



Rensselaer

DEPARTMENT OF MECHANICAL, AEROSPACE, AND
NUCLEAR ENGINEERING

RCF 15-01
March 25, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Re: Operations Report for the Rensselaer Polytechnic Institute Reactor Critical Facility, NRC
License CX-22, Docket Number 50-225.

To Whom It May Concern:

This document constitutes the calendar year 2014 (CY2014) Operation Report of the Rensselaer Polytechnic Institute (RPI) Reactor Critical Facility (RCF) to the U.S. Nuclear Regulatory Commission (NRC) and the RPI management.

The RCF operated successfully during CY2014. The RCF was used for one laboratory course and supported an introductory course in the Nuclear Engineering curriculum. Also facility tours were provided to officer candidates from the West Point Military academy, undergraduate physics students from Vermont Technical College, operators in training at the Fitzgerald nuclear power plant and members of the local American Nuclear Society. The work during the year essentially supported the laboratory course and training of students.

Work proceeded on critical experiments with the 0.640" pitch lattice plates. Critical measurements were performed with the 326-pin configuration with Zr-4 reflectors installed on two of the unrodded external faces of the fuel array. A 327-pin configuration was used for some critical measurements. Subcritical experiments were conducted with fewer pins. The SPERT (F1) fuel used is 4.81 w/o enriched high density UO_2 pellet fuel clad in stainless steel, so it is similar to power plant reactor fuel. These experiments have been designed to be similar to power reactor startup measurements.

The 2014 NRC annual inspection was completed in December 2014 and has been reported in separate correspondence.

Training and proficiency requirements for all licensed operators have been reviewed and are current. Total staffing on December 31, 2014 is four licensed Senior Reactor Operators with two additional individuals scheduled for a licensing examination in January 2015.

The Technical Specifications, App. A to the USNRC License CX-22 requires reporting the following operational items:

1. Changes to the facility design: None.
2. Significant Maintenance, repairs, or other work performed on RCF systems:
New gears were procured, machined to the required dimensions and installed in one control rod.

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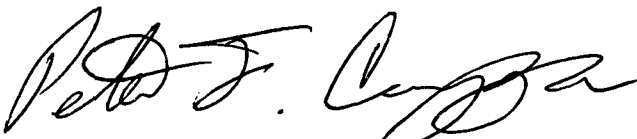
3. Changes in operating procedures which relate to the safety of RCF operations: None.
4. Surveillance checks, tests, and calibrations were conducted and logged as required.
5. Changes, tests, or experiments requiring authorization from the USNRC under 10CFR50.59 (a) or (b): None.
6. Staff Changes during CY 2014: Ms. Annette Chism, Director of Environmental, Health and Safety, assumed supervision of Health Physics when the Radiation Safety Officer resigned. A search for a replacement is in progress.
Dr. Shekhar Garde was appointed Dean of Engineering.
7. Changes to Nuclear Safety Review Board during 2014: None. Attachment 1 shows the current members of NSRB as of January 1, 2015.
8. Calculated Thermal Power: Integrated power was approximately 0.04 kwhr for all CY2014, far less than the 2 kwhr/yr limitation in the Technical Specifications. The April - June quarter recorded the highest usage at 0.025 kwhr.
9. Maintenance operations were carried out and logged with satisfactory results.
10. No discharges occurred in CY 2014

Environmental monitor dosimetry is performed at the exclusion area fence (EM1 through EM4), and at the site boundary fence (EM5 and EM6). The environmental monitoring results are reported without background subtraction, and the accumulated dose to an off-site control monitor is reported separately. The sum of the quarterly control readings from 2014 was 108 mrem. The sums of the gross readings and net dose results for 2014 are:

	Gross	Net
EM1	97 mrem	0 mrem
EM2	105 mrem	0 mrem
EM3	98 mrem	0 mrem
EM4	93 mrem	0 mrem
EM5	100 mrem	0 mrem
EM6	104 mrem	0 mrem

11. A total of five personnel monitoring badges recorded an accumulated dose greater than the minimum reportable dose of 10 mrem in at least one quarter of 2014, for a total collective dose of 57 mrem.

Sincerely,



Dr. Peter F. Caracappa, Director
RPI Reactor Critical Facility

Cc:

Dr. Shekhar Garde Dean of
Engineering

Dr. Suvranu De, Head,
Mechanical, Aerospace, and
Nuclear Engineering
Department

Dr. Yaron Danon
Chairman, NSRB and Head,
Nuclear Engineering Program

Ms. Annette Chism, Director
Environmental Health and
Safety

Mr. Glenn Winters, RCF
Operations Supervisor

Attachment: 1

Members of NSRB as of January 1, 2015:

1. Dr. Yaron Danon, Head NSRB
2. Dr. Peter Caracappa , RCF Facility Director
3. Dr. Mark Embrechts
4. Dr. Tarek Abdoun (Associate Dean for Research)
5. Ms. Annette Chism, Director Environmental Health and Safety and Radiation Safety Officer
6. Sergeant Marcie DeVeccio (Public Safety)
7. Dr. Wei Ji
8. Dr. Bimal Malaviya
9. Dr. George Xu
10. Dr. Mike Podowski
11. Mr. Glenn Winters, RCF Operations Supervisor
12. Ms. Leslie Norton (Public Safety)
13. Dr. Timothy Trumbull

Attachment #2 Updated list of RPI personnel and the mailing addresses.

1. Peter F. Caracappa, Ph.D, CHP
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2. Annette Chism, Director EH&S
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3. Glenn Winters
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4. Dr. Yaron Danon
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