

December 15, 2011

Dr. Melinda Krahenbuhl, Director
Reed Reactor Facility
Reed College
3203 SE Woodstock Blvd.
Portland, OR 97202

SUBJECT: EXAMINATION REPORT NO. 50-288/OL-12-01, REED COLLEGE

Dear Dr. Krahenbuhl:

During the week of November 21, 2011 the U.S. Nuclear Regulatory Commission (NRC) administered operator licensing examination at your Reed Reactor Facility. The examination was conducted according to NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors," Revision 2, published in June 2007. Examination questions and preliminary findings were discussed at the conclusion of the examination with those members of your staff identified in the enclosed report.

In accordance with Title 10, Section 2.390 of the Code of Federal 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 Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). The NRC is forwarding the individual grades to you in a separate letter which will not be released publicly. If you have any questions concerning this examination, please contact Patrick Isaac at 301-415-1019 or via email at patrick.isaac@nrc.gov.

Sincerely,
/RA/

Johnny H. Eads, Jr., Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-288

Enclosures: 1. Examination Report No. 50-288/OL-12-01
2. Written Examination

cc without enclosures: See next page

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DISTRIBUTION w/ encls.:

PUBLIC PROB r/f JEads Facility File CRevelle (O12-D19)
ADAMS ACCESSION #: ML113480053

OFFICE	PROB:CE		IOLB:LA		PROB:BC	
NAME	PIsaac		CRevelle		JEads	
DATE	12/14/2011		12/14/2011		12/15/2011	

OFFICIAL RECORD COPY

Reed College

Docket No. 50-288

cc:

Mayor of the City of Portland
1220 Southwest 5th Avenue
Portland, OR 97204

Reed College
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Portland, OR 97202-8199

Reed College
ATTN: Dr. Colin Diver, President
3203 S.E. Woodstock Boulevard
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Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

EXAMINATION REPORT NO: 50-288/OL-12-01

FACILITY: Reed Reactor

FACILITY DOCKET NO.: 50-288

FACILITY LICENSE NO.: R-112

SUBMITTED BY: /RA/ 12/13/2011
Patrick J. Isaac, Chief Examiner Date

SUMMARY:

During the week of November 21, 2011, the NRC administered initial operator licensing examinations to one Senior Reactor Operator Instant and retake examinations to two Senior Reactor Upgrade candidates. The candidates passed the examinations.

REPORT DETAILS

1. Examiner: Patrick J. Isaac, Chief Examiner
2. Results:

	RO PASS/FAIL	SRO PASS/FAIL	TOTAL PASS/FAIL
Written	N/A	1/0	1/0
Operating Tests	N/A	3/0	3/0
Overall	N/A	3/0	3/0

3. Exit Meeting:

Dr. Melinda Krahenbuhl, Director, Reed Reactor
Reuven Lazarus, Reactor Supervisor, Reed Reactor
Patrick Isaac, NRC, Examiner

The NRC Examiner agreed to correct the answer key for the written examination to accept "c" and "d" as correct answers to question C.3.

The NRC Examiner thanked the facility for their support in the administration of the examinations.

U. S. NUCLEAR REGULATORY COMMISSION
NON-POWER INITIAL REACTOR LICENSE EXAMINATION

FACILITY: Reed College

REACTOR TYPE: TRIGA

DATE ADMINISTERED: 11/21/2011

CANDIDATE:

INSTRUCTIONS TO CANDIDATE:

Answers are to be written on the answer sheet provided. Attach the answer sheets to the examination. Points for each question are indicated in parentheses for each question. A 70% in each section is required to pass the examination. Examinations will be picked up two (2) hours after the examination starts.

<u>CATEGORY</u> <u>VALUE</u>	<u>% OF</u> <u>TOTAL</u>	<u>CANDIDATE'S</u> <u>SCORE</u>	<u>% OF</u> <u>CATEGORY</u> <u>VALUE</u>	<u>CATEGORY</u>
<u>20.00</u>	<u>50.0</u>	_____	_____	B. NORMAL AND EMERGENCY OPERATING PROCEDURES AND RADIOLOGICAL CONTROLS
<u>20.00</u>	<u>50.0</u>	_____	_____	C. FACILITY AND RADIATION MONITORING SYSTEMS
<u>40.00</u>		_____	_____%	TOTALS
		FINAL GRADE		

All work done on this examination is my own. I have neither given nor received aid.

Candidate's Signature

ENCLOSURE 2

B. NORMAL/EMERG PROCEDURES & RAD CON

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

001 a b c d ___

002 a b c d ___

003 a b c d ___

004 a b c d ___

005 a b c d ___

006 a ___ b ___ c ___ d ___

007 a b c d ___

008 a b c d ___

009 a b c d ___

010 1 ___ 2 ___ 3 ___ 4 ___

011 a ___ b ___ c ___ d ___

012 a b c d ___

013 a b c d ___

014 a b c d ___

015 a b c d ___

016 a b c d ___

017 a b c d ___

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

C. PLANT AND RAD MONITORING SYSTEMS

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

001 a b c d ___

002 a b c d ___

003 a b c d ___

004 a ___ b ___ c ___ d ___

005 a b c d ___

006 a b c d ___

007 a b c d ___

008 a b c d ___

009 a b c d ___

010 a b c d ___

011 a b c d ___

012 a b c d ___

013 a b c d ___

014 a b c d ___

015 a b c d ___

016 a b c d ___

017 a b c d ___

018 a b c d ___

(**** END OF CATEGORY C ****)
(***** END OF EXAMINATION *****)

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have neither received nor given assistance in completing the examination. This must be done after you complete the examination.
3. Restroom trips are to be limited and only one candidate at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
4. Use black ink or dark pencil only to facilitate legible reproductions.
5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.
6. Mark your answers on the answer sheet provided. **USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.**
7. The point value for each question is indicated in [brackets] after the question.
8. If the intent of a question is unclear, ask questions of the examiner only.
9. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition turn in all scrap paper.
10. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
11. To pass the examination you must achieve a grade of 70 percent or greater in each category.
12. There is a time limit of two (2) hours for completion of the examination.

EQUATION SHEET

$$Q = m c_p \Delta T$$

$$SUR = 26.06/\tau$$

$$P = P_0 e^{(t/\tau)}$$

$$\lambda_{\text{eff}} = 0.1 \text{ seconds}^{-1}$$

$$DR = DR_0 e^{-\lambda t}$$

$$\rho = (K_{\text{eff}} - 1)/K_{\text{eff}}$$

$$1 \text{ Curie} = 3.7 \times 10^{10} \text{ dps}$$

$$1 \text{ Btu} = 778 \text{ ft-lbf}$$

$$1 \text{ Mw} = 3.41 \times 10^6 \text{ BTU/hr}$$

$$CR_1 (1-K_{\text{eff}})_1 = CR_2 (1-K_{\text{eff}})_2$$

$$P = P_0 10^{\text{SUR}(t)}$$

$$\tau = (l^*/\rho) + [(\beta-\rho)/\lambda_{\text{eff}}\rho]$$

$$DR_1 D_1^2 = DR_2 D_2^2$$

$$DR = 6CiE/D^2$$

$$1 \text{ eV} = 1.6 \times 10^{-19} \text{ watt-sec.}$$

$$1 \text{ gallon water} = 8.34 \text{ pounds}$$

$$^{\circ}\text{F} = 9/5^{\circ}\text{C} + 32$$

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

Question: B.1 [1.0 point]

In order to ensure the health and safety of the public, in an emergency, 10CFR50 allows the operator to deviate from Technical Specifications. What is the minimum level of authorization needed to deviate from Tech. Specs?

- a. USNRC
- b. Reactor Supervisor
- c. Licensed Senior Reactor Operator.
- d. Licensed Reactor Operator.

Question: B.2 [1.0 point]

Which ONE of the following is the definition of the site boundary for the Reed reactor facility?

- a. The area inside the reactor bay.
- b. 250 feet from the center of the reactor.
- c. The physical boundary of Reed College.
- d. Within the confines of the Psychology building.

Question: B.3 [1.0 point]

Which ONE of the following activities must be carried out on a weekly basis?

- a. Test the evacuation alarm.
- b. Test the water level low/hi alarm.
- c. Inventory licensed radioactive material.
- d. Radiation Area Monitor (RAM) check.

Question: B.4 [1.0 point]

Which one of the following describes the expected response of the Reed Reactor Facility 24-hour telephone communications if 110 VAC power to the Reed College switchboard is lost?

- a. The direct dial-in line and the special phone line will fail.
- b. The direct dial-in line will fail, but the special phone line will be unaffected.
- c. The direct dial-in line will shift to the special phone line.
- d. The direct dial-in line will be re-powered by a backup generator and the special line will be unaffected..

Question: B.5 [1.0 point]

Which ONE of the following is the absolute MAXIMUM STEADY-STATE power level allowed by TECHNICAL SPECIFICATIONS?

- a. 240 Kilowatts
- b. 250 Kilowatts
- c. 287.5 Kilowatts
- d. 300 Kilowatts

Question: B.6 [1.0 points, 0.25 each]

Match the radiation reading from column A with its corresponding radiation area classification (per 10 CFR 20) listed in column B.

COLUMN A

COLUMN B

- | | |
|----------------|-----------------------------|
| a. 10 mRem/hr | 1. Unrestricted Area |
| b. 150 mRem/hr | 2. Radiation Area |
| c. 10 Rem/hr | 3. High Radiation Area |
| d. 550 Rem/hr | 4. Very High Radiation Area |

Question: B.7 [1.0 point]

Which ONE of the following conditions requires a radiation work permits (RWPs) in accordance with SOP 53?

- a. Collect the pool sample for monthly test.
- b. If work is to be done on the bridge during beam irradiation.
- c. A deep dose equivalent to an individual in excess of 2 mRem.
- d. Remove samples from the lazy susan, central thimble, or rabbit.

Question: B.8 [1.0 point]

Which one of the following is the 10 CFR 20 definition of **TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)**?

- a. The sum of the deep dose equivalent and the committed effective dose equivalent.
- b. The dose that your whole body receives from sources outside the body.
- c. The sum of the external deep dose and the organ dose.
- d. The dose to a specific organ or tissue resulting from an intake of radioactive material

Question: B.9 [1.0 point]

During a rabbit irradiation at full power, which ONE of the following precautions must be followed as part of the procedure?

- a. Do not allow the rabbit motor to be turned on after the reactor has been at power for a while.
- b. The rabbit operator must not allow anyone except him/herself to have complete control over the insertion and removal of the sample in the core.
- c. The reactor operator must scram the reactor if there is a power level change greater than 10% when the sample is inserted in the core.
- d. Discolored rabbit tubes must be used since they are more brittle and will allow a greater percentage of neutrons to irradiate the sample.

Question: B.10 [1.0 points, 0.25 each]

Match the requirements (10 CFR 55) for maintaining an active operator license in column A with the correct time period from column B.

<u>Column A</u>	<u>Column B</u>
1. Renewal of license	a. 4 months
2. Medical examination	b. 1 year
3. Console manipulation evaluation	c. 2 years
4. Requalification exam (written)	d. 6 years

Question: B.11 [1.0 points, 0.25 each]

Match the following experiments in Column A with their applicable requirements in Column B.

<u>COLUMN A</u>	<u>COLUMN B</u>
a. explosive materials.	1. Not allowed
b. Liquid fissionable materials	2. Doubly encapsulated
c. materials corrosive to reactor components.	3. No special requirements
d. compounds highly reactive with water	

Question: B.12 [1.0 point]

During an earthquake, the reactor operator must perform the following tasks, EXCEPT:

- a. Isolate the demin tank.
- b. Isolate the heat exchanger.
- c. Stop the cooling system pumps.
- d. Scam the reactor .

Question: B.13 [1.0 point]

Which ONE of the following scrams is NOT required by Technical Specifications?

- a. Linear channel
- b. % power channel
- c. Manual
- d. Log channel

Question: B.14 [1.0 point]

Which one of the following does NOT require NRC approval for changes?

- a. Facility License
- b. Requalification plan
- c. Emergency Implementation Procedures
- d. Emergency Plan

Question: B.15 [1.0 point]

Which ONE of the following is NOT a part of the Technical Specifications definition of a Shutdown Reactor?

- a. The console key is in the OFF position and the key is removed from the console and under the control of the licensed operator.
- b. No work is in progress involving fuel handling or maintenance of the control rod mechanisms.
- c. The minimum shutdown margin with the most reactive or the operable control elements withdrawn shall be $\$1.10$
- d. Sufficient control rods are inserted so as to assure the reactor is subcritical by a margin greater than $0.7 \Delta K/K$, cold Xenon free.

Question: B.16 [1.0 point]

Why is algaecide added weekly to the secondary cooling loop?

- a. Suppresses biological growth in the cooling tower.
- b. Minimizes corrosion of the pipes.
- c. Increases thermal conductivity of the water.
- d. Prevents the water from freezing in cold temperatures.

Question: B.17 [1.0 point]

It is April 1, 2008. You have stood watch for the following hours during the last quarter:

Jan. 11, 2008 0.5 hours

Feb. 24, 2008 1.5 hours

Mar. 16, 2008 1.0 hours

What requirements must you meet in order to stand an RO watch today?

- a. None. You've met the minimum requirements of 10 CFR 55.
- b. You must perform 4 hours of shift functions under the direction of a licensed operator or licensed senior operator as appropriate.
- c. You must perform 6 hours of shift functions under the direction of a licensed operator or licensed senior operator as appropriate.
- d. You must submit a new application form to the NRC requesting a waiver to reactivate your license.

Question: B.18 [1.0 point]

An entry was made in the log in red ink. Which one of the following is the significance of the red ink?

- a. It indicates only unexplained scrams.
- b. It indicates only inadvertent scrams.
- c. It indicates a fuel movement.
- d. It indicates all in-core changes.

Question: B.19 [1.0 point]

During a reactor startup, the reactor operator calculates that the maximum excess reactivity for reference core conditions is 2.35% $\Delta k/k$. For this excess reactivity, which ONE of the following is the best action?

- a. Continue to operate because the excess reactivity is within TS limit.
- b. Increase power to 100 W and verify the excess reactivity again.
- c. Shutdown the reactor; immediately report the result to the supervisor due to excess being above TS limit.
- d. Continue operation, but immediately report the result to the supervisor since the excess reactivity is exceeding TS limit.

Question: B.20 [1.0 point]

Which one of the following has the ultimate responsibility to ensure the emergency grab bag has been taken when evacuating the facility?

- a. Emergency Coordinator.
- b. The Operator.
- c. The Director.
- d. The first staff member using the exit corridor.

(*** End of Section B ***)

Question: C.1 [1.0 point]

When the Reactor ventilation system is in isolation mode, which one of the following describes the correct state of operation? Damper 11 is the fresh supply inlet and Damper 14 is the HEPA inlet.

- a. Damper 11 is OPEN and Damper 14 is OPEN.
- b. Damper 11 is OPEN and Damper 14 is CLOSED.
- c. Damper 11 is CLOSED and Damper 14 is OPEN.
- d. Damper 11 is CLOSED and Damper 14 is CLOSED.

Question: C.2 [1.0 point]

Flow through the demineralizer loop is limited to 20 gallons per minute. This limit is to

- a. prevent blowing resin out of the demineralizer thereby clogging the filter.
- b. creating channels through the demineralizer reducing efficiency.
- c. overpressurization of the demineralizer.
- d. blowing the upstream filter into the demineralizer.

Question: C.3 [1.0 point]

What type of radiation detector is used for surveying contaminated areas?

- a. Ionization chamber
- b. Proportional counter
- c. Geiger-Mueller tube
- d. Scintillation detector

Question: C.4 [1.0 points, 0.25 each]

Match each monitor and instrument (channel) listed in column A with a specific purpose in column B. Items in column B is to be used only once.

Column A

a. Log Channel.

b. Percent Power Channel.

c. Core Inlet Temperature

d. Linear Channel.

Column B

1. Provide a full power scram.

2. Provide a reactor period.

3. Provide a wide range of power on a linear meter.

4. Protect the demineralizer resins.

Question: C.5 [1.0 point]

Which ONE of the following is the actual design feature which prevents siphoning of pool water on a failure of the purification system?

a. A valve upstream of the primary pump will shut automatically.

b. A valve downstream of the primary pump will shut automatically.

c. The Emergency Fill system will automatically maintain pool level.

d. "Vacuum breaks" are located in the system which prevents draining the pool 40 inches below the surface of water.

Question: C.6 [1.0 point]

Which ONE of the following is **NOT** a design function of the purification system?

a. Reduce radiation level due to dissolved ions.

b. Reduce radiation due to gases in solution.

c. Reduce radiation due to suspended solids.

d. Reduce corrosion due to dissolved ions.

Question: C.7 [1.0 point]

_____ prevents Ar-41 from leaking into the rooms.

- a. The speed of the “rabbit”
- b. The exhaust stack height
- c. High efficient particulate air (HEPA) filters.
- d. The rabbit system operating under negative pressure

Question: C.8 [1.0 point]

The “PULL ROD” is associated with the ...

- a. Rod UP limit switch.
- b. Rod DOWN limit switch.
- c. Motor UP limit switch.
- d. Motor DOWN limit switch.

Question: C.9 [1.0 point]

If water conductivity in the pool is greater than 2 $\mu\text{Si}/\text{cm}$ the immediate action required is _____.

- a. Reduce water temperature by 5 °C
- b. assume normal reactor operation
- c. inform senior reactor operator and keep reactor operating
- d. shutdown the reactor immediately

Question: C.10 [1.0 point]

The output of the Uncompensated Ion Chamber provides input signal:

- a. for Linear Channel.
- b. for Log-n Channel.
- c. for the period circuit.
- d. for % Power Channel.

Question: C.11 [1.0 point]

4in graphite sections are inserted on both sides of the fuel element can and the primary function of these inserts is

- a. To absorb thermal neutrons
- b. To reduce neutron leakage
- c. To absorb fission product gases
- d. To increase fast neutron flux

Question: C.12 [1.0 point]

How does the control rod position indicator measure rod height?

- a. A potentiometer is attached to the control rod drive motor.
- b. A sonar detector measures the amount of control rod still in the core.
- c. An accelerometer determines the relative movement of the control rod.
- d. A radio-frequency detector measures the height of the control rod extension tube above the piston.

Question: C.13 [1.0 point]

The reactor needs to be immediately shutdown if water temperature at the exit of the reactor pool reaches -----

- a. 5 °C
- b. 25 °C.
- c. 45 °C.
- d. 55 °C.

Question: C.14 [1.0 point]

Which one of the following describes the design of the Reactor Water and Purification System that reduces the radiation level at the top of the reactor tank?

- a. The primary pump takes a suction three feet below the surface of the reactor pool to prevent Nitrogen-16 from reaching the pool surface.
- b. The reactor water purification system takes a suction three feet below the surface of the reactor pool to prevent Argon-41 from reaching the pool surface.
- c. The primary pump discharges through a diffuser nozzle directing water currents downward over the core to slow Nitrogen-16 from reaching the pool surface.
- d. The reactor water purification system discharges through a diffuser nozzle directing water currents downward over the core to slow Argon-41 from reaching the pool surface.

Question: C.15 [1.0 point]

If the stack sampling pump fails, the _____ will be inoperable.

- a. Air Particulate Monitor (APM)
- b. Radiation Area Monitor (RAM)
- c. Continuous Air Monitor (CAM) and Air Particulate Monitor (APM)
- d. Continuous Air Monitor (CAM) and Radiation Area Monitor (RAM)

Question: C.16 [1.0 point]

The purpose of the HEPA filter in the ventilation system is to reduce _____

- a. routine Ar₄₁ emissions from the reactor bay.
- b. fission gas (Xe & Kr) emissions from the reactor bay during a fuel element failure.
- c. fission gas daughter release (Cs and Rb) during a fuel element failure.
- d. routine N₁₆ emissions from the reactor bay.

Question: C.17 [1.0 point]

Primary makeup water is provided by the municipal water supply, passed through two filters and added to the pool -----

- a. directly into the pool.
- b. into the suction of the primary pump.
- c. into the discharge of the primary pump.
- d. upstream of the demineralizers.

Question: C.18 [1.0 point]

WHICH ONE of the following is the purpose of the diffuser on the return of the primary coolant system?

- a. Increase heat transfer rate due to increased mixing within the core.
- b. Decrease the activation rate of O¹⁶ to N¹⁶ due to reduced time in core.
- c. Increase transport time for N¹⁶ to reach surface of pool.
- d. Break up of O¹⁶ bubbles in pool, thereby decreasing production of N¹⁶.

Question: C 19: [1.0 point]

The neutron absorber in Reed's reactor control rods is:

- a. Aluminum oxide
- b. Zirconium hydride
- c. Graphite powder
- d. Boron carbide

Question: C 20: [1.0 point]

Which ONE of the following statements describes the drive speeds of the Shim rod, Regulating rod and Safety rod?

- a. The Shim rod drives at 24 inches per minute, the Regulating and Safety rods drive at 19 inches per minute.
- b. The Shim and Regulating rods drive at 24 inches per minute, the Safety rod drives at 19 inches per minute.
- c. The Safety rod drives at 24 inches per minute, the Regulating and Shim rods drive at 19 inches per minute.
- d. The Regulating rod drives at 24 inches per minute, the Safety rod drives at 19 inches per minute and Shim rods drive at 11 inches per minute.

(*** End of Examination ***)

- B.1 c
REF: 10CFR50.54(y)
- B.2 b
REF: EP, Section 2, Definition
- B.3 d
REF: Reed Research Reactor SOP-70; Weekly Checklist §70.7.5
- B.4 d.
REF: EPlan, Section 3.1.8
- B.5 c
REF: Technical Specifications § A.2 *Steady State Mode*
- B.6 a, 2; b, 3; c, 3; d, 4
REF: 10 CFR 20.1003, Definitions
- B.7 b
REF SOP 55, Sec 55.4
- B.8 a
REF: 10 CFR 20.1003 *Definitions*
- B.9 c
REF: Reed Research Reactor SOP-51; Rabbit Irradiations 51.5.3
- B.10 1 d 2 c 3 b 4 c
REF: 10CFR55
- B.11 a 1 b 2 c 2 d 2
REF: SOP 50D
- B.12 a
REF EIP, 5 PAGE 6
- B.13 d.
Reference: Tech Specs Table 1
- B.14 c
REF: 10 CFR 50.54q; 10 CFR 50.59; 10 CFR 55.59
- B.15 c
REF: Technical Specifications § A *Definitions*
- B.16 a
REF: Reed Reactor Facility Training Manual Pg. 186

B.17 c
REF: 10CFR55.53e & f

B.18 c.
REF: SOP 10

B.19 c
REF: TS, Section E, Reactor Core

B.20 b.
Reference: EIP.7

(** End of Section B **)

Section C Facility and Radiation Monitoring Systems

- C.1 c
REF: Reed Training Manual, September 2008, page 194.
- C.2 b
REF: RRF TRIGA Mk I Mech. Maint. & Op. Manual, sec 5.11.1
- C.3 c or d
REF: NRC Standard question.
- C.4 a(2) b(1) c(4) d(3)
REF: Reed Training Manual, Section 11.8 and 11.9
- C.5 d
REF: Reed Training Manual, Section 11.6
- C.6 b
REF: Reed Reactor TRIGA Mark I Reactor Mechanical Maintenance & Operating Manual § 5.1 pg. 71.
- C.7 d
REF: Reed Training Manual, September 2008, page 181
- C.8 b
REF: Reed Reactor Facility Training Manual 11.4.
- C.9 d
REF TS sec 3.8
- C.10 d
REF Reed Manual, Figure 11.10
- C.11 b.
REF: Training Manual 11.2;
- C.12 a.
REF: Reed Reactor Facility Mech Manual 3.8
- C.13 d
REF: Tec specs section 3.8.4
- C.14 c.
REF: SAR, Section 5.2.6
- C.15 a.
REF: SOP 34, Section 34.7, pg 1 -- SOP 32, Section 32.4.2;
- C.16 c
REF: Standard NRC question. The HEPA is NOT in service during routine evolutions therefore A and D are incorrect. A HEPA filter is NOT designed to filter gases, therefore B is incorrect..

Section C Facility and Radiation Monitoring Systems

C.17 a

REF: SAR 5.4.

C.18 c

REF: Operation Support systems, 1.2.2.

C.19 d

REF: SAR 4.2.8.

C.20 d

REF: training manual 176.

(*** End of Section C ***)
(***** End of Examination *****)