August 22, 2007

Mr. Glenn Winters, RCF Facility Director
Reactor Critical Facility
NES Building, Room 1-10, MANE Department
Rensselaer Polytechnic Institute
110 8th St.
Troy, NY 12181

SUBJECT: RETAKE EXAMINATION REPORT NO. 50-225/OL-07-02, RENSSELAER POLYTECHNIC INSTITUTE

Dear Mr. Winters:

During the week of July 23, 2007, the NRC administered an operator licensing examination at your Rensselaer Polytechnic Institute Reactor Critical Facility. The examination was conducted according to NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors," Revision 2, published in June 2007.

In accordance with 10 CFR 2.390 of the Commission's regulations, a copy of this letter and the enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/NRC/ADAMS/indesx.html. The NRC is forwarding the individual grades to you in a separate letter which will not be released publicly. Should you have any questions concerning this examination, please contact Phillip T. Young at (301)415-4094 or via internet e-mail at pty@nrc.gov.

Sincerely,

/RA/

Johnny Eads, Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-225

Enclosures: 1. Retake Examination Report No. 50-225/OL-07-02
2. Examination and answer key

cc w/encls: See next page

cc:

Mayor of the City of Schenectady
Schenectady, NY 12305

Barbara Youngberg
Chief, Radiation Section
Division of Hazardous Waste and Radiation Management
NY State Dept. of Environmental Conservation
625 Broadway
Albany, NY 12233-7255

Peter F. Caracappa, Radiation Safety Officer
NES Building, Room 1-10, MANE Department
Rensselaer Polytechnic Institute
110 8th St.
Troy, NY 12180-3590

Dr. Timothy Trumbull, RCF Supervisor
NES Building, Room 1-10, MANE Department
Rensselaer Polytechnic Institute
110 8th St.
Troy, NY 12180

Peter Collopy, Director EH&S
Rensselaer Polytechnic Institute
21 Union Street
Gurley Building 2nd Floor
Troy, NY 12180

John P. Spath, State Liaison Officer Designee
Program Manager
Radioactive Waste Policy and Nuclear Coordination
New York State Energy Research & Development Authority
17 Columbia Circle
Albany, NY 12203-6399

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

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EXAMINATION PACKAGE NO.: ML071800022
ACCESSION NO.: ML072290498 **TEMPLATE #: NRR-079**

OFFICE:	PRTB:CE	DIRF/IROB:LA	PRTB:BC
NAME:	jhe for PYoung	CHart cah	JEads jhe
DATE:	8/22 /2007	8/22/2007	8/22/2007

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U. S. NUCLEAR REGULATORY COMMISSION
OPERATOR LICENSING INITIAL EXAMINATION REPORT

REPORT NO.: 50-225/OL-07-02

FACILITY DOCKET NO.: 50-225

FACILITY LICENSE NO.: CX-22

FACILITY: Rensselaer Polytechnic Institute

EXAMINATION DATES: July 23, 2007

EXAMINERS: Phillip T. Young, Chief Examiner

SUBMITTED BY: /RA/ 08/22/2007
Phillip T. Young, Chief Examiner Date

SUMMARY:

On July 23, 2007, the facility administered an NRC prepared Operator Licensing Retake Written Examination to a candidate who had failed section B of the February, 2007 examination. The candidate passed the examination.

REPORT DETAILS

1. Examiners:
   Phillip T. Young, Chief Examiner

2. Results:

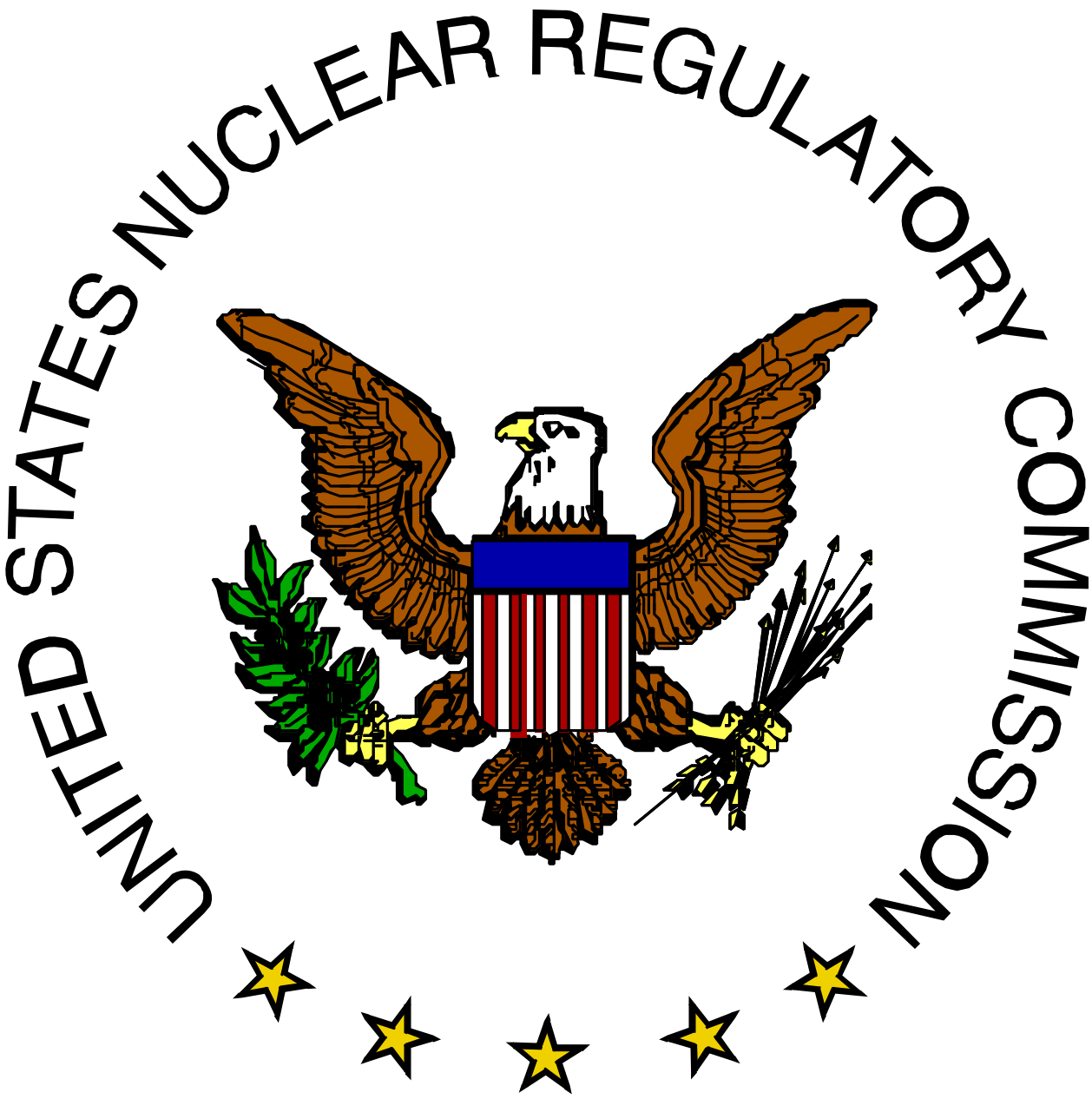
	RO PASS/FAIL	SRO PASS/FAIL	TOTAL PASS/FAIL
Written	0/0	1/0	1/0
Operating Tests	0/0	0/0	0/0
Overall	0/0	1/0	1/0

3. Exit Meeting:
   Phillip T. Young, NRC, Examiner
   Timothy Trumbull, Operations Supervisor

   The chief examiner and Operations Supervisor communicated on the results of the examination. There were no comments on the written examination, and no reported problems with the administration of the examination.

ENCLOSURE 1

RENSSELAER
WRITTEN RETAKE EXAM with ANSWER KEY



OPERATOR LICENSING EXAMINATION
JULY 23, 2007

ENCLOSURE 2

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.001 (1.00) (1.0)
Which ONE of the following surveillances are required to be performed before a reactor startup?

a. Moderator-reflector water height verification.
b. Criticality detector system calibration.
c. Control rod drop time determination.
d. Shutdown margin determination.

Answer: A.001 a.
Reference: RPI Technical Specifications, Section 4.1.

QUESTION B.002 (1.00) (2.0)
In accordance with the Technical Specifications, which ONE situation below is NOT permissible?

a. A power level trip setting of 120 watts.
b. Coolant temperature of 45 degrees F.
c. Operation with the Log N, Period channel bypassed.
d. Criticality detector system removed from service, but replaced by an equivalent portable system.

Answer: B.002 b.
Reference: RPI Technical Specifications, Section 3.2.

QUESTION B.003 (1.00) (3.0)
The limit for maximum water level at no greater than 10 inches above the top grid of the core is based on:

a. providing adequate neutron shielding during operation.
b. avoiding hydraulic restrictions to control rod insertion during a scram.
c. limiting moderator mass to maximize negative temperature coefficient effects during transients.
d. ensuring that negative reactivity will be added within 1 minute through loss of the reflector above the core following a scram.

Answer: B.003 d.
Reference: RPI Technical Specifications, Section 3.1.

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.004 (1.00) (4.0)
Which ONE of the following defines an "Instrument Channel Check?"

a. The introduction of a signal into a channel for verification that it is operable.

b. The qualitative verification of acceptable performance by observation of channel behavior.

c. A combination of sensors, electronic circuits and output devices which measure and display the value of a parameter.

d. The adjustment of a channel such that its output corresponds with acceptable accuracy to known values of the parameter which the channel measures.

Answer: B.004 b.
Reference: RPI Technical Specifications, Definitions.

QUESTION B.005 (1.00) (5.0)
All of the following are interlocks that prevent control rod withdrawal during reactor operations EXCEPT:

a. water level in reactor tank 12 inches above core top grid.

b. neutron flux = 60 counts per minute.

c. failure of line voltage to recorders.

d. fill pump running.

Answer: B.005 a.
Reference: RPI Technical Specifications, Table 2.

QUESTION B.006 (1.00) (6.0)
Prior to the disposal of water from the reactor tank, storage tank or sump, it must be tested to ensure that:

a. the activity is within limits

b. the pH is between 4.7 and 7.0

c. the temperature is less than 70 deg. F

d. the particulate concentration is within limits

Answer: B.006 a.
Reference: Operating Procedures, I, Water Disposal.

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.007 (1.00) (7.0)
Following an unintentional scram, the reactor may be prepared for startup only after the cause of the scram has been determined by the:

a. Reactor Operator
b. Senior Reactor Operator
c. Operations Supervisor
d. Facility Director

Answer: B.007 b.
Reference: Emergency Procedure 7.3.1.

QUESTION B.008 (1.00) (8.0)
During a reactor startup in which the rod sensitivity is known from previous measurements, withdrawal of control rods as a bank is permitted:

a. as long as the reactivity addition does not exceed 12 cents per second.
b. as long as the control rod withdrawal rate does not exceed 5 inches per minute.
c. as long as the reactivity addition does not exceed 12 cents per second up to 10 times the source level.
d. only until the source channel has increased by ONE decade and then they may only be withdrawn ONE at a time.

Answer: B.008 c.
Reference: Operating Procedures, A, Reactor Startup.

QUESTION B.009 (1.00) (9.0)
During performance of a power calibration, the reactor is scrammed after activation and the operator enters the high bay area to take readings. Prior to entering the high bay area the operator should verify that:

a. the neutron source has been removed to its shielded container.
b. all control rods are fully inserted and water drained from the tank.
c. the "Reactor On" key is removed and returned to the office safe.
d. 10 minutes have elapsed to allow for short lived isotopes to decay.

Answer: B.009 d.
Reference: Surveillance Procedures, 3, Power Calibration.

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.010 (1.00) (10.0)
How would an accessible area be posted if the radiation level in the area is 65 mR/hr?

a. CAUTION- RADIATION AREA
b. CAUTION- RESTRICTED AREA
c. CAUTION- HIGH RADIATION AREA
d. CAUTION- RADIOACTIVE MATERIALS AREA

Answer: B.010 a.
Reference: 10 CFR 20.

QUESTION B.011 (1.00) (11.0)
The gamma radiation level from a point source is 10 R/hour at a distance of 1 foot from the source. The radiation level 8 feet from the source is approximately:

a. 19 mR/hour
b. 156 mR/hour
c. 625 mR/hour
d. 1250 mR/hour

Answer: B.011 b.
Reference: $DR_1D_1^2 = DR_2D_2^2$ $(10)(1) = DR_2(64)$; $DR_2 = 10/64 = 0.156$ R/hr = 156 mR/hr.

QUESTION B.012 (1.00) (12.0)
If smoke or fire is detected, the operator must immediately:

a. stop all rod withdrawal and notify the Senior Reactor Operator.
b. determine the location, and close down all fans.
c. notify the Operations Supervisor.
d. shutdown and secure the reactor.

Answer: B.012 d.
Reference: RPI Emergency Plan, Section 6.2.

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.013 (1.00) (13.0)
Emergency Action Levels are:

a. accidents grouped by severity level for which predetermined emergency measures may be taken.

b. specific instrument readings, observations, dose rates, etc which provide thresholds for establishing emergency classes.

c. instructions that detail the implementation actions and methods required to achieve the objectives of the emergency plan.

d. projected radiological dose or dose commitment values to individuals that warrant protective action following a release of radioactive material.

Answer: B.013 b.
Reference: RPI Emergency Plan, Definitions.

QUESTION B.014 (1.00) (14.0)
When the Critical Facility Emergency Alarm sounds, all personnel are to assemble:

a. in the control room.

b. in the counting room.

c. near the facility gate near the site boundary.

d. at the edge of the inner zone within the operations boundary.

Answer: B. 014 b.
Reference: RPI Emergency Plan, Section 7.

QUESTION B.015 (1.00) (15.0)
In accordance with the Emergency Plan, the person or group responsible for setting any emergency action into motion is:

a. the Facility Director.

b. the Operations Supervisor.

c. the RPI Public Safety Force.

d. the first staff member who becomes aware of the emergency.

Answer: B. 015 d.
Reference: RPI Emergency Plan, Section 2.

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.016 (1.00) (16.0)
Which ONE of the following Non-Radiological Emergencies does NOT require that the reactor be shut down and secured?

a. Act of civil disorder.

b. Smoke or fire.

c. Human injury.

d. Bomb threat.

Answer: B. 016 c.
Reference: RPI Emergency Plan, Section 6.6.

QUESTION B.017 (1.00) (17.0)
In accordance with the Emergency Plan, an "Emergency Planning Zone" is:

a. the area within the site boundary.

b. the area beyond the site boundary.

c. an area for which offsite emergency planning is performed.

d. the area within the site boundary where the licensee may directly initiate emergency activities.

Answer: B.017 c.
Reference: RPI Emergency Plan, Definitions.

QUESTION B.018 (1.00) (18.0)
In accordance with the Technical Specifications, which ONE situation below is NOT permissible?

a. A moderator temperature of 50 deg. F

b. A clean fuel pin with a reactivity worth of $0.20

c. A water level of 10 inches above the top grid of the core

d. A total control rod drop time (full out to full in) of 1 second

Answer: B.018 d.
Reference: Technical Specifications 3.1(4)

B. NORMAL/EMERGENCY OPERATING PROCEDURES & RADIOLOGICAL CONTROLS

QUESTION B.019 (1.00) (19.0)
The reactivity worth of a planned moveable experiment is determined to be $0.80. Which ONE of the statements below is correct concerning this experiment?

a. The experiment is allowed in the core but must be secured.

b. The experiment is allowed in the core but must be doubly encapsulated.

c. The experiment cannot be allowed in the core due to an excessive reactivity value.

d. The experiment is allowed in the core provided that analysis indicates the worth is such that its removal will not exceed the safety limit.

Answer: B.019 c.
Reference: Technical Specifications, 3.4(4).

QUESTION B.020 (1.00) (20.0)
In accordance with the Technical Specifications, a SAFETY LIMIT is:

a. a limit on an important process variable which is found to be necessary to reasonably protect the integrity of physical barriers which guard against the uncontrolled release of radioactivity.

b. an administratively established constraint on equipment and operational characteristics which shall be adhered to during operation of the reactor.

c. a system which is designed to initiate automatic reactor protection or to provide information for initiation of manual protective action.

d. the actuating level for an automatic protective device related to those variables having significant safety functions.

Answer: B.020 a.
Reference: RPI Technical Specifications, Definitions.

(***** END OF CATEGORY B *****)