

# GGNS LOT 2014 NRC INITIAL LICENSED OPERATOR WRITTEN EXAMINATION

## RO EXAM

### ANSWER KEY

1	B		26	Delete		51	C
2	A		27	D		52	D
3	D		28	D		53	D
4	A		29	B		54	A
5	C		30	B		55	A
6	B		31	C		56	A
7	A		32	A		57	C
8	B		33	B		58	B
9	A		34	D		59	C
10	C		35	D		60	D
11	D		36	C		61	A
12	D		37	A		62	C
13	B		38	A		63	B
14	C		39	A		64	A
15	D		40	A		65	A
16	D		41	D		66	D
17	D		42	C		67	D
18	Delete		43	A		68	A
19	B		44	B		69	B
20	C		45	C		70	D
21	A		46	B		71	D
22	A		47	D		72	B
23	A		48	D		73	A
24	B		49	B		74	B
25	C		50	A		75	A

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295001 Partial or Complete Loss of Forced Core Flow Circulation</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295001 AK1.04</b>
	<b>Rating</b>	2.5
<b>Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Limiting cycle oscillation: Plant Specific</b>		

### Question 1

Use your provided references to answer this question.

The plant is operating on the 100 percent rod line at rated thermal power.

All OPRMs are INOP

Then:

- Both reactor recirc pumps unexpectedly downshift to slow speed
- Core flow stabilizes at 40 mlbm/hr
- Reactor power stabilizes at 52 percent of rated thermal power

Which of the following describes the required immediate operator action?

- A. begin inserting control rods.
- B. place the reactor mode switch in SHUTDOWN.
- C. trip the recirculation pump with the lowest flow.
- D. maximize reactor recirc pump flows .

**Answer: B**

#### Explanation:

Since the core is operating in the scram region of the power-flow curve with OPRMS inoperable, step 4.1 requires an immediate scram. A would be correct if in the controlled entry region of the power-flow curve. C would be correct for trip of a single Recirc pump. D would be correct if the pumps are manually downshifted

**Technical References:**

05-01-02-III-3, , Reduction in Recirculation Flow Rate

**References to be provided to applicants during exam:** Figure 1 from 05-01-02-III-3, Power-flow map

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295003 – Partial or complete loss of AC  Knowledge of abnormal condition procedures.</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295003 – 2.4.11</b>
	<b>Rating</b>	4.0

**Question 2**

According to 05-1-02-I-4, Loss of AC Power, which of the following 2 buses would constitute a station blackout if power was lost?

- A. 15AA and 16AB
- B. 15AA and 17AC
- C. 16AB and 13AD
- D. 16AB and 14AE

**Answer: A**

**Explanation:**

A is correct because of the note 05-1-02-I-4, Loss of AC Power, Rev 45.  
 B is wrong because both buses are ESF buses but 17AC is not the Div 3 bus.  
 C is wrong because 13AD is not an ESF but does carry a recirc pump MG set which could be plausible if an applicant doesn't understand what safety related means.  
 D is wrong because 14AE is not an ESF but does carry a recirc pump MG set which could be plausible if an applicant doesn't understand what safety related means.

**Technical References:**

05-1-02-I-4, Loss of AC Power, Revision 45, Section 5.0 Automatic Actions

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295004 Partial or Total Loss of DC Power</b>  <b>Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295004 2.4.4</b>
	<b>Rating</b>	4.5

### Question 3

The plant is operating at rated thermal power when a spurious automatic actuation of the following ESF systems occurs:

- Control Room Standby Fresh Air 'A'
- Initiation Combustible Gas Control System 'A'
- Initiation Containment/Drywell Division I isolation
- Standby Service Water System 'A' initiation
- Standby Gas Treatment System 'A' initiation
- Auxiliary Building Division I Ventilation isolation

At this time, the crew should:

- A. restore AC power and enter 05-1-02-V-11 Loss of Plant Service Water.
- B. restore DC power and enter 05-1-02-V-11 Loss of Plant Service Water.
- C. restore AC power and enter 05-1-02-III-5, Automatic Isolations.
- D. restore DC power and enter 05-1-02-III-5, Automatic Isolations.

**Answer: D**

**Explanation:**

These actuations could not result from a loss of AC, only DC. The affected systems can only be restored by the actions of ONEP 05-1-02-III-5, which resets the affected signals. Plant service water is affected, but 05-1-02-V-11 contains no instructions that will restore service water in this condition.

This event happened at GGNS as documented in LER 95-005-00

**Technical References:**

**Grand Gulf Nuclear Station LER 95-005-00.**

05-1-02-III-5, Automatic Isolations

**References to be provided to applicants during exam: None.**

**Learning Objective:** GLP-OPS-L1100 Discuss the interrelationships of the following systems with the Plant DC System. (10) ESF Power Distribution System-R21 (10.2)GLP-OPS-R2100 Describe the interrelationship between the following systems and the ESF Distribution System: (25) 125 Volt DC System - L11 (25.1)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295005 Main Turbine Generator Trip</b>  <b>Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: RPS</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295005 – AK2.02</b>
	<b>Rating</b>	3.8

#### Question 4

With the plant at rated thermal power, which of the following plant conditions **immediately** generates an RPS scram signal and a turbine trip signal?

- A. Reactor water at 58" Narrow Range
- B. Reactor water at 10" Narrow Range
- C. High reactor pressure at 1080 psig
- D. Main steam isolation valve closure

**Answer: A**

**Explanation:**

A is correct because this signal generates a turbine trip to protect the turbine from carryover.  
 B is wrong because this signal does not directly generate a turbine trip.  
 C is wrong because this signal does not directly generate a turbine trip.  
 D is wrong because this signal does not directly generate a turbine trip.

**Technical References:**

05-1-02-I-2, Turbine and Generator Trips, Rev 34

**References to be provided to applicants during exam: None.**



**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295016 Control Room Abandonment</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
<b>Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.</b>	<b>K/A #</b>	<b>295016 2.4.34</b>
	<b>Rating</b>	4.2

### Question 5

The control room has been abandoned due to a fire.

A reactor operator sent to the Remote Shutdown Panel places the Transfer Switch for Lockout Transfer Relay C61-HSS-M150 at 1H22-P152 to the ON position.

Which of the following components is electrically separated from its control room indication and can be controlled from the Remote Shutdown Panel by this action?

- A. Low Pressure Core Spray pump breaker
- B. RHR pump 'C' pump breaker
- C. Control Rod Drive pump 'A' breaker
- D. E51-F064, RCIC Division 1 Steam Supply Isolation Valve

**Answer: C**

**Explanation:**

'A' is wrong - Controls are not found on remote shutdown panel for LPCS system.  
'B' is wrong - Controls are not found on remote shutdown panel for RHR 'C'  
'C' is correct -  
'D' is wrong - The Steam supply isolation valves for RCIC are not on the remote Shutdown panel

**Technical References:**

GLP-OPS-C6100, Remote Shutdown Panel Lesson Plan.  
05-1-02-II-1

**References to be provided to applicants during exam: None.**

**Learning Objective:** GLP-OPS-C6100 Obj. 6, 7.14, 11

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank #858 New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295018 Partial or Total Loss of CCW</b>  <b>Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Securing individual components (prevent equipment damage)</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295018 – AK3.03</b>
	<b>Rating</b>	3.1

### Question 6

The plant has been operating at rated thermal power for 5 months following a refueling outage.

One of the 2 running CCW pumps has tripped and the standby pump will not start.

Reactor Recirc pump/motor temperatures are currently normal.

1. Which of the following describes the action per ONEP 05-1-02-V-1, Loss of Component Cooling Water, to be taken **FIRST** to mitigate this event?

AND

2. What is the reason for this action?
  - A. Scram the reactor; one CCW pump cannot maintain Reactor Recirc motor temperatures within specification so manual action is required
  - B. Isolate CCW to FPCCU heat exchangers; maximize cooling to Reactor Recirc pumps
  - C. Close P42-F103 (locally) to isolate CCW to RWCU heat exchangers; maximize cooling to Reactor Recirc pumps
  - D. Reduce core flow to 70 mlbm/hr; reduce the heat load on Reactor Recirc pumps

**Answer: B**

**Explanation:**

A is wrong because this would be the appropriate response if this was a complete loss of CCW. Plausible because if the applicant believes this constitutes a complete instead of a partial loss of CCW this is the correct answer.

B is correct because this is specified in step 3.2.2 of the procedure and the note before step

3.2.2 gives the reason for the step. Also, step 3.2.1 was already accomplished because an attempt to start the standby pump was already attempted.

C is wrong because this is required by step 3.2.3. This is plausible if the applicant believes there has not been enough time since the refueling outage and they are not allowed to isolate CCW to FPCCU so the next step is to isolate CCW to RWCU

D is wrong because this is specified in step 3.2.4 as a conditional step if RRC temperatures cannot be maintained within specification

**Technical References:**

ONEP 05-1-02-V-1, Loss of Component Cooling Water, Rev. 24, p. 3-4

**References to be provided to applicants during exam:** ONEP 05-1-02-V-1, Loss of Component Cooling Water

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295019 Partial or Total Loss of Inst. Air</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
<b>Ability to obtain and interpret station electrical and mechanical drawings.</b>	<b>K/A #</b>	<b>295019 2.2.41</b>
	<b>Rating</b>	3.5

### Question 7

Use your provided references to answer this question.

When TBCW is not available to plant air compressors, aligning SSW to supply cooling water to plant air compressors requires opening valve:

- A. P41-F155A
- B. P41-F159A
- C. P41-F160B
- D. P41-F042

**Answer: A**

#### Explanation:

B is wrong because this valve supplies the A drywell purge compressor

C is wrong because this is the return from the B drywell purge compressor

D is wrong because this is the supply to DRWL CLRS/CCW HXS

The valve descriptions are omitted because the purpose of this question is to require use of the P & ID. Giving the valve descriptions makes use of the reference unnecessary.

#### Technical References:

Step 3.3 of ONEP 05-1-02-V-9, Loss of Instrument Air

Standby Service Water System P & I Diagrams M-1061D (G-2)

#### References to be provided to applicants during exam:

Standby Service Water System P & I Diagrams M-1061A, B, C, and D

#### Learning Objective:

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295021 Loss of Shutdown Cooling</b>  <b>Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water heatup/cool-down rate</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295021 – AA2.01</b>
	<b>Rating</b>	3.5

### Question 8

**Use your provided references to answer this question.**

The plant is shut down for 5 days for RF19 with RHR B in Shutdown Cooling Mode and DIV 1 ESF bus out of service for maintenance.

Initial conditions are:

- RPV temperature is 118°F
- Reactor Head removal preps are being performed
- Reactor vessel is flooded up to below the flange

If Shutdown Cooling was lost what is the current maximum heatup rate before a limit is reached?

- A. 50 °F/hr
- B. 80 °F/hr
- C. 100 °F/hr
- D. 120 °F/hr

**Answer: B**

**Explanation:**

Since the temperature is 110°F the applicant should use the 120°F curve of Attachment 1, Figure 3, of 05-1-02-III-1, Inadequate Decay Heat Removal, Rev. 39. Using this curve the difference between 200°F and 120°F is 80°F and the time 5 days after shutdown is 1 hr. All other rates are plausible if the applicant chooses the wrong graph.



**Technical References:**

05-1-02-III-1, Inadequate Decay Heat Removal, Rev. 39

**References to be provided to applicants during exam:** All attachments from 05-1-02-III-1, Inadequate Decay Heat Removal, Rev. 39

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295023 Refueling Accident</b>	<b>Tier #</b>	1
<b>Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS : Area radiation levels.</b>	<b>Group #</b>	1
	<b>K/A #</b>	<b>295023 AA2.01</b>
	<b>Rating</b>	3.6

### Question 9

Refueling activities are in progress.

A CONTAINMENT FUEL HDLG AREA RADIATION HIGH alarm is received.

No other alarms are received at this time.

This condition could be caused by:

- A. a fuel assembly being inadvertently raised too high at the refueling platform.
- B. drop of a spent fuel assembly from the refueling platform.
- C. a fuel assembly being inadvertently raised too high at the fuel handling platform.
- D. drop of a spent fuel assembly from the fuel handling platform.

**Answer: A**

#### **Explanation:**

Raising an irradiated fuel assembly too high could result in reduced shielding with a subsequent rise in area radiation levels.

B and D are wrong because if release of gaseous activity from a damaged fuel assembly is the cause of the area radiation alarm, this would be accompanied by gaseous process radiation alarms.

C and D are wrong because the fuel handling platform is not in the containment building.

#### **Technical References:**

**ARI 04-1-02-1H13-P844-1A-A3, CONTAINMENT FUEL HDLG AREA RADIATION HIGH.**

**Lesson plan GLP-RF-F1101, Fuel handling/Refueling Platform**

**References to be provided to applicants during exam:** NONE

**Learning Objective:** GLP-OPS-D1721 Given applicable Alarm Response Instructions (ARIs) and plant conditions, state/identify the probable causes for any alarm listed in the System Alarm Index of SOI 04-1-01-D17-1 and SOI 04-1-01-D21-1 (NLOs responsible for LOCAL Panels only). (19)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7) 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295024 High Drywell Pressure</b>  <b>Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: RHR/LPCI</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295024 – EA1.04</b>
	<b>Rating</b>	4.1

**Question 10**

All ECCS systems are in standby.

The plant has scrammed after receiving a high drywell pressure signal. Drywell pressure continues to rise.

The amber light above the RHR A pump is lit indicating the A RHR pump breaker has...

- A. tripped on a load shed.
- B. tripped on no minimum flow path.
- C. received a close signal and is tripped.
- D. received a close signal and is running.

**Answer: C**

**Explanation:**

A is wrong because there would not be a reason for the pump to trip on a load shed. The applicant should assume all equipment was in a normal position, so the pump wouldn't trip. The pump should load after LSS is complete.

B is wrong because there is no trip on no minimum flow path, but plausible since this should be an immediate action for operators. Applicants may confuse the immediate action with preventing an automatic action from occurring.

C is correct because this is the meaning of the light per Table 1 of GFIG-OPS-E1200.

D is wrong because of C.

**Technical References:**

GFIG-OPS-E1200, Residual Heat Removal (RHR) System – Figures, Rev 1

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295025 High Reactor Pressure</b>	<b>Tier #</b>	1
<b>Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: Reactor pressure.</b>	<b>Group #</b>	1
	<b>K/A #</b>	<b>295025 EA2.01</b>
	<b>Rating</b>	4.3

### Question 11

A reactor vessel steam dome high pressure scram signal should be the signal that **FIRST** generates a reactor scram on a:

- A. single MSIV closure with reactor power at 75%.
- B. closure of all MSIVs at full power.
- C. turbine trip at full power.
- D. IPC fails causing Turbine control valves to close with reactor power at 75%.

**Answer: D**

**Explanation:**

Interpreting reactor pressure involves determining if it is responding as expected.

A is wrong because this should not result in a scram.

B is wrong because the reactor will scram on the main steam isolation valve closure. C is wrong because the reactor will scram on Turbine stop valve closure or low trip oil pressure.

At less than RTP, the high pressure signal should precede the high power signal

**Technical References:**

**Mitigating of Core Damage (EPTS-2) Pressure Increase Events, GLP-OPS-MCD12**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-MCD12 Given a pressure increase event and associated plant parameter curves, explain the behavior of the plant parameters.(2)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295026 Suppression Pool High Water Temp</b>  <b>Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Reactor SCRAM</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295026 – EK3.05</b>
	<b>Rating</b>	3.9

**Question 12**

The reason for transitioning out of EP-3, Containment Control, before suppression pool temperature reaches 110°F is to ensure:

- A. There is an adequate NPSH for all pumps taking suction off of the suppression pool.
- B. All pumps taking suction from the suppression pool will not become gas bound.
- C. Containment pressure remains below 10 psig during a design basis accident.
- D. EP-2, RPV Control, is initiated before reaching maximum boron injection initiation temperature.

**Answer: D**

**Explanation:**

A is wrong because NPSH is only referenced for level and not temperature. This is plausible since NPSH is a combination of both.

B is wrong because gas binding of pumps is not mentioned for high suppression pool temperatures.

C is wrong because the design containment pressure is 15 psig.

D is correct because in the PSTG this is referenced as the reason for transitioning.

**Technical References:**

05-S-01-PSTG, Plant Specific Technical Guidelines, Rev 05

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #



	New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7);(8)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295027 High Containment Temperature  Knowledge of the reasons for the following responses as they apply to HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY) : Containment spray: Plant specific.	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295027 EK3.02</b>
	<b>Rating</b>	3.2

### Question 13

Containment Spray is initiated ONLY when containment temperature and pressure are in the safe zone of the CSIPL curve.

Which of the following describes the basis for this action?

- A. e  
ensures the steam formation will not over-pressurize the drywell.
- B. p  
prevents an excessive rate of depressurization.
- C. ensures RHR pump discharge pressure is adequate to prevent runout.
- D. prevents excessive flow through the RHR heat exchanger.

**Answer: B**

#### Explanation:

The CSIPL does not allow spray to be initiated when temperature is high and pressure is low. Spray with high temperature and low pressure results in a rapid cooldown/depressurization which may lead to forming a negative pressure in containment with subsequent loss of containment integrity.

A is credible because steam may be produced by spray flow, but the concern is overcooling, not overpressurization.

C is credible because high pressure would limit centrifugal pump flow but this is not the basis for the CSIPL.

D is credible because low pressure would result in more HX flow but this is not the basis for the CSIPL.

**Technical References:**  
**BWROG EP Guidelines section 17.9.**  
**02-S-01-40, Att VI page 16 of 34**

**References to be provided to applicants during exam: None.**

**Learning Objective:** GLP-OPS-EP3

7. State/identify the basis associated with each individual step in EP-3

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7);55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295028 High Drywell Temperature</b>  <b>Knowledge of EOP entry conditions and immediate action steps.</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295028 – 2.4.1</b>
	<b>Rating</b>	4.6

### Question 14

Which of the following would require an entry into 05-S-01-EP-3, Containment Control?

If you were required to enter 05-S-01-EP-2, RPV Control, based on not being able to control a parameter in EP-3, what would your immediate action be upon entry into EP-2?

- A. Suppression Pool temperature at 85°F  
Maximize Suppression Pool cooling
- B. Drywell pressure at 1.15 psig  
Prevent ECCS injection
- C. Drywell temperature at 145°F  
Verify the Reactor Mode Switch in Shutdown
- D. Suppression Pool level at 18.45 ft  
Inhibit ADS

**Answer: C**

#### Explanation:

A wrong because this temperature would not require entry into the EOP. The immediate action is not an action required when entering EP-2, but is reasonable for a high temperature.

B is wrong because the pressure would not require entry into the EOP. The immediate action is a step in EP-2 for high drywell pressure but pressure has to be above 1.39 psig. C is correct because this temperature is above the entry criteria of 135°F. The immediate action is correct upon entry into EP-2.

D is wrong because the level would not require entry into an EOP. The immediate action is a step in the EP-2 procedure that should be second nature to an applicant so they could

believe it is an immediate action.

**Technical References:**

05-S-01-EP-3, Containment Control

05-S-01-EP-2, RPV Control

**References to be provided to applicants during exam: None.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295030 Low Suppression Pool Wtr Lvl  Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: Reactor SCRAM	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295030 EK3.06</b>
	<b>Rating</b>	3.6

### Question 15

The reason a reactor scram is required on a low suppression pool level of 14.5 ft. is:

- A. the drywell to containment suppression pool vents are uncovered. t
- B. the SRV sparger will become uncovered t
- C. the ECCS pumps may fail due to vortexing.
- D. If a LOCA occurs, this may result in a loss of containment.

**Answer: D**

**Explanation:**

The EP technical basis states that the reason is to preserve containment integrity because the SP may not adequately condense steam on a primary system break..

**Technical References:**

- EP-2, RPV Control
- EP-3, Containment control
- EP Technical Basis, Step

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-EP37. State/identify the basis associated with each individual step in EP-3

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295031 Reactor Low Water Level</b>  <b>Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL: Automatic depressurization system actuation</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295031 – EK3.01</b>
	<b>Rating</b>	3.9

### Question 16

The reason for the 105 second time delay before ADS initiation is to allow enough time \_\_\_\_\_:

- A. To inhibit ADS if not desired.
- B. To ensure systems are aligned for an emergency depressurization.
- C. For RCIC to recover RPV level.
- D. For HPCS to recover RPV level.

**Answer: D**

**Explanation:**

A is wrong because it is not the reason for the timer exists but plausible if an applicant believes the system initiation is based on the emergency procedure.  
 B is wrong because emergency depressurization does use the ADS valves and proper alignment is needed but an emergency depressurization occurs much later in the emergency procedure and it is not the basis for the timer.  
 C is wrong because it is the incorrect high pressure system but plausible if an applicant confuses RCIC for an ECCS system.  
 D is correct because the reason is specified in the training manual.

**Technical References:**

GLP-OPS-E2202, Automatic Depressurization System (ADS)

**References to be provided to applicants during exam: None.**

**Learning Objective:**

Describe the signals and setpoints for the initiation of the ADS System for both automatic and manual initiation.



<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(8), (10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown  Knowledge of EOP mitigation strategies	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295037 2.4.6</b>
	<b>Rating</b>	3.7

### Question 17

The plant was at rated thermal power when a turbine trip occurred.

Multiple control rods remained at the fully withdrawn position.

Currently;

- Reactor power is 10%
- RPV level is 18"
- Reactor pressure is 935 psig being controlled by the turbine bypass valves.
- Suppression pool temperature is normal

Which of the following is the nominal band allowed in EP-2A, ATWS RPV Control?

- A. to between -191" and +53.5"
- B. until power is below 5% or level drops to -167".
- C. to between -191" and -167"
- D. to between -130" and -70".

**Answer: D**

**Explanation:**

A is wrong because, while level is initially lowered to -70" in step 7.1, step 9 subsequently directs a level band of -191" and -70"  
B and C are correct only if SRVs are open.

**Technical References:**  
EP-2A, Revision Date 5/15/12

**References to be provided to applicants during exam: None.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295038 High Off-site Release Rate</b>  <b>Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Offgas System</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295038 – EK2.02</b>
	<b>Rating</b>	3.6

### Question 18

To prevent an off-site release greater than allowable limits, the Offgas system isolates when (a) \_\_\_\_\_ Upscale HI-HI-HI trip channel(s) is(are) received.

The Upscale HI-HI-HI alarm setpoint is \_\_\_\_\_ throughout an operating cycle by Chemistry.

- A. single; fixed
- B. single; varied
- C. both; fixed
- D. both; varied

**THIS QUESTION WAS DELETED.**

**Answer: D**

#### **Explanation:**

A is wrong because it takes both Upscale HI-HI-HI alarms to isolate Offgas but it takes a single alarm to take the system out of bypass which makes this answer plausible. This value can be varied throughout an operating cycle at management discretion according to procedure 08-S-03-22, INSTALLED RADIATION MONITORING SYSTEM ALARM SETPOINT DETERMINATION AND CONTROL, Rev 114.

B is wrong because the first answer is false but the second is true

C is wrong because it takes both channels to generate a trip but the setpoint can be varied at any time throughout the cycle.

D is correct because it takes both channels to isolate and the setpoint can be varied.

#### **Technical References:**

Procedure 08-S-03-22, INSTALLED RADIATION MONITORING SYSTEM ALARM SETPOINT DETERMINATION AND CONTROL, Revision 114

**References to be provided to applicants during exam: None.**

**Learning Objective:** Discuss the types of alarms received on the Radiation Monitoring Systems. (8)

Describe the automatic actions initiated by the Process Radiation Monitoring. (15)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(11)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
600000 Plant Fire On Site  Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: Fire Alarm	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>600000 AA1.06</b>
	<b>Rating</b>	3.0

**Question 19**

A rate-of-rise heat detector in the “B” RPS MG room triggers a local fire alarm. The expected fire system response is a:

- A. CO<sub>2</sub> discharge occurs immediately.
- B. O<sub>2</sub> discharge occurs after a 30 second delay.
- C. halon discharge occurs immediately.
- D. halon discharge occurs after a 30 second delay.

C

**Answer: B**

**Explanation:**

C and D are wrong because this room is not protected by Halon. A is wrong because the discharge is delayed to allow for evacuation

**Technical References:**

GFIG-OPS-P6400 Figure 11, Typical CO<sub>2</sub> Control Station

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-P6400 Describe the automatic actions/features associated with each of the following Fire Protection System components, including setpoints and bypasses (if applicable): (6.0) Fire Protection CO<sub>2</sub> System, including automatic and manual start (6.6)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>700000 Generator Voltage and Electric Grid Disturbances</b>  <b>Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Voltage regulator controls</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>700000 – AA1.03</b>
	<b>Rating</b>	3.8

### Question 20

With the TVR in automatic what is the maximum allowable reactive load allowed during normal and emergency conditions?

Which pushbuttons are used to change reactive load?

- A. +253 MVARs; TVR raise/lower
- B. +253 MVARs; Load Demand raise/lower
- C. +297.5 MVARs; TVR raise/lower
- D. +297.5 MVARs; Load Demand raise/lower

**Answer: C**

#### Explanation:

A is wrong because the maximum reactive load is listed in 04-1-01-N40-1 as +297.5 in P&L  
3.8. A -253 corresponds to the minimum reactive load allowed by procedure. This is plausible if the applicant reverses the signs on maximum load.  
B is wrong because this does not meet the maximum specified in procedure. Also, changing the load with the load demand pushbuttons changes actual load and not reactive load. This is plausible if an applicant doesn't understand the difference in grid/turbine load.  
C is correct because this is the correct value and the correct button  
D is wrong because the incorrect pushbutton is listed.

**Technical References:**



04-1-01-N40-1, Main Generator and Auxiliaries, Rev 37, p.4, P&L 3.8

Describe how the output voltage of the Main Generator is varied, including any limitations.  
(8)

**References to be provided to applicants during exam: None.**

**Learning Objective:**

Identify precautions, limitations, cautions, warnings and notes which apply to a given situation and are related to the Main Generator. (14.1).

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295002 Loss of Main Condenser Vac  Knowledge of the interrelations between LOSS OF MAIN CONDENSER VACUUM and the following: Offgas system	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295002 AK2.07</b>
	<b>Rating</b>	3.1

### Question 21

The plant is operating at rated power.

Which of the following alarms would cause a slow, gradual loss of condenser vacuum?

(Assume all inputs to these alarms have initiated.)

- A. OG POST-TREAT RAD HI-HI-HI/INOP.
- B. OG RADWST VENT RAD HI.
- C. OG CHAR VAULT RAD HI.
- D. MSL B/MSL C RAD HI-HI/INOP.

**Answer: A**

#### Explanation:

OG POST-TREAT RAD HI-HI-HI/INOP isolates condenser off-gas, which, according to 05-1-02-V-8 "Loss of Condenser Vacuum" should lead to a slow, gradual reduction in condenser vacuum.

OG RADWST VENT RAD HI has no automatic actions.

OG CHAR VAULT RAD HI has no automatic actions.

MSL B/MSL C RAD HI-HI/INOP only results in a half-trip.

#### Technical References:

**05-1-02-V-8, Loss of Condenser Vacuum**

**05-1-02-II-2, Off-Gas Activity High**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-N6200

13. Discuss the interrelationships of the following systems with the Condenser Air Removal System. h. Process Radiation Monitoring System, D17 i. Offgas System, N64

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(?), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Low Reactor Water Level</b>  <b>Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: Reactor water cleanup</b>	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295009 – AK2.04</b>
	<b>Rating</b>	

**Question 22**

Which of the following would result in the isolation of Reactor Water Cleanup?

- A. Reactor vessel water level at -50”.
- B. Main steam line tunnel temperature at 165<sup>0</sup>F.
- C. RWCU heat exchanger room at 110<sup>0</sup>F.
- D. RWCU differential flow at 70 gpm for 30 seconds.

**Answer: A**

**Explanation:**

A is correct because it is less than the setpoint of -41.6”  
 B is wrong because the setpoint is at 185<sup>0</sup>F  
 C is wrong because the setpoint is 120<sup>0</sup>F  
 D is wrong because the setpoint is 79 gpm for 45 seconds

**Technical References:**

GLP-OPS-G3336, Rev 16, Reactor Water Cleanup System

**References to be provided to applicants during exam: None.**

**Learning Objective:**

8.6 Describe automatic actions associated with system isolation valves.

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295010 High Drywell Pressure  Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Drywell ventilation/cooling	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295010 AA1.01</b>
	<b>Rating</b>	3.4

### Question 23

An energized white light above the associated drywell chiller hand switch in the control room indicates the chiller:

- A. is in standby.
- B. is in local control.
- C. has tripped.
- D. has auto started.

**Answer: A**

**Explanation:**

B, C, and D are wrong because A is correct.

**Technical References:**

**04-1-02-1H13-P601-16A-B4, ARI for DRWL PRESS HI  
GLP-OPS-M5100, Drywell Cooling and Drywell Chilled Water Systems**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-M5100. 04 State/identify the locations from which the following components of the Drywell Cooling and Drywell Chilled Water Systems can be found.  
Drywell Coolers Drywell Chillers  
Obj 6, Describe the automatic actions . . . Drywell Chillers

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #

	New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295011 High Containment Temp</b>  <b>Knowledge of the interrelations between HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY) and the following: Containment ventilation/cooling: Mark-III.</b>	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295011 – AK2.01</b>
	<b>Rating</b>	3.7

### Question 24

During normal routine operation:

What is the MINIMUM number of fan coolers required to be in service per SOI 04-1-01-M41, Containment Cooling System?

Will containment fan coolers receive an auto start signal if a high containment temperature alarm is received?

- A. 1/Yes
- B. 2/No
- C. 1/No
- D. 2/Yes

**Answer: B**

**Explanation:**

A is wrong because the minimum number required is 2 and there is no auto start on high containment temperature.

B is correct because the minimum required is 2 and the only auto start for the fan coolers is on low flow across a fan.

C is wrong because see A

D is wrong because the minimum number is correct there is no auto start on high containment temperature.

**Technical References:**



GLP-OPS-M4100, Containment Cooling System M41, Rev 5

Note from 04-1-01-M41, Containment Cooling System:

“The following operations are performed at 1H13-P842, Unless otherwise noted. Two **OR** three Containment coolers Should be in service during normal operations.”

**References to be provided to applicants during exam: None.**

**Learning Objective:**

10.1 State/identify the interlocks associated with starting and stopping of fans.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295012 High Drywell Temperature  Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : Pressure/temperature relationship	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295010 AK1.01</b>
	<b>Rating</b>	3.3

### Question 25

The purpose of the RPV Saturation Temperature (RPVST) curve is to evaluate the effect of drywell temperature on:

- A. reactor vessel integrity.
- B. containment integrity.
- C. PV level instrumentation accuracy.
- D. PV pressure instrumentation accuracy.

R

R

**Answer: C**

**Explanation:**

The RPV Saturation Temperature is a plot of the saturation temperature of water as a function of pressure. If the temperature of the water in an RPV water level instrument run exceeds this temperature, the water may start to boil, resulting in unreliable level indication.

**Technical References:**

**02-S-01-40, p. 42 of 45**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS- Describe the system interrelationship between the Drywell Cooling and Drywell Chilled Water Systems and the following: (10) Containment and Drywell Instrumentation and Control System (10.6)

**Question Source:**

**Bank #**

(note changes; attach parent)

Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(?), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>295013 High Suppression Pool Temperature</b>  <b>Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL TEMPERATURE: Suppression pool cooling</b>	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295013 – AA1.01</b>
	<b>Rating</b>	3.9

**Question 26**

RHR B is in service in suppression pool cooling mode due to high temperature in the suppression pool from RCIC operability testing.

According to procedure 04-1-01-E12-1, Residual Heat Removal System, the RHR system flow must be maintained greater than \_\_\_\_\_ when throttling with the E12-F048B.

AND

At what minimum temperature **must** suppression pool cooling be secured?

- A. 7300 gpm; 65°F
- B. 7300 gpm; 75°F
- C. 7450 gpm; 65°F
- D. 7450 gpm; 75°F

**THIS QUESTION WAS DELETED.**

**Answer: A**

**Explanation:**

A is correct because as referenced in the procedure this is the minimum flow and a caution in the procedure has you secure suppression pool cooling before you go below 65°F.

B is wrong because it is the correct flow but temperature is incorrect. This is plausible because the note references 70°F but it doesn't explicitly have you shutdown suppression pool cooling until below 65°F.

C is wrong because the flow requirements are incorrect but plausible since this is the tech spec value for flow. The temperature is correct

D is wrong because both flow and temperature are incorrect but plausible.

**Technical References:**

04-1-01-E12-1, Residual Heat Removal System, Rev. 143, p.26

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

Last NRC Exam

No

**Question History:**

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(8)

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
295015 Incomplete SCRAM  Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM : Shutdown margin	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295015 AK1.01</b>
	<b>Rating</b>	3.6

### Question 27

Following a reactor scram two control rods are at the fully withdrawn position.

The crew may make a transition from EP-2A (ATWS), to EP-2 (RPV) control relying on Reactor Engineering to determine the negative reactivity from:

1. inserted control rods.
2. injected boron.
3. current xenon concentration.

- A. 1, 2 and 3
- B. 1 and 2 only
- C. 1 and 3 only
- D. 1 only

**Answer: D**

#### **Explanation:**

BWROG EPGs/SAGs, Appendix B Revision 2 says “Note that the instruction requires a positive determination, not only that the reactor *is* shutdown, but that it will *remain* shutdown, without reliance upon boron, under worst-case cold shutdown conditions. The phrase

“without boron” does not imply that the condition cannot be met if boron has been injected, but that credit cannot be taken for the negative reactivity contributed by the boron. **Control**

**rod insertion alone must provide the necessary shutdown margin.”**

#### **Technical References:**

**BWROG EPGs/SAGs, Appendix B Revision 2**

**References to be provided to applicants during exam: None.**

**Learning Objective: .**

GLP-OPS-EP02A 7. State/identify the basis associated with each individual step in EP-2A

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(8)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
203000 RHR/LPCI: Injection Mode  Knowledge of RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Operation from remote shutdown panel	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	203000 – K4.14
	<b>Rating</b>	3.6

### Question 28

The Control Room was evacuated due to toxic gases.

If the RHR A INJ DISABLE handswitch is placed in the ENABLE position at the Remote Shutdown Panel, E12-F042A, RHR A Injection Shutoff Valve, will \_\_\_\_\_:

- A. Remain open on a Containment Spray initiation signal
- B. Automatically open on LOCA signal regardless of reactor pressure
- C. Open manually from Remote Shutdown Panel only if reactor pressure is <476 psig
- D. Open manually from Remote Shutdown Panel regardless of Reactor pressure

**Answer: D**

#### Explanation:

A is correct because it is listed as a caution in 05-1-02-II-1

B is wrong because it is not defeated. The valve can still be opened manually with the signal present but it will auto close

C is wrong because this does not meet the caution in 05-1-02-II-1

D is wrong because the valve does not get an open signal solely on initiation. Plausible if an applicant believes it does

The enable switch only bypasses the 476 psig logic for manual operation.

#### Technical References:

05-1-02-II-1, Shutdown from the Remote Shutdown Panel, Attachment XIV

**References to be provided to applicants during exam: None.**

**Learning Objective: .**



**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(8)

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
205000 Shutdown Cooling  Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) :Valve operation	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295000 K5.02</b>
	<b>Rating</b>	2.8

### Question 29

Shutdown cooling is being established using RHR loop A per SOI-04-1-01- E12-2, Shutdown Cooling and Alternate Decay heat Removal Operations.

After starting RHR pump A, the operator is procedurally directed to open a valve and immediately establish a flowpath in order to prevent:

- A. cavitation in RHR pump A.
- B. discharging reactor vessel coolant to the suppression pool.
- C. reactor pressure vessel thermal stratification.
- D. lifting the RHR pump A discharge relief valve.

**Answer: B**

#### Explanation:

According to the note prior to the pump start, "Failure to establish greater than 1154 gpm within 8 seconds of pump start automatically opens F064A, establishing flow from Reactor to Suppression Pool."

A is wrong because, while inadequate pump flow could eventually lead to pump cavitation, F064A operation will prevent this.

C is wrong because, while stratification is a concern when flow is inadequate, F064A operation will prevent this.

D is wrong, because the RHR pump is centrifugal, and its discharge pressure at shutoff head is well below the lift setpoint of system safety valves.

**Technical References:**

Shutdown Cooling and Alternate Decay Heat Removal Operation, SOI 04-1-01-E12-2, Revision 116. Caution prior to step 4.1.2c(17)

**References to be provided to applicants during exam: None.**

**Learning Objective:** .

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>205000 Shutdown Cooling</b>  <b>Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: High pressure isolation</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>205000 – K4.02</b>
	<b>Rating</b>	2.6

**Question 30**

Which NSSSS group isolation provides protection against high reactor pressure for the RHR system in the Shutdown Cooling Mode of Operation?

- A. 2
- B. 3
- C. 4
- D. 5

**Answer: B**

**Explanation:**

A is wrong because Group 2 isolations protect for RHR to Radwaste  
 B is correct because Group 3 isolations protect the RHR in shutdown cooling  
 C is wrong because Group 4 isolations were part of steam condensing mode of RHR  
 D is wrong because Group 5 isolations protect RHR test lines

**Technical References:**

Table 2 of GFIG-OPS-E1200; GLP-OPS-M701 p.36

**References to be provided to applicants during exam: None.**

**Learning Objective: .**

Describe the signals, setpoints and valves actuated by the RHR Shutdown Cooling Isolation Logic. (7.3)

**Question Source:**

**Bank #**

(note changes; attach parent)

Modified Bank #  
New

X

Last NRC Exam

No

**Question History:**

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(?), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
209001 LPCS	<b>Tier #</b>	2
Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM : A.C. power	<b>Group #</b>	1
	<b>K/A #</b>	<b>209001 K6.01</b>
	<b>Rating</b>	3.4

### **Question 31**

Following a loss of MCC 15B11, an ECCS initiation signal would result in the LPCS pump:

- A. failing to start.
- B. starting and running at shutoff head (zero flow) regardless of RCS pressure.
- C. starting, and running on min-flow only regardless of RCS pressure.
- D. starting and running without min-flow protection, but will inject into the core when RCS pressure drops low enough.

**Answer: C**

#### **Explanation:**

MCC 15B11 powers all system MOVs but not the pump. The pump will start, but no MOV can be repositioned.

A is wrong because the pump has not lost power.

B is wrong because the mini-flow valve has no power but it is normally open.

D is wrong because the injection flowpath is normally isolated with an MOV that has no power.

#### **Technical References:**

**GLP-OPS-E2100**

**References to be provided to applicants during exam: None.**

#### **Learning Objective: .**

GLP-OPS-E2100 Rev. 10, Obj. 7.1 State/identify the power supplies for the following LPCS system components: Motor Operated Valves

Obj 16 Upon recognition of the following abnormal plant indications, predict system response and potential consequences – AC power disturbances

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

Examination Outline Cross-Reference	Level	RO
209001 LPCS  Ability to determine operability and/or availability of safety related equipment	Tier #	2
	Group #	1
	K/A #	209001 – 2.2.37
	Rating	3.6

### Question 32

The plant is in Mode 4 with Electrical Bus 16AB OOS for planned maintenance.

You've been asked to perform 06-OP-1E21-M-0001, LPCS Monthly Functional Test, and the LPCS valves are in the following position:

- LPCS Injection valve – Closed
- LPCS Suction Valve – Open
- LPCS Minimum flow to suppression Pool – Open
- LPCS Testable Check Valve – Closed

Is the LPCS system operable?

If RHR 'A' system is operable, is Tech Spec 3.5.2, ECCS Shutdown, met?

- A. Yes/Yes
- B. No/Yes
- C. Yes/No
- D. No/No

**Answer: A**

**Explanation:**



A is correct because this lineup meets the requirements of LPCS Monthly Functional Test, and since LPCS, RHR A and HPCS are all operable and only 2 are required this meets the LCO for 3.5.2.

B is wrong because the system is not operable but plausible since it is counterintuitive to have the min flow valve should be in the open position for the system to be operable.

C is wrong because the system is operable and the minimum systems are met.

D is wrong because the system is operable and the minimum systems are met.

**Technical References:**

06-OP-1E21-M-01, LPCS Monthly Functional Test, Revision 106

TS SR 3.5.2

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7);(8)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
209002 HPCS  Ability to predict and/or monitor changes in parameters associated with operating the HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) controls including: Condensate storage tank level: BWR-5,6	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>209002 A1.09</b>
	<b>Rating</b>	2.6

### Question 33

The reactor is shutdown with RHR A in shutdown cooling.

HPCS is in operation IAW SOI aligned CST to CST when E22-FIS-N656, HPCS Pump Discharge Flow fails downscale.

Following the instrument failure, CST level will:

- A. drop and RPV level will rise.
- B. drop and suppression pool level will rise.
- C. rise and suppression pool level will drop.
- D. remain steady.

**Answer: B**

#### Explanation:

**Explanation: The full flow test is recirculating the CST. Transmitter FT-N056 feeds FIS- N656. With measured flow < 1206 gpm, F012, HPCS recirc. opens, moving water from the CST to the suppression pool. GGNS no longer performs the full flow test (CST to CST).**

**A would be correct if the recirc valve discharged to the RCS.**

**C would be correct if the full flow test was recirculating the suppression pool and the recirc discharged to the CST.**

**D would be correct if equalizing a flow transmitter caused indicated flow to fail high.**

**Technical References:**  
**GFIG-OPS-E2201, HPCS figures, Figure 2, HPCS System Overview**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**The HPCS lesson plan was not provided.**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7); 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>211000 SLC</b>  <b>Knowledge of the operational implications of the following concepts as they apply to STANDBY LIQUID CONTROL SYSTEM: Explosive valve operation</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>211000 – K5.04</b>
	<b>Rating</b>	2.5

### Question 34

Following an initiation of SLC 'A', which of the following sets of indications would be observed if the 'A' squib valve fails to open?

- A. SLC storage tank level decreasing, SLC pump discharge pressure higher than reactor pressure, and reactor power decreasing.
- B. SLC storage tank level decreasing, SLC pump discharge pressure lower than reactor pressure, and reactor power constant.
- C. SLC storage tank level constant, SLC pump discharge pressure higher than reactor pressure, and reactor power decreasing.
- D. SLC storage tank level constant, SLC pump discharge pressure higher than reactor pressure, and reactor power constant.

**Answer: D**

#### Explanation:

A is wrong because it describes a good start of the SLC system  
 B is wrong because if SLC pump discharge pressure is less than reactor pressure SLC would not be able to inject, therefore it is not indicative of a failure of the squib to fire but of the system not developing pressure  
 C is wrong because SLC storage tank level would not remain constant if SLC was initiated. The indication describe a failed instrument  
 D is correct because tank level would remain constant and discharge pressure would be higher than reactor pressure because the pump would be recircing due to the relief valve lifting.

#### Technical References:

GLP-OPS-C4100 Rev 10, page 18-20

**References to be provided to applicants during exam: None.**

**Learning Objective:**

(12) Describe the indications of SLC injection into the reactor.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(6); 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
212000 RPS  Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on following: Process radiation monitoring	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>212000 K3.01</b>
	<b>Rating</b>	3.0

### Question 35

The reactor is at 5% power during a startup when C71-S003A EPA breaker trips on undervoltage.

With respect to the PROCESS RADIATION MONITORS, this event would result in;

- A. closure of Inboard Reactor Sample Valve, B33-F019.
- B. closure of Outboard Reactor Sample Valve, B33-F020.
- C. generation of a mechanical vacuum pump trip signal.
- D. no automatic trip signals or isolations.

**Answer: D**

#### Explanation:

On the loss of RPS A, there is no affect due to the power the process rad monitors is from inverter 1Y87. Therefore, none of the RPS components would be affected making "D" correct. No process monitors will lose power in this event.

**Technical References:**  
**GLP-OPS-D1721**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #

	New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?); 55.43	

Examination Outline Cross-Reference	Level	RO
215003 IRM  Knowledge of the effect that a loss or malfunction of the following will have on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM: Detectors	Tier #	2
	Group #	1
	K/A #	215003 – K6.04
	Rating	3.0

**Question 36**

The plant is starting up following an outage.

SRM/IRM overlap has been verified and all IRMs are indicating normally on range 5.

IRM F and IRM H fail high.

What is the expected system/plant response?

- A. A full RPS scram.
- B. A half scram on RPS Division A AND a rod block.
- C. A half scram on RPS Division B AND a rod block.
- D. A rod withdrawal block ONLY.

**Answer: C**

**Explanation:**

A is wrong because both detectors are on the same division so full scram logic would not be made up. Plausible if an applicant doesn't know which IRMs are on which division

B is wrong because this is the wrong division of RPS

C is correct this is the correct division of RPS and a rod block is generated.

D is wrong because a rod block would be generated an RPS signal would also be generated.

**Technical References:**

GLP-OPS-C5102 – p. 20-31

**References to be provided to applicants during exam: None.**

**Learning Objective: Concerning the major automatic features of the IRM System,**



**state/identify the signals and setpoints associated with an IRM scram signal, including when the signals are bypassed.**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
215003 IRM	<b>Tier #</b>	2
	<b>Group #</b>	1
Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: Meters and recorders	<b>K/A #</b>	<b>215003 A3.01</b>
	<b>Rating</b>	3.3

### Question 37

When an Intermediate Range Monitor's "UP" button illuminates, the operator should press the associated channel's \_\_\_\_\_ button.

- A. UP
- B. DRIVE OUT
- C. DOWN
- D. DRIVE IN

**Answer: A**

#### Explanation:

The UP button is backlit when the light signifies that the IRM is at 75% of scale. Pressing the button raises the channel to the next highest scale. This condition is expected during a plant startup.

There is nothing intuitive about the meaning of this light. It could mean that the detector needs to be driven in (up), or is up and should be down (driven out). It could also logically mean that the current scaling is too high, which would occur during a plant shutdown.

#### Technical References:

**GLP-OPS-C5102**

References to be provided to applicants during exam: None.

#### Learning Objective:

**GLP-OPS-C5102** For each of the following IRM System components, state/identify methods of operation, including locations of associated controls and indications: (7) Drive mechanism (7.1) IRM range select pushbuttons (7.2)

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>215004 Source Range Monitor</b>	<b>Tier #</b>	2
<b>Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Power supply degraded</b>	<b>Group #</b>	1
	<b>K/A #</b>	<b>215004 - A2.01</b>
	<b>Rating</b>	2.7

### Question 38

The reactor is starting up following a refueling outage.

The output voltage on Inverter 1Y96 indicates 0.0 volts.

What is an expected automatic action of this condition?

AND

What would be the operator action to mitigate this failure so startup can continue?

- A. Control rod block; bypass SRM C
- B. Control rod block; bypass SRM D
- C. Full RPS scram; bypass SRM C
- D. Full RPS scram; bypass SRM D

**Answer: A**

**Explanation:**

A is correct because SRM normally only generate rod blocks unless in special situations. This inverter feeds the power supply for SRM C.

B is wrong because the first half is correct but Inverter 1Y95 feeds SRM D.

C is wrong because there are no scram signals generated from SRMs unless the shorting links are removed. This is normally done during fuel loading and would not

be done while starting up. It is plausible if an applicant doesn't understand this.  
D is wrong because see answer C

**Technical References:**

GLP-OPS-C5101, SOURCE RANGE MONITORING (SRM) SYSTEM – C5101, Rev 3

**References to be provided to applicants during exam: None.**

**Learning Objective:**

10.1 Describe the interrelationships of the following systems with the SRM System: 120V AC Uninterruptible Power Supply (UPS) System.

8.2 Concerning the major automatic features of the SRM System, state/identify the signals and setpoints associated with an SRM rod withdrawal block signal, including when the signals are bypassed

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
215005 APRM / LPRM  Knowledge of the physical connections and/or cause-effect relationships between AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM and the following: Traversing incore probe system	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>215005 K1.13</b>
	<b>Rating</b>	2.6

### Question 39

The traversing incore probe system is used to ensure that the \_\_\_\_\_ instrumentation remains operable.

- A. reactor protection system
- B. SRM/IRM control rod block
- C. post accident monitoring
- D. emergency core cooling system

**Answer: A**

**Explanation:**

TS 3.3.1 function 2b cannot remain operable because SR 3.3.1.1.7 (LPRM calibration) cannot be met.

The other answers are incorrect because TIPS is not used in maintaining operability for these systems.

This is RO level because the RO is required to recognize conditions that require TS entry.

**Technical References:**

TS 3.3.1, function 2b, SR 3.3.1.1.7.

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**GLP-OPS-C5105, TIP system**

Describe the interrelationships of the following systems with the TIP

System: (10) Process Computer (10.1)

Local Power Range Monitors (10.4)

Given plant conditions, identify entry into the Limiting Condition for Operation (LCO) for any

Technical Specification related to the TIP System. (12)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>217000 RCIC</b>  <b>Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>217000 – 2.1.7</b>
	<b>Rating</b>	4.4

### Question 40

The plant is operating at rated thermal power when you receive SUPP POOL LVL HI alarm on the RCIC section of P601.

Control room operators should immediately verify:

- A. RCIC suction is from the suppression pool
- B. RCIC suction is from the condensate storage tank
- C. HPCS operability
- D. MOV E51-F022, RCIC Inboard Test return, is open

**Answer: A**

#### Explanation:

A is correct because this is the immediate action in ARP 04-1-02-1H13-P601.

B is wrong because this is not listed in the ARP but it could be correct if someone believes that high suppression pool level would result in RCIC inoperability/unavailability.

C is wrong because it is not listed in the ARP but could be correct if someone believes the condition makes RCIC inoperable.

D is wrong because it is listed in the immediate actions to verify the valve is closed and not open.

#### Technical References:

ARP 04-1-02-1H13-P601

**References to be provided to applicants during exam: None.**

**Learning Objective:**



(19) GLP-OPS-E5100

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(?), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
218000 ADS	<b>Tier #</b>	2
Knowledge of the operational implications of the following concepts as they apply to AUTOMATIC DEPRESSURIZATION SYSTEM :ADS logic operation	<b>Group #</b>	1
	<b>K/A #</b>	<b>218000 K5.01</b>
	<b>Rating</b>	3.8

### Question 41

The plant has experienced a transient and the following conditions currently exist:

- Reactor level has been less than Level 3 for 8 minutes
- Reactor level has been less than Level 1 for 5 minutes
- All ECCS equipment has responded as designed
- Drywell pressure is 0.5 psig and is rising at 0.1 psig per minute.

Based on these conditions, the Automatic Depressurization System relief valves:

- A. have opened.
- B. will open immediately when drywell pressure reaches 1.39 psig
- C. will open in 105 seconds
- D. will open in 6 minutes.

**Answer: D**

#### **Explanation:**

Input from the high drywell pressure channel is automatically bypassed if Reactor level stays < -150.3 for 9.2 minutes. This condition assumes a LOCA outside the Drywell with degraded high pressure injection systems, and thus takes override action to initiate ADS to recover RPV level.

#### **Technical References:**

**GLP-OPS-E2202**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-E2202 Describe the signals and setpoints for the initiation of the ADS System for both automatic and manual initiation. (15.0)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>223002 PCIS/Nuclear Steam Supply Shutoff</b>  <b>Ability to manually operate and/or monitor in the control room: valve closures</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>223002 – A4.01</b>
	<b>Rating</b>	3.6

**Question 42**

RPV level is +20 inches and slowly lowering.

As RPV level continues to slowly lower, the first automatic isolation would be the:

- A. Main Steam Isolation Valves (MSIVs)
- B. Reactor Water Cleanup Isolation valves
- C. RHR to Radwaste isolation valves
- D. Service Air isolation valves

**Answer: C**

**Explanation:**

The first isolation would be at +11.4 inches.

- 'A' is wrong - MSIVs isolate at -150.3"
- 'B' is wrong - RWCU will isolate at -41.6"
- 'C' is correct - These RHR valves will isolate at +11.4"
- 'D' is wrong - isolate at -41.6"

**Technical References:**

05-1-02-III-5

**References to be provided to applicants during exam: None.**

**Learning Objective:** GLP-OPS-M7101

**Question Source:**

(note changes; attach parent)

Bank #802  
Modified Bank #  
New

X

<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
239002 SRVs  Knowledge of RELIEF/SAFETY VALVES design feature(s) and/or interlocks which provide for the following: Insures that only one or two safety/relief valves reopen following the initial portion of a reactor isolation event (LLS logic): Plant-Specific	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>239002 K4.01</b>
	<b>Rating</b>	3.9

### Question 43

The plant is at rated power when the MSIVs close causing a reactor scram.

Reactor pressure reaches 1120 psig resulting in multiple SRVs cycling.

Following the initial transient, the SRV(s) would be expected to automatically maintain reactor pressure between:

- A. 926 and 1033 psig.
- B. 936 and 1073 psig.
- C. 946 and 1113 psig.
- D. 1013 and 1113 psig.

**Answer: A**

#### Explanation:

Low-Low Set initiates automatically when RPV pressure reaches SRV F051D's normal lift setpoint of 1103 psig.

Once initiated, six SRVs are capable of operating in the Low-Low Set mode with the following adjusted opening and closing setpoints: One SRV, F051D, lifts at 1033 psig and blows down to 926 psig. A second SRV, F051B, lifts at 1073 psig and blows down to 936 psig. Only one SRV is needed to maintain pressure after the initial transient.

#### Technical References:

**GLP-OPS-E2202**

**References to be provided to applicants during exam: None.**

#### Learning Objective:

GLP-OPS-E2202 For each mode of operation of the SRVs, state/identify the number of valves which open and the associated opening setpoints. (11.2)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>259002 Reactor Water Level Control</b>  <b>Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Reactor water level input</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>259002 – K6.05</b>
	<b>Rating</b>	3.5

**Question 44**

If the plant is in single element mode with automatic level channel selection mode, and the controlling level channel fails high the DFCS will de-select the failed channel and select...

- A. the upset range channel irrespective of the magnitude.
- B. an intermediate value from the remaining narrow range and upset range channels.
- C. the highest value from the remaining narrow range and upset range channels.
- D. the lowest value from the remaining narrow range and upset range channels.

**Answer: B**

**Explanation:**

A is wrong because this will happen only if the upset channel is the intermediate value.  
 B is correct because this is design of the system.  
 C is wrong because the system is designed to select the intermediate value.  
 D is wrong because the system is designed to select the intermediate value.

**Technical References:**

GLP-OPS-C3400, DIGITAL FEEDWATER CONTROL SYSTEM (DFCS) – C34, Rev 12

**References to be provided to applicants during exam: None.**

**Learning Objective:** State/identify the Level Control Subsystem’s response to failure of one or more Narrow Range level control channels when in the Automatic Level Channel Selection Mode. (3.6).



**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7)

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
261000 SGTS	<b>Tier #</b>	2
Knowledge of the effect that a loss or malfunction of the STANDBY GAS TREATMENT SYSTEM will have on following: Off-site release rate	<b>Group #</b>	1
	<b>K/A #</b>	<b>261000 K3.02</b>
	<b>Rating</b>	3.6

### **Question 45**

Procedure 04-1-01-T48-1, Standby Gas Treatment SOI, contains a caution to prevent an automatic start of SBGT if painting in the Auxiliary Building.

This is because paint fumes in the SBGT System can:

- A. result in a fire due to the electric heater in the system.
- B. plug the HEPA filters and reduce system flowrates.
- C. reduce the efficiency of the charcoal adsorber leading to increased off-site release rates.
- D. render the demister inoperable and subsequent fouling of the charcoal.

**Answer: C**

#### **Explanation:**

The presence of a volatile organic substance (e.g. painting) in the SBGT system reduces the efficiency of the adsorber material leading to an increased release rate of radioactive particles to the environment.

#### **Technical References:**

GLP-OPS-T4801

**References to be provided to applicants during exam: None.**

#### **Learning Objective:**

GLP-OPS-T4801

State/identify the design bases of the Standby Gas Treatment System. (2.0)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>262001 AC Electrical Distribution</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
<b>Ability to predict and/or monitor changes in parameters associated with operating the A.C. ELECTRICAL DISTRIBUTION controls including: Bus voltage</b>	<b>K/A #</b>	<b>262001 – A1.03</b>
	<b>Rating</b>	2.9

### Question 46

A degraded voltage on the DIV 1 and DIV 3 ESF buses results in bus voltages to be at 3600 volts for 7 seconds.

Following the transient, the status of the DIV 1 and DIV 3 EDGs would be\_\_\_\_\_.

- A. Both EDGs running
- B. Neither EDG running
- C. DIV 1 EDG running and DIV 3 EDG NOT running
- D. DIV 1 EDG NOT running and DIV 3 EDG running

**Answer: B**

#### Explanation:

A is wrong because neither of the diesel would start.

For the DIV 1 diesel there is a 9 second time delay between 2912 volts and 3744 volts before the DIV 1 diesel starts.

For the DIV 3 diesel there is a 4 second time delay between 3045 and 3660 volts for the diesel to start. This start sequence has to be coincident with a LOCA signal. If there is no LOCA signal present coincident with the 4 second time delay then there is a 5 minute time delay until DIV 3 diesel starts.

B is correct because of the explanation  
in A C is wrong because see above  
D is wrong because see above

**Technical References:**

GLP-OPS-R2100.12, LOAD SHEDDING & SEQUENCING SYSTEM AND ESF AC  
POWER DISTRIBUTION SYSTEM – R21, Rev 12, p.19  
GLP-OPS-P8100, HIGH PRESSURE CORE SPRAY (HPCS) DIESEL  
GENERATOR SYSTEM – P81, Rev 14, p. 40

**References to be provided to applicants during exam: None.**

**Learning Objective:**

Discuss the interrelationships of the following systems with the HPCS Diesel Generator System: (18).

State/identify the signals and setpoints that will produce a Bus Undervoltage signal to LSS Shed System and the actions associated with each signal. (12)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7),	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
262001 AC Electrical Distribution  Knowledge of the effect that a loss or malfunction of the A.C. ELECTRICAL DISTRIBUTION will have on following: Emergency generators	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>262001 K3.02</b>
	<b>Rating</b>	3.8

### Question 47

The plant is at rated power when a grid disturbance causes the voltage on buses 15AA and 16AB to drop in a step change to a sustained value of 3700 volts.

The emergency diesel generator will receive an automatic start signal \_\_\_\_\_ seconds later.

- A. 0.5
- B. 2.3
- C. 4
- D. 9.5

**Answer: D**

#### Explanation:

With bus voltage < 3744 volts, after a 9 second delay, the offsite bus feeder breakers open. This activates the < 2912 volt timer, which, after 0.5 seconds sends a start signal to the associated diesel generator.

The 0.5 second opening of incoming breakers is credible because this is the time delay of the 70% timer. The start of the EDG simultaneous with breaker opening is credible, since this is what happens with the 70% timer.

B and C are plausible because they are start times for division 3 D/G.

#### Technical References:

**GLP-OPS-R2100**  
**GLP-OPS-P7500**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-P7500 Describe the automatic initiation logic for a Standby Diesel Generator for degraded power conditions and a Loss of Coolant Accident (LOCA). (8.0)

GLP-OPS-R2100 State/identify the signals and setpoints that will produce a bus undervoltage signal to LSS shed system and the actions associated with each signal. (12)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>262002 UPS (AC/DC)</b>  <b>Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): D.C. electrical power</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	262002 – K6.02
	<b>Rating</b>	2.8

**Question 48**

If DC power is lost to an ESF inverter the static switch on the inverter will  (a) ?

AND

When the condition is corrected the static switch for the ESF inverter will  (b) (automatically/manually)  be transferred back to the DC source?

- |  |               |
|--|---------------|
| (a)  | (b)           |
| A. only transfer if the IN SYNC light is illuminated | automatically |
| B. transfer regardless of IN SYNC light              | automatically |
| C. only transfer if the IN SYNC light is illuminated | manually      |
| D. transfer regardless of IN SYNC light              | manually      |

**Answer: D**

**Explanation:**

Excerpts from the training material:

- If the inverter output and the AC source are out of sync the static switch will not transfer. An out of sync transfer would cause major damage to the inverter and potential damage to the loads.
- If the DC source has low or no voltage IN SYNC is not required, most of the inverters will auto transfer.
- Upon a return of the normal source the BOP Inverters (except 1Y99) will automatically (-2 seconds of normal power) return to the normal power supply.



- The ESF Inverters and 1Y99 have had the auto return feature disabled internally on the inverter. (Each inverter has a switch to enable or disable this feature.) If DC power is lost to an ESF Inverter, the DC input circuit breaker trips on undervoltage.

A is wrong because a loss of DC would result in no voltage so the IN SYNC light would not come into play. Also, only the BOP buses will automatically transfer when normal DC power is restored.

B is wrong because ESF inverters have the automatic return to normal supply disabled.

C is wrong because the inverter will transfer regardless of the IN SYNC light since the inverter has zero voltage.

D is correct because the transfer will happen regardless of the IN SYNC light and there is no automatic return to the normal source for ESF inverters.

**Technical References:**

GLP-OPS-L6200, Static Inverter System – L62, Rev 10

**References to be provided to applicants during exam: None.**

**Learning Objective:** Describe the automatic feature of the Static Inverter System that transfers power sources and which inverters have the following features: ( 4)

Inverter to alternate power source ( 4.1)

Alternate power source to inverter upon return of inverter power (4.2)

Describe the operation of the Static Inverter using: (5)

Static Switch- Auto (5.1)

Static Switch- Manual (5.2)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
263000 DC Electrical Distribution	<b>Tier #</b>	2
	<b>Group #</b>	1
Ability to (a) predict the impacts of the following on the D.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Grounds	<b>K/A #</b>	<b>263000 A2.01</b>
	<b>Rating</b>	2.8

### Question 49

The following alarm was received, 1H13-P864-1A-H4, 125VDC BTRY 1A3 SYS TROUBLE.

If this alarm is in due to a ground detection, which of the following describes why it is important to promptly eliminate a ground on a DC bus?

AND

Which procedure(s) should be used to mitigate this condition?

- A. one ground can cause unpredictable spurious operation of equipment.  
Loss of AC Power ONEP / Plant DC System Operating Instruction
- B. subsequent grounds will be masked, and multiple grounds can produce unanalyzed results.  
Alarm Response Instruction / Plant DC System Operating Instruction
- C. a shock hazard exists at the grounded equipment.  
Plant DC System Operating Instruction / Tech Specs
- D. a fire hazard exists due to excessive current flow at the ground location.  
Alarm Response Instruction / Tech Specs

**Answer: B**

#### Explanation:

Failure to promptly eliminate a single ground could mask subsequent grounds. Multiple grounds could lead to unpredictable spurious operation of equipment, inoperable equipment, unanalyzed loads on batteries, or unanalyzed equipment

failure modes that could be expected to occur during harsh environments associated with accident conditions. The first ground does not produce adverse effects because there is no path for current flow with one ground in an ungrounded system. Correct procedure used would begin with the ARI which has you determine how much the ground is which is performed in the Plant DC SOI.

**Technical References:**

**GLP-OPS-L1100**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**GLP-OPS-L1100** State/identify the purpose/function of Ground Detection Systems. (5.3)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>DC Electrical Distribution</b>  <b>Knowledge of electrical power supplies to the following: Major D.C. loads</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>263000 – K2.01</b>
	<b>Rating</b>	3.1

**Question 50**

The Diesel Generator 11 \_\_\_\_\_ is(are) powered from the **ESF** DC distribution system.

- A. generator field flash
- B. fuel oil booster pump
- C. lube oil pump
- D. air compressors

**Answer: A**

**Explanation:**

- B is wrong because it is powered from a BOP bus
- C is wrong because it is AC powered
- D is wrong because it is AC powered

**Technical References:**

04-1-01-L11-1\_123 and GLP-OPS-P7500\_024-1

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-L1100. (8) State/identify the major loads of the Plant DC System

**Question Source:**

(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
264000 EDGs	<b>Tier #</b>	2
Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on following: A.C. electrical distribution	<b>Group #</b>	1
	<b>K/A #</b>	<b>264000 K3.02</b>
	<b>Rating</b>	3.9

### **Question 51**

The voltage regulator on a standby diesel generator has a malfunction that limits its maximum voltage to 3900 VAC.

In this condition, the output breaker can be closed:

1. automatically.
2. remotely (P864) when paralleling with an offsite source.
3. remotely (P864) when energizing a dead bus.

- A. 1, 2 and 3
- B. 2 and 3 only
- C. 3 only
- D. 1 only

**Answer: C**

#### **Explanation:**

**DG at rated voltage is an interlock for closing the breaker automatically or remotely when paralleling. It is not an interlock when all offsite feeder breakers are open**

#### **Technical References:**

Table 4 of GLP-OPS-P7500

**References to be provided to applicants during exam: None.**

#### **Learning Objective:**

GLP-OPS-P7500 State/identify the start sequence and interlocks involved in starting the Standby Diesel Generator System during the following conditions: (15.0) LOCA signal

present (15.1) LOP/BUV signal present (15.2) Local Emergency Start signal present (15.3)  
Normal operations (15.4)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>300000 Instrument Air</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
<b>Knowledge of the connections and/or cause effect relationships between INSTRUMENT AIR SYSTEM and the following: Cooling water to compressor</b>	<b>K/A #</b>	<b>300000 – K1.04</b>
	<b>Rating</b>	2.8

**Question 52**

Normal cooling water for the Plant air compressors is provided by\_\_\_\_\_:

- A. Plant Service Water.
- B. Standby Service Water.
- C. Component Cooling Water.
- D. Turbine Building Cooling Water.

**Answer: D**

**Explanation:**

A is wrong because it does not provide cooling but is plausible if the applicant believes that since the system is not safety related it would come from a non-safety related source. B is wrong because this is the emergency source of water. C is wrong because it does not provide cooling but is plausible if the applicant doesn't realize that component cooling water only provides cooling to potentially radioactive sources. D is correct because it is the normally aligned source of cooling water.

**Technical References:**

Document where the correct answer is found

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X



<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7),	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
400000 Component Cooling Water  Knowledge of electrical power supplies to the following: CCW valves	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>40000 K2.02</b>
	<b>Rating</b>	2.9

### Question 53

The power supply to P42-F116, CCW RTN FRM DW is:

- A. Bus 11DA
- B. LCC 16BB3
- C. MCC17B01
- D. MCC 15B11

**Answer: D**

**Explanation:**

A is wrong because the “DA” shows that this is a 125V DC bus, and the valve is powered from 480 VAC.

B is wrong because the valve motor is < 50 hp. It is powered from an MCC (not an LCC).

C is the power supply to the B CCW pump.

C is wrong because MCC 17B11 is a division III bus which does not power any CCW components.

**Technical References:**

04-1-01-P42-1, CCW SOI

GLP OPS-R2700, Normal AC Power Distribution System

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP OPS-R2700 Identify components using the GGNS numbering system. (16)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

	New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>201001 CRD Hydraulic</b>  <b>Knowledge of the physical connections and/or cause-effect relationships between CONTROL ROD DRIVE HYDRAULIC SYSTEM and the following: Condensate System</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>201001 – K1.01</b>
	<b>Rating</b>	3.1

**Question 54**

During normal operation, the suction pressure for the control rod drive pumps is from the \_\_\_\_\_.

AND

On a loss of the condensate system the suction of the control rod drive pumps is from the \_\_\_\_\_.

- A. condensate pumps; CST
- B. condensate booster pumps; CST
- C. condensate pumps; demineralized water system
- D. condensate booster pumps; demineralized water system

**Answer: A**

**Explanation:**

- A is correct
- B is wrong because the suctions from the condensate pumps
- C is wrong because the service water system does not feed the CRD system but is plausible because the water system is very clean and could be used in the CRD system
- D is wrong because of B and C

**Technical References:**

GLP-OPS-C111A

**References to be provided to applicants during exam: None.**

**Learning Objective:**

11.1 Describe the interrelationships between the CRWST and the CRD Hydraulic System.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(6),	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
201003 Control Rod and Drive Mechanism  Knowledge of the operational implications of the following concepts as they apply to CONTROL ROD AND DRIVE MECHANISM :Hydraulics	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>201003 K5.01</b>
	<b>Rating</b>	2.6

### Question 55

In order to continuously withdraw a CRDM, the collet fingers are continuously held:

- A. outward by hydraulic pressure
- B. outward by mechanical interaction with the index tube
- C. inward by hydraulic pressure
- D. inward by mechanical interaction with the index tube

**Answer: A**

#### Explanation:

The collet fingers are initially opened by mechanical interaction with the index tube by a slight insertion, but they are subsequently held open by hydraulic pressure applied to a piston. The fingers move outward to unlatch the rod, they move inward to latch the rod and prevent outward movement.

#### Technical References:

**GLP-OPS-C111A\_008-1**

**References to be provided to applicants during exam: None.**

#### Learning Objective:

GLP-OPS-C111A Describe in detail the following control rod operations: (10.0)

- o Control rod insertion (10.1)
- o Control rod withdrawal (10.2)

GLP-OPS-C111AB Describe the following CRD Mechanism evolutions and operations:

(5) Operation of the collet locking mechanism. (5.3)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43,	

Examination Outline Cross-Reference	Level	RO
<b>201005 RCIS</b>  <b>Ability to (a) predict the impacts of the following on the ROD CONTROL AND INFORMATION SYSTEM (RCIS) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Rod Drift</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>201005 – A2.13</b>
	<b>Rating</b>	3.8

### Question 56

Which of the following could cause a Control Rod to drift IN?

AND

What are the immediate actions required to be performed?

- A. Scram Outlet valve fails Open  
Depress the IN TIMER SKIP pushbutton
- B. CRD System Flow Control Valve fails Closed  
Depress the IN TIMER SKIP pushbutton
- C. All Stabilizing Valves close  
Depress the INSERT pushbutton
- D. Pressure Control Valve C11-F003 taken to full Closed position  
Depress the RESET DRIFT pushbutton.

**Answer: A**

**Explanation:**

**Technical References:**

GLP-OPS-C1102, Rod Control and Information Systems (RC&IS)  
05-1-02-IV-1



**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-C1102, Rod Control and Information Systems (RC&IS)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(6)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
204000 RWCU  Ability to manually operate and/or monitor in the control room: Valve controllers	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>204000 A4.02</b>
	<b>Rating</b>	2.9

### Question 57

Reactor pressure is 150 psig during a plant heatup with RWCU blowdown to the main condenser maintaining RPV level.

The following alarm is received:

RWCU FLTR DMIN INL TEMP HI 130°F, P680-11A-D6

Which of the following is the cause of the alarm?

- A. Not enough system flow, a second pump is required.
- B. G33-F044, RWCU FLTR DMIN BYP VLV, is OPEN.
- C. G33-F033, RWCU SYS BLWDN FLO CONT, is opened too far.
- D. A RWCU filter demin isolation has occurred.

**Answer: C**

#### Explanation:

Opening F033 will cause non-regenerative HX outlet temp to rise because of a loss of cooling flow in the regenerative HX. If it reaches 140°F, 1GG33-F004 closes and the RWCU pumps trip.

A is wrong because at this reactor pressure one RWCU pump is in the POST-Pump mode but should not affect temperature.

B is wrong because the demin bypass valve will not affect HX temperature

C is correct.

D is wrong because this activity will not affect temperature going up

**Technical References:**

04-1-02-1H13-P680-11A-C6 ARI, RWCU FLTR DMIN INL TEMP HI 140°F.  
04-1-01-G33-1, Reactor Water Cleanup, caution on top of page 55.

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**GLP-OPS-G3336** Describe any interlocks, trips, or automatic actions associated with the following Reactor Water Cleanup System components: (8.0) System Isolation Valves (8.6) Concerning SOI 04-1-01-G33-1: (10.0) Identify the reasons for the precautions, limitations, cautions, warnings and notes given in the SOI. (10.2) State / identify the relationship between reactor water level control and RWCU blowdown and flow control.(11.0)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>219000 RHR/LPCI: Torus/Pool Cooling Mode</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>219000 – 2.1.28</b>
	<b>Rating</b>	4.1
<b>Knowledge of the purpose and function of major system components and controls</b>		

### Question 58

The suppression pool cooling mode of RHR is designed to limit suppression pool temperature to a maximum of \_\_\_\_ (a) \_\_\_\_ during normal conditions to ensure suppression pool temperature does not exceed 185°F under accident conditions.

This is accomplished in the suppression pool cooling mode by regulating flow through the...

- A. 95°F; F024A/B, RHR A/B test return to suppression pool
- B. 95°F; F048A/B, heat exchanger A/B bypass valve
- C. 110°F; F024A/B, RHR A/B test return to suppression pool
- D. 110°F; F048A/B, heat exchanger A/B bypass valve

**Answer: B**

#### Explanation:

A is wrong because the valve listed is not throttled in the suppression pool cooling mode  
 B is correct because this is the temperature listed in the training manual and the only valve that should be throttled in SOI 04-1-01-E12, Residual Heat removal System.  
 C is wrong because this temperature is not listed in the training manual but plausible since it is listed in the EOP (EP-2). Also this is the incorrect valve for regulating temperature  
 D is wrong because see answer C.

#### Technical References:

GLP-OPS-E1200, Residual Heat Removal (RHR) System – E12  
 SOI 04-1-01-E12, Residual Heat removal System

**References to be provided to applicants during exam: None.**

**Learning Objective:**

State/identify the purpose/function of the Suppression Pool Cooling mode of RHR (1.4)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(?),

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
226001 RHR/LPCI: CTMT Spray Mode	<b>Tier #</b>	2
Knowledge of RHR/LPCI: CTMT Spray Mode design feature(s) and/or interlocks which provide for the following: Prevention of inadvertent containment spray activation.	<b>Group #</b>	2
	<b>K/A #</b>	<b>226001 K4.12</b>
	<b>Rating</b>	2.9

### Question 59

Which of the following is required before the RHR system will initiate in the containment spray mode when using the Manual CTMT Spray pushbutton?

- A. -150.3" Reactor water level
- B. 10.85 minute time delay
- C. 1.39 psig Drywell pressure
- D. 7.84 psig Containment pressure

**Answer: C**

**Explanation:**

The RHR Containment Spray System logic must have a drywell pressure of >1.39psig before the manual initiate pushbuttons will work.

A is wrong - not required for manual initiation but plausible due to required for auto initiation.

B is wrong - not required for manual initiation but plausible due to required for auto initiation.

C is correct

D is wrong - not required for manual initiation but plausible due to required for auto initiation.

**Technical References:**

**GLP-OPS-E1200**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-E1200 Obj 8

<b>Question Source:</b> (note changes; attach parent)	Bank #669 Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(8)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>233000 Fuel Pool Cooling/Cleanup</b>  <b>Knowledge of FUEL POOL COOLING AND CLEAN-UP design feature(s) and/or interlocks which provide for the following: Pool cooling during loss of cooling accident: BWR-6</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>233000 - K4.08</b>
	<b>Rating</b>	2.6

### Question 60

Both fuel pool cooling water pumps are running when a LOCA signal is received.

Both pumps will trip and...

- A. both will be automatically restarted by the sequencer.
- B. neither pump can be restarted until the LOCA signal is reset.
- C. Only A pump can be restarted following LSS.
- D. either pump can be manually restarted following load shedding and sequencing.

**Answer: D**

**Explanation:**

A is wrong because the pumps are not listed as loads that automatically sequence on.  
 B is wrong because the LOCA signal does not lock out the pumps.  
 C is wrong because the LSS signal can't be in or the pump will trip and the signal will be in while loads are sequencing.  
 D is correct because see A, but they are listed as loads that are not locked out and can be manually started.

**Technical References:**

04-1-01-R21-1, Load Shedding and Sequencing System  
 GLP-OPS-R2100, Load Shedding and Sequencing System and ESF AC Power Distribution System

**References to be provided to applicants during exam: None.**



**Learning Objective:**

(17) Describe the sequencing of Loads on a LOCA signal.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(8)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
245000 Main Turbine Gen. / Aux  Knowledge of the effect that a loss or malfunction of the following will have on the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS : Main steam	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>245000 K6.08</b>
	<b>Rating</b>	3.0

### Question 61

One SRV failing open at rated power will result in generator megawatts (1)\_\_\_\_\_ and feedwater injection temperature (2)\_\_\_\_\_

- |                       |                    |
|-----------------------|--------------------|
| (1)                   | (2)                |
| A. lowering           | lowering           |
| B. lowering           | remaining constant |
| C. remaining constant | lowering           |
| D. remaining constant | remaining constant |

**Answer: A**

#### Explanation:

The SRV operation lowers steam pressure, EHC responds by lowering turbine steam flow. The lowered turbine steam flow leads to reduced extraction steam flow, which lowers feedwater temperature.

#### Technical References:

ARI 04-01-02-1H13-P601-19A-A5, SRV/ADS VLV OPEN/DISCH LINE PRESS HI

**References to be provided to applicants during exam: None.**

#### Learning Objective:

**GLP-OPS-E2202** Identify the system interrelationships between each of the following systems and the ADS/SRV System: (19.0)  
Nuclear Boiler B13/21 (19.2)

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(?), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Reactor Feedwater</b>  <b>Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR FEEDWATER SYSTEM: Reactor water level control system</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	259001 – K6.07
	<b>Rating</b>	3.8

### Question 62

The plant is operating at 90% power.

Steam flow transmitter C34-N030A fails upscale.

The following occurs:

- STEAM FLOW FAIL light begins flashing
- DFCS TROUBLE alarm annunciates on H13-P680

Based on this malfunction;

- Feedflow will increase and the reactor will scram on high water level.
- Feedflow will decrease and the reactor will scram on low water level.
- DFCS will automatically shift to single element control and feedflow remains fairly constant.
- DFCS automatically deselects C34-N030A, remains in 3-element control, and feedflow remains fairly constant.

**Answer: C**

#### **Explanation:**

A is wrong; feedflow will remain fairly constant because the DFCS shifts to single element control and maintains reactor water level at setpoint.

B is wrong; feedflow will remain fairly constant because the DFCS shifts to single element control and maintains reactor water level at setpoint.

C is correct; feedflow will remain fairly constant because the DFCS shifts to single element control and maintains reactor water level at setpoint.  
D is wrong because DFCS automatically shifts to single element control.

**Technical References:**

GLP-OPS-C3400.12, page 31

**References to be provided to applicants during exam: None.**

**Learning Objective:**

C3400.12 – 5.3 – State/identify the consequences of a steam flow channel failure.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(4), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
268000 Radwaste  Knowledge of the effect that a loss or malfunction of the RADWASTE will have on following: Drain sumps	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>268000 K3.04</b>
	<b>Rating</b>	2.7

**Question 63**

Isolating the floor drain collection tank and both waste surge tanks will result in not being able to automatically pump down the \_\_\_\_\_.

- A. Turbine Building West Equipment Drain Sump
- B. Auxiliary Building Floor Drain Transfer Tank
- C. Auxiliary Building North Equipment Drain Sump
- D. Turbine Building North Chemical Waste Sump

A  
T

**Answer: B**

**Explanation:**

Of these sumps, only B pumps to these tanks (dirty RW). A and C discharge to the Equipment collection drain tanks (clean RW). D discharges to the Miscellaneous Chemical Waste Receiver Tank

**Technical References:**

GLP-OPS-G1718.08

**References to be provided to applicants during exam: None.**

**Learning Objective:**

State/identify the purpose/function and location of the Equipment Drain Collector Tanks, Floor Drain Collector Tank and Waste Surge Tanks. (3.0)  
Discuss the water quality of the various inputs to the tanks from operating the plant and the importance of segregation of the waste water. (3.3)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>27100 Offgas</b>  <b>Knowledge of the physical connections and/or cause-effect relationships between OFFGAS SYSTEM and the following: Plant air systems</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>271000 – K1.07</b>
	<b>Rating</b>	2.7

### Question 64

The air used in the Offgas System is supplied by the \_\_\_\_\_ Air System and on a loss of air N64-F016A/B, Offgas Condenser Drain Valves, fail \_\_\_\_\_.

- A. Instrument; open
- B. Instrument; close
- C. Service; open
- D. Service; close

**Answer: A**

#### Explanation:

- A is correct.
- B is wrong because the valves fail open.
- C is wrong because Instrument Air is used.
- D is wrong because Instrument Air is used and the valves fail open.

#### Technical References:

GLP-OPS-N6465

**References to be provided to applicants during exam: None.**

#### Learning Objective:

- (8.4) State/identify the location from where the Offgas Condenser Drain Valves, F016A/B, can be operated
- (14.2) Discuss the interrelationships of the Instrument Air System with the Offgas/Vault Refrigeration System



<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(13)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
290003 Control Room HVAC  Ability to monitor automatic operations of the CONTROL ROOM HVAC including: Initiation/failure of fire protection system	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>290003 A3.02</b>
	<b>Rating</b>	3.0

### Question 65

The operating control room air conditioning unit will automatically shut down if:

- A. smoke is detected in the return ductwork from the control room.
- B. high-high radiation is sensed in the outside air intake duct.
- C. high-high temperature is sensed on an operating fresh air unit filter train.
- D. a Freon leak is detected in the control room air conditioner cooling coils.

S

**Answer: A**

#### Explanation:

Upon sensing the presence of smoke in the return ductwork from the Control Room or in the fresh air intake duct, the smoke detector causes the following actions to take place:

- The operating air conditioning unit shuts down.
- The operating air conditioning unit inlet and outlet dampers close.
- The fire detection system sounds the fire alarm.

B is wrong because this isolates the control room but does not trip the air conditioning unit.

C is wrong because this shuts down the running control room standby fresh air units.

D is wrong because the Freon leak alarm has no automatic actions associated with it..

#### Technical References:

ARI 04-S-02-SH13-P855-1A-B4, CONT RM HVAC FREON  
HI GLP-OPS-Z5100

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-Z5100

Discuss the interrelationships of the Plant Fire Protection System with the Control Room HVAC System. (13.6)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Conduct of Operations</b>	<b>Tier #</b>	3
	<b>Group #</b>	
<b>Knowledge of shift turnover practices.</b>	<b>K/A #</b>	<b>2.1.3</b>
	<b>Rating</b>	3.7

**Question 66**

What is the MAXIMUM time a shift can be one less than the minimum required by regulations?

AND

Can the exception to minimum staffing requirements be invoked during shift change for a crewperson being late or absent?

A. 1 hour; Yes

B. 1 hour; No

C. 2 hours; Yes

2

D. 2 hours; No

2

**Answer: D**

**Explanation:**

A is wrong because the time is less than the maximum allowed but is a logical time to get an onsite replacement.

B is wrong because of answer A. The conduct of operations procedure does not allow for this exception for tardiness or absence. The second part of the question is correct.

C is wrong because this is the correct time, but the conduct of operations procedure does not

all for this exception

D is correct because this is the maximum time allowed and the correct interpretation of the conduct of operations procedure.

**Technical References:**

EN-OP-115, Conduct of Operations , Rev. 14, Attachment 9.3

**References to be provided to applicants during exam: None.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
Conduct of Operations	<b>Tier #</b>	3
	<b>Group #</b>	
Knowledge of the refueling process.	<b>K/A #</b>	<b>2.1.41</b>
	<b>Rating</b>	2.8

### Question 67

When removing the reactor vessel head, reactor vessel level should be maintained using the \_\_\_\_\_ range.

- A. Fuel Zone
- B. Wide
- C. Upset
- D. Shutdown

**Answer: D**

**Explanation:**

The target is to maintain vessel level approximately one foot below the vessel flange (196" to 200" on shutdown range). Level too high would result in water spilling over the flange. Level too low increases dose in the refueling area. Only the Shutdown Range measures level this high.

**Technical References:**

**03-1-01-5 Refueling, Step 5.15.15**  
**GFIG-OPS-B2101, Figure 2**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-B2101

State/identify the indicating ranges of the following RPV Water Level Instruments: (5.0)

- o Reactor Water Level Narrow Range (5.1)
- o Reactor Water Level Wide Range (5.2)
- o Reactor Water Level Shutdown Range (5.3)

- o Reactor Water Level Upset Range (5.4)
- o Reactor Water Level Fuel Zone Range (5.5)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Conduct of Operations</b>	<b>Tier #</b>	3
	<b>Group #</b>	
<b>Knowledge of conduct of operations requirements.</b>	<b>K/A #</b>	2.1.1
	<b>Rating</b>	3.8

**Question 68**

Per ENP-OP-115, Conduct of Operations, which of the following tasks is allowed to be performed without a procedure in hand?

- A. Adjusting circulating water blowdown flow.
- B. Align Startup Level Control after reactor scram.
- C. Resetting a full scram.
- D. Rotating CRD pumps.

**Answer: A**

**Explanation:**

A is correct because the activity is specified in Attachment 9.3 of ENP-OP-115, Conduct of Operations

B is wrong because it is not listed in the procedure. SLC SOI (04-1-01-C41-1) states hard card used to verify indications. The procedure is not required when lining up the system for injection.

C is wrong because it is not listed in the procedure but resetting a half scram is. D is wrong because it is not listed in the procedure.

**Technical References:**

Attachment 9.3 of ENP-OP-115, Conduct of Operations, Rev 14

**References to be provided to applicants during exam: None.**

**Learning Objective:**



<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
Conduct of Operations	<b>Tier #</b>	3
	<b>Group #</b>	
Knowledge of the process used to track inoperable alarms.	<b>K/A #</b>	<b>2.1.43</b>
	<b>Rating</b>	3.0

**Question 69**

A single length of red tape placed diagonally across an alarm window means the annunciator:

- A. card has been removed.
- B. is not functioning properly due to faulty alarm circuitry.
- C. inputs have been verified to cause a nuisance alarm.
- D. deficiency affects technical specification operability.

**Answer: B**

**Explanation:**

A is wrong because a removed card is identified by two lengths of red tape placed to form an 'X'.

C is wrong because an annunciator with input bypassed due to nuisance alarm is designated with two vertical lengths of red tape.

D is wrong because this condition leads to further documentation but not a window marking

**Technical References:**

02-S-01-25 Deficient Equipment Identification, sections 6.2 and 6.3.

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Equipment Control</b>	<b>Tier #</b>	3
	<b>Group #</b>	
<b>Ability to determine operability and/or availability of safety related equipment</b>	<b>K/A #</b>	<b>2.2.37</b>
	<b>Rating</b>	3.6

### Question 70

The HPCS pump was declared INOP due not being able to provide sufficient flow during a surveillance.

Per Tech Specs 3.5.1, ECCS Operating, within one hour determine \_\_\_\_\_ system(s) operable.

- A. LPCS
- B. one RHR
- C. at least 2 low pressure ECCS
- D. RCIC

**Answer: D**

**Explanation:**

Per Tech Spec 3.5.1

A is incorrect; plausible due to LPCS is the other spray system.

B is incorrect;

C is incorrect; requirement to enter 3.0.3 is three or more inop

D is correct

**Technical References:**

Technical Specifications 3.5.1

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-TS001

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(10)

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
Equipment Control  Ability to track Technical Specification limiting conditions for operations.	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	<b>2.2.23</b>
	<b>Rating</b>	3.1

### Question 71

A valve is re-positioned to satisfy the requirements of a technical specification required action and is documented on an eSOMS LCOTR.

This valve would be identified with a \_\_\_\_\_ tag.

- A. No
- B. CPC
- C. Test & Maintenance
- D. Caution

**Answer: D**

**Explanation:**

A no tag identifies components that cannot be tagged but require positioning when hanging and removing a tagout. There is no LCOTR tag.

A test & maintenance tag makes the tagout holder accountable for the component's status.

**Technical References:**

**02-S-01-17, Control of Limiting Conditions for Operation**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**Question Source:**

**Bank #**

(note changes; attach parent)

Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7), 55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Radiation Control</b>  <b>Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.</b>	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	<b>2.3.5</b>
	<b>Rating</b>	2.9

### Question 72

Taking the mode switch from OPERATE to OFF on an Area Radiation Monitor causes the FAIL SAFE green light to extinguish.

Which of the following is also an indication of an ARM taken to the OFF position?

1. LOCAL red light to illuminate
2. AREA RAD PNL P844 TROUBLE annunciator on 1H13-P680 to annunciate
3. AREA RADIATION MONITORING SYSTEM FAILURE annunciator on 1H13-P844 to annunciate
4. HIGH ALARM/RESET pushbutton to illuminate

- A. 1 and 2 only
- B. 1, 2 and 3 only
- C. 2, 3 and 4 only
- D. 1 thru 4 (all)

**Answer: B**

**Explanation:**

A is wrong because #3 will also alarm

B is correct.

C is wrong because the High Alarm reset pushbutton will not illuminate

D is wrong because the High Alarm reset pushbutton will not illuminate

**Technical References:**



GLP-OPS-D1721, Radiation Monitoring System

**References to be provided to applicants during exam: None.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(11)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
Radiation Control  Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	<b>2.3.15</b>
	<b>Rating</b>	2.9

**Question 73**

The Normal Range Area Radiation monitors utilize \_\_\_\_\_ detectors.

- A. Geiger-Mueller tube
- B. ion chamber
- C. scintillation
- D. solid state alpha and beta scintillation

**Answer: A**

**Explanation:**

The main steamline radiation monitoring subsystem uses ion chambers.  
The process liquid monitoring subsystem uses scintillation detectors.  
Ventilation release rad monitors use solid state alpha detectors and beta scintillation detectors.

**Technical References:**

GLP-OPS-D1721, p 19 of 68

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-D1721 State/identify the types of detectors used for the following radiation

monitors: (5) Area Radiation Monitors (5.1)

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
<b>Emergency Procedures/Plan</b>	<b>Tier #</b>	3
<b>Knowledge of EOP entry conditions and immediate action steps.</b>	<b>Group #</b>	
	<b>K/A #</b>	<b>2.4.1</b>
	<b>Rating</b>	4.6

### Question 74

Which of the following is an entry condition to EP-2, RPV Control, and what is the purpose of the immediate action that follows?

- A. Suppression pool temperature above 95<sup>o</sup>F, maintain a sufficient heat sink
- B. Drywell pressure above 1.23 psig, ensure reactor is shutdown
- C. Drywell temperature above 135<sup>o</sup>F, protect equipment in the containment
- D. Containment temperature above 95<sup>o</sup>F, maintain containment integrity

**Answer: B**

**Explanation:**

- A is wrong because it is not an entry condition for EP-2
- B is correct because it is an entry condition and the immediate action is to ensure the reactor has scrammed
- C is wrong because it is not an entry condition for EP-2
- D is correct because it is not an entry condition for EP-2

**Technical References:**

EP-2, RPV Control

**References to be provided to applicants during exam: None.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(10), 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
Emergency Procedures/Plan  Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	<b>2.4.16</b>
	<b>Rating</b>	3.5

### Question 75

A reactor scram has been automatically initiated due to high drywell pressure.

According to Procedure 02-S-01-40, EP Technical Bases and 05-01-02-I-1, Reactor Scram ONEP, should be executed:

- A. concurrently with EP-2.
- B. prior to entering EP-2.
- C. only after drywell pressure is less than 1.23 psig.
- D. only after exiting the emergency procedures.

**Answer: A**

**Explanation:**

According to the referenced procedure, ONEP 05-1-02-1-1 should be entered and executed concurrently with EP-2.

**Technical References:**

02-S-01-40, EP Technical Bases, Revision 004

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(10), 55.43

GGNS LOT 2014 NRC INITIAL LICENSED OPERATOR WRITTEN EXAMINATION

SRO EXAM

**ANSWER KEY**

76	B
77	C
78	D
79	B
80	A
81	D
82	B
83	A
84	C
85	A
86	B
87	B
88	A
89	C
90	C
91	A
92	A
93	C
94	C
95	D
96	B
97	B
98	A
99	C
100	C



Examination Outline Cross-Reference	Level	SRO
295021 Loss of Shutdown Cooling  Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water temperature	Tier #	1
	Group #	1
	K/A #	295021 – AA2.04
	Rating	3.6

## Question 76

Use your provided references to answer this question.

The plant is in Mode 4 and flooding up when a spurious Group 3 isolation occurs due to low reactor water level. Thirty minutes has elapsed and maintenance is unable to reset the isolation. Reactor water temperature has risen to 205°F. Primary and secondary containments are intact.

What is the current emergency classification for this event?

What is the maximum time to make the initial notification to the NRC?

- A. Unusual Event; 15 minutes
- B. Unusual Event; 1 hour
- C. Alert; 15 minutes
- D. Alert; 1 hour

**Answer: B**

### Explanation:

A is wrong because the classification is correct since this is an unplanned event and RCS temperature is greater than 200°F but the time is incorrect.

B is correct because of A.

C is wrong because an alert would only be necessary if 200°F had been exceeded for greater than 60 minutes.

D is wrong because of C.

**Technical References:**

10-S-01-1, Activation of the Emergency Plan, Rev 122, Attachment I, page 7  
10-S-01-6, Notification of Offsite Agencies and Plant On-Call Emergency Personnel, Rev 50,  
Note under Step 6.1.1.b

**References to be provided to applicants during exam:** 10-S-01-1, Activation of the  
Emergency Plan, Rev 122 Attachment I (all pages)

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(5)	

Examination Outline Cross-Reference	Level	SRO
295026 Suppression Pool High Water Temp.	Tier #	1
	Group #	1
Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature	K/A #	295026 EA2.01
	Rating	4.1

### Question 77

Use your provided references to answer this question.

- The plant is in MODE 2.
- RCIC testing is in progress in accordance with SR 3.5.3.3.
- SR 3.5.3.3 was successfully performed 93 days ago.
- Suppression pool average temperature is 97°F.
- Per EP-3 both RHR systems are in Suppression Pool Cooling
- A risk assessment has been performed for RHR systems in Suppression pool cooling and MOV test switches.

Technical Specifications will allow the plant to enter MODE 1:

- only** after the RCIC testing is completed satisfactorily **and** suppression pool temperature is lowered to  $\leq 95^{\circ}\text{F}$ .
- only** after suppression pool average temperature is lowered to  $\leq 95^{\circ}\text{F}$  **but** the RCIC testing can still be in progress.
- with current suppression pool temperature **only** if RCIC testing is still in progress during the MODE change.
- with current suppression pool temperature **only** if the RCIC testing is completed satisfactorily.

**Answer: C**

**Explanation:**

LCO 3.6.2.1 Actions A and B require the plant to reduce THERMAL POWER to  $< 1\%$ ,

which will require a MODE change from MODE 1 to MODE 2. Thus, 3.0.4.a will not allow MODE 1 entry with the LCO not met.

C conditions meet LCO 3.6.2. LCO 3.5.3 is met because SR 3.5.3.3 is still within the frequency limits of SR 3.0.2.

A is wrong because the SR 3.5.3.3 is still within the frequency limits of SR 3.0.2.

B is wrong. With RCIC testing is in progress, the LCO is met at the current suppression pool temperature.

D is wrong because the LCO is only met at the current suppression pool temperature if the testing is still in progress.

**Technical References:**

**References to be provided to applicants during exam: LCOs 3.5.3.1 and 3.6.2.1.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.43(b)(2)	

Examination Outline Cross-Reference	Level	SRO
<b>295027 High Containment Temperature</b>  <b>Ability to determine and/or interpret the following as they apply to HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY): Containment radiation levels: Mark-III</b>	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295027 – EA2.04</b>
	<b>Rating</b>	3.7

### Question 78

A General Emergency has been declared.

Current conditions are:

- Reactor water level is -195" and stable
- Approximately 15% fuel damage
- Containment temperature is 180°F
- All containment radiation monitors are off scale high
- Large fission product inventory in Containment
- Radiation levels at the Site Boundary are at 25 Rem/hr TEDE
- Projected radiation levels at 8 miles are 2 Rem/hr TEDE

What are the Protective Action Recommendations?

- A. No evacuation of surrounding areas is required.
- B. Evacuate a 2-mile radius and shelter 5 miles downwind.
- C. Evacuate a 2-mile radius and 5 miles downwind; shelter the rest of the 10-mile EPZ; consider the use of Potassium Iodide.
- D. Evacuate a 2-mile radius and 10 miles downwind; shelter the rest of the 10-mile EPZ; consider the use of Potassium Iodide.

**Answer: D**

**Explanation:**

A is wrong because all GE requires PARs to be recommended.  
B is wrong because sheltering is required for the entire EPZ and not just downwind  
C is wrong because the dose projection at 8 miles requires an extended PAR  
D is correct because the conditions presented require an extended PAR

**Technical References:**

10-S-01-1, Activation of the Emergency Plan, Rev 122, Step 6.1.7k

**References to be provided to applicants during exam:** 10-S-01-1, Activation of the Emergency Plan, Rev 122, Step 6.1.7k only

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
295028 High Drywell Temperature  Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Reactor water level	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295028 EA2.03</b>
	<b>Rating</b>	3.9

### Question 79

Use your provided references to answer this question.

The crew has entered EP-2, RPV Control and EP-3, Containment Control. The following conditions exist:

- Drywell temperature 300°F.
- RPV pressure 10 psig.
- Suppression pool temperature is 190°F.
- Containment pressure 2 psig.
- Suppression pool 23 ft.
- Containment temperature 230°F
- All RPV level indications are erratic

At this point, the SRO should:

- A. Enter Emergency Depressurization.
- B. Enter EP-5, RPV Flooding.
- C. Initiate CTMT sprays.
- D. Enter Steam Cooling

**Answer: B**

#### Explanation:

Conditions are in the “possible boiling” area of the RPVST. This + unstable level indication makes RPV level unknown, which requires transition to EP-5.

A is wrong because emergency depressurizations conditions are not met.

C is wrong because the given condition are in the “unsafe to initiate” region of the CS IPL D is wrong because this transition is based on level, which is unavailable

**Technical References:**

**EP-2, EP-1, EP-5**

**References to be provided to applicants during exam:**

RPVST curve from EP Caution 1.

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7) 55.43	



Examination Outline Cross-Reference	Level	SRO
295030 Low Suppression Pool Water Level  Knowledge of EOP mitigation strategies	Tier #	1
	Group #	1
	K/A #	295030 – 2.4.6
	Rating	4.7

### Question 80

The plant is operating at rated power when an earthquake occurs resulting in an unisolable suppression pool leak.

Suppression pool level is 17.5 feet and lowering with all available methods of making up to the suppression pool in service in accordance with EP-3, Containment Control.

EP-4, Auxiliary Building Control is being implemented and sump pumps are maintaining Auxiliary Building Area water levels below their max safe values.

The CRS should enter EP-2, RPV Control ...

- A. and order an Emergency Depressurization using 8 ADS SRVs.
- B. and order operators to reduce reactor pressure to the reduced band using the bypass valves.
- C. and order an Emergency Depressurization using available EP-2, Table 3, Alternate Depressurization Systems.
- D. when suppression pool level drops below 14.5 feet and order an Emergency Depressurization using available EP-2, Table 3, Alternate Depressurization Systems.

**Answer: A**

**Explanation:**

A is correct because since all methods of suppression pool makeup are in service and level is still dropping you would have to transition to EP-2 and emergency depressurize.

B is wrong because you are unable to maintain suppression pool level SPL-9 directs you to

ED.

C is wrong because step ED-4 in E-2 requires 8 ADS/SRVs to be open to ED. The only allowance to use Table 3 is contained in ED-5.

D is wrong because the procedure step has you transition before reaching 14.5 ft. Understanding that level is dropping and continuing to drop after exhausting all makeup would meet the definition of before in this case. Also use of Table 3 systems is not allowed unless you meet the conditions in ED-5

**Technical References:**

EP-2, RPV Control

EP-3, Containment Control

02-S-01-40, EP Technical Bases, Rev 5

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)...

55.43(b)(5)

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295037 EA2.07</b>
	<b>Rating</b>	4.2
Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Containment conditions/isolations		

### Question 81

The plant was at rated power when an inadvertent closure of all MSIVs occurred. The following conditions exist:

- Multiple rods failed to insert.
- Reactor power is 3% and steady.
- Suppression pool temperature is 109°F and rising.
- RPV level is 40”.
- The crew is implementing EP-2A, ATWS RPV control.

At this time, the SRO should:

- A. exit level and pressure of EP-2A and enter emergency depressurization. e
- B. exit EP-2A and enter EP-3, Containment Control e
- C. exit EP-2A, flood the CTMT, and enter SAPs.
- D. remain in EP-2A and inject boron into the RPV with both SLC pumps.

**Answer: D**

**Explanation:**

This action is specified in the POWER leg of EP-2A, ATWS RPV Control.

A would only be done if RPV level were low and cannot be restored.  
 B In this case, EP-2A must be continued until the reactor will remain subcritical in all conditions without boron.  
 C would only be done if RPV level were low, cannot be restored, and emergency depressurization has been performed.  
 D is continuing with the current procedure.

**Technical References:**

**EP-2A**

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7) 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
700000 Generator Voltage and Electric Grid Disturbances / 6  Ability to determine and/or interpret the following as   they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Operational Status of offsite circuit	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	<b>295037 AA2.05</b>
	<b>Rating</b>	3.8

### Question 82

**Use your provided references to answer this question.**

The plant is operating at rated power when grid instabilities cause the following:

Day 1, 0000 hours      Baxter Wilson Line voltage reaches 526 KV and remains there  
Franklin Line voltage reaches 524 KV and remains there

Day 1, 0100 hours      Port Gibson Line voltage reaches 120 KV and remains there

Day 1, 0200 hours      Baxter Wilson Line frequency reaches 61.5 Hz and remains there  
Franklin Line frequency reaches 61.9 Hz and remains there

Day 1, 0300 hours      Port Gibson Line voltage reaches 121 KV and remains there

The Plant AC/DC Weekly Lineup (06-OP-1R20-W-0001) has been performed.

Per Tech Specs, if none of the above conditions change, the plant must be in MODE 3 no later than \_\_\_\_\_.

A. Day 2 at 1200 hours

B. Day 2 at 1500 hours

C. Day 4 at 1200 hours

D

D. Day 4 at 1400 hours

**Answer: B**

**Explanation:**

See 06-OP-1R20-W-0001, Attachment I, page 2.

At Day 1, 0000 hours, Baxter Wilson line volts goes out of spec high (limit is 525 KV). We now have only two offsite circuits OPERABLE (Franklin and Port Gibson), but only two are required (Tech Spec LCO 3.8.1; therefore, no Tech Spec action yet applies).

At Day 1, 0100 hours, nothing has changed because the Port Gibson line volts are still in spec (limit is 120.75).

At Day 1, 0200 hours, Franklin line frequency goes out of spec high (limit is 61.8 Hz). We now have one of two required offsite circuits inoperable. Per Tech Spec Action 3.8.1.A.2, we have 72 hours to restore one to OPERABLE; otherwise, be in MODE 3 within 12 hours thereafter (per Tech Spec Action 3.8.1.G.2). This would be no later than 84 hours after Day 1, 0200 hours; i.e., Day 4, 1400 hours.

At Day 1, 0300 hours, we now have zero offsite circuits OPERABLE because Port Gibson volts has gone out of spec high. Per Tech Spec Action 3.8.1.C.2, we have 24 hours to restore one to OPERABLE; otherwise, be in MODE 3 within 12 hours thereafter (per Tech Spec 3.8.1.G.2). This would be no later than 36 hours after Day 1, 0300 hours; i.e., Day 2, 1500 hours.

**Technical References:**

06-OP-1R20-W-0001, Plant AC/DC Power Distribution Weekly Lineup  
Tech Spec 3.8.1, AC Sources - Operating

**References to be provided to applicants during exam:**

06-OP-1R20-W-0001, Plant AC/DC Power Distribution Weekly Lineup  
Tech Spec 3.8.1, AC Sources - Operating

**Learning Objective:**

GLP-OPS-TS001, Objective 39

<b>Question Source:</b> (note changes; attach parent)	Bank #273 Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental	

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7)

55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
295002 Loss of Main Condenser Vac	<b>Tier #</b>	1
	<b>Group #</b>	2
Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.	<b>K/A #</b>	<b>295002 2.4.38</b>
	<b>Rating</b>	4.4

### Question 83

Use your provided references to answer this question.

The plant was increasing power at 38% RTP when the following alarms occurred:

- HP CNDSR SHELL PRESS HI
- IP CNDSR SHELL PRESS HI
- LP CNDSR SHELL PRESS HI
- EOC/RPT A TRIP
- EOC/RPT B TRIP

Reactor power is stable at 25% with turbine bypass valves controlling reactor pressure. Based on these conditions, the CRS should now:

- A. enter EP-2, RPV Control, and if power is reduced to < 4%, declare an Alert.
- B. enter EP-2, RPV Control, and if power is reduced to < 4%, declare a Site Area Emergency.
- C. enter 05-1-02-I-2, Turbine and Generator Trips. If power is reduced to <4%, no E-Plan declaration is necessary.
- D. enter 05-1-02-V-8, Loss of Condenser Vacuum. No E-Plan declaration is necessary.

**Answer: A**

**Explanation:**

the reactor should have scrammed because power was > 35.4% RTP when the turbine tripped. This is described by SA3 in the Classification flowcharts. EP-2 should be



implemented because a reactor scram is required and all control rods are not at position 00.

**Technical References:**

EN-OP-115, Conduct of Operations

**References to be provided to applicants during exam:** Emergency Classification Flowcharts

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7) 55.43	

Examination Outline Cross-Reference	Level	SRO
<b>295011 High Containment Temp</b>  <b>Ability to determine and/or interpret the following as they apply to HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY): Containment humidity: Mark-III</b>	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	<b>295011 – AA2.03</b>
	<b>Rating</b>	3.2

#### Question 84

The plant is operating at full power when containment exhaust filter moisture high alarm is received.

- Containment temperature is 90°F.
- Suppression Pool temperature is 90°F
- Radiation levels are normal for the power level
- Containment sump runtimes are normal

The CRS should enter:

- A. EP-3, Containment Control
- B. EP-2, RPV Control
- C. 04-S-01-M41-1, Containment Cooling System
- D. 04-S-01-P64-1, Fire Protection Water System

**Answer: C**

#### **Explanation:**

A is wrong because containment temperature and radiation levels would be elevated if a steam leak were occurring.

B is wrong because radiation levels would be higher and sump runtimes would be increasing to deal with the higher leakage

C is correct because the temperature are slightly elevated but not above any EOP entry conditions.

D is wrong because fire water is relatively cool water it would probably wouldn't add to the

amount of vapor inside containment.

**Technical References:**

04-1-02-1H13-P842, Alarm Response Instruction, Rev 22

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
295014 Inadvertent Reactivity Addition	<b>Tier #</b>	1
	<b>Group #</b>	2
Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	<b>K/A #</b>	<b>295014 2.2.42</b>
	<b>Rating</b>	4.6

### Question 85

Use your provided references to answer this question.

The plant is performing a plant startup following a refueling outage. At 1230, with the plant at 20% power, the reactor operator reports that a review of plant indications show that one hour previously,

- Jet pumps 5 and 6 indicated a step drop in flow.
- Total core flow indicated a step drop.
- Recirculation loop drive flow indicated a step increase.
- Reactor power dropped slightly.

At this time, the SRO should: (LCO 3.4.3 is provided)

- A. declare LCO 3.4.3 action condition A entry at 1230. d
- B. declare LCO 3.4.3 action condition A entry at 1130. d
- C. consider LCO 3.4.3 met because SR 3.4.3.1 does not have to be performed at this power level.
- D. consider LCO 3.4.3 met because the established patterns of jet pump flow have not been established following the refueling.

**Answer: A**

**Explanation:**

These are symptoms of a rams head ejection. The definition of OPERABLE is not met.

Two jet pumps are not capable of their specified safety related function.  
 B is wrong because action conditions apply from the time of discovery, not the time of occurrence.  
 C is wrong because the SR has to be met, even though it does not have to be performed. D is wrong because the TS basis says "During the initial weeks of operation under such conditions, while baselining new "established patterns," engineering judgment of the daily surveillance results is used to detect significant abnormalities which could indicate a jet pump failure."

**Technical References:**

Technical Specifications 3.4.3, 3.4.3 bases, SR 3.0.1.

**References to be provided to applicants during exam: LCO 3.4.3**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank #	
	Modified Bank #	
	New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental	
	Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)...	
	55.43	

Examination Outline Cross-Reference	Level	SRO
203000 RHR/LPCI: Injection Mode  Knowledge of EOP entry conditions and immediate action steps	Tier #	2
	Group #	1
	K/A #	203000 – 2.4.1
	Rating	4.8

### Question 86

The plant has scrammed from full power due to high drywell pressure.

- 1 control rod is not indicating full in
- Drywell Pressure is 4 psig
- Drywell Temperature is 150° F
- RPV pressure is 700 psig

The CRS should...

- A. enter EP-5A, ATWS RPV Flooding.
- B. remain in EP-2, RPV Control and EP-3 Containment Control.
- C. enter EP-5, RPV Flooding and EP-3 Containment Control
- D. enter EP-2A, ATWS RPV Control.

**Answer: B**

**Explanation:**

A is wrong - EP-5A is not required due to with only one rod out that meets the shutdown margin and no ATWS is required and requirements of caution 1 is not met to declare level instruments inop.

B is correct one rod out that meets the shutdown margin and no ATWS is required and entry conditions exist for both EP 2 and 3.

C is wrong - EP 5 is not required due to requirements of caution 1 is not met to declare level instruments inop.

D is wrong - is not required due to with only one rod out that meets the shutdown margin and no ATWS is required.

**Technical References:**

GLP-OPS-B2101, RPV Level Instrumentation, Rev 7  
EP caution 1

**References to be provided to applicants during exam: None.**

**Learning Objective:**

GLP-OPS-EP01

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
212000 RPS	<b>Tier #</b>	2
	<b>Group #</b>	1
Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: : RPS bus power supply failure	<b>K/A #</b>	<b>212000 A2.02</b>
	<b>Rating</b>	3.9

### Question 87

The plant is at rated power when P680 annunciator HCU TROUBLE is received.

When the operator depresses the HCU FAULT pushbutton on the Operator's Control Module, the following control rods have blinking red LEDs on the RC&IS display;

- 04-21
- 04-45
- 28-05
- 28-61

The CRS also notes the Division I MSIV lights on panels 1H13-P622 and P623 are dark.

The SRO should direct the crew to:

- A. Transfer the 'A' RPS bus to the alternate power source per ONEP 05-1-02-IV-1, Control Rod/Drive Malfunctions.
- B. Transfer the 'A' RPS bus to the alternate power source per ONEP 05-1-02-III-2, Loss of One or Both RPS buses.
- C. Transfer the 'B' RPS bus to the alternate power source per ONEP 05-1-02-III-2, Loss of One or Both RPS buses.
- D. Transfer the 'B' RPS bus to the alternate power source per ONEP 05-1-02-IV-1, Control Rod/Drive Malfunctions.



**Answer: B**

**Explanation:**

These are symptoms of loss of RPS bus 'A'. The correct procedure to use is the Loss of one or both RPS buses.

**Technical References:**

ONEP 05-1-02-III-2, Loss of One or Both RPS buses

**References to be provided to applicants during exam: None.**

**Learning Objective:**

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7)...

55.43

Examination Outline Cross-Reference	Level	SRO
<b>215003 IRM</b>  <b>Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Faulty or erratic operation of detectors/system</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>215003 – A2.05</b>
	<b>Rating</b>	3.5

### Question 88

Use your provided references to answer this question.

A plant startup is in progress with the reactor Mode Switch in STARTUP.

IRMs and APRMs have been verified to have proper overlap, all APRMs are off the downscale light, and all Mode 1 prerequisites have been met.

Inverter 1Y87 and its alternate power supply fail.

(1) Regarding TS 3.3.1.1, what is the required action?

(2) When is the Mode Switch allowed to be placed in RUN?

- A. (1) Place the affected IRM channels in trip within 12 hours.  
(2) When directed by the Shift Manager in accordance with 03-1-01-1, Cold Shutdown to Generator Carrying Minimum Load.
- B. (1) Be in Mode 3 within 12 hours.  
(2) Only after either Inverter 1Y87 or its alternate power supply are returned to OPERABLE status.
- C. (1) Place the affected IRM channels in trip within 12 hours.  
(2) Only after either Inverter 1Y87 or its alternate power supply are returned to OPERABLE status.

- D. (1) Be in Mode 3 within 12 hours.
- (2) When directed by the Shift Manager in accordance with 03-1-01-1, Cold Shutdown to Generator Carrying Minimum Load.

**Answer: A**

**Explanation:**

A is correct because this power supply failure would only require entry into Condition A of TS 3.1.1. The action would already be taken so there would be 12 hours to fix the inverter. The second part of the question tests application of TS 3.0.4. Since IRMs are not required in Mode 1 this would meet TS 3.0.4.a

B is wrong because TS 3.3.1.1.H requires this only after you fail to meet the time requirements TS 3.3.1.1.A. Even though the action has been taken for A the time allowance still remains at 12 hours before you need to enter condition H.

C is wrong because you would not need to wait until the inverter is restored.

D is wrong because of the TS discussion in B.

**Technical References:**

TS 3.3.1.1

**References to be provided to applicants during exam: TS 3.3.1.1.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(2)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
259002 Reactor Water Level Control  Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: RFP runout condition: Plant-Specific	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>259002 A2.04</b>
	<b>Rating</b>	3.1

### Question 89

The plant is at rated thermal power when the following alarms are received:

- RFPT A ACT THR BRG WR HI
- RFPT A TRIP

Shortly thereafter,

- RX LVL 40"/32" HI/LO is received.

The plant has the following conditions:

- Reactor power – 80%
- Core Flow - 85 mlbm/hr
- RFPT B speed – 5900 rpm
- Reactor water level is slowly lowering

R

C

The procedure that contains the actions to mitigate these conditions is:

- A. ARI 04-1-02-1H13-P680-3A-A3, RX LVL 40"/32" HI/LO, to mitigate the low reactor level.
- B. ONEP 05-1-02-III-3, Reduction in Recirculation System Flow Rate, to mitigate the low reactor level.

C. ONEP 05-1-02-V-7, Feedwater System Malfunctions, to mitigate RFPT B runout.

D. ARI 04-1-02-1H13-P680-2A-A2, RFPT A TRIP, to mitigate RFPT B runout.

**Answer: C**

**Explanation:**

RFPT B is at runout conditions and RX level is low. The mitigating actions are to lower reactor power to below 75% and ensure that RFPT speed is reduced to  $\leq 5850$  rpm. Of these, only Feedwater System Malfunctions contains these instructions

**Technical References:**

ARI 04-1-02-1H13-P680-3A-A3, RX LVL 40"/32" HI/LO

ONEP 05-1-02-III-3, Reduction in Recirculation System Flow Rate

ONEP 05-1-02-V-7, Feedwater System Malfunctions

ARI 04-1-02-1H13-P680-2A-A2, RFPT A TRIP

**References to be provided to applicants during exam: None**

**Learning Objective:**

GLP-OPS-N2100 Describe the interrelationship(s) between the Feedwater System and the following: (28.0) Nuclear Boiler System, B21 (28.10) Concerning SOI 04-1-01-N21-1: (29.0) Identify precautions, limitations, cautions, warnings and notes that apply to a given situation. (29.1)

List/identify the immediate operator actions for the following Off Normal Event

Procedures: (31.0) Feedwater System Malfunctions ONEP, 05-1-02-V-7 (31.2)

Given a copy of the above listed ONEPs and plant conditions, discuss the subsequent actions to be taken with regard to the Feedwater System. (32.0)

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7)...

55.43

Examination Outline Cross-Reference	Level	SRO
<b>261000 SGTS</b>  <b>Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations: A.C. electrical failure</b>	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	<b>261000 – A2.07</b>
	<b>Rating</b>	2.7

### Question 90

A seismic event has resulted in the following:

- Small break LOCA in the drywell
- Auto initiation of RCIC and HPCS
- Loss of offsite power with all diesels supplying power to their respective buses
- EP-2 has been entered
  
- Drywell pressure is 2.0 psig and stable
- Drywell temperature is 120°F and stable
- Reactor water level is stable in the normal band
- Fuel handling exhaust radiation at 4.2 mr/hr and stable
- Suppression pool temperature at 90°F and stable
- RCIC equipment area temperature at 150°F and stable

At this point operators are required to transition to ...

- A. EP-3, Containment Control, and operate all available suppression pool cooling with RHR pumps not required for adequate core cooling.
- B. EP-3, Containment Control, and defeat drywell cooling isolation interlocks using Attachment 10 of EP-1.
- C. EP-4, Auxiliary Building Control, and verify standby gas treatment system is in service and all automatic isolations are complete.

D. EP-4, Auxiliary Building Control, and operate RCIC room coolers to lower temperature in the RCIC room.

**Answer: C**

**Explanation:**

A is wrong because suppression pool temperature is higher than normal but does not exceed the 95°F in EP-3.

B is wrong because drywell temperature has not exceeded the temperature in EP-3.

C is correct because the setpoint has been exceeded in EP-4

D is wrong because the RCIC room temperature has not exceeded the temperature in EP-5

**Technical References:**

EP-4, Auxiliary Building Control

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)...

55.43(b)(5)

Examination Outline Cross-Reference	Level	SRO
239001 Main and Reheat Steam  Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>239001 2.4.9</b>
	<b>Rating</b>	4.2

### Question 91

Use your provided references to answer this question.

After being at rated power for 11 continuous months, the crew is performing a cooldown per 03-1-01-3, Plant Shutdown, to comply with LCO 3.5.1, ECCS – Operating.

- Required action condition D was entered 3 hours ago due to failure of the B RHR motor.
- Reactor water cleanup is isolated and not available.
- D  
Decay Heat Removal is operating the turbine bypass valves and shutdown cooling has been placed in service using A RHR to supplement the cooldown.
- Reactor pressure is 110 psig.

Then, the A RHR pump trips and cannot be restarted. Reactor pressure is being maintained constant.

If no repairs are made, it will eventually be necessary to declare a(n) \_\_\_\_\_(1) due to \_\_\_\_\_(2).

(1)	(2)
A. Unusual Event	Inability to reach operating mode within TS limits
B. Unusual Event	Unplanned loss of decay heat removal capability with irradiated fuel in the RPV.



C. Alert	Inability to reach operating mode within TS
D. Alert	Unplanned loss of decay heat removal capability with irradiated fuel in the RPV.

**Answer: A**

**Explanation:**

Explanation: ONEP 05-1-02-III-1, Inadequate Decay Heat Removal says (section 3.4) to place redundant loop in shutdown cooling (not available) or place ADHRS in service (cannot be done above 200°F). It will not be possible to place the plant in MODE 4 in this condition. Decay heat removal capability has not been lost because the turbine bypass system is still available.

**Technical References:**

**ONEP 05-1-02-III-1**

**Emergency Classification Flowcharts**

**References to be provided to applicants during exam:**

**Emergency Classification Flowcharts and TS 3.5.1.**

**Learning Objective:**

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental

Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)(7)...

55.43

<b>.Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
<b>241000 Reactor/Turbine Pressure Regulator</b>  <b>Ability to (a) predict the impacts of the following on the REACTOR/TURBINE PRESSURE REGULATING SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Main Turbine Overspeed</b>	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>241000 – A2.08</b>
	<b>Rating</b>	3.3

### Question 92

A reactor startup is in progress.

While synchronizing the main generator to the grid, the main turbine shaft speed reaches 1,992 rpm.

As a result...

- A. (1) The Turbine Control and Stop valves close.  
(2) The CRS will direct entry into the Turbine Trip ONEP.
- B. (1) The Turbine Control and Stop valves close.  
(2) The CRS will direct entry into the Scram and Turbine Trip ONEP's.
- C. (1) Only the Turbine Control valves close.  
(2) The CRS will direct entry into the Turbine Trip ONEP
- D. (1) Only the Turbine Control valves close.  
(2) The CRS will direct entry into the Scram and Turbine Trip ONEP's.

**Answer: A**

**Explanation:**

Per 04-1-03-N32-3, Turbine Actual Overspeed Trip Test step 7.1.15 states the turbine overspeed trip is 1980 rpm. The applicant must predict the impact of the given 1,992 rpm on the plant. The impact is a turbine trip only since the normal reactor scram on a turbine trip is bypassed when below 30% power (see 04-1-02-1H13-P680-7A-A1(B1) step 2.1). For this reason only the Turbine Trip ONEP will be entered.

If the applicant fails to realize the turbine should have tripped, then the answer choice of only the turbine control valves close is plausible since the stop valves will only close on a trip condition or if they are manually closed (see 04-1-02-1H13-P680-7A-B1, TURB SV CLOSE TRIP). In this case the applicant would assume normal turbine control valve operation in that they would close to slow the shaft rotation speed. Part two of distracters 2 & 3 deal with what the CRS would do for an abnormal parallel or normal parallel respectively assuming no turbine trip for this condition.

Only the answer correctly identifies that both the turbine control and stop valves will close and that only the Turbine Trip ONEP is required.

**Technical References:**

04-1-03-N32-3, Turbine Actual Overspeed Trip Test  
 04-1-02-1H13-P680-7A-A1, TURB CV FAST CLOSE TRIP  
 04-1-02-1H13-P680-7A-B1, TURB SV CLOSE TRIP

**References to be provided to applicants during exam:** NONE

**Learning Objective:**

GLP-OPS-N3201 Obj 5

<b>Question Source:</b> (note changes; attach parent)	Bank #169 Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	Yes (2012)
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
259001 Reactor Feedwater  Ability to (a) predict the impacts of the following on the REACTOR FEEDWATER SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of extraction steam	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	<b>259001 A2.04</b>
	<b>Rating</b>	3.4

### Question 93

The plant is at rated power when the following occurs:

- P680 alarm FW HTR 6B LVL HI is received.
- P870 alarm FW HTR 6B LVL HI-HI is received
- Motor-operated valve 1N36-F011B, FW HTR 6B EXT STM ISOL, is stroking closed.

The SRO should FIRST direct the crew actions in accordance with:

- A. ARI 04-1-02-1H13-P870-6A-A5, FW HTR 6B LVL HI-HI
- B. ONEP 05-1-02-1-1, Reactor Scram.
- C. ONEP 05-1-02-V-5, Loss of Feedwater Heating.
- D. System Operating Instruction, 04-1-01-N23-1

**Answer: C**

#### Explanation:

FW HTR 6B is a high pressure heater, so recirculation flow should be reduced rapidly per the note prior to step 2 of ONEP Loss of Feedwater Heating.

The note also says that the action should be taken when the isolation valve begins to close. Control rods would only be inserted if the reduction in recirc flow resulted in being above the MEOD boundary line.

It may be possible to avoid a scram on this occurrence, so the procedures direct a power reduction.

**Technical References:**

ONEP 05-1-02-V-5, Loss of Feedwater Heating

**References to be provided to applicants during exam: None**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)... 55.43	

Examination Outline Cross-Reference	Level	SRO
Conduct of Operations	Tier #	3
	Group #	
Knowledge of refueling administrative requirements	K/A #	2.1.40
	Rating	3.9

### Question 94

According to procedure 03-1-01-5, Refueling, "Loads in excess of \_\_\_\_\_ pounds shall be prohibited from travel over fuel assemblies in the Spent Fuel OR Upper Containment Fuel Storage Pool Racks."

- A. 975
- B. 1060
- C. 1140
- D. 1220

**Answer: C**

**Explanation:**

Precaution and limitation 2.8 of 03-1-01-5, Refueling, Rev 128 defines the maximum load allowed over fuel assemblies in the spent fuel pool.

"2.8 Loads in excess of 1140 pounds Shall be prohibited from travel over Fuel assemblies in the Spent Fuel OR Upper Containment Fuel Storage Pool Racks."

**Technical References:**

03-1-01-5, Refueling, Rev 128

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

**Question Source:**  
(note changes; attach parent)

Bank #  
Modified Bank #  
New

X

**Question History:**

Last NRC Exam

No

**Question Cognitive Level:**

Memory/Fundamental  
Comprehensive/Analysis

X

**10CFR Part 55 Content:**

55.41(b)...  
55.43(b)(7)

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
Conduct of Operations  Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	<b>2.1.44</b>
	<b>Rating</b>	3.8

### Question 95

The plant is in MODE 5, turnover indicates the crew is applying the provisions of LCO 3.10.5, Single CRD Removal – Refueling, to remove one CRD mechanism in a cell containing three fuel assemblies.

CRD mechanism removal is in progress.

Then, alarm CONT ROD WITHDRAWAL BLOCK is received.

The RO determines that the cause of the alarm is refueling platform is over core and grapple loaded with a fuel bundle.

Technical specifications require the operators to immediately:

1. direct the maintenance crew to suspend the removal of the CRD mechanism.
2. insert a control rod withdrawal block.
3. direct the refueling platform operator to stop core alterations.

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2, and 3.

**Answer: D**



**Explanation:**

In this mode, the alarm signifies that the LCO was not met when the CRD removal began. The control rod withdrawal block was not inserted. 1, 2, and 3 are all immediate actions that are required per TS 3.10.5. While a rod block is now present, action 3 will make the rod block clear, so it will be necessary to insert one

**Technical References:**

ARI 04-1-02-1H13-P680-4A2-C5, CONT ROD WITHDRAWAL BLOCK.  
**LCO 3.10.5**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7)... 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
<b>Equipment Control</b>	<b>Tier #</b>	3
	<b>Group #</b>	
<b>Knowledge of the process for making changes to procedures</b>	<b>K/A #</b>	<b>2.2.5</b>
	<b>Rating</b>	3.6

**Question 96**

Which of the following situations would be appropriate for issuing a Temporary Change Notice:

1. Equipment is out of service and a change is required to complete the work and return the equipment to service.
2. A change is required to implement a surveillance that is scheduled to be performed in 4 weeks.
3. A directive change is required to support an operability review and a revision has not been processed.

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

**Answer: B**

**Explanation:**

From 01-S-02-3, Author's Guide, Rev 121, Note 6.4.1, "directive change is required to implement a surveillance and the work is scheduled in the near future (i.e., two weeks)". Since the time frame is 4 weeks in (2) then it should be issued as a direct revision instead of a TCN. This makes any answer containing (2) incorrect.

**Technical References:**

01-S-02-3, Author's Guide, Rev 121, Note 6.4.1

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
Equipment Control	<b>Tier #</b>	3
Knowledge of the process for controlling temporary design changes.	<b>Group #</b>	
	<b>K/A #</b>	<b>2.2.11</b>
	<b>Rating</b>	3.3

### Question 97

When an approved procedure installs electrical jumpers for testing purposes, Temporary Modification Tags should be applied whenever the jumpers:

- A. must be independently verified.
- B. are out of line of sight.
- C. are **NOT** documented in the Asset Suite (AS).
- D. will be in place for greater than one hour.

**Answer: B**

#### Explanation:

P&L 7 of EN-DC-136, Temporary Modifications, contains this requirement.

A is wrong because this process (testing) is excluded from T-MOD requirements when restoration is documented and verified through independent verification and the jumper remains in line of sight.

C is wrong because testing jumpers are not documented in the Asset Suite.

D is wrong because there are no time requirements. The jumpers do not need a T-mod tag unless they are left unattended.

#### Technical References:

**EN-DC-136, Temporary Modifications**

**References to be provided to applicants during exam: None.**

#### Learning Objective:

#### Question Source:

(note changes; attach parent)

#### Bank #

Modified Bank #

	New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(?)... 55.43	

Examination Outline Cross-Reference	Level	SRO
Radiation Control  Ability to control radiation releases.	Tier #	3
	Group #	
	K/A #	2.3.11
	Rating	4.3

### Question 98

(1) What is the governing procedure to process liquid radioactive waste discharges?

(2) What is the governing procedure to process solid radioactive waste discharges?

- A. (1) 01-S-08-11, Radioactive Discharge Controls  
(2) EN-RP-121, Radioactive Material Control
- B. (1) EN-RP-121, Radioactive Material Control  
(2) 01-S-08-11, Radioactive Discharge Controls
- C. (1) 01-S-08-11, Radioactive Discharge Controls  
(2) 01-S-08-11, Radioactive Discharge Controls
- D. (1) EN-RP-121, Radioactive Material Control  
(2) EN-RP-121, Radioactive Material Control

**Answer: A**

**Explanation:**

A is correct because 01-S-08-11, control liquid and gaseous releases. Step 6.2.1 of 01-S-08-11 refers to EN-RP-121 for processing solid waste.

B is wrong of A.

C is wrong of A.

D is wrong of A.

**Technical References:**

01-S-08-11, Radioactive Discharge Controls

EN-RP-121, Radioactive Material Control

**References to be provided to applicants during exam: None.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(13) 55.43(b)(5)	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
Emergency Procedures / Plan	<b>Tier #</b>	3
Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	<b>Group #</b>	
	<b>K/A #</b>	<b>2.4.4</b>
	<b>Rating</b>	4.7

### Question 99

The plant was at rated power when all four channels of MSL PIPE TNL TEMP HI alarms are received on P601:

Concurrently,

- A Group one isolation occurs.
- A reactor scram occurs with all control rods fully inserted.

Shortly thereafter, alarm RX LVL 3 (+10") LO is received.

- Suppression Pool temperature is 89°F and rising.
- Suppression Pool Level is 18.5 ft. and rising.

Then, the CRS should enter:

1. EP-2, RPV Control
2. EP-3, Containment Control
3. EP-4, Auxiliary Building Control

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. 1, 2, and 3

**Answer: C**

**Explanation:**



At least one entry conditions is met for EP-2 (RV level < 11.4 In).  
At least one entry condition is met for EP-4 (MSL Pipe Tunnel Temp > 185°F) No entry conditions for EP-3 are met

**Technical References:**

**EP-2, 3, and 4**

**References to be provided to applicants during exam: None.**

**Learning Objective:**

.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)(7) 55.43	

Examination Outline Cross-Reference	Level	SRO
Emergency Procedures/Plan	Tier #	3
	Group #	
Knowledge of fire protection procedures	K/A #	2.4.25
	Rating	3.7

**Question 100**

**Use your provided references to answer this question.**

A fire is reported to the control room at the SSW Pump 'A' Room at 12:00 pm.

How many fire brigade members are required to be sent?

AND

The fire brigade leader reports back at 12:25 pm that the fire is not extinguished. Which Emergency Action Level has been exceeded?

- A. 3  
Unusual Event
- B. 3  
Alert
- C. 5  
Unusual Event
- D. 5  
Alert

**Answer: C**

**Explanation:**

A is wrong because the 5 man team is responsible for responding to the SSW pump room. A UE is required by the emergency plan

B is wrong because a 5 man team is required and an Alert would not be

C is correct because a 5 man team is required by procedure and an unusual event would be required

D is wrong because the classification is incorrect

**Technical References:**

10-S-03-2, Response to Fires, Rev 25. Step 6.2.3.f

10-S-01-1, Activation of the Emergency Plan, Rev. 122

**References to be provided to applicants during exam: EAL Flow Chart.**

**Learning Objective:** Document learning objective if possible.

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	X
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41(b)... 55.43(b)(5)	