, 20 years from the date of issuance, unless terminated sooner.

In accordance with agency practice, the NRC has restated the license in its entirety, incorporating all changes and amendments made since the issuance of the original license as appropriate. Also enclosed with the renewed facility operating license is the safety evaluation report associated with the license renewal. A Notice of Issuance of Renewed Facility Operating License No. R-87 has been sent to the Office of the Federal Register for publication. The environmental assessment for this renewal was published in the *Federal Register* on October 27, 2016 (81 FR 74822) and was sent to you under separate cover dated October 21, 2016.

R. Bean

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The NRC staff requests that you provide us with a copy of your start-up plan for the increase in licensed power level once the plan has received final approval. If you have any questions, please contact me at 301-415-3398 or by electronic mail at Cindy.Montgomery@nrc.gov.

Sincerely,

/RA/

Cindy K. Montgomery, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-182

Enclosures:

1. Facility Operating License No. R-87
2. Safety Evaluation Report

cc: See next page

Purdue University

Docket No. 50-182

cc:

Leah Jamieson, Dean of Engineering
Purdue University
School of Nuclear Engineering
400 Central Drive
West Lafayette, IN 47907

Mayor
City of West Lafayette
609 W. Navajo
West Lafayette, IN 47906

John H. Ruyack, Manager
Epidemiology Res Center/Indoor & Radiological Health
Indiana Department of Health
2525 N. Shadeland Ave., E3
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Howard W. Cundiff, P.E., Director
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2 North Meridian Street, 5D
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Clive Townsend, Reactor Supervisor
Purdue University
School of Nuclear Engineering
400 Central Drive
West Lafayette, IN 47907

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

R. Bean

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Sincerely,

/RA/

Cindy K. Montgomery, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-170

Enclosures:

1. Facility Operating License No. R-87
2. Safety Evaluation Report

cc: See next page

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DATE	9/20/2016	9/22/2016	9/29/2016	9/22/2016
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NAME	MYoung	LLund (MGavrilas for)	WDean	CMontgomery
DATE	9/30/2016	10/13/2016	10/31/2016	11/1/2016

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PURDUE UNIVERSITY

DOCKET NO. 50-182

RENEWED FACILITY OPERATING LICENSE

License No. R-87

1. The U.S. Nuclear Regulatory Commission ("the Commission") has found that:
 - A. The application for renewal of Facility Operating License No. R-87 filed by Purdue University ("the licensee"), dated July 7, 2008, as supplemented by letters dated June 4, 2010; November 15, 2011; January 4, January 30, January 31, June 1, June 15, June 29, July 13, and August 11, 2012; April 10, 2013; July 24, 2015; and January 29, February 26, March 31, May 9, July 7, July 19, September 19, and September 29, 2016 ("the application"), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended ("the Act"), and the Commission's rules and regulations set forth in Title 10, Chapter I, of the *Code of Federal Regulations* (10 CFR);
 - B. Construction of the Purdue University Research Reactor ("the facility") was completed in substantial conformity with the Construction Permit No. CPRR-64, issued to Purdue University on August 7, 1961, and the application, as amended; the provisions of the Act; and the rules and regulations of the Commission;
 - C. The facility will operate in conformity with the application, as supplemented, the provisions of the Act, and the rules and regulations of the Commission;
 - D. There is reasonable assurance that: (i) the activities authorized by this license can be conducted without endangering the health and safety of the public, and (ii) such activities will be conducted in compliance with the Commission's regulations;
 - E. The licensee is technically and financially qualified to engage in the activities authorized by this license in accordance with the rules and regulations of the Commission;
 - F. The licensee is a nonprofit educational institution and will use the facility for the conduct of educational activities, and has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
 - G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

- H. The issuance of this license is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations and all applicable requirements have been satisfied; and
 - I. The receipt, possession and use of byproduct and special nuclear materials as authorized by this facility operating license will be in accordance with the Commission's regulations in 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material."
2. Accordingly, Facility Operating License No. R-87 is hereby renewed in its entirety to read as follows:
- A. This license applies to the Purdue University Research Reactor, a pool-type nuclear reactor (herein "the facility") owned by Purdue University (herein "the licensee"). The facility is located on the campus of Purdue University, in the city of West Lafayette, Tippecanoe County, Indiana and is described in the licensee's application for license renewal, dated July 7, 2008, as supplemented.
 - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the Purdue University as follows:
 - 1. Pursuant to subsection 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, use, and operate the facility as a utilization facility at the designated location in West Lafayette, Indiana, in accordance with the procedures and limitations described in the application and set forth in this license;
 - 2. Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," to receive, possess, and use, but not separate: (1) up to 3.8 kilograms of contained uranium-235 of enrichment of less than 20 percent in the form of materials testing reactor (MTR)-type fuel; (2) up to 80.0 grams of plutonium contained in encapsulated plutonium-beryllium sources; and (3) up to 100 grams of contained uranium-235 of any enrichment in the form of fission chambers, flux foils and fueled experiments, all used in connection with the operation of the facility;
 - 3. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

- C. This license shall be deemed to contain and is subject to the conditions specified 10 CFR Parts 20, 30, 50, 51, 55, 70, and 73 of the Commission's regulations; is subject to all applicable provisions of the Act, and to the rules, regulations and orders of the Commission now or hereafter in effect and to the additional conditions specified or incorporated below:

1. Maximum Power Level

The licensee is authorized to operate the facility at steady state power levels not in excess of 12 kilowatts (thermal).

2. Technical Specifications

The Technical Specifications contained in Appendix A are, hereby, incorporated in their entirety in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. Physical Security Plan

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security plan, including all amendments and revisions made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). This approved physical security plan, which contains information withheld from public disclosure under 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements," is entitled "The Purdue University Reactor-1 Physical Security Plan," and is dated March 2016.

- D. This license is effective as of the date of issuance and shall expire at midnight, twenty years from the date of issuance.

For the Nuclear Regulatory Commission

/RA/

William M. Dean, Director
Office of Nuclear Reactor Regulation

Attachment:
Appendix A, Technical Specifications

Date of Issuance: October 31, 2016