Question # SRO 1

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295003 AK1.06
	Importance Rating	4.0
Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF A.C. POWER: Station Blackout. ***PRA: Respond to loss of offsite and onsite power.***		

Proposed Question:

The plant is operating at 100% power when the following occur:

- Both 115 KV lines are lost
- EDG 102 and EDG 103 will NOT start
- PB 11 and PB 12 are lost

Per the Special Operating Procedures, which one of the following describes the use of the Emergency Condenser (EC) 11 and 12 once reactor pressure is less than 1000 psig?

a. Using both EC 11 and EC 12, maintain reactor pressure between 800 and 1000 psig.

b. Using only EC 11 or EC 12, lower reactor pressure at a cooldown rate up to the TS limit of ≤100°F/hr.

c. Using both EC 11 and EC 12, reduce reactor pressure but the cooldown rate must be maintained ≤75°F/hr.

d. Using only EC 11 or EC 12, lower reactor pressure at the maximum capability of the EC until RPV water level is between +5 and +53 inches.

Proposed Answer: b.

Explanation (Justification of Distractors):

a. During a SBO, the reactor must be depressurized within the TS cooldown limit. Maintaining the reactor at pressure is not appropriate.

c. Both the SOP and the OP require that one EC be removed from service and the cooldown performed using only one EC. The cooldown rate is not limited to 75°F per the SOP; this is a limitation in the OP which can be overridden by the SSS. Also, the limitation of the SOP is the TS rate of 100°F/hr.

d. Lowering reactor pressure at the maximum capability of one EC will exceed the TS cooldown limit. Although +5" (Lo-Lo RPV level) is the level at which RWCU is verified closed, it is plausible since at this level a candidate may determine that the cooldown rate must be slowed to permit establishing makeup to the RPV.

Technical Reference(s): N1-SOP-18, Rev 05

Proposed references to be provided to applicants during the examination:

None.

Learning Objective: 01-OPS-001-207-1-01, EO-7c, 9, 12

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	2

10 CFR Part 55 Content: 43.5

Comments:

Question # SRO 5

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295009 AA1.03
	Importance Rating	3.1
Ability to operate and/or monitor the following as they apply to LOW REACTOR WATER LEVEL: Recirculation System		

Proposed Question:

The plant is operating at 80% power with the following conditions:

- A power ascension using recirculation flow is in progress.
- Feedwater pumps 11 and 13 are operating.
- Feedwater Pump 12 is marked up out of service for maintenance.

Subsequently:

- Feedwater Pump 11 trips
- H3-1-7, REACTOR FW PUMP 11 TRIP OVERLOAD SUCTION HI-LEVEL, alarms
- F2-3-3, REACTOR VESSEL LEVEL HIGH-LOW, alarms

Per the Alarm Response Procedures, which one of the following actions is the ASSS required to direct?

a. Manually scram the reactor and enter N1-SOP-1.

b. Take manual control of feedwater and restore RPV level.

c. Insert cram rods to reduce reactor power and control RPV level.

d. Use recirc flow to lower reactor power within the feed flow capability.

Proposed Answer: d. The required action is to reduce power to remain within the capability of the running Feedwater Pumps.

Explanation (Justification of Distractors):

a. A reactor scram is required only if the automatic scram is imminent, however, the correct action of lowering reactor power using recirc flow will reduce the feed flow requirements to within the capability of the operating shaft driven feedwater pump. If a reactor scram did occur, then entry into N1-SOP-1 is required.
b. Taking manual control is an appropriate action only if the system is misoperating. There is NO indication that the Feedwater Control System is malfunctioning. Only a Feedwater Pump trip has occurred.
c. Cram rods insertion will reduce reactor power but not soon enough to avoid the reactor scram. The alarm procedures direct using recirc flow which provides a more rapid response to the event and is therefore more effective in restoring RPV level.

Technical Reference(s): N1-ARP-H3, 1-7, Rev 03
N1-ARP-F2, 3-3, Rev 03

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	1
	Comprehension or Analysis	

10 CFR Part 55 Content: 43. (b) item 5

Comments:

Question # SRO 9

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295014 AK2.06
	Importance Rating	3.5
Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: moderator temperature.		

Proposed Question:

The plant is at 85% power when the following annunciators are received:

- Feedwater HTR 131-135 LEVEL HIGH
- Feedwater HTR 131-135 LEVEL HIGH-HIGH

It is determined that the high level exists in heater 134. The high-high level CANNOT be restored to normal using the level control valve.

Which one of the following describes the required operator action including the reason for the action?

a. Lower reactor recirc flow to compensate for the colder feedwater. Remove the affected feedwater heater string from service.

b. Lower reactor recirc flow to reduce feedwater flow and prevent heater over-pressurization. Notify engineering to raise the MCPR limit.

c. Insert cram rods to compensate for the reduced feedwater heating. Remove the 5th stage feedwater heater from service.

d. Scram the reactor because the feedwater temperature reduction will exceed 100°F. Execute N1-SOP-01, Reactor Scram, concurrently.

Proposed Answer: a.

Explanation (Justification of Distractors):

b. Lowering recirc flow is done to lower power, heater over-pressurization is not a concern.
c. Emergency power reduction requires that recirculation flow be adjusted before inserting cram rods. For this failure, it will not be necessary to insert cram rods.
d. The feedwater temperature change resulting from this failure including performance of the required ARP, SOP, and OP actions will not result in a 100°F feedwater temperature decrease.

Technical Reference(s): N1-ARP-H3, 3-4, 3-5
N1-OP-16, H.5.0

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	43. (b) 5 SRO must assess impact of high level, determine response and direct removal of equipment from service. 45.8	

Comments:

Question # SRO 12

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295016 AA1.09
	Importance Rating	4.0
Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: Isolation/Emergency Condenser(s): plant-specific		
PRA: Initiate emergency condenser from remote shutdown panel #11, #12.		

Proposed Question:

A plant fire requires that the Control Room be evacuated. In accordance with N1-SOP-9.1, Control Room Evacuation, which one of the following operations personnel is directed to control the cool down rate using EC 11?

a. CSO

b. NAOC

c. In-Plant E

d. Control Room E

Proposed Answer: d. Control Room E performs the RSP #11 actions including the operation of EC 11.

Explanation (Justification of Distractors):

a. CSO performs the RSP #12 actions including the operation of EC 12. EC 12 which is not available.
b. NAOC performs actions for vessel isolations, manual FW control, fire water injection to the RPV, and EC makeup.
c. In-Plant E proceeds performs actions at PB11, PB12, DG PB rooms, and battery load shedding if required.

Technical Reference(s): N1-SOP-9.1, Rev 04, (Control Room E actions)

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	1
	Comprehension or Analysis	
10 CFR Part 55 Content:	43.(b).5 SRO must direct crew members without reference to a procedure and ensure they get to there locations in a timely manner.	

Comments:

Question # SRO 14

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295017 AK3.02
	Importance Rating	3.5
Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Plant Ventilation		

Proposed Question:

Upon entering N1-EOP-6, Radioactivity Release Control, one step directs operating the Turbine Building Ventilation. Which one of the following explains why this step is necessary?

a. Ensure that any releases will be from an elevated and monitored release point.

b. Ensure that any primary system discharges into the Turbine Building are filtered prior to release.

c. Ensure heat can be removed from the steam tunnel to avoid a reactor scram on Main Steam Line High Tunnel temperatures.

d. Ensure the reactor building Emergency Ventilation System can achieve and maintain its design flowrate.

Proposed Answer: a. Access to the Turbine Building may be required during events requiring entry into EOP-6. Turbine Building Ventilation is operated to (1) control temperature and radiation levels inside the Turbine Building, and (2) direct any radioactivity released from the Turbine Building through an elevated and monitored path. Since the Turbine Building is not air tight, isolating the ventilation system may not only restrict personnel access, but also result in an unmonitored ground level release of radioactivity.

Explanation (Justification of Distractors):
b. No filtration occurs. Only an elevated release point is established.
c. A purpose of the system is to prevent rising main steam tunnel temperatures, but this is not the EOP step basis.
d. The flowrate should not be effected by elevated radiation levels

Technical Reference(s):	N1-ODP-PRO-0305, Rev 00, Element RR-2.

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:	01-OPS-006-344-1-06, EO-4	
Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	1
10 CFR Part 55 Content:	43. 1 and 4	

Comments:

Question # SRO 16

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295024 EA2.01
	Importance Rating	4.4
Ability to determine and interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell Pressure		

Proposed Question:

Following a steam line break in the Drywell, all level instruments were lost and EOP-7, RPV Flooding, was entered. It was not possible to open any ERVs so the SAPs were entered.

The Primary Containment is being flooded with the Fire Water system per EOP-1, attachment 19. The following conditions exist:

- All rods were inserted 10 hours ago
- There are no indications of core damage
- Fire water injection flow rate is 27.7×10^4 lbm/hr
- RPV pressure is 15 psig and steady
- Torus pressure is 44 psig and slowly rising
- Containment level is 80 feet and rising
- Liquid Poison #11 and both CRD pumps are injecting

Which one of the following actions is required?

a. Vent the primary containment while injecting with fire water.

b. Stop fire water injection but do not vent the primary containment.

c. Stop all sources that are injecting into the primary containment.

d. Stop fire water injection and then vent the primary containment.

Proposed Answer: a. SAP-1 flowchart directs the use of leg 6, Outside PSP, Figure L. Because of the fire water injection, the Minimum Debris Retention Injection Rate is met (Detail Y). Torus pressure is 44 psig which is well above PSP. In this leg if we are approaching or above the PCP limit (Figure D) it requires venting the PC.

Explanation (Justification of Distractors):

b. If legs 2, 3 or 4 are entered this could be interpreted as the correct step if you believe the fire water system injects directly into the PC but it injects into the feed water discharge header to the RPV first. Legs 2, 3, and 4 are not entered. This requires determining that RPV injection is below the Minimum Debris Retention Rate which it is Detail Y). Legs 1 and 5 do not allow venting, if these legs are entered venting is not an option.

c. This paraphrases the step in the procedure for legs 2, 3, and 4 and is incorrect for the same reasons as b. Additionally if the assumption is made that all injection must be stopped, this is incorrect because injection into the RPV is a priority. Legs 1 and 5 do not allow venting, if these legs are entered venting is not an option.

d. Since pressure is above the PCP limit (44 psig vs. 43 psig) Leg D directs venting and stopping injection if you "still" cannot stay below the PCP limit. "Still" implies venting should be tried first. The bases states that "If venting is ineffective" then stop injection. In this case venting is required first.

Technical Reference(s): N1-SAP-1, Primary Containment Flooding
N1-ODP-PRO-0305, EOP/SAP Technical Bases

Proposed references to be provided to applicants during the examination:

All EOPs and SAPs with the entry conditions removed

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 3

10 CFR Part 55 Content: 43.5
45.13

Comments:

Question # SRO 17

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295024 EK3.04
	Importance Rating	4.1

Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency Depressurization

Proposed Question:

Given the following conditions:

- A LOCA has occurred inside the Drywell
- Torus water level is 10.5 ft and steady
- Torus pressure is 18 psig and rising steadily
- Torus water temperature is 120°F and slowly rising
- RPV pressure is 600 psig and slowly lowering

Per N1-ODP-PRO-0305, EOP/SAP Technical Bases, which of the following is the basis for performing an RPV Blowdown?

a. Permit ERV operation without exceeding the torus boundary load.

b. Prevent exceeding allowable downcomer stresses on high d/p.

c. Remove primary system heat while sufficient heat capacity exists.

d. Lower pressure before the torus vent downcomers are uncovered.

Proposed Answer: a. (about to exceed PSP)

Explanation (Justification of Distractors):
b. This is a basis for ERV tailpipe limit and does not apply to downcomers
c. Sufficient heat capacity exists see fig M on EOP-4
d. 10.5 ft is the Tech Spec. minimum level

Technical Reference(s): EOP Bases attached
(Attach if not previously provided)

Proposed references to be provided to applicants during the examination:

EOPs without entry conditions

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New

Question History:	Previous NRC Exam	
	Previous Test / Quiz	

Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	3

10 CFR Part 55 Content: 43. (b) item 5

Comments: SRO only: Requires application of the knowledge of the EOP Curve Bases to determine how plant parameters challenge those bases.

Question # SRO 18

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295025 EA1.03
	Importance Rating	4.4
Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: Safety Relief Valves		

Proposed Question:

Following an ATWS, conditions required entering EOP-8, RPV BLOWDOWN. Fifty (50) seconds after initiating the blowdown one (1) of the ERVs has closed. Reactor pressure is 103 psig and lowering. Which one of the following actions is required?

a. Verify emergency condensers in service and continue the RPV blowdown with the two (2) remaining open ERVs.

b. Leave the two (2) remaining ERVs open. Manually open other ERVs as necessary to maintain at least three (3) open.

c. If shutdown cooling is available place it in service with the two (2) remaining open ERVs and continue the RPV blowdown.

d. If two (2) ERVs remain open and RPV pressure is lowering, ensure the remaining ERVs remain open and continue the RPV blowdown.

Proposed Answer: b.

Explanation (Justification of Distractors):

a. ECs were placed in service prior to opening ERVs, three ERVs are still required above 72 psig.

c. Shutdown cooling can not be placed in service until after the steps in the previous hold point are met and they are not met.

d. EOP requires opening another ERV or using another blowdown system until pressure is less than 72 psig.

Technical Reference(s): (Attach if not previously provided)	EOP-8, RPV Blowdown, N1-ODP-PRO-0305, EOP/SAP Technical Bases, Sect. 1.11

Proposed references to be provided to applicants during the examination:

All EOPs with the entry conditions removed

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	2
10 CFR Part 55 Content:	43. (b) item 5	
	45.6	

Comments:

Question # SRO 22

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295031 EK3.04
	Importance Rating	4.3
† Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL: Steam cooling.		

Proposed Question:

While executing N1-EOP-2, RPV Control, the SSS determines that due to a very low RPV level it is necessary to enter N1-EOP-9, Steam Cooling. Which one of the following describes the bases for executing this strategy?

Entering N1-EOP-9, Steam Cooling...

a. permits fuel clad temperatures to rise to the threshold for fuel rod perforation to maximize heat transfer.

b. permits fuel clad temperatures to rise to the threshold for the metal-water reaction to maximize heat transfer.

c. maximizes the time that reactor level is above the Minimum Steam Cooling RPV Water Level for alignment of injection sources.

d. maximizes the time that reactor level is above the minimum water level required to use EC 11/12 while aligning injection sources.

Proposed Answer: b.

Explanation (Justification of Distractors):

a. This threshold for fuel rod perforation is 1500°F. Steam cooling EOP allows fuel cal temperatures to rise to 1800°F, the threshold for the metal-water reaction.

c. It maximizes the time that the reactor water level remains above the Minimum Zero Injection Water Level (-121 inches), not the Minimum Steam Cooling RPV Water Level (-109 inches). Steam cooling allows reactor water level to continue to lower below -109 inches.

d. The basis for steam cooling is decay heat removal by permitting fuel clad temperature and transfers more heat to the steam passing through the reactor core. This strategy (mechanism for cooling) is independent of the Emergency Condensers and can be accomplished without the Emergency Condensers in service.

Technical Reference(s): N1-ODP-PRO-0305, Section 1.3

Proposed references to be provided to applicants during the examination:

None.

Learning Objective: 01-OPS-006-344-1-09, EO-1.5

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	1
10 CFR Part 55 Content:	43.(b) item 5 45.6	

Comments:

Question # SRO 25

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	1
	K/A #	295038 2.3.9
	Importance Rating	3.4
Knowledge of the process for performing a containment purge.		

Proposed Question:

During a LOCA the following containment conditions exist:

- Drywell Pressure is 40 psig and slowly rising
- Torus Pressure is 39 psig and slowly rising
- Torus Level is 15 feet and stable

The SSS has been decided to vent the primary containment to avoid exceeding any containment limits. Which one of the following describes the action required for these conditions?

a. Vent the Torus using the Emergency Ventilation System.

b. Vent the Drywell using the Emergency Ventilation System.

c. Vent the Torus using the Drywell and Torus Vent and Purge Fan.

d. Vent the Drywell using the Drywell and Torus Vent and Purge Fan.

Proposed Answer: c. Per N1-EOP-PCC, Primary Containment Control, Step PCP-8: If torus level is < 27', then vent the torus using EOP-4.1, Section 2. If torus level is > 27' or if the torus cannot be vented, then vent the drywell using EOP-4.1, Section 4. There are no challenges that prevent venting from the torus. EOP-4.1 must be referenced to determine how to vent the specified area. EOP-4.1, Section 2, is venting using the Drywell and Torus Vent and Purge Fan.

Explanation (Justification of Distractors):

a. The EVS is only used at a lower torus pressure and when EOP-4.2, Hydrogen Control, has been entered.
b. The EVS is only used at a lower torus pressure and when EOP-4.2, Hydrogen Control, has been entered.
d. If torus level is > 27' or if the torus cannot be vented, then vent the drywell using EOP-4.1, Section 4. There are no challenges that prevent venting from the torus. Torus level is below 27'.

Technical Reference(s): N1-EOP-4, Step PCP-8
N1-EOP-4.1, Section 2
N1-EOP-4.1, Section 4

Proposed references to be provided to applicants during the examination:

EOPs with the entry conditions removed

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	2
10 CFR Part 55 Content:	43. (b) item 5	

Comments:

Question # SRO 27

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295001 AK1.03
	Importance Rating	4.1
† Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Thermal Limits		

Proposed Question:

The following plant conditions exist:

- Reactor power 90%
- Reactor Recirc Pumps (RRP) 11, 12, 13, and 14 operating

- RRP 15:
  - ➢ IDLE
  - ➢ Suction valve open, Discharge bypass valve open
  - ➢ Flow instrument is valved out

Which one of the following actions will permit reactor power to be raised to 100% power?

a. Isolate the idle loop discharge valve and lock open the associated motor breaker.

b. Perform an APRM gain adjustment and lower the trip setpoints for all APRMs by 1%.

c. Confirm that the idle loop temperature is within 17°F of one of the operating RCS loop temperatures.

d. Verify power/flow relationship, APLHGR and MCPR within the limits of the Core Operating Limits Report.

Proposed Answer: d.

Explanation (Justification of Distractors):

a. The idle loop is not required to be isolated. Power can be raised to 100% with these conditions after checking P/F and thermal limits. If the loop was required to be isolated the suction and discharge bypass would also be required to be closed.

b. This is a requirement when only in 3 loop operation and the idle loops are not required to be isolated.

c. This is a requirement that must be met to startup an idle RCS loop.

Technical Reference(s): N1-OP-1, Rev 42, Section H.4.0
T.S. 3.1.7e

Proposed references to be provided to applicants during the examination:

None.

Learning Objective: 01-OPS-001-202-1-01, EO-7d,

Question Source: Bank No.
Modified Bank #
New New

Question History: Previous NRC Exam
Previous Test / Quiz

Question Cognitive Level: Memory of Fundamental Knowledge 1
Comprehension or Analysis

10 CFR Part 55 Content: 43. (b) items 2 and 5

Comments:

Question # SRO 32

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295012 AA2.02
	Importance Rating	4.1
Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell Pressure		

Proposed Question:

The plant was at 100% power when a steam leak in containment required inserting a manual scram:

- Bulk Drywell temperature is 151°F and rising slowly
- Drywell pressure is 8 psig and rising slowly
- Torus Water Temperature is 86°F and steady
- RPV level is 95" and rising slowly

Which one of the following describes the required emergency actions at this time?

a. Vent the primary containment through the RBEVS.

b. Evaluate the usability of RPV water level instruments.

c. Initiate Containment Sprays and align some flow to the Torus.

d. Override the isolation signal and align RBCLC flow to the Drywell.

Proposed Answer: b.
Per N1-EOP-4, step DWT-1, drywell temperature affects RPV water level indication requiring that Detail A is checked. Detail A is an evaluation of the ability to use RPV water level instruments.

Explanation (Justification of Distractors):
a. Drywell pressure is too high to vent the containment through RBEVS. This action is used before drywell pressure reaches 3.5 psig.
c. Containment sprays are not required until Torus pressure is above 13 psig. For these conditions, Torus pressure is less than drywell pressure.
d. No containment isolation signal was received. The leak is greater than the

capacity of the drywell cooling system.

Technical Reference(s): N1-EOP-4, DWT-1

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	55.43 (b) item 5	

Comments:

Question # SRO 33

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295018 AK1.01
	Importance Rating	3.6
Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Effects on Component/System Operation		
PRA: Respond to TBCLC pump trip.		

Proposed Question:

The plant is operating at 100% power when the operating TBCLC pump trips. The standby TBCLC pump CANNOT be started.

In accordance with N1-SOP-19, TBCLC Failure, which one of the following actions is required?

a. Reduce reactor power below the capability of the shaft-driven FW pump and remove the motor-driven FW pump from service.

b. Reduce reactor power when temperature alarms are received, isolate RWCU, and perform a normal unit shutdown to cold shutdown.

c. Reduce reactor power without entering the restricted zone and control RPV level per the actions for HPCI use with a loss of instrument air.

d. Reduce reactor power without entering the restricted zone, place house service loads on the reserve supply, and scram the reactor.

Proposed Answer: d. The unit must be removed form service because of the sustained loss of TBCLC. A unit trip is required prior to restoring TBCLC.

Explanation (Justification of Distractors):

a. The shaft-driven FW pump is affected, not the motor-driven FW pumps.
b. RWCU is not cooled by TBCLC, rather RBCLC. If instrument air is affected, RBCLC TCV (70-137) fails as is and is controlled manually per N1-OP-11.
c. This action is not an approved per N1-SOP-19 and would not be required until after the unit is removed from service.

Technical Reference(s): N1-SOP-19, Rev 02

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 1
10 CFR Part 55 Content:	10CFR55.43 (b) item 5	

Comments:

Question # SRO 36

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295021 2.4.9
	Importance Rating	3.9
Knowledge of low power/shutdown implications in accident (e.g., LOCA or loss of RHR) mitigation strategies.		

Proposed Question:

The following conditions exist entering RFO 15:

- The reactor is in cold shutdown with RPV head vents open
- The reactor has been shutdown for 48 hours
- SDC: 11 and 12 in service 13 is marked up
- RRP: 13 in service 11, 12, 14, 15 are off and isolated
- SFP: 11 in service 12 is off

- RPV water level (wide range) 18.4 feet
- RPV water temp 130 °F
- SDC inlet temp (TR 38-146) 130 °F
- RCS 13 suction temp (CPT A-435) 130 °F
- SFP temp 90 °F
- RBCLC temp (TI-70-23C) 80 °F

A loss of SDC system 12 occurs. SDC system 11 is still operating.
Assume **NO** operator actions are taken. Per N1-ODG-11, Shutdown Operations Protection Guideline, which one of the following is the approximate time (in hours) the reactor will remain in cold shutdown?

a. 1.0 hours

b. 2.7 hours

c. 4.0 hours

d. 10.5 hours

Proposed Answer: b. The correct calculation is 2.71 hours.

Explanation (Justification of Distractors):

a. Calculated as 1.02 when using the wrong SDC Constant. Used SDC constant for 2 loops rather than 1.

c. Calculated as 4.04 when using the wrong line #2 data on line #82. Used 90°F rather than 130°F.

d. Calculated as 10.45 when using the wrong Thermal Capacity. Used line #71 rather than line #72.

Technical Reference(s): N1-ODG-11, Rev 11, Attachment 2

Proposed references to be provided to applicants during the examination:

N1-ODG-11, Rev 11, Attachment 2
Provide a calculator to each candidate.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	3
10 CFR Part 55 Content:	43.5.(b) item 5	

Comments:

Question # SRO 37

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295022 AK3.01
	Importance Rating	3.9
Knowledge of the reasons for the following responses as they apply to LOSS OF CRD PUMPS: Reactor Scram		

Proposed Question:

Given the following conditions:

- Reactor Power is 100%
- "12" CRD pump is NOT available for operation
- "11" CRD pump trips and CANNOT be restarted
- F3 1-5, CRD CHARGING WTR PRESS HI/LO, alarms

Per the Alarm Response Procedures (ARPs), which one of the following conditions requires a reactor scram?

a. Twenty minutes after the alarm is received one CRD accumulator trouble alarm is received and a CRD pump is still not operating.

b. Twenty minutes after the alarm is received one CRD high temperature alarm is received and a CRD pump is still not operating.

c. Two or more CRD accumulator trouble alarms are received and are concurrent with each other at anytime after the alarm is received.

d. Two or more CRD high temperature alarms are received and are concurrent with each other at anytime after the alarm is received.

Proposed Answer: a. If one or more accumulator trouble alarms is received while no CRD pump is operating THEN restart at least one CRD pump within 20 minutes and insert at least one withdrawn control rod at least one notch to verify CRD restoration OR insert a manual reactor scram.

Explanation (Justification of Distractors):

b. There are no requirements to insert a reactor scram for CRD high temperatures.
c. The ARP requirement to insert a reactor scram is based on the conditions being present 20 minutes following the loss of CRD and no CRD pump has been restored to operation.
d. There are no requirements to insert a reactor scram for CRD high temperatures.

Technical Reference(s):	N1-ARP-F3, Rev 03, 1-5 N1-ARP-F3, Rev 03, 1-2

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	NEW
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	2
10 CFR Part 55 Content:	10CFR55.43. (b) 5 10CFR55.45.6	

Comments:

Question # SRO 40

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295032 EK1.03
	Importance Rating	3.9

Knowledge of the operational implications of the following concepts as they apply to the HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Secondary Containment Leakage Detection

Proposed Question:

The plant is at power when the following occur:

S|E 2nd

- A leak occurs in the Reactor Water Cleanup System
- Cleanup CANNOT be isolated
- Cleanup Pump area temperature is 191°F and rising
- Cleanup Pump area radiation level is 22 mrem/hr and steady
- Reactor Building Exhaust area radiation level is 7 mrem/hr and steady
- Pyrometer readings in the reactor building have NOT been taken

Which one of the following describes the required actions if NO other secondary containment area temperatures, radiation levels, or water levels are in alarm?

a. Scram the reactor. An RPV blowdown is not required.

b. Scram the reactor and then perform an RPV Blowdown.

c. Begin a plant shutdown within ten hours per Tech Specs.

d. Operate area coolers and the reactor building ventilation system.

Proposed Answer: a. A scram is required before an area is above Max Safe. *Note: The cleanup pumps are in a general area, not in an enclosed room.*

Explanation (Justification of Distractors):

b. Not required until a second area is above Max Safe.

c. Technical Specifications 3.2.7, Reactor Coolant Isolation Valves requires a shutdown within one hour, not ten hours. The plant must be in cold shutdown within 10 hours.

d. Although this step applies, emergency ventilation is required at this radiation level. Reactor Building ventilation is isolated and there is no guidance to override the isolation signal.

Technical Reference(s): N1-EOP-5
Technical Specifications 3.2.7

Proposed references to be provided to applicants during the examination:

EOPs with entry conditions removed.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	
	Comprehension or Analysis	2

10 CFR Part 55 Content: 43 (b) items 2 and 5

Comments:

Question # SRO 42

Examination Outline Cross-Reference	Level	SRO
	Tier #	1
	Group #	2
	K/A #	295036 EA2.01
	Importance Rating	3.2
Ability to determine and interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Operability of Components Within the Affected Area		

Proposed Question:

The plant is operating at 80% power when the following occur:

- H-2 2-1, R BLDG FL DR SUMPS 11-16 AREA WTR LVL LEVEL HIGH alarms
- The AO dispatched to investigate reports:
  - ➢ Water level in the NW compartment is 6 feet above the floor surface and rising.
  - ➢ Water is traveling from the NW compartment through an electrical conduit into the NE compartment and has covered that floor with 1 inch of water.
- It is determined that the leak is from the Torus and is not isolable.
- Torus level is 10.6 feet and slowly lowering.

Per the EOPs, which one of the following describes the required action and the reason for that action **IF** water level in the rooms continue to rise?

a. Shutdown if the NE Compartment water level is above 203 feet elev. because equipment required for safe shutdown is threatened.

b. Within one hour initiate an orderly shutdown because Containment Spray Pumps 111 and 121 are inoperative.

c. Scram the reactor when the NW Compartment level is at 203 feet elev. to comply with EOP-5, Secondary Containment Control.

d. Scram the reactor while sufficient level still exists in the Torus to comply with EOP-4, Primary Containment Control.

Proposed Answer: a. Holding at step SC-6. Waiting for a second area to reach max safe before starting the plant shutdown.

Explanation (Justification of Distractors):

b. A shutdown is not required for these pumps being inoperative.
c. Primary system is not discharging into the reactor building so a scram is not required.
d. Torus level does not require a scram, EOP entry level has not been reached. Attempts should be made to make up to torus level and determine how far torus level will lower before equalizing with the corner rooms.

Technical Reference(s): N1-EOP-5, Secondary Containment Control
EOP Bases, N1-ODP-PRO-0305
N1-ARP-H2, 2-1

Proposed references to be provided to applicants during the examination:

N1-ARP-H2, 2-1

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	43.5 45.13	

Comments:

Question # SRO 81

Examination Outline Cross-Reference	Level	SRO
	Tier #	2
	Group #	3
	K/A #	233000 2.1.10
	Importance Rating	3.9
Knowledge of conditions and limitations in the facility license.		

Proposed Question:

With the Fuel Pool heat load normal, Fuel Pool temperature rises to 126°F during maintenance on the system. Which one of the following describes the concern with the Fuel Pool Filtering and Cooling System?

a. The licensing basis for the system is invalid.

b. The ion exchange capability of the filters is ineffective.

c. The cooling capability of both heat exchangers is exceeded.

d. The ability to control airborne radiation levels on the refuel floor has been lost.

Proposed Answer: a.

Explanation (Justification of Distractors):

b. The resin is not affected until higher temperatures (@ 150°F). Although the ion exchange capability may be slightly affected at this lower temperature, the capability is not ineffective.

c. The second heat exchanger could be used to lower temperature.

d. The system does not control refuel floor radiation levels.

Technical Reference(s): N1-OP-6, Rev 15, Section B, D.4, D.5

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	1
10 CFR Part 55 Content:	43.1 45.13	

Comments:

Question # SRO 83

Examination Outline Cross-Reference	Level	SRO
	Tier #	2
	Group #	3
	K/A #	Generic 2.1.12
	Importance Rating	4.0
Ability to apply technical specifications for a system.		

Proposed Question:

The plant is in a refueling outage. The following conditions exist:

- At 0800 on June 1, a core reload is started.
- At 0900 on June 1, #11 Reactor Building Emergency Ventilation System (RBEVS) is declared inoperable. It will be out of service for 6 days.
- At 0900 on June 5, it is discovered that the last performance of N1-ST-M8 for #12 RBEVS was 45 days ago.

Per Technical Specifications, which one of the following describes the required actions?

a. Initiate action to complete N1-ST-M8 for #12 RBEVS by 0900 on June 6 and movement of irradiated fuel may continue.

b. At 0900 on June 5, #12 RBEVS must be declared inoperable and core alterations must be stopped.

c. If N1-ST-M8 is not complete for #12 RBEVS by 2100 on June 7, then the movement of irradiated fuel must be stopped.

d. If #12 RBEVS is not in operation by 0800 on June 8, then core alterations must be stopped.

Proposed Answer: b. With one RBEVS system inoperable, core alterations may continue provided the other RBEVS is OPERABLE. With both RBEVS inoperable, core alterations must be suspended. When it is discovered that the monthly surveillance for the #12 RBEVS is beyond its surveillance interval (31 days plus 25% extension) it must be declared inoperable and core alterations must be stopped.

Explanation (Justification of Distractors):

a. There is no time allowance to not declare the equipment inoperable for a missed surveillance. When it is discovered that the monthly surveillance for the #12 RBEVS is beyond its interval (31 days plus 25% extension) it must be declared inoperable and core alterations must be stopped.

c. There are no provisions in Technical Specifications to delay declaring the equipment inoperable for a missed surveillance. This answer also uses the 36 hour completion time to place the plant in a condition where RBEVS is not required.

d. This answer also uses the 7 day completion time to place the OPERABLE RBEVS into operation to continue core alterations. There is no OPERABLE RBEVS to place into operation.

Technical Reference(s): Tech Spec 3.4.4

Proposed references to be provided to applicants during the examination:

EOPs with entry conditions blacked out.
Tech Spec 3.4.1 through 3.4.4 (all)

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	43.2, 43.5, 43.6, 43.7 45.3	

Comments:

Question # SRO 85

Examination Outline Cross-Reference	Level	SRO
	Tier #	
	Group #	
	K/A #	Generic 2.1.32
	Importance Rating	3.8
Ability to explain and apply system limits and precautions.		

Proposed Question:

Per the station reactivity management procedures and the Reactivity Control Book, which one of the following activities requires a Reactivity Brief prior to performance?

a. Adjusting APRM gain factors on all channels.

b. Adjusting RPV water level from +69" to +71".

c. Raising reactor power using recirc flow for power maintenance.

d. Lowering reactor power from 1845 to 1800 MWth using recirc flow.

Proposed Answer: d.

Explanation (Justification of Distractors):

a. Specifically not required per N1-OP-43A, and Attachment 2.
b. Specifically not required per N1-OP-43A, and Attachment 2.
c. GAP-OPS-05 states routine recirc flow changes per the CRC book needed to maintain the desired power level do not require a formal reactivity brief.

Technical Reference(s):	N1-OP-43A, and Attachment 2. Reactivity Controls Book

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	1
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.43.b. 5	

Comments:

Question # SRO 86

Examination Outline Cross-Reference	Level	SRO
	Tier #	-
	Group #	-
	K/A #	Generic 2.1.7
	Importance Rating	4.4

Ability to evaluate plant performance and make operational judgements based on operating characteristics/ reactor behavior/ and instrument interpretation.

Proposed Question:

A reactor heat balance has been performed. You notice that the value for recirculation pump energy has **NOT** been included in the calculation.

The calculated reactor power from this heat balance was 1618 MW_{th}.

Following the heat balance the APRM gains were adjusted to reflect the new power level. The APRMs read 87.5% with their GAFs set at 1.0. Which one of the following is correct?

a. Actual power is greater than the indicated power.

b. The APRMs are reading higher than actual reactor power.

c. APRMs indicate true reactor power but the APRM scram setpoint is more conservative.

d. APRMs indicate true reactor power but the APRM scram setpoint is non-conservative.

Proposed Answer: b. Actual reactor power is equal to the energy that must be added to the water energy entering the core (feedwater energy + recirc pump energy) to produce the energy of the steam leaving the reactor. The calculated core power has less energy entering the core (it omits recirc pump heat). So the calculated power attributes the recirc pump heat to the core, it overstates core power. If the APRMs have been calibrated to this power they are indicating more than actual reactor power.

Explanation (Justification of Distractors):

a. The APRMs were calculated to a higher core power than actual so they read higher than actual power. Actual power id less than indicated.

c. The APRMs do not indicate true power, the loss of the recirc power in the heat balance effects more than the flow biased scram setpoint.

d. The APRMs do not indicate true power, the loss of the recirc power in the heat balance effects more than the flow biased scram setpoint.

Technical Reference(s): N1-REP-8, Core Thermal Power
(Attach if not previously provided)

Proposed references to be provided to applicants during the examination:

N/A

Learning Objective:

Question Source: Bank No.
Modified Bank #
New — New

Question History: Previous NRC Exam
Previous Test / Quiz

Question Cognitive Level: Memory of Fundamental Knowledge
Comprehension or Analysis — 3

10 CFR Part 55 Content: 43.1, 43.2
45.5, 45.12, 45.13

Comments:

Question # SRO 88

Examination Outline Cross-Reference	Level Tier # Group # K/A #	Generic 2.1.23
	Importance Rating	4.0
Ability to perform specific system and integrated plant procedures during different modes on plant operation.		

Proposed Question:

The plant is at 100% power. The following Emergency Cooling (EC) System components become inoperable:

- 0800 on July 1: 05-05, EC VENT TO TORUS BV 11 declared inoperable.
- 0800 on July 6: 05-07, EC VENT TO TORUS BV 12 declared inoperable.

ASSUME that these EC valves CANNOT be restored to operable status. Which one of the following describes the LATEST time and date that the plant must be in Cold Shutdown?

a. 1800 on July 6.

b. 1800 on July 8.

c. 1800 on July 15.

d. 1800 on July 20.

Proposed Answer: d.

Explanation (Justification of Distractors):

a. Based on declaring both EC systems (not just the torus vents) inoperable at the designated times permitting 10 hours to be in Cold Shutdown.

b. Based on declaring EC 11 system inoperable at 0800 on July 1 permitting 7 days to restore to operable status. If not restored within 7 days, then 10 hours is allowed to be on Cold Shutdown.

c. Based on the 30 days to restore the vent to operable status being changed to 14 days when the other vent is declared inoperable and applying the 14 days and then 10 hours to the time that EC 11 vent was declared inoperable.

Technical Reference(s): Technical Specification 3.1.3, d.1 and d.2

Proposed references to be provided to applicants during the examination:

Technical Specification 3.1.3 (ALL)

Learning Objective:	01-OPS-001-207-1-01, EO-3, EO-11	
Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	45.2, 45.6 43.2	

Comments: SRO only. Technical Specification application.

Question # SRO 91

Examination Outline Cross-Reference	Level	SRO
	Tier #	-
	Group #	-
	K/A #	Generic 2.2.17
	Importance Rating	3.5

Knowledge of the process for managing maintenance activities during power operations.

Proposed Question:

The unit is operating at 100% power. 115 KV switchyard maintenance is in progress and will be completed in 24 hours. Maintenance has also requested to work on one of the following this shift: **EDG 102, EC 11, CS 12, Battery 11.**

To comply with GAP-PSH-03, Control of On-Line Work Activities, which one of the following can be approved for removal from service this shift without introducing a higher than usual risk?

a. Removal of EC 11 from service.

b. Removal of CS 12 from service.

c. Removal of EDG 102 from service.

d. Removal of Battery 11 from service.

Proposed Answer: b.

Explanation (Justification of Distractors):
If plant activities introduce a higher than usual risk of an initiating event such as a loss of offsite power, SSCs that perform key safety functions such as diesel generators, emergency condensers,and batteries, should not be removed from service.

Technical Reference(s): GAP-PSH-03, Rev 02, 3.2.5 and 3.3.1.d

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New
Question History:	Previous NRC Exam	
	Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge	1
	Comprehension or Analysis	
10 CFR Part 55 Content:	43.5	
	45.13	

Comments:

Question # SRO 92

Examination Outline Cross-Reference	Level	SRO
	Tier #	-
	Group #	-
	K/A #	Generic 2.2.11
	Importance Rating	3.4
Knowledge of the process for controlling temporary changes.		

Proposed Question:

A Type 1 change to N1-OP-43A, Reactivity Control, that does NOT alter the intent of the procedure is requested. Per Technical Specifications, which one of the following satisfies the approval requirements to implement the temporary change?

a. The GSO or the SSS approve the change.

b. The CSO and the ASSS approve the change.

c. The Manager of Operations or Plant Manager approve the change.

d. The SSS and a member of management staff approve the change.

Proposed Answer: d.

Explanation (Justification of Distractors):
The intent of the procedure is not altered. The change must be approved by at least two members of the unit management staff, at least one who holds a Senior Reactor Operator license on the unit affected.

The change is documented, reviewed, and approved within 14 days of implementation by the branch manager or higher levels of management. This is not required to answer the question because it only asks for the approvals to implement the change.

Explanation (Justification of Distractors):
a. Another member of management staff must also approve the change.
b. The CSO is not a member of management staff.
c. Two people must approve the change and one of the members of management staff must be a SRO on the unit.

Technical Reference(s): Tech. Spec. 6.8.3

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 1
10 CFR Part 55 Content:	43.3 45.12	

Comments:

Question # SRO 93

Examination Outline Cross-Reference	Level	SRO
	Tier #	-
	Group #	-
	K/A #	Generic 2.3.4
	Importance Rating	3.1
Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized.		

Proposed Question:

Following a LOCA, it is necessary to authorize an emergency exposure for an individual who has volunteered to enter a very high radiation area to protect valuable property.

- The individual has an accumulated TEDE of 3200 mrem for the year.
- The TSC is NOT activated.

In accordance with EPIP-EPP-15, Emergency Health Physics Procedure, which one of the following describes the MAXIMUM permissible dose and approval requirement to receive the dose?

a. 10 rem approved by the Plant Manager.

b. 6.8 rem approved by the Plant Manager.

c. 10 rem approved by the Site Emergency Director.

d. 6.8 mrem approved by the Site Emergency Director.

Proposed Answer: c. Emergency exposure limits are exclusive of current occupational exposure, therefore, 10 rem is permitted. The SED approves emergency exposures, not the Plant Manager. The Plant Manager has final approval for exposure above the administrative limit (4000 mrem) but this approval requirement is not required in an emergency.

Explanation (Justification of Distractors):

a. The SED approves emergency exposures, not the Plant Manager.
b. Emergency exposure limits are exclusive of current occupational exposure, therefore, 10 rem is permitted. The SED approves emergency exposures, not the Plant Manager.
d. Emergency exposure limits are exclusive of current occupational exposure, therefore, 10 rem is permitted.

Technical Reference(s): EPP-EPIP-15, Attachment 1

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	1
10 CFR Part 55 Content:	43.3 45.10	

Comments:

Question # SRO 94

Examination Outline Cross-Reference	Level	SRO
	Tier #	-
	Group #	Generic
	K/A #	2.3.11
	Importance Rating	3.2
Ability to control radiation releases.		

Proposed Question:

The plant was at 100% power when a reactor scram occurred. The following conditions are present:

- RPV Level is +70" indicated on the Narrow Range instruments
- RPV Pressure is 760 psig
- EC 11 Shell temperature and level have rapidly risen
- EC 11 CANNOT be isolated
- Radiation Protection reports the projected integrated off-site dose rate is above the General Emergency action level

Which one of the following describes the required actions?

a. Perform an RPV blowdown.

b. Open all EC vents to the torus.

c. Rapidly depressurize the RPV using EC 12.

d. Evacuate all ERPAs within 10 miles of the site.

Proposed Answer: a. Rad Release EOP for GE and primary system discharging outside containment.

Explanation (Justification of Distractors):

b. The vents are on the main steam line to the EC. Opening the vents will be ineffective in reducing the release.

c. This is an appropriate action before the General Emergency level is reached. Once the General Emergency level is reached, the required action is to open 3 ERVs (RPV blowdown).

d. Only evacuate areas 2 miles around and 5 miles downwind and shelter all remaining areas.

Technical Reference(s): N1-EOP-6, Radioactivity Release Control

Proposed references to be provided to applicants during the examination:

All EOPs with the EOP entry conditions blacked out.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	 New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	43.b.4, 43.b.5 45.9, 45.10	

Comments:

Question # SRO 100

Examination Outline Cross-Reference	Level Tier # Group # K/A #	 Generic 2.4.40
	Importance Rating	4.0
Knowledge of the SRO's responsibilities in emergency plan implementation.		

Proposed Question:

Note: Reactor water levels are <u>indicated</u>.
An ATWS is in progress. Following the actions to terminate and prevent all RPV injection the following conditions existed:

- Reactor water level –50 inches and stable
- Reactor power 3% and lowering
- Reactor pressure 900 psig and lowering slowly
- Torus water temperature 120°F and steady
- Torus level 10.8 feet and steady
- ERVs are closed
- Control rod insertion has NOT been established
- Liquid Poison failed to inject and CANNOT be started
- No alternate boron system is injecting

When APRM's are downscale, RPV injection is re-established and RPV level is being maintained between –50 and –84 inches. Which one of the following describes the required emergency plan event classification at this time?

a. Remain at the Alert classification.

b. Remain at the Site Area Emergency classification.

c. Reclassify the event from an Alert to a General Emergency.

d. Reclassify the event from a Site Area Emergency to an General Emergency.

Proposed Answer: b. Any RPS scram setpoint exceeded AND automatic and manual scrams fail to result in a control rod pattern which assures reactor shutdown under all conditions without boron AND EITHER reactor power >4% OR torus temp >110°F requires classification of a Site Area Emergency.

Explanation (Justification of Distractors):

a. Site Area Emergency is required because of the suppression pool temperature and the reactor power present prior to deliberately lowering RPV level to suppress reactor power.

c. The power excursion will require that RPV injection sources be terminated and prevented to lower level to suppress power. This power change will not cause the HCTL to be exceeded, which is required to declare a General Emergency. Additionally, there is no evidence that actions to lower reactor pressure or to lower torus temperature are not successful. If the candidate uses the incorrect curve (curve B) for torus water level when evaluating HCTL, they will determine that HCTL is exceeded and a General Emergency is required.

d. The power excursion will require that RPV injection sources be terminated and prevented to lower level to suppress power. This power change will not cause the HCTL to be exceeded, which is required to declare a General Emergency. The Site Area Emergency event classification criteria were met and still exist. Thus, the plant is still at the Site Area Emergency classification because of torus temperature and also because of the power excursion.

Technical Reference(s): Unit 1 Emergency Action Level Matrix 2.2.1, 2.2.2
EPIP-EPP-25, Section 3.1

Proposed references to be provided to applicants during the examination:

Unit 1 Emergency Action Level Matrix (EAL chart)

Learning Objective:

Question Source: Bank No.
Modified Bank #
New New

Question History: Previous NRC Exam
Previous Test / Quiz

Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	 2
10 CFR Part 55 Content:	43. (b) item 5 45.11	

Comments: