Question Number 1

Given the following conditions:

- The plant is in Operational Condition 5.
- 10A401 A Channel 4.16 KV bus is de-energized for maintenance.
- Core Alterations are in progress.
- The infeed breaker for 10Y412 120/208 Volt AC Distribution panel trips open.

(Use attached table Q1 for load listing)

Which one of the following correctly describes the effect on Core Alterations and reason?

Core Alterations _____

a. may continue provided the panel is re-energized within the next 8 hours.

b. may continue because the panel feeds Non-1E loads.

c. must be suspended because all SRM drives lose power.

d. must be suspended because the panel is required.

Answer	d	Exam Level	B	Cognitive Level	Application	Facility:	Hope Creek	Exam Date:	03/10/2003

Tier:	Emergency and Abnormal Plant Evolutions	RO Group	2	SRO Group	1	295003A101

295003	Partial or Complete Loss of A.C. Power

AA1.	Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER:	
AA1.01	A.C. electrical distribution system	3.7 3.8

Explanation of Answer

D- correct; B Channel Panel 10Y412 is required by 3.8.3.2 because Channel A 10A401 is de-energized.
A- incorrect; electrical spec in OP Cond 1, 2, & 3
B- incorrect; Panel contains 1E loads
C- incorrect; 10Y208 powers SRM Drive Cabinet. SRMs not listed in 10Y412 Load list.

Reference Title
TS 3.8.3.2

Learning Objectives

1EAC00E028	Given a scenario of applicable conditions and access to Technical Specifications: a. Choose those sections, which are applicable to the 1E AC Power Distribution System IAW Technical Specifications. b. Evaluate 1E AC power operability and de

Material Required for Examination Load Reference table for 10Y412; Tech Specs section 3.8

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 2

Given the following condidtions:

- The plant is in Operational Condition 4.
- "B" Fuel Pool Cooling is in operation with the FP Demins bypassed.

Then the following occurs:

- All offsite power is lost.
- All other equipment functions properly.

Which one of the following describes how and when cooling to the Fuel Pool is re-established?

a. Automatically; within 2 minutes.

b. Automatically; greater than 2 minutes.

c. Manually; within 2 minutes.

d. Manually; greater than 2 minutes.

Answer	d	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Emergency and Abnormal Plant Evolutions	RO Group	2	SRO Group	1	295003G411

295003	Partial or Complete Loss of A.C. Power	
2.4	Emergency Procedures and Plan	
2.4.11	Knowledge of abnormal condition procedures.	3.4 3.6

Explanation of Answer

Justification:
Correct: Manually; greater than 2 minutes. The FPCC pumps are not sequenced back following a LOP. The Control Room Operator must manually start the pump after automatic load sequencing is completed 95 seconds after output breaker closure or 108 seconds after LOP. Restart is accomplished.using HC.OP-SO.EC-0001. The FP Filter demin Bypass valve must be reclosed for pump start. It is also the third piece of equipment in order allowed to be restarted as load permits in accordance with HC.OP-AB.ZZ-0135.
Incorrect: Automatically; within 2 minutes. The FPCC pumps are not automatically sequenced back following a LOP. Plausible misconception.
Incorrect: Automatically; greater than 2 minutes. The FPCC pumps are not automatically sequenced back following a LOP. Plausible misconception.
Incorrect: Manually; within 2 minutes. The FPCC pumps must be manually restarted following a LOP. The pump is no longer inhibited from starting after 95 seconds. As a minimum, the FP Demin bypass valve must be manually closed for pump restart. It is also the third piece of equipment in order allowed to be restarted as load permits in accordance with HC.OP-AB.ZZ-0135.

Reference Title
HC.OP-AB.ZZ-0135 Step 4.7.9

Learning Objectives	
0AB135E004	Explain the reasons for how plant/system parameters respond when implementing, Station Blackout/Loss Of Offsite Power Diesel Generator Malfunction, Abnormal Operating Procedure.
0AB135E006	(R) Explain the bases for Subsequent Actions and the information contained in the Discussion Section of Station Blackout/Loss Of Offsite Power Diesel Generator Malfunction, Abnormal Operating Procedure.

Material Required for Examination None

Question Source:	New	Question Modification Method:	
Question Source Comments:			

Given the following conditions:

- Core reload is in progress at fuel movement step 1150.
- Ten (10) new fuel bundles remain to be loaded into the core into the "B" quadrant.
- SRM readings are as follows:

	SRM A	SRM B	SRM C	SRM D
Step 1150	75	100	75	75

- After loading two of the ten new fuel bundles, the SRMs read as follows:

	SRM A	SRM B	SRM C	SRM D
Step 1152	90	200	90	90

WHICH ONE (1) of the following states the expected results during loading of the remaining bundles?
(Assume all 10 bundles have equal reactivity worth.)

a. Inserting one more bundle will cause a local criticality.

b. Inserting two more bundles will cause a local criticality.

c. SRM "B" will indicate 500 cps when the core is fully loaded.

d. SRM "B" will indicate 1000 cps when the core is fully loaded.

Answer: b | Exam Level: B | Cognitive Level: Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group: 1 | SRO Group: 1 | 295014A201

295014 Inadvertent Reactivity Addition

AA2. Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION:

AA2.01 Reactor power 4.1 4.2

Explanation of Answer

Justification:
Correct: 2 more will cause a local criticality. The first doubling was reached with 2 bundles. The same amount of reactivity will be added with the next 2 bundles at which time the reactor would be critical at least locally.
Incorrect: One more bundle will cause a local criticality. One more bundle would be half the amount of reactivity needed to be critical at that local area.
Incorrect: SRM "B" will indicate 500 cps when the core is fully loaded. Value if 100 counts added per 2 bundles.
Incorrect: SRM "B" will indicate 1000 cps when the core is fully loaded. Value if 100 counts added per bundle.

Reference Title

Reactor Theory

Learning Objectives

RXOPERE009	Describe how to determine if a reactor is critical.
RXOPERE005	Explain the characteristics to be observed when the reactor is very close to criticality.

Material Required for Examination	None

Question Source:	INPO Exam Bank	Question Modification Method:	Significantly Modified

Question Source Comments:	INPO Bank QID 14536 09/13/1996 Peach Bottom

Question Number 4

Given the following conditions:

- Control rod friction testing is in progress.
- Shutdown Margin is determined to be 0.25% delta k/k analytically.
- The One-Rod-Out interlock is Operable.

(Assume all SRMs are operable)

Which one of the following is the minimum required to automatically mitigate an inadvertant criticality?

a. Non-Coincident UPSCALE scram from at least 2 SRM channels.

b. Non-Coincident UPSCALE scram from only 1 SRM channel.

c. Coincident UPSCALE scram from at least 2 SRM channels.

d. Coincident UPSCALE scram from only 1 SRM channel.

Answer	b	Exam Level	B	Cognitive Level	Comprehension	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Emergency and Abnormal Plant Evolutions	RO Group	1	SRO Group	1	295014K205

295014 Inadvertent Reactivity Addition

AK2. Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following:

AK2.05 Neutron monitoring system 4.0 4.1

Explanation of Answer

Justification- Correct- Non-Coincident Scram from only 1 SRM channel. RPS Shorting links must be removed for a Non-Coincident scram from any 1 NI Channel to withdraw a control rod with SDM less than analytical limit of .38% delta k/k.

Incorrect- Non-Coincident Scram from at least 2 SRM channels. Only 1 SRM required with shorting links removed.

Incorrect- Coincident Scram from at least 2 SRM channels. Without SDM greater than the limit, the shorting links must be removed.

Incorrect- Coincident Scram from only 1 SRM channel. With Shorting Links installed, need at least 2 channels

Reference Title

Tech Specs 3.9.2 /4.9.2.d

Tech Specs Table 3.3.1-1 Footnote (C)

Tech Spec Bases 3/4/3.1

Learning Objectives

SRMSYSE007 (R) Given a scenario of applicable operating conditions and access to technical specifications.
a. Choose those sections which are applicable to the SRM system.
b. Evaluate SRM operability and determine required actions based upon system operability. (

Material Required for Examination Tech Spec section 3.3 with Table 3.3.1-1 removed

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 5

Given the following conditions:

- The plant is in OPCON 4 having just completed Refueling Operations.
- The Refueling Cavity is being decontaminated.
- Several bundles are being shuffled in the Fuel Pool in preparation for sipping operations.
- The Control Room reports the FUEL POOL COOLING SYS LEAKAGE HI alarm has been received.

Assuming the alarm was caused by gate leakage due to low seal pressure, which of the following pressure indicators would read low?

I. KA-PI- 4610A
II. KA-PI- 4610B
III. KA-PI- 4610C
IV. KA-PI- 4610D

a. I and II.

b. I and III.

c. II and III.

d. III and IV.

Answer: a | Exam Level: B | Cognitive Level: Application | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group: 3 | SRO Group: 1 | 295023A204

295023 Refueling Accidents

AA2. Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS:

AA2.04 Occurrence of fuel handling accident 3.4 4.1

Explanation of Answer

Justification:
I and II Correct - Leakage would be from the Inner fuel pool gate inner and outer seals since the Fuel Pool is full and the Refueling Cavity is drained. I and II pressure indicators monitor the inner seals.
KA-PI- 4610C and KA-PI- 4610D are for the outer Fuel Pool Gates.
Not direct lookup because trainee must use P&ID to determine answer.
Incorrect: I and III
Incorrect: II and III
Incorrect: III and IV

Reference Title
P&ID M-53 sheet 2
HC.OP-AR.ZZ-0013 Attachment B-5

Learning Objectives	
FPCC00E004	(R) From memory, describe/explain how leakage is detected from the spent fuel storage pool, dryer-separator storage pit, reactor well and fuel shipping cask pit liners, IAW the Fuel Pool Cooling and Cleanup System (FPCCS) Lesson Plan.

Material Required for Examination: P&ID M-53 sheet 2;

Question Source: Facility Exam Bank | Question Modification Method: Direct From Source

Question Source Comments: 2002 LSRO Requal exam.

Question Number 6

The unit is in OP CON 5 with the following plant conditions:

- RHR Loop "B" is operating in Shutdown Cooling.
- Both Fuel Pool Cooling Pumps and Heat Exchangers are in service.
- The Refueling Cavity is flooded and the Fuel Pool gates are removed.
- Preparations for Core Alterations are in progress.
- A control circuit malfunction causes a vessel draining event.
- Operator actions have slowed the lowering level.
- Level is currently lowering 1 foot every 11 minutes.
- Due to high radiation conditions, the refueling floor is NOT accessible.

Based on these conditions, which of the following makeup sources is available to the Fuel Pool/Refueling Cavity that requires operator component manipulation from outside the Control Room?
(Exclude hand operation of MOVs)

a. Fire Water.

b. Service Water.

c. Demineralized Water.

d. Condensate Storage & Transfer.

Answer	d	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 3 | SRO Group 1 | 295023G435

295023 Refueling Accidents

2.4 Emergency Procedures and Plan

2.4.35 Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications. 3.3 3.5

Explanation of Answer

Justification:
CORRECT - Condensate Storage & Transfer - Requires manual valve manipulation only to initiate makeup water flow to the cavity/pool through RHR SDC.
INCORRECT - Fire Water - Requires opening of HV-4648 from the Control Room. Fire hose on 201 disallowed by question stem.
INCORRECT - Demineralized Water - can only be aligned with hoses on 201' RB.
INCORRECT - Service Water. Service Water requires opening valves from the Control Room.

Reference Title

Ref: M-10-1 and M-53-1

Learning Objectives

FPCC00E008 (R) Concerning spent fuel storage pool water level, summarize, from memory, the following IAW the Fuel Pool Cooling and Cleanup (FPCCS) System Lesson Plan:
a. How normal level is controlled
b. Sources of makeup to the spent fuel storage poo

Material Required for Examination None

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified

Question Source Comments:	Vision Bank QID# Q53948 Modified to disallow hoses on 201 el.

Question Number 7

Given the following conditions:

- The reactor is shutdown.
- RHR Loop "B" is in Shutdown Cooling (SDC).
- RHR Heat Exchanger Bypass valve, BC-HV-F048B, is closed.

During shift turnover, Reactor Recirculation was found in the following condition:

- 'B' Reactor Recirculation Pump suction valve is 100% open.
- 'B' Reactor Recirculation Pump discharge valve is 10% open.

Based on these conditions, which of the following describes the actions necessary to maximize SDC heat removal?

The 'B' Recirculation Pump discharge valve must be fully

a. opened because the RHR pump will be running at shutoff head.

b. opened because RHR pump min flow will be open.

c. closed because the RHR flow will be at pump runout.

d. closed because the RHR flow will be bypassing the core.

Answer	d	Exam Level	B	Cognitive Level	Comprehension	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Emergency and Abnormal Plant Evolutions	RO Group	2	SRO Group	2	295001A101

295001 Partial or Complete Loss of Forced Core Flow Circulation

AA1. Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION:

AA1.01 Recirculation system 3.5 3.6

Explanation of Answer

Justification:
Correct answer: closed because the RHR flow will be bypassing the core. The 'B' Recirculation Pump discharge valve must be fully shut. With the discharge and suction valves open, some SDC flow will bypass the core reducing heat removal from the core. Closing the B discharge valve will establish full SDC flow through the core.
Incorrect: opened because the RHR pump will be running at shutoff head. - Wrong direction, wrong reason. RHR pump will have normal SDC flowpath to and from the B Recirc loop.
Incorrect: opened because RHR pump min flow will be open. Wrong direction, wrong reason. Flow through RHR loop flow element will be adequate to close min flow valve.
Incorrect: closed because the RHR flow will be at pump runout. Correct direction but wrong reason. The valve must be closed to stop core bypass flow. Pump runout is not why the Recirc discharge valve is closed. F015B is throttled to prevent runout.

Reference Title

HC.OP-SO.BC-0002 Limitations 3.2.5 and 3.2.11

Learning Objectives

RHRSYSE009 (R) Given plant problems/industry events associated with the Residual Heat Removal System:
a. Discuss the root cause of the plant problem/industry event IAW the associated plant problems/industry event document.
b. Discuss the HCGS design a

Material Required for Examination	None
Question Source:	New
Question Modification Method:	
Question Source Comments:	

Question Number 8

Given the following conditions:

- The plant is in Operational Condition 5.
- The reactor core has been completely off-loaded to the Fuel Pool.
- Fuel Pool Cooling Heat Exchanger is supplied by B SACS Loop.
- Prior to reload, the Control Room reports Fuel Pool temperature is increasing.

Which one of the following malfunctions would cause the rise in Fuel Pool temperature?

a. SACS Loop B HX Bypass Isolation valve EG-HV-2457B air supply line breaks off.

b. SSW Loop B Yard Dump valve EA-HV-2356B spuriously opens.

c. SSW Loop B to RACS valve EA-HV-2204 closes.

d. SACS Loop B Temperature Control valve EG-TCV-2517B fails full open.

Answer	d	Exam Level	B	Cognitive Level	Comprehension	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Emergency and Abnormal Plant Evolutions	RO Group	2	SRO Group	2	295018A201

295018 Partial or Complete Loss of Component Cooling Water

AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER:

AA2.01 Component temperatures 3.3 3.4

Explanation of Answer

Justification:
Correct: SACS Loop B Temperature Control valve EG-TCV-2517B fails full open. Full open bypasses the SACS HX. SACS Loop B temp will rise as well as FP temp.
Incorrect: SSW Loop B Yard Dump valve EA-HV-2356B spuriously opens. Would increase SSW flow through the SSW side of the SACS HX. Worst case would make no change if no water came out.
Incorrect: SSW Loop B to RACS valve EA-HV-2204 closes. FP is cooled by SACS. Loop B SSW flow would increase though SACS HX, lowering SACS temp or worst case, no change.
Incorrect: SACS Loop B HX Bypass Isolation valve EG-HV-2457B air supply line breaks off. Valve fails closed on loss of air, forcing more flow through SACS HX and lowering SACS temps.

Reference Title

P&ID M-11 sheet 1 and M-10 sheet 2

Learning Objectives

FPCC00E015	(R) Given any of the following systems, from memory, summarize the interrelations between the FPCCS and that system, IAW the Fuel Pool Cooling and Cleanup System (FPCCS) Lesson Plan: a. Instrument Air System b. Area Radiation Monitoring Sys
STACS0E006	Summarize/identify how the STACS system temperature is automatically controlled. IAW available control room references

Material Required for Examination P&ID M-11 sheet 1 and M-10 sheet 2

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 9

Given the following conditions:

- The plant is in Operational Condition 4
- Control Room CRIDS computer is out of service when the following alarms actuate in the Control Room:

  - RACS REMOTE CONTROL PNL 10C202 (A2-F2)
  - RACS RMS is in ALARM on RM-11

- An operator has been dispatched to determine RACS Head Tank level.

Based on these conditions:

a. RACS is leaking into RWCU.

b. RWCU is leaking into RACS.

c. RACS is leaking into Service Water.

d. Service Water is leaking into RACS.

Answer b **Exam Level** B **Cognitive Level** Comprehension **Facility:** Hope Creek **Exam Date:** 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions **RO Group** 2 **SRO Group** 2 295018K101

295018 Partial or Complete Loss of Component Cooling Water

AK1. Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER:

AK1.01 Effects on component/system operations 3.5 3.6

Explanation of Answer

Justification:
Correct: RWCU is leaking into RACS. RWCU is source of activity causing RACS Rad Monitor alarm. Inward leakage into RACS makes Head tank level rise.
Incorrect: Service Water is leaking into RACS. Would not cause RACS Rad Monitor alarm.
Incorrect: RACS is leaking into Service Water. Head tank level would lower.
Incorrect: RACS is leaking into RWCU.. Would not cause RACS Rad Monitor alarm. Head tank level would lower.

Reference Title

HC.OP-AR.ZZ-0011 Attachment C1-8

Learning Objectives

RACS00E013 (R) Given M-13-0 and M-13-1 assess the interrelationship between RACS and any of the following for a given set of plant conditions:
a. Control Rod Drive
b. Liquid Radwaste Collection System
c. Liquid Radwaste System
d. Solid R

Material Required for Examination M-13-1

Question Source: INPO Exam Bank **Question Modification Method:** Editorially Modified

Question Source Comments: INPO Bank QID# 7975 03/14/1997 Hatch. Modified for Hope Creek

Question Number 10

Given the following conditions:

- The plant is in Operational Condition 4 following a forced shutdown 16 hours ago.
- RHR Loop "A" operating in Shutdown Cooling.
- The "B" RHR pump is Cleared & Tagged for motor replacement.
- The "A" RHR pump develops a high vibration and trips on overcurrent.
- HC.OP-AB.RPV-0009, Shutdown Cooling, is entered.

Which of the following will be adequate to maintain Operational Condition 4?

a. Crosstie "C" or "D" RHR pump for heat removal.

b. Maximize RWCU bottom head drain flow.

c. Raise level to +80 inches using natural circulation for heat removal.

d. Inject with Core Spray from the CST to the RPV.

Answer a | Exam Level B | Cognitive Level Application | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 3 | SRO Group 2 | 295021A104

295021 Loss of Shutdown Cooling

AA1. Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING:

AA1.04 Alternate heat removal methods 3.7 3.7

Explanation of Answer

Justification

Crosstie "C" or "D" RHR pump for heat removal. correct - RPV-0009 subsequent action E, RHR Pumps C & D may be realigned to provide alternative decay heat removal.

Maximize RWCU bottom head drain flow. -incorrect- Maximizing bottom head drain flow does not provide heat removal adequate to maintain less than 200 degrees.

Raise level to +80 inches using natural circulation for heat removal. -Incorrect- per subsequent action E Natural Circulation does not provide heat removal, only circulation.

Inject with Core Spray from the CST's to the RPV. -incorrect- This is not an approved method of Alternate DHR.

Reference Title
HC.OP-AB.RPV-0009

Learning Objectives	
ABRPV9E007	(R) Explain the bases for Subsequent Actions and the information contained in the Discussion Bases Section of Shutdown Cooling.

Material Required for Examination: None

Question Source: Facility Exam Bank | Question Modification Method: Significantly Modified

Question Source Comments: VISION Bank QID# Q61332 Sig Mod

Question Number 11

Given the following conditions:

- The plant is in Operational Condition 5.
- Control rod friction testing is in progress.
- 'B' CRD Pump is C/T for maintenance.
- Control rod 30-31 is at notch 04.
- 'A' CRD pump trips and cannot be restarted.

Which one of the following is the most limiting consequence of the pump trip?

a. Rod 30-31 must be electrically disarmed.

b. Rod 30-31 must be hydraulically disarmed.

c. Rod 30-31 must be scrammed.

d. Rod 30-31 cell must be unloaded.

Answer c | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 2 | SRO Group 2 | 295022K102

295022 Loss of CRD Pumps

AK1. Knowledge of the operational implications of the following concepts as they apply to LOSS OF CRD PUMPS:

AK1.02 Reactivity control 3.6 3.7

Explanation of Answer

Justification:
Correct: Scrammed. Any control rod withdrawn unless under TS 3.9.10.1 or 3.9.10.2 must have an operable scram accumulator. 3.1.4.5 In Op Con 5* With one or more control rods inoperable, upon discovery immediately initiate action to fully insert inoperable withdrawn control rods. The CRD Accumulator trouble alarm will eventually alarm requiring a reactor scram.
Incorrect- Rod 30-31 cell must be unloaded. Not required. 30-31 must be inserted immediately.
Incorrect- Rod 30-31 must be electrically disarmed. Action for Op Con 1 and 2.
Incorrect- Rod 30-31 must be hydraulically disarmed. Action for Op Con 1 and 2.

Reference Title
Tech Spec 3.1.3.5

Learning Objectives	
CRDHYDE033	(R) Given a scenario of applicable operating conditions and access to Technical Specifications complete each of the following IAW Technical Specifications: Select those sections applicable to the CRDH System. Evaluate CRDH System operability and determ
ABIC01E007	(R) Explain the bases for Subsequent Actions and the information contained in the Discussion Bases Section of Control Rod.

Material Required for Examination: Tech Spec section 3.1

Question Source: New | Question Modification Method:

Question Source Comments:

Question Number 12

Given the following:

- LPRM changouts are being perfomed within the reactor vessel cavity.
- One of the old fission chambers is accidently lifted 1 inch clear of the water.

Which one of the choices correctly completes the following statement regarding the Refueling Floor Evacuation Alarm in the reactor building?

The _____ radiation monitor activates the Evacuation Alarm because its detector(s) is(are) located in _____

a. New Fuel Vault; line-of-sight to the refueling cavity.

b. Spent Fuel Pool; line-of-sight to the refueling cavity.

c. Refuel Floor Exhaust; the ducts above the refueling cavity.

d. Reactor Building Exhaust; the ducts above the refueling cavity.

Answer b | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 2 | SRO Group 2 | 295033A101

295033 High Secondary Containment Area Radiation Levels

EA1. Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS:

EA1.01 Area radiation monitoring system 3.9 4.0

Explanation of Answer

Justification: Spent Fuel Pool Area rad monitor activates the evacuation siren on the wall opposite the elevator. Detector is an area radiation monitor also mounted on the wall next to the siren.
New Fuel Vault rad Monitors also activate evacuation siren but are shielded by concrete from sources outside the vault.
RFE may alarm from shine but does not activate siren.

Reference Title

HC.OP-AR.ZZ-0019 Attachment A4

Learning Objectives

RMSYS0E004 (R) Given a scenario of plant operating conditions, evaluate the effect on plant operations IAW the Radiation Monitoring System Lesson Plan if a high radiation level is indicated for:
a. Main Steam Lines
b. Liquid Radwaste Monitoring
c.

Material Required for Examination None

Question Source: Facility Exam Bank | **Question Modification Method:** Direct From Source

Question Source Comments: VISION Bank QID# Q56244

Question Number 13

Which one of the following would require evacuation of part of the Reactor Building area to prevent possible personnel over-exposure?

a. An LPRM removal using the LPRM removal tool.

b. An SRM Detector driven out of the core using the SRM Drive.

c. A TIP detector withdrawn into the TIP Drive Mechanism.

d. A Control Rod Blade unlatched by the CRB removal tool.

Answer c | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 2 | SRO Group 2 | 295033K304

295033 High Secondary Containment Area Radiation Levels

EK3. Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS:

EK3.04 Personnel evacuation 4.0 4.4

Explanation of Answer

Justification: Correct: A TIP detector withdrawn into the TIP Drive Mechanism. High radiation source is outside the normal storage location and in an easily accessible unshielded location.
Incorrect: An SRM Detector driven out of the core using the SRM Drive. High radiation source detector remains inside the reactor.
Incorrect: An LPRM removal using the LPRM removal tool. Performed underwater for shielding.
Incorrect: A Control Rod Blade unlatched by the CRB removal tool. Performed underwater for shielding

Reference Title

Learning Objectives

TIPS00E009 (R) Given plant problems/industry events associated with the TIP System:
a. Discuss the root cause of the plant problem/industry events.
b. Discuss the HCGS design and/or procedural guidelines that mitigate/reduce the likelihood of the plan

Material Required for Examination None

Question Source: New | **Question Modification Method:**

Question Source Comments:

Question Number 14

With a Reactor Building Exhaust Ventillation Radiation High Alarm present, EOP-103/4 directs the operator to verify secondary containment isolation of reactor building ventilation and the initiation of FRVS.

WHICH ONE (1) of the following is the reason for this verification?

a. A treated and controlled ground release of the activity is provided.

b. A treated and controlled elevated release of the activity is provided.

c. To prevent contamination of normal ventilation ductwork.

d. To allow accurate monitoring of a release to the environment.

Answer b Exam Level B Cognitive Level Memory Facility: Hope Creek Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions RO Group 2 SRO Group 2 295034K301

295034 Secondary Containment Ventilation High Radiation

EK3. Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION:

EK3.01 Isolating secondary containment ventilation 3.8 4.1

Explanation of Answer

Justification:
Correct: A treated and controlled elevated release of the activity is provided. Secondary Containment is designed to minimize any ground level release od radioactivity which may result from an accident. FRVS Fans provide charcoal filters to remove radioactive iodine
Incorrect: A treated and controlled ground release of the activity is provided. Elevated release
Incorrect: To prevent contamination of normal ventilation ductwork. Occurs normally
Incorrect: To allow accurate monitoring of a release to the environment. Release from RB is always monitored. Not reason FRVS started.

Reference Title
Tech Spec Bases 3/4 6.5

Learning Objectives	
RBVENTE036	(R) Given a scenario of applicable operating conditions and access to Technical Specifications: a. Choose those sections which are applicable to Reactor Building Ventilation. b. Evaluate Reactor Building Ventilation operability. c. E

Material Required for Examination None

Question Source: INPO Exam Bank Question Modification Method: Editorially Modified

Question Source Comments: INPO BANK QID#18083 10/16/1998 Pilgrim

Question Number 15

10CFR 50.54(X) and NC.NA-AP.ZZ-0005 "Station Operating Practices" allow "reasonable action that departs from a license condition or a Technical Specification in an emergency when this action is immediately needed to protect the public health and safety..."

These actions:

a. must be reported to the NRC within 15 minutes of the action being taken.

b. must be approved by the Operations Manager prior to the action taking place.

c. must be approved by a licensed SRO on the operating shift prior to the action taking place.

d. must be approved by any member of the plant staff who holds a Senior Operators License.

Answer	c	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Emergency and Abnormal Plant Evolutions	RO Group	3	SRO Group	2	295035G101

295035	Secondary Containment High Differential Pressure	
2.1	Conduct of Operations	
2.1.1	Knowledge of conduct of operations requirements.	3.7 3.8

Explanation of Answer

Generic KA FORCED to Procedures section on purpose. IGNORE 295035 K/A Title.
Justification:
Correct: - must be approved by a licensed SRO on the operating shift prior to the action taking place.
Incorrect - must be approved by the Plant Manager prior to the action taking place. An SRO on the crew must approve a 50.54(x) call prior to the decision.
Incorrect - must be approved by any member of the plant staff who holds a Senior Operators License. An SRO on the crew must approve a 50.54(x) call prior to the decision.
Incorrect - must be reported to the NRC within 15 minutes of the action being taken. A 1 hour notification is required.

Reference Title

Reference: NC.NA-AP.ZZ-0005, Rev. 11, Section 5.4.3 10CFR50.54(x)

Learning Objectives

ADMPROE007	From Memory Explain the circumstances and approval required for Licensed Operators to deviate from Technical Specifications or license conditions. IAW NC.NA-AP.ZZ-0005 and 10CFR50.54(x),and SH.OP-AP.ZZ-0102

Material Required for Examination None

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source

Question Source Comments: Q57018

Question Number 16

Which one of the following describes the only position on the shift complement specified in the Technical Specifications that can NOT be reduced temporarily by one less than the minimum to accomodate unexpected absence of on-duty shift crew members?

a. CRS.

b. OS.

c. RO/PO.

d. STA.

Answer b | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 3 | SRO Group 2 | 295035G104

295035 Secondary Containment High Differential Pressure

2.1 Conduct of Operations

2.1.4 Knowledge of shift staffing requirements. 2.3 3.4

Explanation of Answer: Generic KA FORCED to Procedures section on purpose. IGNORE 295035 K/A Title.
Justification:
Correct:OS. As stated in NC.NA.AP.ZZ-0005 Attach 9 paragraph 5 and Tech Specs Table 6.2.2-1
Incorrect: CRS. May be short up to 2 hours
Incorrect: RO/PO. May be short up to 2 hours
Incorrect: STA. May be short up to 2 hours

Reference Title

NC.NA-AP.ZZ-0005, rev 1 Section 5.14, attachment 9 Par 5

Learning Objectives

ADMPROE021 Given plant conditions and/or access to control room references Determine the following:
The level of licensing required for the OS, CRS, and RO/PO.
Minimum shift manning requirements for all plant conditions.
Normal shift staffing levels.
When a pers

Material Required for Examination: None. Remove Tech Spec Admin section from references.

Question Source: Facility Exam Bank | Question Modification Method: Direct From Source

Question Source Comments: VISION Bank QID# Q54277

Question Number 17

Given the following conditions:

- New fuel is being lifted to the refueling floor from the Reactor Building Truck Bay with the polar crane.
- Workers are preparing new fuel for inspection.

Which of the following configuations of new fuel is NOT allowed?

a. 4 full crates stored on top of each other.

b. 5 full crates laid side by side next to each other.

c. 2 new bundles in the inspection stand and one suspended from the polar crane.

d. 5 new bundles in the new fuel storage rack with one in an open crate.

Answer	a	Exam Level	B	Cognitive Level	Application	Facility:	Hope Creek	Exam Date:	02/24/2003
Tier:	Emergency and Abnormal Plant Evolutions			RO Group	3	SRO Group	2		295035G110
295035	Secondary Containment High Differential Pressure								
2.1	Conduct of Operations								
2.1.10	Knowledge of conditions and limitations in the facility license.								2.7 3.9

Explanation of Answer

Generic KA FORCED to Procedures section on purpose. IGNORE 295035 K/A Title.
Justification:
4 full crates stored on top of each other. Correct. HC Operating License condition 2.C.6 states "Fresh fuel asemblies, when stored in their shipping containers shall be stacked no more than 3 containers high."
5 full crates laid side by side next to each other. Incorrect. Not prohibited by HC Operating License condition 2.C.6
2 new bundles in the inspection stand and one suspended from the polar crane. Incorrect. Not prohibited by HC Operating License condition 2.C.6.
5 new bundles in the new fuel storage rack with one in an open crate. Incorrect. Not prohibited by HC Operating License condition 2.C.6.

Reference Title

HC.RE-FR.ZZ-0001 P&L 3.2.5

HC Operating License condition 2.C.6

Learning Objectives

TECSPCE010	(R) Given specific plant operating conditions and a copy of the Hope Creek Generating Station Technical Specifications, evaluate plant/system operability and determine required actions (if any) to be taken. (SRO/STA Only)

Material Required for Examination HC 100 percent operating license.

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 18

Given the following conditions:

- Troubleshooting on the refuel platform air accumulator auto drain trap is complete.
- The clearance tags have been removed.
- The trap was still blowing air by slightly.
- The air system will be returned to service with the trap manually isolated and instructions to manually unisolate and blowdown hourly when in use.

Which one of the following tags is placed on the isolation valve to document the instructions while allowing hourly use?

a. Red Blocking Tag.

b. White Caution Tag.

c. Yellow Permissive Tag.

d. Administrative Tag.

Answer b Exam Level B Cognitive Level Memory Facility: Hope Creek Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions RO Group 3 SRO Group 2 295035G220

295035 Secondary Containment High Differential Pressure

2.2 Equipment Control

2.2.20 Knowledge of the process for managing troubleshooting activities. 2.2 3.3

Explanation of Answer: Generic KA FORCED to Procedures section on purpose. IGNORE 295035 K/A Title.
Justification:
Correct: White Caution Tag. IAW NC.NA-AP.ZZ-0015 5.4.4. Used for abnormal operating conditions
Incorrect: Red Blocking Tag. Does not allow valve manipulation with tag present.
Incorrect: EMIS Tag. Used to identify malfunction.
Incorrect: Administrative Tag. Not a physical tag. Communicates personnel of adminstrative and safety requirements

Reference Title
NC.NA-AP.ZZ-0015 5.4.4

Learning Objectives	
NA0015E004	Identify the kinds of tags and their purpose IAW the Safety Tagging Procedure, NC.NA-AP.ZZ-0015(Q) and the SAP/WCM Tagging Operations Procedure, SH.OP-AP.ZZ-0015(Q).

Material Required for Examination: None

Question Source: Other Facility Question Modification Method: Editorially Modified

Question Source Comments: Peach Bottom 2002 LSRO question 3-8 modified for Hope Creek.

Question Number 19

Given the following conditions:

- A fuel handling tool malfunctions causing high radiation conditions on the refuel floor.
- A worker receives an accidental radiation exposure on the Refueling Floor of 6.5 Rem TEDE.

Which one of the following correctly describes the time limit for reporting the event to the NRC?

a. 1 hour.

b. 4 hours.

c. 8 hours.

d. 24 hours.

Answer b Exam Level B Cognitive Level Application Facility: Hope Creek Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions RO Group 3 SRO Group 2 295035G430

295035 Secondary Containment High Differential Pressure

2.4 Emergency Procedures and Plan

2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies. 2.2 3.6

Explanation of Answer: Generic KA FORCED to Procedures section on purpose. IGNORE 295035 K/A Title.
Justification:
Correct: 4 hours. ECG Reportable Action Level # 11.4.2.a
Incorrect: 1 hour
Incorrect: 8 hours
Incorrect: 24 hours

Reference Title

HC ECG RAL 11.4.2.a

Learning Objectives

Material Required for Examination: HC ECG without Introduction and Usage section

Question Source: New Question Modification Method:

Question Source Comments: E Plan for Operations Duties NEPLICOPSHCC Obj 6.1

Question Number 20

New fuel is being unloaded on the refuel floor for inspection and placement in the New Fuel Vault.

Which one of the following is required by the Fire Protection Program for this work and the reason for the requirement?

a. Continous Fire Watch because the shipping crates are combustable.

b. Hot Work Permit because flammable chemicals are required.

c. Class D fire extinguisher because ignitable metals are present.

d. ALL FOG nozzles placed on fire hose stations to prevent inadvertant criticality.

Answer c | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Emergency and Abnormal Plant Evolutions | RO Group 2 | SRO Group 2 | 600000K302

600000 Plant Fire On Site

EK3. Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE:

EK3.02 Steps called our in the site fire protection plant, fire protection system manual, and fire zone manual 2.2 2.8

Explanation of Answer

Justification:
Correct: Class D fire extinguisher because ignitable metals are present. Fuel bundles consist of fuel pins, fuel pin end plugs, channels, and spacer made from Zirconium which is an ignitable metal. A class D fire extinguisher must be readily available.
Incorrect: Continous Fire Watch because the shipping crates are combustable. Shipping crated are non-combustable metal.
Incorrect: Hot Work Permit because flammable chemicals are required. Hot work is cutting or welding. Use of chemicals requires a chemical use permit.
Incorrect: ALL FOG nozzles placed on fire hose stations to prevent inadvertant criticality. Fog nozzles are replaced with solid stream nozzles when new fuel is present to prevent foam moderation causing criticality.

Reference Title

NC.FP-AP.ZZ-0012 Table 2 and step 4.4.2

Learning Objectives

ADMPROE064 Given access to Control Room References Determine where ignitable metals are used at HCGS. IAW NC.NA-AP.ZZ-0025.

Material Required for Examination NC.NA-AP.ZZ-0025, NC.FP-AP.ZZ-0025, and NC.FP-AP.ZZ-0012

Question Source: New | **Question Modification Method:**

Question Source Comments:

Question Number 21

Given the following conditions:

- The plant is in Operational Condition 5 following shutdown using normal procedures.
- Core offload is in progress.
- Shutdown Cooling is in-service through the B Loop.
- An inadvertent full Channel C LPCI Initiation signal is received.

Which one of the following describes the response (if any)?

a. Reactor cavity water level will lower because LPCI Loop C test return valve will open to the suppression pool.

b. Reactor cavity water level will lower because LPCI Loop C min-flow valve will open.

c. Reactor cavity water level will rise because LPCI Loop C will inject to the reactor vessel.

d. Reactor cavity water level will remain unchanged because LPCI Loop C is isolated from injection.

Answer d | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 1 | SRO Group 1 | 203000K301

203000 RHR/LPCI: Injection Mode (Plant Specific)

K3. Knowledge of the effect that a loss or malfunction of the RHR/LPCI: INJECTION MODE will have on following:

K3.01 Reactor water level 4.3 4.4

Explanation of Answer

Justification:
Reactor cavity water level will remain unchanged because LPCI Loop C is isolated from injection during refueling. Correct. HC.OP-IO.ZZ-0005 step 5.2.46 isolated RHR and Core Spray from injection prior to refueling.

Reference Title

HC.OP-IO.ZZ-0005 step 5.2.46

Learning Objectives

IOP005E006	(R) Analyze plant conditions and parameters to determine if plant operation is in accordance with the COLD SHUTDOWN TO REFUELING Integrated Operating Procedure, supporting System Operating Procedures and Technical Specifications.

Material Required for Examination None

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 22

Given the following conditions:

- Refueling is in progress.
- The Reactor Mode Switch is locked in REFUEL.
- Source Range Monitors A, C, and D are operable; SRM B is inoperable.
- Shutdown margin has been verified.
- All control rods are at position 00.
- As a fuel assembly is taken to the fuel pool through the transfer canal, the RO observes that the 'C' SRM counts have dropped to zero.
- The refueling crew stops the bridge in the fuel pool.

After reviewing applicable procedures, Core Alterations can continue:

a. with no restrictions.

b. for Control Rod Blades only.

c. only in the quadrants monitored by SRMs A and D.

d. only in the quadrants monitored by SRMs A and C.

Answer	c	Exam Level	B	Cognitive Level	Application	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Plant Systems	RO Group	1	SRO Group	1	215004G232

215004	Source Range Monitor (SRM) System		
2.2	Equipment Control		
2.2.32	Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.5	3.3

Explanation of Answer

Justification: IAW Tech Spec 3.9.2.b - One operable SRM must be in the quadrant where the core alteration is taking place and one in an adjacent quadrant.
"can continue only in the quadrants monitored by SRMs A and D"- Correct
"can continue with no restrictions" - Incorrect- core Alts in only A/D quadrants.
"for Control Rod Blades only." - Incorrect- core Alts in only A/D quadrants.
"can continue only in the quadrants monitored by SRMs A and C." - Incorrect- can continue in A/D quadrants only.

Reference Title
Tech Spec 3.9.2.b

Learning Objectives	
SRMSYSE007	(R) Given a scenario of applicable operating conditions and access to technical specifications. a. Choose those sections which are applicable to the SRM system. b. Evaluate SRM operability and determine required actions based upon system operability. (

Material Required for Examination Tech Spec section 3.9

Question Source: Facility Exam Bank **Question Modification Method:** Significantly Modified

Question Source Comments: VISION QID# 60987. Significantly modified.

Question Number 23

Given the following conditions:

- The reactor is defueled.
- The reactor mode switch is in locked in Shutdown.
- LPRM changeouts are in progress.
- The Control Room reports a control rod block and half scram is received from "A" APRM.

Which one of the following would cause the rod block and half scram?
(Consider each answer choice seperately and assume remaining LPRMs are working normally)

_____ assigned to "A" APRM is (are) placed in _____

a. 1 of 4 "B" level LPRMs; BYP.

b. 3 of 4 "B" level LPRMs; CAL.

c. 8 of 21 LPRMs; BYP.

d. 1 of 21 LPRMs; CAL.

Answer c | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 1 | SRO Group 1 | 215005A103

215005 Average Power Range Monitor/Local Power Range Monitor System

A1. Ability to predict and/or monitor changes in parameters associated with operating the APRM/LPRM controls including:

A1.03 Control rod block status 3.6 3.6

Explanation of Answer

Justification:
8 of 21 LPRMs assigned to "A" APRM are placed in BYP. Correct. With only 13 LPRMs in Operate, APRM INOP occurs with Reactor Mode Switch NOT in Run.
1 of 4 "B" level LPRMs assigned to "A" APRM is placed in BYP. Incorrect. 20 LPRMS remain in Operate. No APRM Inop trip.
3 of 4 "B" level LPRMs assigned to "A" APRM are placed in CAL. Incorrect. 18 LPRMS remain in Operate. No APRM Inop trip. Administrative Inop only.
1 of 21 LPRMs assigned to "A" APRM is placed in CAL. Incorrect. 20 LPRMS remain in Operate. No APRM Inop trip

Reference Title

HC.OP-SO.SE-0001

Learning Objectives

APRM00E010 (R) From memory, explain why an inoperable trip of an APRM channel is initiated if there are less than 14 LPRM inputs, IAW the Student Handout.

Material Required for Examination: Tech spec section 3.3 with Table 3.3.1-1 removed.

Question Source: New | Question Modification Method:

Question Source Comments:

Question Number 24

Given the following conditions:

- The plant is in Operational Condition 5.
- All RBVS and RBVE fans are running.
- FRVS is in a normal standby configuration.
- "B" and "D" Diesel Generators are tagged out for maintenance.

A radiological incident on the Refuel Floor causes Refuel Floor Exhaust Radiation to reach 4.5E-3 uci/ml.

Select total FRVS recirculation flow one minute after this event.
(Assume no operator actions)

a. 0 cfm.

b. 90,000 cfm.

c. 120,000 cfm.

d. 180,000 cfm.

Answer d | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 1 | SRO Group 1 | 261000A301

261000 Standby Gas Treatment System

A3. Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including:

A3.01 System flow 3.2 3.3

Explanation of Answer

JUSTIFICATION:
Correct Answer:"180,000 cfm" All six FRVS fans will automatically start on the high Refuel Floor Exhaust radiation signal because there is no loss of bus power or offsite power stated. All RBV fans running. EDGs out for maintenance will not prevent start of all fans.
Incorrect Answers: 0 cfm. All recirc fans start and run until manually secured.
"120,000 cfm" . Incorrect. No operator actions taken to secure 2 fans.
"90,000 cfm". Incorrect. B and D EDG maintenance have no effect.
End of Justification

Reference Title
HC.OP-SO.GU-0001

Learning Objectives	
RBVENTE006	(R) Given plant conditions, distinguish between the automatic starts and stops associated with the Filtration Recirculation Ventilation System (FRVS) Recirc Fans.

Material Required for Examination: None

Question Source: Facility Exam Bank | Question Modification Method: Editorially Modified

Question Source Comments: Vision Bank QID # Q60662.

Question Number 25

125 VDC bus 1CD417 is deenergized when an Emergency Diesel Generator start signal is received.

Which of the following describes the effect on Diesel Generator 1CG400?

a. The diesel generator will NOT automatically start.

b. The diesel generator will start from the Main Control Room but the automatic trips will be disabled.

c. The diesel generator will automatically start but in the DROOP mode.

d. The diesel generator will automatically start but the output breaker can only be shut manually.

Answer	a	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Plant Systems	RO Group	1	SRO Group	1	264000K609

264000	Emergency Generators (Diesel/Jet)

K6.	Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET):	
K6.09	D.C. power	3.3 3.5

Explanation of Answer

Justification:
Correct: The diesel generator will not automatically start. DC control power is needed to open the Air Start Solenoids. Energized to open.
Incorrect: The diesel will automatically start but the output breaker can only be shut manually. The diesel will not start manually or automatically.
Incorrect: The diesel generator will automatically start but in the DROOP mode. The diesel will not start manually or automatically.
Incorrect: The diesel generator will start from the Main Control Room but the automatic trips will be disabled. The diesel will not start from the Main Control Room or automatically.

Reference Title
HC.OP-SO.KJ-0001
HC.OP-AR.KJ-0006 Attach 37

Learning Objectives	
EDG000E011	(R) Given plant conditions, predict the response of Diesel Generator governor and voltage regulator control circuitry to an Emergency start (LOP/LOCA).

Material Required for Examination None

Question Source: Facility Exam Bank

Question Modification Method: Editorially Modified

Question Source Comments: Vision Bank QID# Q53558. Modified answer choice "The diesel generator will start but the automatic trips will be disabled." because it is correct. Air Start Solenoids can be positioned with manual levers. The engine will start but there are no elec trips.

Question Number 26

WHICH ONE of the following ruptured areas would prevent establishing two-thirds(2/3) core coverage following a Design Bases Accident LOCA?

a. Jet pump inlet riser.

b. Jet pump diffuser section.

c. Shutdown Cooling suction line.

d. Low pressure LPCI injection line.

Answer b | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 2 | SRO Group 2 | 202001K401

202001 Recirculation System

K4. Knowledge of RECIRCULATION System design feature(s) and/or interlocks which provide for the following:

K4.01 2/3 core coverage: Plant-Specific 3.9 3.9

Explanation of Answer

Justification:
Correct: Jet pump diffuser section. Part of jet pump boundry to establish 2/3 core floodable volume
Incorrect: Jet pump inlet riser. Located in the downcomer region which if ruptured, would not drain the rpv.
Incorrect: Shutdown Cooling suction line. Would only drain the downcomer annulus area.
Incorrect: Low pressure LPCI injection line. Located at the top of the core at the core plate which is above 2/3 core coverage.

Reference Title

Tech Spec Bases 3/4.4.1

Learning Objectives

RECIRCE007 Explain/Discuss how the Recirculation System is designed to ensure a 2/3 core height refloodable volume is maintained. IAW available control room references:

Material Required for Examination None

Question Source: INPO Exam Bank | **Question Modification Method:** Direct From Source

Question Source Comments: INPO Bank QID# 12456 07/02/1999 Limerick

Question Number 27

Given the following conditions:

- The plant is in Operational Condition 4 with coolant temperature at 185°F.
- The "B" Loop of RHR is in Shutdown Cooling.
- An RPV water level transient occurs.
- RPV level has lowered to -20 inches and is stabilized at -15".
- RPV water level cannot be raised to Level 3.
- HC.OP-AB.RPV-0009, Shutdown Cooling is entered.

Which of the following decay heat removal methods will be effective for these conditions?

a. Alternate Shutdown cooling using "D" to "B" RHR pump cross-tie.

b. Manually operate SDC valves and restart B RHR pump.

c. RHR RPV head spray with all RPV head vent valves open.

d. Maximizing Fuel Pool cooling with both Fuel Pool heat exchangers.

Answer b | Exam Level B | Cognitive Level Application | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 2 | SRO Group 2 | 205000A205

205000 Shutdown Cooling System (RHR Shutdown Cooling Mode)

A2. Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM/MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:

A2.05 System isolation 3.5 3.7

Explanation of Answer

Justification:
Correct: Manually operate SDC valves and restart B RHR pump. Based on HC.OP-AB.RPV-0009 Shutdown Cooling Action A3 and A4.
Incorrect: Alternate Shutdown cooling using "D" to "B" RHR pump cross-tie. Still isolated at Level 3{+12.5"].
Incorrect: RHR RPV head spray with all head vent valves open. Requires 2 SRV's open with at least 50 psid RPV to SP per HC.OP-AB.RPV-0009 section H. Head spray line would be isolated with RPV level below Level 3.
Incorrect: Maximizing fuel pool cooling. In OC 4, the RPV head is still in place, FPCCU cannot be used.

Reference Title

HC.OP-AB.RPV-0009 subsequent actions "A3 and A4"

Learning Objectives

ABRPV9E007 (R) Explain the bases for Subsequent Actions and the information contained in the Discussion Bases Section of Shutdown Cooling.

Material Required for Examination None

Question Source: Facility Exam Bank | Question Modification Method: Significantly Modified

Question Source Comments: VISION Bank QID #Q61331 Stem modified to provide a correct answer. Answers modified.

Question Number 28

Given the following conditions:

- The plant is operating in Operational Condition 4 in preparation for refueling outage.
- Residual Heat Removal (RHR) System Loop B is operating in the Shutdown Cooling (SDC) mode.
- RPV pressure has increased from 50 to 100 psig.

In addition to B RHR PUMP(BP202) tripping, which of the following system automatic responses will occur?

a. RHR SHUTDOWN CLG INBD ISLN(F009) closes;
RHR LOOP B RET TO RECIRC(F015B) opens;
RHR PMP B SUCT FROM RECIRC(F006B) closes.

b. RHR SHUTDOWN CLG OUTBD ISLN(F008) closes;
RHR PMP B SUCT FROM RECIRC(F006B) closes;
RHR LOOP B RET TO RECIRC(F015B) closes.

c. RHR SHUTDOWN CLG OUTBD ISLN(F008) closes;
RHR LOOP B RET TO RECIRC(F015B) closes;
RHR PMP B MIN FLOW MOV(F007B) opens.

d. RHR SHUTDOWN CLG OUTBD ISLN(F008) closes;
RHR SHUTDOWN CLG INBD ISLN(F009) closes;
RHR LOOP B RET TO RECIRC(F015B) closes.

Answer d | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 2 | SRO Group 2 | 205000K402

205000 Shutdown Cooling System (RHR Shutdown Cooling Mode)

K4. Knowledge of SHUTDOWN COOLING SYSTEM/MODE design feature(s) and/or interlocks which provide for the following:

K4.02 High pressure isolation: Plant-Specific 3.7 3.8

Explanation of Answer

Justification:
RHR SHUTDOWN CLG OUTBD ISLN(F008) closes, RHR SHUTDOWN CLG INBD ISLN(F009) closes, RHR LOOP B RET TO RECIRC(F015B) closes. Correct. 8,9, and 15's close on RPV Pressure isolation.
RHR SHUTDOWN CLG OUTBD ISLN(F008) closes, RHR PMP B SUCT FROM RECIRC(F006B) closes, RHR LOOP B RET TO RECIRC(F015B) closes. Incorrect. F006 does not automatically close.
RHR SHUTDOWN CLG OUTBD ISLN(F008) closes, RHR LOOP B RET TO RECIRC(F015B) closes, RHR PMP B MIN FLOW MOV(F007B) opens. Incorrect: F007B does not automatically open on a pump trip. The pump trips prior to pump low flow 10 sec time delay.
RHR SHUTDOWN CLG INBD ISLN(F009) closes, RHR LOOP B RET TO RECIRC(F015B) opens, RHR PMP B SUCT FROM RECIRC(F006B) closes. Incorrect. F015B does not automatically open. F006B does not automatically close.

Reference Title
HC.OP-SO.BC-0002

Learning Objectives	
RHRSYSE011	Given a labeled drawing of, or access to the Residual Heat Removal System controls/indication on 10C650: a. Explain the function of each indicator IAW the RHR System Lesson Plan. b. Assess plant conditions which will cause the indicators to

Material Required for Examination	Tech Spec section 3.3 with TABLE 3.3.2-1 removed; Provide panel drawing of 10C650A for RHR A and B.

Question Source:	Facility Exam Bank	**Question Modification Method:**	Significantly Modified
Question Source Comments:	Q55155 Significantly Modified		

Question Number 29

Which one of the following supplies power to the Intermediate Range Monitoring System Channel drawers?

a. 24 Volt Non-1E DC batteries.

b. 125 Volt Non-1E DC batteries.

c. 125 Volt 1E DC batteries.

d. 250 Volt 1E DC batteries.

Answer	a	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Plant Systems	RO Group	1	SRO Group	2	215003K201

215003	Intermediate Range Monitor (IRM) System		
K2.	Knowledge of electrical power supplies to the following:		
K2.01	IRM channels/detectors	2.5	2.7

Explanation of Answer

Justification:
Correct: 24 Volt Non-1E DC batteries. Supplies all SRM and IRM drawer power
Incorrect: 125 Volt Non-1E DC batteries. No connection to IRMs
Incorrect: 125 Volt 1E DC batteries. No connection to IRMs
Incorrect: 250 Volt 1E DC batteries. HPCI and RCIC only. No connection to IRMs

Reference Title

E-0010

Learning Objectives

DCELECE004 (R) Summarize the interrelationship(s) between 24VDC Power System and the following IAW the DC Electrical Distribution Lesson Plan.
a. Auxiliary Building Ventilation System
b. 1E AC Electrical Distribution System
c. Neutron Monitoring Syst

Material Required for Examination Tech Spec section 3.8 with 3.8.3.1 removed.

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 30

Plant conditions are as follows:

- In-vessel maintenance is in progress.
- Control Rod Blade (CRB) 18-15 is to be removed using the Combined Grapple.
- The Control Room does NOT have position indication.
- When the CRB is lifted using the Monorail Hoist, load indication is +400 lb.
- The 'UP' pushbutton is released.

WHICH ONE of the following explains the reason for these indications?

a. The CRB is still coupled to the drive.

b. The CRB bail handle has broken free.

c. The CRB removal tool air hoses are slack.

d. The CRB exceeded the setpoint of the hoist cutoff.

Answer a | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 3 | SRO Group 2 | 234000K105

234000 Fuel Handling Equipment

K1. Knowledge of the physical connections and/or cause- effect relationships between FUEL HANDLING EQUIPMENT and the following:

K1.05 Reactor vessel components: Plant-Specific 2.9 3.3

Explanation of Answer

Justification:
Correct: The CRB is still coupled to the drive. HC.RE-FR.ZZ-0002 Caution 5.6.11 indications of a uncoupled CRB are 340 pounds; >400 coupled.
Incorrect: The CRB bail handle has broken free. The weight would be lower than a CRB.
Incorrect: The CRB removal tool air hoses are slack. Air hoses are slack deliberately, otherwise they pull up on the load.
Incorrect: The CRB exceeded the setpoint of the hoist cutoff.. Monorail hoist load cell cutoff is set at 500 +/- 50 pounds HC.OP-ST.KE-0001 step 5.4.8.

Reference Title

HC.RE-FR.ZZ-0002 Caution 5.6.11

Learning Objectives

REFUELE010 Given a drawing of, or access to, the frame mounted hoist or monorail hoist control pendant, explain the controls and indications IAW the Student Handout.

Material Required for Examination Monorail Hoist Pendant Figure from Refueling Platform Lesson Plan

Question Source: INPO Exam Bank | **Question Modification Method:** Significantly Modified

Question Source Comments: INPO Bank QID# 14062 07/02/1999 Peach Bottom

Question Number 31

Given the following conditions:

- The plant is in Operational Condition 5.
- The Reactor Mode switch is in the REFUEL position.
- The Refueling Platform (bridge) is over the Reactor Vessel.

A control rod block will occur when...

a. the Fuel Grapple is loaded with fuel.

b. the Fuel Grapple is in the FULL UP position.

c. the Frame Mounted Auxiliary Hoist is loaded with fuel.

d. all rods are Full-In, except for a selected rod at position 02.

Answer a | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 3 | SRO Group 2 | 234000K502

234000 Fuel Handling Equipment

K5. Knowledge of the operational implications of the following concepts as they apply to FUEL HANDLING EQUIPMENT:

K5.02 Fuel handling equipment interlocks 3.1 3.7

Explanation of Answer

Justification:
- The Fuel Grapple is loaded with fuel.-Correct- IAW HC.OP-SO.KE-0001 section 3.3.1
- The Fuel Grapple is in the FULL UP position.-Incorrect- nothing associated with full up
- The frame mounted Auxiliary Hoist is loaded with fuel.-Incorrect- the Auxilairy hoist has a load cutout at 500 lbs to prevent fuel moves See TS 4.9.6.b
- All rods are Full-In, except for a selected rod at position 02.-Incorrect- 02 same as 00 so no rod block from RMCS

Reference Title
HC.OP-SO.KE-0001

Learning Objectives	
REFUELE005	(R) Given a drawing of, or access to, the interlock status display panel, and normal Control Room references, explain the information provided by each light and any automatic actions which should occur when light is illuminated IAW the Student Handout.

Material Required for Examination Figure of Interlock Display panel from Refueling platform lesson plan. Tech Spec section 3.9 with 3.9.1 removed.

Question Source: Facility Exam Bank | **Question Modification Method:** Editorially Modified

Question Source Comments: Vision bank QID #Q56552

Question Number 32

Given the following conditions:

- Core reload is in progress.
- Reactor Building Ventilation is aligned for refueling.
- An irradiated fuel bundle bumps the RPV wall and falls free into the core.

Based on this observation, how will the Radiation Monitoring System respond and what immediate operator action is required IAW HC.OP-AB.CONT-0005 IRRADIATED FUEL DAMAGE?

a. Reactor Building Exhaust Radiation monitors will alarm first and FRVS will trip. Suspend all refueling operations.

b. Reactor Building Exhaust Radiation monitors will alarm first and RBVS will start. Evacuate the refueling floor.

c. Refuel Floor Exhaust Radiation monitors will alarm first and FRVS will start. Suspend all refueling operations.

d. Refuel Floor Exhaust Radiation monitors will alarm first and RBVS will trip. Evacuate the refueling floor.

Answer	c	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Plant Systems	RO Group	2	SRO Group	2	272000A201

272000 Radiation Monitoring System

A2. Ability to (d) predict the impacts of the following on the RADIATION MONITORING SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:

A2.01 Fuel element failure 3.7 4.1

Explanation of Answer

Justification:
Correct:Refuel Floor Exhaust Radiation monitors will alarm first and FRVS will start. Suspend all refueling operations. Design basis of RFE RMS. All airflow off the refuel floor passes RFE RMS elements 4856A,B,C. FRVS starts on RFE Hi Rad 2.0E-3 uci/cc. IOA of HC.OP-AB.CONT-0005 IRADIATED FUEL DAMAGE
Incorrect:Reactor Building Exhaust Radiation monitors will alarm first and FRVS will trip. Suspend all refueling operations. RFE RMS will alarm first. FRVS starts.
Incorrect:Reactor Building Exhaust Radiation monitors will alarm first and RBVS will start. Evacuate the refueling floor. RFE RMS will alarm first. RBVS trips and isolates.
Incorrect: Refuel Floor Exhaust Radiation monitors will alarm first and RBVS will trip. Evacuate the refueling floor. Subsequent action of HC.OP-AB.CONT-0005 IRADIATED FUEL DAMAGE

Reference Title

HC.OP-AB.CONT-0005 IRADIATED FUEL DAMAGE

M-76, M-84

Learning Objectives

ABCNT5E003	(R) From memory, recall the Immediate Operator Actions for Irradiated Fuel Damage.
ABCNT5E004	Explain the reasons for how plant/system parameters respond when implementing Irradiated Fuel Damage.
RMSYS0E004	(R) Given a scenario of plant operating conditions, evaluate the effect on plant operations IAW the Radiation Monitoring System Lesson Plan if a high radiation level is indicated for: a. Main Steam Lines b. Liquid Radwaste Monitoring c.

Material Required for Examination

None

Question Source:	New	Question Modification Method:	
Question Source Comments:			

Question Number 33

Given the following conditions:

- The plant is in Operational Condition 4 with all systems running normally.
- A and C SACS pump are running supplying TACS.
- B SACS pump is running.
- D SACS pump is in AUTO, NOT running.

Which one of the following results in an automatic start of the non-running SACS pump?

a. Low flow on the A Control Room Chilled Water pump.

b. Low-Low-Low Level in the A SACS Expansion Tank.

c. Low differential pressure on the B SACS pump.

d. Low-Low-Low Level in the B SACS Expansion Tank.

Answer b | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 2 | SRO Group 2 | 400000K401

400000 Component Cooling Water System (CCWS)

K4. Knowledge of CCWS design feature(s) and or interlocks which provide for the following:

K4.01 Automatic start of standby pump 3.4 3.9

Explanation of Answer

Justification:
Correct: Low-Low-Low Level in the A SACS Expansion Tank. Low-Low-Low in the Expansion tank supplying TACS will isolate TACS valves, causing low flow in the A SACS Loop which auto starts B and D SACS Pumps. B is already running.
Incorrect: Low flow on the A Control Room Chilled Water pump. Auto starts A SACS Pump if not running.
Incorrect: Low differential pressure on the B SACS pump. Trips the B SACS pump but does not start the D.
Incorrect: Low-Low-Low Level in the B SACS Expansion Tank. Would isolate TACS if on the B loop.

Reference Title

HC.OP-SO.EG-0001

Learning Objectives

STACS0E016 Determine the following information for SACS pumps:
Time delay associated with the SACS pumps when automatically started by either the LOCA or LOP sequencer.
Automatic start signals
Automatic trip signals IAW available control room references

Material Required for Examination None

Question Source: New **Question Modification Method:**

Question Source Comments:

Question Number 34

During control rod scram testing, control rod 26-19 is observed to scram (fully) in 2 seconds.

Which one of the following describes the cause of the observed condition and the components that would be damaged?

a. Excessive accumulator gas pressure. Damage to the Bellville washers.

b. Worn lower stop piston seals. Damage to the CRD Guide tube.

c. Worn drive piston seals. Damage to the Collet Fingers.

d. Inadequate accumulator gas pressure. Damage to the Index tube.

Answer a | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 2 | SRO Group 3 | 201003K101

201003 Control Rod and Drive Mechanism

K1. Knowledge of the physical connections and/or cause- effect relationships between CONTROL ROD AND DRIVE MECHANISM and the following:

K1.01 Control rod drive hydraulic system 3.2 3.3

Explanation of Answer

JUSTIFICATION:
Correct Answer: Fast scram times can result from excessive accumulator gas pressure and can damage the Bellville washers. - Excessive accumulator gas would cause higher pressure to the P under area which would result in excessive speeds. This would cause damage to the Bellville washers.
The following distractors are incorrect as follows:
Worn lower stop piston seals. Damage to the CRD Guide tube. Incorrect. Scram speed will increase but the CRD Guide tube is not damaged.
Worn drive piston seals. Damage to the Collet Fingers. Incorrect. Worn drive piston seals result in slower scram times and the collet fingers are damaged by excessive withdrawal speeds.
Inadequate accumulator gas pressure. Damage to the index tube.- Only excessive pressures will damage the index tube.

Reference Title
NOH01CRMECH-00

Learning Objectives	
CRMECHE012	(R) From memory, describe the possible CRDM damage that could result from scramming a control rod too fast.
CRMECHE004	(R) Given various plant conditions, select those conditions that could potentially cause a CRDM to scram too rapidly.

Material Required for Examination

Question Source: Facility Exam Bank | **Question Modification Method:** Significantly Modified

Question Source Comments: Vision Bank QID # Q54298

Question Number 35

A TIP machine is being retested when an instrument technician error causes actuation of the NSSSS Channel A manual isolation logic.

Which of the following describes the TIP system response (if any)?

a. No automatic actions occur when only one NSSSS channel manual isolation switch is actuated.

b. The TIP detector will withdraw to its indexer, the TIP Shear Valve automatically fires to cut the detector cable and seal the guide tube.

c. The TIP Guide Tube Ball Valve automatically closes, cutting the detector cable and sealing the guide tube.

d. The TIP detector will withdraw to its "in-shield" position and the TIP Guide Tube Ball Valves automatically close.

Answer	d	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Plant Systems	RO Group	3	SRO Group	3	215001K604

215001 Traversing In-Core Probe

K6. Knowledge of the effect that a loss or malfunction of the following will have on the TRAVERSING IN-CORE PROBE:

K6.04 Primary containment isolation system: Mark-I&II(Not- BWR1) 3.1 3.4

Explanation of Answer

Justification:
The TIP detectors not in the "in-shield" position will automatically withdraw to their "in-shield" position and the TIP Guide Tube Ball Valves automatically close.
Correct - IAW HC.RE-SO.SE-0001, Section 3.1, Precautions and Limitations and HC.OP-SO.SM-0001, Table SM-017
The TIP detector will withdraw to its indexer, the TIP Shear Valve automatically fires to cut the detector cable and seal the guide tube. Incorrect - the Shear Valves must be manually initiated.
The TIP Guide Tube Ball Valve automatically closes, cutting the detector cable and sealing the guide tube. Incorrect - the Ball Valve will not close with the cable inside the valve.
No automatic actions occur when only one NSSSS channel manual isolation switch is actuated.
Incorrect - manual initiation of NSSSS Channel "A" will cause isolation of affected systems, including TIP.

Reference Title

HC.RE-SO.SE-0001, Section 3.1, Precautions and Limitations

HC.OP-SO.SM-0001, Table SM-017;

Learning Objectives

TIPS00E006 (R) From memory explain the response of the TIP System following the receipt of an isolation signal from the Nuclear Steam Supply Shutoff System.

Material Required for Examination None

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified

Question Source Comments: Vision Bank QID# Q53710 editorially modified due to correct answer was longest and most detailed answer.

Given the following conditions:

- A core reload is in progress.
- Fuel Pool/ Reactor cavity level is steady at 1 inch above NORMAL water level.
- A fuel assembly has been grappled in the fuel pool and just raised to the NORMAL-UP position.
- The fuel bundle destination is 31-32 in the vessel.

The following occurs:

- Fuel pool level is recognized and confirmed to be LOWERING due to a leak on the out of service Fuel Pool Cooling pump discharge line.
- Normal FP makeup source is NOT available.
- The refuel floor ARM is NOT alarming.

How far will FP/Rx cavity level lower and what immediate operator action is required?
(Assume NO evaporative losses or operator actions taken)

a. 6 inches; Isolate Fuel Pool Cooling because that is the source of the leak.

b. 6 inches; Move the bridge over the reactor cavity because it is further away from the fuel pool.

c. 9 inches; Place the fuel assembly in the designated open rack location in the fuel pool because it is a safe location.

d. 9 inches; Suspend movement of the fuel assembly at its present condition because Core Alterations must be suspended.

Answer c | Exam Level B | Cognitive Level Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 3 | SRO Group 3 | 233000A202

233000 Fuel Pool Cooling and Clean-up

A2. Ability to (a) predict the impacts of the following on the FUEL POOL COOLING AND CLEAN-UP; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:

A2.02 Low pool level 3.1 3.3

Explanation of Answer

Justification:
Correct: 9 inches; Place the fuel assembly in the nearest open rack location in the fuel pool because it is a safe location. 1 inch above normal water level is Elev 200' 1". The bottom of the Skimmer Surge Tank inlet pipe and FPCC Discharge pipe anti siphon holes is 199' 4". Water level will drop 9 inches and stop. 6 inches is based on 22' 2" above RPV flange from normal water level. Immediate operator action for lowering FP level are: evacuate the Refuel Floor; Return irradiated fuel assembly to the vessel or pool; Lower any bundle in the Fuel Prep Machine to the full down position. Since the IOA are bulleted, they can be performed in any order or simultaneously.
Incorrect: 6 inches; Isolate Fuel Pool Cooling because that is the source of the leak. Subsequent action. Wrong level.
Incorrect: 6 inches; Move the bridge over the reactor cavity because it is further away from the fuel pool. Wrong Level. Wrong reason. AB-COOL-0004 allows movement to either the FP or core, however the reason movement allowed to the core is to put the bundle down in a safe position.Tech Spec Definitions 1.7.
Incorrect: Suspend movement of the fuel assembly at its present condition because Core Alterations must be suspended. Not an IOA. IO-0009 3.4.2 states "The RFS shall direct personnel performing CORE ALTERATIONS to place hoisted fuel or core components in a stable configuration and suspend subsequent CORE ALTERATIONS.

Reference Title
HC.OP-AB.COOL-0004
HC.OP-IO-ZZ-0009

Learning Objectives	
ABCOL4E003	(R) From memory, recall the Immediate Operator Actions for Fuel Pool Cooling.
FPCC00E005	(R) From memory, explain the methods used to preclude draining of the spent fuel storage pool, IAW the Fuel Pool Cooling and Cleanup (FPCCS) System Lesson Plan.
FPCC00E016	(R) Summarize the immediate operator actions required for a Loss of Fuel Pool Inventory, IAW HC.OP-AB.ZZ-0144.

Material Required for Examination	None		
Question Source:	New	**Question Modification Method:**	
Question Source Comments:	new. Major revision to INPO BANK QID# 16907. Replace submitted question based on KAMM.		

Question Number 37

Given the following conditions:

- Core Alterations are in progress.
- The Reactor Mode Switch is in the REFUEL position.
- Control Rod Blade (CRB) 06-15 is on the Frame Mounted Aux Hoist.
- CRDM 06-15 is in the overtravel position with its position indication bypassed.
- Control Rod 30-31 is withdrawn for friction testing.
- The Standby Liquid Control Tank concentration is now reported at 13.5 percent with tank level at 4850 gallons.
- All other systems are operable.

Which one of the following actions (if any) are required?

a. No action is required.

b. Return CRB 06-15 to the control cell within one hour.

c. Return SLC Tank within specification within 8 hours.

d. Insert control rod 30-31 within one hour.

Answer d | Exam Level B | Cognitive Level Application | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Plant Systems | RO Group 3 | SRO Group 3 | 290002K605

290002 Reactor Vessel Internals

K6. Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR VESSEL INTERNALS:

K6.05 SBLC 3.3 3.4

Explanation of Answer

Justification:
Correct: Insert control rod 30-31 within one hour. 3.9.10.2 is not applicable to friction testing since all 4 fuel assemblies surrounding the control rod would be in place. Therefore SLC must be operable with a rod 06-15 withdrawn.
Incorrect: No action is required. Must insert 30-31 within one hour.
Incorrect: Return CRB 06-15 to the control cell within one hour. Not required because 4 surrounding bundles are removed.
Incorrect: Return SLC Tank level within specification within 8 hours. Action time in Op Con 1 and 2.

Reference Title

Tech Spec 3.1.5 and 3.9.10.2

Learning Objectives

SLCSYSE025 (R) Given a scenario of applicable operating conditions and access to Technical Specifications:
a. Select those sections applicable to the Standby Liquid Control System, IAW HCGS Technical Specifications.
b. Evaluate Standby Liquid Control

Material Required for Examination Tech Spec sections 3.1 and 3.9 with 3.9.1 removed.

Question Source: New **Question Modification Method:**

Question Source Comments:

Conditions are as follows:

A group of new PSE&G employees is currently at Hope Creek during your shift.
One of the group is a 36 year old who is an ex-radiation worker, and has completed an NRC-4 form with a total exposure of 20 Rem received prior to arriving at the Hope Creek Site, and no radiation exposure this calendar year.
He is badged for the site, has completed the GET and RWT courses.

For this individual, which one of the following would be the correct administrative dose limit?

a. 1000 Mrem/yr.

b. 2000 Mrem/yr.

c. 3000 Mrem/yr.

d. 4000 Mrem/yr.

Answer b Exam Level B Cognitive Level Memory Facility: Hope Creek Exam Date: 02/24/2003

Tier: Generic Knowledge and Abilities RO Group 1 SRO Group 1 294001G301

GENERIC

2.3 Radiological Controls

2.3.1 Knowledge of 10 CFR 20 and related facility radiation control requirements. 2.6 3.0

Explanation of Answer: Justification:
Correct:Justification: IAW NC.NA-AP.ZZ-0024 Rev. 11 Attachment 1, the limit for a person with a life time dose of <2(N-17) is 2000 mrem, with the Radiation Protection Manager required to allow an increase to 3000 mrem.

Reference Title

NC.NA-AP.ZZ-0024 Rev. 11 Attachment 1

Learning Objectives

ADMPROE059 Given a set of exposure conditions Identify the personnel responsible for approval of the following dose extension:
a. Yearly Dose Extension
b. Declared Pregnant Women Dose Extension
c. Lifetime Dose Extension IAW NC.NA-AP.ZZ-0024:

Material Required for Examination: None

Question Source: Facility Exam Bank Question Modification Method: Direct From Source

Question Source Comments: VISION Bank QID# Q60666

Question Number 39

Which one of the following meets ALARA principles for performing a job?

a. 1 man accomplishing the job in 1 hour in a 60 mR/hr field.

b. 1 man installing shielding for 30 minutes in a 60 mR/hr field and then accomplishing the job in 1 hour in a 6 mR/hr field.

c. 2 men accomplishing the job in 25 minutes in a 60 mR/hr field.

d. 2 men installing shielding for 15 minutes in a 60 mR/hr field and then accomplishing the job in 25 minutes in a 6 mR/hr field.

Answer d | Exam Level B | Cognitive Level Application | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Generic Knowledge and Abilities | RO Group 1 | SRO Group 1 | 294001G302

GENERIC

2.3 Radiological Controls

2.3.2 Knowledge of facility ALARA program. 2.5 2.9

Explanation of Answer

Justification:
Correct: 2 men installing shielding for 15 minutes in a 60 mR/hr field and then accomplishing the job in 25 minutes in a 6 mR/hr field. 2(.25 hour X 60mR/hr)+2(25/60 hour X 6mR/hr) = 35 mR TEDE
Incorrect: 1 man accomplishing the job in 1 hour in a 60 mR/hr field. (1 hour X 60 mR/hr)= 60 mR TEDE
Incorrect: 1 man installing shielding for 30 minutes in a 60 mR/hr field and then accomplishing the job in 1 hour in a 6 mR/hr field. 1(.5 hour X 60 mR/hr) + 1(1 hour X 6 mR/hr) = 36 mR TEDE
Incorrect: 2 men accomplishing the job in 25 minutes in a 60 mR/hr field. 2(25/60 hour X 60 mR/hr) = 50 mR/hr

Reference Title
NC.NA-AP.ZZ-0024

Learning Objectives	
HEAPHYE019	Define stay time and perform calculations to determine stay time or dose received.

Material Required for Examination: None

Question Source: INPO Exam Bank | Question Modification Method: Direct From Source

Question Source Comments: INPO Exam Bank QID# 7593 11/04/1997 FitzPatrick

Question Number 40

Given the following conditions:

- A worker with specific skills must enter a high radiation area to repair a leaking valve.
- This job is estimated to take a continuous exposure of 1.5 hours in a 200 mrem/hr gamma field.
- Current dose for the year is 2725 mrem.
- The worker is 33 years old and has received a lifetime dose of 34.4 REM.

Who must approve this dose limit extension needed to complete the task and to what new dose control level?
(Assume NO delegation of authority)

a. VP-Operations; to 4000 mr/yr TEDE.

b. Radiation Protection Supervisor; to 3000 mr/yr TEDE.

c. Operations Manager; to 3000 mr/yr TEDE.

d. Radiation Protection Manager; to 4000 mr/yr TEDE.

Answer: a | Exam Level: B | Cognitive Level: Comprehension | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Generic Knowledge and Abilities | RO Group: 1 | SRO Group: 1 | 294001G304

GENERIC

2.3 Radiological Controls

2.3.4 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. 2.5 3.1

Explanation of Answer: Justification:
Correct: VP-Operations, to 4000 mr/yr TEDE. VP needed for 4000 mr/yr extension because > 2(N-17) lifetime dose exceeded. Estimated dose to complete the job will exceed 3000 mrem therefore extension above 3000 is needed.
Incorrect: Radiation Protection Supervisor; to 3000 mr/yr TEDE. Incorrect approver. Incorrect limit. Would be approver for current limit if <2(N-17) lifetime.
Incorrect: Operations Manager, to 3000 mr/yr TEDE. Incorrect approver. Incorrect limit.
Incorrect: Radiation Protection Manager; to 4000 mr/yr TEDE. Incorrect approver. Would be approver for needed limit if <2(N-17) lifetime.

Reference Title

NC.NA-AP.ZZ-0024 Attachment 1 2(N-17) Lifetime Dose Action Level

Learning Objectives

ADMPROE059 Given a set of exposure conditions Identify the personnel responsible for approval of the following dose extension:
a. Yearly Dose Extension
b. Declared Pregnant Women Dose Extension
c. Lifetime Dose Extension IAW NC.NA-AP.ZZ-0024:

Material Required for Examination: None

Question Source: Facility Exam Bank | Question Modification Method: Editorially Modified

Question Source Comments: VISION Bank QID# Q55936 Modified to remove delegation to other approvers and to make 3000 limits plausible.

Question Number 41

Which one of the following is the maximum permitted backround count rate on a frisker prior to use, and the minimum count rate above backround that indicates the contaimination limit has been reached?

	Max Backround	Contamination Limit
a.	100 cpm	100 cpm above backround
b.	100 cpm	300 cpm above backround
c.	300 cpm	100 cpm above backround
d.	300 cpm	300 cpm above backround

Answer c | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Generic Knowledge and Abilities | RO Group 1 | SRO Group 1 | 294001G305

GENERIC

2.3 Radiological Controls

2.3.5 Knowledge of use and function of personnel monitoring equipment. 2.3 2.5

Explanation of Answer: If greater than 300 cps, find another frisker or notify RP tech. Indication of contamination is 100 cps above initial backround reading.

Reference Title

Radiation worker training handout material

Learning Objectives

Material Required for Examination: None

Question Source: Other Facility | Question Modification Method: Direct From Source

Question Source Comments: Peach Bottom 2002 LSRO Exam question 4-5 unmodified. Hope Creek has the same limits.

Question Number 42

Which one of the following limitations of HC.OP-ST.KE-0001 prevents overexposure to Refuel Platform workers when a fuel bundle is removed from the RPV?

a. Aux Hoist uptravel with a fuel bundle is stopped 6 feet below the water surface.

b. The Main Fuel Grapple must be used to remove a fuel bundle.

c. Maximize the amount of water shielding between the fuel bundle and the reactor vessel wall.

d. Minmize the time the fuel bundle in the Drywell Bellows Area.

Answer b | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Generic Knowledge and Abilities | RO Group 1 | SRO Group 1 | 294001G310

GENERIC

2.3 Radiological Controls

2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. 2.9 3.3

Explanation of Answer

Justification:
Incorrect: Aux Hoist uptravel with a CRB is stopped 6 feet below the water surface.Fuel bundles not allowed to be moved with the Aux hoists. Uptravel limits switches and mechanical blocks are set to prevent a Control Rod Blade from being lifted to within 6 ft of normal water level for personnel protection.
Correct: The Main Fuel Grapple must be used to remove a fuel bundle. Main fuel grapple is required to be used for fuel movement.
Incorrect: Maximize the amount of water shielding between the fuel bundle and the reactor vessel wall. Concern for personnel in the Drywell.
Incorrect: Minmize the time the fuel bundle in the Drywell Bellows Area. Concern for personnel in the Drywell.

Reference Title
HC.OP-ST.KE-0001
HC.OP-FT.KE-0002
UFSAR 9.1.4.1

Learning Objectives	
REFUELE011	From memory, identify the only grapple which may be used to move fuel in the reactor vessel or spent fuel pool IAW Technical Specifications.

Material Required for Examination: None

Question Source: New | Question Modification Method:

Question Source Comments:

Question Number 43

Delayed neutrons are neutrons that:

a. have reached thermal equilibrium with the surrounding medium.

b. are born within 10E-14 seconds of the fission event.

c. are produced from the radioactive decay of specific fission fragments.

d. are responsible for the majority of U-235 fissions.

Answer	c	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	292001K102

292001	Neutrons

K1.0	

K1.02	Define prompt and delayed neutrons.	.0	3.1

Explanation of Answer

Reference Title

Learning Objectives

KINETIE003	Describe the production of delayed neutrons.

Material Required for Examination: None

Question Source:	NRC Exam Bank	Question Modification Method:	Direct From Source

Question Source Comments: BWR GFE BANK QUESTION IDQ: B1945 (P845)

Question Number 45

Refer to the reactor response curve attached (Q 45) for a reactor that was initially stable in the source range.
A momentary control rod withdrawal occurred at time = 0 sec.

The response curve shows _____ versus time for a reactor that was initially _____

a. reactor period; subcritical.

b. reactor period; critical.

c. reactor fission rate; subcritical.

d. reactor fission rate; critical.

Answer	c	Exam Level	B	Cognitive Level	Comprehension	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	292003K107

292003	Reactor Kinetics and Neutron Sources		
K1.0			
K1.07	Explain prompt critical, prompt jump, and prompt drop.	.3	3.3

Explanation of Answer

Reference Title

Learning Objectives

KINETIE007	Explain prompt critical, prompt jump, and prompt drop.

Material Required for Examination Attached figure from GFE Question B3250

Question Source:	NRC Exam Bank	Question Modification Method:	Direct From Source

Question Source Comments: NRC BWR GFE Bank Question ID: B3250 (P3249)

Question Number 46

Compared to beginning of core life, the Doppler coefficient of reactivity is _____ negative at end of core life due to _____
(Assume the same initial fuel temperature.)

a. less; depletion of U-238.

b. more; depletion of U-238.

c. less; buildup of Pu-240.

d. more; buildup of Pu-240.

Answer d | Exam Level B | Cognitive Level Memory | Facility: Hope Creek | Exam Date: 02/24/2003

Tier: Fundamentals | RO Group 0 | SRO Group 0 | 292004K105

292004 Reactivity Coefficients Reactivity Coefficients

K1.0

K1.05 Define the doppler coefficient of reactivity. .9 2.9

Explanation of Answer

Reference Title

Learning Objectives

BWRTHRE011 Explain the doppler coefficient of reactivity.

Material Required for Examination: None

Question Source: NRC Exam Bank | Question Modification Method: Editorially Modified

Question Source Comments: NRC BWR GFE Exam Bank Question ID: B1353 Modified IAW A. Blamey comments.

Question Number 44

Which one of the following, if decreased, will not affect Keff?

a. Fuel enrichment.

b. Control rod worth.

c. Neutron contribution from neutron sources.

d. Shutdown margin when the reactor is subcritical.

Answer	c	Exam Level	B	Cognitive Level	Comprehension	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	292002K108

292002	Neutron Life Cycle

K1.0

K1.08	Define effective multiplication factor and discuss its relationship to the state of d reactor.	.7	2.8

Explanation of Answer

Reference Title

Learning Objectives

NEULIFE004	Define K excess

Material Required for Examination: None

Question Source: NRC Exam Bank

Question Modification Method: Direct From Source

Question Source Comments: NRC BWR GFE Exam Bank Question ID: B348

Question Number 47

A reactor has been operating at 100% power for several weeks when a reactor scram occurs.

How much time will be required for core heat production to decrease to 1% following the scram?

a. 1 to 8 Days.

b. 1 to 8 Hours.

c. 1 to 8 Minutes.

d. 1 to 8 Seconds.

Answer	b	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	292008K130

292008	Reactor Operations		
K1.3	Normal Reactor Shutdown		
K1.30	Explain the relationship between decay heat generation and: a) power level history, b) power production, and c) time since reaction shut down.	.2	3.5

Explanation of Answer

Reference Title

Learning Objectives

RXOPERE031	Explain the relationship between decay heat generation and a. power level history b. power production c. time since reactor shutdown

Material Required for Examination None

Question Source:	NRC Exam Bank	Question Modification Method:	Direct From Source

Question Source Comments: NRC BWR GFE Exam Bank Question ID: B2272 (P572)

Question Number 48

Refer to the attached drawing (Q 48) of four sets of centrifugal pump operating curves. Each set of curves shows the results of a change in pump/system operating conditions.

Two identical constant-speed centrifugal pumps are operating in parallel in an open system when one pump trips.

Which set of operating curves depicts both the "before" and "after" conditions described above?

a. 1.

b. 2.

c. 3.

d. 4.

Answer	a	Exam Level	B	Cognitive Level	Comprehension	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	293006K113

293006 Fluid Statics

K1.1 Pumps and Pump Characteristics

K1.13 --Explain the results of putting centrifugal pumps in parallel or series combinations. .6 2.7

Explanation of Answer

Reference Title

Learning Objectives	
PUMPS0E013	Describe the operation of centrifugal pumps in series and in parallel arrangements.

Material Required for Examination: Figure of pump curves for GFE Bank question B2279

Question Source:	NRC Exam Bank	Question Modification Method:	Direct From Source

Question Source Comments: NRC BWR GFE Exam Bank Question ID: B2279 (P1524)

Question Number 49

Which one of the following conditions must occur to sustain natural convection in a fluid system?

a. Subcooling of the fluid.

b. A phase change in the fluid.

c. An enthalpy change in the fluid.

d. Radiative heat transfer to the fluid.

Answer	c	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	293008K106

293008	Thermal Hydraulics
K1.0	Pool Boiling Curve (T vs. Q/A)
K1.06	Define a natural convection heat transfer. .5 2.6

Explanation of Answer

Reference Title

Learning Objectives

THRMHYE008	Define natural convection heat transfer.

Material Required for Examination: None

Question Source: NRC Exam Bank | Question Modification Method: Direct From Source

Question Source Comments: NRC BWR GFE Exam Bank Question ID:B387

Question Number 50

Brittle fracture of a low-carbon steel can only occur when the temperature of the steel is _____ the nil ductility temperature, and will normally occur when the applied stress is _____ the steel's yield strength (or yield stress).

a. greater than; greater than

b. greater than; less than

c. less than; greater than

d. less than; less than

Answer	d	Exam Level	B	Cognitive Level	Memory	Facility:	Hope Creek	Exam Date:	02/24/2003

Tier:	Fundamentals	RO Group	0	SRO Group	0	293010K101

293010	Brittle Fracture and Vessel Thermal Stress		
K1.0			
K1.01	State the brittle fracture mode of failure.	.4	2.8

Explanation of Answer

Reference Title

Learning Objectives	
BRITTLE005	State the brittle fracture mode of failure.

Material Required for Examination: None

Question Source: NRC Exam Bank | Question Modification Method: Direct From Source

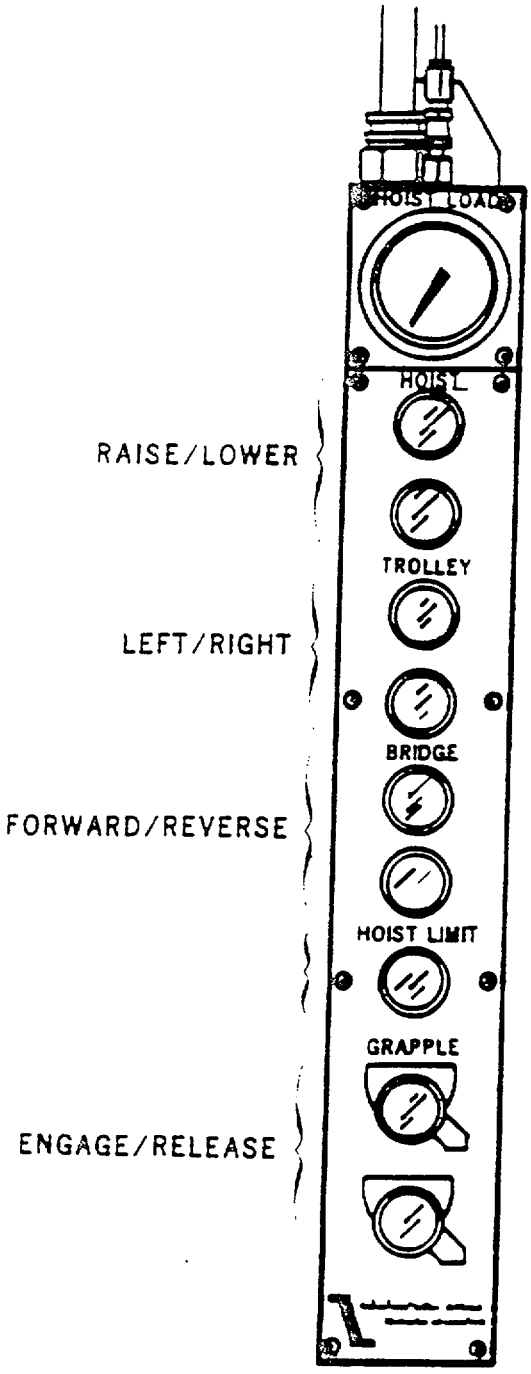
Question Source Comments: NRC BWR GFE Exam Bank Question ID:B2499 (P2496)

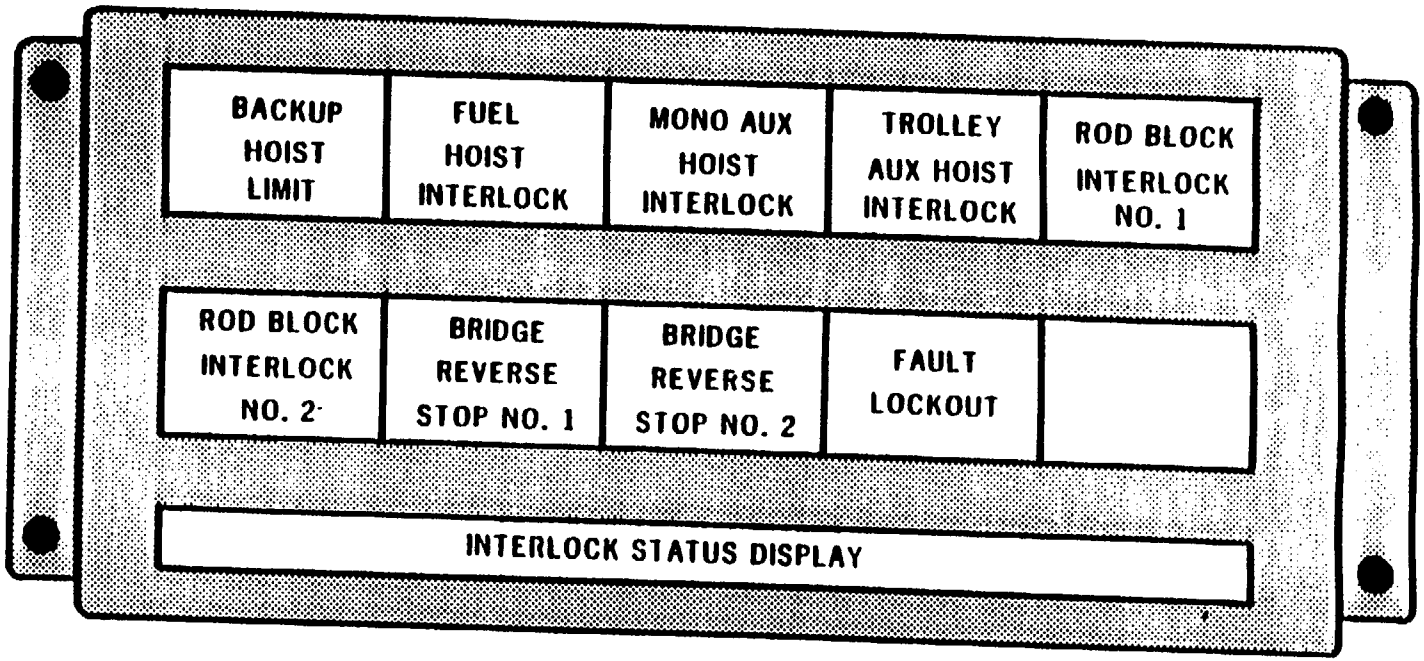
Q1

10Y412 Panel Load List

FunctLocation	Description	Planning plant
H1BD -10Y412-07	LVL SW,CST 1LISN-035A & E	NNUC
H1GM -10Y412-06	PNL,D/G AREA PNL RM SUP 1BC486	NNUC
H1PG -10Y412-01	HTR,SPACE SUB 10B420	NNUC
H1PG -10Y412-05	HTR,SPACE MCC 10B421	NNUC
H1SB -10Y412-02	VERT BD,RPS LOGIC 10C611	NNUC
H1ZZ -10Y412-04	SPARE	NNUC
H1ZZ -10Y412-08	SPARE	NNUC
H1ZZ -10Y412-09	SPARE	NNUC
H1ZZ -10Y412-10	SPARE	NNUC
H1ZZ -10Y412-11	SPARE	NNUC
H1ZZ -10Y412-12	SPARE	NNUC
H1ZZ -10Y412-13	SPARE	NNUC
H1ZZ -10Y412-14	SPARE	NNUC
H1ZZ -10Y412-15	SPARE	NNUC
H1ZZ -10Y412-16	SPARE	NNUC
H1ZZ -10Y412-17	SPARE	NNUC
H1ZZ -10Y412-18	SPARE	NNUC

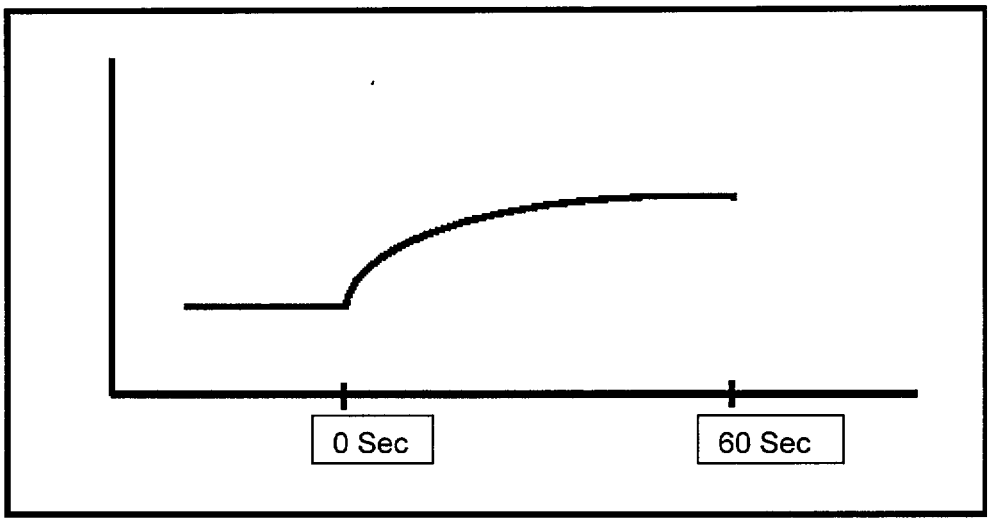
Q30


HOIST LOAD
HOIST
TROLLEY
BRIDGE
HOIST LIMIT
GRAPPLE
RAISE/LOWER
LEFT/RIGHT
FORWARD/REVERSE
ENGAGE/RELEASE

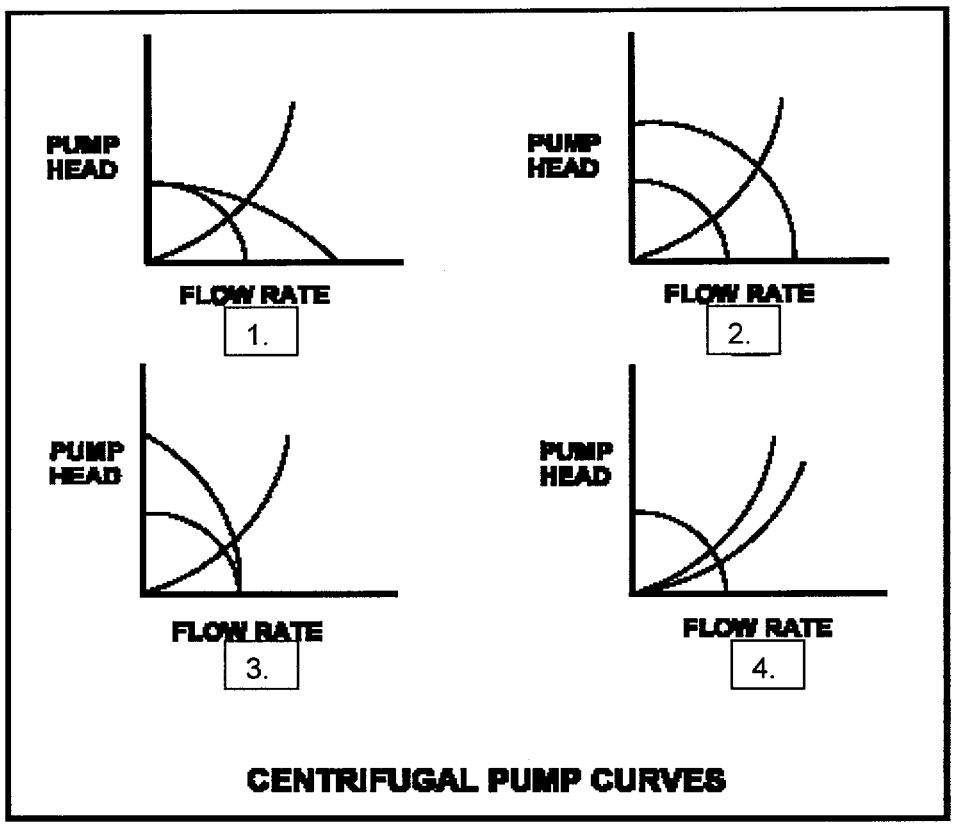

BACKUP HOIST LIMIT
FUEL HOIST INTERLOCK
MONO AUX HOIST INTERLOCK
TROLLEY AUX HOIST INTERLOCK
ROD BLOCK INTERLOCK NO. 1
ROD BLOCK INTERLOCK NO. 2
BRIDGE REVERSE STOP NO. 1
BRIDGE REVERSE STOP NO. 2
FAULT LOCKOUT
INTERLOCK STATUS DISPLAY

Q31

Q 45



Q 48


PUMP HEAD
FLOW RATE
1.
PUMP HEAD
FLOW RATE
2.
PUMP HEAD
FLOW RATE
3.
PUMP HEAD
FLOW RATE
4.
CENTRIFUGAL PUMP CURVES