

**G2.1.29 Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc (CFR 41.10 / 45.1 / 45.12).**

**K/A MATCH ANALYSIS**

The questions gives plausible scenarios where a lineup verification is being performed. The candidate must choose which of the scenarios is proper verification performance.

**ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. Plausible but closed valves should be taken closed direction, not open.
- B. Incorrect. Plausible but throttle valves should not be manipulated, verify visually.
- C. Incorrect. The SS should be contacted prior to manipulation of the valve.
- D. Correct. This would be an indirect IV of the valve position which is allowed.

**REFERENCES**

NMP-OS-002, "Verification Policy" section 6.1.9 for Independent Verification Methods and section 6.3 for Mispositioned Components Discovered During Verification version # 6.0

Vogtle 2009 RO NRC exam question # 61

**VEGP learning objectives:**

LO-LP-63308 Briefly describe the Independent Verification Policy. Include a discussion of the different types of verification that are available, including Concurrent Verification.

Answer: D  
76. G2.1.38 1

Initial conditions:

- Core reload is in progress during a refueling outage.

Current conditions:

- While in transit to the core, the Refueling Machine PLC (Programmable Logic Controller) fails with an irradiated fuel assembly in the mast.

- The assembly is to be returned to a safe location at the upender.

Which one of the following correctly completes the following statement?

Per 93270-C, "Refueling Machine Operations", The Fuel Handling Supervisor (FHS) has to grant permission to operate in the \_\_\_(1)\_\_\_ mode that will be required to move the assembly,

and

the FHS is \_\_\_(2)\_\_\_ to perform a refueling crew briefing PRIOR to moving this assembly back to the upender.

\_\_\_(1)\_\_\_

\_\_\_(2)\_\_\_

- |                       |              |
|-----------------------|--------------|
| A. Boundary Bypass    | required     |
| B. Boundary Bypass    | NOT required |
| C. Interlock Override | required     |
| D. Interlock Override | NOT required |

**G2.1.38 Knowledge of the station's requirements for verbal communications when implementing procedures. (CFR 41.19 / 45.13)**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where a PLC failure occurs while in transit to the core and the FHS requires movement of a fuel assembly to the upender. With the PLC failed the RF Machine must be placed in the Interlock Override mode. The question asks which mode requires FHS to authorize and whether the FHS is required to conduct a refueling crew briefing prior to movement of the assembly.

SRO 10CFR55.43 (b)(7)(Fuel Handling Procedure and Facilities)

**ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. The first half is incorrect. The Boundary Bypass pushbutton does NOT require FHS permission to use. This is used by the RF Machine operator during normal maneuvering of the RF Machine in the core area.

The second half of the question is correct, A crew briefing is required to operate in the Interlock Override mode since all RF Machine safety

features have been overridden.

B. Incorrect. The first half is incorrect. The Boundary Bypass pushbutton does NOT require FHS permission to use. This is used by the RF Machine operator during normal maneuvering of the RF Machine in the core area.

The second half is incorrect. A crew briefing is required to operate in the Interlock Override mode since all RF Machine safety features have been overridden.

C. Correct. The first half is correct. The FHS permission is required to authorize operation in the Interlock Override mode.

The second half of the question is correct, A crew briefing is required to operate in the Interlock Override mode since all RF Machine safety features have been overridden.

D. Incorrect. The first half is correct. The FHS permission is required to authorize operation in the Interlock Override mode.

The second half is incorrect. A crew briefing is required to operate in the Interlock Override mode since all RF Machine safety features have been overridden.

## **REFERENCES**

93270-C, "Refueling Machine Operation", version 34.2, section 4.4.3, "Operation in Interlock Override"

## **VEGP learning objectives:**

LO-PP-25101-06 Describe the interlocks and bypasses associated with the following:

c. Refueling Machine

LO-PP-25101-24 Describe the responsibilities that each of the following positions have during refueling operations:

b. Fuel Handling Supervisor

## **G. Fuel Handling Facilities and Procedures (10CFR55.43(b)(7))**

Some examples of SRO exam items for this topic include.

- **Refuel floor SRO responsibilities.**

- Assessment of fuel handling equipment surveillance requirement acceptance

- criteria.
- Prerequisites for vessel disassembly and reassembly.
  - Decay heat assessment.
  - Assessment of surveillance requirements for the refueling mode.
  - Reporting requirements.
  - Emergency classifications.

**Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can question be answered *solely* by knowing immediate operator actions?"

Yes RO question

**No**

Can question be answered *solely* by knowing entry conditions for AOPs or plant parameters that required direct entry into major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

Knowledge of when to implement attachments and appendices, including how to coordinate, these items with procedure steps.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions

to event specific sub-procedures or emergency contingency procedures.

**Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.**

**Yes SRO only**

Answer: C

77. G2.1.8 1

Given the following:

- Unit 1 Control Room is being evacuated due to a fire.

In accordance with 18038-1, "Operation From Remote Shutdown Panels" the \_\_\_(1)\_\_\_ will be dispatched to Shutdown Panel A

and

the PREFERRED method of communications to coordinate in plant activities with personnel outside the control room is via \_\_\_(2)\_\_\_.

A. (1) Reactor Operator

(2) bridge phone extension, page, or radio

B. (1) extra shift personnel

(2) bridge phone extension, page, or radio

C. (1) Reactor Operator

(2) sound powered telephones (red box)

D. (1) extra shift personnel

(2) sound powered telephones (red box)

**G.2.1.8 Ability to coordinate personnel activities outside the control room**

(CFR 41.10 / 45.5 / 45.12 / 45.13)

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where a Control Room evacuation is in progress. The candidate must determine which shutdown panel the OATC (RO) should report to and the preferred method of communications to co-ordinate activities with personnel outside the Control Room. Knowing where to report and how to communicate from there meets the KA.

**ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. The Reactor Operator should report to panel "A", sound powered phones is preferred.

Bridge network is plausible as it is the RNO if sound powered phones not working.

B. Incorrect. The Reactor Operator should report to panel "A", sound powered phones is preferred.

Bridge network is plausible as it is the RNO if sound powered phones not working.

C. Correct. The Reactor Operator should report to panel "A", sound powered phones is preferred.

D. Incorrect. The Reactor Operator should report to panel "A" . Communications part is correct.

**REFERENCES**

AOP-18038-1, "Operation From Remote Shutdown Panels", versions 3.1 steps # 8 and # 10,

**VEGP learning objectives:**

LO-PP-60327-13 State the locations where the following operators will be stationed during operation from Remote Shutdown Panels.

- b. Reactor Operator (OATC)
- g. Extra shift personnel

Answer: C

78. G2.2.1 1

Given the following sequence of events:

- Unit 1 is in Mode 6 with core reload in progress.
- The HFASA alarm is in service.
- The Shutdown Monitor was last reset when the count rate was 6 cps steady state.
- Both Source Range instruments indicate counts rapidly rising unexpectedly.

Which one of the following indicates the alarm setpoint for ALB10-C01 "Source Range Hi Flux Level At Shutdown"

and

the action required if a valid alarm setpoint is reached?

<u>Alarm setpoint</u>	<u>Required Actions</u>
A. 12 cps	suspend Core Alterations only
B. 12 cps	evacuate all personnel in Containment
C. 13.8 cps	suspend Core Alterations only
D. 13.8 cps	evacuate all personnel in Containment

**G 2.2.1 Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity (CFR 41.10 / 41.5/ 43.5 / 43.6 / 45.1).**

### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where core reload is in progress. The candidate must know the setpoint for the Hi Flux at Shutdown alarm given the count rate at which it was reset and the actions to take if alarm is valid.

### **ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. First part correct. The alarm setpoint is set at 2 times the count rate existing the last time it was reset.  
Second part incorrect. Per the ARP, after the alarm is validated, the

operator would also make a page announcement to evacuate all personnel in containment. It is plausible the candidate may think suspension of core alterations is all that is required.

B. Correct. First part correct. The alarm setpoint is set at 2 times the count rate existing the last time it was reset.  
Second part correct. Per the ARP, after the alarm is validated, the operator would also make a page announcement to evacuate all personnel in containment.

C. Incorrect. First part incorrect. The value given is 2.3 times the level at last reset which is plausible as it is the tech spec surveillance limit. The shutdown monitor is setup to alarm at 2 times the level at last reset.  
Second part incorrect. Per the ARP, after the alarm is validated, the operator would also make a page announcement to evacuate all personnel in containment. It is plausible the candidate may think suspension of core alterations is all that is required.

D. Correct. First part incorrect. The value given is 2.3 times the level at last reset which is plausible as it is the tech spec surveillance limit. The shutdown monitor is setup to alarm at 2 times the level at last reset.  
Second part correct. Per the ARP, after the alarm is validated, the operator would also make a page announcement to evacuate all personnel in containment.

## **REFERENCES**

ARP 17010-C window C01 Version 50  
036AK3.01 from LOIT exam bank.

## **VEGP learning objectives:**

LO-PP-17201-04 Discuss the operation of the "High Flux at Shutdown" Alarm.

LO-PP-17201-05 Discuss all applicable Technical Specification associated with the Source & Intermediate Range Nuclear Instrumentation to include (from memory):

- a. All LCO's
- b. Applicability
- c. All 1 hour actions

LO-PP-25101-27 State the LCO, TR, applicability, and any one hour or less actions for all refueling LCOs and TRs.

LO-PP-25101-24 Describe the responsibilities that each of the following positions have

during refueling operations:

d. OATC

LO Active bank 036AK3.01  
from Sequoyah 2009 question # 22.

Answer: B  
79. G2.2.13 1

Per NMP-AD-003-002, "Tagout Standards", which one of the following will specifically require concurrence from the Shift Manager and Department Supervisor to perform?

- A. Using a check valve as a fluid boundary isolation point.
- B. Mechanically gagging closed a fail open AOV without a handwheel.
- C. Removing fuses instead of opening links for electrical power isolation.
- D. Isolating primary power to the tagged component using a blocking device.

**G2.2.13 Knowledge of tagging and clearance procedures  
(CFR 41.10 / 45.13)**

**K/A MATCH ANALYSIS**

The question straight forward asks from a list of evolutions from the Clearance and Tagging Standards, which one requires the Shift Manager and Department Supervisor to approve.

SRO 10CFR55.43 (b)(5)(Assessment and selection of procedures)

**ANSWER / DISTRACTOR ANALYSIS**

- A. Correct. This is specifically required per 6.15.10.2 of NMP-003-002.
- B. Incorrect. Step 6.15.8.4 addresses, requires no special permission.
- C. Incorrect. Step 6.14.12.2 addresses, requires no special permission.
- D. Incorrect. Step 6.14.7 addresses, requires no special permission.

**REFERENCES**

NMP-AD-003-002, "Tagout Standards", version 7.0

**VEGP learning objectives:**

S-GE-PP-400 State the responsibilities of the following positions:

Shift Supervisor  
Shift Manager  
Department Manager  
Department Supervisor

S-GE-PP-400 With a Tagout involving mechanical and electrical Tagout Points, IDENTIFY proper tag placement requirements for the following:

Valves  
Fuses  
Links  
Leads  
Breakers

**Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can question be answered *solely* by knowing immediate operator actions?"

Yes RO question

**No**

Can question be answered *solely* by knowing entry conditions for AOPs or plant parameters that required direct entry into major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

Knowledge of when to implement attachments and appendices, including how to coordinate, these items with procedure steps.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific sub-procedures or emergency contingency procedures.

**Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.**

**Yes SRO only**

Answer: A

80. G2.2.17 1

Which one of the following correctly completes the statement below?

Per 00354-C, "Maintenance Scheduling", a \_\_\_(1)\_\_\_ is Mitigating System Performance Index (MSPI) monitored equipment

and

the \_\_\_(2)\_\_\_ is responsible to approve MSPI equipment removal from service that results in a 25% reduction of remaining MSPI margin.

A. (1) Centrifugal Charging Pump

(2) Plant Manager

B. (1) Centrifugal Charging Pump

(2) Outage and Scheduling Manager

C. (1) Containment Cooler

(2) Plant Manager

D. (1) Containment Cooler

(2) Outage and Scheduling Manager

**G.2.2.17 Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator (CFR 41.10 / 43.5 / 45.13)**

**K/A MATCH ANALYSIS**

The question requires candidate to recognize MSPI components and who must approve MSPI monitored components from service if MSPI margins are challenged.

**ANSWER / DISTRACTOR ANALYSIS**

A. Correct. CCPs are monitored components. Per step 3.1, Plant Manager must authorize.

B. Incorrect. First part correct, CCPs are monitored components.

Second part incorrect. The Outage and Scheduling Manager is plausible as his department is responsible for scheduling system outages.

C. Incorrect. First part incorrect. Containment coolers are safety-related components, thus plausible but not MSPI monitored.

Second part correct. Per step 3.1, Plant Manager must authorize.

D. Incorrect. First part incorrect. Containment coolers are safety-related components, thus plausible, but not MSPI monitored. Second part incorrect. The Outage and Scheduling Manager is plausible as his department is responsible for scheduling system outages.

**REFERENCES**

00354-C, "Maintenance Scheduling" Version 16.2  
Modified bank Farley 2008, (G2.2.17)

Vogle 2009 audit (G2.2.17)

Vogle 2010 audit (G2.2.17)

**VEGP learning objectives:**

V-LO-PP-63226-07 Identify the MSPI systems.

Answer: A

81. G2.2.18 1

Unit 1 Initial conditions:

- Mode 3, 2235 psig, 557°F.
- CCP "B" repairs are in progress.

Current conditions:

- CCP "A" has been shutdown and declared inoperable.
- Emergency Maintenance has been authorized to restore CCP "A" to operable status.

Which one of the following correctly completes the following statement?

Based on the plant conditions, per 00350-C, "Work Request Program", the \_\_\_(1)\_\_\_ determines the need for emergency maintenance

and

assuming neither CCP is restored to operable status, \_\_\_(2)\_\_\_ is the completion time required for **Mode 4 entry** per Tech Specs.

A. (1) Operations Superintendent

(2) 7 hours

B. (1) Operations Superintendent

(2) 13 hours

C. (1) Shift Manager

(2) 7 hours

D. (1) Shift Manager

(2) 13 hours

**G2.2.18 Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.  
(CFR 41.10 / 43.5 / 45.13)**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where Emergency Maintenance could be used. The candidate must know who determines Emergency maintenance and must recognize Tech spec 3.0.3 and apply it at mode 3 conditions.

SRO 10CFR55.43 (b)(2)(Tech Specs)

SRO 10CFR55.43 (b)(5)(Assessment and selection of procedures)

**ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. The first half is incorrect. Per 00350-C, "Work Request Program", the Shift Manager makes determinations of emergency maintenance.

The second half is incorrect. The plant is in Mode 3 so there is no 7 hour requirement to place the plant in the lower mode. This is per Tech Spec 3.0.3 and plausible candidate could confuse the actions with the higher mode (Mode 1 or 2) actions. The action to be in Mode 4 is 13 hours.

B. Incorrect. The first half is incorrect. Per 00350-C, "Work Request Program", the Shift Manager makes determinations of emergency maintenance.

The second half is correct. With the plant already in Mode 3, the action to place the plant in Mode 4 per 3.0.3 is 13 hours.

C. Incorrect. The first half is correct. The Shift Manager makes the determination of Emergency Maintenance.

The second half is incorrect. The plant is in Mode 3 so there is no 7 hour requirement to place the plant in the lower mode. This is per Tech Spec 3.0.3 and plausible candidate could confuse the actions with the higher mode (Mode 1 or 2) actions. The action to be in Mode 4 is 13 hours.

D. Correct. The first half is correct. The Shift Manager makes the determination of Emergency Maintenance.

The second half is correct. With the plant already in Mode 3, the action to place the plant in Mode 4 per 3.0.3 is 13 hours.

## **REFERENCES**

Technical Specification LCO 3.0.3.

Procedure 00350-C, "Work Request Program", version 42.5, section 2.8 for Emergency Maintenance and section 3.11, "Operations Department Shift Supervision".

### **VEGP learning objectives:**

LO-LP-63350-04 Describe the requirements for emergency maintenance and when emergency maintenance can be performed.

LO-LP-63350-07 Define the following terms:

c. Emergency Maintenance

### **Figure 1: Screening for SRO-only linked to 10 CFR 55.43(b)(2) (Tech Specs)**

Can question be answered *solely* by knowing  $\leq$  1 hour TS/TRM Action?

Yes RO question

**No**

Can question be answered *solely* by knowing the LCO/TRM information listed "above-the-line?"

Yes RO question

**No**

Can question be answered *solely* by knowing the TS Safety Limits?

Yes RO question

**No**

Does the question involve one or more of the following for TS, TRM, or ODCM?

Application of Required Actions (Section 3) and Surveillance Requirements (Section 4) in accordance with rules of application requirements (Section 1)

**Application of generic LCO requirements (LCO 3.0.1 thru 3.0.7 and SR 4.0.1 thru**

**4.0.4)**

Knowledge of TS bases that is required to analyze TS required actions and terminology

**Yes SRO only**

No Question might not be linked to 10 CFR 55.43(b)(2) for SRO-only

**Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can question be answered *solely* by knowing immediate operator actions?"

Yes RO question

**No**

Can question be answered *solely* by knowing entry conditions for AOPs or plant parameters that required direct entry into major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

Knowledge of when to implement attachments and appendices, including how to coordinate, these items with procedure steps.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific sub-procedures or emergency contingency procedures.

**Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.**

**Yes SRO only**

Answer: D

82. G2.2.3 1

Which one of the following correctly completes the statement below?

\_\_\_(1)\_\_\_ has local-remote transfer switches for the Diesel Generator Fuel Oil Transfer Pumps that are physically located at \_\_\_(2)\_\_\_ .

- | ___(1)___ | ___(2)___          |
|-----------|--------------------|
| A. Unit 1 | 480V 1E bus 1BBF   |
| B. Unit 2 | 480V 1E bus 2BBF   |
| C. Unit 1 | 4160V 1E bus 1BA03 |
| D. Unit 2 | 4160V 1E bus 2BA03 |

**G2.2.3 (Multi-unit license) Knowledge of design, procedural, and operational differences between units.  
(CFR 41.5 / 41.6 / 41.7 / 41.10 / 45.12)**

**K/A MATCH ANALYSIS**

The question straight forward asks which DG Fuel Oil Transfer Pumps have LOCAL control capability and where these controls are physically located.

**ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. Part 1 is incorrect, Unit 2 DG FO Xfer pumps have local handswitches on

the 480V MCC.

Part 2 is incorrect, while there is a method for locally operating the DG FO Xfer pumps on the local MCC, it is an I & C operation, not local handswitches.

B. Correct. Part 1 is correct, Unit 2 DG FO Xfer pumps have local handswitches on the 480V MCC.

Part 2 is correct, Unit 2 DG FO Xfer pumps have local handswitches on the 480V MCC.

C. Incorrect. Part 1 is incorrect, Unit 2 DG FO Xfer pumps have local handswitches on the 480V MCC.

Part 2 is incorrect, Unit 2 DG FO Xfer pumps have local handswitches on the 480V MCC. It is plausible the candidate may know there is a method of locally operating the unit 1 DG FO Xfer pumps and think they are operated from the 4160 1E bus 1BA03 which has local remote switches on the swgr.

D. Incorrect. Part 1 is correct, Unit 2 DG FO Xfer pumps have local handswitches on the 480V MCC.

Part 2 is incorrect, Unit 2 DG FO Xfer pumps have local handswitches on the 480V MCC. It is plausible the candidate may think they are operated from the 4160 1E bus 2BA03 which has local remote switches on the swgr.

## **REFERENCES**

Vogtle 2009 RO Audit Exam question # 61

LO-LP-61300, "Unit Differences"

## **VEGP learning objectives:**

LO-LP-61300-03 Given a design or operational difference, be able to describe why it exists and the impact on the plant and its operation.

Answer: B

83. G2.3.11 1

Initial conditions:

- Unit 1 is at 100% power.
- A Steam Generator Tube Rupture occurs on SG # 3.

Current conditions:

- 19030-C, "E-3 Steam Generator Tube Rupture" is in progress.
- The crew is performing the actions to isolate SG # 3.

Which one of the following describes the PREFERRED actions to minimize radiation releases in accordance with 19030-C?

- A. Adjust SG # 3 ARV setpoint to automatically control pressure at 1125 psig.
- B. Adjust SG # 3 ARV setpoint to automatically control pressure at 1160 psig.
- C. Place SG # 3 ARV in MANUAL and control pressure at 1125 psig.
- D. Place SG # 3 ARV in MANUAL and control pressure at 1160 psig.

### **G2.3.11 Ability to control radiation releases (CFR 41.11 / 43.4 / 45.10)**

#### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where a SGTR is in progress and the crew is isolating the affected SG. The candidate must choose the correct method IAW 19030-C to control the radiation release from the ruptured SG.

#### **ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. 19030-C specifies an ARV pot setting of 7.73 which corresponds to 1160 psig. 1125 psig is plausible as the pressure where ARV will normally be set to control.
- B. Correct. 19030-C specifies an ARV pot setting of 7.73 which corresponds to 1160 psig. This pressure is chosen to be above the normal release value of 1125 psig to limit the release and to be sufficiently low enough to preclude opening of the SG Code Safeties.
- C. Incorrect. 19030-C implies the ARV to be in AUTO unless manual control is necessary to control at 1160 psig. Although not stated for the pot to be in auto, it is implied as this is the only way the ARV could control at 1160 psig based on a pot setting. Operator training also teaches for the ARV to

be in AUTO. 1125 psig is used as a plausible distractor for manual operation as this is the normal ARV controller setpoint.

- D. Incorrect. 19030-C implies the ARV to be in AUTO unless manual control is necessary to control at 1160 psig. Although not stated for the pot to be in auto, it is implied as this is the only way the ARV could control at 1160 psig based on a pot setting. Operator training also teaches for the ARV to be in AUTO.

## **REFERENCES**

19030-C, "E-3 Steam Generator Tube Rupture", version 37.1

Harris March 2009 RO NRC exam question # 70.

## **VEGP learning objectives:**

- LO-LP-37311-04 Describe the key variables which determine the amount of radioactivity released to the environment following a SGTR event.
- LO-LP-37311-07 Using EOP 19030-C as a guide, briefly describe how each step is accomplished.

Answer: B  
84. G2.3.12 1

Given the following conditions:

- A General Emergency has been declared.
- An operator is projected to receive 30 Rem to close a valve isolating a large release path to the environment.
- All of the available operators have volunteered and are fully aware of the risks.

Which one of the following is the preferred operator to perform the task in accordance with 91301-C, "Emergency Exposure Guidelines?"

- A. Operator A - 23 years old and previously received an emergency exposure of 27 Rem TEDE for lifesaving actions at another plant.
- B. Operator B - 42 years old and received an emergency exposure of 4 Rem TEDE during this event protecting valuable equipment.
- C. Operator C - 32 years old declared pregnant female and has received a lifetime

occupational exposure of 0.05 Rem TEDE.

D. Operator D - 47 years old and has received a lifetime occupational exposure of 21 Rem TEDE.

**G2.3.12 Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc (CFR 41.12 / 45.9 / 45.10)**

### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where an emergency declaration has been made and the candidate has to select the preferred operator to receive an emergency exposure to isolate a large release pathway to the environment. The application of the radiological safety principle of dose exposure control is being tested.

SRO 10CFR55.43 (b)(5)(Assessment of procedures)

SRO 10CFR55.43 (b)(4)(Radiological hazards)

### **ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. Per 91301-C, Precaution 4.2, Emergency exposures in excess of 25 REM, for lifesaving missions (per Table 1 this includes protection, should be limited to one in a lifetime.

In addition, NOTES in Table 1 of 91301-C, for Emergency Exposure Guidelines states doses to workers performing emergency services shall be treated as a once-in-a-lifetime exposure.

B. Incorrect. Per 91301-C, Precaution 4.3, to the extent possible, personnel should be limited to one emergency exposure during the course of the emergency.

C. Incorrect. Per 91301-C, declared pregnant women shall be excluded from receiving emergency exposures.

D. Correct. Although high, this worker has only received an accumulated occupational exposure which does not count toward emergency exposure limits.

### **REFERENCES**

91301-C, "Emergency Exposure Guidelines"

Harris 2009 March SRO Exam, question # 87

**VEGP learning objectives:**

LO-LP-40101-34 State the emergency TEDE limits for the following (SRO ONLY)

- a. All activities
- b. Protecting valuable property
- c. Life saving actions or protection of large populations

LO-LP-40101-35 State what group of people should be first considered for emergency exposure, and what group should not be allowed to receive an emergency exposure (91301-C). (SRO only)

**Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can question be answered *solely* by knowing immediate operator actions?"

Yes RO question

**No**

Can question be answered *solely* by knowing entry conditions for AOPs or plant parameters that required direct entry into major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

Knowledge of when to implement attachments and appendices, including how to coordinate, these items with procedure steps.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific sub-procedures or emergency contingency procedures.

**Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.**

**Yes SRO only**

Also 10 CFR 55.43(b)(4) for SRO-only

**4. Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions (10CFR55.43(b)(4))**

Some examples of SRO exam items for this topic include:

- Process for gaseous/liquid release approvals, i.e., release permits.
- Analysis and interpretation of radiation and activity readings as they pertain to selection of administrative, normal, and emergency procedures.
- Analysis and interpretation of coolant activity, including comparison to emergency plan criteria and/or regulatory limits.

Answer: D

85. G2.3.13 1

Core offload is in progress during a refueling outage.

- CNMT area rad monitors RE-002 and RE-003 HIGH radiation alarms illuminate.
- 18006-C, "Fuel Handling Event" is entered.

Which one of the following correctly completes the following statement?

Per 93300-C, "Conduct of Refueling Operations", the \_\_\_(1)\_\_\_ has the authority to suspend core alterations

and

the Containment evacuation page announcement will instruct personnel to \_\_\_(2)\_\_\_.

\_\_\_(1)\_\_\_

\_\_\_(2)\_\_\_

- |               |  |
|---------------|--|
| A. OATC or SS | report to the Control Building HP Control Point for radiological monitoring                        |
| B. OATC or SS | exit CNMT and remain in the vicinity until radiological monitoring and accountability are complete |
| C. SS only    | report to the Control Building HP Control Point for radiological monitoring                        |
| D. SS only    | exit CNMT and remain in the vicinity until radiological monitoring and accountability are complete |

**G2.3.13 Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.  
(CFR 41.12 / 43.4 / 45.9 / 45.10)**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where high radiation alarms are received during core offload. The student must know that an RO has the authority to suspend core alterations. The student must also know that personnel evacuating containment have to remain in the vicinity until accountability and radiation monitoring are performed.

**ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. OATC has authority to suspend is correct, personnel should remain in vicinity of CTMT until accountability and monitoring are performed, not report to HP Control Building Control Point and track contamination throughout the control building.
- B. Correct. OATC has authority to suspend and personnel should remain in vicinity of CTMT until accountability and monitoring are performed.

C. Incorrect. While the SS or FHS have the authority to suspend, their authority is not required, the OATC may suspend. personnel should remain in vicinity of CTMT until accountability and monitoring are performed, not report to HP Control Building Control Point and track contamination throughout the control building.

D. Incorrect. OATC has authority to suspend and personnel should remain in vicinity of CTMT until accountability and monitoring are performed.

## **REFERENCES**

18006, Fuel Handling Event, version 8.2, step # 3.

93300-C, Conduct of Refueling Operations, Precaution and Limitation 3.1, and step 4.4.2 for OATC Responsibilities.

17102-1, ARP for CDCA B3 1-RE-0002 red lamp lit high.

**NOTE: THIS IS SIMILAR TO A QUESTION ON HL-15R NRC RO EXAM BUT HAS BEEN MODIFIED ON THE FIRST HALF OF THE QUESTION.**

## **VEGP learning objectives:**

LO-PP-25101-19, State which members of the refueling team have the authority to suspend core alterations.

LO-PP-25101-04, Describe the responsibilities of the following personnel during refueling operations.

d. Reactor Operator

LO-LP-60306-01, Given the entire AOP, describe.

a. Purpose of selected steps.

b. How and why the step is performed.

Answer: B

86. G2.3.14 1

Given the following on Unit 1:

- Steam Generator # 2 is ruptured.

- ARV # 2 is lifting and steam is blowing toward the Control Room OSA Intake.

- Control Room Air Intake monitors 1RE-12116 and 1RE-12117 are in HIGH alarm.

Which one of the following correctly completes the following statement?

Per 13301-1, "CBCR Normal HVAC and Emergency Filtration System", the Control Room crew will verify the Control Room HVAC is in the \_\_\_(1)\_\_\_ Mode of operation

and

will \_\_\_(2)\_\_\_ the CR Outside Air Supply Dampers (1HV-12114 and 1HV-12115).

\_\_\_(1)\_\_\_

\_\_\_(2)\_\_\_

- |                               |            |
|-------------------------------|------------|
| A. Isolation                  | leave open |
| B. Isolation                  | close      |
| C. Recirculation (Filtration) | leave open |
| D. Recirculation (Filtration) | close      |

**G2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where an SGTR is in progress with an ARV on the affected SG blowing toward the CR OSA Intake resulting on HIGH radiation on the CR OSA Intake Radiation Monitors (RE-12116 / RE-12117). The candidate must choose which mode of CRI is correct and the status the OSA Intake Dampers should be aligned.

**ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. Isolation mode has all OSA shut off and runs only in recirculation while drawing in no outside air. This mode is only used for toxic gas or smoke. The proper mode for High radiation is the recirculation mode with the OSA dampers left open.
- B. Incorrect. Isolation mode has all OSA shut off and runs only in recirculation while drawing in no outside air. This mode is only used for toxic gas or smoke. The proper mode for High radiation is the recirculation mode with the OSA dampers left open.

C. Correct. Isolation mode has all OSA shut off and runs only in recirculation while drawing in no outside air. This mode is only used for toxic gas or smoke. The proper mode for High radiation is the recirculation mode with the OSA dampers left open.

D. Incorrect. Isolation mode has all OSA shut off and runs only in recirculation while drawing in no outside air. This mode is only used for toxic gas or smoke. The proper mode for High radiation is the recirculation mode with the OSA dampers left open.

## **REFERENCES**

ARP-17102-1, Annunciator Response Procedures for the Safety Related Display Console QRM2 version 19.3.

SOP-13301-1, CBCR Normal HVAC and Emergency Filtration System version 28.3.

V-LO-PP-23101, Control Room HVAC

G2.3.14 question # 64 from HL-15R Audit

## **VEGP learning objectives:**

LO-PP-23301-02 Describe the Emergency and Isolation mode of operation for the Control Room HVAC System, including flow paths and interlocks.

Answer: C  
87. G2.3.6 1

Which one of the following correctly completes the following statement?

The simultaneous release of two \_\_\_(1)\_\_\_ Waste Processing System tanks from the plant site at the same time is allowed. In addition to the SS / SSS, the \_\_\_(2)\_\_\_ Manager's approval is required.

\_\_\_(1)\_\_\_

\_\_\_(2)\_\_\_

A. Liquid

Shift

B. Liquid

Chemistry

C. Gaseous

Shift

D. Gaseous

Chemistry

### **G2.3.6 Ability to approve release permits (CFR: 41.13 / 43.4 / 45.10) .**

#### **K/A MATCH ANALYSIS**

For a release of a single waste monitor tank, the SS / SSS will approve the release. Releasing multiple waste monitor tanks at the same time, the chemistry manager must approve in addition to the SS / SSS.

SRO 10CFR55.43 (b)(4)

#### **ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. Two liquid Waste Monitor Tanks may be released at the same time with Chemistry Manager permission. There is no provision for releasing multiple Waste Gas Decay Tanks simultaneously. Shift Manager is plausible as a distractor. Step 2.1.6 of 13216-1/2.
- B. Correct. Two liquid Waste Monitor Tanks may be released at the same time with Chemistry Manager permission. There is no provision for releasing multiple Waste Gas Decay Tanks simultaneously. Shift Manager is plausible as a distractor. Step 2.1.6 of 13216-1/2.
- C. Incorrect. Two liquid Waste Monitor Tanks may be released at the same time with Chemistry Manager permission. There is no provision for releasing multiple Waste Gas Decay Tanks simultaneously. Shift Manager is plausible as a distractor. Step 2.1.6 of 13216-1/2.
- D. Incorrect. Two liquid Waste Monitor Tanks may be released at the same time with Chemistry Manager permission. There is no provision for releasing multiple Waste Gas Decay Tanks simultaneously. Shift Manager is plausible as a distractor. Step 2.1.6 of 13216-1/2.

#### **REFERENCES**

13216-1, Liquid Waste Release, version. 44.2, 09/28/2010.

13216-2, Liquid Waste Release, version. 31.2, 09/28/2010

#### **VEGP learning objectives:**

LO-PP-47101-08, Describe the major steps required for operations to release a WMT.

10 CFR 55.43(b)(4) for SRO only

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

**Process for gaseous/liquid release approvals, i.e., release permits.**

Answer: B

88. G2.4.12 1

Procedure list as follows:

- 91101-C, "Emergency Response Organization"
- 91401-C, "Assembly and Accountability"
- 91403-C, "Site Dismissal"

Given the following:

- An on shift Systems Operator (not holding an ERO position) is inside the Protected Area.
- A Radiological Emergency is declared.
- The Emergency Director orders assembly and accountability.

Which one of the following correctly completes the following statement?

Per the procedures listed above, the SO will report to the \_\_\_(1)\_\_\_

and

the MINIMUM Emergency Action Level (EAL) where the Emergency Director is REQUIRED to order a Site Dismissal of all non-involved personnel (if feasible) is \_\_\_(2)\_\_\_ .

\_\_\_(1)\_\_\_

\_\_\_(2)\_\_\_

- |                 |           |
|-----------------|-----------|
| A. OSC          | Alert     |
| B. OSC          | Site Area |
| C. Control Room | Alert     |
| D. Control Room | Site Area |

**G2.4.12 Knowledge of general crew operating responsibilities during emergency operations (CFR 41.10 / 45.12)**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where the Emergency Directors orders Assembly and Accountability during an emergency declaration. The candidate must determine where a System Operator (on shift) not assigned an ERO position would report. In addition, the candidate will determine the minimum EAL where a Site Dismissal is required.

SRO 10CFR55.43 (b)(5)(Assessment and selection of procedures)

**ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. The first half is incorrect, on shift operators report to the Control Room. Off shift operators are required to report to the OSC.

The second half is incorrect, Site Area is the minimum EAL where the ED is required to order a Site Dismissal with or without monitoring. The ED could "decide" to order Site Dismissal at the Alert level but is not procedurally required to do so.

B. Incorrect. The first half is incorrect, on shift operators report to the Control Room. Off shift operators are required to report to the OSC.

The second half is correct. Site Area is the minimum EAL where the ED is required to order a Site Dismissal with or without monitoring. The ED could "decide" to order Site Dismissal at the Alert level but is not procedurally required to do so.

C. Incorrect. The first half is correct, on shift operators report to the Control Room.

The second half is incorrect, Site Area is the minimum EAL where the ED is required to order a Site Dismissal with or without monitoring. The ED could "decide" to order Site Dismissal at the Alert level but is not procedurally required to do so.

D. Correct. The first half is correct, on shift operators report to the Control Room.

The second half is correct. Site Area is the minimum EAL where the ED is required to order a Site Dismissal with or without monitoring. The ED could "decide" to order Site Dismissal at the Alert level but is not procedurally required to do so.

**REFERENCES**

91101-C, "Emergency Response Organization"  
91102-C, "Duties of the Emergency Director"  
91202-C, "Activation and Operation of the Operations Support Center"  
91401-C, "Assembly and Accountability"  
91403-C, "Site Dismissal"

**VEGP learning objectives:**

LO-LP-40101-24 State the circumstances requiring site dismissal with or without monitoring (SRO ONLY)

**Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can question be answered *solely* by knowing immediate operator actions?"

Yes RO question

**No**

Can question be answered *solely* by knowing entry conditions for AOPs or plant parameters that required direct entry into major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

Knowledge of when to implement attachments and appendices, including how to coordinate, these items with procedure steps.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific sub-procedures or emergency contingency procedures.

**Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.**

**Yes SRO only**

Answer: D

89. G2.4.31 1

Unit 1 is currently in 19010-C, "Loss of Reactor or Secondary Coolant".

Per NMP-OS-007-001, "Conduct of Operations Standards and Expectations", concerning annunciators as they come in to alarm, which one of the following describes the actions required associated with the alarms?

- A. Annunciators that have a direct effect on the execution of the EOPs in effect should be announced and responded to as prioritized by the procedures in effect.
- B. Annunciators should NOT be announced until after entry into the EOPs. After entry, they all should be responded to by a plant operator in an expeditious manner.
- C. All annunciators that have a direct effect on the execution of the EOPs in effect should be announced and responded to immediately.
- D. All annunciators are still applicable while the EOPs are in effect and are required to be addressed per the appropriate Annunciator Response Procedure.

**G2.4.31 Knowledge of annunciators alarms, indications, or response procedures (CFR 41.10 / 45.3).**

### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where a LOCA is in progress and the candidate must know the correct method of announcing and responding to the alarms.

### **ANSWER / DISTRACTOR ANALYSIS**

- A. Correct.
- B. Incorrect. Only those Annunciators that have a direct effect on the execution of the EOPs in effect should be announced and all do not have to be responded to during transient conditions.
- C. Incorrect. Annunciators that have a direct effect on the execution of the emergency procedure in effect should be announced is correct. Not all are responded to. Response is prioritized with procedures in effect
- D. Incorrect. During transient conditions, all do not need to be announced. It is

### **REFERENCES**

NMP-OS-007-001, "Conduct of Operations Standards and Expectations" Ver. 9.0 section 6.9 alarm response.

Farley December 2004 RO NRC exam question # 66

### **VEGP learning objectives:**

LO-LP-63500-15 State the standards and expectations for alarm response.

Answer: A

90. G2.4.37 1

Per Procedure 91102-C, "Duties Of The Emergency Director", which one of the following identifies a duty that CAN be delegated by the Emergency Director?

- A. Filling the position of Decision Maker, if Severe Accident Management Guidelines (SAMGs) are implemented.
- B. Recommending protective actions to offsite authorities and content of notification messages.
- C. Authorizing personnel radiation exposures in excess of 10CFR20 limits, if necessary.
- D. Deciding to request assistance from federal support groups.

**G2.4.37 Knowledge of lines of authority during implementation of the emergency plan(CFR 41.10 / 45.13)**

## **K/A MATCH ANALYSIS**

The candidate must know the duties of the Emergency Director that can/cannot be delegated.

SRO 10CFR55.43 (b)(5)

## **ANSWER / DISTRACTOR ANALYSIS**

- A. Correct. This is the responsibility 2.3.13 of 91102-C which can be delegated.
- B. Incorrect. This is the responsibility 2.3.2 of 91102-C which is marked with an asterisk and cannot be delegated.
- C. Incorrect. This is the responsibility 2.3.3 of 91102-C which is marked with an asterisk and cannot be delegated.
- D. Incorrect. This is the responsibility 2.3.5 of 91102-C which is marked with an asterisk and cannot be delegated.

## **REFERENCES**

Procedure 91102-C, "Duties of the Emergency Director" Ver 31.0

## **VEGP learning objectives:**

LO-LP-40101-08 State from memory ED duties that cannot be delegated (SRO only)

### **Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can the question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can the question be answered *solely* by knowing immediate operator actions?

Yes RO question

**No**

Can the question be answered *solely* by knowing entry conditions for AOPs or plant parameters that require direct entry to major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events, or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific subprocedures or emergency contingency procedures

**Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures**

Yes **SRO-only**

Answer: A

91. G2.4.46 1

Initial conditions:

- A LOSS OF ALL AC power has occurred.
- 1AA02 has been re-energized by DG1A when an **emergency trip** of the DG occurs.

Current conditions:

- The UO directs the System Operator at DG1A to start the DG by depressing the "Emergency Stop Reset" pushbutton.
- This was the **ONLY** action the System Operator had to take to start the DG, **NO** other actions had previously been taken.

Which one of the following annunciators correctly reflects the condition that caused the DG1A emergency trip?

- A. DG1A TRIP GEN DIFF
- B. DG1A TRIP OVERSPEED
- C. DG1A TRIP LOW PRESS LUBE OIL
- D. DG1A TRIP HI TEMP JACKET WATER

**G2.4.46 Ability to verify that the alarms are consistent with plant conditions (CFR 41.10 / 43.5 / 45.3 / 45.12).**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where a DG1A emergency trip has occurred during a Loss of AC power. The candidate has to determine from given annunciators the condition which caused the emergency trip.

**ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. Generator Differential is an emergency trip which will cause the trip to occur under these conditions, however, the 186A Differential Relay would require resetting to allow DG1A to start. The stem states no other actions were required other than to depress the emergency stop reset pushbutton which rules this trip out.
- B. Incorrect. Overspeed is an emergency trip which will cause the trip to occur under these conditions, however, the overspeed trip device will require resetting to allow DG1A to start. The stem states no other actions were required other than to depress the emergency stop reset pushbutton which rules this trip out.
- C. Correct. Low Lube Oil Pressure is an emergency trip which will cause the trip to occur under these conditions, however, the only action required to start the DG1A is to depress the emergency stop reset pushbutton. DG1A will start and run but will have to be tripped manually if required.
- D. Incorrect. High Jacket Water Temperature will NOT trip the DG1A under emergency conditions.

**REFERENCES**

17035-1, windows A10, B02, C05, E07 for DG1A, version 34.1.  
13145A-1, Diesel Generator Train A, P & L 2.1.3, version 3.2.

LO-PP-11101-31-01 from LOIT bank. used as base for question.

**THIS QUESTION IS A RE-USE FROM THE HL-15R NRC RO EXAM.**

**VEGP learning objectives:**

LO-PP-11101-41 For the emergency engine trips, describe:

- a. Conditions that must be met to reset trip to allow engine restart.
- b. Which trips can be bypassed if still present and how accomplished.

Answer: C  
92. WE03EK2.1 1

Initial conditions:

- The crew is performing 19012-C, "Post LOCA Cooldown and Depressurization".
- Reactor Trip Breakers are OPEN.
- SI has been RESET.
- RCS pressure is 1900 psig and slowly lowering.
- Low Steam Line Pressure SI/SLI has just been BLOCKED.
- All SG pressures are 800 psig and slowly lowering.

Current conditions:

- A main steam line ruptures inside Containment.

Which one of the following ESF functions will automatically actuate (if any)?

- A. Safety Injection only.
- B. High Steam Pressure Rate SLI only.
- C. BOTH Safety Injection and High Steam Pressure Rate SLI.
- D. NEITHER Safety Injection or High Steam Pressure Rate SLI.

**WE03EK2.1      Post LOCA Cooldown and Depressurization**

**Knowledge of the interrelations between the Post LOCA Cooldown**

**and Depressurization and the following (CFR 41.7 / 45.7):**

**Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features**

### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where a Post LOCA Cooldown is in progress. Low SL Pressure SI has been blocked and SI has been reset, but not re-armed. The candidate must recognize the effects of a steam line break on ESFAS actuations.

### **ANSWER / DISTRACTOR ANALYSIS**

A. Correct. SI will not automatically occur due to having been reset with P-4 present. A manual actuation is the only way SI would occur at this time.

B. Incorrect. An SLI will still occur on Low Steam Pressure Rate. Blocking the Low Steam Line Pressure SI/SLI under 2000 psig will prevent the SI/SLI from occurring on low SG pressure of 585 psig but enables the high steam pressure rate SLI which would occur automatically on a ruptured steam line. A manual SLI would not be required for an SLI to occur.

C. Incorrect. SI will not automatically occur due to having been reset with P-4 present. A manual actuation is the only way SI would occur at this time.

An SLI will still occur on Low Steam Pressure Rate. Blocking the Low Steam Line Pressure SI/SLI under 2000 psig will prevent the SI/SLI from occurring on low SG pressure of 585 psig but enables the high steam pressure rate SLI which would occur automatically on a ruptured steam line. A manual SLI would not be required for an SLI to occur.

D. Incorrect. SI will not automatically occur due to having been reset with P-4 present. A manual actuation is the only way SI would occur at this time.

An SLI will still occur on Low Steam Pressure Rate. Blocking the Low Steam Line Pressure SI/SLI under 2000 psig will prevent the SI/SLI from occurring on low SG pressure of 585 psig but enables the high steam pressure rate SLI which would occur automatically on a ruptured steam line. A manual SLI would not be required for an SLI to occur.

### **REFERENCES**

Vogtle 2009 RO Audit Exam question # 68 (WE03EA1.1)

19012-C, "ES-1.2 Post LOCA Cooldown and Depressurization" version # 32

1X6AA00-00231 Functional Diagram for Steam Generator Trip Signals

**VEGP learning objectives:**

LO-PP-28103-05 List all ESF actuation signals with applicable set points, coincidences, permissives, blocks, and discuss the systems response to each ESF actuation signal.

LO-PP-28103-06 Determine when ESF actuation signal can be reset and describe actions to reset the signal.

LO-PP-28103-07 Discuss SI reset to include:

- a. Time delay
- b. SI reset with P-4
- c. SI reset without P-4
- d. Auto and Manual actuation capabilities following reset.

Answer: B

93. WE04EA1.3 1

Procedure List:

19010-C, "E-1 Loss of Reactor or Secondary Coolant"  
19111-C, "ECA 1.1 Loss of Emergency Coolant Recirculation"

Given the following :

- A LOCA outside containment has occurred.
- The crew is performing 19112-C, "ECA 1.2 LOCA Outside Containment".

Which one of the following correctly completes the following statement?

The parameter used in 19112-C to determine whether the leak is isolated is \_\_(1)\_\_\_

and

if the leak has NOT been isolated, the crew will transition to procedure \_\_(2)\_\_\_.

\_\_(1)\_\_\_

\_\_(2)\_\_\_

A. RCS pressure	19010-C
B. RCS pressure	19111-C
C. RVLIS level	19010-C
D. RVLIS level	19111-C

### **WE04EA1.3 LOCA outside CNMT**

**Ability to operate and/or monitor the following as they apply to the LOCA outside CNMT (CFR 41.7 /45.5 /45.6).**

**Desired operating results during abnormal and emergency situations.**

#### **K/A MATCH ANALYSIS**

The Candidate must know the parameter used to determine leakage is isolated and the procedure transition made if leakage is not isolated.

#### **ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. First column is correct, RCS pressure is the correct parameter.

Second column is incorrect, 19111-C is the proper transition since cold leg recirculation capability will be lost.

B. Correct. First column is correct, RCS pressure is the correct parameter.

Second column is correct, 19111-C is the proper transition since cold leg recirculation capability will be lost.

C. Incorrect. First column is incorrect, RCS pressure is the correct parameter.

Second column is incorrect, 19111-C is the proper transition since cold leg recirculation capability will be lost.

D. Incorrect. First column is incorrect, RCS pressure is the correct parameter.

Second column is correct, 19111-C is the proper transition since cold leg recirculation capability will be lost.

#### **REFERENCES**

19111-C, ECA-1.1 Loss Of Emergency Coolant Recirculation

19112-C, ECA-1.2 LOCA Outside Containment

**VEGP learning objectives:**

LO-PP-37116-02 Describe the steps taken to isolate a LOCA outside containment.

LO-PP-37116-03 Describe the indications used to confirm that a LOCA outside containment was successfully isolated.

LO-PP-37116-04 Describe the possible EOP transitions out of 19112-C based on either successful or unsuccessful isolation of a LOCA outside containment.

LO-LP-37116-03

The following plant conditions exist:

Reactor Trip and Safety Injection - Actuated  
Auxiliary Building Radiation Levels - High  
Plant Vent Stack Radiation Levels - High

The crew has completed the valve alignment verification and isolation steps of 19112-C, "LOCA Outside Containment." The crew has determined that RCS pressure is **NOT** rising.

Which **ONE** of the following procedures will the crew transition to?

UOP 12006-C, "RCS COOLDOWN TO COLD SHUTDOWN"

EOP 19010-C, "LOSS OF REACTOR OR SECONDARY COOLANT"

EOP 19012-C, "POST LOCA COOLDOWN AND DEPRESSURIZATION"

EOP 19111-C, "LOSS OF EMERGENCY COOLANT RECIRCULATION"

AND Q60 OF HL-16

Answer: B

94. WE05EA2.2 1

Initial Conditions:

- 19231-C, "FR-H.1, Response To Loss of Secondary Heat Sink", is in progress.
- Containment pressure is 3.5 psig.
- CETCs are stable.

Current Conditions:

- RCS Bleed and Feed is NOT initiated.
- Total AFW flow has just been established at 600 gpm.
- SG levels are as follows:

SG 1 40% wide range and rising  
SG 2 40% wide range and stable  
SG 3 40% wide range and stable  
SG 4 29% wide range and lowering

Which one of the following is required in accordance with 19231-C?

- A. Remain in 19231-C until at least one SG narrow range level is greater than 10%.
- B. Remain in 19231-C until at least one SG narrow range level is greater than 32%.
- C. Remain in 19231-C and immediately initiate RCS bleed and feed.
- D. Return to procedure and step in effect.

#### **WE05EA2.2 Loss of Secondary Heat Sink**

**Ability to determine and interpret the following as they apply to the Loss of Secondary Heat Sink (CFR 43.5 / 45.13):**

**Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments**

#### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where the candidate must choose the proper procedure guidance with the data presented.

SRO 10CFR55.43 (b)(5)

#### **ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. If condensate or MFW is restored, the procedure states to check for SG NR level > 10%, if not the operator is sent to the RNO. It is plausible the candidate may think they may need 10% SG level for any restoration of FW flow to the SGs.

B. Incorrect. If condensate or MFW is restored, the procedure states to check for SG

NR level > 32% ADVERSE, if not the operator is sent to the RNO. It is plausible the candidate may think they may need 10% SG level for any restoration of FW flow to the SGs.

- C. Incorrect. WR levels in any 3 SG's less than 29% (44% adverse) initiates a bleed and feed process. Plausible that with one SG 29% WR and lowering, the candidate would think bleed and feed is required.
- D. Correct. If AFW flow is established at > 570 gpm, the operator is directed to return to procedure and step in effect.

### **REFERENCES**

19231-C, "FR-H.1, Response to Loss of Secondary Heat Sink"  
WOG Background FR-H.1 Response to Loss of Secondary Heat Sink

### **VEGP learning objectives:**

LO-LP-37051-10 State all conditions when the procedure 19231, Response to Loss of Secondary Heat Sink, would be terminated.

### **Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can the question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can the question be answered *solely* by knowing immediate operator actions?

Yes RO question

**No**

Can the question be answered *solely* by knowing entry conditions for AOPs or plant parameters that require direct entry to major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events, or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps

**Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific subprocedures or emergency contingency procedures**

Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures

**Yes SRO-only**

Answer: D

95. WE05EK2.1 1

Initial conditions:

- 19231-C, "FR-H.1 Response to Loss of Secondary Heat Sink" is in progress.
- RCS Bleed and Feed has been initiated.

Current conditions:

- One SIP is running.
- One PRZR PORV is open.

Per 19231-C, which one of the following correctly completes the following statement?

One SIP running is \_\_\_(1)\_\_\_ for the RCS Feed path

and

one PRZR PORV open is \_\_\_(2)\_\_\_ for the RCS Bleed path.

\_\_\_(1)\_\_\_

\_\_\_(2)\_\_\_

A. adequate

adequate

- |                 |              |
|-----------------|--------------|
| B. adequate     | NOT adequate |
| C. NOT adequate | adequate     |
| D. NOT adequate | NOT adequate |

### **WE05EK2.1 Loss of Secondary Heat Sink**

**Knowledge of the interrelations between the Loss of Secondary Heat Sink and the following (CFR 41.7 / 45.7):**

**Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features**

#### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where RCS bleed and feed has been initiated during a LOHS. The candidate has to determine if the combination of SIPs running and PRZR PORVs open provides adequate RCS bleed and feed heat removal.

#### **ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. First column is correct, one SIP running is adequate.  
Second column is incorrect, both PORVs are required to be open.
- B. Correct. First column is correct, one SIP running is adequate.  
Second column is correct, both PORVs are required to be open.
- C. Incorrect. First column is incorrect, one SIP running is adequate.  
Second column is incorrect, both PORVs are required to be open.
- D. Incorrect. First column is incorrect, one SIP running is adequate.  
Second column is correct, both PORVs are required to be open.

#### **REFERENCES**

19231-C, "FR-H.1 Response To Loss Of Secondary Heat Sink" version 33.4

FR-H.1 WOG Background Document

**VEGP learning objectives:**

LO-LP-37051-08 Using EOP 19231 as a guide, briefly describe how each major step is accomplished. Describe the bases for each. (commitment)

Answer: B

96. WE06EG2.4.18 1

Initial conditions:

- Core Cooling CSFST is ORANGE.
- 19222-C, "FR-C.2 Response to Degraded Core Cooling" is in progress.
- RCPs 1, 2, and 3 are running.

Current conditions:

- Steam Generator depressurization to 200 psig is in progress.
- A validated Red Path on the CSFSTs points to 19241-C, "FR-P.1 Response to Imminent Pressurized Thermal Shock Condition".

Regarding the SG depressurization to 200 psig, the RCPs are required to \_\_\_(1)\_\_\_

and

the SS is required to \_\_\_(2)\_\_\_.

- A. (1) remain running in order to maintain forced flow to prevent entry into the Inadequate Core Cooling FRP  
(2) remain in 19222-C until completion
- B. (1) remain running in order to maintain forced flow to prevent entry into the Inadequate Core Cooling FRP  
(2) immediately transition to 19241-C
- C. (1) be stopped due to the anticipated loss of Number 1 seal requirements  
(2) remain in 19222-C until completion

- D. (1) be stopped due to the anticipated loss of Number 1 seal requirements  
(2) immediately transition to 19241-C

#### **WE06EG2.4.18 Degraded Core Cooling**

##### **Knowledge of specific bases for EOPs (CFR 41.10/43.1/45.13)**

#### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where Degraded Core Cooling condition exists and the determination of stopping RCP's under degraded support conditions is required and whether a transition to a higher priority CSFST is needed. Understanding the EOP bases is necessary to get this correct.

SRO 10CFR55.43 (b)(5)

#### **ANSWER / DISTRACTOR ANALYSIS**

A. Correct. Part 1 is correct because RCP's are left running due to the degraded Core Cooling condition even though inadequate RCP Seal DP will be approached. RCP's are left running to provide forced single phase or two phase flow through the core to keep it cool. Tripping RCP's would cause an Inadequate Core Cooling the condition.

Part 2 is also correct because the Red Path on Integrity is an expected response and 19222-C should be completed prior to exit.

B. Incorrect. Part 1 is correct because RCP's are left running due to the degraded Core Cooling condition even though inadequate RCP Seal DP will be approached. RCP's are left running to provide forced single phase or two phase flow through the core to keep it cool. Tripping RCP's would cause an Inadequate Core Cooling the condition.

Part 2 is incorrect because the Red Path on Integrity is an expected response due to the depressurization and injection of the Accumulators causing Cold Leg temperatures to drop. If the Red Path were entered, the cooldown would be stopped and soak time would be required. During this time, the accumulator water would boil off uncovering the core again. 19222-C should be completed prior to exit even though the Red Path is a

higher priority, it will be addressed later.

C. Incorrect. Part 1 is incorrect because RCP's are left running to provide forced single phase or two phase flow through the core to keep it cool. Tripping the RCP's would cause an Inadequate Core Cooling condition.

Part 2 is correct because the Red Path on Integrity is an expected response and 19222-C should be completed prior to exit.

D. Incorrect. Part 1 is incorrect because RCP's are left running to provide forced single phase or two phase flow through the core to keep it cool. Tripping the RCP's would cause an Inadequate Core Cooling condition.

Part 2 is incorrect because the Red Path on Integrity is an expected response due to the depressurization and injection of the Accumulators causing Cold Leg temperatures to drop. If the Red Path were entered, the cooldown would be stopped and soak time would be required. During this time, the accumulator water would boil off uncovering the core again. 19222-C should be completed prior to exit even though the Red Path is a higher priority, it will be addressed later.

## **REFERENCES**

WOG Background Document.

19222-C, "FRP-C.2, Response to Degraded Core Cooling"

## **VEGP learning objectives:**

LO-LP-37061-03 Given a NOTE or CAUTION statement from the EOP, state the bases for that NOTE or CAUTION statement.

**Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5)  
(Assessment and selection of procedures)**

Can the question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can the question be answered *solely* by knowing immediate operator actions?

Yes RO question

**No**

Can the question be answered *solely* by knowing entry conditions for AOPs or plant parameters that require direct entry to major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events, or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps

**Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific subprocedures or emergency contingency procedures**

Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures

**Yes SRO-only**

Answer: A

97. WE08EK3.4 1

19241-C, "FR-P.1 Response to Imminent Pressurized Thermal Shock Condition", has been entered on Unit 1.

- A one hour soak is required.

Which one of the following correctly completes the statement below?

The soak allows thermal gradients on the \_\_\_(1)\_\_\_ to be reduced, thus reducing corresponding stresses

and

if a cooldown is required AFTER the soak, the MAXIMUM cooldown rate is \_\_\_\_ (2) \_\_\_\_ in any 60 minute period.

A. (1) Steam Generator shell wall

(2) < 50°F

B. (1) Steam Generator shell wall

(2) < 100°F

C. (1) Reactor vessel wall

(2) < 50°F

D. (1) Reactor vessel wall

(2) < 100°F

#### **WE08EK3.4 Pressurized Thermal Shock**

**Knowledge of the reasons for the following responses as they apply to the Pressurized Thermal Shock (CFR 41.5 / 41.10 / 45.6 / 45.13):**

**RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.**

#### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where the PTS procedure is in effect with a one hour soak required. The candidate has to determine the primary area where the soak is attempting to relieve thermal stresses and the maximum cooldown rate allowed after the soak has been performed.

#### **ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. First part is incorrect, soak is to relieve stress in reactor vessel wall.

Second part is correct, < 50°F is the limit.

B. Incorrect. First part is incorrect, soak is to relieve stress in reactor vessel wall.

Second part is incorrect, < 50°F is the limit. 100°F is plausible as this is used as the cooldown limit in other places in our EOPs.

C. Correct. First part is correct, soak is to relieve stress in reactor vessel wall.

Second part is correct, < 50°F is the limit.

D. Incorrect. First part is correct, soak is to relieve stress in reactor vessel wall.

Second part is incorrect, < 50°F is the limit. 100°F is plausible as this is used as the cooldown limit in other places in our EOPs.

## **REFERENCES**

19241-1, "FR-P.1 Response to Imminent Pressurized Thermal Shock Condition" version # 25.

WOG EOP Background Document FR-P.1

WE08EK3.2 Farley 2011 RO NRC Exam question # 73

## **VEGP learning objectives:**

LO-LP-37071-04 State the actions for preventing or mitigating the severity of overcooling and repressurizing transients.

LO-LP-37071-06 Using EOP 19241 as a guide, briefly describe how each step is accomplished.

FROM FARLEY 2011 Q73

FRP-P.1, Response to Imminent Pressurized Thermal Shock Conditions, has been entered on Unit 1.

A one hour soak is required.

Which one of the following completes the statements below per FRP-P.1?

The soak allows thermal gradients on the   (1)   to be reduced, thus reducing corresponding stresses.

If a cooldown is required **AFTER** the soak, the maximum cooldown rate is   (2)   in any 60 minute period.

1) Steam Generator shell wall

2) < 50°F

1) Steam Generator shell wall

2) < 100°F

1) Reactor Vessel wall

2) < 50°F

**1) Reactor Vessel wall**

**2) < 100°F**

Answer: C

98. WE10EG2.4.47 1

Initial Conditions:

- Cooldown per 19002-C, "ES-0.2 Natural Circulation Cooldown" is being performed.

The following data is observed during the cooldown:

<u>Time</u>	<u>RVLIS Upper Range</u>	<u>PRZR Level</u>
10:00	100	25
10:15	100	25

Current conditions:

- HV-8145 Auxiliary Spray Valve sticks open and CANNOT be closed.

<u>Time</u>	<u>RVLIS Upper Range</u>	<u>PRZR Level</u>
10:30	98	28
10:45	84	58

Based on these conditions:

the SS will \_\_\_(1)\_\_\_

and

the MAXIMUM cooldown rate allowed for the procedure to be implemented is

\_\_(2)\_\_\_?

- A. (1) remain in 19002-C, "ES-0.2 Natural Circulation Cooldown"
  - (2) 50°F per hour
- B. (1) remain in 19002-C, "ES-0.2 Natural Circulation Cooldown"
  - (2) 100°F per hour
- C. (1) go to 19003-C, "ES-0.3 Natural Circulation Cooldown With Void In Vessel (With RVLIS)"
  - (2) 50°F per hour
- D. (1) go to 19003-C, "ES-0.3 Natural Circulation Cooldown With Void In Vessel (With RVLIS)"
  - (2) 100°F per hour

**WE10G2.4.47 Natural Circ Cooldown with steam void in vessel with/without RVLIS**

**Ability to diagnose and recognize trend in an accurate and timely manner utilizing the appropriate control room reference material. (CFR 41.10 / 43.5 / 45.12)**

**K/A MATCH ANALYSIS**

The question presents a plausible scenario where a natural circulation cooldown is in progress. While depressurizing the RCS, the Auxiliary Spray valve HV-8145 will stick open resulting in lowering RVLIS level and rapidly rising PRZR level. Per step 23 of 19002-C, this will require a transition to 19003-C. The question also asks the student the maximum allowable cooldown rate for the present plant conditions.

SRO 10CFR55.43 (b)(5)

**ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. Part 1 is incorrect because the crew will transition to 19003-C per step 23 of 19002-C due to indications of void formation.

Part 2 is incorrect. The cooldown rate limit in 19003-C is

100°F.

B. Incorrect. Part 1 is incorrect because the crew will transition to 19003-C per step 23 of 19002-C due to indications of void formation.

Part 2 is correct. The cooldown rate limit in 19003-C is 100°F.

C. Incorrect. Part 1 is correct. A transition to 19003-C is necessary based on step 23 RNO of 19002-C due to indications of void formation.

Part 2 is incorrect. The cooldown rate limit in 19003-C is 100°F.

D. Correct. Part 1 is correct. A transition to 19003-C is necessary based on step 23 RNO of 19002-C due to indications of void formation.

Part 2 is correct. The cooldown rate limit in 19003-C is 100°F.

## **REFERENCES**

WOG Background Document, ES-0.2

19002-C, "ES-0.2 Natural Circulation Cooldown", step # 23 and RNO.

19003-C, "ES-0.3 Natural Circulation Cooldown With Voids in Vessel (With RVLIS)"

## **VEGP learning objectives:**

LO-LP-37012-15 State the limitations on subcooling and cooldown rate associated with natural circulation cooldown. Include the bases for any variations.

### **Figure 2: Screening for SRO-only linked to 10 CFR 55.43(b)(5) (Assessment and selection of procedures)**

Can the question be answered *solely* by knowing "systems knowledge", i.e., how the system works, flowpath, logic, component location?

Yes RO question

**No**

Can the question be answered *solely* by knowing immediate operator actions?

Yes RO question

**No**

Can the question be answered *solely* by knowing entry conditions for AOPs or plant parameters that require direct entry to major EOPs?

Yes RO question

**No**

Can the question be answered *solely* by knowing the purpose, overall sequence of events, or overall mitigative strategy of a procedure?

Yes RO question

**No**

Does the question require one or more of the following?

**Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed**

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific subprocedures or emergency contingency procedures

Knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures

**Yes SRO-only**

Answer: D

99. WE11EG2.4.6 1

From the choices below, which one of the following is the FIRST major action to attempt to perform per 19111-C, "ECA-1.1 Loss of Emergency Coolant Recirculation"?

- A. Depressurize the SGs to cooldown and depressurize RCS.
- B. Depressurize the RCS to minimize RCS subcooling.
- C. Initiate RCS cooldown to cold shutdown.
- D. Increase / Conserve RWST inventory.

**WE11EG2.4.6 Loss of Emergency Coolant Recirc**

**Knowledge of EOP mitigation strategies**

(CFR 41.10 / 43.5 / 45.13)

**K/A MATCH ANALYSIS**

The candidate must select the first major action to perform to try to restore recirculation equipment in 19111-C to mitigate a loss of recirculation capability.

**ANSWER / DISTRACTOR ANALYSIS**

- A. Incorrect. While the major actions of 19111-C are listed with diamonds versus steps on the cover of the procedure, they are listed in the order which the procedure will perform them. This would be the 6th of the major actions listed in the procedure the operators will attempt to perform. This choice is plausible as it is a major action of the procedure.
- B. Incorrect. While the major actions of 19111-C are listed with diamonds versus steps on the cover of the procedure, they are listed in the order which the procedure will perform them. This would be the 4th of the major actions listed in the procedure the operators will attempt to perform. This choice is plausible as it is a major action of the procedure.
- C. Incorrect. While the major actions of 19111-C are listed with diamonds versus steps on the cover of the procedure, they are listed in the order which the procedure will perform them. This would be the 3rd of the major actions listed in the procedure the operators will attempt to perform. This choice is plausible as it is a major action of the procedure.
- D. Correct. This is the first of the major actions on the choices that is performed.

**REFERENCES**

EOP 19111-C, "ECA -1.1 Loss of Emergency Coolant Recirculation" version 33.0

**VEGP learning objectives:**

LO-PP-37115-01 Describe the actions taken to conserve RWST inventory for a loss of emergency coolant recirculation.

Answer: D

100. WE15EG2.1.32 1

A LOCA has occurred.

- 19013-C, "ES 1.3 Transfer To Cold Leg Recirculation" has been completed.

- Containment Emergency Sump Level indications on QMCB are 108 inches.
- 19252-C, "FR-Z.2 Response To Containment Flooding" has been entered.

Based on these conditions, which one of the following correctly completes the following statement?

The status of the Containment CSFST is \_\_\_(1)\_\_\_

and

the main concern caused by this condition is \_\_\_(2)\_\_\_.

A. (1) Red

(2) water introduced into the ECCS sump beyond capacity can potentially affect the operation of vital equipment

B. (1) Red

(2) potential thermal shock to the reactor vessel lower head due to quenching

C. (1) Orange

(2) water introduced into the ECCS sump beyond capacity can potentially affect the operation of vital equipment

D. (1) Orange

(2) potential thermal shock to the reactor vessel lower head due to quenching

### **WE15EG2.1.32 Cnmt Flooding**

**Ability to explain and apply system limits and precautions.  
(CFR 41.10 / 43.2 / 45.12)**

#### **K/A MATCH ANALYSIS**

The question presents a plausible scenario where the candidate must determine the status of the containment CSFST and identify the concern that these plant conditions represent.

#### **ANSWER / DISTRACTOR ANALYSIS**

A. Incorrect. First part is incorrect, the CSFST status is Orange for the conditions.

Second part is correct, this is the basis per the WOG Background document for FR-Z.2 Containment Flooding.

B. Incorrect. First part is incorrect, the CSFST status is Orange for the conditions.

Second part is incorrect, this is a plausible basis as a high enough water level could shock the reactor vessel.

C. Correct. First part is correct, the CSFST status is Orange for the conditions.

Second part is correct, this is the basis per the WOG Background document for FR-Z.2 Containment Flooding.

D. Incorrect. First part is correct, the CSFST status is Orange for the conditions.

Second part is incorrect, this is a plausible basis as a high enough water level could shock the reactor vessel.

## **REFERENCES**

EOP Back ground Document FR-Z.2 Rev 2.0

19200-C, "F-0 Critical Safety Function Status Trees" Ver 23.0

19252-C, FR-Z.2 Containment Flooding, version 7.1.

## **VEGP learning objectives:**

Not applicable.

Answer: C