

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.1.18
	<b>Rating</b>	3.6

### Question 1

The on-coming Control Room Operator has entered the following plant status information in the narrative log at the time of accepting the watch:

- Date/time
- Mode Switch position
- Recirc loop temperature
- Reactor pressure
- Core Flow
- Gross generator MWe

Per the requirements of 02-S-01-5, Shift Logs and Records, what information is missing from this log entry?

- A. Reactor power level
- B. Generator reactive load (MVARs)
- C. Generator LOAD DEMAND setting
- D. Jet Pump Total Flow for each Recirc loop

**Answer:** A

**Explanation:**

Per 02-S-01-5, section 6.2.3.b(1). Therefore, 'A' is correct.

None of the distracters represents plant status information required to be entered at shift turnover.

**Technical References:**

02-S-01-5, Shift Logs and Records

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

None

**Learning Objective:** GLP-OPS-PROC, objective 51.4

<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>	55.41.10 55.43	

Examination Outline Cross-Reference	Level	RO
	Tier #	3
	Group #	
	K/A #	2.1.30
	Rating	4.4

## Question 2

The control room has been evacuated due to fire.

Operators are controlling the plant in accordance with the Remote Shutdown ONEP.

CRS determines there is a need to disable the Relief Mode auto-opening capability of all SRVs.

What can operators do to accomplish this?

- A. There is no way to accomplish this outside the control room.
- B. At P152, place the “Transfer Panel Main Handswitch” to ON.
- C. At P150 and at P151, place all of the SRV handswitches to OFF.
- D. At buses 1DA1 and 1DB1, open the SRV Control Power breakers.

**Answer:** D

### Explanation:

Remote Shutdown ONEP, section 3.7.3.b, directs operators to open SRV Control Power breakers at the DC buses to disable all Relief Modes of SRV operation (including ADS mode). Thus, ‘D’ is correct and ‘A’ is incorrect.

Only 6 SRVs (of the 20 total) can be operated at RSP panels P150 and P151; thus, ‘C’ is incorrect.

‘B’ is incorrect because it suggests that the Transfer Panel Main Handswitch at Alternate Shutdown Panel P152 affects the SRVs; it does not.

### Technical References:

05-1-02-II-1, Remote Shutdown ONEP

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

None

**Learning Objective:** GLP-OPS-E2202, objectives 10.2, 10.3, 12.5

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.7 and 10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.1.38
	<b>Rating</b>	3.7

### **Question 3**

The operating crew has entered the Reduction in Recirculation System Flowrate ONEP due to a Recirc Pump 'A' trip on motor overload.

Shortly afterwards, the following annunciator is received:

- RECIRC MTR 'A' BRG OIL LVL LO

Per 02-S-01-27, Operations Philosophy, which of the following describes the requirements for verbally announcing this alarm?

- Do not announce this alarm at all.
- Announce it as an "expected" alarm, but only the first time it comes in.
- Announce it as an "unexpected" alarm, but only the first time it comes in.
- Do not announce this alarm the first time it comes in, but announce it if it comes in again.

**Answer: A**

#### **Explanation:**

Per 02-S-01-27, section 6.6.9.a, this is a non-critical alarm that is received while in Off-Normal (ONEP) conditions. Do not announce such alarms. The distracters represent variations of the Annunciator Response section 5.9 of EN-OP-115, while in other than Emergency or Off-Normal conditions. Therefore, only choice 'A' is correct.

#### **Technical References:**

EN-OP-115, Conduct of Operations, Section 5.9  
02-S-01-27, Operations Philosophy, Section 6.6.9

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

None

**Learning Objective:** GLP-OPS-PROC, objective 59.3

<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>	55.41.10	
	55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.2.14
	<b>Rating</b>	3.9

**Question 4**

Which of the following labeling methods is used to identify problem annunciators (i.e., annunciators that are not fully functional) in the control room?

- A. Square dot in the corner of the window
- B. Red tape across the window
- C. Black triangle in the corner of the window
- D. Yellow tape across the window

**Answer: B**

**Explanation:**

Per 02-S-01-25, section 6.2 and Attachment IV, red tape is used; therefore, ‘B’ is correct.

A square dot indicates annunciator has re-flash capability; therefore, ‘A’ is incorrect.

A black triangle indicates there are isolations associated with the annunciator; therefore, ‘C’ is incorrect.

‘D’ is incorrect because yellow tape is not used at all; however, the suggested yellow color is as plausible as is red.

**Technical References:**

02-S-01-25, Deficient Equipment Identification, Section 6.2

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

None

**Learning Objective:** GLP-OPS-PROC, objective 56.5

<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>	55.41.10 55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.2.15
	<b>Rating</b>	3.9

**Question 5**

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

Which of the following describes the sequence of operations to de-energize the Franklin Offsite Transmission Line and to ground that line?

- A. Open circuit breakers J5240 and J5248.  
Open disconnect J5242.  
Open the Franklin Substation side of the transmission line.  
Close disconnect K5293.
- B. Open circuit breakers J5240 and J5248.  
Open disconnect J5242.  
Close disconnect K5293.  
Open the Franklin Substation side of the transmission line.
- C. Open disconnect J5242.  
Open the Franklin Substation side of the transmission line.  
Close disconnect K5293.
- D. Open disconnect J5242.  
Close disconnect K5293.  
Open the Franklin Substation side of the transmission line.

**Answer: A**

**Explanation:**

When opening disconnects, the circuit breakers on at least one side are required to be opened first to prevent disconnect damage. J5240 and J5248 are the breakers associated with the Franklin line. They must be opened prior to opening circuit breaker J5242. Once J5242 is opened, the Kirk Key may be transferred to the ground disconnect K5293. Prior to closing K5293, which is on the transmission side of J5242, the Franklin Substation side of the line must be opened to prevent taking 500 KV to ground.

Therefore, choice 'A' is correct, and all distracters are incorrect.

**Technical References:**

E-0001, Main One-Line Diagram  
04-S-01-R27-1, 500/115 KV System SOI, Section 5.1

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

E-0001 (500 KV portion only)

**Learning Objective:** GLP-OPS-R2700, objectives 4.4, 15, 22

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-03454
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.7 and 10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.3.7
	<b>Rating</b>	3.5

**Question 6**

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

During a refueling outage, Recirc Loop A is to be drained.

Per RWP 07-1503, which of the following identifies radiological requirements associated with this work activity?

- A. Single PCs  
Respirator
- B. Double PCs  
Respirator
- C. Single PCs  
Notify RP Drywell Control Point prior to draining the loop.
- D. Double PCs  
Notify RP Drywell Control Point prior to draining the loop.

**Answer: D**

**Explanation:**

Candidate is expected to apply the survey results of Map # 1A112 (DW 100' floor), which shows the elevation posted as an HCA.

RWP 07-1503, page 2, specifies that Double PCs are required for the HCA

Page 3 of the RWP, Worker Instruction #5 says to notify RP DW control point prior to draining system B33 (Recirc) piping.

Page 1 clearly states that respirators are prohibited under this RWP.

For all these reasons, only choice 'D' is correct.

**Technical References:**

RWP 07-1503  
RF-15 Drywell Survey Map # 1A112

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

RWP 07-1503  
RF-15 DW Survey Map # 1A112

**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>	55.41.12 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.3.11
	<b>Rating</b>	3.8

**Question 7**

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

The plant is operating at rated power with the following:

- Offgas flow is 80 CFM
- Offgas Pre-Treatment Radiation Monitor is reading 1000 mr/hr and rising
- All MSL Radiation Monitors are reading 1.2 x NFPB (normal full-power background)

Which of the following describes a required operator action?

- A. Declare an ALERT.
- B. Insert a manual scram.
- C. Enter EP-4, Auxiliary Building Control.
- D. Reduce core flow to 67 Mlbm/hr.

**Answer: D**

**Explanation:**

Per ONEP 05-1-02-II-2, step 3.3 and its Table, a UE (not an ALERT) is to be declared; therefore, 'A' is incorrect.

Per the ONEP step 3.5, a scram is not required until pre-treatment reaches 14,000 mr/hr; therefore, 'B' is incorrect.

Per EP-4 entry conditions, an EP-4 entry is not required until MSL rad monitors reach 1.5 x NFPB; therefore, 'C' is incorrect.

ONEP step 3.1 and its Table requires a reduction in core flow to 67 Mlbm/hr; therefore, 'D' is correct.

**Technical References:**

05-1-02-II-2, Offgas Activity High ONEP, Section 3.0  
EP-4, Auxiliary Building Control

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

05-1-02-II-2 ONEP (entire)

**Learning Objective:** GLP-OPS-ONEP, objective 2

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-07312a
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	 X
<b>10CFR Part 55 Content:</b>	55.41.10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.3.13
	<b>Rating</b>	3.4

### **Question 8**

As the result of a damaged irradiated fuel assembly, high airborne activity has been confirmed in Containment.

Containment automatically isolated.

Which of the following describes the required operator action aimed at reducing the airborne activity level in Containment?

- A. Place Standby Gas Treatment in service.
- B. Initiate Containment Low Volume Purge.
- C. Place Fuel Handling Ventilation in service.
- D. Initiate Containment Cleanup Mode.

**Answer: D**

#### **Explanation:**

Per 05-1-02-II-8, section 3.6, and Containment Cooling SOI (04-1-01-M41-1), P/L 3.7, containment cooling is placed in containment cleanup mode (i.e., a second Recirc charcoal filter is placed in service). Therefore, 'D' is correct.

'A' and 'C' are incorrect because these configurations have no impact on the atmosphere in an isolated containment.

'B' is incorrect because this lineup requires the 6" dampers to be open (i.e., an unisolated containment).

#### **Technical References:**

05-1-02-II-8, High Radiation During Fuel Handling ONEP, Section 3.6  
04-1-01-M41-1, Containment Cooling System SOI, Section 3.7

**Proposed references to be provided to applicants during exam:**

None

**Learning Objective:** GLP-OPS-ONEP, objective 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>	55.41.7 and 10 55.43	



Examination Outline Cross-Reference	Level	RO
	Tier #	3
	Group #	
	K/A #	2.4.18
	Rating	3.3

**Question 9**

The second row of Step L5 in EP-2A (ATWS RPV CONTROL) directs operators to lower RPV water level to -70 inches.

Per the EP Technical Bases, what is the second row of step L5 specifically intended to accomplish?

- A. Lower the reactor power.
- B. Lower the incoming feedwater temperature.
- C. Prevent thermal-hydraulic instabilities.
- D. Prevent further heat addition to primary containment.

**Answer: C**

**Explanation:**

Refer to EP Technical Bases, EP-2A Step L5 discussion, pages 6-16 through 6-18.

The -70" level uncovers the feedwater sparger (by ~2 feet) with the intent of heating the incoming feedwater, which reduces inlet subcooling. By reducing the subcooling, we prevent thermal-hydraulic instabilities. Therefore, only choice 'C' is correct, and 'B' is incorrect.

'A' and 'D' are incorrect because these both relate to the specific purpose of the first row of step L5.

**Technical References:**

EP-2A, ATWS RPV Control flowchart  
 EP-2A Technical Bases, pages 6-16 through 6-20

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

None

**Learning Objective:** GLP-OPS-EP2ATR, objective 6

<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>	55.41.10 and 14 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.4.28
	<b>Rating</b>	3.2

**Question 10**

The plant is operating at rated power when the following occurs:

- A hostile force enters the Protected Area
- A Security Code ORANGE is determined to exist

Per 05-1-02-VI-4, Security Threat, which of the following describes the required operator action?

- A. Scram the reactor.
- B. Dispatch one RO to the Operations Support Center (OSC).
- C. Notify the NRC Operations Center to verify threat.
- D. Evacuate the control room.

**Answer:** A

**Explanation:**

Refer to ONEP 05-1-02-VI-4, Sections 2.0 and 3.0.

The actions described in distracters 'B', 'C' and 'D' are not immediate operator actions per the ONEP, steps 2.1 and 2.2. Therefore, these choices are incorrect.

'A' is correct because scram the reactor is a requirement given these stem conditions.

**Technical References:**

05-1-02-VI-4, Security Threat, Sections 2.0 and 3.0

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

None

**Learning Objective:** GLP-OPS-ONEP, objective 1.0

<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>	55.41.10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	202002 A4.09
	<b>Rating</b>	3.2

### **Question 11**

The plant is operating in single-loop after removing Recirc Pump 'A' from service using the SOI.

The following stable Recirc system flow indications exist:

- Total Jet Pump Flow recorder = 16 Mlbm/hr
- Loop 'A' Jet Pump Flow = 9 Mlbm/hr
- Loop 'B' Jet Pump Flow = 25 Mlbm/hr

What is Total Core Flow?

- A. 34 Mlbm/hr
- B. 25 Mlbm/hr
- C. 16 Mlbm/hr
- D. 9 Mlbm/hr

**Answer: A**

#### **Explanation:**

Per SOI for B33, P/L 3.18. With indicated total core flow (i.e., total jet pump flow) reading less than 38 Mlbm/hr, Total Core Flow indication (i.e., Total Jet Pump Flow recorder) is inaccurate. Determine total core flow by adding the jet pump flows (i.e., 9 + 25 = 34). Thus, only 'A' is correct.

#### **Technical References:**

04-1-01-B33-1, Reactor Recirculation System SOI, Section 3.18

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

None

**Learning Objective:** GLP-OPS-B3300, objective 38.1

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-07375a
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.2 and 10 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	203000 A3.05
	<b>Rating</b>	4.4

**Question 12**

The plant is operating at rated power when a LOCA occurs in the Drywell.

The RPV leak rate is approximately 1000 gpm.

RHR 'A' auto-initiates and is the only available source of makeup.

At which of the following points in the event timeline should the operator expect to see reactor water level start to recover (i.e., level stops lowering and begins to rise)?

**When...**

- A. the LPCS/LPCI A INJ VLV RPV PRESS LO annunciator is received
- B. the RHR A ACTUATED annunciator is received
- C. reactor pressure lowers to about 450 psig
- D. reactor pressure lowers to about 250 psig

**Answer: D**

**Explanation:**

Per the RHR SOI (04-1-01-E12-1), section 5.4.1.c, the RHR pump shutoff head is about 285 psig; therefore, 'D' is correct.

'B' is incorrect because this annunciator is received very early in the event timeline when a LOCA signal is generated (1.39 psig in drywell or -150.3" reactor water level); see ARI P601-20A-B5.

'A' is incorrect because this annunciator is received when reactor pressure lowers to 476 psig, signifying the opening permissive point for the LPCI injection valve (see ARI P601-21A-F7).

'C' is incorrect because this is the expected discharge pressure for a Condensate Booster Pump (see Condensate SOI 04-1-01-N19-1, page 8) and is very plausible since it is so close to the injection valve opening permissive of 476 psig.

**Technical References:**

04-1-01-E12-1, RHR System SOI, Section 5.4.1  
ARI P601-20A-B5, annunciator window  
ARI P601-21A-F7, annunciator window  
04-1-01-N19-1, Condensate System SOI, Section 4.1.2

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

None

**Learning Objective:** GLP-OPS-E1200, objective 20

<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>	55.41.8 and 14 55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	204000 K4.07
	<b>Rating</b>	2.9

### Question 13

The plant has just scrammed from rated power.

RWCU is rejecting to the main condenser.

RWCU Blowdown Flow Controller is set at 10% open.

G33-F234, RWCU BLOWDOWN TO MAIN CONDENSER, fails closed.

Which of the following describes a direct RWCU system response?

- A. G33-F033, RWCU SYSTEM BLOWDOWN FLOW CONTROL VALVE, automatically closes.
- B. G33-F235, RWCU BLOWDOWN TO MAIN CONDENSER, automatically closes.
- C. RWCU automatically isolates and RWCU Pumps trip.
- D. RWCU does not automatically isolate, but RWCU Pumps trip.

**Answer:** A

#### **Explanation:**

Refer to ARI 1H13-P680-11A-C5. With closure of F234, pressure downstream of Flow Control Valve F033 will be >140 psig (pumps running with reactor pressure still near 1000 psig), concurrent with the F033 controller >5% open. This results in an auto-closure of F033. Thus, 'A' is correct.

'B' is incorrect because there is no leak detection auto-closure signal for F235.

'C' and 'D' are incorrect because there is nothing in the system that should happen to cause an isolation, or a pump trip, when the F033 valve auto-closes.

To pre-empt any suggestion that the F033 closure may cause a system-wide pressure/flow perturbation that could cause an erroneous high differential-flow isolation, we've applied the word "direct" in the question statement.

**Technical References:**

04-1-02-1H13-P680-11A-C5, annunciator window

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

None

**Learning Objective:** GLP-OPS-G3336, objective 8.0

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-07162a
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.4 and 7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	205000 A4.12
	<b>Rating</b>	3.4

**Question 14**

A plant cooldown is in progress with the following:

- RHR B is operating in Shutdown Cooling
- Recirc Pump A is operating

Which of the following identifies the preferred indication to be used for monitoring and recording reactor coolant temperature?

- Recirc Loop A suction temperature from the recorder at panel P614
- Recirc Loop A suction temperature from the PDS display computer point
- RHR A HX inlet temperature from the recorder at panel P601
- RHR A HX inlet temperature from the PDS display computer point

**Answer: A**

**Explanation:**

Per SDC SOI, P/L 3.8.16, Recirc Loop suction temperature is preferred when a Recirc Pump is operating. Per Plant Shutdown IOI-3, Attachment III, Data Sheet 1, use of the recorder 1B21-R643 (which is located on control room back-panel P614) is preferred over that of using the PDS display computer point. For these reasons, 'A' is correct and 'B' is incorrect.

Per the SDC SOI P/L 3.8.16, RHR HX inlet temperature is to be used only if no Recirc Pumps are running. Since the stem indicates that a Recirc Pump is operating, choices 'C' and 'D' are incorrect.

**Technical References:**

- 04-1-01-E12-2, RHR Shutdown Cooling SOI, Section 3.8.16.
- 03-1-01-3, Plant Shutdown IOI, Att. III, page 1 of 2 (Data Sheet 1).

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

None

**Learning Objective:** GLP-OPS-E1201, objective 11.1

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.10	
	55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	205000 K5.02
	<b>Rating</b>	2.8

**Question 15**

It is important that valve E12-F037A (RHR A SDC Return To Upper CTMT Pool) is not stroked open against an excessive d/p across the valve.

Which of the following describes the design feature or operating requirement that specifically addresses this concern?

- A. An interlock prevents this valve from opening unless E12-F037B (RHR B SDC Return To Upper CTMT Pool) is fully closed.
- B. An interlock prevents this valve from opening unless E12-F027A (RHR A System Shutoff) is fully closed.
- C. The Shutdown Cooling SOI requires this valve's handswitch to be red tagged closed anytime Shutdown Cooling is lined up in Modes 2 or 3.
- D. The Shutdown Cooling SOI requires this valve's handswitch to be red tagged closed anytime Shutdown Cooling is lined up in Modes 3 or 4.

**Answer:** D

**Explanation:**

See SOI P/L 3.8.6. Valve handswitch is red tagged closed when SDC is lined up in Modes 3 or 4. Therefore, 'D' is correct.

'A' and 'B' are incorrect because F037A is not interlocked with any other valve.

'C' is incorrect because there is no requirement for F037A to ever be red tagged in Mode 2.

**Technical References:**

04-1-01-E12-2, RHR Shutdown Cooling SOI, Section 3.8.6

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

None

**Learning Objective:** GLP-OPS-E1201, objective 11.1

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.10	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	209001 K3.02
	<b>Rating</b>	3.8

### Question 16

The plant is operating at rated power with RHR pump A inoperable.

The following plant conditions exist:

Reactor Water Level -162" (-150.3" was reached 30 seconds ago)  
 Drywell Pressure 2.3 psig

LPCS did not initiate because of logic power failure.

Which of the following describes the impact on the ADS system?

- A. Can only be manually initiated.
- B. Cannot be automatically or manually initiated.
- C. Will automatically initiate in 8 minutes and 42 seconds.
- D. Will automatically initiate in 75 seconds.

**Answer: D**

#### **Explanation:**

'D' is correct because the Division 2 initiation logic is unaffected with RHR B/C running; ADS will initiate when 105 second time delay has expired.

'A' is incorrect because the Division 2 initiation logic is unaffected with RHR B/C running ADS will initiate when 105 second time delay has expired.

'B' is incorrect because the Division 2 initiation logic is unaffected with RHR B/C running ADS will initiate when 105 second time delay has expired.

'C' is incorrect because reactor water level is required to be below -150.3" for 9.2 minutes without high drywell pressure. With high drywell pressure above 1.39 psig, ADS will initiate when 105 second time delay has expired.

**Technical References:**

GLP-OPS-E2202, ADS lesson plan, pages 28-31

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

None

**Learning Objective:** GLP-OPS-E2202, objectives 12.2, 12.3, and 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>	55.41.7	
	55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	209002 K4.01
	<b>Rating</b>	2.9

**Question 17**

Which of the following is designed to prevent water hammer in the HPCS system?

- A. HPCS Pump Discharge Restricting Orifice, E22-RO-D002
- B. HPCS Pump Discharge Check Valve, E22-F002
- C. HPCS Testable Check Valve, E22-F005
- D. HPCS Jockey Pump, E22-C002

**Answer: D**

**Explanation:**

‘A’ is incorrect because its purpose is to prevent pump runout at low discharge pressures.

‘B’ is incorrect because its purpose is to prevent backflow through the pump.

‘C’ is incorrect because its purpose is to act as a PCIV.

‘D’ is correct because the jockey pump prevents water hammer by keeping the injection filled and pressurized between the pump discharge check valve and the injection valve (F004).

**Technical References:**

M-1086, HPCS P&ID  
Tech Spec Bases B 3.5.1, SR 3.5.1.1 discussion

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

None

**Learning Objective:** GLP-OPS-E2201, objective 5.11

<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>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	211000 A1.10
	<b>Rating</b>	3.7

**Question 18**

Standby Liquid Control (SLC) is in its normal standby lineup when a wire break interrupts continuity of power to the SLC 'A' squib valve.

Which of the following identifies the control room panel P601 indications that result from this failure?

- A. SQUIB VLV TROUBLE white light illuminates and the SLC SYS A OOSVC annunciator alarms.
- B. SQUIB VLV READY white light extinguishes and the SLC SYS A OOSVC annunciator alarms.
- C. SQUIB VLV TROUBLE white light illuminates; there is no associated alarm.
- D. SQUIB VLV READY white light extinguishes; there is no associated alarm.

**Answer: B**

**Explanation:**

See SLC SOI section 5.3.2.b(2) and ARI P601-19A-H1.

'B' is correct as described in these references.

'A' and 'C' are incorrect because there is no SQUIB VALVE TROUBLE white light.

'D' is incorrect because the P601-19A-H1 alarm also comes in.

**Technical References:**

04-1-01-C41-1, SLC System SOI, Section 5.3.2

ARI P601-19A-H1, annunciator window

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

None

**Learning Objective:** GLP-OPS-C4100, objective 20

<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>	55.41.7 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	212000 K2.01
	<b>Rating</b>	3.2

**Question 19**

The plant is operating at rated power.

Service Transformer 21 trips on sudden pressure.

Which of the following describes the power supplies to the RPS Motor Generators?

- A. RPS A M/G power available  
RPS B M/G power unavailable
- B. RPS A M/G power unavailable  
RPS B M/G power available
- C. RPS A M/G power unavailable  
RPS B M/G power unavailable
- D. RPS A M/G power available  
RPS B M/G power available

**Answer: A**

**Explanation:**

‘B’ is incorrect because RPS A M/G did not lose power and B is de-energized.

‘C’ is incorrect because RPS A M/G did not lose power.

‘D’ is incorrect because RPS B M/G is de-energized.

‘A’ is correct because a loss of ST 21 will cause a loss of 14AE which supplies power from 14B22 to RPS M/G B.

**Technical References:**

04-1-01-C71-1, RPS System SOI, Attachment 3

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

None

**Learning Objective:** GLP-OPS-C7100, objective 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>	55.41.7	
	55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	215003 K3.04
	<b>Rating</b>	3.6

**Question 20**

A plant startup is in progress.

All IRMs are indicating mid-scale on Range 5 and 6 and slowly rising.

Inverter 1Y87 and its alternate power supply have failed.

Which of the following describes the IRM reactor power indication?

- A. IRM A, C, E, G have failed downscale, B, D, F, and H are indicating accurate reactor power.
- B. IRM B, D, F, H have failed downscale, A, C, E, and G are indicating accurate reactor power.
- C. IRM A and E have failed downscale, all other IRMs are indicating accurate reactor power.
- D. IRM B and F have failed downscale, all other IRMs are indicating accurate reactor power.

**Answer: C**

**Explanation:**

A loss of 1Y87 and alternate will cause a downscale failure of A and E IRM all others will indicate normally. Therefore, 'C' is correct.

'A' is incorrect because only A and E will fail.

'B' is incorrect because only A and E will fail and these are in the other channel.

'D' is incorrect because 1Y88 feeds B and F.

**Technical References:**

- 04-1-01-C51-1, Attachment III, page 1 of 3
- 04-1-01-L62-1, Attachment VI, pages 16-17 of 21

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

None

**Learning Objective:** GLP-OPS-C5102, objective 6

<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>	55.41.7	
	55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	215004 2.1.23
	<b>Rating</b>	4.3

**Question 21**

A reactor startup is in progress with all Nuclear Instrument channels operable.

Per 03-1-01-1, Cold Shutdown To Generator Carrying Minimum Load, at what point in the startup is the Operator directed to fully withdraw all SRMs?

- A. When SRM/IRM overlap has been verified.
- B. When all IRMs are on Range 3 or above.
- C. When the Point of Adding Heat has been reached.
- D. When the Mode Switch has been placed in RUN.

**Answer: B**

**Explanation:**

Per IOI 03-1-01-1, step 5.38, fully withdraw all SRMs once all IRMs are on range 3 or above; thus, 'B' is correct.

'A' is incorrect because SRMs are kept on scale (between  $10^2$  and  $10^5$  CPS) after verifying SRM/IRM overlap (see IOI step 5.36).

'C' is incorrect for the reasons already described.

'D' is incorrect because at this point in the startup, we fully withdraw all IRMs (see IOI step 6.2.18).

**Technical References:**

03-1-01-1, Cold Shutdown To Generator Carrying Minimum Load

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

None

**Learning Objective:** GLP-OPS-IOI01, objective 21.0

<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>	55.41.10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	215004 K4.06
	<b>Rating</b>	3.2

**Question 22**

The Reactor Mode Switch is in STARTUP.

Which of the following situations will generate a rod withdrawal block?

- A. All IRMs are on range 4  
SRM E in INOP and manually bypassed (joystick)  
SRM F is being withdrawn and its reading drops to 90 CPS
- B. All IRMs are on range 1  
IRM G is downscale  
SRM C is being withdrawn and its reading drops to 200 CPS
- C. IRMs A, B, C, and D are on range 2  
IRMs E, F, G, and H are on range 3  
SRM D fails downscale
- D. All IRMs are on range 9  
All SRMs are being withdrawn  
SRM C fails upscale

**Answer: C**

**Explanation:**

‘A’ is incorrect because the low counts while being withdrawn is bypassed when associated IRMs are at or above range 3.

‘B’ is incorrect because with IRMs on range 1 the IRM downscale is bypassed and the SRM low counts while being withdrawn is <100.

‘D’ is incorrect because all SRM functions are bypassed with associated IRMs at or above range 8.

‘C’ is correct because IRM B and D must be at or above range 3 in order to bypass the SRM D downscale trip.

**Technical References:**

04-1-01-C51-1, section 3.8  
GLP-OPS-C5101, SRM lesson plan

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

None

**Learning Objective:** GLP-OPS-C5101, objective 8.2

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-07330
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	215005 A1.01
	<b>Rating</b>	4.0

**Question 23**

The plant is operating at rated power when a reduction in Recirc system flowrate results in the onset of thermal hydraulic instabilities (THI).

Per 05-1-02-III-3, Reduction in Recirc System Flowrate, which of the following could be an indication that THI is occurring?

- A. APRM readings oscillate with peak-to-peak swings of 3% rated power every 10 seconds.
- B. LPRM readings oscillate with peak-to-peak swings of 5 watts/cm<sup>2</sup> every 2 seconds.
- C. APRM readings oscillate with peak-to-peak swings of 12% rated power every 2 seconds.
- D. LPRM readings oscillate with peak-to-peak swings of 15 watts/cm<sup>2</sup> every 10 seconds.

**Answer: C**

**Explanation:**

See Reduction in Recirc System Flowrate ONEP, section 4.9 (including the NOTE) for indications of THI.

‘A’ is incorrect because peak-to-peak swings of 3% is too low and the 10-second frequency is too long.

‘B’ is incorrect because the peak-to-peak swings of 5 watts/cm<sup>2</sup> is too low, although the 2-second frequency is within the proper range.

‘C’ is correct because the peak-to-peak swings are large enough (>10% rated power) and the frequency is within the range (1.4 to 3.3 seconds).

‘D’ is incorrect because the frequency is too long, although the peak-to-peak swings are sufficient (>10 watts/cm<sup>2</sup>).

**Technical References:**

05-1-02-III-3, Reduction in Recirc System Flowrate ONEP

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

None

**Learning Objective:** GLP-OPS-B3300, objective 24.0

<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>	55.41.5 and 10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	217000 K5.02
	<b>Rating</b>	3.1

**Question 24**

A control room fire has de-energized the entire P870 panel.

The fire has forced a control room evacuation.

The following Remote Shutdown ONEP lineups have been completed:

- Att. III, Control Building Handswitch Lineup
- Att. IV, Aux Building Alternate Shutdown Panel Handswitch Lineup

Which of the following describes the ability/inability to operate the plant from Remote Shutdown Panels P150 and P151?

- Cannot determine Suppression Pool level at either panel.
- Cannot electrically open P41-F018A, DG 11 HX Inlet valve.
- Can determine RCIC flow rate only from the RCIC flow controller itself.
- Can only use the RHR HX Outlet valves, E12-F003A(B), to control RHR Shutdown Cooling cooldown rate

**Answer: C**

**Explanation:**

There is no separate RCIC flow indication at P150. Operators determine RCIC flow to the reactor using the feedback signal (null signal) that is displayed on the vertical meter of the flow controller (see SOI P/L 3.28); therefore, 'C' is correct.

'A' is incorrect because the Suppression Pool level monitoring at the Remote Shutdown Panels is electrically isolated from the control room (see Remote Shutdown ONEP, section 1.9); this electrical isolation is by design and is not dependent upon implementation of any ONEP attachments.

'B' is incorrect because the P41-F018A valve does have remote-manual (electrical) opening capability at P150 (see ONEP section 3.6 CAUTION); only the valve's auto-open (on DG start signal) capability is disabled after Att. III has been completed.

'D' is incorrect because we do have control of the RHR HX bypass valves (E12-F048A(B)), as well, at P150/P151 (see ONEP Attachment X, sections 3.11.1.p and 3.11.2.p).

**Technical References:**

05-1-02-II-1, Remote Shutdown ONEP  
04-1-01-E51-1, RCIC System SOI

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

None

**Learning Objective:** GLP-OPS-E5100, objective 13.1

<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>	55.41.7 55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	217000 K6.04
	<b>Rating</b>	3.5

**Question 25**

RCIC is operating for its quarterly pump surveillance when the following occurs:

- The piping breaks on the high-pressure side of the CST level transmitter that inputs to the RCIC logic

Which of the following identifies the response of RCIC regarding its suction?

- A. Suction remains from the CST.
- B. Suction swaps from the CST to the Suppression Pool.
- C. Suction swaps from the Suppression Pool to the CST.
- D. Suction remains from the Suppression Pool.

**Answer: B**

**Explanation:**

The high pressure side of the CST level transmitter senses tank level (dp); i.e., it is the variable leg for the dp cell. The cell's low pressure side is vented to atmosphere.

Therefore, a break in the high pressure side is sensed as a failed low tank level.

For the surveillance, RCIC takes a suction from the CST. Therefore, the logic will see a low CST level and auto-swap its suction to the Supp Pool.

Thus, only 'B' is correct.

**Technical References:**

04-1-01-E51-1, RCIC, Section 3.7  
 GLP-OPS-COM07, GFE Components lesson plan

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

None

**Learning Objective:** GLP-OPS-E5100, objective 8.1

<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	
	55.43.2	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	218000 K5.01
	<b>Rating</b>	3.8

**Question 26**

A LOCA is in progress.

ADS Valves have been opened per EP-2, RPV Control.

Then, a complete loss of offsite power occurs.

How will the ADS Valves be impacted by the loss of offsite power?

(Assume LOCA signals remain present throughout.)

**When the loss of offsite power occurs, the ADS valves will...**

- A. automatically close then automatically re-open sometime after the D/Gs reenergize the buses.
- B. automatically close and will require operator action to re-open after the D/Gs reenergize the buses.
- C. automatically close and cannot be re-opened.
- D. remain open and not be impacted.

**Answer: D**

**Explanation:**

At GGNS, ADS is manually initiated (per the EPs) by manually opening each of the 8 ADS Valves at control room panel P601. Placing each valve's handswitch in OPEN keeps these SRVs open (in the Relief Mode) regardless of any future response of the ADS logic itself. Therefore, even though the ADS logic will intend to close the ADS valves upon seeing the absence of a running low pressure ECCS pump as a result of the loss of offsite power, the valves will remain open because of the operator action already taken. Thus, 'D' is correct.

'A' would be correct if weren't for the fact that the operator places the handswitches in the OPEN position.

'B' is plausible to the candidate who doesn't fully understand/recall the ADS logic and therefore believes that the operator must manually reset the ADS logic in order to allow the ADS logic to reinitiate after ECCS pumps are running again.

'C' has face plausibility.

**Technical References:**

04-1-01-B21-1, Nuclear Boiler System SOI

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

None

**Learning Objective:** GLP-OPS-E2202, objective 25.0

<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>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	219000 A3.01
	<b>Rating</b>	3.3

**Question 27**

The plant is operating at rated power with the following:

- RHR A is operating in Suppression Pool Cooling mode
- A complete loss of Drywell Cooling occurs
- Drywell pressure reaches 1.39 psig

Which of the following RHR A valves automatically change position when Drywell pressure reaches 1.39 psig?

- A. F004A, RHR Pump Suction From Suppression Pool Valve
- B. F024A, RHR A Test Return To Suppression Pool Valve
- C. F027A, RHR System A Shutoff Valve
- D. F042A, RHR A Injection Shutoff Valve

**Answer: B**

**Explanation:**

F004A remains as is since it's already open; therefore, 'A' is incorrect.

The 1.39 psig LOCA signal closes the F024A to prevent diverting injection flow to the Suppression Pool; therefore, 'B' is correct.

The F027A valve has no auto-close feature of any type; therefore, 'C' is incorrect.

The 1.39 psig LOCA signal is a part of what it takes to auto-open the F042A valve; however, the valve won't change its position (currently closed) until it also sees the reactor pressure opening permissive (i.e., reactor pressure <476 psig). Stem conditions give no reason why reactor pressure should not still be at or near rated pressure (>1000 psig); therefore, the <476 psig permissive is not present and the F042A valve will not open. Therefore, 'D' is incorrect.

**Technical References:**

J-1271-008, 011, 017, 020

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

None

**Learning Objective:** GLP-OPS-E1200, objective 9.6

<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>	55.41.7	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	223001 K2.09
	<b>Rating</b>	2.7

**Question 28**

The plant is operating at rated power.

A total loss of offsite power occurs.

Which of the following describes the response of the Drywell Cooling Fans?

- A. Division 1 fans auto start 15 seconds after 15AA is re-energized  
Division 2 fans will NOT auto start after 16AB is re-energized
- B. Division 1 fans auto start 15 seconds after 15AA is re-energized  
Division 2 fans auto start 15 seconds after 16AB is re-energized
- C. Division 1 fans will NOT auto start after 15AA is re-energized  
Division 2 fans auto start 15 seconds after 16AB is re-energized
- D. Division 1 fans will NOT auto start after 15AA is re-energized  
Division 2 fans will NOT auto start after 16AB is re-energized

**Answer: B**

**Explanation:**

Division 1 Drywell cooling fans are powered from 15B42 and the Div 2 fans are powered from 16B42. After the LOP signal the feeder breakers for both MCC will re-energize 15 seconds after the associated buses (15AA and 16AB) are powered by the Diesel Gen. With the associated fan control switch in START (maintain contact) all fans will auto start as soon as the associated MCC is re-energized. Thus, 'B' is correct.

'A' is incorrect because Div 2 fans will auto start.

'C' is incorrect because Div 1 fans will auto start.

'D' is incorrect because both divisions will auto start.

**Technical References:**

04-1-01-R21-1, LSS SOI, Table 1  
04-1-01-M51-1, Drywell Cooling System SOI, Attachment III

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

None

**Learning Objective:** GLP-OPS-M5100, objective 10.2

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.7	
	55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	223002 K6.07
	<b>Rating</b>	3.2

**Question 29**

How will a loss of bus 16AB impact Containment/Drywell Instrumentation & Control System (M71), or the equipment it controls?

- A. All Div 2 M71 isolation logic power will be unavailable.
- B. Some (but not all) Div 2 M71 isolation logic power will be unavailable.
- C. Normally open Div 2 Drywell Chilled Water (P72) primary containment isolation valves fail closed.
- D. Normally open Div 2 Drywell Floor/Equipment Drains (P45) primary containment isolation valves fail closed.

**Answer: D**

**Explanation:**

M71 isolation logic power comes only from the following sources: 120 VAC UPS inverter power, or 125 VDC bus power. None of it comes from the 120 VAC essential power panels powered by 16AB. Therefore, 'A' and 'B' are incorrect.

A loss of bus 16AB results in a loss of Div 2 120 VAC essential power panels. These panels power the solenoids for the Primary Containment air-operated isolation valves that are controlled by the Div 2 side of M71. The normally open PCIVs for system P45 are all air-operated (AOVs); therefore, they fail closed. For this reason, 'D' is correct.

'C' is incorrect because all P72 system PCIVs are motor-operated (MOVs), which remain as is on loss of bus power.

**Technical References:**

04-1-01-R21-16, Attachment I, pages 28/29 of 47  
 GLP-OPS-P4500, page 33 of 40

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

None

**Learning Objective:** GLP-OPS-M7101, objective 16.6

<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>	55.41.7	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	226001 A1.10
	<b>Rating</b>	3.0

**Question 30**

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

A station blackout is in progress and the Loss of AC Power ONEP, 05-1-02-I-4, is being implemented.

Div 3 Diesel Generator has been aligned to supply power to 15AA.

Div 3 Diesel Generator is currently loaded to 2350 KW.

Among the following activities, what is the largest load (KW) that can be added to Div 3 Diesel Generator without it exceeding its continuous service rating?

(Assume all support system equipment is already operating.)

- A. Starting the LPCS Pump for injection to the RPV.
- B. Starting RHR Pump A for Containment Spray.
- C. Starting Control Room A/C Unit A compressor.
- D. Starting all Div 1 Safeguard Switchgear/Battery Room fans.

**Answer: B**

**Explanation:**

Per SOI 04-1-01-P81-1, P/L 3.1.4, the continuous service rating is 3300 KW.

See ONEP 05-1-02-I-4, page 15 CAUTION and page 20 Table 1.

‘A’ is incorrect because the CAUTION prohibits placing LPCS on the Div 3 D/G.

‘B’ is correct because RHR Pump A adds 803 KW (for total of 2350 + 803 = 3153 KW), per Table 1.

‘C’ and ‘D’ are incorrect because each of these will add far less load than the RHR Pump (see Table 1).

NOTE: This question is not a Direct Lookup because the candidate is expected to recall from memory the 3300 KW continuous service rating; this rating is not found in the Loss of AC Power ONEP.

**Technical References:**

05-1-02-I-4, Loss of AC Power ONEP  
04-1-01-P81-1, HPCS Div 3 DG SOI

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

ONEP 05-1-02-I-4 (entire)

**Learning Objective:** GLP-OPS-P8100, objectives 19.1, 22.0

<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>	55.41.7 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	233000 K1.02
	<b>Rating</b>	2.9

**Question 31**

The plant is in Mode 4, preparing for a Refueling outage.

Both Fuel Pool Cooling and Cleanup Pumps have tripped and cannot be restored.

RHR A is started and operating in Fuel Pool Cooling Assist mode with the F066A, RHR A FPC Assist Suction open and the F004A, RHR A Suppression Pool Suction closed.

A valid LOCA signal is received.

Which of the following describes the response of the RHR A subsystem after LSS sequencing?

- A. RHR A will not auto start.
- B. The F066A will auto close and the F004A will auto open, RHR A pump will restart in the LPCI mode.
- C. RHR A will auto restart and inject Spent Fuel Pool water into the reactor through the LPCI injection flowpath.
- D. RHR A will auto restart on minimum flow.

**Answer: C**

**Explanation:**

The RHR pump will restart after LSS sequence because the F066A is a suction start permissive for the pump, the F042A injection valve will open and pump the Spent Fuel Pool into the reactor.

‘A’ is incorrect because the RHR A pump will restart and inject.

‘B’ is incorrect because the F066A and the F004A do not have any auto actions.

‘D’ is incorrect because the F042A will open, due to being in mode 4 and below 476 psig reactor pressure, and provide a flowpath into the reactor.

'C' is correct; refer to RHR SOI 6.1.1.b Caution.

**Technical References:**

04-1-01-E12-1, RHR System SOI, Section 6.1.1.b Caution

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

None

**Learning Objective:** GLP-OPS-E1200, objective 9.5

<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>	55.41.7	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	239002 2.1.20
	<b>Rating</b>	4.6

### Question 32

The plant is operating at rated power when the following occurs:

- ADS / SRV LEAK annunciator is received
- Generator megawatt output has suddenly lowered by approximately 3 to 4 MWe
- All green status lights associated with the SRV handswitches on P601 are illuminated; the red status lights are all extinguished
- Operators determine that SRV B21-F041D is the source of the alarm
- Suppression Pool average water temperature has risen approximately 1°F over the past 10 minutes and is currently 85 °F

Which of the following operator actions has the highest priority?

- Place the reactor Mode Switch in SHUTDOWN.
- Place RHR in Suppression Pool Cooling per the SOI.
- Attempt to close the SRV by cycling its handswitch at P601.
- Attempt to close the SRV by cycling its handswitch at both P601 and P631.

**Answer: B**

#### **Explanation:**

Candidate is expected to interpret these stem conditions as evidence of a leaking SRV, but not an open SRV. If the SRV were open, its downstream pressure switch would actuate (at 30 psig sensed pressure in the tailpipe) and activate another annunciator (P601-19A-A5, SRV/ADS VLV OPEN/DISCH PRESS HI). Additionally, many more Megawatts (~70) would be lost to the Supp Pool. Per ARI (P601-18A-G2) for the leaking SRV (given in the stem), of the four choices for operator actions given in this question, the only one that would certainly be interpreted as having the “highest” priority would be to place RHR in Supp Pool cooling. Therefore, choice ‘B’ is correct.

‘A’ is incorrect because neither this ARI, nor Tech Specs (TS 3.6.2.1), require a manual scram until average pool temp reaches 110 °F.

‘C’ and ‘D’ are incorrect because operators are not to cycle the handswitches unless the

SRV is verified to be stuck open (per the actions of the other ARI P601-19A-A5). This SRV is not open.

**Technical References:**

Tech Spec 3.6.2.1, Supp Pool Average Temperature  
04-1-02-1H13-P601-18A-G2, annunciator window  
04-1-02-1H13-P601-19A-A5, annunciator window

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

None

**Learning Objective:** GLP-OPS-E2202, objectives 21.0, 22.0

<b>Question Source:</b>	Bank #	
(note changes; attach parent)	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>	55.41.7, 10, and 14	
	55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	239002 A2.06
	<b>Rating</b>	4.1

**Question 33**

The plant was operating at rated power when the main turbine tripped.

An ATWS has occurred.

Reactor pressure reached 1120 psig and is currently at 1050 psig and slowly lowering.

Which of the following identifies the total number of SRVs that are currently open, and describes the actions required to control reactor pressure?

- A. 6 SRVs are open.  
Manually control reactor pressure with SRVs.
- B. 6 SRVs are open.  
Allow reactor pressure to be controlled by Lo-Lo Set.
- C. 11 SRVs are open.  
Manually control reactor pressure with SRVs.
- D. 11 SRVs are open.  
Allow reactor pressure to be controlled by Lo-Lo Set.

**Answer: C**

**Explanation:**

SRVs in the relief mode will open 1 @ 1103, 10 @ 1113, and 9 @ 1123. Reactor pressure peaked at 1120, therefore only 11 SRVs opened. For 5 SRVs that opened at 1113 their closing setpoint is 1013 psig, therefore 11 SRVs are currently open.

Lo-Lo set initiated at 1103, per 02-S-01-27, during EP-2A ATWS, cycling of SRVs on Lo-Lo set should be avoided since it could result in power oscillations or tailpipe damage.

Required action is to manually control pressure with SRVs.

For these reasons, only 'C' is correct.

**Technical References:**

04-1-01-B21-1, Nuclear Boiler System SOI, Section 4.2.2 e  
02-S-01-27, Operations Philosophy, Section 6.2.4

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

None

**Learning Objective:** GLP-OPS-E2202, objective 11.0; GLP-OPS-PROC, objective 59.3

<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>	55.41.7 and 10 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	256000 A2.08
	<b>Rating</b>	3.1

### Question 34

The plant is operating at rated power when Low Pressure Feedwater Heater 2A level control malfunctions causing a Hi-Hi water level condition (concurrent with a Hi water level condition).

Which of the following describes the automatic actions that occur and the required operator action per 05-1-02-V-5, Loss of Feedwater Heating?

- A. Steam supply valve to heater 2A closes.  
Reduce Core Flow to 67 Mlbm/hr.
- B. Condensate isolation valves to 'A' Low Pressure heater string close.  
Reduce reactor power to 50%.
- C. Steam supply valve to heater 2A closes.  
Reduce reactor power to 50%.
- D. Condensate isolation valves to 'A' Low Pressure heater string close.  
Reduce Core Flow to 67 Mlbm/hr.

**Answer: D**

### Explanation:

Receipt of a hi-hi level (concurrent with a Hi level condition) in a LP Feedwater heater will cause the Condensate isolation valves to close for that string. 05-1-02-V-5 immediate operator actions require a power reduction to 67 Mlbm/hr.

'A' is incorrect because the steam supply valve will not close.

'B' is incorrect because reduction to 50% is required when a HP Feedwater htr is out of service.

'C' is incorrect for both of the above reasons.

'D' is correct for stated reasons.

**Technical References:**

04-1-01-N23-1, FW Heater Vents/Drains System SOI

05-1-02-V-5, Loss of Feedwater Heating ONEP

**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>	55.41.5, 7, and 10 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	259001 A3.10
	<b>Rating</b>	3.4

**Question 35**

The plant is operating at 60% power when RFPT ‘A’ trips.

The RFPT trip signal is locked in.

Which of the following are indications associated with RFPT ‘A’ that the operator should expect to see at control room panel P680, 80 seconds after the trip?

- |    |                 |               |                 |
|----|-----------------|---------------|-----------------|
| A. | Discharge Valve | RED light on  | GREEN light off |
|    | Recirc Valve    | RED light off | GREEN light on  |
| B. | Discharge Valve | RED light off | GREEN light on  |
|    | Recirc Valve    | RED light off | GREEN light on  |
| C. | Discharge Valve | RED light on  | GREEN light off |
|    | Recirc Valve    | RED light on  | GREEN light on  |
| D. | Discharge Valve | RED light off | GREEN light on  |
|    | Recirc Valve    | RED light on  | GREEN light off |

**Answer:** B

**Explanation:**

‘B’ is correct because the Discharge Valve immediately closes (RED off, GREEN on) on an RFPT trip, and the Recirc Valve (min flow) fully closes (RED off, GREEN on) 60 seconds after the trip. For the same reason, ‘A’, ‘C’ and ‘D’ are incorrect.

**Technical References:**

1H13-P680-2A-A2, annunciator window  
GLP-OPS-N2100, Feedwater System lesson plan

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

None

**Learning Objective:** GLP-OPS-N2100, objectives 16.0 and 26.0

<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>	55.41.7	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	259002 K1.05
	<b>Rating</b>	3.6

**Question 36**

The plant is operating at rated power with the following Reactor water level indications:

Narrow Range

- A 36"
- B 37"
- C 35"

Upset Range 38"

The 'A' Narrow Range reactor water level instrument immediately fails hard upscale.

Which of the following describes the response of the Feedwater Pumps?

**Feedwater Pump speed...**

- A. rises and remains at the higher speed.
- B. initially lowers then returns to its original speed.
- C. initially rises then returns to its original speed.
- D. lowers and remains at the lower speed.

**Answer: B**

**Explanation:**

Narrow range A failure would cause it to be removed from the DFCS and the upset range signal installed. DFCS selects the intermediate of the three signals which would now be B narrow range at 37". With the Feedwater controller set at 36, the feedpumps would slow down to achieve 36", then return to the original speed to maintain a stable 36" level.

'A', 'C', and 'D' are all incorrect for the above reason.

**Technical References:**

04-1-02-1H13-P680-4A2-A2

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

None

**Learning Objective:** GLP-OPS-C3400, objective 3.6

<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>	55.41.7	
	55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	261000 A4.06
	<b>Rating</b>	3.3

**Question 37**

The plant is operating at rated power when the following occurs:

- A valid signal is generated for automatic initiation of Standby Gas Treatment (SGTS)
- Fuel Handling Area Ventilation and Auxiliary Building Ventilation isolate
- But both trains of SGTS fail to automatically start

With both Enclosure Building d/p recorders (Div 1 and Div 2) initially reading 0" wc, Div 1 SGTS is manually initiated at control room panel P870.

Div 2 SGTS will not start.

Which of the following identifies the final indication for each of these recorders after the building pressure drawdown with Div 1 SGTS is completed?

- A. Div 1 recorder reads -0.15" wc  
Div 2 recorder reads 0" wc
- B. Div 1 recorder reads -0.3" wc  
Div 2 recorder reads -0.3" wc
- C. Div 1 recorder reads -0.15" wc  
Div 2 recorder reads -0.15"wc
- D. Div 1 recorder reads -0.3" wc  
Div 2 recorder reads 0" wc

**Answer: B**

**Explanation:**

The design drawdown for either Division of SGTS is  $>-0.25$  psid (i.e., -0.25 psid or more negative). Both recorders will read this same d/p. Therefore, 'B' is correct and 'D' is incorrect.

The normal plant ventilation (FHA and Aux Bldg Vent) provides a negative d/p of  $\sim 0.15$  psid. Therefore, distracters 'A' and 'C' are incorrect.

**Technical References:**

GLP-OPS-T4800, SGTS lesson plan

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

None

**Learning Objective:** GLP-OPS-T4800, objective 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>	55.41.7 and 8 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	262001 A3.04
	<b>Rating</b>	3.4

**Question 38**

The feeder breaker for bus 15AA has tripped.

Which of the following describes when the RED status light at the DIV 1 LSS PNL RESET pushbutton on control room panel P864 will illuminate?

- A. When the BUV signal is received
- B. After all sequencing is complete for the BUV signal
- C. When sequencing begins for the BUV signal
- D. When the D/G PARALLEL RESET switch is taken to PARALLEL

**Answer: C**

**Explanation:**

‘A’ is incorrect because the AMBER status on the LSS TEST MODE handswitch will illuminate and the white light will extinguish.

‘B’ is incorrect because the RED light will illuminate at the beginning of the sequence.

‘D’ is incorrect because this action will cause the AMBER light to illuminate.

‘C’ is correct per LSS SOI (04-1-01-R21-1) P/L 3.8.2.

**Technical References:**

04-1-01-R21-1, LSS System SOI

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

None

**Learning Objective:** GLP-OPS-R2100, objective 35

<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>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	262002 2.2.6
	<b>Rating</b>	3.0

**Question 39**

The plant is operating at rated power.

Static inverter 1Y95 is scheduled to be tagged out for normal preventive maintenance.

During the shutdown of 1Y95 the operator recognizes the procedure steps are out of sequence and if performed as written will cause a total loss of power to the 1Y95 distribution panels.

Per EN-AD-102, Procedure Adherence and Level of Use, which of the following describes the required action?

- A. Stop all work and process a procedure change prior to proceeding.
- B. Line through the error and enter the correct information, initial and date change, and process a procedure change later.
- C. Stop all work and allow supervisor to N/A affected steps prior to proceeding.
- D. Continue with procedure, note step changes and process a procedure revision request.

**Answer: A**

**Explanation:**

Per EN-AD-102, step 5.2.2 [3], procedure users shall perform the procedure steps in the sequence written unless specific allowance to skip sections/steps is permitted by procedure. A procedure change is required per step 5.2.5. Therefore A is correct.

‘B’ is incorrect because this is only used for editorial errors per 5.2.4 [1].

‘C’ is incorrect because N/A is only used when the step was not performed per 5.2.3 [2].

‘D’ is incorrect because work must be stopped when action cannot be performed as written per step 5.2.5.

**Technical References:**

EN-AD-102, Procedure Adherence and Level of Use

**Proposed references to be provided to applicants during exam:**

None

**Learning Objective:** None

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.10	
	55.43.3	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	263000 K3.03
	<b>Rating</b>	3.4

**Question 40**

A loss of Feedwater has occurred.

RCIC is maintaining level with suction from the Suppression Pool.

11DA bus fails on a complete ground, 11DA bus supply breaker trips open.

Which of the following describes the response of the following RCIC valves on a valid isolation signal?

- E51-F063 (RCIC Steam Supply Inboard Isolation)
- E51-F064 (RCIC Steam Supply Outboard Isolation)
- E51-F031 (RCIC Pump Suction From Suppression Pool)
- E51-F045 (RCIC Steam Supply to RCIC Turbine)

- A. E51-F063 Close  
E51-F064 Remain Open  
E51-F031 Remain Open  
E51-F045 Remain Open
- B. E51-F063 Remain Open  
E51-F064 Close  
E51-F031 Close  
E51-F045 Remain Open
- C. E51-F063 Remain Open  
E51-F064 Remain Open  
E51-F031 Remain Open  
E51-F045 Close
- D. E51-F063 Close  
E51-F064 Close  
E51-F031 Close  
E51-F045 Close

**Answer: A**

**Explanation:**

With a complete loss of 11DA the F031 and F045 have no power to operate therefore they remain open. The F064 is AC powered, but the isolation logic is powered from 11DA, therefore it will not receive a close signal and it will remain open. The F063 is also AC powered and the isolation logic is powered from the 11DB battery therefore it will receive a close signal.

Therefore, only 'A' is correct.

**Technical References:**

04-1-01-E51-1, RCIC  
GLP-OPS-E5100, RCIC lesson plan

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

None

**Learning Objective:** GLP-OPS-E5100, objectives 6.1, 8, and 11.5

<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>	55.41.7	
	55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	264000 A1.03
	<b>Rating</b>	2.8

**Question 41**

The Div 2 Diesel Generator is running and supplying 16AB separated from the grid.

Taking the Manual Governor Control Switch to the LOWER position will lower \_\_\_\_\_.

Taking the Automatic Voltage Regulator Setpoint Control Switch to LOWER will lower \_\_\_\_\_.

- A. Generator load (MW)  
Bus 16AB voltage
- B. Bus 16AB frequency  
Generator reactive load (MVAR)
- C. Bus 16AB frequency  
Bus 16AB voltage
- D. Generator load (MW)  
Generator reactive load (MVAR)

**Answer: C**

**Explanation:**

With Div 2 DG separated from the grid, the manual governor controls bus frequency, and the auto-VR Setpoint controls bus voltage.

‘A’ is incorrect because Generator load is controlled by bus loads.

‘B’ is incorrect because being separated from grid reactive load is not present.

‘D’ is incorrect because of both of the above.

‘C’ is correct for stated reasons.

**Technical References:**

04-1-01-P75-1, Standby DGs, Section 6.1

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

None

**Learning Objective:** GLP-OPS-P7500, objective 17.0

<b>Question Source:</b>	Bank #	
(note changes; attach parent)	Modified Bank #	GGNS-OPS-00708
	New	

<b>Question History:</b>	Last NRC Exam	No
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<b>Question Cognitive Level:</b>	Memory/Fundamental	X
	Comprehensive/Analysis	

<b>10CFR Part 55 Content:</b>	55.41.7
	55.43

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	286000 K4.02
	<b>Rating</b>	3.3

**Question 42**

Which of the following conditions will directly result in an automatic start of Diesel-Driven Fire Pump B?

- A. Fire water header high flow
- B. Fire water jockey pump loss of power
- C. Loss of AC control power for 20 seconds
- D. Fire water header pressure at 118 psig for 4 seconds

**Answer: C**

**Explanation:**

‘A’ is incorrect because there is no auto-start signal related to high flow.

‘B’ is incorrect because there is no auto-start signal related to loss of the jockey pump.

‘D’ is incorrect because Pump B auto-starts with 117 psig for at least 5 seconds.

‘C’ is correct because the pump auto-starts on loss of its AC control power for at least 15 seconds.

.

**Technical References:**

GLP-OPS-P6400, Fire Protection System lesson plan

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

None

**Learning Objective:**GLP-OPS-P6400, objective 6.3

<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>	55.41.4 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	288000 2.4.2
	<b>Rating</b>	4.5

**Question 43**

The plant is operating at rated power when an irradiated fuel handling accident occurs at the Spent Fuel Pool.

As a result, EP-4 (Auxiliary Building Control) is entered due to the Fuel Pool Sweep Exhaust radiation levels on all radiation monitoring channels.

Which of the following describes the automatic response of the HVAC systems in the Auxiliary Building?

- A. Aux Building Zone Fan Coil Units stop.  
Both trains of Standby Gas Treatment initiate.  
Fuel Handling Area and Fuel Pool Sweep HVAC isolate.
- B. Aux Building Zone Fan Coil Units remain running.  
Both trains of Standby Gas Treatment initiate.  
Fuel Handling Area and Fuel Pool Sweep HVAC isolate.
- C. Aux Building Zone Fan Coil Units stop.  
Only one train of Standby Gas Treatment initiates.  
Fuel Handling Area and Fuel Pool Sweep HVAC remain running.
- D. Aux Building Zone Fan Coil Units remain running.  
Only one train of Standby Gas Treatment initiates.  
Fuel Handling Area and Fuel Pool Sweep HVAC remain running.

**Answer: A**

**Explanation:**

Per EP-4, Table 10 entry conditions, the Fuel Pool Sweep Exhaust rad levels have reached 30 mr/hr.

Per ONEP 05-1-02-III-5 (Automatic Isolations), page 22, T42-F003 and F004 (FH Area Vent Exhaust Aux Building Isolations) automatically close on the 30 mr/hr signal.

Per ARI P601-19A-B10 (one example), this 30 mr/hr signal auto-initiates Standby Gas Treatment (both trains are normally aligned for auto-initiation).

Aux Building Fan Coil Units B002 and B005 auto-stop when either of T42-F003 or F004 are not full open.

Therefore, only choice 'A' is correct and all distracters are incorrect.

**Technical References:**

04-1-02-1H13-P601-19A-B10, annunciator window  
05-1-02-III-5, Auto Isolations ONEP, page 22

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

None

**Learning Objective:** GL-OPS-T4200, objective 12.0

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-04722
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	290002 K1.20
	<b>Rating</b>	3.2

**Question 44**

Which of the following describes the vertical location of the LPRM detectors inside the reactor vessel?

- A. D is 18” above the bottom of active fuel; detectors are 36” apart, with A being 24” from the top of active fuel.
- B. A is 18” above the bottom of active fuel; detectors are 36” apart, with D being 24” from the top of active fuel.
- C. D is 30” below the bottom of active fuel; detectors are 36” apart, with A being 15” above the centerline of active fuel.
- D. A is 30” below the bottom of active fuel; detectors are 36” apart, with D being 15” above the centerline of active fuel.

**Answer: B**

**Explanation:**

‘A’ is incorrect because A detector is the lowest detector with D being the highest.

‘C’ and ‘D’ are incorrect because 30” and 15” are the locations for SRM and IRM.

‘B’ is correct with A being the lowest and D being the highest.

**Technical References:**

GLP-OPS-C5103, LPRM lesson plan

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

None

**Learning Objective:** GLP-OPS-C5103, objective 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>	55.41.2 55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	290003 2.1.27
	<b>Rating</b>	3.9

**Question 45**

Which of the following describes a function of the Control Room HVAC System?

- A. Automatically isolates the control room from the air outside the plant in the event that smoke is detected at the intake ductwork.
- B. Maintains the control room at a slightly negative pressure during normal plant operation.
- C. Maintains a radiologically controlled environment from which the plant can be operated during a Design Basis Accident.
- D. Maintains the control room at a slightly positive pressure during all modes of the system's operation.

**Answer: C**

**Explanation:**

'A' is incorrect because the system auto-isolates the control room on high radiation, but not on the detection of smoke.

'B' is incorrect because the system maintains the control room at a slightly positive pressure, not a negative pressure.

'C' is correct, as described in GLP-OPS-Z5100 Lesson plan, System Design Bases.

'D' is incorrect because the control room is not pressurized while the system is operating in its Isolation (recirculation) mode.

**Technical References:**

GLP-OPS-Z5100 Lesson plan page 10, System Design Bases

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

None

**Learning Objective:** GLP-OPS-Z5100, objectives 1 and 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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.7	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295001 AA2.01
	<b>Rating</b>	3.5

**Question 46**

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

The plant is operating at rated power when Reactor Recirc Pump ‘A’ trips.

Plant conditions stabilize as follows:

Reactor Power        65%  
Total Core Flow        53 Mlbm/hr

Then, a valid PBDS CH A HI-HI DECA Y RATIO alarm is received.

Per 05-1-02-III-3, Reduction in Recirc System Flowrate, which of the following describes the required operator action when the alarm is received?

- A.     Immediately place the Mode Switch in SHUTDOWN.
- B.     Insert control rods.
- C.     Raise ‘B’ Recirc loop flow rate.
- D.     Monitor for THI.

**Answer:** A

**Explanation:**

The indications given show us in the Restricted Region (RR) with a valid PBDS alarm. Per the Immediate Operator Actions of 05-1-02-III-3, step 2.1.b, shall immediately place the mode switch to shutdown. Therefore, ‘A’ is correct.

Distractors are all incorrect for the reasons already described.

‘D’ cannot be argued as another correct answer because of the manner in which the question stated...”when the alarm is received”... Once the conditions are met to scram the reactor, “monitoring for THI” is no longer an acceptable operator action.

**Technical References:**

05-1-02-III-3, Reduction in Recirc System Flowrate ONEP

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

05-1-02-III-3 Fig 1 (P/F Map)

**Learning Objective:** GLP-OPS-B3301, objective 41.2

<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>	55.41.10	
	55.43.5	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295003 AA1.04
	<b>Rating</b>	3.6

**Question 47**

Breaker 152-1705, Feeder From ESF XFMR #21, trips

Which of the following describes the indication of 11DC bus voltage?

- A. Remains constant.
- B. Lowers by a small amount and remains at that indication.
- C. Goes to zero volts.
- D. Lowers by a small amount and returns to normal after 5 to 10 seconds.

**Answer: D**

**Explanation:**

17AC bus is powered from ESF 21. A loss of power to the bus will cause a loss of power to the 1C4 battery charger (52-170104). Voltage will initially drop due to loss of charger. After 5 to 10 seconds, the Div 3 Diesel Gen will reenergize the 17AC bus and restore power to the 17B01 LCC providing power back to the 1C4 battery charger and indication will return to normal.

Therefore, only 'D' is correct.

**Technical References:**

04-1-01-L11-1, Attachment IIIC  
04-1-01-R21-17, Attachment I

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

None

**Learning Objective:** GLP-OPS-L1100, objective 16

<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>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295004 AK1.05
	<b>Rating</b>	3.3

**Question 48**

The circuit breaker supplying DC control power to bus 15AA has tripped.

Which of the following describes the electrical operations of the 4160 VAC circuit breakers on 15AA bus?

- A. Operators can electrically trip the breakers remotely.
- B. Operators can electrically trip the breakers locally.
- C. Breakers can automatically trip one time.
- D. Breakers cannot automatically trip.

**Answer: D**

**Explanation:**

A loss of DC control power to a 4160 v breaker will prevent the trip coil from activating on any trip signal (automatic or manual-electric); therefore 'D' is correct and the others are all incorrect.

**Technical References:**

GLP-OPS-R2700, Normal AC System lesson plan

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

None

**Learning Objective:** GLP-OPS-R2700, objective 14

**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>	55.41.7 and 8 55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295005 AK3.03
	<b>Rating</b>	2.8

**Question 49**

The plant is operating at 20% power when the main turbine trips.

Which of the following describes the response of feedwater inlet temperature and the reason for that response?

- A. Lowers because of the reduced amount of heat added from the Feedwater Heaters.
- B. Lowers because of the reduced steam cycle energy after the plant scrams.
- C. Rises because of the reduced amount of sub-cooling in the main condenser.
- D. Rises because of the reduced amount of feedwater inlet sub-cooling.

**Answer:** A

**Explanation:**

‘A’ is correct because of the loss of heat input to the FW heaters following the loss of turbine extraction steam.

‘C’ and ‘D’ are incorrect because they imply that feedwater inlet temperature will rise instead of lower.

‘B’ is incorrect because the turbine trip scram is bypassed with reactor power so low (20%).

**Technical References:**

Generic Fundamentals knowledge application

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

None

**Learning Objective:** None

<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>	55.41.4 and 14 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295006 AA2.01
	<b>Rating</b>	4.5

**Question 50**

The Mode Switch is in STARTUP.

A feedwater flow perturbation causes the following APRM power levels:

- |   |     |   |     |
|---|-----|---|-----|
| A | 14% | E | 13% |
| B | 16% | F | 14% |
| C | 14% | G | 13% |
| D | 16% | H | 14% |

APRM Upscale alarm is received.

Which of the following plant/system responses should have occurred?

- A. Rod Block only
- B. Rod Block and half-scam on RPS A
- C. Rod Block and half-scam on RPS B
- D. Full scram

**Answer: C**

**Explanation:**

With the mode switch in Startup the rod block setpoint is 12% and scram setpoint is 15%. APRMs A, C, E, G input to RPS A. APRMs B, D, F, H input to RPS B.

Stem indicates any of the APRMs will generate the rod block (12%), but only RPS B trips (half-scam due to APRMs B, D >15%).

Therefore, only 'C' is correct.

**Technical References:**

03-1-01-1, section 2.1.9

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

None

**Learning Objective:** GLP-OPS-C5104, objectives 7.1 and 7.2

<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 Comprehension/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.5 and 7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	295007 AK2.05
	<b>Rating</b>	2.9

**Question 51**

RHR A is running in Shutdown Cooling through E12-F037A (RHR A To Containment Pool Valve).

Performance of an I&C test inadvertently results in the following:

- E12-F008 (RHR SDC Outboard Suction Valve) and E12-F009 (RHR SDC Inboard Suction Valve) automatically isolate
- E12-F037A remains open

Which of the following identifies the isolation signal that was generated by the I&C test?

- A. High Drywell Pressure
- B. Low Reactor Water Level
- C. High Reactor Pressure
- D. High RHR Room Temperature

**Answer: C**

**Explanation:**

‘B’ and ‘D’ would close all group 3 isolation valves including F037A.

‘A’ would close only the F037A.

‘C’ is correct because 135 psig reactor pressure would close all group 3 valves except F037B.

**Technical References:**

05-1-02-III-5, Auto Isolations ONEP, page 9

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

None

**Learning Objective:** GLP-OPS-E1200, objective 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>	55.41.7 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	295010 AK2.01
	<b>Rating</b>	3.2

**Question 52**

Which of the following would cause the highest peak in drywell pressure during a LOCA?

(Assume all parameters other than those specified below are in their normal bands.)

- A. Drywell-to-Containment differential pressure -0.2 psid
- B. Suppression pool water level of 20 ft indicated.
- C. Suppression pool water level of 17 ft indicated.
- D. Drywell-to-Containment differential pressure +0.2 psid

**Answer: B**

**Explanation:**

‘A’ is incorrect because this would indicate a negative drywell pressure, but is within the tech spec allowable value. This would require a higher drywell pressure to clear the 1<sup>st</sup> row of vents but would not cause the highest peak.

‘C’ is incorrect because Weir Wall water level would be lower requiring less pressure to clear the 1<sup>st</sup> row of vents.

‘D’ is incorrect because positive pressure in the drywell would cause a lower weir wall water level but should not affect the amount of pressure required to clear the 1<sup>st</sup> row of drywell vents.

‘B’ is correct because too high a pool level requires a higher drywell pressure before the blowdown is able to clear the horizontal vents to relieve pressure from the drywell into the Suppression Pool.

**Technical References:**

Tech Spec 3.6.2.2 Bases  
GLP-OPS-M4101, PC and Auxiliaries lesson plan

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

None

**Learning Objective:** GLP-OPS-M4101, objectives 6.3, 6.7, 7, and 8

<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>	55.41.7	
	55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	295012 AA1.02
	<b>Rating</b>	3.8

**Question 53**

A LOCA has occurred in the Drywell.

The following conditions exist:

- Drywell pressure is 1.25 psig
- Drywell temperature is 190 °F

Which of the following describes the ability to re-open the Drywell Chilled Water Isolation Valves?

- A. Cannot be re-opened with current plant conditions.
- B. Can be re-opened at any time without any prior operator action.
- C. Can be re-opened only after 30 seconds has elapsed since they isolated.
- D. Can be re-opened only after placing both Aux Building Isolation Bypass switches in BYPASS.

**Answer: C**

**Explanation:**

Current plant conditions do not inhibit the opening of these valves; therefore, ‘A’ is incorrect.

Valves can be re-opened with control room handswitches, but only after the 30-second timer has timed out (30 seconds after the isolation signal); therefore, ‘C’ is correct and ‘B’ is incorrect.

‘D’ is incorrect because it represents the previous design of the Aux Building valve logic, but no longer exists.

**Technical References:**

05-1-02-III-5, Auto Isolations, Attachment II, Step 3

**Proposed references to be provided to applicants during exam:**

None

**Learning Objective:** GLP-OPS-M5100. objective 6.5

<b>Question Source:</b>	Bank #	GGNS-OPS-05140 (editorial changes only)
(note changes; attach parent)	Modified Bank # New	
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.7 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	295015 AK1.04
	<b>Rating</b>	3.8

**Question 54**

The plant was operating at rated power when a failure of the Main Turbine IPC caused all Main Turbine Control Valves to fail fully open.

Reactor pressure lowered to 845 psig before the Mode Switch was placed in SHUTDOWN.

Reactor power is 12%.

Which of the following describes the ability to control reactor pressure and the band that should be maintained?

- A. SRV manual control  
800 to 1060 psig
- B. SRV manual control  
450 to 600 psig
- C. Main Turbine Bypass Valves  
800 to 1060 psig
- D. Main Turbine Bypass Valves  
450 to 600 psig

**Answer: B**

**Explanation:**

Mode switch in RUN and <849 psig will cause a Group 1 isolation signal (MSIVs closed). An ATWS has occurred (12% power). With MSIVs closed the Main Turbine Bypass valves are unavailable, therefore SRVs will have to be used. The pressure band is 450-600 due to loss of Feedwater.

Only 'B' is correct.

**Technical References:**

02-S-01-27, Operations Philosophy

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

None

**Learning Objective:** GLP-OPS-PROC, objective 59.3

<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/Fund	
	Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.7	
	55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295016 AK3.03
	<b>Rating</b>	3.5

**Question 55**

Which of the following describes one reason why we intentionally disable control room control of certain equipment when we abandon the control room due to fire?

- A. To ensure certain Div 1 components can be operated from outside the control room.
- B. To ensure the RCIC Steam Supply Drywell Outboard Isolation Valve (E51-F064) can electrically close if necessary.
- C. To ensure the RCIC Steam Supply Drywell Inboard Isolation Valve (E51-F063) can electrically close if necessary.
- D. To ensure certain Div 2 components can be operated from outside the control room.

**Answer:** A

**Explanation:**

Per the Remote Shutdown ONEP, Section 3.5 and Attachments III and IV, only certain Div 1 components are disabled to ensure they will operate from outside the control room and not be affected by fire-related hot shorts, opens, or grounds in the control room panels. Therefore, 'A' is correct.

'D' is incorrect because it suggests Div 2 components are disabled; they are not.

'B' and 'C' are incorrect. Although 'B' describes a Div 1 isolation valve, the ONEP actions do not impact the RCIC steam supply drywell isolations at all, including the Div 2 valve suggested by choice 'C'. See ONEP Section 3.5.4 NOTE for information related to these RCIC valves.

**Technical References:**

ONEP 05-1-02-II-1, Remote Shutdown ONEP

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

None

**Learning Objective:** GLP-OPS-ONEP, objective 3.0

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.10	
	55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295018 AK2.01
	<b>Rating</b>	3.3

**Question 56**

Which of the following identifies the system loads allowed to be supplied by Component Cooling Water (CCW) during a partial loss of CCW (degraded pressure/flow)?

- A. Fuel Pool Cooling Heat Exchangers  
Control Rod Drive Pump oil coolers
- B. Reactor Water Cleanup  
Fuel Pool Cooling Heat Exchangers
- C. Recirculation pump / motor  
Control Rod Drive Pump oil Coolers
- D. Recirculation pump / motor  
Reactor Water Cleanup

**Answer: C**

**Explanation:**

ONEP 05-1-02-V-1, Loss of CCW, step 3.1.2 and 3.1.3 calls for Fuel Pool C/U and RWCU to be isolated and secured on a partial loss. ‘C’ is the only correct answer.

**Technical References:**

05-1-02-V-1, Loss of CCW, step 3.1.2 and 3.1.3

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

None

**Learning Objective:** GLP-OPS-ONEP, objective 3.0

**Question Source:**

(note changes; attach parent)

Bank #

Modified Bank #

New

GGNS-OPS-02844

<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.7 55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295019 AK2.09
	<b>Rating</b>	3.3

**Question 57**

The plant is operating at rated power when a total loss of instrument air occurs.

Which of the following identifies the impact on Containment Temperature and Containment Pressure?

- |    | <u>Containment Temperature</u> | <u>Containment Pressure</u> |
|----|--------------------------------|-----------------------------|
| A. | Rise                           | Rise                        |
| B. | Rise                           | Constant                    |
| C. | Constant                       | Constant                    |
| D. | Constant                       | Rise                        |

**Answer: A**

**Explanation:**

A loss of Instrument Air will cause the Turbine building isolation valves for Plant Chilled water to auto close, causing a trip of all Primary and Secondary Chilled water pumps. A loss of PCW will cause the Containment Temperature to rise, causing Containment Pressure to rise.

Therefore, only 'A' is correct.

**Technical References:**

- 04-1-01-P71-1, PCW, section 3.6
- 04-1-02-H13-P870-3A-F3, annunciator window

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

None

**Learning Objective:** GLP-OPS-M4100, objective 13.1

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-04976
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<b>Question History:</b>	Last NRC Exam	N/A
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<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
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<b>10CFR Part 55 Content:</b>	55.41.7 and 14 55.43
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<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295021 AK3.01
	<b>Rating</b>	3.3

**Question 58**

The plant is in Mode 4 with RHR A in Shutdown Cooling (SDC).

A spurious Group 3 isolation occurs and will not reset.

The CRS directs reactor water level to be raised to 101” to 129”.

Per 05-1-02-III-1, Inadequate Decay Heat Removal, which of the following describes the basis for the specified level band?

**To provide...**

- A. more time to boil.
- B. for natural circulation inside the reactor.
- C. a flowpath for cooling through SRVs.
- D. for accurate reactor vessel temperature monitoring.

**Answer: C**

**Explanation:**

ONEP 05-1-02-III-1, Inadequate Decay Heat Removal step 3.3.3.f.(3) states “Slowly raise RPV water level using any available injection systems to between + 101 inches and +129 inches to establish flow through open SRVs back to Suppression Pool.

Therefore, ‘C’ is correct and the distracters are incorrect.

**Technical References:**

05-1-02-III-1, Inadequate Decay Heat Removal ONEP

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

None

**Learning Objective:** GLP-OPS-ONEP, objective 3.0

<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>	55.41.5, 7, and 10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295024 2.4.18
	<b>Rating</b>	3.3

**Question 59**

In EP-3, Containment Control, Step PCP-7 requires venting the primary containment before primary containment pressure reaches 22.4 psig.

Per the EP Technical Bases, what does the 22.4 psig value represent?

- A. The maximum pressure capability of primary containment
- B. The maximum containment pressure at which RPV vent valves can be opened and closed
- C. The maximum containment pressure at which SRVs can be opened and will remain open
- D. The maximum containment pressure at which vent valves sized to reject all decay heat from containment can be opened and closed

**Answer: D**

**Explanation:**

Per EP Basis section 11.17 (PCPL). Therefore, 'D' is correct.

'A' and 'C' represent the non-limiting PCPL criteria discussed in this Basis section.

'B' represents another non-limiting PCPL criterion, but one that is not applicable to GGNS.

**Technical References:**

EP Technical Bases, Section 11.17

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

None

**Learning Objective:** GLP-OPS-EP3TR, objective 6

<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>	55.41.7 and 10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295025 EK2.08
	<b>Rating</b>	3.7

**Question 60**

The plant is operating at rated power when the following occurs:

- A Recirc Loop Flow controller malfunction causes reactor power to begin to slowly rise

Before operators take any action, what should be the initial automatic response of the Main Turbine HP Control Valves and Bypass Control Valves?

	<u><b>HP Control Valves</b></u>	<u><b>Bypass Control Valves</b></u>
A.	Open farther	Begin to open
B.	Open farther	Remain as is
C.	Remain as is	Begin to open
D.	Remain as is	Remain as is

**Answer: B**

**Explanation:**

As reactor power rises so too does reactor pressure, causing the HP Control valves to open farther (from approximately 50-60% open at rated pressure) in order to control the rising turbine inlet steam pressure. Initially, the Bypass Control Valves have no reason to move (from fully closed), while the HP Control Valves still have opening room to control the rising pressure. Therefore, only choice 'B' is correct.

**Technical References:**

GLP-OPS-N3202, EHC Control Oil lesson plan

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

None

**Learning Objective:** GLP-OPS-N3202, objectives 3.1 and 4.2

<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>	55.41.4 and 5 55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295026 2.1.7
	<b>Rating</b>	4.4

**Question 61**

The plant is operating at rated power with RCIC testing in progress.

Average Suppression Pool temperature has risen to 97°F.

Which of the following describes the required operator actions?

- A. Place the Reactor Mode Switch to SHUTDOWN.  
Enter EP-3 and place RHR is Suppression Pool Cooling.
- B. Immediately secure RCIC.  
Enter EP-3 and place RHR is Suppression Pool Cooling.
- C. Place the Reactor Mode Switch to SHUTDOWN and enter EP-2.  
Depressurize the reactor to <200 psig.
- D. Enter EP-3 and place RHR is Suppression Pool Cooling.  
Monitor Suppression Pool temperature.

**Answer: D**

**Explanation:**

At > 1% power and testing which adds heat to the suppression pool suppression pool temperature is allowed to go to 105°F. At > 95°F the required actions are to enter EP-3 at 95°F and place suppression pool cooling in service and monitor suppression pool temp not to exceed 105°F.

‘A’ is incorrect because Mode switch to shutdown is required at > 110°F.

‘B’ is incorrect because RCIC is secured immediately at >105°F.

‘C’ is incorrect because entry to EOP-2 is required at >110°F and depressurization is required at >120°F.

‘D’ is correct for the above reasons.

**Technical References:**

Tech Spec 3.6.2.1, Supp Pool Average Water Temperature  
EP-3, PC Control

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

None

**Learning Objective:** GLP-OPS-EP3TR, objective 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>	55.41.10 55.43.5	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295027 EA2.01
	<b>Rating</b>	3.7

**Question 62**

EP-3, Primary Containment Control, is being implemented.

Containment temperature is continuing to rise and is nearing 185 °F.

Per the EP Technical Bases, what is the significance of nearing 185 °F Containment temperature?

**Containment temperature is nearing the point beyond which...**

- A. containment damage or challenge to equipment operability may occur.
- B. Fuel Zone RPV water level instruments will no longer be reliable.
- C. the Suppression Pool pressure suppression function is impaired.
- D. containment spray initiation is not allowed.

**Answer:** A

**Explanation:**

Per EP-3 Bases, page 7-18, this is the containment design temperature...i.e., where containment damage or challenge to equipment operability may occur. Thus, 'A' is correct and the distracters are all incorrect.

**Technical References:**

EP-3 Bases

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

None

**Learning Objective:** GLP-OPS-EP3TR, objective 6

<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>	55.41.10 55.43.5	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295028 2.1.20
	<b>Rating</b>	4.6

**Question 63**

A LOCA has occurred.

Drywell pressure is 2.1 psig.

Drywell temperature is 145 °F.

The CRS has directed operators to maximize drywell cooling.

Which of the following is required to ensure all available Drywell cooling is operating?

- A. Open Drywell Chilled Water containment isolation valves.  
Re-energize 15B42 and 16B42.
- B. Open Drywell Chilled Water containment isolation valves.  
Manually start B Drywell Chiller skid and pump.
- C. Re-energize 15B42 and 16B42.  
Manually start both A and B Drywell Chiller skids and pumps.
- D. Open Drywell Chilled Water containment isolation valves.  
No additional action is required.

**Answer: A**

**Explanation:**

A LOCA signal will cause the B drywell chiller skid and pumps to be locked out on the 16 bus and 15 and 16B42 will not auto sequence and require manual re-energization. It will also cause the drywell chilled water CTMT isolation valves to close, requiring 30 second time delay prior to reopening. Therefore, 'A' is correct.

'B' is incorrect because B Drywell chiller skid is unavailable during a LOCA.

'C' is incorrect because B Drywell chiller skid is unavailable during a LOCA and the A skid will auto start when chilled water flow path is restored.

'D' is incorrect because only this action will allow the 'A' chillers and pump to restart;

but with no drywell coolers, drywell cooling would not be maximized.

**Technical References:**

EP-3, PC Control  
05-1-02-EP-1, EP/SAP Support Documents, Attachment 10  
GLP-OPS-M5100, Drywell Cooling lesson plan

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

None

**Learning Objective:** GLP-OPS-M5100, objectives 9.2 and 10.2

<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>	55.41.7 and 10 55.43.5	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295030 EK1.02
	<b>Rating</b>	3.5

**Question 64**

Per System Operating Instructions, in a non-emergency situation, the ECCS pumps should not be operated using the Suppression Pool as a suction path unless Suppression Pool level is at least \_\_\_\_\_.

- A. 10.5 feet
- B. 12.5 feet
- C. 13.5 feet
- D. 14.5 feet

**Answer: D**

**Explanation:**

10.5 feet is the level at the top of the SRV discharge devices; therefore, 'A' is incorrect.

12.5 feet is the level at the top of the horizontal vents; therefore, 'B' is incorrect.

13.5 feet is used for its face plausibility; it is incorrect.

14.5 feet is specified in the SOIs for HPCS, RCIC, LPCS, and RHR as the level below which these systems should not take a suction in non-emergent situations; this is a concern for adequate pump NPSH. Therefore, 'D' is correct.

**Technical References:**

- 04-1-01-E51-1, RCIC, Section 3.4
- 04-1-01-E12-1, RHR, Section 3.2.6
- 04-1-01-E22-1, HPCS, Section 3.19
- 04-1-01-E21-1, LPCS, Section 3.13

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

None

**Learning Objective:** GLP-OPS-E1200, objectives 14.1 and 14.2

<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>	55.41.7 and 10 55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295031 EK3.02
	<b>Rating</b>	4.4

**Question 65**

The DBA LOCA has occurred on Recirc Loop A.

All ECCS systems are injecting at rated flows and pressures.

Considering the plant design (not procedural actions), which of the following identifies the minimum core water level (below instrument zero) that operators should be able to maintain?

- A. -167"
- B. -217"
- C. -242"
- D. -317"

**Answer: B**

**Explanation:**

The 2/3 core height re-floodable core volume attributed to the placement of the jet pump suctions corresponds to -217". Therefore, 'B' is correct.

'A' is incorrect because this is TAF.

'C' is incorrect because this is 50% core height.

'D' is incorrect because this is BAF.

Concerning KA match: So as to avoid asking the obvious (i.e., that full core submergence is preferred among the three methods of ensuring adequate core cooling), this question instead asks the candidate to relate the important 2/3 core-height re-floodable volume concept to an indicated water level. Meaning that a "reason" for the response of operators attempting to maintain ECCS injection is so that at least 2/3 of the core will be submerged (as represented by a -217" level indication) in the worst-case DBA LOCA.

**Technical References:**

Tech Spec Bases B 3.4.3 “Background” discussion  
Tech Spec Bases Figure B 3.3.1.1-1 “Reactor Vessel Water Level”

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

None

**Learning Objective:** GLP-OPS-B3300, objective 9

<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>	55.41.5 and 7 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	295032 2.2.12
	<b>Rating</b>	3.7

**Question 66**

The plant is operating at rated power.

I&C is performing the quarterly Functional Test surveillance (06-IC-1E31-Q-1002), Attachment I, for RCIC Equipment Room High Temperature Channel 'A'.

The Logic 'A' Leak Detection System (LDS) Bypass Switches for RCIC, RWCU, and RHR are currently in BYPASS as required by the procedure.

A NOTE in this procedure section directs personnel to ensure that the LDS Bypass Switches do not remain in BYPASS for more than 6 hours.

Which of the following describes the reason for this NOTE?

To avoid having to immediately declare the \_\_\_\_\_ inoperable solely due to the in-progress surveillance.

- A. Div 1 LDS isolation instrumentation for RCIC, RWCU, and RHR
- B. Div 2 LDS isolation instrumentation for RCIC, RWCU and RHR
- C. RHR system
- D. RCIC system

**Answer: A**

**Explanation:**

'A' is correct. Refer to Surveillance Requirements NOTES on Tech Spec page 3.3-53 (SRs for 3.3.6.1, PC Isolation Instrumentation). Also see the surveillance procedure (06-IC-1E31-Q-1002), P/L 2.6 and the NOTE on Attachment I, page 6 of 6.

For this same reason, all the distracters are incorrect.

**Technical References:**

06-IC-1E31-Q-1002, Functional Test Surveillance Procedure  
Tech Spec 3.3.6.1, PC Isolation Instrumentation

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

None

**Learning Objective:** GLP-OPS-E3100, objective 10.0

<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>	55.41.10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>RO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295033 EK3.02
	<b>Rating</b>	3.5

**Question 67**

The plant is operating at rated power.

The RCIC steam line has a small leak at the E51-F045 (Steam Supply Isolation Valve).

RCIC room radiation levels are above the Operating Limit and rising.

E51-F063 and F064 (Inboard and Outboard Steam Isolation Valves) will not close.

Per the EP Technical Bases, which of the following describes the reason for a manual reactor SCRAM prior to exceeding the Max Safe radiation value?

- A. Place the primary system in its lowest possible energy state.
- B. Reduce the discharge rate to prevent offsite release rates above the General Emergency level.
- C. Preclude a wide scale problem that could pose a direct and immediate threat to safe operation of the plant.
- D. Reduce the rate of energy production introduced into the secondary containment.

**Answer: D**

**Explanation:**

With a discharge from a primary system that can't be isolated a reactor scram is required to reduce the rate of energy production introduced into the secondary containment. Thus, 'D' is correct.

'A' and 'B' are incorrect because this is the reason for an emergency depressurization which is not required in this situation.

'C' is incorrect because this is the reason for reactor shutdown when 2 areas are above the max safe of the same parameter.

**Technical References:**

EP-4 Technical Bases, pages 8-10 thru 8-13

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

None

**Learning Objective:** GLP-OPS-EP4TR, objective 6

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.5 and 10 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295036 EA1.02
	<b>Rating</b>	3.5

**Question 68**

The plant is operating at rated power when the following alarms are received:

- LPCS RM SMP LVL HI-HI
- LPCS PMP RM FLOODED

A plant operator reports a leak downstream of the E21-F001, Suppression Pool Suction Valve.

Per 02-S-01-27, Operations Philosophy, which of the following describes the required actions?

- A. Immediately close the E21-F001, then inform the CRS.
- B. Wait for direction from the CRS, then close the E21-F001.
- C. Rack out the LPCS pump breaker, then close the E21-F001.
- D. Wait for direction from the CRS after he/she enters EP-4.

**Answer: A**

**Explanation:**

02-S-01-27 Operations Philosophy states: Leaks should be isolated without informing the SRO. Therefore, 'A' is correct.

'B' is incorrect because concurrence is not required to isolate a leak that poses a danger to personnel or equipment.

'C' is incorrect because you do not have to wait to rack out the breaker.

'D' is incorrect because direction is not required from CRS to isolate the leak.

**Technical References:**

02-S-01-27, Operations Philosophy, section 6.4.2

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

None

**Learning Objective:** GLP-OPS-PROC, objective 59.3

<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>	55.41.7 and 10 55.43	



Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295037 EK3.07
	<b>Rating</b>	4.2

**Question 69**

An ATWS is in progress with the following:

- MSIVs are closed
- Reactor water level is being maintained between -70” and -130”
- Reactor pressure is being maintained at 800 to 1060 psig with SRVs
- Drywell pressure is 2.3 psig
- Containment pressure is 1.1 psig
- All 8 Scram pilot valve solenoid indicating lights are ON
- ATWS/ARI has been initiated but ARI valves have failed to reposition

Per the Emergency Procedures (EPs), which of the following attachments should be used for control rod insertion?

- A. Deenergizing Scram Solenoids, Attachment 21
- B. Opening Individual Scram TEST Switches, Attachment 22
- C. Manually Venting Scram Air Header, Attachment 23
- D. Venting CRD Overpiston Volumes, Attachment 24

**Answer: A**

**Explanation:**

A failure to deenergize and a failure to vent ATWS has occurred.

‘B’, ‘C’, and ‘D’ require entry into the Containment, which is not performed with SRVs lifting.

‘A’ will deenergize the scram solenoids is therefore correct..

Basis for KA match: From memory (closed-reference), the candidate must recognize that the “reason” for not using Attachments 22, 23, or 24 (distracters B, C, D) is that Containment entry while SRVs are lifting to the Supp Pool is not permitted. Therefore, the “reason” Attachment 21 should be used is because it does not require Containment entry.

**Technical References:**

05-S-01-EP-1, EP/SAP Support Documents, Attachments 21, 22, 23, and 24  
EP-2A, ATWS RPV Control

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

None

**Learning Objective:** GLP-OPS-EP2ATR, objective 7

<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>	55.41.7 and 10 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295038 EK1.02
	<b>Rating</b>	4.2

**Question 70**

Which of the following describes actions used to protect the general public from an offsite release?

- A. Evacuation, only
- B. Evacuation and/or Sheltering
- C. Ensuring evacuation is complete prior to venting Containment
- D. Ensuring offsite release rate limits will not be exceeded prior to venting Containment.

**Answer: B**

**Explanation:**

Protecting the general public from offsite releases is done by use of PARs which is evacuating and sheltering affected areas; therefore, 'B' is correct.

'A' is incorrect because all PARs evacuate and/or shelter.

'C' is incorrect because containment venting is performed without regard to evacuation status.

'D' is incorrect because EP-3 states "OK to exceed release rate limits if containment pressure is >22.5 psig".

**Technical References:**

10-S-01-1, Activation of Emergency Plan, section 6.1.6.k  
EP-3, PC Control

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

None

**Learning Objective:** None

<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>	55.41.8, 9, and 10 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	300000 K2.01
	<b>Rating</b>	2.8

**Question 71**

The plant was operating at rated power with the following air system configuration:

Service Air A	Shutdown
Plant Air B	STANDBY
Plant Air C	Running
Unit 1 Instrument Air	STANDBY

An instrument line ruptured in the Drywell causing Drywell pressure to rise to 1.42 psig.

Service Transformer 11 has tripped.

Which of the following describes the available air compressors?

**Only...**

- A. Service Air A
- B. Plant Air B  
Plant Air C  
Unit 1 Instrument Air
- C. Plant Air B  
Plant Air C
- D. Service Air A  
Unit 1 Instrument Air

**Answer: C**

**Explanation:**

A loss of ST-11 will cause a loss of power to 12HE, 13AD, and 15AA, Service Air A is powered from 13AD. With a LOCA signal the Unit 1 Instrument Air compressor (powered from 16AB) is locked out. Plant Air B and C are powered from 14AE, which is not affected. Thus, 'C' is correct.

'A' is incorrect because Plant Air B and C did not lose power.

'B' is incorrect because Unit 1 Inst Air Comp is locked out on a LOCA from LSS.

'D' is incorrect because of both of the above.

**Technical References:**

04-1-01-P53-1, Instrument Air system ONEP, Attachment III

04-1-01-R21-1, Load Sequencing System

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

None

**Learning Objective:** GLP-OPS-P5300, objective 30.0

<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>	55.41.7 55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	400000 K4.01
	<b>Rating</b>	3.4

**Question 72**

The plant is operating at rated power.

CCW Pumps A and C are operating, with B selected for Standby.

Service Transformer 21 trips.

CCW header pressure is 105 psig and falling slowly.

Which of the following describes the response of the B CCW pump?

- A. Will auto start 10 seconds after the Diesel Generator re-energizes bus 16AB.
- B. Will auto start when header pressure reaches 100 psig.
- C. Will auto start after the Diesel Generator re-energizes bus 16AB and header pressure reaches 100 psig.
- D. Can only be manually started after the Diesel Generator re-energizes bus 16AB.

**Answer: D**

**Explanation:**

ST 21 feeds power to 16AB. Due to the loss of power to the bus the B CCW pump will lose its standby feature, requiring a manual start of the CCW pump.

‘A’ is incorrect because B CCW pump will not auto start after a loss of power.

‘B’ is incorrect because the standby feature is gone.

‘C’ is incorrect because B CCW pump will not auto start after a loss of power.

‘D’ is correct because after a loss of power the standby design feature is lost and requires a manual start of the B CCW pump after 10-sec time delay from LSS.

**Technical References:**

04-1-02-1H13-P870-8A-A1 and E1, annunciator windows

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

None

**Learning Objective:** GLP-OPS-P4200, objective 20.0

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-OPS-04773
<b>Question History:</b>	Last NRC Exam	N/A
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.4 and 7 55.43	



<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	400000 K6.01
	<b>Rating</b>	2.7

**Question 73**

A loss of Instrument Air has occurred.

Which of the following describes the effects on the Component Cooling Water system?

- A. Loss of makeup to the surge tank  
Loss of cooling for RWCU Non-Regen Heat Exchanger
- B. Loss of minimum flow protection  
Loss of cooling for the Fuel Pool Cooling System
- C. Loss of makeup to the surge tank  
Loss of cooling for the Fuel Pool Cooling System
- D. Loss of minimum flow protection  
Loss of cooling for RWCU Pump seals

**Answer: A**

**Explanation:**

A loss of Inst Air will cause the F103 (RWCU non-regen HX inlet), F500 (Surge tank makeup) and the F503 (CCW min flow) to close.

‘B’ and ‘C’ are incorrect because FPCCU uses MOVs and will not be affected.

‘D’ is incorrect because RWCU Pump seals are hard piped with no AOVs involved.

‘A’ is correct because the F500 and F103 will auto close on a loss of air.

**Technical References:**

05-1-02-V-9, Loss of Instrument Air ONEP, section 5.33

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

None

**Learning Objective:** GLP-OPS-P4200, objective 11.0

<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>	55.41.7 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	600000 AA1.05
	<b>Rating</b>	3.0

**Question 74**

The plant is operating at rated power with the following at control room panel P855:

- Red status light is illuminated for Control Room A/C Unit A fan
- Green status light is illuminated for Control Room A/C Unit B fan

Then, a fire occurs in the Control Building.

Fire detection has sensed smoke in the inlet air duct to Control Room A/C Unit A.

Which of the following identifies an expected indication at P855?

**Red status light is illuminated for...**

- A. Control Room A/C Unit A fan.
- B. Control Room A/C Unit B fan.
- C. Control Room Standby Fresh Air Unit A fan.
- D. Control Room Standby Fresh Air Unit B fan.

**Answer: B**

**Explanation:**

Per logic diagram J-0240-009, smoke detector XS-N030A stops the A/C Unit A fan (green light) and starts the A/C Unit B fan on low flow from the Unit A fan (red light).

Therefore, 'A' is incorrect and 'B' is correct.

'C' and 'D' are incorrect because both Fresh Air Units are normally in standby (green lights) and will auto-start only on a Control Room Isolation signal (high rad).

**Technical References:**

GLP-OPS-Z5100, Control Room HVAC lesson plan

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

None

**Learning Objective:** GLP-OPS-Z5100, objectives 6 and 7

<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>	55.41.7	
	55.43	

Examination Outline Cross-Reference	Level	RO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	700000 AK3.02
	<b>Rating</b>	3.6

**Question 75**

The plant is operating at rated power when an indication of grid instability occurs.

The CRS has entered the Loss of AC Power ONEP, 05-1-01-I-4, and has directed the ACRO to maintain Generator MVARs between +170 and -170 MVARs.

Which of the following describes the basis for this particular band of MVARs?

- A. Prevent Generator Stator bars from overheating.
- B. Ensure the reverse power relay operates properly.
- C. Control generator and grid voltage.
- D. Maintain generator frequency >58.5 Hz.

**Answer: A**

**Explanation:**

Maintaining Generator MVARs below +/- 170 should prevent generator stator bars from overheating; therefore, 'A' is correct.

'B' is incorrect because the maximum allowable reactive power that GGNS can deliver to the grid and not operate in a region where the reverse power relay may not recognize a reverse power conditions is 272 MVARs.

'C' is incorrect because voltage control on the grid is not the basis for this band of MVARs.

'D' is incorrect because controlling MVARs will have no effect on frequency.

**Technical References:**

05-1-01-I-4, Loss of AC Power ONEP, Section 3.4.2 Caution

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

None

**Learning Objective:** GLP-OPS-ONEP, objective 3.0

<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>	55.41.10 55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	700000 AA2.05
	<b>Rating</b>	3.8

**Question 76**

**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

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.    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.

For all of these reasons, only choice 'B' is correct.

**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 (entire)  
Tech Spec 3.8

**Learning Objective:** GLP-OPS-R2700, objective 20.1

<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>	55.41.10 55.43.2	



Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	600000 AA2.17
	<b>Rating</b>	3.6

**Question 77**

The plant is cooling down for a refueling outage.

Reactor water temperature is 220°F.

A fire starts and is confined to zone 0C215 (Div 2 Switchgear Area).

The following equipment could be potentially impacted by a fire in zone 0C215:

- B21-F051A, ADS SRV
- P41-C003C, SSW CLG TWR FAN C
- E51-F076, RCIC STM LINE WMUP ISOL
- B21-PIS-N658A, ATWS-RPT RPV PRESSURE TRANSMITTER

10-S-03-2 (Response to Fires) directs the Shift Manager to assess fire damage potential and the impact to the equipment for which operability is required.

Of the above listed equipment, the \_\_\_\_\_ should be assessed for fire damage potential.

- A. B21-F051A, ADS SRV
- B. P41-C003C, SSW CLG TWR FAN C
- C. E51-F076, RCIC STM LINE WMUP ISOL
- D. B21-PIS-N658A, ATWS-RPT RPV PRESSURE TRANSMITTER

**Answer: B**

**Explanation:**

‘A’ is incorrect because ADS SRVs are not required to be operable in Mode 3 when RPV steam dome pressure is at or below 150 psig (per Tech Spec 3.5.1). And, even though this SRV also answers to Tech Spec 3.4.4, that spec only requires a total of 13 of the 20 SRVs to be operable; therefore, this SRV is not necessarily required to be operable.

‘B’ is correct because this equipment is required to be operable in Mode 3 without exception (per Tech Spec 3.7.1).

'C' is incorrect because RCIC is not required to be operable in Mode 3 unless steam dome pressure is >150 psig (per Tech Spec 3.5.3).

'D' is incorrect because this equipment is required in MODE 1, only, per Tech Spec 3.3.4.2.

**Technical References:**

Tech Specs 3.3.4.2, 3.4.4, 3.5.1, and 3.7.1  
10-S-03-2, Response To Fires

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

None

**Learning Objective:** None

<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>	55.41.10	
	55.43.2	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295037 EA2.02
	<b>Rating</b>	4.2

**Question 78**

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

An ATWS is in progress with the following:

- Reactor power is <4%
- SLC is injecting
- Suppression Pool level is 18.0 feet
- Suppression Pool temperature is 155 °F
- Reactor water level is -210” and steady
- All available Table 4 systems are injecting

Per the Emergency Procedures (EPs) which of the following describes the NEXT required action?

- A. Lower the reactor pressure band.
- B. Exit all EPs and enter the SAPs.
- C. Enter the Emergency Depressurization leg.
- D. Inject to the RPV using RHR through the shutdown cooling line.

**Answer: C**

**Explanation:**

See EP-2A, ATWS RPV Control and EP-3, Primary Containment Control.

‘A’ is incorrect because, per the Operations Philosophy procedure (02-S-01-27), page 14, with these conditions (MSIVs closed, therefore, no feedwater) the current pressure control band is understood to be 450-600 psig. With this band, we are far away from an HCTL concern (see Figure 1) at this SP level and temperature; therefore, there is no need to lower reactor pressure. This choice is plausible if the candidate thinks we’re currently using the 800-1060 psig pressure control band.

‘B’ is incorrect because we can’t get to the SAPs in EP-2A until after we’ve Emergency Depressurized (see EP-2A, step L-6).

'D' is incorrect because the reason it is not currently an "available" Table 4 system is because we must first Emergency Depressurize before we can use the low-pressure shutdown cooling line.

'C' is correct per EP-2A, step L-6.

**Technical References:**

EP-2A, EP-3, and EP Figure 1  
02-S-01-27, Operations Philosophy

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

EP flowcharts and Figures

**Learning Objective:** GLP-OPS-EP2ATR, objective 8

<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>	55.41.10 55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295036 2.4.6
	<b>Rating</b>	4.7

**Question 79**

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

The plant is operating at rated power when the following occurs:

- Annunciator RHR RM C SMP LVL HI-HI is received
- Operators determine that an un-isolable Suppression Pool leak has occurred at E12-F004C, RHR Pump Suction From Supp Pool
- Suppression Pool level is 18.6 feet and is slowly lowering
- Annunciator RHR RM C FLOODED begins to alarm intermittently

Which of the following actions should be performed NEXT?

- A. Enter EP-2, RPV Control.
- B. Commence a normal plant shutdown per IOI 03-1-01-2.
- C. Manually initiate Suppression Pool Makeup (SPMU).
- D. Operate sump pumps to restore RHR C room water level to below the Operating Limit.

**Answer: D**

**Explanation:**

Candidates are expected to recognize that the RHR RM C SMP LVL HI-HI annunciator (P680-8A1-C2) is the EP-4 (Aux Bldg Control) entry condition for water level in excess of the Operating Limit (see EP-4, Table 10). Similarly, they are expected to recognize that the RHR RM C FLOODED annunciator (P870-10A-G2) means that room level has reached the Max Safe level of Table 10.

‘A’ is incorrect. This choice suggests the action of EP-4, step 9. We get to this only by invoking the override step 6. However, because the SP leak is not an un-isolable primary system discharge outside CTMT, we don’t invoke this override.

Given the stem conditions, we proceed to EP-4, step 7; i.e., to operate sump pumps in an effort to restore RHR C room level below the Operating Limit. Thus, ‘D’ is correct.

'B' is incorrect. This suggests the IF-THEN action of EP-4, step 7. However, we do this only if water level is >Max Safe in two or more areas; it is not.

'C' is incorrect. Initiating SPMU would only be done as directed from EP-3 (PC Control), step SPL-6. However, with SP level only down to 18.6 feet (stem condition), we've not yet entered EP-3 (18.34 feet entry condition). Before EP-3 entry, the only approved method for restoring SP level is to re-fill using the P11 system (CRWST) SOI, as directed by the SUPP POOL LVL HI/LO annunciator (P870-4A-C3).

**Technical References:**

EP-3, PC Control  
EP-4, Aux Bldg Control and Bases  
P680-8A1-C2 annunciator window  
P870-10A-G2 annunciator window  
P870-4A-C3 annunciator window

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

EP flowcharts

**Learning Objective:** GLP-OPS-EP4TR, objective 8

<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>	55.41.10 55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295032 2.2.22
	<b>Rating</b>	4.7

**Question 80**

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

The plant is operating at rated power with the following:

- RCIC quarterly pump test is in progress
- RHR 'A' is operating in Suppression Pool Cooling

Day 1 at 0000 hours – RHR 'A' room cooler fan trips and cannot be restarted.

Day 1 at 0100 hours – RHR 'A' room temperature rises above 150 °F and continues to rise.

Day 1 at 0130 hours – RCIC automatically isolates due to a steam leak near the E51-F068, RCIC Turbine Exhaust Valve; RCIC is declared inoperable and HPCS is verified operable.

Day 1 at 0145 hours – RHR 'A' room temperature peaks at 160 °F.

What is the **EARLIEST** Completion Time for a Tech Spec/TRM Action?

- A. Day 15 at 0130 hours
- B. Day 8 at 0000 hours
- C. Day 4 at 0000 hours
- D. Day 1 at 0900 hours

**Answer: D**

**Explanation:**

The 'A' choice represents the 14-day LCO Completion Time that began when RCIC was declared inop on Day 1 at 0130 hours (see LCO 3.5.3.A.2).

The 'B' choice represents a 7-day LCO Completion Time that began when the trip of the RHR 'A' room cooler fan required declaring RHR 'A' subsystem inop (per LCO

3.5.1.A.1); see RHR E12-1 SOI, step 3.2.9.

The 'C' choice represents the 72-hour LCO Completion Time (to restore RHR 'A' room cooler to operable) that would have begun on Day 1 at 0000 hours if the Candidate thinks this room cooler is addressed by TRM 6.7.1.A.1; it is not. Therefore, 'C' is incorrect.

The 'D' choice represents 8-hour Completion Time that began when RHR room temperature went above 150 °F on Day 1 at 0100 hours (see TRM 6.7.3.A.1). Since this Completion Time is the shortest among choices 'A', 'B', and 'D', choice 'D' is correct.

**Technical References:**

Tech Specs/TRM 3.5.1, 3.5.3, 6.7.1, and 6.7.3  
04-1-01-E12-1, RHR SOI

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

Tech Spec/TRM Sections 3.5 and 6.7

**Learning Objective:** GLP-OPS-TS001, objective 34

<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	
	55.43.2	



Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295030 2.1.7
	<b>Rating</b>	4.7

**Question 81**

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

An ATWS and an unisolable RHR suction line leak are in progress with the following:

- MSIVs are closed
- Reactor power is 12%
- SLC is injecting
- Reactor water level is -50"
- Reactor pressure is being maintained 450 to 600 psig
- Suppression Pool temperature is 160 °F and rising
- Suppression Pool level is 17.0 feet and lowering
- Containment pressure is 3.0 psig and rising

Per the Emergency Procedures (EPs), which of the following actions has the highest priority?

- A. Establish a reactor water level band of -70" to -130".
- B. Establish a reactor water level band of -70" to -191".
- C. Lower the reactor pressure band.
- D. Initiate Containment sprays.

**Answer: C**

**Explanation:**

'A' and 'B' are incorrect because these bands result only from the bottom row of override Step L-5 of EP-2A (ATWS RPV Control). However, the stem conditions indicate that the top row of L-5 applies here.

'D' is incorrect because the combination of a 3.0 psig containment pressure and a 17.0' SP level is still well below the "unsafe" zone of PSP (see Figure 4, PSP); therefore, Steps PCP-2 and PCP-5 (of EP-3, Containment Control) are not the "highest" priority for the crew.

‘C’ is correct because the stem conditions clearly show that SP level has just dropped below the 16.5’ curve of Figure 1 (HCTL). Per the Operations Philosophy procedure, no interpolation is allowed; rather, the next lowest SP level curve (i.e., 14.5’) applies. In this case, the crew suddenly finds itself in the “unsafe” zone of Figure 1 (HCTL). Per EP-2A, override Step P-1 (3<sup>rd</sup> row), the crew is to reduce the pressure band as necessary to maintain in the “Safe” zone of HCTL. This is the highest priority at this time.

**Technical References:**

EP-1, Figures 1 and 4  
 EP-2A, ATWS RPV Control  
 EP-3, Containment Control  
 02-S-01-27, Operations Philosophy

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

EP flowcharts and Figures

**Learning Objective:** GLP-OPS-EP3TR, objective 8

<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>	55.41.10	
	55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295023 AA2.05
	<b>Rating</b>	4.6

**Question 82**

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

The plant is in Mode 5 with refueling activities in progress.

Highest peak reading of Area Radiation Monitors (ARMs) over the past 24 hours:

- CTMT Fuel Handling Area (D21-K626 thru K629) 4.5 mr/hr
- CTMT 209 Airlock (D21-K630) 1.5 mr/hr

Which of the following situations, alone, would require entry into the Emergency Plan?

- A. CTMT 209 Airlock alarm (P844-1A-A1) with ARM D21-K630 reading below the annunciator alarm setpoint.
- B. An unplanned rise of the reading on ARM D21-K626 to a level of 900 mr/hr; the reading has been validated.
- C. Polar crane drops a piece of equipment on a spent fuel bundle in the transfer canal; a valid CTMT Fuel Handling Area alarm is received.
- D. An Operation with Potential to Drain the Reactor Vessel results in an uncontrolled lowering of Upper CTMT Pool levels; the level drop is halted before fuel is uncovered.

**Answer: C**

**Explanation:**

'A' is incorrect because the alarm is not a VALID one, as defined by 10-S-01-1, section 5.59. EAL AA2 requires the alarm to be VALID.

'B' is incorrect because 900 mr/hr is both less than full-scale for the ARM (full-scale = 1000 mr/hr) and less than 1000 times the highest peak reading over the past 24 hours (stem shows this to be 4.5 mr/hr, where 1000 times would = 4500 mr/hr).

'D' is incorrect because EAL AU2 doesn't apply unless the level drop is accompanied by a valid rise in an ARM reading.

'C' is correct because it satisfies the threshold for declaring an ALERT per EAL AA2.

**Technical References:**

EALs AU2 and AA2  
10-S-01-1, Activation of the Emergency Plan

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

EAL flowcharts

**Learning Objective:** None

<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/Fundamentals Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295019 2.1.19
	<b>Rating</b>	3.8

**Question 83**

The plant is operating at rated power when the Unit 1 Instrument Air Compressor is removed from service for emergent repairs.

The EOOS computer calculates the risk safety index value to be “10.0”.

What risk color is this?

- A. Green – Non-risk significant; no action necessary.
- B. Yellow – Acceptable risk increase; increased awareness of maintenance advised.
- C. Orange – Potentially risk significant; contingency plans needed.
- D. Red – Risk significant; do not enter voluntarily.

**Answer:** A

**Explanation:**

Per 01-S-18-6, Attachment II, page 1 of 1. Therefore, only ‘A’ is correct.

**Technical References:**

01-S-18-6, Risk Assessment of Maintenance Activities  
EOOS Computer

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

None

**Learning Objective:** GLP-OPS-PROC, objective 84.2

**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>	55.41.10 55.43	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
	<b>Tier #</b>	1
	<b>Group #</b>	2
	<b>K/A #</b>	295017 AA2.03
	<b>Rating</b>	3.9

**Question 84**

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

A General Emergency has been declared.

Radioactive release from the Containment Vent System has begun and is expected to be in progress for 90 minutes.

Weather conditions are partly cloudy with no rain expected in the forecast.

Offsite and Onsite Monitoring Team data has been obtained.

Dose commitments at the Site Boundary are: 2000 mrem TEDE and 4000 mrem Thyroid CEDE.

Dose commitments at 5 miles are: 800 mrem TEDE and 2000 mrem Thyroid CEDE.

Which of the following would be the Protective Action Recommendations for these conditions?

- A. Shelter 5 mile EPZ
- B. Shelter 10 mile EPZ
- C. Evacuate 2 miles all sectors  
Evacuate 5 miles downwind sectors  
Shelter remainder of 10 mile EPZ
- D. Evacuate 2 miles all sectors  
Evacuate 10 miles downwind sectors  
Shelter remainder of 10 mile EPZ

**Answer: C**

**Explanation:**

Conditions for the duration of the release do not allow the Sheltering PAR.

Also, dose projections for the site boundary prohibit use of the Sheltering PAR.

Dose projections at 5 miles are below the level for an Extended PAR. This means that the Standard PAR is appropriate. Therefore, only 'C' is correct.

See 10-S-01-12, sections 6.1.7e and 6.2.1.

**Technical References:**

10-S-01-12, Radiological Assessment and PARs

References to be provided to applicants during exam:

10-S-01-12 (entire)

**Learning Objective:** GLP-EP-EPTS6, objective 2

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-LORQT-06071
<b>Question History:</b>	Last NRC Exam	No
<b>Question Cognitive Level:</b>	Memory/Fundamental Comprehensive/Analysis	X
<b>10CFR Part 55 Content:</b>	55.41.10 55.43.4	



Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	295001 2.4.41
	<b>Rating</b>	4.6

**Question 85**

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

The plant is in MODE 4 preparing for a refueling outage with the following:

- RHR A is operating in Shutdown Cooling when RHR A Pump trips on motor overload
- RHR B is inoperable and unavailable
- RWCU Pump B is operating in Pre-Pump mode
- RWCU Pump A is inoperable and unavailable
- Recirc Pump B is running

Then, the following occurs:

- ST-11 experiences a sudden pressure lockout
- Consequently, reactor water temperature rises to 201 °F

Which of the following describes a required action?

- A. Place RWCU in Alternate Shutdown Cooling.
- B. Notify the NRC Operations Center.
- C. Place ADHRS in service.
- D. Activate the TSC.

**Answer: B**

**Explanation:**

‘A’ is incorrect because Alternate Shutdown Cooling is an RWCU lineup and the loss of ST-11 takes power away from RWCU Pump B. With the pre-existing unavailability of RWCU Pump A, no RWCU is available for service.

‘C’ is incorrect because ADHRS is available only in Mode 4 and 5. Stem indicates that RCS temp has reached 200 °F (i.e., Mode 3).

'D' is incorrect because the requirement for activating the TSC doesn't occur until an ALERT is declared.

'B' is correct because the unplanned Mode change (to Mode 3 as temperature reaches 200 °F) is an Unusual Event declaration per classification CU3. Per the Emergency Plan procedure 10-S-01-6, section 6.1, the NRC Operations Center is to be notified as one of the Offsite agencies.

**Technical References:**

10-S-01-1, EPP 01-02 (EAL Flowchart)  
10-S-01-6, Notifications  
ONEP 05-1-02-III-1, Inadequate Decay Heat Removal  
04-1-01-E12-2, SDC and ADHRS SOI

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

EAL flowcharts  
ONEP 05-1-02-III-1 (entire)

**Learning Objective:** GLP-OPS-ONEP, objective 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>	55.41.10 55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	268000 2.2.40
	<b>Rating</b>	4.7

**Question 86**

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

A combination of personnel errors has resulted in the following:

- Liquid effluent has been released to the river
- The effluent is untreated
- The release duration totaled 18 minutes
- The concentration (microcuries/ml) is 5 times the limits of 10 CFR 20, Appendix B
- Projected dose from the effluent in the river is 0.1 mrem total body in a 31-day period

Which of the following describes a required action?

- A. Immediately initiate action to prepare and submit a Special Report to the NRC.
- B. Declare an ALERT.
- C. Immediately declare the liquid effluent waste treatment system inoperable.
- D. Declare an UNUSUAL EVENT.

**Answer: A**

**Explanation:**

Per ODCM Section 6.11.3, since this release is untreated and exceeds 0.06 mrem total body in the UNRESTRICTED AREA (see Definitions), Action A.1 applies. Therefore, 'A' is correct.

'B' is incorrect because only EAL AA1 could apply after only an 18-minute release duration; however, this release is no where near the "200 times ODCM limits" requirement of the EAL.

'C' is incorrect; see ODCM Section 6.11.1. Stem indicates that the concentration is only 5 times the 10 CFR 20 limits. This section applies only if the concentration is >10 times the limit.

'D' is incorrect because only EAL AU1 might apply; however, this EAL is only concerned with releases lasting >60 minutes.

**Technical References:**

EAL flowcharts  
ODCM Sections 6.11.1 and 6.11.3

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

ODCM, section 6.11 and surrounding portions  
EAL flowcharts

**Learning Objective:** GLP-OPS-TS001, objective 34

<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>	55.41.10 55.43.2	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	264000 2.2.36
	<b>Rating</b>	4.2

**Question 87**

The plant is operating at rated power.

HPCS is inoperable.

Div 1 Diesel Generator Aux Lube Oil Pump has been tagged out for breaker maintenance; only the pump breaker and handswitch are affected by the tagout.

Then, a fire destroys the breaker for the Div 3 Diesel Generator Room Outside Air Fan (no other equipment is affected); fire is immediately extinguished.

How many of the Tech Spec “required OPERABLE diesel generators” are currently OPERABLE?

- A. 0
- B. 1
- C. 2
- D. 3

**Answer: C**

**Explanation:**

Per Tech Spec 3.8.1 “Applicability” statement, Div 3 DG is not a “required OPERABLE diesel generator when HPCS is inoperable. Therefore, only Div 1 and Div 2 diesel generators are “required OPERABLE” at this time.

04-1-01-P75-1, P/L 3.36 states that the absence of an Aux Lube Oil Pump does not render a DG inoperable because the DG is designed to operate using only the engine driven lube oil pump....”is not required to be operational for DG to be considered operable.” Therefore, Div 1 DG is currently OPERABLE.

Stem conditions make no mention of Div 2 DG; therefore, the Candidate should consider it OPERABLE at this time.

Therefore, Div 1 and Div 2 DGs are both OPERABLE, making choice ‘C’ the only correct answer.

‘A’ is plausible to the Candidate who believes that only Div 1 and Div 3 DGs are ‘required OPERABLE’ and believes that both are currently inoperable.

‘D’ is plausible to the Candidate who recalls that Div 1 DG is still OPERABLE (even without its Aux oil pump), but who mistakenly believes that Div 3 DG operability is not dependent upon its DG room cooler fan.

**Technical References:**

04-1-01-P75-1, Div 1 and Div 2 DG SOI  
Tech Spec 3.8.1

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

None

**Learning Objective:** GLP-OPS-TS001, objective 34

<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>	55.41.10	
	55.43.2	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	262001 2.4.41
	<b>Rating</b>	4.6

**Question 88**

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

The plant is operating at rated power when the following sequence of events occurs:

- EVENT #1 ESF 21 sudden pressure lockout
- EVENT #2 ESF 11 de-energizes (feeder breaker from ST-11 trips on an internal fault)
- EVENT #3 DG 11 trips (engine problem); operators power 15AA from ESF 12
- EVENT #4 DG 12 trips (engine problem); 16AB remains de-energized
- EVENT #5 ESF 12 sudden pressure lockout

Consider only the LOSS OF AC POWER category of the EALs.

Assume all EAL threshold time requirements (>15 minutes) are satisfied for each EVENT.

The first required EAL classification results from EVENT \_\_\_\_.

\_\_\_\_\_ is the highest EAL level that results from this sequence of events.

- A. #3  
ALERT
- B. #4  
ALERT
- C. #3  
SITE AREA EMERGENCY
- D. #4  
SITE AREA EMERGENCY

**Answer: B**

**Explanation:**

EVENT #4 is the earliest that an EAL classification is required. This event results in a

Div 2 bus (16AB) that remains de-energized, with ESF 12 powering the Div 1 bus (15AA). EAL SA1 applies.

These events never escalate any higher than the SA1 Alert. This is because the Div 3 DG is still powering the Div 3 bus (17AC).

Therefore, 'B' is correct, and the distracters are all incorrect.

**Technical References:**

EAL flowcharts

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

EAL flowcharts

**Learning Objective:** None

<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>	55.41.10	
	55.43	



Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	261000 2.4.41
	<b>Rating</b>	4.6

**Question 89**

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

The plant is operating at rated power when the following occurs:

- Standby Gas Treatment (SGTS) automatically starts on a valid condition
- Decision is made to evacuate the control room because of fire
- Manual scram (and ARI initiation) before evacuating the control room results in 6 control rods stuck at position 12
- Operators evacuate the control room with reactor power on the IRMs
- Chemistry informs Shift Manager that 40 Ci/sec is being released from the SGTS stack and 0.3 Ci/sec is being released from the Turbine Bldg vent stack

Shift Manager activates the Emergency Plan 15 minutes later.

Which of the following EAL declarations should be made?

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

**Answer: C**

**Explanation:**

Control room evacuation is an ALERT, per EAL HA3.

ATWS with power <4% is an ALERT, per EAL SA3.

Turbine Bldg vent release of 0.3 Ci/sec is not yet an EAL (see EAL AU1 and Table R1.

SGTS release of 40 Ci/sec exceeds the 33.7 Ci/sec threshold of Table R1, for EAL AS1, Site Area Emergency. Therefore, only choice 'C' is correct.

**Technical References:**

EAL flowcharts

References to be provided to applicants during exam:

EAL flowcharts

**Learning Objective:** GLP-OPS-EP-EPTS6, objective 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>	55.41.10	
	55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	2
	<b>K/A #</b>	241000 2.1.20
	<b>Rating</b>	4.6

**Question 90**

The plant is operating at rated power with the following:

- One of the Turbine Bypass Stop Valves fails during performance of the ATT Turbine Bypass Stop and Control Valve Test (04-1-03-N32-2)
- The plant remains operating at steady-state conditions

A CR is written to address the failure of the Bypass Pressure Control System.

Per EN-OP-104, Operability Determinations, what should be the outcome of the initial Operability screening for this CR?

**The initial screening will...**

- conclude that the Bypass Pressure Control System is OPERABLE or NOT OPERABLE.
- conclude that the Bypass Pressure Control System is FUNCTIONAL or NOT FUNCTIONAL.
- conclude that the failed Turbine Bypass Stop Valve constitutes a “Nonconforming Condition”.
- conclude that the failed Turbine Bypass Stop Valve constitutes an “Administrative Violation”.

**Answer: B**

**Explanation:**

Per EN-OP-104, sections 3.0[7] and 3.0[11], ‘B’ is correct.

‘A’ is incorrect because this is not a Tech Spec or Tech Spec support system; see section 3.0[10].

‘C’ is incorrect because the failure is not a nonconforming condition as defined by section 3.0[8].

'D' is incorrect because this is an equipment failure; see section 3.0[11], 1<sup>st</sup> bullet.

**Technical References:**

EN-OP-104, Operability Determinations

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

None

**Learning Objective:** GLP-OPS-OP104, objective 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>	55.41.10	
	55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	1
	<b>Group #</b>	1
	<b>K/A #</b>	223001 A2.04
	<b>Rating</b>	3.8

**Question 91**

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

A LOCA is in progress with the following:

- SAPs have been entered
- All hydrogen igniters are energized
- DW hydrogen analyzer is reading 6.5%
- CTMT hydrogen analyzer is reading 6.5%
- CTMT pressure is 15 psig
- RPV water level is -230 inches and lowering with all available systems injecting
- Radioactive release rate is projected to be above the ODCM 6.11.4 limit

Which of the following describes the NEXT required action?

- A. Start the hydrogen recombiners.
- B. Start the DW purge compressors.
- C. Vent and purge the CTMT to remove hydrogen.
- D. Vent and purge the CTMT to control CTMT pressure.

**Answer: B**

**Explanation:**

Both SAPs (SAP-1 and 2) have been entered from step H-1 of EP-3 and/or from step L-14 of EP-2.

In SAP-1, we drive down column #3 (only). Choice ‘D’ suggests that we would vent CTMT to control pressure. Because CTMT pressure is only 15 psig (well below the point of deciding that CTMT pressure “cannot be maintained below 22.4 psig”), this choice (‘D’) is incorrect; it is not the NEXT required action.

In SAP-2, we drive down the Hydrogen leg. With the hydrogen concentrations indicated in the stem conditions, we drive right through the WHENs of steps H-6 and H-7. On the H-6 side, we determine (in step H-8) that we’re in the Safe Zone of HDOL (Figure 5).

As such, we proceed to step H-9, which directs us to operate DW purge compressors. For this reason, 'B' is correct.

On the H-7 side, stem conditions have us answer step H-13 "No". As such, we don't start the recombiners as would be directed by step H-15. Thus, 'A' is incorrect.

In the center, at step H-10, stem conditions have us answer this step "No". As such, we don't vent the CTMT for hydrogen removal as would be directed by step H-12. Thus, choice 'C' is incorrect.

NOTE, concerning KA match: As permitted by NUREG-1021, Rev.9, Supp 1, ES-401, section D.2.a (page 6 of 33), this question tests only the (b) portion of the selected A.2 category KA. The question tests an important concept, including an exercise of the SAPs (not being touched upon anywhere else in this 100-question exam), but does not lend itself well to testing the (a) "predict" portion of this A2 category. This approach is justified not only because of our desire to test the SAPs, but also because there are many other opportunities among the 100 questions where the whole A2 category KA (both portions) is being exercised.

**Technical References:**

- EP-2, RPV Control
- EP-3, Primary Containment Control
- SAP-1, Primary Containment Flooding
- SAP-2, RPV, Containment, and Radioactive Release Control

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

- EP flowcharts
- SAP flowcharts

**Learning Objective:** GLP-OPS-EP2TR, objective 7

<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>	55.41.10	
	55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	215004 2.2.25
	<b>Rating</b>	4.2

**Question 92**

For each SRM required to be OPERABLE during Core Alterations, Tech Spec surveillance SR 3.3.1.2.4 requires us to verify that a minimum SRM count rate exists.

The NOTE belonging to this SR states that the surveillance applies only if there are at least 5 fuel assemblies installed adjacent to the SRM.

Per Tech Specs, which of the following describes the basis for this NOTE, and identifies the required minimum count rate for the SRM?

- A. Ensures enough source material is present to establish the minimum count rate.  
3 counts per second
- B. Ensures enough source material is present to establish the minimum count rate.  
100 counts per second
- C. Ensures neutrons can be seen around the entire circumference of the detector.  
3 counts per second
- D. Ensures neutrons can be seen around the entire circumference of the detector.  
100 counts per second

**Answer:** A

**Explanation:**

Per Tech Spec SR 3.3.1.2.4 Basis, the minimum number of fuel assemblies ensures enough neutron source material is present to establish the minimum count rate.

Therefore, only 'B' is correct and all distracters are incorrect.

**Technical References:**

Tech Spec SR 3.3.1.2.4 and its Bases

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

None

**Learning Objective:** GLP-OPS-C5100, objective 14

<b>Question Source:</b>	Bank #	
(note changes; attach parent)	Modified Bank #	
	New	X

<b>Question History:</b>	Last NRC Exam	No
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<b>Question Cognitive Level:</b>	Memory/Fundamental	X
	Comprehensive/Analysis	

<b>10CFR Part 55 Content:</b>	55.41
	55.43.2



Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.1.35
	<b>Rating</b>	3.9

**Question 93**

Per 01-S-06-50, Control of Refueling Operations, which of the following activities requires that the Refueling Supervisor In Charge (RSIC) first obtain Refuel SRO authorization?

- A. An LPRM is to be removed from the core.
- B. A spent control rod is to be lowered into the Spent Fuel Pool.
- C. A new (non-irradiated) fuel assembly is to be lowered into the core.
- D. A control rod is to be lowered into a core cell where there no fuel assemblies.

**Answer: C**

**Explanation:**

Per 01-S-06-50. Section 5.1 defines CORE ALTERATIONS. Attachment III shows the activities for which the RSIC must obtain Refuel SRO authorization. These are CORE ALTERATIONS, only.

‘A’, ‘B’, and ‘D’ are all incorrect because these are not Core Alterations.

‘C’ is correct because it is a Core Alteration.

**Technical References:**

01-S-06-50, section 5.1 and Attachment III

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

None

**Learning Objective:** GLP-OPS-PROC, objective 8.2

<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	
	55.43.6	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.2.11
	<b>Rating</b>	3.3

**Question 94**

Which of the following is considered a temporary modification needing to be controlled by EN-DC-136, Temporary Modifications?

- A. Following an engineering evaluation, a seismic class I support is temporarily removed to accommodate a maintenance activity.
- B. Due to outage activities, a temporary feed is connected to MCC 11B12 to supply its loads.
- C. Temporary scaffolding is installed over a reactor feedwater pump.
- D. A circuit board is temporarily removed to support an electrical test.

**Answer: B**

**Explanation:**

See EN-DC-136, Attachment 9.2, Part II, Exclusions.

‘A’ is incorrect because it applies Exclusion #9.

‘C’ is incorrect because it applies Exclusion #8.

‘D’ is incorrect because it applies Exclusion #11.

‘B’ is correct because it is not excluded.

**Technical References:**

EN-DC-136, Temporary Modifications

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

None

**Learning Objective:** GLP-OPS-PROC, objective 9

<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 55.43.3	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.2.22
	<b>Rating</b>	4.7

**Question 95**

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

The plant is operating at rated power.

DG 11 is tagged out for maintenance.

Two hours after DG 11 is tagged out, the NOB reports that SSW cooling tower fans C and D have no oil in their sight glasses and there is oil on the floor.

A current Engineering Evaluation documents that the fans cannot perform their safety function without oil in the sight glasses.

Which of the following describes the Tech Spec required action?

- A. Enter LCO 3.0.3 immediately.
- B. Enter LCO 3.0.3 within 4 hours.
- C. Be in MODE 3 within 12 hours and in MODE 4 within 36 hours.
- D. Restore one required DG to OPERABLE within 2 hours.

**Answer: D**

**Explanation:**

SSW cooling tower fans C and D supply SSW B basin.

With both inoperable, TS LCO 3.7.1 Condition B directs us to declare SSW B subsystem inoperable.

Tech Spec 3.7.1 Condition D says that when one SSW subsystem is inoperable, enter LCO 3.8.1 and restore SSW subsystem to operable within 72 hours.

LCO 3.8.1 Condition B.2 allows up to 4 hours to declare Div 1 supported systems inoperable; the Completion Time starts when redundant inoperable equipment is discovered (SSW B inoperable).

LCO 3.8.1 Condition E states that when two DGs are inoperable, restore one to operable within 2 hours. Therefore, 'D' is correct.

'A' is incorrect because it assumes all supported systems are declared inoperable immediately and then applies LCO 3.5.1 Condition H.

'B' is incorrect because it is not the limiting LCO in this scenario.

'C' is incorrect because it fails to account for the 2 hours allowed to restore one DG operable before the 12 hour and 36 hours clocks start.

**Technical References:**

Tech Specs 3.7.1 and 3.8.1

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

Tech Spec sections 3.5, 3.7, and 3.8

**Learning Objective:** GLP-OPS-P7500, objective 23

<b>Question Source:</b> (note changes; attach parent)	Bank # Modified Bank # New	GGNS-LORQT-06096
<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 55.43.2	

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.3.11
	<b>Rating</b>	4.3

**Question 96**

Which of the following processes is controlled per 01-S-08-11, Radioactive Discharge Controls?

- A. Discharge of solid radioactive waste
- B. Continuous release of liquid radioactive waste
- C. Batch release of liquid effluents during normal plant operations
- D. Continuous discharge of gaseous effluents during normal plant operations

**Answer: C**

**Explanation:**

‘A’ is incorrect because of 01-S-08-11, section 6.2.

‘B’ is incorrect because of 01-S-08-11, section 6.3.1.

‘C’ is correct per section 6.4.2.

‘D’ is incorrect because of 01-S-08-11, section 6.3.1.

**Technical References:**

01-S-08-11, Radioactive Discharge Controls

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

None

**Learning Objective:** GLP-OPS-PROC, objective 36

**Question Source:** Bank #  
 (note changes; attach parent) 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>	55.41.13 55.43	



Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.3.14
	<b>Rating</b>	3.8

**Question 97**

The Emergency Plan has been entered.

A gaseous radioactive release is in progress.

PDS Data Point D173000 (“Release Rate > Tech Spec Limits”) is in alarm.

What does this PDS data point indicate with respect to the release?

**The release exceeds the LCO limit for...**

- A. dose rate due to noble gases.
- B. gross gamma activity rate of noble gases in the Offgas effluent.
- C. total air dose due to beta radiation.
- D. dose due to iodines and particulates in any calendar quarter.

**Answer: A**

**Explanation:**

Per Tech Spec (ODCM) LCO 6.11.4.a, ‘A’ is correct.

‘B’ is incorrect. This is taken from LCO 3.7.5 (Main Condenser Offgas), is a calculated (not monitored) parameter, and has no association with this computer point.

‘C’ is incorrect. This is taken from LCO 6.11.5, is a calculated (not monitored) parameter, and has no association with this computer point.

‘D’ is incorrect. This is taken from LCO 6.11.6, is a calculated (not monitored) parameter, and has no association with this computer point.

**Technical References:**

10-S-01-12, Radiological Assessment and PARs

Tech Specs 3.7.5, 6.11.4, 6.11.5, and 6.11.6

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

None

**Learning Objective:** None

<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	X
	Comprehensive/Analysis	
<b>10CFR Part 55 Content:</b>	55.41.10	
	55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.4.30
	<b>Rating</b>	4.1

**Question 98**

Per 01-S-06-5, Reportable Events or Conditions, which of the following is an NRC 4-Hour Notification requirement?

- A. Safety Limit Violation
- B. Actual ECCS injection due to a valid signal
- C. Tech Spec deviation authorized per 10CFR50.54X
- D. Contraband material found inside the Protected Area

**Answer: B**

**Explanation:**

See 01-S-06-5, Attachment III.

‘A’, ‘C’, and ‘D’ are all incorrect because these are 1-hour report requirements.

‘B’ is correct; this is a 4-hour report per II.2 on page 2 of 13 of Attachment III.

**Technical References:**

01-S-06-5, Reportable Events or Conditions

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

None

**Learning Objective:** GLP-OPS-PROC, objectives 11.8 and 11.9

**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  
55.43.2

<b>Examination Outline Cross-Reference</b>	<b>Level</b>	<b>SRO</b>
	<b>Tier #</b>	3
	<b>Group #</b>	
	<b>K/A #</b>	2.4.38
	<b>Rating</b>	4.4

**Question 99**

The plant is operating at rated power under normal (non-emergency) conditions when the following occurs:

- An off-normal plant event occurs
- The event exceeds the threshold for the declaration of an UNUSUAL EVENT
- By the time the operating crew discovers that the event occurred, the basis for an EAL declaration no longer exists (i.e, a “rapidly concluded event”)
- No other off-normal event is in progress that requires an EAL declaration

Per 10-S-01-1, Activation of the Emergency Plan, which of the following is a requirement for this situation?

- A. Declare the UNUSUAL EVENT in the same manner as if the event were still in progress.
- B. Declare the UNUSUAL EVENT then immediately terminate the event classification.
- C. Report this to the NRC as a Reportable Event within 1 hour.
- D. Initiate action to prepare and submit a 30-day Special Report to the NRC.

**Answer: C**

**Explanation:**

Per 10-S-01-1, section 6.1.5. Therefore, only ‘C’ is correct.

**Technical References:**

10-S-01-1, Activation of Emergency Plan

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

None

**Learning Objective:** GLP-OPS-EPTS6, objective 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>	55.41.10 55.43	

Examination Outline Cross-Reference	Level	SRO
	<b>Tier #</b>	2
	<b>Group #</b>	1
	<b>K/A #</b>	212000 A2.21
	<b>Rating</b>	3.9

**Question 100**

The plant is operating at rated power when the following occurs:

- An actual under-voltage condition occurs on the output of RPS B MG Set
- Both of the under-voltage relays that should have sensed the condition failed to do so
- As a result, RPS B MG Set is still powering RPS B Bus
- All loads normally energized from RPS B Bus are still energized

Which of the following describes the potential impact of sustained operation with this under-voltage condition (per the Tech Spec Bases), and describes the Tech Spec required action for the failure of the under-voltage relays?

- Loss of scram pilot valve function due to solenoid chatter.  
Remove RPS B MG Set from service within 1 hour.
- Premature dropout of scram pilot valve solenoids.  
Remove RPS B MG Set from service within 1 hour.
- Loss of scram pilot valve function due to solenoid chatter.  
Remove RPS B MG Set from service within 72 hours.
- Premature dropout of scram pilot valve solenoids.  
Remove RPS B MG Set from service within 72 hours.

**Answer: A**

**Explanation:**

See Tech Spec 3.3.8.2 and the “Background” portion of its Bases.

Candidate is expected to know that the stem condition (2<sup>nd</sup> bullet) statement “Both of the...” means that both of the EPAs for the RPS B MG Set (i.e., the in-service RPS power supply) have malfunctioned, making both EPAs inoperable.

Per Tech Spec 3.3.8.2, Action B.1, the MG Set must be removed from service within 1 hour.

See the Bases “Background” discussion (4<sup>th</sup> paragraph from the top) for the consequence of operating for an extended period with this low voltage condition.

For these reasons, ‘A’ is correct.

‘B’ is incorrect because the Background discussion does not imply anything about excessive current beyond the solenoid design current.

‘C’ and ‘D’ are incorrect because they imply that Tech Spec 3.3.8.2, Action A.1 is applicable. It would apply if only one of the EPAs for the MG Set were inoperable.

**Technical References:**

Tech Spec 3.3.8.2 and Bases

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

None

**Learning Objective:** GLP-OPS-C7100, objective 17

<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 55.43.2	