

**U.S. Nuclear Regulatory Commission  
Site-Specific  
Written Examination  
  
ANSWER KEY**

**Applicant Information**

Name: <b>ANSWER KEY</b>	Region: <b>IV</b>
Date: <b>February 7, 2003</b>	Facility/Unit: <b>River Bend Station Unit 1</b>
License Level: <b>RO</b>	Reactor Type: <b>GE</b>
Start Time:	Finish Time:

**Instructions**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected six hours after the examination starts.

**Applicant Certification**

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

\_\_\_\_\_   
Applicant's Signature

**Results**

Examination Value	_____ 100 _____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 1

The reactor is critical and plant heatup/pressurization is in progress when the high voltage power supply for IRM Channel 'D' fails and drops to 0 volts.

All other IRMs are OPERABLE.

Which one of the following describes the RC&IS and RPS response to the change in IRM Channel 'D' detector supply voltage?

- A. BOTH a control rod withdrawal block and a RPS half scram signal are generated.
- B. ONLY a control rod withdrawal block signal is generated.
- C. ONLY a RPS half scram signal is generated.
- D. NEITHER a control rod withdrawal block NOR a RPS half scram signal is generated.

ANSWER: A

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503    OBJ-H13	ARP-P680-06A-A10	215003 K3.03	3.7	3.7

BANK QID: 1

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 2

When RPV pressure instrumentation senses pressure has reached 1133 psig, which one of the following describes the expected response of the SRVs?

- A. No SRVs will open.
- B. One SRV will open, Low-Low-Set will not be armed.
- C. Two SRVs will open, due to Low-Low-Set being armed.
- D. Five SRVs will open, due to Low-Low-Set being armed.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-109 OBJ-17	STM-109. Pages 11 & 58	239002 K1.03	3.5	3.6

BANK QID: 2

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 3

Given the following conditions:

- LPCS System Inoperative alarm has been received
- The Low Pressure Core Spray (LPCS) Line Break status light (postage stamp) is illuminated

Which of the following describes the location of the break?

The break is in the . . .

- A. Drywell between the LPCS Testable Check Valve (F006) and the LPCS Injection Valve (F005).
- B. Reactor pressure vessel downcomer area.
- C. Auxiliary Building between the LPCS Testable Check Valve (F006) and the LPCS Injection Valve (F005).
- D. Area inside the core shroud bypassing the Low Pressure Core Spray sparger.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-205    OBJ-H10	STM-205, Page 18 ARP-P601-21A-H08	209001 A2.05	3.3	3.6

BANK QID: 3

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 4**

SELECT the reason that terminating and preventing injection per Step RLA-15 of EOP-1A, RPV Control - ATWS , results in a power reduction.

Terminating and preventing injection . . .

- A. results in more core inlet subcooling as feed preheating is lowered.
- B. raises the void fraction by a reducing core natural circulation flow.
- C. raises the coolant moderator temperature as level is lowered.
- D. results in a rise in fuel temperature as core steaming rate rises.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513    OBJ-4	EPSTG-2. Page 7-17	295037 EK1.02 295037 EK3.03	4 4	4 4

BANK QID: 4

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 5

A plant heatup and pressurization is in progress with the reactor at the point of adding heat. In order to complete a required surveillance on RCIC, the CRS has directed the ATC to stop the heatup and stabilize RPV pressure at ~80 psig.

During the completion of the surveillance, the reactor became subcritical and power gradually lowered to Range 3 on the IRMs.

When directed to resume the heatup, the ATC, selected the next in-sequence control rod and withdrew it from 00 to 48 with continuous motion, resulting in a sustained 20 second period.

Which one of the following is the next required action of the ATC?

- A. Insert a manual scram.
- B. Perform a coupling check on the Control Rod just withdrawn to 48.
- C. Insert the Control Rod just withdrawn to lengthen the period to >30 seconds.
- D. Range all IRMs up to Range 7 to prevent an inadvertent automatic scram as power rises.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-500    OBJ-8	GOP-0001 IF 7-98	295014 AA1.04	3.2	3.3

BANK QID: 5

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 6

A loss of power has just occurred to one of the solenoids for an open Main Steam Isolation Valve (MSIV).

Which of the following describes the response of the MSIV and the reason for that response?

The MSIV will . . .

- A. close because the solenoids energize to align the air supply to open the MSIV.
- B. remain open because the other solenoid continues to supply air to the MSIV.
- C. close because the solenoids are in series and either one deenergizing will vent the air supply to the MSIV.
- D. remain open because the instrument air accumulator for that MSIV continues to supply air to the actuator.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-109    OBJ-H7	STM-109, Page 22	239001 K5.06*	2.8	2.9
		239001 K2.01	3.2	3.3

BANK QID: 6

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 7**

With the plant operating at 20% power, a loss of RPS Bus 'B' occurs.

Which one of the following describes the status of the RPS Scram Discharge (SDV) Vent and Drain Pilot Valve and Backup Scram Valve solenoids following the bus loss?

	VENT/DRAIN PILOT SOLENOIDS	BACKUP SCRAM SOLENOIDS
A.	Both energized	Both de-energized
B.	A energized, B de-energized	Both energized
C.	A energized, B de-energized	Both de-energized
D.	Both de-energized	Both energized

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-508    OBJ-H3	STM-508. Pages 23 & 24 STM-508. Fig. 8 & 9	201001 K2.03 201001 K2.04*	3.5 3.2	3.6 3.3
BANK QID:    7	GE 828F531A A AOP-0010			



**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 8**

A Safety Relief Valve (SRV) tailpipe vacuum breaker is failed in the open position when its associated SRV opens.

Which one of the following will result from this condition?

- A. Containment pressure will rise.
- B. Drywell to Containment differential pressure will rise.
- C. Suppression pool water will be drawn up into the SRV discharge line after the SRV closes.
- D. Steam from the SRV will bypass the quenchers and directly discharge into the suppression pool.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-109    OBJ-H17	P&ID 3-1B STM-109, Fig. 7	223001 A2.09*	3.4	3.6
BANK QID:    8	STM-109, Page 12	223001 K3.07	3.1	3.2

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 9

The plant is operating at 100% power. A rupture in the high pressure leg of the "A" Feedwater line flow transmitter (C33-FTN002A) changed the feed flow input to the Feedwater Level Control System. The At-The-Controls operator promptly placed Feedwater Level Control in SINGLE ELEMENT control with little change in level.

As a result of the above conditions, both Reactor Recirculation Pumps will . . .

- A. remain at present speed, however the Recirc Flow Control Valves will runback to minimum position.
- B. downshift to slow speed operation with the Recirc Flow Control Valves remaining at their present position.
- C. trip to OFF due to cavitation interlocks not being met and Recirc Flow Control Valves not being at 22%.
- D. remain at present speed and the Recirc Flow Control Valves will remain at their present position.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-053    OBJ-H2	AOP-0024 ARP-P680-4A-A3 ARP-P680-4A-A9	202002 K6.04	3.5	3.5
BANK QID:    9	ARP-P680-4A-C1 ARP-P680-4A-C7			

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 10

Given the following plant conditions:

- Reactor Power                      0% (all rods in)
- Reactor Level                      +33 inches
- Reactor Pressure                  890 psig
- Drywell Pressure                  1.5 psid
- Drywell Temperature              138°F
- Containment Temperature        88°F
- Containment Pressure            0.35 psig
- Annulus Differential Pressure   -4.5 in.WC

Based on the above conditions, which one of the following describes the Emergency Operating Procedures that should be entered?

- A. EOP-1 ONLY
- B. EOP-1 and 2
- C. EOP-2 ONLY
- D. EOP-2 and 3

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-514    OBJ-4</b>	<b>EOP-2. Entry Conditions</b>	<b>2.4.4*</b>	<b>4</b>	<b>4.3</b>
		<b>295011 AK1.01</b>	<b>4</b>	<b>4.1</b>

BANK QID: 10

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 11

The reactor is shutdown with no injection subsystems or alternate injection subsystems running?

Given the following RPV level and pressure conditions, in which case is adequate core cooling NOT assured?

- A. Level is -170 inches and rapidly lowering,  
Pressure is 300 psig and rapidly lowering.
- B. Level is -185 inches and slowly lowering,  
Pressure is 200 psig and slowly rising.
- C. Level is -190 inches and slowly lowering,  
Pressure is 300 psig and slowly rising.
- D. Level is -200 inches and slowly lowering,  
Pressure is 450 psig and rapidly lowering.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-512    OBJ-7	EOP-4. ALC and STC EPSTG-2. Page 12-8	295031 FA2.04	4.6	4.8

BANK QID: 19

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 12

With reactor power at 60%, the Reactor Engineering requested that Control Rod 22-43 be inserted from notch 48 to notch 42 for a rod pattern adjustment. A few seconds after the ATC inserts the control rod to notch 42 a ROD DRIFT annunciator is received.

The ATC then observes Control Rod 22-43 moving past notch 46 and stopping at notch 48. The Control Rod Movement Sequence withdraw limit is notch 48. Reactor power had returned to 60%.

The appropriate action(s) for this condition are which one of the following :

- A. Place the Mode Switch in SHUTDOWN.
- B. Determine whether the rod has a failed Directional Control Valve or a stuck collet and notify Reactor Engineering.
- C. Since power is below HPSP, the Rod Withdraw Error analysis is affected and the rod must be inserted to notch 42 without delay.
- D. Notify a Reactor Engineer, declare rod 22-43 inoperable, and adjust the pattern as needed for flux shaping with rod 22-43 full out since it will not remain inserted.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-052 OBJ-4	ARP-680-07-B02 GE SIL 310	201003 K4.07 201003 A2.03*	3.2 3.4	3.2 3.7

BANK QID: 49

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 13

During valve time testing on RHR System A, IE12\*MOV004A, RHR pump A Suppression Pool Suction Valve, is closed with all other RHR A valves and control switches in their normal standby position.

If a valid LOCA signal occurs at this time, the RHR A Pump breaker will . . .

- A. close and immediately trip because of the IE12\*MOV004A contacts in the breaker trip circuit.
- B. close and immediately trip because of the low RHR system flowrate.
- C. close after IE12\*MOV004A opens automatically.
- D. close and remain closed, while IE12\*MOV004A remains closed.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-204 OBJ-H6	828E534A A STM-204. Fig. 10	203000 K4.06	3.5	3.5

BANK QID: 140

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 14

The following conditions exist:

- A leak inside the drywell has occurred.
- All RHR pumps are running.
- Automatic Depressurization System automatically actuated at 105 seconds and all ADS SRVs are open.
- RPV water level is now steady at -150 inches.
- Drywell pressure peaked at 1.5 psid and is now lowering.
- RPV pressure is 200 psig.

If both Div 1 and Div 2 ADS TIMER/LEVEL 3 SEAL IN RESET buttons are depressed and then released, which of the following describes the result on the Automatic Depressurization System?

The ADS SRVs will . . .

- A. close and then reopen after 5 minutes plus 105 seconds.
- B. close and then reopen after 105 seconds.
- C. close and remain closed.
- D. remain open.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-202 OBJ-H3	STM-202. Pages 14 & 15 STM-202. Fig. 4	218000 K4.03	3.8	4

BANK QID: 176

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 15**

With the plant operating at 75% power, the Outboard MSIV Positive Leakage Control System switch is inadvertently placed in the OPERATE position.

Which one of the following will prevent the Outboard MSIV Positive Leakage Control System from initiating?

- A. A LOCA signal on either high drywell pressure or low reactor water level is not present.
- B. The required main steam line pressure and reactor pressure requirements have not been met.
- C. The post LOCA 20 minute timer has not timed out.
- D. All Main Steam Isolation Valves have not been fully closed.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-208 OBJ-H4	ARP-P601-17A-G05 & G06	239001 K1.13	2.6	2.8
	STM-208, Page 10	239003 K4.06*	3.1	3.3
BANK QID: 190	SOP-0034, Page 9	239003 K1.01	3.3	3.4
		239003 K4.03	2.9	3.2



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 16

The following conditions exist:

- An ATWS is in progress.
- Reactor power is 22%.
- Reactor water level is 10 inches.
- Reactor pressure is 960 psig.

Which of the following will be most severely challenged and is of primary importance should a full MSIV closure occur?

- A. Primary containment integrity
- B. Secondary containment integrity
- C. Fuel integrity
- D. RPV integrity

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-520    OBJ-5	EOP-1A HLO-320. Page 7 USAR Table 15.8-4	2.4.6	3.1	3.8
BANK QID: 211				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 17**

The Remote Shutdown (RSS) Panel emergency transfer switches (Division I switch on C61-P001 and Division II switch on RSS-PNL102) for SRV B21-F051G are in the EMERGENCY position.

SRV B21-F051G can be manually opened by operating . . .

- A. BOTH of the Division I "A" and Division II "B" solenoid control switches in the Main Control Room.
- B. ONLY the Division I "A" solenoid control switch in the Main Control Room.
- C. ONLY the Division II "B" solenoid control switch in the Main Control Room.
- D. ONLY the control switch on the RSS Panel, the Main Control Room switches are inoperable.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-200 OBJ-6	AOP-0031 SOP-0027	295016 AK3.03 295016 AA1.07	3.5 4.2	3.7 4.3
BANK QID: 251	STM-200. Page 7			

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 18

An MSIV closure resulted in a reactor scram. The pressure transient caused a small steam leak in the drywell. NO OPERATOR ACTION HAS BEEN TAKEN and the following conditions exist:

- Reactor pressure is at 900 psig.
- Reactor Level is at -80 inches wide range
- Drywell pressure is 2.1 psid
- Containment pressure is 0.3 psig
- Lowest recorded ENS-SWG1A Bus voltage was 3952 volts.

Which one of the following would be in service as indicated?

- A. DIV I D/G running unloaded.
- B. LPCS injecting into the RPV.
- C. Drywell units coolers running with no cooling flow.
- D. DIV II Standby Service Water with flow through the "B" Containment Unit Cooler.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-309S OBJ-H5	SOP-0053	262001 K1.01	3.8	4.3
	ARP-P877-32A-H03	262001 A2.02*	3.6	3.9

BANK QID: 261

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 19**

Which one of the following is the reason that EOP-2, "Primary Containment Control", requires the reactor to be scrammed before suppression pool temperature reaches 110°F?

- A. Containment design pressure will not be exceeded due to compression of the non-condensable gasses at the higher water temperature.
- B. Complete condensation of the blowdown effluent from a LOCA will still occur with the expected suppression pool temperature rise of 70°F.
- C. Post-LOCA suppression pool hydrodynamic forces will remain within design limitations for containment.
- D. To minimize heat rejected to the primary containment in the event that Emergency Depressurization is required.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-514 OBJ-5</b>	<b>EPSTG-2. Page B-8-17</b>	<b>295026 EK2.05</b>	<b>3</b>	<b>3.3</b>
	<b>EOP-2. SPT-4</b>	<b>295013 AK3.02</b>	<b>3.6</b>	<b>3.8</b>
<b>BANK QID: 373</b>	<b>TS Bases. Pages 3.6-55 &amp; 56</b>			

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 20

Which one of the following is the BASIS for maintaining the refueling cavity pool 23 feet above the top of the reactor pressure vessel flange during refueling?

- A. To provide adequate net positive suction head to the Fuel Pool Cooling Cleanup Pumps.
- B. To ensure adequate core cooling during refueling, if Shutdown Cooling is lost.
- C. To provide spent fuel decay heat removal for 7 days without makeup.
- D. To limit the iodine activity release from a dropped fuel bundle.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-602 OBJ-8	TS 3.9.6 Bases STM-602. Page 47	2.3.10* 295023 AK1.01	2.9 3.6	3.3 4.1

BANK QID: 389

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 21**

The plant is shutdown and operators are making preparations to place RHR "A" in Shutdown Cooling (SDC). Both Recirculation Pumps are shutdown with their discharge valves closed.

Which of the following describes how RHR Pump "A" is protected from damage due to no flow, without pumping RPV water to the Suppression Pool?

- A. The operator is required to establish a pump discharge flow-path to the reactor as soon as possible after starting the pump.
- B. The pump minimum flow valve (F064A) will open to provide flow until the RHR Heat Exchanger Bypass Valve (F048A) can be opened.
- C. The operator will open the minimum flow valve (F064A) until shutdown cooling flow is greater than 500 gpm.
- D. The pump will automatically trip on low suction pressure if flow/pressure is not adequate for pump suction.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-204 OBJ-H8	SOP-0031, Page 33 STM-204	2.1.2* 205000 A 2.12	3 2.9	4 3

BANK QID: 411

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 22**

The plant is shutdown for a maintenance outage. Work is being performed on a portion of the Feedwater System by Mechanical Maintenance. An I&C Maintenance Lead has received a Tier Clearance to work within the Feedwater System Master Clearance boundary to calibrate an instrument.

Upon completion of work, the Mechanical Maintenance Supervisor wishes to release his Master Clearance and restore the system, but the instrument calibration is still taking place.

What action(s), if any, must be taken to ensure the safety of the personnel performing the calibration?

- A. The Master Clearance is transferred to the I&C Maintenance Lead.
- B. The Master Clearance can be released with verbal permission from the I&C Maintenance Lead.
- C. The Mechanical Maintenance Supervisor may clear all tags that pertain to the I&C work.
- D. The I&C Maintenance Lead must release his Tier Clearance to the Tagging Official prior to releasing the Master Clearance.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-201 OBJ-3	ADM-0027. Page 19	2.2.13	3	3.4

BANK QID: 432

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 23**

Which one of the following is a consequence of allowing suppression pool water level to drop below 13 feet?

Suppression pool water level less than 13 feet . . .

- A. could result in overpressurization of the Containment.
- B. uncovers the top two Drywell to Containment horizontal vents.
- C. uncovers the Reactor Core Isolation Cooling turbine exhaust line.
- D. reduces the available net positive suction head for the low pressure ECCS pumps below minimum required.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-514    OBJ-5	EOP-4. ED-4 EPSTG-2. Page 13-8	295030 EK1.03	3.8	4.1

**BANK QID: 513**



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 24

The plant is operating at 100% power when a short circuit occurs on the DC bus supplying power for ATWS ARI/RPT. This causes all of the power supply breakers to BYS-PNL02A2 to trip, resulting in a loss of power to ATWS ARI/RPT.

Which one of the following describes the response of the ARI system and the Reactor Recirculation Pumps?

- A. ARI will not function, however the Reactor Recirculation pumps will trip to OFF immediately.
- B. ARI will actuate causing a depressurization of the scram air header and the Reactor Recirculation pumps will trip to OFF immediately.
- C. ARI will not function and the Reactor Recirculation pumps will not trip on an ATWS condition.
- D. ARI will actuate causing a depressurization of the scram air header on an ATWS condition, however the Reactor Recirculation pumps will not trip.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-052 OBJ-H5	STM-052. Page 32 STM-052. Fig. 21	295004 AK2.03 295004 AA2.02	3.3 3.5	3.3 3.9

BANK QID: 539

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 25**

A LOCA has occurred, which for a time uncovered fuel in the core. The following conditions exist:

- Pre-LOCA Containment Temperature      90°F
- POST-LOCA Containment Pressure        2 psig
- POST-LOCA Containment Temperature    120°F

Based on the conditions above, the Control Room Supervisor has directed that the Hydrogen Recombiners be started.

Referring to SOP-0040 (EXAM HANDOUTS), which one of the following is the required RECOMBINER POWER SETTING?

- A. 52.46 KW
- B. 49.88 KW
- C. 47.30 KW
- D. 45.15 KW

**ANSWER: B**

REQUIRES SOP-0040 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-050    OBJ-12</b>	<b>SOP-0040, Page 7</b>	<b>500000 EA 1.03</b>	<b>3.4</b>	<b>3.2</b>
	<b>SOP-0040, Attachment 5</b>	<b>2.1.25</b>	<b>2.8</b>	<b>3.1</b>

**BANK QID: 546**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 26

The plant is operating at 100 % power. The Auxiliary Building SNEO reports there is a major leak on the service water side of the CCP Heat Exchangers and the only way to isolate the leak is to isolate all service water to the CCP Heat Exchangers.

- Water temperature on CCP is 110°F and rising.
- Reactor Recirculation Pump Motor temperatures are rising.

Which one of the following describes the actions required by AOP-0011, Loss of Reactor Plant Component Cooling Water, regarding the loss of cooling water to CCP?

- A. Manually scram the reactor and trip and isolate both Reactor Recirculation Pumps, and isolate service water to the CCP Heat Exchangers.
- B. Reduce CCP heat loads by down shifting the Reactor Recirculation Pumps to slow speed, establish a feed and bleed on CCP to remove heat, and isolate the leak.
- C. Reduce CCP heat loads by tripping to OFF the operating CRD Pump, and start the standby CCP pump to increase cooling water flow while mechanics effect repairs on the broken piping.
- D. Shutdown CCP pumps, and isolate the CCP Heat Exchangers on the Service Water side. Repair the leak, un-isolate the Service Water side of the CCP Heat Exchangers and re-start the CCP Pumps.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-530    OBJ-6	AOP-0011 STM-115	295018 AA2.03	3.2	3.5

BANK QID: 550

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 27

The plant is operating at 100 % power. The Feedwater Level Control (FWLC) System is in three element control with the "A" Reactor Water Level Channel selected. A rupture occurs on the "A" reference leg causing a level change.

Assuming no other instruments are affected by the rupture, which one of the following describes the required operator action?

- A. Manually control water level with RCIC.
- B. Select the "B" Reactor Water Level Channel.
- C. Transfer the FWLC System to single element control.
- D. Allow the level dominant signal to take control and return level to normal.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107B OBJ-H8	AOP-0006 ARP-P680-3A-C08	295009 AA1.02	4	4

BANK QID: 553

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 28

Which one of the following describes the basis for the maximum design internal pressure of the Drywell?

- A. Maximum Drywell Pressure is + 20 psid based on a double-ended shear of a Recirculation Pump discharge pipe.
- B. Maximum Drywell Pressure is + 20 psid based on a double-ended shear of a Main Steam Line upstream of the MSIVs.
- C. Maximum Drywell Pressure is + 25 psid based on a double-ended shear of a Recirculation Pump discharge pipe.
- D. Maximum Drywell Pressure is + 25 psid based on a double-ended shear of a Main Steam Line upstream of the MSIVs.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-057    OBJ-H4	TS 3.6.5.4 USAR 6.2.1.1.1 STM-057	295024 EK1.01	4.6	4.2
BANK QID: 573				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 29

The plant is at 5 % power. Chemistry samples taken indicate that fuel damage is present in the core.

Which one of the following will NOT automatically initiate measures to control an Offsite Radiation release?

- A. Fuel Building Ventilation Radiation Monitors.
- B. Control Room Ventilation Radiation Monitors.
- C. Offgas Post-Treatment Radiation Monitor.
- D. Reactor Building Annulus Ventilation Exhaust Radiation Monitor.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-402    OBJ-1	STM-402. Page 7 AOP-0003 AOP-0039	295034 EK1.02	4.1	4.4
BANK QID: 576				

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

### QUESTION NO. 30

The plant has just returned to 100 % power following completion of Refueling Outage 9 (RF-9). The shutdown for RF-9 was 45 days ago. The following conditions exist:

- Fuel Pool Cooling Pump SFC-P1B is out of service with shorted motor windings.
- Fuel Pool Cooling Pump SFC-P1A has just been secured and isolated due to a pump seal failure to prevent lowering level in the Spent Fuel Pool.

Using plant Decay Heat curves in AOP-0051 (EXAM HANDOUTS), determine which one of the following describes the present conditions of the Spent Fuel Pool.

	Time to Boil	Decay Heat	Heat-up rate
A.	17 hrs	5.6 Mbtu/hr	2.5°F/hr
B.	42 hrs	6.5 Mbtu/hr	2.5°F/hr
C.	17 hrs	6.5 Mbtu/hr	2.3°F/hr
D.	42 hrs	5.6 Mbtu/hr	2.3°F/hr

**ANSWER: D**

REQUIRES AOP-0051 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-543</b>	<b>OBJ-10</b>	<b>AOP-0051. Attachments 1. 3. 5</b>	<b>2.7</b>	<b>3.1</b>
		<b>233000 A4.05</b>	<b>3</b>	<b>3.2</b>
		<b>2.1.25*</b>	<b>2.8</b>	<b>3.1</b>
<b>BANK QID: 582</b>		<b>233000 K5.06</b>	<b>2.5</b>	<b>2.7</b>

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 31**

Standby Gas Treatment has started on a high Drywell pressure. The Unit Operator has placed the "B" Standby Gas Train in standby.

Which one of the following describes the response of the Standby Gas Treatment System to a High-High Annulus Exhaust Radiation signal on both divisions?

- A. The "B" Standby Gas Treatment Train will automatically restart from standby.
- B. The "A" Standby Gas Treatment Train will shutdown, then both Standby Gas Treatment Trains will re-initiate.
- C. The "A" Standby Gas Treatment Train will remain operating and the "B" Standby Gas Treatment Train will remain in standby.
- D. Both Standby Gas Treatment Trains shutdown and isolate awaiting further operator action.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-257 OBJ-5	ESK06GTS01&2 SOP-0043. Page 6 SOP-0059.	261000 K1.08* 261000 K4.01	2.8 3.7	3.1 3.8
BANK QID: 591	ARP-P863-71A-C07 & G07 ARP-P863-73A-C04. D05. E05. F0			



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 32**

The plant is operating at 100 % power when B21-AOVF028B, an outboard MSIV fails closed due to a rupture of the valve actuator air supply.

Which one of the following describes the response of the reactor?

ASSUME NO OPERATOR ACTION.

- A. RPV pressure will rise and stabilize at a higher pressure.  
Reactor power will rise and stabilize at a higher power.  
RPV water level will lower and then return to normal level.
- B. RPV pressure will rise and then lower following the scram.  
Reactor power will rise and then drop following the scram.  
RPV water level will lower and then stabilize at a lower level.
- C. RPV pressure will lower and stabilize at a lower pressure.  
Reactor power will lower and stabilize at a lower power.  
RPV water level will rise and then stabilize at a lower level.
- D. RPV pressure will lower and stabilize at a lower pressure.  
Reactor power will rise and return to the original power.  
RPV water level will rise and then return to normal level.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-316 OBJ-2	USAR 15.2.4.1.2.2 STM-107. Page 54	295007 AK1.03	3.8	3.9

BANK QID: 599

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 33

The plant is operating at 100% power.

The Control Room Supervisor has a tagout that requires independent verification.

Under which one of the following conditions should a waiver for independent verification be obtained from the Operations Shift Manager?

- A. The components to be tagged are required to continue power operation.
- B. The valves to be tagged are located around the Main Turbine Stop Valves.
- C. The components are located inside the Containment over the Hydraulic Control Units.
- D. The components involve a Temporary Alteration on the HPCS Diesel Generator Air Start System.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-201 OBJ-12	ADM-0076. Page 15	2.3.1	2.6	3

BANK QID: 632

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 34

The following conditions exist:

- A startup is in progress
- Reactor power is 2%
- EHC PRESSURE SET is 250 psig
- Reactor pressure is stable at 200 psig
- Turbine Shell Warming is in progress with a WARMING RATE set at 10%.
- Turbine 1st stage pressure is 10 psig

The Unit Operator closes all the steam drains. Determine the response of reactor pressure, and the reactor/turbine pressure regulating system (EHC).

- A. Reactor pressure remaining constant at 200 psig, and turbine warming rate and 1st stage pressure will automatically rise.
- B. Reactor pressure remaining constant at 200 psig and the turbine bypass valves will automatically open.
- C. Reactor pressure will rise until vessel heat loss is 2% at ~920 psig, and turbine warming rate and 1st stage pressure will automatically be held constant.
- D. Reactor pressure will rise to approximately 250 psig, and then the turbine bypass valves will automatically open.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-509 OBJ-H9	EHC Funct Diag STM 509 Fig. 19 295007 AK2.01 STM-509 Pages 19 & 45		3.5	3.7

BANK QID: 664

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 35

The plant was operating at 100% rated power when a loss of Feedwater caused an automatic scram signal at RPV Level 3 (+9.7 inches). Plant conditions are as follows:

- A failure to scram has occurred (ATWS) and Reactor Power is 15%.
- RPV water level is being controlled between -60 inches and -100 inches with Condensate/Feedwater
- Control rods are being inserted per EOP-0005, Enclosure 14, Defeating RC&IS Interlocks and Emergency Control Rod Insertion Data Sheet.
- P680 annunciator RWCU EQUIP RMS DIFFERENTIAL HIGH TEMP was received.
- The Reactor Building SNEO has reported a fire in RWCU Pump Room 1.

Which one of the following systems should be isolated, if found to be discharging into RWCU Pump Room 1?

- A. Feedwater System
- B. Fire Suppression Systems
- C. Reactor Water Cleanup System
- D. Control Rod Drive Hydraulics System

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-515 OBJ-4	EOP-3 EOP-1A EPSTG-2 Rev. 9. Page B-9-7	295032 FA2.03	3.8	4
BANK QID: 669				

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 36**

Concerning the plant air systems, which one of the following statements correctly describes the relationship between the Instrument Air System and the Service Air System?

- A. The Instrument Air System and the Service Air System can be cross-connected ONLY by a manual isolation valve.
- B. The Instrument Air System and the Service Air System are not capable of being cross-connected due to the safety related nature of the Instrument Air System.
- C. The Instrument Air System will automatically cross-connect to the Service Air System if pressure at the discharge of the Instrument Air Compressors drops below a specified value. The systems will automatically realign when pressure rises above the pre-determined setpoint.
- D. The Service Air System will automatically cross-connect to supply the Instrument Air System if pressure at the discharge of the Instrument Air Compressors drops below a specified value. Once pressure is restored in the system, the cross-connect valve must be manually reset.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-121 OBJ-H3	SOP-0021. Page 5 SOP-0022 STM-121	300000 K4.01 300000 K4.02*	2.8 3	2.9 3
BANK QID: 703				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 37**

During a plant startup with CRD Pump A out of service for seal repairs, the following sequence of events occurred:

- 1605 - CRD Pump B tripped on overcurrent. Attempts to restart CRD Pump B per ARP-P601-22A-A01 (EXAM HANDOUT) were unsuccessful.
- 1612 - Annunciator ACCUMULATOR TROUBLE for CRD 20-13 at notch 48.
- 1615 - Annunciator ACCUMULATOR TROUBLE for CRD 38-17 at notch 12.
- 1617 - Tags are being cleared to make CRD Pump A available.

It is now 1620 and the following conditions exist:

- Reactor Pressure is 620 psig AND lowering steadily at 3 psig per minute
- Turbine Bypass Valves and steam line drains are all SHUT

How much time remains to return CRD Pump A to service before the Reactor Mode Switch MUST be placed in SHUTDOWN?

- A. 5 minutes
- B. 7 minutes
- C. 12 minutes
- D. 15 minutes

**ANSWER: B**

REQUIRES ARP-P601-22A-A01 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-052	OBJ-H6	ARP-P601-22A-A01	295022 AK3.01	3.7 3.9

BANK QID: 752

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 38

A Station Blackout has occurred and the following plant conditions exist:

- RPV pressure 830 psig
- RPV level 28 inches, RCIC operating to maintain level
- Drywell temperature 250°F and rising at 1°F per minute
  
- Annunciators alarming:
  - ADS SAFETY & RLF V AIR SUPPLY HDR A LOW PRESS
  - ADS SAFETY & RLF V AIR SUPPLY HDR B LOW PRESS
- SVV-ES3A and B, ADS Air Supply Pressure Rosemounts are both downscale

Which one of the following methods should be used to reduce RPV pressure to limit the rise in Drywell temperature?

- A. Using the MSL Drains and Main Turbine Bypass Valves while maintaining a cooldown rate less than 100°F/hr.
- B. Using sustained SRV opening while maintaining a cooldown rate less than 100°F/hr.
- C. Using the MSL Drains and Main Turbine Bypass Valves to rapidly lower pressure to 0 psig, irrespective of cooldown rate.
- D. Open at least 5 SRVs to rapidly lower pressure to 0 psig, irrespective of cooldown rate.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-512 OBJ-7	EOP-1. RP-3 to RP-7 EPSTG-2. Page 6-31	295003 AK1.06	3.8	4

BANK QID: 732

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 39

A plant startup was in progress with the following plant conditions:

- Reactor power at 10%
- Startup FWRV in AUTO controlling RPV level
- Reactor Feed Pump FWS-P1C in service

FWS-P1C tripped and RPV level approached 9.7 inches before FWS-P1B could be started and placed in service. A manual scram was initiated as the discharge valve for FWS-P1B began opening. The following conditions now exist:

- Reactor power at 0%, all control rods inserted
- RPV pressure is 900 psig and stable
- FWS-P1B is in service with its discharge valve fully open
- Startup FWRV in AUTO indicating fully shut
- RPV level at 41 inches and rising slowly (~4 inches per minute)

Which one of the following is the reason RPV water level is rising?

- A. Level swell due to a failed open SRV
- B. Feedwater Level Control setpoint setdown operation
- C. Level swell due to normal Turbine Steam Bypass Valve operation
- D. Thermal expansion of the cool feedwater injected after the scram

ANSWER: D

TRAINING OBJECTIVE    REFERENCES  
STM-107B    OBJ-H4    AOP-0001

NRC K/As    RO    SRO  
295006 AA2.03    4    4.2

BANK QID: 733



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 40

A refueling outage was in progress with RHR loop 'B' drained and isolated when the plant experienced an earthquake. The following conditions exist:

- All offsite power has been lost
- All three Diesels Generators are supplying their respective buses
- The entire contents of the CST has been lost due to a rupture.

A leak has developed in the Refueling Cavity/Upper Containment Pool that will soon uncover an irradiated fuel bundle suspended from the Refuel Bridge in the Refueling Cavity.

Given the above conditions, which of the following should be taken?

- A. Restore/maintain Refuel Cavity level with the Condensate System via Feedwater injection lines.
- B. Operate the Refuel Bridge to place the fuel bundle in the Dryer Pool fuel storage racks.
- C. Restore/maintain Refuel Cavity level with RPV injection from Standby Service Water via the RHR crosstie.
- D. Restore/maintain Refuel Cavity level with Standby Service Water via the crosstie with the SFC Coolers.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-535 OBJ-8	AOP-0027 SOER 85-1	295023 AK2.02	2.9	3.2

BANK QID: 734

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 41

With the plant operating at 100% power, the 'A' Reactor Recirculation Pump trips. The 'B' Reactor Recirculation Pump continues to operate on Fast Speed.

Following the trip, the flow indicated on P680 for Jet Pumps No. 5 and 10 lowered to zero as the 'A' Reactor Recirculation Pump coasted down. Ten seconds later both Jet Pumps are observed each indicating a stable flow of 1.2 E6 lbm/hr.

Which one of the following describes why Jet Pumps No. 5 and 10 indicate a flow of 1.2 E6 lbm/hr?

- A. Flow from the 'B' Recirculation Loop that is bypassing the core.
- B. One fifth of the reverse flow through the 'A' Loop Flow Control Valve.
- C. Indication of at least one failed jet pump in the 'A' Recirculation Loop.
- D. Reverse flow induced by natural circulation driving head ONLY.

ANSWER: A

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-317 OBJ-2	AOP-0024	295001 AA2.04	3	3.1

BANK QID: 738

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 42**

During a plant startup, with reactor power at 28%, a turbine trip occurred. A manual reactor scram was initiated 12 seconds after the turbine trip with reactor power at 32%. Shortly AFTER THE SCRAM, both Reactor Recirculation pumps transferred from fast speed to slow speed.

Which one of the following is the reason the Reactor Recirculation pumps DID NOT transfer to slow speed BEFORE the scram.

- A. Averaging manifold pressure never reached a value equivalent to >30.92% power.
- B. Steam Cross Around pressure never reached a value equivalent to >30.92% power.
- C. Turbine First Stage pressure never reached a value equivalent to >30.92% power.
- D. The 15 second time delay on the EOC-RPT downshift was not met.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-053    OBJ-H12	ARP-P680-06A-C07	202001 K4.13 202001 K1.28	3.7 3.9	4 4.1

**BANK QID: 739**

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 43**

Which one of the following is the reason that both the UP STREAM B33-AOVF019, DIV 2 and the DN STREAM B33-AOVF020, DIV 1 Reactor Water Sample Line isolation valves close on a Loss of RPS Bus A?

(EXAM HANDOUT, Reactor Water Sample Valve Isolation Logic, STM-058, Figure 14)

- A. The isolation logic power for both valves is supplied by RPS Bus A.
- B. Power to the air actuator solenoids for both valves is supplied by RPS Bus A.
- C. Power to Main Steam Line High Radiation Channels A and C is supplied by RPS Bus A.
- D. Any initiation of the OUTBOARD Logic, also initiates the INBOARD Logic for these valves.

**ANSWER: C**

REQUIRES STM-058 FIG. 14 (05800010E.VSD) AS EXAM

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-058    OBJ-H2	AOP-0003 GE DWG 828E445A A	295020 AA 2.06	3.4	3.8

BANK QID: 742

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 44**

A plant startup is in progress. The reactor is critical at the point-of-adding-heat.

Fully withdrawn Control Rod 20-25 loses its Channel 2 position indication. Control Rod 20-25 has substitute data entered for Channel 1 position indication.

All other control rods are operating normally.

To continue the plant startup, Control Rod 20-25 . . .

- A. position signals must be bypassed in both RC&IS RACS cabinets.
- B. may have Substitute Data entered for Channel 2 position indication.
- C. must be fully inserted and bypassed in the RC&IS RGDS cabinet.
- D. must be fully inserted by using the Scram Test switches locally on its HCU.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-500    OBJ-H14	SOP-0071 SOER 84-2 CR Mispositioning REP-0051	201005 K3.02	3.5	3.5
BANK QID: 743				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 45

Given the following conditions:

- RPV Pressure is 0 psig
- Drywell temperature at the 145 ft elevation is 185°F
- Containment temperature at the 119 ft elevation is 99°F
- Wide Range RPV Level indicates -145 inches

Which of the following describes the operational status of Wide Range RPV Level instruments?

- A. They CANNOT be used to determine RPV water level.
- B. They CAN be used, but their indicated level is lower than actual level.
- C. They CAN be used, but their indicated level is higher than actual level.
- D. They CAN be used and will indicate actual level since they are at calibration conditions.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-511    OBJ-6	EOP-1. CAUTION 1 EPSTG-2. Pages 2 - 8	2.1.32* 216000 A3.01	3.4 3.4	3.8 3.4

BANK QID: 745

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 46

A plant startup and heatup is in progress with power at the Point of Adding Heat. The following conditions exist:

- RCS temperature: 250°F
- Heatup rate: 20°F/hr
- A loss of RPS Bus "B" has just occurred.

Which one of the following is an immediate operational concern if power to RPS Bus "B" cannot be promptly restored?

- A. The inability to raise RPV level
- B. The inability to lower RPV level
- C. The inability to control the heatup rate
- D. The full scram when the Inboard MSIVs close due to loss of air

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-058 OBJ-6	AOP-0003. Page 18	223002 K6.08	3.5	3.7

BANK QID: 746

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 47**

The reactor was manually scrammed from 100% power when Drywell pressure began to approach the scram setpoint. All control rods inserted and RPV level dropped to -10 inches. EOP-1, RPV Control, and EOP-2, Primary Containment Control were entered on high Drywell pressure.

RPV level was stabilized at 30 inches per EOP-1, Step RL-4.

During performance of the subsequent actions of AOP-0001, Reactor Scram, RPV level control becomes erratic and level drops to +5 inches.

Select the REQUIRED action.

- A. Re-enter EOP-1 at the beginning (Point A).
- B. Re-enter EOP-1 at the beginning of Section RL (Point B).
- C. Restore and maintain RPV water level between 10 and 51 inches per RL-4. EOP re-entry is not necessary.
- D. Since level has fallen below the control band, continue execution of Section RL at Step RL-5 band. EOP-1 re-entry is not necessary.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-512    OBJ-4	EPSTG-2. Page 4-4 OSP-0009. Page 43	2.4.14	3	3.9

**BANK QID: 750**



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 48

With the plant at 100% power, APRM A is indicating 99% and has the following LPRM input signals:

- 4 LPRMs reading between 95 and 100
- 6 LPRMs reading between 80 and 95
- 4 LPRMs reading between 50 and 80
- 3 LPRMs reading between 35 and 50

If the HIGHEST reading LPRM is BYPASSED, which one of the following describes the immediate effect on APRM A indicated power and the absolute difference between the APRM A indicated power and the calculated (heat balance) core thermal power?

- A. APRM output is lower and the absolute difference is higher.
- B. APRM output is lower and the absolute difference is lower.
- C. APRM output is higher and the absolute difference is higher.
- D. No effect on either, the averaging amplifier adjusts the output for the bypassed LPRM.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503 OBJ-503	STM-503. Page 53	215005 A1.07	3	3.4

BANK QID: 756

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 49**

An ATWS has resulted in Containment degraded conditions due to difficulties in restoring the Containment Unit Coolers.

In which one of the following situations is Emergency Depressurization REQUIRED?

Containment Temperature is . . .

- A. 187°F and slowly lowering due to Containment Unit Cooler restoration.
- B. 184°F and stable, Containment Unit Coolers CANNOT be restored.
- C. 180°F and rising, Containment Unit Coolers are about to be restored.
- D. 180°F and slowly rising, Containment Unit Coolers CANNOT be restored.

**ANSWER:** A or D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-514    OBJ-6	EOP-2. CT-4. 5. 6 EPSTG-2. Pages 3-2. 3-3. 3-4. 8-10	295027 EA1.03	3.7	3.8

**BANK QID: 758**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 50**

It is three days after the shutdown to begin a refueling outage. The reactor is in MODE 4 with RPV water level at +58 inches when a complete loss of shutdown cooling occurs. Both recirc pumps are OFF.

Under these conditions, which one of the following is an adverse consequence that can result from thermal stratification as long as RPV water level remains at +58 inches?

- A. An inadvertent pressurization of the RPV.
- B. The inability to restore any normal method of shutdown cooling.
- C. RPV temperature lowering below Technical Specification limits.
- D. The inability to establish an alternate method of decay heat removal.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-543 OBJ-12	AOP-0051. Page 5	205000 K3.03 205000 K3.01*	3.8 3.3	3.9 3.3

**BANK QID: 759**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 51

The plant has experienced an ATWS and the CRS has directed the UO to initiate Standby Liquid Control System (SLC) injection. The following occurred:

- The UO took the P601 SLC PUMP A control switch to RUN and noted that C41-F001A (Suction Valve) failed to open.
- He then took the P601 SLC PUMP B control switch to RUN and observed C41-F001B beginning to open.

The following additional indications now exist:

- SLC "A" SQUIB CONTINUITY light is extinguished
- SLC "B" SQUIB CONTINUITY light is lit

Based on the above, when C41-F001B is full open, which one of the following describes the status of the SLC System?

- A. SLC Pump "B" is injecting into the RPV through the "B" Squib valve.
- B. SLC Pump "B" is injecting into the RPV through the "A" Squib valve.
- C. SLC Pump "A" and "B" are injecting into the RPV through the "A" Squib valve.
- D. SLC Pump "A" is NOT running and SLC Pump B is NOT injecting because the "B" Squib valve failed to open.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-201 OBJ-H4	STM-201. Page 21 STM-201. Fig. 6	211000 A3.03	3.8	3.8

BANK QID: 760

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 52

Following a large break LOCA, ALL RPV level instruments went off-scale low.

Five seconds later, the Fuel Zone Level instruments returned on scale. The following conditions now exist:

- Containment temperature      91°F (at EL 119 ft)
- Drywell temperature          285°F (at EL 145 ft)
- RPV Pressure                    10 psig
- Fuel Zone Level indication   -290 inches and slowly rising

With the above conditions, Fuel Zone Level indication . . .

- A. CANNOT be used to determine RPV level due to the elevated Drywell temperature.
- B. CANNOT be used to determine RPV level because it was off-scale low concurrently with all other level instruments.
- C. CAN be used to determine RPV level because it is above the Minimum Indicated Level.
- D. CAN be used to determine RPV level because its indicated level is conservatively lower than actual level .

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-511      OBJ-6	EOP-1. Caution 1 EPSTG. Page 5-5	295028 EK2.03	3.6	3.8

BANK QID: 761

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 53**

The plant has experienced an ATWS. The following conditions exist at P680:

- All eight white scram solenoid lights are extinguished.
- Annunciator SCRAM PILOT VLV AIR HEADER LOW PRESSURE is alarming.
- SDV Vent and Drain valve position lights indicate all four valves are closed.
- Approximately 20% of the withdrawn control rods fully inserted.
- CRD cooling water differential pressure has been maximized.

Which of the following methods for alternate control rod insertion should be attempted next?

(EOP-0005, Enclosure 26, EXAM HANDOUT)

Control rod insertion by . . .

- A. venting the scram air header.
- B. resetting and reinitiating ARI.
- C. removing the scram solenoid power fuses.
- D. resetting the scram and initiating a manual scram.

**ANSWER: D**

REQUIRES EOP Enclosure 26 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513    OBJ-5	EOP-1A. ROA-11 EPSTG-2. Pages 7-64 & 65 EOP-0005. Encl 26	295015 AK2.04	4	4.1
BANK QID: 763				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 54**

High Drywell pressure of 2.2 psid has resulted in initiation of High Pressure Core Spray (HPCS). HPCS injected with RPV pressure at 950 psig following the scram and raised level to +60 inches. The HPCS Injection Valve (E22-F004) has automatically closed. NO OPERATOR ACTION WAS TAKEN.

Five minutes later, P601 annunciator DIV III 480V BUS E22\*S002 UNDER VOLTAGE alarmed. Attempts to restore power to MCC E22-S002 were unsuccessful.

As RPV water level lowers below -43 inches, which one of the following actions will be required if it is necessary to use HPCS to restore RPV water level?

- A. Reset the HPCS Initiation Logic and monitor HPCS automatically re-align at -43 inches.
- B. Locally re-open both the Injection Valve, E22-F004 and the Minimum Flow Valve, E22-F012 manually.
- C. Locally re-open Injection Valve, E22-F004, and close Minimum Flow Valve, E22-F012, manually.
- D. Locally close the HPCS Pump supply breaker, re-open Injection Valve, E22-F004 from the control room, and close Minimum Flow Valve, E22-F012, manually.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-203 OBJ-H13	STM-203. Page ARP-P601-16A-G02	209002 K2.02	2.8	2.9

BANK QID: 765

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 55

The plant is operating at 100% power. A failure in the EHC electronics has caused the Speed Control Unit output to be equivalent to it detecting a 10% overspeed condition.

Which one of the following describes the INITIAL response of the Turbine and Bypass Valves to the erroneous EHC Speed Control Unit signal?

- A. All Turbine Intercept Valves and Control Valves will close.  
Both Bypass Valves will remain closed.
- B. Only the Turbine Intercept Valves will close.  
Both Bypass Valves will open.
- C. Only the Turbine Control Valves will close.  
Both Bypass Valves will remain closed.
- D. All Turbine Intercept Valves and Control Valves will close.  
Both Bypass Valves will open.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-509 OBJ-H10	STM-509, Page 50 STM-509, Fig. 23	241000 K3.08	3.7	3.7

BANK QID: 766



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 56

After completing all prerequisites for starting Reactor Feedwater Pump FWS-P1C, the following conditions existed:

- RPV water level was 30 inches
- FWS-P1C pump suction pressure was 275 psig
- The P680 RX FWP-P1C MN LO PMP PRESS NORM red light was lit
- The P680 RX FWP-P1C GEAR INCR LO PRESS NORM red light was lit
- All P680 annunciators associated with the Reactor Feedwater Pumps were clear.

The ATC depressed the START pushbutton for FWS-P1C and released it 2 seconds later. FWS-P1C failed to start. The only change from the above conditions is annunciator RX FW PUMP BREAKERS AUTO TRIP is now alarming.

Which one of the following is the reason FWS-P1C did not start?

- A. Inadequate lube oil system pressure.
- B. Inadequate FWS-P1C pump suction pressure.
- C. FWS-P1C minimum flow valve NOT full open.
- D. FWS-P1C electrical protection lockout (86 device not reset).

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107 OBJ-H5	ARP-P680-3A-A01 STM-107. Page 9	259001 A4.02	3.9	3.7

BANK QID: 767

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 57**

Following a scram due to high Drywell pressure, EOP-2 was entered with Drywell temperature rising.

At a Drywell temperature of 145°F, Enclosure 20, Defeating Drywell Cooling Isolation Interlocks, was installed and all Drywell Unit Coolers placed in operation by 160°F. Drywell temperature reached a peak value of 230°F before beginning to lower. The following conditions now exist:

- RPV level reached a minimum of -35 inches and is now stable at 30 inches.
- Drywell pressure is 1.55 psid and lowering rapidly.
- Drywell temperature is 143°F and lowering rapidly.

With the above conditions, which one of the following is true?

- A. Enclosure 20 must be removed with Drywell temperature below 145°F.
- B. All available Drywell Unit Coolers must remain ON per EOP-2, Step DWT-3.
- C. All Drywell Unit Coolers must be secured. Drywell temperature was >200°F.
- D. Individual Drywell Unit Coolers can be secured to avoid a negative Drywell pressure.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-514    OBJ-6	EOP-2. Steps DWT-2 & 3 EPSTG-2. Page 8-6	295012 AA1.02	3.8	3.8

**BANK QID: 769**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 58**

With the plant operating normally at 100% power, a full-flow surveillance test of the RCIC system from CST to CST is being performed.

Annunciator RCIC SUCTION XFER SUP PL LEVEL HIGH alarms. The operator performing the surveillance test responds by immediately depressing the RCIC DIV 1 MANUAL ISOLATION pushbutton.

Assuming NO FURTHER OPERATOR ACTION is taken which one of the following describes the response of CST level and the reason for that response?

CST level would be expected to . . .

- A. remain constant with RCIC continuing to operate in full-flow test lineup, CST to CST.
- B. remain constant with an isolation of the RCIC Turbine steam supply and the Test Return valves to the CST closed.
- C. rise due to RCIC continuing to operate in full-flow test lineup, but now pumping water from the Suppression Pool to the CST.
- D. remain constant with RCIC continuing to operate with its minimum flow valve opening after the Test Return valves to the CST close.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-209    OBJ-H5	SOP-0035 ARP-P601-21A-C05 STM-209	217000 A1.06	3.2	3.3
BANK QID: 771				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 59

The plant is operating at 75% power and the third Reactor Feed Pump is about to be started. A problem develops in the Feedwater Level Control (FWLC) System resulting in a rise in RPV level. With level gradually rising, RPV level indication on P680 is as follows:

- C33-R606A Narrow Range Level Indicator 52 inches
- C33-R606B Narrow Range Level Indicator 49 inches
- C33-R606C Narrow Range Level Indicator 51 inches
- B21-R604 Wide Range Level Indicator 50 inches
- C33-R608 Upset Range Level Recorder 49 inches
- MTS & FWP TRIP RX WATER HIGH LEVEL 8 annunciator is alarming

No automatic actions have occurred. Based on the conditions above, which one of the following describes the required actions and the correct order for those actions to be taken?

- A. Trip ONE Reactor Feed Pump.  
Monitor RPV water level for further action.
- B. Trip ONE Reactor Feed Pump.  
Trip the Main Turbine.  
Manually SCRAM the reactor.
- C. Trip the Main Turbine.  
Manually SCRAM the reactor.  
Trip BOTH Reactor Feed Pumps.
- D. Manually SCRAM the reactor.  
Trip the main turbine.  
Monitor RPV water level for further action.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-051 OBJ-H3	AOP-0001. Page 3 AOP-0002. Pages 3 & 6	295008 AA1.07	3.4	3.4

BANK QID: 774

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 60

The plant is starting up. After verifying acceptable overlap between all the IRMs and APRMs, the ATC placed mode switch in RUN.

Before the recorder displaying IRM Channel G could be switched to the APRM position, IRM Channel G experienced an INOP trip due to a power supply failure.

Which one of the following describes the expected response for this condition?

- A. Half scram and Control Rod Withdrawal Block.
- B. NO half scram or Control Rod Withdrawal Block, both are bypassed.
- C. Control Rod Withdrawal block ONLY, IRM scrams are bypassed.
- D. Half scram ONLY, IRM Control Rod Withdrawal Blocks are bypassed.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-508 OBJ-H2	STM-503. Pages 36 & 37 SOP-0074. Attachment 4	212000 K6.02	3.7	3.9

BANK QID: 776

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 61

A cold reactor startup was in progress with SRM Channel A bypassed due to failure of its high voltage power supply.

When the SRM detectors were withdrawn per GOP-0001, SRM D remained fully inserted. SRM A, B and C fully withdrew. A control rod was inserted two notches to stop the power rise on IRM Range 5 while troubleshooting the SRM D drive problem. All IRM Channels are now on Range 5 and slowly lowering.

The status of SRM D is as follows:

- SRM D UPSC TRIP and UPSC ALM OR INOP lights are lit.
- All attempts to withdraw SRM D have been unsuccessful and it has been declared inoperable.

Which one of the following describes the impact of the above on the plant startup?

The startup can continue . . .

- A. with no additional required actions.
- B. only after either SRM A or D is returned to operable status.
- C. by placing all IRMs on Range 8 to clear the SRM D upscale control rod withdrawal block.
- D. by placing the SRM BYPASS switch in the 'CH D' position to clear the SRM D upscale control rod withdrawal block.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503 OBJ-H2	TS 3.3.1.2 SOP-0074. Attachment 2	215004 A2.03	3	3.3

BANK QID: 777

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 62**

A fire was detected on Preferred Station Service Transformer RTX-XSR1C and its fire suppression Deluge Valve opened.

The Aux. Control Room reported that Diesel Driven Fire Pump FPW- P1A started and is the only fire pump running. Fire water pressure had initially dropped to 40 psig for about 10 seconds. Then it was restored to 130 psig and is being maintained at that pressure by the FPW-P1A.

Which one of the following describes the status of the Fire Water System?

- A. All Fire Water Pumps operated as expected.
- B. Only the Motor Driven Fire Pump FPW-P2 has failed to start.
- C. Only the Diesel Driven Fire Pump FPW-P1B has failed to start.
- D. Both the Motor Driven Fire Pump FPW-P2 and the Diesel Driven Fire Pump FPW-P1B have failed to start.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-250 OBJ-N5	STM-250. Page 10 SOP-0037. Pages 7, 8, 12	286000 K5.05	3	3.1

**BANK QID: 780**

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 63**

With all plant systems operating in their normal lineup in Mode 3, which one of the following describes the effect, if any, that manually initiating Division 2 Standby Service Water will have on RPCCW?

Depressing the MAN INITIATE pushbutton for Div 2 Standby Service Water will . . .

- A. have NO affect on RPCCW.
- B. isolate Div 2 Service Water to and from the RPCCW Heat Exchangers ONLY with NO affect on flow through either RPCCW Safety Related Loop.
- C. isolate Div 2 Service Water to and from the RPCCW Heat Exchangers AND stop flow through BOTH RPCCW Safety Related Loops.
- D. isolate Div 2 Service Water to and from the RPCCW Heat Exchangers AND stop flow through the "B" RPCCW Safety Related Loop ONLY.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-115 OBJ-H9	ARP-P870-55A-H03 STM-115. Page 15	400000 A3.01	3	3

**BANK QID: 781**



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 64

A plant startup is in progress. RWCU is in its normal lineup rejecting to the Main Condenser with RWCU Reject Flow Control Valve, G33-AOVF033. The following conditions exist:

- Recirc Loop Suction temperature is 325°F
- A heatup rate of ~75°F/hr is being maintained
- P680 RWCU Reject Flow Controller G33-R606 is set for a 100 gpm reject flow.
- Non-Regenerative Heat Exchanger (NRHX) Outlet temperature is 128°F

If the ATC significantly raises the setting on G33-R606 to raise reject flow, which one of the following could occur:

- A. A RWCU Containment Isolation due to high differential flow.
- B. Closure of G33-AOVF033 due to high upstream pressure.
- C. Closure of G33-AOVF033 due to low downstream pressure.
- D. Closure of G33-MOVF004 due to high NRHX outlet temperature.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-601 OBJ-H4	ARP-P680-01A-B01	204000 A4.03	3.2	3.1

BANK QID: 786

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 65

Control Room annunciator 125VDC BAT CHGR ENB-CHGR1B TROUBLE is alarming on P808. ENB-SWG01B on P808 is as follows:

- Bus Voltage is reading 126 VDC
- Bus Current is reading 380 Amps

The following is indicated on the Division II 125VDC Battery Charger, ENB-CHGR1B, control panel:

- DC Voltmeter is reading 126 VDC
- DC Ammeter is reading 360 Amps
- Timer switch is at 0
- FLOAT EQUALIZE light is lit
- AC ON green light is lit

WITH NO OPERATOR ACTION, which one of the following describes the expected ENB-SWG01B bus voltage trend and the reason for that trend?

The bus voltage will . . .

- A. rise because an equalizing charge is being provided.
- B. lower because the bus load exceeds the charger's capacity.
- C. lower because a malfunction of the float charge is indicated.
- D. lower because AC power is NOT being supplied to the charger.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-305 OBJ-H4	SOP-0049 STM-305. Pages 5 & 7 ARP-P808-87A-G07	263000 A1.01	2.5	2.8
BANK QID: 788				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 66

Following a manual scram from 50% power due to lowering condenser vacuum, the following conditions exist:

- All Turbine Control Valves are shut.
- TMB-JI108, GENERATOR WATTS has just reached ZERO.
- The Main Generator Exciter Field Breaker is CLOSED.
- Both Main Generator output breakers are CLOSED.
- Main Condenser vacuum is 24 inches Hg and STABLE.

With the above conditions continuing to exist, the Main Turbine should automatically trip in about 5 seconds as a result of which one of the following?

- A. Condenser low vacuum
- B. Generator reverse power
- C. Generator low frequency
- D. Generator volts/Hz

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-521 OBJ-6	AOP-0002 STM-310	295005 AK2.04	3.3	3.3

BANK QID: 789

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 67

An In-Service Leak Test is being performed on the RPV following refueling operations. A miscommunication during the test results in a significant rise in reactor pressure. Control Room pressure indication is as follows:

- P680 Wide Range pressure is off-scale high.
- P601 Post Accident Pressure recorders both indicate 1350 psig.

Which one of the following is the correct assessment of the above conditions and any resulting limitations on plant operation?

Reactor pressure . . .

- A. was within the Tech Spec Safety Limit and there is no impact on plant operation.
- B. CANNOT be determined to have exceeded the Tech Spec Safety Limit based on the above conditions and requires engineering evaluation before further action.
- C. exceeded the Tech Spec Safety Limit, but if restored to within the limit within two hours, the plant startup may continue.
- D. exceeded the Tech Spec Safety Limit and plant startup will require NRC authorization.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-401 OBJ-9	Tech Spec 2.0	295025 EK1.05	4.4	4.7

BANK QID: 790

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 68

The plant is operating at 100% power when leakage followed by a line break in the RWCU System outside Primary Containment causes Auxiliary Building Area temperatures to rise. The RWCU Pump Room Area Temperature High causes the break to be isolated but not before RPV level reaches -43 inches.

It is now desirable to have access to the Auxiliary Building. In order to reduce area temperatures, which one of the following describes the Auxiliary Building Ventilation System alignment based on the above conditions?

- A. Normal supply and exhaust fans are operating, along with all with all Auxiliary Building unit coolers.
- B. Normal supply fans are operating with Standby Gas Treatment providing the only exhaust path.
- C. Supply air is from in-leakage into the Building with Safety Related Unit Coolers operating and the normal exhaust fans providing the exhaust path.
- D. Supply air is from in-leakage into the Building with Safety Related Unit Coolers operating and Standby Gas Treatment providing the exhaust path.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-409 OBJ-H2	AOP-0003. Pages 9 & 17 STM-409. Pages 21 & 22	290001 A1.02	3.6	3.6

BANK QID: 791

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 69**

The Division 1 Standby Diesel is operating in parallel with off-site power loaded to 3100 KW for a one-hour load test surveillance. A LPCS/RHR A LOCA initiation signal is received.

Which one of the following describes the response of the Standby Diesel Bus to the LOCA signal and LPCS pump breaker closing?

- A. The normal feeder breaker to ENS-SWGR1A will trip due to the LOCA signal to isolate the bus from Off-site power with the diesel connected.
- B. The normal feeder breaker to ENS-SWGR1A will trip due to overcurrent from the LPCS pump starting current.
- C. The Standby Diesel Output Breaker will will trip due to the LOCA signal and ENS-SWGR1A will be supplied by Off-site power.
- D. The load from the LPCS pump start will be shared between Off-site power and the Diesel Generator operating in Droop Mode. NO breakers will trip.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-309    OBJ-H8	SOP-0053, Page 5 STM-300	264000 K1.07	3.9	4.1

BANK QID: 792

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 70

Following an E-plan emergency declaration at River Bend, the NRC is notified within one hour using which one of the following?

- A. Dialogics System
- B. State and Local Hotline
- C. Emergency Notification System
- D. Emergency Support Package Communications (ESP\_COMM)

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
EP-023      OBJ-4	FIP-2-006	2.4.43	2.8	3.5

BANK QID: 793

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

### QUESTION NO. 71

Due to a steam leak the Main Steam Line Tunnel area temperatures are all between 160°F and 170°F. All automatic isolations have occurred as designed. Because of the leak location and isolation actions, NO LOCA signal occurred from high drywell pressure or RPV low level.

An ALERT has been declared based on offsite release rates.

Which one of the following will reduce the UNMONITORED release rate?

- A. Shutdown the Turbine Building Ventilation System if operating.
- B. Shutdown the Radwaste Building Ventilation System if operating.
- C. Start the Turbine Building Ventilation System if NOT operating.
- D. Start the Fuel Building Charcoal Filtration trains if NOT operating.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-515 OBJ-6	EOP-3. RR-2 EPSTG-2. Page 10-4	2.3.11 2950017 AK1.0	2.7 3.8	3.2 4.3

BANK QID: 797



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 72

With the plant operating at 100% power, Drywell pressure begins to rise. The CRS directs the UO to obtain a leakage rate report.

To manually generate a leakage rate report, the UO must go to Control Room Panel . . .

- A. P844 (ENV/SEISMIC RCDR PNL) and depress the PRINTOUT pushbutton above the leakage computer printer.
- B. P844 (ENV/SEISMIC RCDR PNL) and on the Leakage Computer keyboard, depress PRINT then ENTER.
- C. P642 (DIV 2 LDS RCDR PNL) and depress the PRINTOUT pushbutton above the leakage computer printer.
- D. P642 (DIV 2 LDS RCDR PNL) and on the Leakage Computer keyboard, depress PRINT then ENTER.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-207 OBJ-H4	STM-207. Page	295010 AA1.06	3.3	3.5

BANK QID: 798

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 73

The plant is Shutdown in Mode 4 and the following plant conditions exist:

- Main Condensers are drained and open for maintenance.
- Service Water temperature is 83°F.
- RPCCW temperature is 91°F.
- HPCS, RHR "B", and RHR "C" pump motors are tagged out for repairs.
- Reactor Recirculation Pump "B" is tagged out for seal replacement.
- Reactor Recirculation Pump "A" is operating in Slow Speed.

RHR Loop "A" was operating in shutdown cooling mode when the RHR A pump tripped due to unknown reasons.

Reactor Engineering has calculated decay heat as 20 E6 Btu/hr at 130°F.

To maintain present plant conditions, which one of the following will meet the Alternate Shutdown Cooling Methods criteria?

(Applicable pages of OSP-0041 in EXAM HANDOUTS)

- A. ADHR ONLY
- B. RWCU ONLY
- C. CRD and SFC ONLY
- D. CRD and RWCU ONLY

**ANSWER:** A

REQUIRES OSP-0041 Pages 13, 56, 57, 59, 60 AS EXAM HANDOUT

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-543    OBJ-8	AOP-0051	295021 AA1.04	3.7	3.7
	OSP-0041. Attachments 2. 4. 5	295021 AK1.01	3.6	3.8

BANK QID: 800

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 74

The plant is operating at 70% power. The Master Level Control System is in Three (3) Element control with Channel A (RPV level instrument C33-N004A) selected.

The variable leg for C33-N004A ruptures.

As a result of the variable leg failure, the Feedwater Level Control System response will be to . . .

- A. close the Feed Reg Valves to a lower position causing actual RPV water level to lower and stabilize at a level above RPV Water Level - Low scram setpoint.
- B. open the Feed Reg Valves to full open causing actual RPV water level to rise above the RPV Water Level - High scram setpoint.
- C. close the Feed Reg Valves to a lower position causing actual RPV water level to lower below the RPV Water Level - Low scram setpoint.
- D. open the Feed Reg Valves to a higher position causing actual RPV water Level to rise and stabilize at a level below the RPV Water Level - High scram setpoint.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107B OBJ-H8	ARP-P680-03A-C08	259002 K6.05	3.5	3.5

BANK QID: 805

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 75

The plant is in a refueling outage and fuel handling is in progress. A High-High Fuel Building Ventilation Exhaust Radiation signal is received. No LOCA conditions are indicated.

Which one of the following describes the required operator actions at P863 to establish a fresh outside air supply to the Fuel Building under the conditions above?

- A. Override the supply isolation dampers by placing their control switches in the CLOSE position and then to the OPEN position.
- B. Place DIVISION 1 and DIVISION 2 RADIATION OVERRIDE switches in OVRD ONLY.
- C. Place DIVISION 1 and DIVISION 2 RADIATION OVERRIDE switches in OVRD, then open the supply isolation dampers.
- D. Place DIVISION 1 and DIVISION 2 RADIATION OVERRIDE switches in OVRD, then open the supply isolation dampers and stop both normal exhaust fans.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-406 OBJ-H7	SOP-0062. Page 10 & 11 STM-406. Page 21	295038 EK2.03	3.6	3.8

BANK QID: 806

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 76**

The Division 1 Emergency Diesel rear air start compressor motor has seized. A Clearance and MAI have been issued for Maintenance to begin repairs.

Which one of the following actions are required?

- A. Declare Division 1 Diesel INOPERABLE. Both starting air compressors are required for an OPERABLE air start system.
- B. Take no action since only one starting air system is necessary to start the diesel and crosstying the unaffected air system with the affected air system would render the diesel INOPERABLE.
- C. Maintain pressure in the normal band of the receiver associated with the seized compressor by intermittently crosstying the operable forward and rear system air dryer outlets. The Division 1 Diesel Generator will remain OPERABLE.
- D. Start and load the Division 1 Diesel Generator. With the diesel running, the starting air system is not required for OPERABILITY of the diesel.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-309    OBJ-H12	SOP-0053 STM-309, Page 63 TS 3.8.3. B 3.8-41	2.2.24	2.6	3.8
BANK QID: 855				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

QUESTION NO. 77

On the EOP Hydrogen Deflagration Overpressure Limit (HDOL) curve, the maximum allowed hydrogen concentration in percent (%) is lower at higher containment pressures.

Which one of the following is the reason for this relationship?

- A. As containment pressure rises, the capability of the Hydrogen Recombiners to remove hydrogen is reduced.
- B. This ensures a hydrogen deflagration at the limit combined with current pressure will not exceed containment overpressure failure limits.
- C. The containment hydrogen analyzer system response time is adversely affected as containment pressure rises.
- D. As containment pressure rises, the deflagration pressure of hydrogen drops requiring a lower concentration of hydrogen.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-514 OBJ-5	EOP-2	2.4.21*	3.7	4.3
	EPSTG-2. Page B-8-30	500000 EK1.01	3.3	3.9

BANK QID: 856

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 78**

Annunciator AUXILIARY BLDG FLOOR DRAIN SUMP TK3A-F AREA LVL H (P870-51A-G04) is in alarm. The LPCS Floor drain sump TK3A level indicator on P870, DFR-LI134, reads full scale.

The Auxiliary Building SNEO has reported the sump in the LPCS Pump Room is overflowing and the water level in the room is about 4 inches deep.

(ARP-P870-51A-G04 IN EXAM HANDOUTS)

Which one of the following describes the expected sump pump status for TK3A operation and the operability of LPCS with these conditions?

- A. Both sump pumps should be operating and LPCS is still operable.
- B. Only one of the sump pumps should be operating and LPCS must be declared inoperable.
- C. Both sump pumps should have tripped due to their motors being flooded and LPCS must be declared inoperable.
- D. Both sump pumps should have tripped due to their motors being flooded and LPCS is still operable.

**ANSWER: A**

REQUIRES ARP-P870-51A-G04 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-609 OBJ-H6	ARP-P870-51A-G04 STM-609, Page 13	295036 FA2.01 295036 FA1.01	3 3.2	3.2 3.3

**BANK QID: 857**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 79

A loss of RPS Bus A causes which one of the following RPV level indications on P680 to fail downscale?

- A. Wide Range meter B21-R604
- B. Upset Range recorder C33-R608R
- C. Narrow Range Channel A meter C33-R606A
- D. Narrow Range recorder C33-R608B

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-051 OBJ-H13	STM-051. Page 42	216000 K6.01	3.1	3.3

BANK QID: 858



**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 80**

Annunciator DIVISION 1 RHR HX SVCE WTR RAD MONITOR TROUBLE on P870 is alarming.

On Grid 2 of the Control Room Digital Radiation Monitoring System (DRMS) RM-11 Console, the background color of the 1LP 015 icon for the RMS-RE15A RHR Heat Exchanger Service Water Effluent Monitor is DARK BLUE.

Which one of the following is the cause of the above indications?

The monitor . . .

- A. is at the HIGH level alarm point.
- B. is at the ALERT level alarm point.
- C. does NOT have power from its UPS panel.
- D. has power, but it is NOT communicating with the RM-11.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-069    OBJ-8	ARP-P870-55A-H09 AOP-0042. Page 39 LOTM 65. Page 58	262002 K1.18	2.5	2.7
BANK QID: 859				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 81

During a plant startup at 7% power the Reactor Mode Switch was placed in RUN. The ATC switched all IRM/APRM recorders to APRM and had selected all IRM detector drives for withdrawal.

Before withdrawing the IRMs, the APRM DOWNSCALE alarm was received. APRMs A and APRM C indicated downscale trips and were reading slightly <5% power.

The ATC was directed to return the Reactor Mode Switch to START/HOT STBY to clear the APRM downscale trips.

After placing the Reactor Mode Switch in START/HOT STBY, the ATC depresses the DRIVE OUT pushbutton for the SRM/IRM detector drives to withdraw the IRM detectors.

Which one of the following describes the expected response?

- A. The Retract Permit interlock will prevent IRM detector withdrawal.
- B. All IRM detectors will fully withdraw, except IRMs A and C.
- C. All IRM detectors will fully withdraw with NO further automatic actions.
- D. All IRM detectors will fully withdraw with a control rod withdrawal block initiated.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503 OBJ-H13	STM-503. Table 6	215003 A4.06	3	2.9

BANK QID: 860

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 82**

RHR A was operating in Suppression Pool Cooling Mode following a full MSIV closure scram. A small leak in the Drywell resulted in 1.68 psig and RHR A automatically re-aligned to LPCI Mode with no operator action.

Five minutes later the following conditions exist:

- RPV Pressure is being maintained at 800 and 950 psig with SRVs
- RPV level is being maintained at 10 to 51 inches with Feedwater
- Suppression Pool temperature has reached 102°F.

The CRS has directed the UO to re-establish Suppression Pool Cooling with RHR A, as soon as possible. Which one of the following states the EARLIEST time that RHR A can be aligned to remove heat from the Suppression Pool and the operator action(s) required?

- A. Immediately by opening the Test Return to the Suppression Pool, E12-F024A.
- B. In five minutes by opening both the Test Return to the Suppression Pool, E12-F024A and the Heat Exchanger Bypass Valve, E12-F048A.
- C. In ten minutes by opening the Test Return to the Suppression Pool, E12-F024A and closing the Heat Exchanger Bypass Valve, E12-F048A.
- D. In ten minutes by opening the Test Return to the Suppression Pool, E12-F024A; the Heat Exchanger Outlet, E12-F003A; and closing the Heat Exchanger Bypass Valve, E12-F048A.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-204 OBJ-H2	EOP-2. SPT-2 & 3 STM-204. Page 20 SOP-0031. Pages 37 & 38	219000 A2.14	4.1	4.3

BANK QID: 861

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

### QUESTION NO. 83

A Reactor Feed Pump trip has resulted in a Recirc Flow Control Valve (FCV) Runback. The ATC is resetting the FCV Runback with ARP-P680-4A-A09 (EXAM HANDOUT).

Referring to STM-053 Figures 9 and 20 in EXAM HANDOUTS, the following P680 FCV status indications exist:

- SERVO ERROR and LIMITER ERROR for both FCVs is 0%
- MA ERROR for FCV A is 0%
- MA ERROR for FCV B is 1%

If the ATC depresses both the A and B CAVITATION INTLK RESET pushbuttons with the conditions above, which one of the following describes the response of the Recirc System?

The FCV Runback annunciator for . . .

- A. both FCVs will reset, and FCV B will open slightly as its MA ERROR goes to 0%.
- B. both FCVs will reset, and neither FCV will move.
- C. FCV A will reset and the annunciator for FCV B will NOT.
- D. FCV A and B will remain in the alarm condition.

**ANSWER: B**

REQUIRES ARP-P680-4A-A09 and STM-053 Figures 9 & 20 AS

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-053 OBJ-12	ARP-P680-4A-A09	202002 A3.01*	3.6	3.4
	STM-053. Fig. 20	202002 K1.12	3.7	3.9

BANK QID: 862

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 84

Given the following conditions:

- Generator load is 290 MWe
- Both Recirculation Pumps are operating on FAST speed
- The Steam Seal Evaporator has just been lost
- There is NO time estimate for return of the evaporator

SELECT the appropriate operator actions for the above conditions.

- A. Reduce power as required to prevent condenser vacuum from lowering to less than 25 inches Hg.
- B. Reduce power as required to prevent condenser vacuum from lowering to less than 23 inches Hg.
- C. Transfer the Recirculation Pumps to "slow" speed and then trip the main turbine
- D. Immediately trip the main turbine.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-524 OBJ-4	AOP-0005. Page 4	2.1.32 295002 AA2.01	3.4 2.9	3.8 3.1

BANK QID: 863

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 85**

Following a LOCA, Drywell pressure is 1.80 psid. The B Charcoal Filter Train of the Control Room HVAC is tagged out for Filter Booster Fan HVC-FN1B replacement. The following indication exists for A Charcoal Filter Train in the Control Room on P863:

- Filter Inlet Damper HVC-AOD43A - BOTH red and green lights lit
- Filter Booster Fan HVC-FN1A - green light lit
- Filter Fan Discharge Damper HVC-AOD3A - red light lit

All other Control Room Ventilation automatic actions have occurred. Which one of the following describes the actions required for the above conditions and the expected results?

- A. Locally open HVC-AOD43A fully in order to start FN1A and establish POSITIVE pressure in the control room.
- B. Locally open HVC-AOD43A fully in order to start FN1A to establish NEGATIVE pressure in the control room.
- C. Place the P863 control switch for HVC-FN1A to START and establish POSITIVE pressure in the control room.
- D. Place the P863 control switch for HVC-FN1A to START to establish NEGATIVE pressure in the control room.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-402 OBJ-H7	SOP-0058 STM-402. Page 13	290003 A 2.03	3.4	3.6

**BANK QID: 864**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 86

The plant is operating at 3% rated power and both Mechanical Vacuum Pumps (A & B) are running to maintain condenser vacuum while troubleshooting is being performed on the Offgas System.

A loss of RPS Bus "A" occurs.

Which one of the following describes the effect of the RPS bus loss?

- A. MSIVs receive a half isolation signal and NEITHER Mechanical Vacuum Pump trips.
- B. MSIVs receive a half isolation signal and BOTH Mechanical Vacuum Pumps trip.
- C. MSIVs receive a half isolation signal and ONLY the "B" Mechanical Pump trips.
- D. All MSIVs will close and BOTH Mechanical Vacuum Pumps trip.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-508 OBJ-7	ARP-P601-19A-C01 & C03 AOP-0010. Page 13	272000 K2.01 272000 K6.01*	2.5 3	2.8 3.2

BANK QID: 865

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 87

EOP-2, Steps SPL-10 and 11 limit Suppression Pool water level to 21 ft 3 inches with the RPV pressurized.

The reason for this is to prevent which one of the following?

- A. Loss of the ability to vent Primary Containment.
- B. Loss of all Suppression Pool temperature indication.
- C. Direct pressurization of Primary Containment with SRV operation.
- D. Primary Containment rupture due to excessive stress from the static head of the water.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-514 OBJ-5	EPSTG-2. Page 8-24	295029 EK2.06	3.4	3.5

BANK QID: 866



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 88**

During a LOCA, a rupture in the air supply to the Safety Relief Valves (SRVs) has resulted in the following:

- SVV-MOV1A, SRV ACCUM AIR SPLY ISOL was closed to isolate the rupture.
- SVV-PT3A ADS Air Header Pressure (inside Containment) indicates 0 psig.
- Both SVV Air Compressors SVV-C4A and SVV-C4B are running.
- P808 annunciator ADS SAFETY & RLF V AIR SUPPLY HDR A LOW PRESS alarming.
- P808 annunciator ADS SAFETY & RLF V AIR SUPPLY HDR B LOW PRESS cleared.

With the above conditions, which one of the following describes the effect the loss of air supply will have on operation of the ADS SRVs if an automatic initiation of ADS occurs in the next five minutes?

(Assume single rupture and all components operate as designed. PID-03-1B included in EXAM HANDOUT.)

- A. Regardless of the air rupture location, ALL ADS SRVs will FAIL to open.
- B. Depending on the air rupture location, FOUR ADS SRVs may FAIL to open.
- C. Depending on the air rupture location, AT MOST, ONE ADS SRV may FAIL to open.
- D. Regardless of the air rupture location, ALL ADS SRVs will open.

**ANSWER: C**

REQUIRES PID-03-1B AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-202 OBJ-H7	ARP-P808-81A-G08 PID-03-1B Rev. 20 STM-109	218000 A1.03	3.2	3.4

BANK QID: 867

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 89**

The following plant conditions exist:

- Reactor Power is 80%
- Turbine LOAD SET is at 1100 MWe
- The following annunciators have begun alarming on P870:
  - STATOR COOLING INLET WATER LOW PRESSURE
  - STATOR COOLING INLET WATER LOW FLOW
  - STATOR COOLING WATER PUMPS AUTO TRIP
  - TURB RUNBACK STATOR COOLANT TROUBLE

If NO OPERATOR ACTION IS TAKEN, which one of the following describes how total steam flow from the RPV will respond to the expected automatic actions for this condition.

Total steam flow from the RPV will begin lowering . . .

- A. immediately and will stabilize at 3-5% of rated.
- B. when LOAD SET reaches ~850 MWe and stabilize at ~70% of rated.
- C. when LOAD SET reaches ~850 Mwe and stabilize at 3-5% of rated.
- D. when LOAD SET reaches ~750 Mwe and stabilize at 3-5% of rated.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-509    OBJ-H10	ARP-P870-54A-D02 STM-509. Page 31	245000 A1.04	2.7	2.8

BANK QID: 868

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 90**

A valve lineup error in Radwaste has resulted in isolation of the floor drain header into the Oil Plate Separator tank LWS-SP3.

Which one of the following describes the effect this will have on the floor drain sumps and/or associated equipment and instrumentation.

- A. Turbine Building floor drain sumps will be pumped to containment sumps.
- B. Continuously running sump pumps on sumps reaching high level conditions.
- C. When the containment sump fills, the LDS leakage computer will be indicating zero unidentified leakage.
- D. Area radiation levels in the turbine building will rise as containment sumps are pumped to Turbine Building floor drain sumps.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-609 OBJ-H7	STM-609 PID 31-1A PID 32-9K	268000 K3.04	2.7	2.8
BANK QID: 869				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 91

The following conditions exist:

- RCS temperature is 135°F.
- All ECCS systems are in standby.
- The Reactor Mode Switch is in SHUTDOWN.
- One reactor vessel head closure bolt is de-tensioned.
- Primary and Secondary Containment are SET (OPERABLE).

Which one of the following is the Plant Operational Mode?

- A. Mode 2 – Startup
- B. Mode 3 – Hot Shutdown
- C. Mode 4 – Cold Shutdown
- D. Mode 5 – Refueling

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-419 OBJ-4	TS 1.1-1	2.1.22	2.8	3.3

BANK QID: 870

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 92

With RCIC operating to inject into the RPV, the CST ruptures at grade level. As CST level lowers, which one of the following describes the RCIC response?

When CST level reaches 0 inches, the RCIC pump . . .

- A. CST suction valve will close, WHILE the Suppression Pool suction valve is opening.
- B. CST suction valve will close, THEN the Suppression Pool suction valve will open.
- C. Suppression Pool suction valve will open, THEN the CST suction valve will close.
- D. Suppression Pool suction valve will open, AND the CST suction valve will remain open until manually closed.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-209 OBJ-H12	STM-209, Page 21 & 23 GE Elementary 828F536AA	256000 K3.06	3.2	3.2

BANK QID: 871

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 93

With the "A" train of the Steam Jet Air Ejectors in service and condenser vacuum lowering, the following plant conditions exist:

- Reactor Power is 40%.
- ARC-AOV1A, SJAE Suction Valve was observed CLOSING.
- The following annunciators are alarming:

OFFGAS SYS AFTER FILTER FLOW HI/LO (NORM RNG)  
OFF-GAS POST-TRT HIGH-HIGH RADIATION  
STEAM TO AIR EJECTOR 1A EXTREME LOW FLOW

Which one of the following caused the closure of ARC-AOV1A?

- A. High Offgas flow
- B. High-High Offgas post treatment radiation
- C. Low steam supply flow to the 1A First Stage SJAEs
- D. Low steam supply flow to the 1A Second Stage SJAE

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-125 OBJ-H4	ARP-P870-52A-G03 STM-125. Page 20	271000 K4.04	3.3	3.6

BANK QID: 872

**EXAM KEY**

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 94**

The plant is operating at rated conditions with all systems in their normal full-power lineup.

The Containment and Reactor Vessel Isolation Control System (CRVICS) indicating lights on the P601 DIV 1 & 4 OUTBOARD ISOLATION display (above the OUTBD ISOLATION SEAL-IN RESET pushbutton) have changed from their normal status to the following:

- HALF ISOLATIONS . . . . . Amber light ON
  
- RWCU . . . . . White light OFF
- MSL DRAINS . . . . . White light ON
- BOP . . . . . White light ON
- RHR E12-F040 F075A&B . . . . . White light ON
- RHR F008 . . . . . White light OFF
- RX WATER SAMPLE B33 F020 . . . White light ON

Based on plant conditions and the status of the CRVICS display above, which one of the following describes the expected valve repositioning?

- A. NO valves have repositioned.
- B. ONLY the RWCU Outboard valves have closed.
- C. BOTH the RWCU Outboard valves and RHR F008 have closed.
- D. ALL isolation valves controlled by the isolation logics with white lights ON have closed.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-058 OBJ-H3	AOP-0003. Svmntoms STM-058	223002 A3.01	3.4	3.4

BANK QID: 873

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 95**

A LOCA has resulted in the following conditions:

- RPV Level at -147 inches and stable for the past three minutes
- Containment-to-Annulus differential pressure is -7 inches WC

With the above conditions, which one of the following describes the status of containment cooling?

- A. ALL three Containment Unit Coolers OPERATING cooled by Turbine Building Chilled Water.
- B. A AND B Containment Unit Coolers OPERATING cooled by Turbine Building Chilled Water.
- C. A AND B Containment Unit Coolers OPERATING, cooled by Service Water.
- D. NONE of the Containment Unit Coolers operating.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-403    OBJ-H4	AOP-0003 STM-403	288000 A 2.02	3.4	3.6

**BANK QID: 874**



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 96

With the plant operating at 50% power, a loss of both Control Rod Drive (CRD) pumps has occurred. All other plant systems are operating normally.

Which one of the following describes the effect of the loss of CRD Hydraulics on the Reactor Recirculation Pumps?

The Recirculation Pump . . .

- A. seal temperatures will all rise significantly.
- B. inner seal cavity pressure will rise above reactor pressure.
- C. seal pressures will all rise, accelerating seal deterioration.
- D. seals will begin to have corrosion products from the RCS passing through them.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-053 OBJ-H5	SOER 83-04 STM-053. Page 14	202001 K6.05	2.7	2.8

BANK QID: 875

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

#### QUESTION NO. 97

Which ONE of the following describes operation of the Div III Diesel Generator while the ENGINE CONTROL switch on the local Engine Control Panel, E22-PNLS001 is in the MAINTENANCE position?

- A. The Diesel will only start on a LOCA initiation signal.
- B. The Diesel cannot be started.
- C. The Diesel can only be started locally.
- D. The Diesel can only be air rolled locally. All starts are disabled.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-309H OBJ-H8	SOP-0052 STM-309H. Page 10	264000 K4.07	3.3	3.4

BANK QID: 876

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

QUESTION NO. 98

Under which one of the following conditions is concurrent verification allowed?

- A. A valve line up for the RHR following operation in Shutdown Cooling.
- B. Restoration of an electrical line up following a Division 1 Diesel Generator Surveillance.
- C. I&C is lifting leads in preparation for a Surveillance.
- D. Verification of alignment of a Fire Protection System post indicator valve.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-200 OBJ-1	ADM-0076. Page 4	2.1.23	3.9	4

BANK QID: 877

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
REACTOR OPERATOR**

**QUESTION NO. 99**

An in plant surveillance test is being performed. When the test was stopped for a lunch break, a test pressure guage was removed with OSM permission and individuals conducting the surveillance left the job site for 45 minutes.

Upon returning to the job site following lunch, the test pressure guage was reinstalled and the OSM notified.

What, as a MINIMUM, is required to proceed with the surveillance?

- A. Verify prerequisites and re-perform all steps of the surveillance test.
- B. Only verify that previously performed steps are in the same state, then continue.
- C. Only verify that the prerequisites are met before continuing.
- D. Verify prerequisites and previously performed steps are in the same state, then continue.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-221 OBJ-6	ADM-0015. Page 33	2.2.12	3	3.4

**BANK QID: 878**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 REACTOR OPERATOR

**QUESTION NO. 100**

The CRS has directed completion of STP-000-0102, Power Distribution Alignment Check. A comparison of the cover sheet for the procedure copy to be used to complete the surveillance and the same procedure in REFLIB is as follows:

**HARD COPY COVER SHEET**

Revision Number: 3B  
Effective Date: Dec 01 2002

**REFLIB COVER SHEET**

Revision Number: 3C  
Effective Date: Jan 01 2003

Which one of the following describes why the hard copy of the procedure CANNOT be used to complete the surveillance.

The REFLIB information indicates . . .

- A. by the Revision Number that the procedure has been cancelled.
- B. by the Revision Number that the procedure is still in the draft stage.
- C. by the Revision Number that a third Change Notice has been incorporated.
- D. that the effective date for use of the hard copy procedure has been exceeded.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-202 OBJ-3	RBNP-001	2.1.21	3.1	3.2

**BANK QID: 879**

**U.S. Nuclear Regulatory Commission  
Site-Specific  
Written Examination  
ANSWER KEY**

**Applicant Information**

Name: <b>ANSWER KEY</b>	Region: <b>IV</b>
Date: <b>February 7, 2003</b>	Facility/Unit: <b>River Bend Station Unit 1</b>
License Level: <b>SRO</b>	Reactor Type: <b>GE</b>
Start Time:	Finish Time:

**Instructions**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected six hours after the examination starts.

**Applicant Certification**

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

\_\_\_\_\_  
Applicant's Signature

**Results**

Examination Value	_____ 100 _____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 1**

The reactor is critical and plant heatup/pressurization is in progress when the high voltage power supply for IRM Channel 'D' fails and drops to 0 volts.

All other IRMs are OPERABLE.

Which one of the following describes the RC&IS and RPS response to the change in IRM Channel 'D' detector supply voltage?

- A. BOTH a control rod withdrawal block and a RPS half scram signal are generated.
- B. ONLY a control rod withdrawal block signal is generated.
- C. ONLY a RPS half scram signal is generated.
- D. NEITHER a control rod withdrawal block NOR a RPS half scram signal is generated.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503    OBJ-H13	ARP-P680-06A-A10	215003 K3.03	3.7	3.7

**BANK QID: 1**



## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 2

When RPV pressure instrumentation senses pressure has reached 1133 psig, which one of the following describes the expected response of the SRVs?

- A. No SRVs will open.
- B. One SRV will open, Low-Low-Set will not be armed.
- C. Two SRVs will open, due to Low-Low-Set being armed.
- D. Five SRVs will open, due to Low-Low-Set being armed.

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-109 OBJ-17	STM-109. Pages 11 & 58	239002 K1.03	3.5	3.6

BANK QID: 2

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 3**

Given the following conditions:

- LPCS System Inoperative alarm has been received
- The Low Pressure Core Spray (LPCS) Line Break status light (postage stamp) is illuminated

Which of the following describes the location of the break?

The break is in the . . .

- A. Drywell between the LPCS Testable Check Valve (F006) and the LPCS Injection Valve (F005).
- B. Reactor pressure vessel downcomer area.
- C. Auxiliary Building between the LPCS Testable Check Valve (F006) and the LPCS Injection Valve (F005).
- D. Area inside the core shroud bypassing the Low Pressure Core Spray sparger.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-205    OBJ-H10	STM-205. Page 18 ARP-P601-21A-H08	209001 A2.05	3.3	3.6

**BANK QID: 3**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

**QUESTION NO. 4**

SELECT the reason that terminating and preventing injection per Step RLA-15 of EOP-1A, RPV Control - ATWS , results in a power reduction.

Terminating and preventing injection . . .

- A. results in more core inlet subcooling as feed preheating is lowered.
- B. raises the void fraction by a reducing core natural circulation flow.
- C. raises the coolant moderator temperature as level is lowered.
- D. results in a rise in fuel temperature as core steaming rate rises.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513    OBJ-4	EPSTG-2. Page 7-17	295037 EK1.02 295037 EK3.03	4 4	4 4

**BANK QID: 4**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 5**

A plant heatup and pressurization is in progress with the reactor at the point of adding heat. In order to complete a required surveillance on RCIC, the CRS has directed the ATC to stop the heatup and stabilize RPV pressure at ~80 psig.

During the completion of the surveillance, the reactor became subcritical and power gradually lowered to Range 3 on the IRMs.

When directed to resume the heatup, the ATC, selected the next in-sequence control rod and withdrew it from 00 to 48 with continuous motion, resulting in a sustained 20 second period.

Which one of the following is the next required action of the ATC?

- A. Insert a manual scram.
- B. Perform a coupling check on the Control Rod just withdrawn to 48.
- C. Insert the Control Rod just withdrawn to lengthen the period to >30 seconds.
- D. Range all IRMs up to Range 7 to prevent an inadvertent automatic scram as power rises.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-500    OBJ-8	GOP-0001 IF 7-98	295014 AA1.04	3.2	3.3

**BANK QID: 5**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 6**

A loss of power has just occurred to one of the solenoids for an open Main Steam Isolation Valve (MSIV).

Which of the following describes the response of the MSIV and the reason for that response?

The MSIV will . . .

- A. close because the solenoids energize to align the air supply to open the MSIV.
- B. remain open because the other solenoid continues to supply air to the MSIV.
- C. close because the solenoids are in series and either one deenergizing will vent the air supply to the MSIV.
- D. remain open because the instrument air accumulator for that MSIV continues to supply air to the actuator.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-109 OBJ-H7	STM-109. Page 22	239001 K5.06* 239001 K2.01	2.8 3.2	2.9 3.3

**BANK QID: 6**

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 7

With the plant operating at 20% power, a loss of RPS Bus 'B' occurs.

Which one of the following describes the status of the RPS Scram Discharge (SDV) Vent and Drain Pilot Valve and Backup Scram Valve solenoids following the bus loss?

	VENT/DRAIN PILOT SOLENOIDS	BACKUP SCRAM SOLENOIDS
A.	Both energized	Both de-energized
B.	A energized, B de-energized	Both energized
C.	A energized, B de-energized	Both de-energized
D.	Both de-energized	Both energized

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-508 OBJ-H3	STM-508. Pages 23 & 24 STM-508. Fig. 8 & 9	201001 K2.03 201001 K2.04*	3.5 3.2	3.6 3.3
BANK QID: 7	GE 828F531AA AOP-0010			

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 8

A Safety Relief Valve (SRV) tailpipe vacuum breaker is failed in the open position when its associated SRV opens.

Which one of the following will result from this condition?

- A. Containment pressure will rise.
- B. Drywell to Containment differential pressure will rise.
- C. Suppression pool water will be drawn up into the SRV discharge line after the SRV closes.
- D. Steam from the SRV will bypass the quenchers and directly discharge into the suppression pool.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-109 OBJ-H17	P&ID 3-1B STM-109, Fig. 7	223001 A2.09* 223001 K3.07	3.4 3.1	3.6 3.2
BANK QID: 8	STM-109, Page 12			

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 9

The plant is operating at 100% power. A rupture in the high pressure leg of the "A" Feedwater line flow transmitter (C33-FTN002A) changed the feed flow input to the Feedwater Level Control System. The At-The-Controls operator promptly placed Feedwater Level Control in SINGLE ELEMENT control with little change in level.

As a result of the above conditions, both Reactor Recirculation Pumps will . . .

- A. remain at present speed, however the Recirc Flow Control Valves will runback to minimum position.
- B. downshift to slow speed operation with the Recirc Flow Control Valves remaining at their present position.
- C. trip to OFF due to cavitation interlocks not being met and Recirc Flow Control Valves not being at 22%.
- D. remain at present speed and the Recirc Flow Control Valves will remain at their present position.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-053    OBJ-H2	AOP-0024 ARP-P680-4A-A3 ARP-P680-4A-A9 ARP-P680-4A-C1 ARP-P680-4A-C7	202002 K6.04	3.5	3.5
BANK QID:    9				



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 10**

Given the following plant conditions:

- Reactor Power                    0% (all rods in)
- Reactor Level                    +33 inches
- Reactor Pressure                890 psig
- Drywell Pressure                1.5 psid
- Drywell Temperature            138°F
- Containment Temperature       88°F
- Containment Pressure            0.35 psig
- Annulus Differential Pressure   -4.5 in.WC

Based on the above conditions, which one of the following describes the Emergency Operating Procedures that should be entered?

- A. EOP-1 ONLY
- B. EOP-1 and 2
- C. EOP-2 ONLY
- D. EOP-2 and 3

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-514    OBJ-4</b>	<b>EOP-2. Entry Conditions</b>	<b>2.4.4*</b>	<b>4</b>	<b>4.3</b>
		<b>295011 AK1.01</b>	<b>4</b>	<b>4.1</b>

**BANK QID: 10**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 11**

The reactor is shutdown with no injection subsystems or alternate injection subsystems running?

Given the following RPV level and pressure conditions, in which case is adequate core cooling NOT assured?

- A. Level is -170 inches and rapidly lowering,  
Pressure is 300 psig and rapidly lowering.
- B. Level is -185 inches and slowly lowering,  
Pressure is 200 psig and slowly rising.
- C. Level is -190 inches and slowly lowering,  
Pressure is 300 psig and slowly rising.
- D. Level is -200 inches and slowly lowering,  
Pressure is 450 psig and rapidly lowering.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-512    OBJ-7	EOP-4. ALC and STC EPSTG-2. Page 12-8	295031 EA 2.04	4.6	4.8

**BANK QID: 19**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 12**

With reactor power at 60%, the Reactor Engineering requested that Control Rod 22-43 be inserted from notch 48 to notch 42 for a rod pattern adjustment. A few seconds after the ATC inserts the control rod to notch 42 a ROD DRIFT annunciator is received.

The ATC then observes Control Rod 22-43 moving past notch 46 and stopping at notch 48. The Control Rod Movement Sequence withdraw limit is notch 48. Reactor power had returned to 60%.

The appropriate action(s) for this condition are which one of the following :

- A. Place the Mode Switch in SHUTDOWN.
- B. Determine whether the rod has a failed Directional Control Valve or a stuck collet and notify Reactor Engineering.
- C. Since power is below HPSP, the Rod Withdraw Error analysis is affected and the rod must be inserted to notch 42 without delay.
- D. Notify a Reactor Engineer, declare rod 22-43 inoperable, and adjust the pattern as needed for flux shaping with rod 22-43 full out since it will not remain inserted.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-052 OBJ-4	ARP-680-07-R02 GE SH. 310	201003 K4.07 201003 A2.03*	3.2 3.4	3.2 3.7

**BANK QID: 49**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 13**

During valve time testing on RHR System A, IE12\*MOV004A, RHR pump A Suppression Pool Suction Valve, is closed with all other RHR A valves and control switches in their normal standby position.

If a valid LOCA signal occurs at this time, the RHR A Pump breaker will . . .

- A. close and immediately trip because of the IE12\*MOV004A contacts in the breaker trip circuit.
- B. close and immediately trip because of the low RHR system flowrate.
- C. close after IE12\*MOV004A opens automatically.
- D. close and remain closed, while IE12\*MOV004A remains closed.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-204 OBJ-H6	828F534A A STM-204, Fig. 10	203000 K4.06	3.5	3.5

**BANK QID: 140**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 14**

The following conditions exist:

- A leak inside the drywell has occurred.
- All RHR pumps are running.
- Automatic Depressurization System automatically actuated at 105 seconds and all ADS SRVs are open.
- RPV water level is now steady at -150 inches.
- Drywell pressure peaked at 1.5 psid and is now lowering.
- RPV pressure is 200 psig.

If both Div 1 and Div 2 ADS TIMER/LEVEL 3 SEAL IN RESET buttons are depressed and then released, which of the following describes the result on the Automatic Depressurization System?

The ADS SRVs will . . .

- A. close and then reopen after 5 minutes plus 105 seconds.
- B. close and then reopen after 105 seconds.
- C. close and remain closed.
- D. remain open.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-202 OBJ-H3	STM-202. Pages 14 & 15 STM-202. Fig. 4	218000 K4.03	3.8	4

BANK QID: 176

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 15

With the plant operating at 75% power, the Outboard MSIV Positive Leakage Control System switch is inadvertently placed in the OPERATE position.

Which one of the following will prevent the Outboard MSIV Positive Leakage Control System from initiating?

- A. A LOCA signal on either high drywell pressure or low reactor water level is not present.
- B. The required main steam line pressure and reactor pressure requirements have not been met.
- C. The post LOCA 20 minute timer has not timed out.
- D. All Main Steam Isolation Valves have not been fully closed.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-208 OBJ-H4	ARP-P601-17A-G05 & G06 STM-208. Page 10	239001 K1.13 239003 K4.06*	2.6 3.1	2.8 3.3
BANK QID: 190	SOP-0034. Page 9	239003 K1.01 239003 K4.03	3.3 2.9	3.4 3.2

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 16

The following conditions exist:

- An ATWS is in progress.
- Reactor power is 22%.
- Reactor water level is 10 inches.
- Reactor pressure is 960 psig.

Which of the following will be most severely challenged and is of primary importance should a full MSIV closure occur?

- A. Primary containment integrity
- B. Secondary containment integrity
- C. Fuel integrity
- D. RPV integrity

ANSWER: A

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-520    OBJ-5	FOP-1A HLO-320. Page 7 USAR Table 15.8-4	2.4.6	3.1	3.8
BANK QID: 211				

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 17

The Remote Shutdown (RSS) Panel emergency transfer switches (Division I switch on C61-P001 and Division II switch on RSS-PNL102) for SRV B21-F051G are in the EMERGENCY position.

SRV B21-F051G can be manually opened by operating . . .

- A. BOTH of the Division I "A" and Division II "B" solenoid control switches in the Main Control Room.
- B. ONLY the Division I "A" solenoid control switch in the Main Control Room.
- C. ONLY the Division II "B" solenoid control switch in the Main Control Room.
- D. ONLY the control switch on the RSS Panel, the Main Control Room switches are inoperable.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-200 OBJ-6	AOP-0031 SOP-0027	295016 AK3.03 295016 AA1.07	3.5 4.2	3.7 4.3
BANK QID: 251	STM-200. Page 7			



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 18**

An MSIV closure resulted in a reactor scram. The pressure transient caused a small steam leak in the drywell. NO OPERATOR ACTION HAS BEEN TAKEN and the following conditions exist:

- Reactor pressure is at 900 psig.
- Reactor Level is at -80 inches wide range
- Drywell pressure is 2.1 psid
- Containment pressure is 0.3 psig
- Lowest recorded ENS-SWG1A Bus voltage was 3952 volts.

Which one of the following would be in service as indicated?

- A. DIV I D/G running unloaded.
- B. LPCS injecting into the RPV.
- C. Drywell units coolers running with no cooling flow.
- D. DIV II Standby Service Water with flow through the "B" Containment Unit Cooler.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-309S OBJ-H5	SOP-0053	262001 K1.01	3.8	4.3
	ARP-P877-32A-H03	262001 A2.02*	3.6	3.9

BANK QID: 261

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 19**

Which one of the following is the reason that EOP-2, "Primary Containment Control", requires the reactor to be scrammed before suppression pool temperature reaches 110°F?

- A. Containment design pressure will not be exceeded due to compression of the non-condensable gasses at the higher water temperature.
- B. Complete condensation of the blowdown effluent from a LOCA will still occur with the expected suppression pool temperature rise of 70°F.
- C. Post-LOCA suppression pool hydrodynamic forces will remain within design limitations for containment.
- D. To minimize heat rejected to the primary containment in the event that Emergency Depressurization is required.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-514    OBJ-5</b>	<b>EPSTG-2. Page B-8-17 EOP-2. SPT-4 TS Bases. Pages 3.6-55 &amp; 56</b>	<b>295026 EK2.05 295013 AK3.02</b>	<b>3 3.6</b>	<b>3.3 3.8</b>
<b>BANK QID: 373</b>				

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 20**

Which one of the following is the BASIS for maintaining the refueling cavity pool 23 feet above the top of the reactor pressure vessel flange during refueling?

- A. To provide adequate net positive suction head to the Fuel Pool Cooling Cleanup Pumps.
- B. To ensure adequate core cooling during refueling, if Shutdown Cooling is lost.
- C. To provide spent fuel decay heat removal for 7 days without makeup.
- D. To limit the iodine activity release from a dropped fuel bundle.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-602 OBJ-8	TS 3.9.6 Bases STM-602. Page 47	2.3.10* 295023 AK1.01	2.9 3.6	3.3 4.1

**BANK QID: 389**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 21**

The plant is shutdown and operators are making preparations to place RHR "A" in Shutdown Cooling (SDC). Both Recirculation Pumps are shutdown with their discharge valves closed.

Which of the following describes how RHR Pump "A" is protected from damage due to no flow, without pumping RPV water to the Suppression Pool?

- A. The operator is required to establish a pump discharge flow-path to the reactor as soon as possible after starting the pump.
- B. The pump minimum flow valve (F064A) will open to provide flow until the RHR Heat Exchanger Bypass Valve (F048A) can be opened.
- C. The operator will open the minimum flow valve (F064A) until shutdown cooling flow is greater than 500 gpm.
- D. The pump will automatically trip on low suction pressure if flow/pressure is not adequate for pump suction.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-204 OBJ-H8	SOP-0031. Page 33 STM-204	2.1.2* 205000 A2.12	3 2.9	4 3

**BANK QID: 411**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 22**

The plant is shutdown for a maintenance outage. Work is being performed on a portion of the Feedwater System by Mechanical Maintenance. An I&C Maintenance Lead has received a Tier Clearance to work within the Feedwater System Master Clearance boundary to calibrate an instrument.

Upon completion of work, the Mechanical Maintenance Supervisor wishes to release his Master Clearance and restore the system, but the instrument calibration is still taking place.

What action(s), if any, must be taken to ensure the safety of the personnel performing the calibration?

- A. The Master Clearance is transferred to the I&C Maintenance Lead.
- B. The Master Clearance can be released with verbal permission from the I&C Maintenance Lead.
- C. The Mechanical Maintenance Supervisor may clear all tags that pertain to the I&C work.
- D. The I&C Maintenance Lead must release his Tier Clearance to the Tagging Official prior to releasing the Master Clearance.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-201 OBJ-3</b>	<b>ADM-0027. Page 19</b>	<b>2.2.13</b>	<b>3</b>	<b>3.4</b>

**BANK QID: 432**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 23**

Which one of the following is a consequence of allowing suppression pool water level to drop below 13 feet?

Suppression pool water level less than 13 feet . . .

- A. could result in overpressurization of the Containment.
- B. uncovers the top two Drywell to Containment horizontal vents.
- C. uncovers the Reactor Core Isolation Cooling turbine exhaust line.
- D. reduces the available net positive suction head for the low pressure ECCS pumps below minimum required.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-514 OBJ-5</b>	<b>EOP-4, ED-4 EPSTG-2. Page 13-8</b>	<b>295030 EK1.03</b>	<b>3.8</b>	<b>4.1</b>

**BANK QID: 513**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 24**

The plant is operating at 100% power when a short circuit occurs on the DC bus supplying power for ATWS ARI/RPT. This causes all of the power supply breakers to BYSPNL02A2 to trip, resulting in a loss of power to ATWS ARI/RPT.

Which one of the following describes the response of the ARI system and the Reactor Recirculation Pumps?

- A. ARI will not function, however the Reactor Recirculation pumps will trip to OFF immediately.
- B. ARI will actuate causing a depressurization of the scram air header and the Reactor Recirculation pumps will trip to OFF immediately.
- C. ARI will not function and the Reactor Recirculation pumps will not trip on an ATWS condition.
- D. ARI will actuate causing a depressurization of the scram air header on an ATWS condition, however the Reactor Recirculation pumps will not trip.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-052 OBJ-H5	STM-052. Page 32 STM-052. Fig. 21	295004 AK2.03 295004 AA2.02	3.3 3.5	3.3 3.9

**BANK QID: 539**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 25**

A LOCA has occurred, which for a time uncovered fuel in the core. The following conditions exist:

- Pre-LOCA Containment Temperature      90°F
- POST-LOCA Containment Pressure        2 psig
- POST-LOCA Containment Temperature    120°F

Based on the conditions above, the Control Room Supervisor has directed that the Hydrogen Recombiners be started.

Referring to SOP-0040 (EXAM HANDOUTS), which one of the following is the required RECOMBINER POWER SETTING?

- A. 52.46 KW
- B. 49.88 KW
- C. 47.30 KW
- D. 45.15 KW

**ANSWER: B**

REQUIRES SOP-0040 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-050    OBJ-12</b>	<b>SOP-0040. Page 7</b>	<b>500000 EA1.03</b>	<b>3.4</b>	<b>3.2</b>
	<b>SOP-0040. Attachment 5</b>	<b>2.1.25</b>	<b>2.8</b>	<b>3.1</b>

**BANK QID: 546**



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 26**

The plant is operating at 100 % power. The Auxiliary Building SNEO reports there is a major leak on the service water side of the CCP Heat Exchangers and the only way to isolate the leak is to isolate all service water to the CCP Heat Exchangers.

- Water temperature on CCP is 110°F and rising.
- Reactor Recirculation Pump Motor temperatures are rising.

Which one of the following describes the actions required by AOP-0011, Loss of Reactor Plant Component Cooling Water, regarding the loss of cooling water to CCP?

- A. Manually scram the reactor and trip and isolate both Reactor Recirculation Pumps, and isolate service water to the CCP Heat Exchangers.
- B. Reduce CCP heat loads by down shifting the Reactor Recirculation Pumps to slow speed, establish a feed and bleed on CCP to remove heat, and isolate the leak.
- C. Reduce CCP heat loads by tripping to OFF the operating CRD Pump, and start the standby CCP pump to increase cooling water flow while mechanics effect repairs on the broken piping.
- D. Shutdown CCP pumps, and isolate the CCP Heat Exchangers on the Service Water side. Repair the leak, un-isolate the Service Water side of the CCP Heat Exchangers and re-start the CCP Pumps.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-530    OBJ-6</b>	<b>AOP-0011 STM-115</b>	<b>295018 AA 2.03</b>	<b>3.2</b>	<b>3.5</b>

**BANK QID: 550**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 27**

The plant is operating at 100 % power. The Feedwater Level Control (FWLC) System is in three element control with the "A" Reactor Water Level Channel selected. A rupture occurs on the "A" reference leg causing a level change.

Assuming no other instruments are affected by the rupture, which one of the following describes the required operator action?

- A. Manually control water level with RCIC.
- B. Select the "B" Reactor Water Level Channel.
- C. Transfer the FWLC System to single element control.
- D. Allow the level dominant signal to take control and return level to normal.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107B OBJ-H8	AOP-0006 ARP-P680-3A-C08	295009 AA1.02	4	4

**BANK QID: 553**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 28**

Which one of the following describes the basis for the maximum design internal pressure of the Drywell?

- A. Maximum Drywell Pressure is + 20 psid based on a double-ended shear of a Recirculation Pump discharge pipe.
- B. Maximum Drywell Pressure is + 20 psid based on a double-ended shear of a Main Steam Line upstream of the MSIVs.
- C. Maximum Drywell Pressure is + 25 psid based on a double-ended shear of a Recirculation Pump discharge pipe.
- D. Maximum Drywell Pressure is + 25 psid based on a double-ended shear of a Main Steam Line upstream of the MSIVs.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-057    OBJ-H4	TS 3.6.5.4 USAR 6.2.1.1.1 STM-057	295024 EK1.01	4.6	4.2
BANK QID: 573				

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 29

The plant is at 5 % power. Chemistry samples taken indicate that fuel damage is present in the core.

Which one of the following will NOT automatically initiate measures to control an Offsite Radiation release?

- A. Fuel Building Ventilation Radiation Monitors.
- B. Control Room Ventilation Radiation Monitors.
- C. Offgas Post-Treatment Radiation Monitor.
- D. Reactor Building Annulus Ventilation Exhaust Radiation Monitor.

ANSWER: B

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-402 OBJ-1	STM-402. Page 7 AOP-0003 AOP-0039	295034 EK1.02	4.1	4.4
BANK QID: 576				

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 30

The plant has just returned to 100 % power following completion of Refueling Outage 9 (RF-9). The shutdown for RF-9 was 45 days ago. The following conditions exist:

- Fuel Pool Cooling Pump SFC-P1B is out of service with shorted motor windings.
- Fuel Pool Cooling Pump SFC-P1A has just been secured and isolated due to a pump seal failure to prevent lowering level in the Spent Fuel Pool.

Using plant Decay Heat curves in AOP-0051 (EXAM HANDOUTS), determine which one of the following describes the present conditions of the Spent Fuel Pool.

	Time to Boil	Decay Heat	Heat-up rate
A.	17 hrs	5.6 Mbtu/hr	2.5°F/hr
B.	42 hrs	6.5 Mbtu/hr	2.5°F/hr
C.	17 hrs	6.5 Mbtu/hr	2.3°F/hr
D.	42 hrs	5.6 Mbtu/hr	2.3°F/hr

**ANSWER: D**

REQUIRES AOP-0051 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-543</b>	<b>OBJ-10</b>	<b>AOP-0051. Attachments 1. 3. 5</b>	<b>2.7</b>	<b>3.1</b>
		<b>233000 A4.05</b>	<b>3</b>	<b>3.2</b>
		<b>2.1.25*</b>	<b>2.8</b>	<b>3.1</b>
<b>BANK QID: 582</b>		<b>233000 K5.06</b>	<b>2.5</b>	<b>2.7</b>

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 31**

Standby Gas Treatment has started on a high Drywell pressure. The Unit Operator has placed the "B" Standby Gas Train in standby.

Which one of the following describes the response of the Standby Gas Treatment System to a High-High Annulus Exhaust Radiation signal on both divisions?

- A. The "B" Standby Gas Treatment Train will automatically restart from standby.
- B. The "A" Standby Gas Treatment Train will shutdown, then both Standby Gas Treatment Trains will re-initiate.
- C. The "A" Standby Gas Treatment Train will remain operating and the "B" Standby Gas Treatment Train will remain in standby.
- D. Both Standby Gas Treatment Trains shutdown and isolate awaiting further operator action.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-257 OBJ-5	ESK06GTS01&2 SOP-0043. Page 6 SOP-0059.	261000 K1.08* 261000 K4.01	2.8 3.7	3.1 3.8
BANK QID: 591	ARP-P863-71A-C07 & G07 ARP-P863-73A-C04. D05. E05. F0			

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 32**

The plant is operating at 100 % power when B21-AOVF028B, an outboard MSIV fails closed due to a rupture of the valve actuator air supply.

Which one of the following describes the response of the reactor?

ASSUME NO OPERATOR ACTION.

- A. RPV pressure will rise and stabilize at a higher pressure.  
Reactor power will rise and stabilize at a higher power.  
RPV water level will lower and then return to normal level.
- B. RPV pressure will rise and then lower following the scram.  
Reactor power will rise and then drop following the scram.  
RPV water level will lower and then stabilize at a lower level.
- C. RPV pressure will lower and stabilize at a lower pressure.  
Reactor power will lower and stabilize at a lower power.  
RPV water level will rise and then stabilize at a lower level.
- D. RPV pressure will lower and stabilize at a lower pressure.  
Reactor power will rise and return to the original power.  
RPV water level will rise and then return to normal level.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-316    OBJ-2	USAR 15.2.4.1.2.2 STM-107. Page 54	295007 AK1.03	3.8	3.9

**BANK QID: 599**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 33**

The plant is operating at 100% power.

The Control Room Supervisor has a tagout that requires independent verification.

Under which one of the following conditions should a waiver for independent verification be obtained from the Operations Shift Manager?

- A. The components to be tagged are required to continue power operation.
- B. The valves to be tagged are located around the Main Turbine Stop Valves.
- C. The components are located inside the Containment over the Hydraulic Control Units.
- D. The components involve a Temporary Alteration on the HPCS Diesel Generator Air Start System.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-201 OBJ-12	ADM-0076. Page 15	2.3.1	2.6	3

**BANK QID: 632**



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 34**

The following conditions exist:

- A startup is in progress
- Reactor power is 2%
- EHC PRESSURE SET is 250 psig
- Reactor pressure is stable at 200 psig
- Turbine Shell Warming is in progress with a WARMING RATE set at 10%.
- Turbine 1st stage pressure is 10 psig

The Unit Operator closes all the steam drains. Determine the response of reactor pressure, and the reactor/turbine pressure regulating system (EHC).

- A. Reactor pressure remaining constant at 200 psig, and turbine warming rate and 1st stage pressure will automatically rise.
- B. Reactor pressure remaining constant at 200 psig and the turbine bypass valves will automatically open.
- C. Reactor pressure will rise until vessel heat loss is 2% at ~920 psig, and turbine warming rate and 1st stage pressure will automatically be held constant.
- D. Reactor pressure will rise to approximately 250 psig, and then the turbine bypass valves will automatically open.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-509 OBJ-H9	EHC Funct Diag STM 509 Fig. 19 295007 AK2.01 STM-509 Pages 19 & 45		3.5	3.7

**BANK QID: 664**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 35**

The plant was operating at 100% rated power when a loss of Feedwater caused an automatic scram signal at RPV Level 3 (+9.7 inches). Plant conditions are as follows:

- A failure to scram has occurred (ATWS) and Reactor Power is 15%.
- RPV water level is being controlled between -60 inches and -100 inches with Condensate/Feedwater
- Control rods are being inserted per EOP-0005, Enclosure 14, Defeating RC&IS Interlocks and Emergency Control Rod Insertion Data Sheet.
- P680 annunciator RWCU EQUIP RMS DIFFERENTIAL HIGH TEMP was received.
- The Reactor Building SNEO has reported a fire in RWCU Pump Room 1.

Which one of the following systems should be isolated, if found to be discharging into RWCU Pump Room 1?

- A. Feedwater System
- B. Fire Suppression Systems
- C. Reactor Water Cleanup System
- D. Control Rod Drive Hydraulics System

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-515    OBJ-4	EOP-3 EOP-1A EPSTG-2 Rev. 9. Page B-9-7	295032 EA 2.03	3.8	4
BANK QID: 669				

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 36**

Concerning the plant air systems, which one of the following statements correctly describes the relationship between the Instrument Air System and the Service Air System?

- A. The Instrument Air System and the Service Air System can be cross-connected **ONLY** by a manual isolation valve.
- B. The Instrument Air System and the Service Air System are not capable of being cross-connected due to the safety related nature of the Instrument Air System.
- C. The Instrument Air System will automatically cross-connect to the Service Air System if pressure at the discharge of the Instrument Air Compressors drops below a specified value. The systems will automatically realign when pressure rises above the pre-determined setpoint.
- D. The Service Air System will automatically cross-connect to supply the Instrument Air System if pressure at the discharge of the Instrument Air Compressors drops below a specified value. Once pressure is restored in the system, the cross-connect valve must be manually reset.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-121 OBJ-H3	SOP-0021. Page 5 SOP-0022	300000 K4.01 300000 K4.02*	2.8 3	2.9 3
BANK QID: 703	STM-121			

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 37**

During a plant startup with CRD Pump A out of service for seal repairs, the following sequence of events occurred:

- 1605 - CRD Pump B tripped on overcurrent. Attempts to restart CRD Pump B per ARP-P601-22A-A01 (EXAM HANDOUT) were unsuccessful.
- 1612 - Annunciator ACCUMULATOR TROUBLE for CRD 20-13 at notch 48.
- 1615 - Annunciator ACCUMULATOR TROUBLE for CRD 38-17 at notch 12.
- 1617 - Tags are being cleared to make CRD Pump A available.

It is now 1620 and the following conditions exist:

- Reactor Pressure is 620 psig AND lowering steadily at 3 psig per minute
- Turbine Bypass Valves and steam line drains are all SHUT

How much time remains to return CRD Pump A to service before the Reactor Mode Switch MUST be placed in SHUTDOWN?

- A. 5 minutes
- B. 7 minutes
- C. 12 minutes
- D. 15 minutes

**ANSWER: B**

REQUIRES ARP-P601-22A-A01 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-052	OBJ-H6	ARP-P601-22A-A01	295022 AK3.01 3.7	3.9

BANK QID: 752

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 38

A Station Blackout has occurred and the following plant conditions exist:

- RPV pressure 830 psig
- RPV level 28 inches, RCIC operating to maintain level
- Drywell temperature 250°F and rising at 1°F per minute
  
- Annunciators alarming:
  - ADS SAFETY & RLF V AIR SUPPLY HDR A LOW PRESS
  - ADS SAFETY & RLF V AIR SUPPLY HDR B LOW PRESS
- SVV-ES3A and B, ADS Air Supply Pressure Rosemounts are both downscale

Which one of the following methods should be used to reduce RPV pressure to limit the rise in Drywell temperature?

- A. Using the MSL Drains and Main Turbine Bypass Valves while maintaining a cooldown rate less than 100°F/hr.
- B. Using sustained SRV opening while maintaining a cooldown rate less than 100°F/hr.
- C. Using the MSL Drains and Main Turbine Bypass Valves to rapidly lower pressure to 0 psig, irrespective of cooldown rate.
- D. Open at least 5 SRVs to rapidly lower pressure to 0 psig, irrespective of cooldown rate.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-512 OBJ-7	EOP-1. RP-3 to RP-7 EPSTG-2. Page 6-31	295003 AK1.06	3.8	4

BANK QID: 732

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 39**

A plant startup was in progress with the following plant conditions:

- Reactor power at 10%
- Startup FWRV in AUTO controlling RPV level
- Reactor Feed Pump FWS-P1C in service

FWS-P1C tripped and RPV level approached 9.7 inches before FWS-P1B could be started and placed in service. A manual scram was initiated as the discharge valve for FWS-P1B began opening. The following conditions now exist:

- Reactor power at 0%, all control rods inserted
- RPV pressure is 900 psig and stable
- FWS-P1B is in service with its discharge valve fully open
- Startup FWRV in AUTO indicating fully shut
- RPV level at 41 inches and rising slowly (~4 inches per minute)

Which one of the following is the reason RPV water level is rising?

- A. Level swell due to a failed open SRV
- B. Feedwater Level Control setpoint setdown operation
- C. Level swell due to normal Turbine Steam Bypass Valve operation
- D. Thermal expansion of the cool feedwater injected after the scram

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107B OBJ-H4	AOP-0001	295006 AA 2.03	4	4.2

**BANK QID: 733**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 40**

A refueling outage was in progress with RHR loop 'B' drained and isolated when the plant experienced an earthquake. The following conditions exist:

- All offsite power has been lost
- All three Diesels Generators are supplying their respective buses
- The entire contents of the CST has been lost due to a rupture.

A leak has developed in the Refueling Cavity/Upper Containment Pool that will soon uncover an irradiated fuel bundle suspended from the Refuel Bridge in the Refueling Cavity.

Given the above conditions, which of the following should be taken?

- A. Restore/maintain Refuel Cavity level with the Condensate System via Feedwater injection lines.
- B. Operate the Refuel Bridge to place the fuel bundle in the Dryer Pool fuel storage racks.
- C. Restore/maintain Refuel Cavity level with RPV injection from Standby Service Water via the RHR crosstie.
- D. Restore/maintain Refuel Cavity level with Standby Service Water via the crosstie with the SFC Coolers.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-535    OBJ-8	AOP-0027 SOER 85-1	295023 AK2.02	2.9	3.2

**BANK QID: 734**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 41**

With the plant operating at 100% power, the 'A' Reactor Recirculation Pump trips. The 'B' Reactor Recirculation Pump continues to operate on Fast Speed.

Following the trip, the flow indicated on P680 for Jet Pumps No. 5 and 10 lowered to zero as the 'A' Reactor Recirculation Pump coasted down. Ten seconds later both Jet Pumps are observed each indicating a stable flow of 1.2 E6 lbm/hr.

Which one of the following describes why Jet Pumps No. 5 and 10 indicate a flow of 1.2 E6 lbm/hr?

- A. Flow from the 'B' Recirculation Loop that is bypassing the core.
- B. One fifth of the reverse flow through the 'A' Loop Flow Control Valve.
- C. Indication of at least one failed jet pump in the 'A' Recirculation Loop.
- D. Reverse flow induced by natural circulation driving head ONLY.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-317 OBJ-2</b>	<b>AOP-0024</b>	<b>295001 AA2.04</b>	<b>3</b>	<b>3.1</b>

**BANK QID: 738**



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 42**

During a plant startup, with reactor power at 28%, a turbine trip occurred. A manual reactor scram was initiated 12 seconds after the turbine trip with reactor power at 32%. Shortly AFTER THE SCRAM, both Reactor Recirculation pumps transferred from fast speed to slow speed.

Which one of the following is the reason the Reactor Recirculation pumps DID NOT transfer to slow speed BEFORE the scram.

- A. Averaging manifold pressure never reached a value equivalent to >30.92% power.
- B. Steam Cross Around pressure never reached a value equivalent to >30.92% power.
- C. Turbine First Stage pressure never reached a value equivalent to >30.92% power.
- D. The 15 second time delay on the EOC-RPT downshift was not met.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-053    OBJ-H12	ARP-P680-06A-C07	202001 K4.13 202001 K1.28	3.7 3.9	4 4.1

**BANK QID: 739**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 43**

Which one of the following is the reason that both the UP STREAM B33-AOVF019, DIV 2 and the DN STREAM B33-AOVF020, DIV 1 Reactor Water Sample Line isolation valves close on a Loss of RPS Bus A?

(EXAM HANDOUT, Reactor Water Sample Valve Isolation Logic, STM-058, Figure 14)

- A. The isolation logic power for both valves is supplied by RPS Bus A.
- B. Power to the air actuator solenoids for both valves is supplied by RPS Bus A.
- C. Power to Main Steam Line High Radiation Channels A and C is supplied by RPS Bus A.
- D. Any initiation of the OUTBOARD Logic, also initiates the INBOARD Logic for these valves.

**ANSWER: C**

REQUIRES STM-058 FIG. 14 (05800010E.VSD) AS EXAM

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-058 OBJ-H2	AOP-0003 GE DWG 828E445AA	295020 AA 2.06	3.4	3.8

BANK QID: 742

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 44**

A plant startup is in progress. The reactor is critical at the point-of-adding-heat.

Fully withdrawn Control Rod 20-25 loses its Channel 2 position indication. Control Rod 20-25 has substitute data entered for Channel 1 position indication.

All other control rods are operating normally.

To continue the plant startup, Control Rod 20-25 . . .

- A. position signals must be bypassed in both RC&IS RACS cabinets.
- B. may have Substitute Data entered for Channel 2 position indication.
- C. must be fully inserted and bypassed in the RC&IS RGDS cabinet.
- D. must be fully inserted by using the Scram Test switches locally on its HCU.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-500    OBJ-H14	SOP-0071 SOER 84-2 CR Mispositioning REP-0051	201005 K3.02	3.5	3.5
BANK QID: 743				

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 45**

Given the following conditions:

- RPV Pressure is 0 psig
- Drywell temperature at the 145 ft elevation is 185°F
- Containment temperature at the 119 ft elevation is 99°F
- Wide Range RPV Level indicates -145 inches

Which of the following describes the operational status of Wide Range RPV Level instruments?

- A. They CANNOT be used to determine RPV water level.
- B. They CAN be used, but their indicated level is lower than actual level.
- C. They CAN be used, but their indicated level is higher than actual level.
- D. They CAN be used and will indicate actual level since they are at calibration conditions.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-511    OBJ-6	EOP-1. CAUTION 1 EPSTG-2. Pages 2 - 8	2.1.32* 216000 A3.01	3.4 3.4	3.8 3.4

BANK QID: 745

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 46**

A plant startup and heatup is in progress with power at the Point of Adding Heat. The following conditions exist:

- RCS temperature: 250°F
- Heatup rate: 20°F/hr
- A loss of RPS Bus "B" has just occurred.

Which one of the following is an immediate operational concern if power to RPS Bus "B" cannot be promptly restored?

- A. The inability to raise RPV level
- B. The inability to lower RPV level
- C. The inability to control the heatup rate
- D. The full scram when the Inboard MSIVs close due to loss of air

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-058 OBJ-6	AOP-0003. Page 18	223002 K6.08	3.5	3.7

**BANK QID: 746**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 47**

The reactor was manually scrammed from 100% power when Drywell pressure began to approach the scram setpoint. All control rods inserted and RPV level dropped to -10 inches. EOP-1, RPV Control, and EOP-2, Primary Containment Control were entered on high Drywell pressure.

RPV level was stabilized at 30 inches per EOP-1, Step RL-4.

During performance of the subsequent actions of AOP-0001, Reactor Scram, RPV level control becomes erratic and level drops to +5 inches.

Select the REQUIRED action.

- A. Re-enter EOP-1 at the beginning (Point A).
- B. Re-enter EOP-1 at the beginning of Section RL (Point B).
- C. Restore and maintain RPV water level between 10 and 51 inches per RL-4. EOP re-entry is not necessary.
- D. Since level has fallen below the control band, continue execution of Section RL at Step RL-5 band. EOP-1 re-entry is not necessary.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-512    OBJ-4</b>	<b>FPSTG-2. Page 4-4 OSP-0009. Page 43</b>	<b>2.4.14</b>	<b>3</b>	<b>3.9</b>

**BANK QID: 750**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 48**

With the plant at 100% power, APRM A is indicating 99% and has the following LPRM input signals:

- 4 LPRMs reading between 95 and 100
- 6 LPRMs reading between 80 and 95
- 4 LPRMs reading between 50 and 80
- 3 LPRMs reading between 35 and 50

If the HIGHEST reading LPRM is BYPASSED, which one of the following describes the immediate effect on APRM A indicated power and the absolute difference between the APRM A indicated power and the calculated (heat balance) core thermal power?

- A. APRM output is lower and the absolute difference is higher.
- B. APRM output is lower and the absolute difference is lower.
- C. APRM output is higher and the absolute difference is higher.
- D. No effect on either, the averaging amplifier adjusts the output for the bypassed LPRM.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503 OBJ-503	STM-503. Page 53	215005 A1.07	3	3.4

**BANK QID: 756**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 49**

An ATWS has resulted in Containment degraded conditions due to difficulties in restoring the Containment Unit Coolers.

In which one of the following situations is Emergency Depressurization REQUIRED?

Containment Temperature is . . .

- A. 187°F and slowly lowering due to Containment Unit Cooler restoration.
- B. 184°F and stable, Containment Unit Coolers CANNOT be restored.
- C. 180°F and rising, Containment Unit Coolers are about to be restored.
- D. 180°F and slowly rising, Containment Unit Coolers CANNOT be restored.

**ANSWER:** A or D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-514    OBJ-6	EOP-2. CT-4. 5. 6 EPSTG-2. Pages 3-2. 3-3. 3-4. 8-10	295027 EA1.03	3.7	3.8

BANK QID: 758



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 50**

It is three days after the shutdown to begin a refueling outage. The reactor is in MODE 4 with RPV water level at +58 inches when a complete loss of shutdown cooling occurs. Both recirc pumps are OFF.

Under these conditions, which one of the following is an adverse consequence that can result from thermal stratification as long as RPV water level remains at +58 inches?

- A. An inadvertent pressurization of the RPV.
- B. The inability to restore any normal method of shutdown cooling.
- C. RPV temperature lowering below Technical Specification limits.
- D. The inability to establish an alternate method of decay heat removal.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>	
<b>HLO-543</b>	<b>OBJ-12</b>	<b>AOP-0051. Page 5</b>	<b>205000 K3.03</b>	<b>3.8</b>	<b>3.9</b>
			<b>205000 K3.01*</b>	<b>3.3</b>	<b>3.3</b>

**BANK QID: 759**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 51**

The plant has experienced an ATWS and the CRS has directed the UO to initiate Standby Liquid Control System (SLC) injection. The following occurred:

- The UO took the P601 SLC PUMP A control switch to RUN and noted that C41-F001A (Suction Valve) failed to open.
- He then took the P601 SLC PUMP B control switch to RUN and observed C41-F001B beginning to open.

The following additional indications now exist:

- SLC "A" SQUIB CONTINUITY light is extinguished
- SLC "B" SQUIB CONTINUITY light is lit

Based on the above, when C41-F001B is full open, which one of the following describes the status of the SLC System?

- A. SLC Pump "B" is injecting into the RPV through the "B" Squib valve.
- B. SLC Pump "B" is injecting into the RPV through the "A" Squib valve.
- C. SLC Pump "A" and "B" are injecting into the RPV through the "A" Squib valve.
- D. SLC Pump "A" is NOT running and SLC Pump B is NOT injecting because the "B" Squib valve failed to open.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-201 OBJ-H4	STM-201. Page 21 STM-201. Fig. 6	211000 A3.03	3.8	3.8

**BANK QID: 760**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 52**

Following a large break LOCA, ALL RPV level instruments went off-scale low.

Five seconds later, the Fuel Zone Level instruments returned on scale. The following conditions now exist:

- Containment temperature      91°F (at EL 119 ft)
- Drywell temperature          285°F (at EL 145 ft)
- RPV Pressure                    10 psig
- Fuel Zone Level indication   -290 inches and slowly rising

With the above conditions, Fuel Zone Level indication . . .

- A. CANNOT be used to determine RPV level due to the elevated Drywell temperature.
- B. CANNOT be used to determine RPV level because it was off-scale low concurrently with all other level instruments.
- C. CAN be used to determine RPV level because it is above the Minimum Indicated Level.
- D. CAN be used to determine RPV level because its indicated level is conservatively lower than actual level .

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-511    OBJ-6	EOP-1, Caution 1 EPSTG. Page 5-5	295028 EK2.03	3.6	3.8

**BANK QID: 761**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 53**

The plant has experienced an ATWS. The following conditions exist at P680:

- All eight white scram solenoid lights are extinguished.
- Annunciator SCRAM PILOT VLV AIR HEADER LOW PRESSURE is alarming.
- SDV Vent and Drain valve position lights indicate all four valves are closed.
- Approximately 20% of the withdrawn control rods fully inserted.
- CRD cooling water differential pressure has been maximized.

Which of the following methods for alternate control rod insertion should be attempted next?

(EOP-0005, Enclosure 26, EXAM HANDOUT)

Control rod insertion by . . .

- A. venting the scram air header.
- B. resetting and reinitiating ARI.
- C. removing the scram solenoid power fuses.
- D. resetting the scram and initiating a manual scram.

**ANSWER: D**

REQUIRES EOP Enclosure 26 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-513    OBJ-5</b>	<b>EOP-1A. ROA-11 EPSTG-2. Pages 7-64 &amp; 65 EOP-0005. Encl 26</b>	<b>295015 AK2.04</b>	<b>4</b>	<b>4.1</b>

BANK QID: 763

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 54**

High Drywell pressure of 2.2 psid has resulted in initiation of High Pressure Core Spray (HPCS). HPCS injected with RPV pressure at 950 psig following the scram and raised level to +60 inches. The HPCS Injection Valve (E22-F004) has automatically closed. NO OPERATOR ACTION WAS TAKEN.

Five minutes later, P601 annunciator DIV III 480V BUS E22\*S002 UNDER VOLTAGE alarmed. Attempts to restore power to MCC E22-S002 were unsuccessful.

As RPV water level lowers below -43 inches, which one of the following actions will be required if it is necessary to use HPCS to restore RPV water level?

- A. Reset the HPCS Initiation Logic and monitor HPCS automatically re-align at -43 inches.
- B. Locally re-open both the Injection Valve, E22-F004 and the Minimum Flow Valve, E22-F012 manually.
- C. Locally re-open Injection Valve, E22-F004, and close Minimum Flow Valve, E22-F012, manually.
- D. Locally close the HPCS Pump supply breaker, re-open Injection Valve, E22-F004 from the control room, and close Minimum Flow Valve, E22-F012, manually.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-203 OBJ-H13	STM-203. Page ARP-P601-16A-G02	209002 K2.02	2.8	2.9

**BANK QID: 765**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 55**

The plant is operating at 100% power. A failure in the EHC electronics has caused the Speed Control Unit output to be equivalent to it detecting a 10% overspeed condition.

Which one of the following describes the INITIAL response of the Turbine and Bypass Valves to the erroneous EHC Speed Control Unit signal?

- A. All Turbine Intercept Valves and Control Valves will close.  
Both Bypass Valves will remain closed.
- B. Only the Turbine Intercept Valves will close.  
Both Bypass Valves will open.
- C. Only the Turbine Control Valves will close.  
Both Bypass Valves will remain closed.
- D. All Turbine Intercept Valves and Control Valves will close.  
Both Bypass Valves will open.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-509 OBJ-H10	STM-509. Page 50 STM-509. Fig. 23	241000 K3.08	3.7	3.7

**BANK QID: 766**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 56**

After completing all prerequisites for starting Reactor Feedwater Pump FWS-P1C, the following conditions existed:

- RPV water level was 30 inches
- FWS-P1C pump suction pressure was 275 psig
- The P680 RX FWP-P1C MN LO PMP PRESS NORM red light was lit
- The P680 RX FWP-P1C GEAR INCR LO PRESS NORM red light was lit
- All P680 annunciators associated with the Reactor Feedwater Pumps were clear.

The ATC depressed the START pushbutton for FWS-P1C and released it 2 seconds later. FWS-P1C failed to start. The only change from the above conditions is annunciator RX FW PUMP BREAKERS AUTO TRIP is now alarming.

Which one of the following is the reason FWS-P1C did not start?

- A. Inadequate lube oil system pressure.
- B. Inadequate FWS-P1C pump suction pressure.
- C. FWS-P1C minimum flow valve NOT full open.
- D. FWS-P1C electrical protection lockout (86 device not reset).

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107 OBJ-H5	ARP-P680-3A-A01 STM-107. Page 9	259001 A4.02	3.9	3.7

BANK QID: 767

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 57**

Following a scram due to high Drywell pressure, EOP-2 was entered with Drywell temperature rising.

At a Drywell temperature of 145°F, Enclosure 20, Defeating Drywell Cooling Isolation Interlocks, was installed and all Drywell Unit Coolers placed in operation by 160°F. Drywell temperature reached a peak value of 230°F before beginning to lower. The following conditions now exist:

- RPV level reached a minimum of -35 inches and is now stable at 30 inches.
- Drywell pressure is 1.55 psid and lowering rapidly.
- Drywell temperature is 143°F and lowering rapidly.

With the above conditions, which one of the following is true?

- A. Enclosure 20 must be removed with Drywell temperature below 145°F.
- B. All available Drywell Unit Coolers must remain ON per EOP-2, Step DWT-3.
- C. All Drywell Unit Coolers must be secured. Drywell temperature was >200°F.
- D. Individual Drywell Unit Coolers can be secured to avoid a negative Drywell pressure.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-514    OBJ-6</b>	<b>EOP-2. Steps DWT-2 &amp; 3 EPSTG-2. Page 8-6</b>	<b>295012 AA1.02</b>	<b>3.8</b>	<b>3.8</b>

**BANK QID: 769**



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 58**

With the plant operating normally at 100% power, a full-flow surveillance test of the RCIC system from CST to CST is being performed.

Annunciator RCIC SUCTION XFER SUP PL LEVEL HIGH alarms. The operator performing the surveillance test responds by immediately depressing the RCIC DIV 1 MANUAL ISOLATION pushbutton.

Assuming NO FURTHER OPERATOR ACTION is taken which one of the following describes the response of CST level and the reason for that response?

CST level would be expected to . . .

- A. remain constant with RCIC continuing to operate in full-flow test lineup, CST to CST.
- B. remain constant with an isolation of the RCIC Turbine steam supply and the Test Return valves to the CST closed.
- C. rise due to RCIC continuing to operate in full-flow test lineup, but now pumping water from the Suppression Pool to the CST.
- D. remain constant with RCIC continuing to operate with its minimum flow valve opening after the Test Return valves to the CST close.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-209    OBJ-H5	SOP-0035 ARP-P601-21A-C05 STM-209	217000 A1.06	3.2	3.3
BANK QID: 771				

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 59**

The plant is operating at 75% power and the third Reactor Feed Pump is about to be started. A problem develops in the Feedwater Level Control (FWLC) System resulting in a rise in RPV level. With level gradually rising, RPV level indication on P680 is as follows:

- C33-R606A Narrow Range Level Indicator      52 inches
- C33-R606B Narrow Range Level Indicator      49 inches
- C33-R606C Narrow Range Level Indicator      51 inches
- B21-R604 Wide Range Level Indicator          50 inches
- C33-R608 Upset Range Level Recorder          49 inches
- MTS & FWP TRIP RX WATER HIGH LEVEL 8 annunciator is alarming

No automatic actions have occurred. Based on the conditions above, which one of the following describes the required actions and the correct order for those actions to be taken?

- A. Trip ONE Reactor Feed Pump.  
Monitor RPV water level for further action.
- B. Trip ONE Reactor Feed Pump.  
Trip the Main Turbine.  
Manually SCRAM the reactor.
- C. Trip the Main Turbine.  
Manually SCRAM the reactor.  
Trip BOTH Reactor Feed Pumps.
- D. Manually SCRAM the reactor.  
Trip the main turbine.  
Monitor RPV water level for further action.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-051      OBJ-H3	AOP-0001. Page 3 AOP-0002. Pages 3 & 6	295008 AA1.07	3.4	3.4

BANK QID: 774

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 60**

The plant is starting up. After verifying acceptable overlap between all the IRMs and APRMs, the ATC placed mode switch in RUN.

Before the recorder displaying IRM Channel G could be switched to the APRM position, IRM Channel G experienced an INOP trip due to a power supply failure.

Which one of the following describes the expected response for this condition?

- A. Half scram and Control Rod Withdrawal Block.
- B. NO half scram or Control Rod Withdrawal Block, both are bypassed.
- C. Control Rod Withdrawal block ONLY, IRM scrams are bypassed.
- D. Half scram ONLY, IRM Control Rod Withdrawal Blocks are bypassed.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-508 OBJ-H2	STM-503. Pages 36 & 37 SOP-0074. Attachment 4	212000 K6.02	3.7	3.9

BANK QID: 776

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 61**

A cold reactor startup was in progress with SRM Channel A bypassed due to failure of its high voltage power supply.

When the SRM detectors were withdrawn per GOP-0001, SRM D remained fully inserted. SRM A, B and C fully withdrew. A control rod was inserted two notches to stop the power rise on IRM Range 5 while troubleshooting the SRM D drive problem. All IRM Channels are now on Range 5 and slowly lowering.

The status of SRM D is as follows:

- SRM D UPSC TRIP and UPSC ALM OR INOP lights are lit.
- All attempts to withdraw SRM D have been unsuccessful and it has been declared inoperable.

Which one of the following describes the impact of the above on the plant startup?

The startup can continue . . .

- A. with no additional required actions.
- B. only after either SRM A or D is returned to operable status.
- C. by placing all IRMs on Range 8 to clear the SRM D upscale control rod withdrawal block.
- D. by placing the SRM BYPASS switch in the 'CH D' position to clear the SRM D upscale control rod withdrawal block.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-503 OBJ-H2	TS 3.3.1.2 SOP-0074. Attachment 2	215004 A2.03	3	3.3

BANK QID: 777

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 62**

A fire was detected on Preferred Station Service Transformer RTX-XSR1C and its fire suppression Deluge Valve opened.

The Aux. Control Room reported that Diesel Driven Fire Pump FPW- P1A started and is the only fire pump running. Fire water pressure had initially dropped to 40 psig for about 10 seconds. Then it was restored to 130 psig and is being maintained at that pressure by the FPW-P1A.

Which one of the following describes the status of the Fire Water System?

- A. All Fire Water Pumps operated as expected.
- B. Only the Motor Driven Fire Pump FPW-P2 has failed to start.
- C. Only the Diesel Driven Fire Pump FPW-P1B has failed to start.
- D. Both the Motor Driven Fire Pump FPW-P2 and the Diesel Driven Fire Pump FPW-P1B have failed to start.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-250 OBJ-N5	STM-250. Page 10 SOP-0037. Pages 7, 8, 12	286000 K5.05	3	3.1

**BANK QID: 780**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 63**

With all plant systems operating in their normal lineup in Mode 3, which one of the following describes the effect, if any, that manually initiating Division 2 Standby Service Water will have on RPCCW?

Depressing the MAN INITIATE pushbutton for Div 2 Standby Service Water will . . .

- A. have NO affect on RPCCW.
- B. isolate Div 2 Service Water to and from the RPCCW Heat Exchangers ONLY with NO affect on flow through either RPCCW Safety Related Loop.
- C. isolate Div 2 Service Water to and from the RPCCW Heat Exchangers AND stop flow through BOTH RPCCW Safety Related Loops.
- D. isolate Div 2 Service Water to and from the RPCCW Heat Exchangers AND stop flow through the "B" RPCCW Safety Related Loop ONLY.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-115 OBJ-H9	ARP-P870-55A-H03 STM-115. Page 15	400000 A3.01	3	3

**BANK QID: 781**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 64**

A plant startup is in progress. RWCU is in its normal lineup rejecting to the Main Condenser with RWCU Reject Flow Control Valve, G33-AOVF033. The following conditions exist:

- Recirc Loop Suction temperature is 325°F
- A heatup rate of ~75°F/hr is being maintained
- P680 RWCU Reject Flow Controller G33-R606 is set for a 100 gpm reject flow.
- Non-Regenerative Heat Exchanger (NRHX) Outlet temperature is 128°F

If the ATC significantly raises the setting on G33-R606 to raise reject flow, which one of the following could occur:

- A. A RWCU Containment Isolation due to high differential flow.
- B. Closure of G33-AOVF033 due to high upstream pressure.
- C. Closure of G33-AOVF033 due to low downstream pressure.
- D. Closure of G33-MOVF004 due to high NRHX outlet temperature.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-601 OBJ-H4	ARP-P680-01A-B01	204000 A4.03	3.2	3.1

**BANK QID: 786**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 65**

Control Room annunciator 125VDC BAT CHGR ENB-CHGR1B TROUBLE is alarming on P808. ENB-SWG01B on P808 is as follows:

- Bus Voltage is reading 126 VDC
- Bus Current is reading 380 Amps

The following is indicated on the Division II 125VDC Battery Charger, ENB-CHGR1B, control panel:

- DC Voltmeter is reading 126 VDC
- DC Ammeter is reading 360 Amps
- Timer switch is at 0
- FLOAT EQUALIZE light is lit
- AC ON green light is lit

WITH NO OPERATOR ACTION, which one of the following describes the expected ENB-SWG01B bus voltage trend and the reason for that trend?

The bus voltage will . . .

- A. rise because an equalizing charge is being provided.
- B. lower because the bus load exceeds the charger's capacity.
- C. lower because a malfunction of the float charge is indicated.
- D. lower because AC power is NOT being supplied to the charger.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-305 OBJ-H4	SOP-0049 STM-305. Pages 5 & 7 ARP-P808-87A-G07	263000 A1.01	2.5	2.8
BANK QID: 788				



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 66**

Following a manual scram from 50% power due to lowering condenser vacuum, the following conditions exist:

- All Turbine Control Valves are shut.
- TMB-JI108, GENERATOR WATTS has just reached ZERO.
- The Main Generator Exciter Field Breaker is CLOSED.
- Both Main Generator output breakers are CLOSED.
- Main Condenser vacuum is 24 inches Hg and STABLE.

With the above conditions continuing to exist, the Main Turbine should automatically trip in about 5 seconds as a result of which one of the following?

- A. Condenser low vacuum
- B. Generator reverse power
- C. Generator low frequency
- D. Generator volts/Hz

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-521    OBJ-6	AOP-0002 STM-310	295005 AK2.04	3.3	3.3

**BANK QID: 789**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

**QUESTION NO. 67**

An In-Service Leak Test is being performed on the RPV following refueling operations. A miscommunication during the test results in a significant rise in reactor pressure. Control Room pressure indication is as follows:

- P680 Wide Range pressure is off-scale high.
- P601 Post Accident Pressure recorders both indicate 1350 psig.

Which one of the following is the correct assessment of the above conditions and any resulting limitations on plant operation?

Reactor pressure . . .

- A. was within the Tech Spec Safety Limit and there is no impact on plant operation.
- B. CANNOT be determined to have exceeded the Tech Spec Safety Limit based on the above conditions and requires engineering evaluation before further action.
- C. exceeded the Tech Spec Safety Limit, but if restored to within the limit within two hours, the plant startup may continue.
- D. exceeded the Tech Spec Safety Limit and plant startup will require NRC authorization.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-401 OBJ-9	Tech Spec 2.0	295025 EK1.05	4.4	4.7

**BANK QID: 790**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 68**

The plant is operating at 100% power when leakage followed by a line break in the RWCU System outside Primary Containment causes Auxiliary Building Area temperatures to rise. The RWCU Pump Room Area Temperature High causes the break to be isolated but not before RPV level reaches -43 inches.

It is now desirable to have access to the Auxiliary Building. In order to reduce area temperatures, which one of the following describes the Auxiliary Building Ventilation System alignment based on the above conditions?

- A. Normal supply and exhaust fans are operating, along with all with all Auxiliary Building unit coolers.
- B. Normal supply fans are operating with Standby Gas Treatment providing the only exhaust path.
- C. Supply air is from in-leakage into the Building with Safety Related Unit Coolers operating and the normal exhaust fans providing the exhaust path.
- D. Supply air is from in-leakage into the Building with Safety Related Unit Coolers operating and Standby Gas Treatment providing the exhaust path.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-409    OBJ-H2	AOP-0003. Pages 9 & 17 STM-409. Pages 21 & 22	290001 A1.02	3.6	3.6

**BANK QID: 791**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 69**

The Division 1 Standby Diesel is operating in parallel with off-site power loaded to 3100 KW for a one-hour load test surveillance. A LPCS/RHR A LOCA initiation signal is received.

Which one of the following describes the response of the Standby Diesel Bus to the LOCA signal and LPCS pump breaker closing?

- A. The normal feeder breaker to ENS-SWGR1A will trip due to the LOCA signal to isolate the bus from Off-site power with the diesel connected.
- B. The normal feeder breaker to ENS-SWGR1A will trip due to overcurrent from the LPCS pump starting current.
- C. The Standby Diesel Output Breaker will will trip due to the LOCA signal and ENS-SWGR1A will be supplied by Off-site power.
- D. The load from the LPCS pump start will be shared between Off-site power and the Diesel Generator operating in Droop Mode. NO breakers will trip.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-309 OBJ-H8	SOP-0053. Page 5 STM-300	264000 K1.07	3.9	4.1

**BANK QID: 792**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 70

Following an E-plan emergency declaration at River Bend, the NRC is notified within one hour using which one of the following?

- A. Dialogics System
- B. State and Local Hotline
- C. Emergency Notification System
- D. Emergency Support Package Communications (ESP\_COMM)

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
EP-023	OBJ-4	FIP-2-006	2.4.43	2.8 3.5

BANK QID: 793

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 71**

Due to a steam leak the Main Steam Line Tunnel area temperatures are all between 160°F and 170°F. All automatic isolations have occurred as designed. Because of the leak location and isolation actions, NO LOCA signal occurred from high drywell pressure or RPV low level.

An ALERT has been declared based on offsite release rates.

Which one of the following will reduce the UNMONITORED release rate?

- A. Shutdown the Turbine Building Ventilation System if operating.
- B. Shutdown the Radwaste Building Ventilation System if operating.
- C. Start the Turbine Building Ventilation System if NOT operating.
- D. Start the Fuel Building Charcoal Filtration trains if NOT operating.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-515    OBJ-6</b>	<b>EOP-3, RR-2 EPSTG-2, Page 10-4</b>	<b>2.3.11 2950017 AK1.0</b>	<b>2.7 3.8</b>	<b>3.2 4.3</b>

**BANK QID: 797**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 72**

With the plant operating at 100% power, Drywell pressure begins to rise. The CRS directs the UO to obtain a leakage rate report.

To manually generate a leakage rate report, the UO must go to Control Room Panel . . .

- A. P844 (ENV/SEISMIC RCDR PNL) and depress the PRINTOUT pushbutton above the leakage computer printer.
- B. P844 (ENV/SEISMIC RCDR PNL) and on the Leakage Computer keyboard, depress PRINT then ENTER.
- C. P642 (DIV 2 LDS RCDR PNL) and depress the PRINTOUT pushbutton above the leakage computer printer.
- D. P642 (DIV 2 LDS RCDR PNL) and on the Leakage Computer keyboard, depress PRINT then ENTER.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-207 OBJ-H4	STM-207. Page	295010 AA1.06	3.3	3.5

**BANK QID: 798**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 73**

The plant is Shutdown in Mode 4 and the following plant conditions exist:

- Main Condensers are drained and open for maintenance.
- Service Water temperature is 83°F.
- RPCCW temperature is 91°F.
- HPCS, RHR "B", and RHR "C" pump motors are tagged out for repairs.
- Reactor Recirculation Pump "B" is tagged out for seal replacement.
- Reactor Recirculation Pump "A" is operating in Slow Speed.

RHR Loop "A" was operating in shutdown cooling mode when the RHR A pump tripped due to unknown reasons.

Reactor Engineering has calculated decay heat as 20 E6 Btu/hr at 130°F.

To maintain present plant conditions, which one of the following will meet the Alternate Shutdown Cooling Methods criteria?

(Applicable pages of OSP-0041 in EXAM HANDOUTS)

- A. ADHR ONLY
- B. RWCU ONLY
- C. CRD and SFC ONLY
- D. CRD and RWCU ONLY

**ANSWER: A**

REQUIRES OSP-0041 Pages 13, 56, 57, 59, 60 AS EXAM HANDOUT

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-543 OBJ-8</b>	<b>AOP-0051</b>	<b>295021 AA1.04</b>	<b>3.7</b>	<b>3.7</b>
	<b>OSP-0041. Attachments 2. 4. 5</b>	<b>295021 AK1.01</b>	<b>3.6</b>	<b>3.8</b>

**BANK QID: 800**



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 74**

The plant is operating at 70% power. The Master Level Control System is in Three (3) Element control with Channel A (RPV level instrument C33-N004A) selected.

The variable leg for C33-N004A ruptures.

As a result of the variable leg failure, the Feedwater Level Control System response will be to . . .

- A. close the Feed Reg Valves to a lower position causing actual RPV water level to lower and stabilize at a level above RPV Water Level - Low scram setpoint.
- B. open the Feed Reg Valves to full open causing actual RPV water level to rise above the RPV Water Level - High scram setpoint.
- C. close the Feed Reg Valves to a lower position causing actual RPV water level to lower below the RPV Water Level - Low scram setpoint.
- D. open the Feed Reg Valves to a higher position causing actual RPV water Level to rise and stabilize at a level below the RPV Water Level - High scram setpoint.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-107B OBJ-H8	ARP-P680-03A-C08	259002 K6.05	3.5	3.5

**BANK QID: 805**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 75**

The plant is in a refueling outage and fuel handling is in progress. A High-High Fuel Building Ventilation Exhaust Radiation signal is received. No LOCA conditions are indicated.

Which one of the following describes the required operator actions at P863 to establish a fresh outside air supply to the Fuel Building under the conditions above?

- A. Override the supply isolation dampers by placing their control switches in the CLOSE position and then to the OPEN position.
- B. Place DIVISION 1 and DIVISION 2 RADIATION OVERRIDE switches in OVRD ONLY.
- C. Place DIVISION 1 and DIVISION 2 RADIATION OVERRIDE switches in OVRD, then open the supply isolation dampers.
- D. Place DIVISION 1 and DIVISION 2 RADIATION OVERRIDE switches in OVRD, then open the supply isolation dampers and stop both normal exhaust fans.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-406 OBJ-H7	SOP-0062. Page 10 & 11 STM-406. Page 21	295038 EK2.03	3.6	3.8

**BANK QID: 806**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 76**

Given the following initial conditions for the Inclined Fuel Transfer (IFTS) System:

- IFTS Tube full
- Upper upender vertical
- Carriage at upper terminal
- Lower upender inclined
- System powered up and neither bridge in the IFTS area

SELECT the correct statement regarding IFTS operation.

- A. The transfer tube can be drained.
- B. The refueling bridge can enter the IFTS area.
- C. The fuel handling bridge can enter the IFTS area in the Fuel Building.
- D. The winch can be lowered using the "lower" pushbutton on the upper control panel.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-055 OBJ-H4	FHP-0005	234000 K4.05	3	3.8
	STM-055. Pages 13, 32, 39	234000 K5.02	3.1	3.7

**BANK QID: 825**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 77**

While operating at power, the plant experienced severe damage to the Turbine Building, the Main Turbine and associated piping from explosives detonated during a terrorist attack. The following conditions exist one hour later:

- Security has neutralized the terrorist threat.
- The reactor is shutdown with all control rods inserted.
- Both MSIVs in the 'A' main steam line failed to fully shut with steam leaking into the turbine building from the steam tunnel.
- All primary systems except Main Steam have been isolated.
- Reactor pressure is 450 psig and slowly lowering.
- Radiation monitoring teams have just reported readings of 2.0 E-6 microcuries/cc I-131 equivalent at the site boundary.

Emergency Depressurization is appropriate at this point to prevent which one of the following? (EIP-2-001 in EXAM HANDOUTS)

- A. Exceeding release rates requiring a General Emergency.
- B. A loss of Secondary Containment integrity.
- C. A loss of Primary Containment integrity.
- D. Any further rise in the release rates.

**ANSWER: D**

**REQUIRES EIP-2-001 AND EOPs AS EXAM HANDOUT MATERIAL**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-515 OBJ-4</b>	<b>EOP-3. RR EOP-3 Bases</b>	<b>295038 EK3.04</b>	<b>3.6</b>	<b>3.9</b>

**BANK QID: 831**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 78**

The plant is in Mode 2.

Preparations are being made to enter Mode 1 when the Division 3 Diesel Generator fuel oil level is discovered to be 40,000 gallons. All other limiting conditions for operation required to be met for Mode 1 are met.

Which one of the following is applicable to entering Mode 1 with the above conditions?  
(Applicable Technical Specifications in EXAM HANDOUTS)

- A. Entry into Mode 1 is prohibited until Div 3 D/G fuel oil is restored to within specifications.
- B. There are no restrictions applicable for entry into Mode 1 with the above conditions.
- C. Entry into Mode 1 is allowed, but Div 3 D/G must fuel oil must be restored to within specifications within the following 48 hours.
- D. Entry into Mode 1 is allowed, if HPCS system is first declared inoperable so that Div 3 D/G is no longer required operable.

**ANSWER: A**

REQUIRES TS 3.0, 3.5.1, 3.8.1, 3.8.3 AS EXAM HANDOUT

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-409    OBJ-1</b>	<b>TS 3.8.3 TS 3.0.4</b>	<b>2.2.22</b>	<b>3.4</b>	<b>4.1</b>

**BANK QID: 832**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 79**

The plant is operating in mode 1 at 100% of rated power. STP-053-3001 (Jet Pump Operability) has just been completed. Upon review of the STP the CRS has discovered that Jet Pump No. 7 is inoperable.

The CRS enters T.S. 3.4.3 Action A, requiring the plant to be in Hot Shutdown within 12 hours.

Which one of the following correctly describes the basis behind this required tech spec action?

- A. A failed jet pump increases the probability of instability events at lower power levels during low flow conditions.
- B. With a failed jet pump, neutron flux distribution across the core changes due to the change in core flow, thereby making the APRM indications unreliable.
- C. A failed jet pump increases the blowdown area and reduces the capability of reflooding to two thirds (2/3) core height following a LOCA.
- D. A failed jet pump causes the APRM Flow Biased scram and rod block setpoints to drift due to the increase or decrease in flow in the affected loop.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-405 OBJ-1</b>	<b>TS 3.4.3 Bases</b>	<b>290002 A2.01</b>	<b>3.7</b>	<b>4</b>
		<b>290002 K4.01*</b>	<b>3.7</b>	<b>3.9</b>

**BANK QID: 833**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 80**

The plant was operating at 20% power. Plant Chemistry reported to the Main Control Room the following chemistry parameters:

- Reactor pH 8.8
- Reactor Water conductivity 11 micromhos/cm
- Reactor Water chlorides 150 ppb

Six hours later with the plant in Mode 2, Chemistry reports the following:

- Reactor pH 6.5
- Reactor Water conductivity 0.9 micromhos/cm
- Reactor Water chlorides 150 ppb

Which one of the following actions is appropriate for these plant conditions?  
(TR 3.4.13 in EXAM HANDOUTS)

- A. Return to Mode 1 where chlorides are in spec.
- B. Be in Mode 3 in 12 hours and Mode 4 in 36 hours.
- C. Stay in Mode 2 and restore chlorides to within limits within 48 hours or be in Mode 3 in 12 hours and Mode 4 in 36 hours.
- D. Restore chlorides to within limits within 48 hours.

**ANSWER: B**

**REQUIRES TR 3.4.13 AS EXAM HANDOUT MATERIAL**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-504 OBJ-1</b>	<b>TR 3.4.13</b>	<b>2.1.34</b>	<b>2.3</b>	<b>2.9</b>

**BANK QID: 834**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 81**

The plant is operating in Mode 1 near the end of cycle with the following conditions existing:

- Reactor Power 100%
- Core Flow 100%

The Daily Core Performance Log printed two hours ago shows a value of 1.06 for the Core Maximum Fraction of Limiting CPR (CMFLCPR) on an Atrium-10 fuel bundle.

Based on the above conditions, which one of the following describes the required action(s), if any, that must be taken?

(Applicable COLR Figures and TS 3.2.2 in EXAM HANDOUTS)

- A. Restore MCPR to within the limits within two (2) hours.
- B. No action is required, all thermal limits are within the limits specified within Technical Specifications.
- C. Restore MCPR to within the limits within two (2) hours and insert all insertable control rods.
- D. Reduce power to less than 23.8% of rated within four (4) hours.

**ANSWER: A**

REQUIRES COLR MCPR Figures 16 & 22 and TS 3.2.2 AS EXAM

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-403 OBJ-1</b>	<b>T.S. Section 2.0 T.S. 3.2.2 COLR Fig. 16. 22</b>	<b>2.1.19</b>	<b>3</b>	<b>3</b>
<b>BANK QID: 835</b>				



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 82**

The plant is now shutdown following an ATWS in which 6 control rods did not fully insert. Implementation of EOP Enclosures was required.

The OSM declared a Site Area Emergency and the following conditions now exist:

- The 6 control rods have been fully inserted.
- The CRS has exited the EOPs and entered GOP-0002, Plant Shutdown.
- RPV level is +30 inches
- RPV pressure is 600 psig.
- No Radioactive release has occurred.

Which one of the following describes the conditions to terminate the Site Area Emergency? (EIP-2-002 in EXAM HANDOUTS)

- A. Terminate the Site Area Emergency and notify the State and Local Agencies and the NRC the event is terminated.
- B. Obtain the concurrence of the State and Local Parishes and the NRC to terminate the Site Area Emergency.
- C. Obtain the concurrence of the State and Local Parishes to terminate the Site Area Emergency with NO further actions required.
- D. The Site Area Emergency will continue until a root cause has been determined and notify the State and Local Parishes that the emergency is terminated.

**ANSWER: B**

REQUIRES EIP-2-002 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
ETT-032	OBJ-6	EIP-2-002. Page 12	2.4	4
			2.4.29	
			2.4.37*	2 3.5

**BANK QID: 836**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 83**

With the plant at 50% power, the DIV I ANNULUS EXH RADN ALARM annunciator actuates. DRMS indicates Annulus Exhaust Radiation Monitor RMS-RE11A is in HIGH ALARM and RMS-RE11B is just below HIGH ALERT.

The UO reports the following status from Control Room Panel P863 before taking any operator actions:

- Both trains of Annulus Pressure Control are OFF and isolated.
- Both trains of Annulus Mixing are operating.
- Standby Gas Treatment Train A is operating.
- Standby Gas Treatment Train B is OFF.

What action(s) are required if it is determined that a valid Annulus Exhanust Radiation High condition existed?

- A. Declare RMS-RE11B inoperable.  
Declare Standby Gas Treatment Train B inoperable because it did NOT initiate.
- B. Declare RMS-RE11B inoperable.  
Declare Standby Gas Treatment Train A inoperable because it initiated.
- C. Declare RMS-RE11B inoperable.  
Declare Annulus Mixing Train B inoperable because it initiated.
- D. Declare ONLY RMS-RE11B inoperable.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-257 OBJ-H7	ARP-P863-71A-C07 STM-257 TS 3.6.4.3	295033 EA1.04	4.2	4.2

BANK QID: 837

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 84**

The plant is in an ATWS condition. To lower reactor power, RPV level was deliberately lowered to -110 inches by terminating and preventing all injection sources, except RCIC. The following conditions now exist:

- Reactor power is 3%
- Suppression pool temperature is 135°F
- Suppression pool level is 20 ft 0 inches
- CST level is 12 inches

Which one of the following is a restriction on injection flow to the RPV applicable to these conditions?

Injection flow from . . .

- A. RCIC must be terminated.
- B. Feedwater must be carefully controlled to avoid a power excursion.
- C. RCIC can only continue if its suction source is the Suppression Pool.
- D. all injection sources must now be controlled to maintain RPV level between -110 inches and Top of Active Fuel.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-513 OBJ-4</b>	<b>EOP Caution 6 EPSTG-2. Page 5-14 EOP-1A. RIA-20</b>	<b>2.4.22* 295037 EK1.06</b>	<b>3.3 4</b>	<b>4 4.2</b>

BANK QID: 838

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 85**

The plant is being shutdown to enter a forced outage. The following plant conditions exist:

- Reactor pressure is 90 psig.
- RHR Loop B is in Shutdown Cooling
- HVR-UC6, the room cooler for LPCS, RHR A and RCIC has been tagged out, isolated, and drained to repair a large tube leak.

At this time, HPCS is discovered to be inoperable. What actions, if any, are required?

(TS 3.5.1 in EXAM HANDOUTS)

- A. LPCS, RHR A or HPCS must be returned to operable status within 72 hours.
- B. HPCS must be returned to operable status within 14 days.
- C. NO additional actions required for these conditions.
- D. LCO 3.0.3 must be entered.

**ANSWER: D**

REQUIRES TS 3.5.1 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-406</b>	<b>OBJ-1</b>	<b>TS 3.5.1</b>	<b>2.6</b>	<b>3.8</b>
		<b>2.2.24*</b>	<b>2.6</b>	<b>2.8</b>
		<b>209001 A2.07</b>	<b>2.6</b>	<b>2.8</b>

**BANK QID: 839**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 86**

While conducting refueling operations, the following has occurred:

- A fuel bundle was dropped during withdrawal from the spent fuel pool.
- The bundle is resting about 30° from vertical
- Bubbles are observed rising from the fuel bundle.
- RMS-RE5A (midrange) is in ALERT at 4.23 E-3 microcuries/ml

Which one of the following identifies the correct actions to be taken?  
(EIP-2-001 in EXAM HANDOUT)

- A. Stop all refueling operations, declare an ALERT per the Emergency Plan and enter EOP-0003.
- B. Retrieve the bundle and place it in the nearest safe position and declare a NOUE per the Emergency Plan
- C. Stop all refueling operations, declare a SAE (Site Area Emergency) and enter EOP-0003
- D. Retrieve the bundle, place it in a safe location. No further actions are required until Reactor Engineering gives permission to resume refueling operations.

**ANSWER: A**

REQUIRES EIP-2-001 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-535    OBJ-4	AOP-0027. Page 4 EOP-3. RR Entry Conditions EIP-2-001. Page 24	295023 AA 2.05	3.2	4.6

BANK QID: 840

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 87**

Given the following conditions:

- Reactor Power 25%
- Reactor Level -105 inches and stable
- Reactor Pressure 950 psig and stable
- Suppression Pool Temp. 135°F and slowly rising
- Suppression Pool Level 20 feet 5 inches
- The turbine is tripped
- BOTH turbine Bypass Valves and TWO SRVs are OPEN

Which one of the following describes the required actions to be taken given the above conditions?

- A. Immediately secure all pumps taking a suction from the Suppression Pool to terminate pump cavitation.
- B. Immediately commence an Emergency Depressurization because limits in the Containment have been exceeded based on Suppression Pool temperature.
- C. Manually cycle one of the SRVs to control Reactor Pressure at the high end of the pressure band to reduce the amount of heat entering the Suppression Pool.
- D. Lower Reactor Pressure using cooldown rates that may exceed 100°F/hr, to avoid exceeding the Heat Capacity Temperature Limit of the Suppression Pool.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513 OBJ-5	FOP-1A. RPA-7	2.4.20	3.3	4

**BANK QID: 841**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 88**

The Maximum Core Uncovery Time Limit is based on the time . . .

- A. that adequate core cooling is assured while all RPV injection is terminated to recover reactor water level indication.
- B. the core may be partially uncovered and steam cooling ensures the hottest fuel rod temperature will not exceed 1800°F.
- C. reactor level may be below the bottom of active fuel with no cooling and the hottest fuel rod clad temperature not exceeding 1500°F.
- D. the time reactor level may be below the bottom of active fuel during an ATWS with no cooling and the hottest fuel rod clad temperature not exceeding 1500°F.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-512 OBJ-5</b>	<b>EPSTG-2. Page A-17 EOP-4. RF-12</b>	<b>295031 EK1.01 295031 EK3.02</b>	<b>4.6 4.4</b>	<b>4.7 4.7</b>

**BANK QID: 842**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 89

The Rod Control and Information System (RC&IS) uses the Bank Position Withdrawal Sequence to limit the maximum incremental control rod worth to prevent significant fuel damage from which one of the following?

- A. A control rod drop accident when operating below the Low Power Setpoint.
- B. A control rod drop accident when operating with a Limiting Control Rod Pattern.
- C. A continuous control rod withdrawal error at rated power conditions.
- D. Exceeding thermal limits when operating with a Limiting Control Rod Pattern.

ANSWER: A

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-402 OBJ-1	TS 3.1.6 Bases Pages 32 & 33	2.2.33	2.5	2.9

BANK QID: 843



## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 90**

During refueling, RHR Loop A is being placed in Fuel Pool Cooling Assist Mode. All prerequisites and valve alignments have been completed to start RHR pump 'A'.

The control room operator starts RHR pump A and attempts to throttle open the RHR HX OUTLET VLV, E12-F003A open beyond its initial 5% open position.

The operator reports to the CRS one minute later that E12-F003A remains at 5% and RHR flow is constant at 700 gpm.

Based on the current conditions, level in the Fuel Pool is . . .

- A. RISING because Suppression Pool water is being diverted to the Fuel Pool.
- B. REMAINING CONSTANT because the RHR system is currently recircing 700 gpm from and back to the Suppression Pool.
- C. REMAINING CONSTANT because the RHR system is currently recircing 700 gpm from and back to the Fuel Pool.
- D. LOWERING because water from the Fuel Pool is being diverted to the Suppression Pool.

**ANSWER: D**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-204 OBJ-H10	SOP-0031. Page 44 STM-204	2.4.48* 233000 K3.02	3.5 3.1	3.8 3.2

**BANK QID: 844**

# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 91

With the CYCLOPS computer is out of service, the following instantaneous values for Core Thermal Power (CTP) were calculated by the Reactor Engineer:

Time	CTP	Time	CTP	Time	CTP
0000	3039 MW	0800	3035 MW	1600	3039 MW
0100	3039 MW	0900	3042 MW	1700	3036 MW
0200	3039 MW	1000	3039 MW	1800	3039 MW
0300	3035 MW	1100	3039 MW	1900	3040 MW
0400	3039 MW	1200	3034 MW	2000	3036 MW
0500	3039 MW	1300	3039 MW	2100	3039 MW
0600	3038 MW	1400	3039 MW	2200	3039 MW
0700	3036 MW	1500	3041 MW	2300	3039 MW

Which one of the following describes compliance with the plant operating license maximum Core Thermal Power limit? (GOP-0005 in EXAM HANDOUT)

- A. Core Thermal Power is within compliance of the Operating License.
- B. Core Thermal Power has exceeded the two-hour average limitation of the Operating License requiring immediate notification of the NRC.
- C. Core Thermal Power has exceeded the eight-hour average limitation of the Operating License requiring immediate notification of the NRC.
- D. Core Thermal Power has exceeded the limitations of the Operating License requiring immediate plant shutdown and immediate notification of the NRC.

**ANSWER:** A

REQUIRES GOP-0005 AS EXAM HANDOUT MATERIAL

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-416 OBJ-2	GOP-0005, Page 5 Operating License NPF-47, Page 3	2.1.10	2.7	3.9

BANK QID: 845

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 92

The plant is operating a 90% with a power ascension to 100% in progress.

- Offgas Post Treat Radiation Monitor "B" is failed upscale, I&C is troubleshooting
- Offgas Post Treat Radiation Monitor "A" fails downscale.

Which one of the following describes the correct action for the CRS to direct next.

- A. Enter AOP-0005, for loss of main condenser vacuum.
- B. No action is required if Offgas Pre Treat Radiation Monitors "A" and "B" are in service.
- C. Contact Radiation Protection to sample the Offgas Post Treat radiation level once every four (4) hours.
- D. Reduce power to less than 5% within six (6) hours, place at least one mechanical vacuum pump in service and remove the SJAE from service.

ANSWER: A

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-524 OBJ-7	STM-606. Page 43 AOP-0005	272000 K3.05	3.5	3.7

BANK QID: 846

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 93**

Which one of the following is the reason that EOP 3, Secondary Containment and Radioactivity Release Control, must be entered if Annulus differential pressure is above - 3.0 inches WC?

- A. A significant steam leak into the secondary containment is indicated.
- B. A significant water leak from primary system may be discharging radioactivity directly to the secondary containment.
- C. A potential for the loss of secondary containment is indicated that could result in uncontrolled radioactive releases.
- D. A potential for failure of the Shield Building is indicated that will also result in failure of the primary containment vessel.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>HLO-515    OBJ-4</b>	<b>EPSTG-2. Page 9-2</b>	<b>295035 EK1.01</b>	<b>3.9</b>	<b>4.2</b>
		<b>295035 EK2.03</b>	<b>3.3</b>	<b>4.1</b>

**BANK QID: 847**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 94**

A MSIV Closure - ATWS has occurred with the plant at 35% power.

Injecting boron BEFORE reaching the Boron Injection Initiation Temperature (BIIT) of 110°F . . .

- A. prevents exceeding the Heat Capacity Temperature Limit (HCTL).
- B. ensures that Emergency Depressurization will NOT be required during ATWS conditions.
- C. violates the intent of EOP-1A, Step RQA-13, "WHEN it has been determined that SP temp. CANNOT be maintained below 110°F."
- D. ensures Hot Shutdown Boron Weight will be injected before suppression pool temperature reaches the value at which a scram is required by Technical Specifications.

**ANSWER: A**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513 OBJ-4	EPSTG-2. Page 7-68	295026 EK3.04	3.7	4.1

**BANK QID: 848**

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 95**

Which one of the following conditions requires a Hourly Fire Watch Patrol.

(TS 3.3.7.4 included in EXAM HANDOUTS.)

- A. The "A" Diesel Driven Fire Pump is inoperable.
- B. Welding activities in the Services Building Machine Shop.
- C. One of the Function B heat detectors for the DIV 3 Diesel Generator Room (EL 98 ft) is inoperable.
- D. One of the Main Control Room PGCC Panel Module smoke detectors has been inoperable for 8 days.

**ANSWER: C**

**REQUIRES TR 3.3.7.4 AS EXAM HANDOUT MATERIAL**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
<b>STM-250 OBJ-H9</b>	<b>FPP-0070. Page 7 FPP-0060 TRM 3.3.7.4</b>	<b>600000 AA 2.15</b>	<b>2.3</b>	<b>3.5</b>

**BANK QID: 849**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 96

The plant has experienced an ATWS condition. The following parameters exist at the present time:

- Reactor Mode Switch is in SHUTDOWN
- Reactor Pressure is 700 psig
- Reactor Water Level is -110 inches
- Reactor Power is <1 %
- Suppression Pool Temperature is 120°F
- MSIVs are closed.
- IRMs and SRMs are inserted.

Under which one of the following conditions would it be appropriate to exit EOP-1A, RPV Control - ATWS?

- A. Standby Liquid Control has injected Hot Shutdown Boron Weight into the reactor.
- B. The Reactor Engineer has performed shutdown margin determinations and has determined that adequate shutdown margin exists for all conditions.
- C. Standby Liquid Control has injected Cold Shutdown Boron Weight into the reactor with an additional 25% injected to allow for imperfect mixing and leakage.
- D. Chemistry and the STA have determined that the combination of Boron and Control Rods has brought the reactor subcritical for all conditions.

**ANSWER: B**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513    OBJ-3	EPSTG-2 Rev. 9. Page B-7-3 EOP-1A. RCA-2	295006 AK1.02	3.4	3.7

BANK QID: 850

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

#### QUESTION NO. 97

Which one of the following describes the interrelationship between IAS-C4, Diesel Driven Air Compressor and the Instrument Air System?

- A. IAS-C4 auto starts on a LOCA to provide sufficient redundancy for Instrument Air service.
- B. IAS-C4 auto starts on a Station Blackout to maintain Instrument Air service.
- C. IAS-C4 is manually started and will automatically align to supply Instrument Air when its receiver pressure exceeds 113 psig.
- D. Must be manually started and manually aligned to Instrument Air on a loss of offsite power.

ANSWER: D

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-121 OBJ-H2	STM-121. Pages 26 & 27	295019 K3.01	3.3	3.4

BANK QID: 851



# EXAM KEY

## U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

### QUESTION NO. 98

During an ATWS, automatic initiation of the Automatic Depressurization System (ADS) is inhibited to prevent which one of the following?

- A. A loss of all RPV level indication
- B. Large irregular neutron flux oscillations
- C. A power excursion due to low pressure ECCS injection
- D. Exceeding 110°F Suppression Pool Temperature before boron injection

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-513    OBJ-4	EOP-1A. RIA-5 EPSTG-2. Page 7-11	2.4.22* 2.4.50 295037 EK1.02	3 3.3 4.1	4 3.3 4.3

BANK QID: 852

## EXAM KEY

**U.S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION FEBRUARY 2003  
SENIOR REACTOR OPERATOR**

**QUESTION NO. 99**

A plant startup was in progress with reactor power at 29%. The No.1 Turbine Bypass Valve failed fully open.

On the full core display, RPC MODE light is between the GP 1-4 FULL OUT and the LO POWER SET PT marks.

Which one of the following is the reason further control rod withdrawal is prohibited with these conditions?

- A. The accident analysis for a Control Rod Drop is NO longer valid.
- B. The required Rod Pattern Controller rod blocks ARE NOT operable.
- C. The Rod Withdrawal Limiter IS NOT enforcing the required four-notch limit.
- D. The Rod Withdrawal Limiter IS enforcing a four-notch withdrawal limit, but should be enforcing a two-notch limit.

**ANSWER: C**

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
STM-500 OBJ-H5	TS 3.3.2.1. Page B 3.3-46	201005 K6.01	3.2	3.2

**BANK QID: 853**

## EXAM KEY

### U.S. NUCLEAR REGULATORY COMMISSION WRITTEN EXAMINATION FEBRUARY 2003 SENIOR REACTOR OPERATOR

QUESTION NO. 100

Which one of the following is ALWAYS required in the contents of a temporary procedure?

- A. A sequence specified for all steps
- B. Independent verification of all steps
- C. A date when the procedure can no longer be used
- D. A statement that prohibits pen and ink changes to the procedure

ANSWER: C

<u>TRAINING OBJECTIVE</u>	<u>REFERENCES</u>	<u>NRC K/As</u>	<u>RO</u>	<u>SRO</u>
HLO-202 OBJ-3	RBNP-001. Page 11	2.2.11	2.5	3.4

BANK QID: 854