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QUESTION NUMBER: 001

Which one of the following will require that the reactor trip breakers on AI-57 be reclosed before the CEDM clutches can be reenergized?

- A✓ A manual reactor trip at the RPS cabinets.
- B. A manual reactor trip at CB-4.
- C. An automatic low RCS flow trip
- D. An automatic high containment pressure trip

Question 1

KA # 000007 EA2.03

Ability to determine or interpret the following as they apply to a reactor trip:

Reactor trip breaker position

RO Importance: 4.2

SRO Importance: 4.4

CFRSection: 41.7 / 45.5 / 45.6

FCS Objective 0712-25 02.05

EXPLAIN what actions are required to reset (re-energize) the CEDM clutches when tripped by:

KA#: 000007 EA2.03

Bank Ref #: 07-12-25 045

LP# / Objective: 0712-25 02.05

Exam Level: BOTH

Cognitive Level: LOW

Source: MODIFIED

Reference: STM 38

Handout: NONE

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QUESTION NUMBER: 002

Why are reactor coolant pumps tripped during a loss of coolant accident?

- A✓ They can cause more water to be lost out the break.
- B. They create a back pressure which opposes the emergency core cooling flow.
- C. To prevent damage to the RCP seals.
- D. Natural circulation provides better core cooling.

Question 2

KA # 000008 AK3.04

Knowledge of the reasons for the following responses as they apply to the Pressurizer Vapor Space Accident:  
RCP tripping requirements

RO Importance: 4.2      SRO Importance: 4.6      CFRSection: 41.5 / 41.10 / 45.6 / 45.13

FCS Objective 0715-23 02.05

EXPLAIN the Reactor Coolant Pump trip strategy used during a Loss of Coolant Accident.  
Distractor C changed per NRC comment.

KA#: 000008 AK3.04

Bank Ref #: 07-15-23 017

LP# / Objective: 0715-23 02.05

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: LP 07-15-23

Handout: NONE

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QUESTION NUMBER: 003

The plant is operating at full power when an RCS leak developed in one of the loops. The following conditions exist in the plant:

- Pressurizer level is 25% and lowering.
- Pressurizer pressure is 1900 psia and lowering
- RCS T-cold is 540°F
- All three charging pumps are running
- Letdown is at the minimum flow rate
- The CRS has directed the operators to manually trip the reactor

Following the trip, pressurizer level will lower until \_\_\_\_\_.

- A.  the pressurizer is empty.
- B. letdown isolates.
- C. HPSI flow begins.
- D. voids form in the reactor vessel.

Question 3

KA # 000009 EA2.06

Ability to determine or interpret the following as they apply to a small break LOCA:

Whether PZR water inventory loss is imminent

RO Importance: 3.8      SRO Importance: 4.3      CFRSection: 43.5 / 45.13

FCS Objective 0715-23 01.01

EXPLAIN the response of primary system parameters.

Wording in choices B, C, D changed in response to NRC comment.

KA#:	000009 EA2.06	Bank Ref #:	N/A
LP# / Objective:	0715-23 01.01	Exam Level:	BOTH
Cognitive Level:	HIGH	Source:	NEW
Reference:	LP 07-15-12	Handout:	NONE

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QUESTION NUMBER: 004

Why does EOP-03 have the operators begin a plant cooldown following a loss of coolant accident?

- A. Because technical specifications require going to cold shutdown following a LOCA.
- B. To reduce the stress on the RCS piping.
- C. To reduce break flow and increase ECCS flow.
- D. To reduce steam generator pressure and increase natural circulation flow.

Question 4

KA # 000009 EK3.21

Knowledge of the reasons for the following responses as they apply to the small break LOCA:

Actions contained in EOP for small break LOCA/leak

RO Importance: 4.2      SRO Importance: 4.5      CFRSection: 41.5 / 41.10 / 45.6 / 45.13

FCS Objective 0715-23 02.04

EXPLAIN the operator actions required to mitigate a Loss of Coolant Accident.

KA#: 000009 EK3.21

Bank Ref #: 07-15-23 016

LP# / Objective: 0715-23 02.04

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: LP 07-15-23

Handout: NONE

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QUESTION NUMBER: 005

The following plant conditions exist:

- The reactor is at 100% power
- RCS pressure is 2100 psia
- The RC-3A "SEAL LEAKAGE FLOW HI" annunciator is in alarm
- VCT pressure is 50 psia.
- RC-3A middle seal inlet pressure is 110 psia
- RC-3A upper seal inlet pressure is 80 psia

Which one of the following is correct about the condition of RC-3A's seals?

- A. The lower seal has failed.
- B. The upper seal has failed.
- C. The lower and middle seals have failed.
- D✓ The upper and middle seals have failed.

Question 5

KA # 000017 AK2.07

Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following:

RCP seals

RO Importance: 2.9

SRO Importance: 2.9

CFRSection: 41.7 / 45.7

FCS Objective 0711-20 01.07d

EXPLAIN the operation of the RCP seal package.

KA#: 000017 AK2.07

Bank Ref #: 07-11-20 014

LP# / Objective: 0711-20 01.07D

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: ARP CB-1,2,3/A6

Handout: NONE

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QUESTION NUMBER: 006

Which one of the following failures will result in automatic closure of containment cooler inlet and outlet valves to cooling coil VA-1A, HCV-400A/C, with a CIAS signal present?

- A. CCW pump discharge pressure switches, PCS-412 and PCS-413, fail low.
- B. CCW flow transmitter from coil VA-1A, FT-416, fails low.
- C. CCW return temperature transmitter from coil VA-1A, TE-420, fails high.
- D. Containment cooling fan, VA-3A, trips.

Question 6

KA # 000026 AA1.07

Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water:

Flow rates to the components and systems that are serviced by the CCWS; interactions among the components

RO Importance: 2.9      SRO Importance: 3.0      CFRSection: 41.7 / 45.5 / 45.6

FCS Objective 0711-06 01.05

EXPLAIN the response of the CCW System to signals from the Engineered Safeguards Control System.

KA#: 000026 AA1.07

Bank Ref #: 07-11-06 011

LP# / Objective: 0711-06 01.05

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: STM-8

Handout: NONE

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QUESTION NUMBER: 007

The reactor tripped 20 minutes ago. The following conditions are observed:

- "PRESSURIZER PRESSURE OFF NORMAL HI-LO" channel X and Y are in alarm.
- PRC-103X (controlling channel) indicates 2160 psia and stable
- All backup heater in auto and energized
- LRC-101Y (controlling channel) indicates 60% and stable
- LRC-101X indicates 43% and increasing slowly
- LI-106 indicates 28%
- Letdown flow is 26 gpm
- One charging pump is running
- Tcold indicates 533°F, Thot indicates 534°F, both are stable

Select the probable cause and the action that should be taken to restore RCS pressure:

- A. Low level on LRC-101X is maintaining the B/U heaters on, place the pressurizer heater cutout channel select switch in channel Y.
- B. The bistable for the B/U heaters needs to be reset, place the control switches for all B/U heaters to reset and back to auto.
- C✓ LRC-101Y has malfunctioned causing the B/U heaters to remain on, place LRC-101X in service.
- D. PRC 103X has malfunctioned causing the B/U heaters to remain on, place PRC-103Y in service.

Question 7 KA # 000027 2.4.49

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

RO Importance: 4.0 SRO Importance: 4.0 CFRSection: 41.10 / 43.2 / 45.6

FCS Objective 0711-20 05.04

Given a current copy of ARP, EXPLAIN the alarms associated with the RCS Instrumentation System and the required actions.

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KA#: 000027 2.4.49  
LP# / Objective: 0711-20 05.04  
Cognitive Level: HIGH  
Reference: STM 37

Bank Ref #: 07-11-20 008  
Exam Level: BOTH  
Source: NRC 97 EXAM  
Handout: NONE

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QUESTION NUMBER: 008

During outage activities which require draining the steam generators, the RPS may be bypassed using OI-RPS-1, Attachment 2. This Attachment installs jumpers across the interposing relay contacts to keep the "M" coils energized. What affect do these jumpers have on RPS operation?

- A.  All automatic trips except for diverse scram will be bypassed. The reactor can still be tripped manually from the RPS cabinets.
- B. All automatic trips including diverse scram will be bypassed. The reactor can still be tripped manually from CB-4.
- C. All automatic and manual trips will be bypassed, including diverse scram.
- D. Only the low steam generator level trips will be bypassed. All other automatic, diverse and manual trips will be operational.

Question 8

KA # 000029 EK2.06

Knowledge of the interrelations between the and the following an ATWS:

Breakers, relays, and disconnects

RO Importance: 2.9\* SRO Importance: 3.1\* CFRSection: 41.7 / 45.7

FCS Objective 0712-25 01.16a

Given a simplified diagram of the RPS trip paths, EXPLAIN how the "M" coil contacts are: Opened to initiate a reactor trip

KA#: 000029 EK2.06

Bank Ref #: 07-12-25 009

LP# / Objective: 0712-25 01.16A

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: OI-RPS-1

Handout: NONE

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QUESTION NUMBER: 009

An alarm on RM-054B (Steam Generator Blowdown Monitor for 'B' Steam Generator) will affect S/G blowdown and sample flows in which one of the following ways?

- A. Blowdown and sample flow will be automatically isolated from the 'B' S/G only.
- B. Blowdown flow will be automatically isolated from the 'B' S/G only. Sample flow will be unaffected.
- C. Blowdown and sample flow will be automatically isolated from both S/Gs.
- D. Blowdown flow will be automatically isolated from both S/Gs. Sample flow will be unaffected.

Question 9

KA # 000038 EK3.03

Knowledge of the reasons for the following responses as they apply to the SGTR:

Automatic actions associated with high radioactivity in S/G sample lines

RO Importance: 3.6\*      SRO Importance: 4.0\*      CFRSection: 41.5 / 41.10 / 45.6 / 45.13

FCS Objective 0712-03 04.01

LIST radiation monitors with automatic actuations and STATE the automatic actuations that occur.

KA#: 000038 EK3.03

Bank Ref #: 07-12-03 009

LP# / Objective: 0712-03 04.01

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 95 EXAM

Reference: STM 33

Handout: NONE

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QUESTION NUMBER: 010

Following a reactor and turbine trip, the following conditions exist:

- Several of the turbine stop and intercept valves are still open
- Pressure in both steam generators is 800 psia and lowering
- RCS T-cold is 520°F and lowering

Which one of the following actions is directed by EOP-00?

- A.  Close the MSIVs and MSIV bypass valves immediately
- B. Close the MSIVs and MSIV bypass valves when S/G pressure reaches 600 psia.
- C. Verify automatic isolation of the MSIVs and MSIV bypass valves immediately.
- D. Verify automatic isolation of the MSIVs and MSIV bypass valves when S/G pressure reaches 500 psia..

Question 10

KA # 000040 AA1.24

Ability to operate and / or monitor the following as they apply to the Steam Line Rupture:

Main steam header pressure gauges

RO Importance: 3.8      SRO Importance: 3.8      CFRSection: 41.7 / 45.5 / 45.6

FCS Objective 0715-20 01.02

EXPLAIN the response of secondary system parameters.

KA#: 000040 AA1.24

Bank Ref #: N/A

LP# / Objective: 0715-20 01.02

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: EOP-00

Handout: NONE

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QUESTION NUMBER: 011

Which one of the following steam line break locations will result in the greatest RCS cooldown (lowest RCS temperature) if both MSIVs, HCV-1041A and HCV-1042A, fail in the open position?

- A. On the steam line from Steam Generator RC-2A, in containment, upstream of the flow restrictor.
- B. On the steam line from Steam Generator RC-2B, in containment, just inside of the containment wall.
- C. On the steam line from Steam Generator RC-2A, in room 81, just outside of the containment wall.
- D. On the steam line from Steam Generator RC-2B, just outside the control room door.

Question 11

KA # 000040 AK2.01

Knowledge of the interrelations between the Steam Line Rupture and the following:

Valves

RO Importance: 2.6\* SRO Importance: 2.5 CFRSection: 41.7 / 45.7

FCS Objective 0715-20 02.03

EXPLAIN the automatic actions that would be taken by Fort Calhoun systems to mitigate an Excessive Heat Removal Event.

KA#: 000040 AK2.01

Bank Ref #: 07-15-20 005

LP# / Objective: 0715-20 02.03

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: STM 25

Handout: NONE

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QUESTION NUMBER: 012

The following alarms were received on CB-10,11 panel A9 following a partial loss of instrument air pressure:

"AI-10A, FW REG SYS, POWER SUPPLY TROUBLE, FCV-1101 TROUBLE"

"AI-10B, FW REG SYS, POWER SUPPLY TROUBLE, FCV-1102 TROUBLE"

What action must be taken to regain normal steam generator water level control following reestablishment of normal instrument air pressure?

- A. The SPEC 200 controllers for FCV-1101 and FCV-1102 will need to be placed in manual and then returned to automatic.
- B. The standby controllers, HIC-1101 and HIC-1102 will need to be placed in manual and then returned to automatic.
- C. The steam dump AUTO/INHIBIT switch will need to be place in the INHIBIT position and the returned to the AUTO position.
- D✓ The solenoid power reset switches HC-1101 and HC-1102 will need to be placed in RESET and then returned to the NORMAL position

Question 12

KA # 000054 2.4.50

Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

RO Importance: 3.3      SRO Importance: 3.3      CFRSection: 45.3

FCS Objective 0711-11 02.00

DESCRIBE the indications and controls available and EXPLAIN the control system automatic protective features, interlocks and tracking circuits.

KA#: 000054 2.4.50

Bank Ref #: N/A

LP# / Objective: 0711-11 02.00

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: ARP CB-10,11 A9

Handout: NONE

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QUESTION NUMBER: 013

What actions, if any, are required to ensure that the station's batteries will be able to supply power to plant instrumentation and controls for the required time period following a station blackout? ?

- A. No action is required, battery capacity is sufficient to supply instrument power for 8 hours.
- B. No action is required. Automatic shedding of selected DC loads will occur.
- C.  Manual shedding of selected DC loads must be performed within 15 minutes..
- D. Manual shedding of selected DC loads must be performed if station power is not restored within 2 hours.

Question 13

KA # 000055 EK1.01

Knowledge of the operational implications of the following concepts as they apply to the Station Blackout :

Effect of battery discharge rates on capacity

RO Importance: 3.3

SRO Importance: 3.7

CFRSection: 41.8 / 41.10 / 45.3

FCS Objective 0718-17 02.03

GIVEN a copy of Attachment 6, EXPLAIN the steps necessary to minimize DC loads.

KA#: 000055 EK1.01

Bank Ref #: N/A

LP# / Objective: 0718-17 02.03

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: AOP/EOP ATT 6

Handout: NONE

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QUESTION NUMBER: 014

Auxilliary Feedwater flow is being established to the steam generators via HCV-1384 following a loss of offsite power. Wide Range steam generator levels indicate 50%. What indicated AFW flow rate should be established to each steam generator?

- A. AFW should be limited to 150 gpm until S/G levels are restored to normal.
- B. AFW flow should be limited to 150 gpm for the first 5 minutes.
- C. All available AFW flow should be provided until S/G levels are restored to normal.
- D. All available AFW flow should be provided for the first 5 minutes.

Question 14

KA # 000056 AA2.20

Ability to determine and interpret the following as they apply to the Loss of Offsite Power:

AFW flow indicator

RO Importance: 3.9

SRO Importance: 4.1

CFRSection: 43.5 / 45.13

FCS Objective 0711-01 01.10

DESCRIBE the operational conditions associated with the operation of each of the three AFW pumps: FW-6, FW-10, and FW-54.

KA#: 000056 AA2.20

Bank Ref #: N/A

LP# / Objective: 0711-01 01.10

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: EOP-02

Handout: NONE

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QUESTION NUMBER: 015

The plant is at 100% when annunciator "Inverter A Trouble" and "Instrument Bus A Low Voltage" alarm. In accordance with AOP-16, "Loss of Instrument Bus Power", what is the correct action to be taken?

- A. Cross tie instrument bus A to instrument bus C within 4 hours.
- B.  If an instrument bus is lost and the reactor has not tripped, the operator should bypass trips on the affected channel.
- C. If an instrument bus is lost and the reactor has not tripped, the operator should depress the manual reactor trip pushbutton and go to the Reactor Trip Procedure, EOP-00.
- D. If an instrument bus is lost and the reactor has not tripped, the operator should place the affected RPS channel trip unit bistables in the tripped position thus putting the RPS in a 1/3 logic.

Question 15

KA # 000057 2.4.50

Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

RO Importance: 3.3      SRO Importance: 3.3      CFRSection: 45.3

FCS Objective 0717-16 01.03

Describe the major recovery actions of this AOP.

KA#: 000057 2.4.50

Bank Ref #: 07-17-16 001

LP# / Objective: 0717-16 01.03

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 99 EXAM

Reference: AOP-16

Handout: NONE

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QUESTION NUMBER: 016

The plant is operating at 100% power with LT-101X failed and channel "Y" selected as the controlling channel when a loss of Instrument Bus "B" occurred. What level should be maintained on LI-106 after selecting channel "X" as the controlling pressurizer level channel?

- A. 31%
- B.  38%
- C. 48%
- D. 60%

Question 16

KA # 000057 AA1.02

Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus:

Manual control of PZR level

RO Importance: 3.8      SRO Importance: 3.7      CFRSection: 41.7 / 45.5 / 45.6

FCS Objective 0717-16 01.02

Describe how the plant responds to a loss of instrument bus power in terms of how specific equipment is affected and how it affects overall plant operation and reliability

NOTE: TDB-III-2 should be provided to the student as a handout.

Reworded per NRC comment

KA#: 000057 AA1.02

Bank Ref #: 07-17-16 002

LP# / Objective: 0717-16 01.02

Exam Level: BOTH

Cognitive Level: HIGH

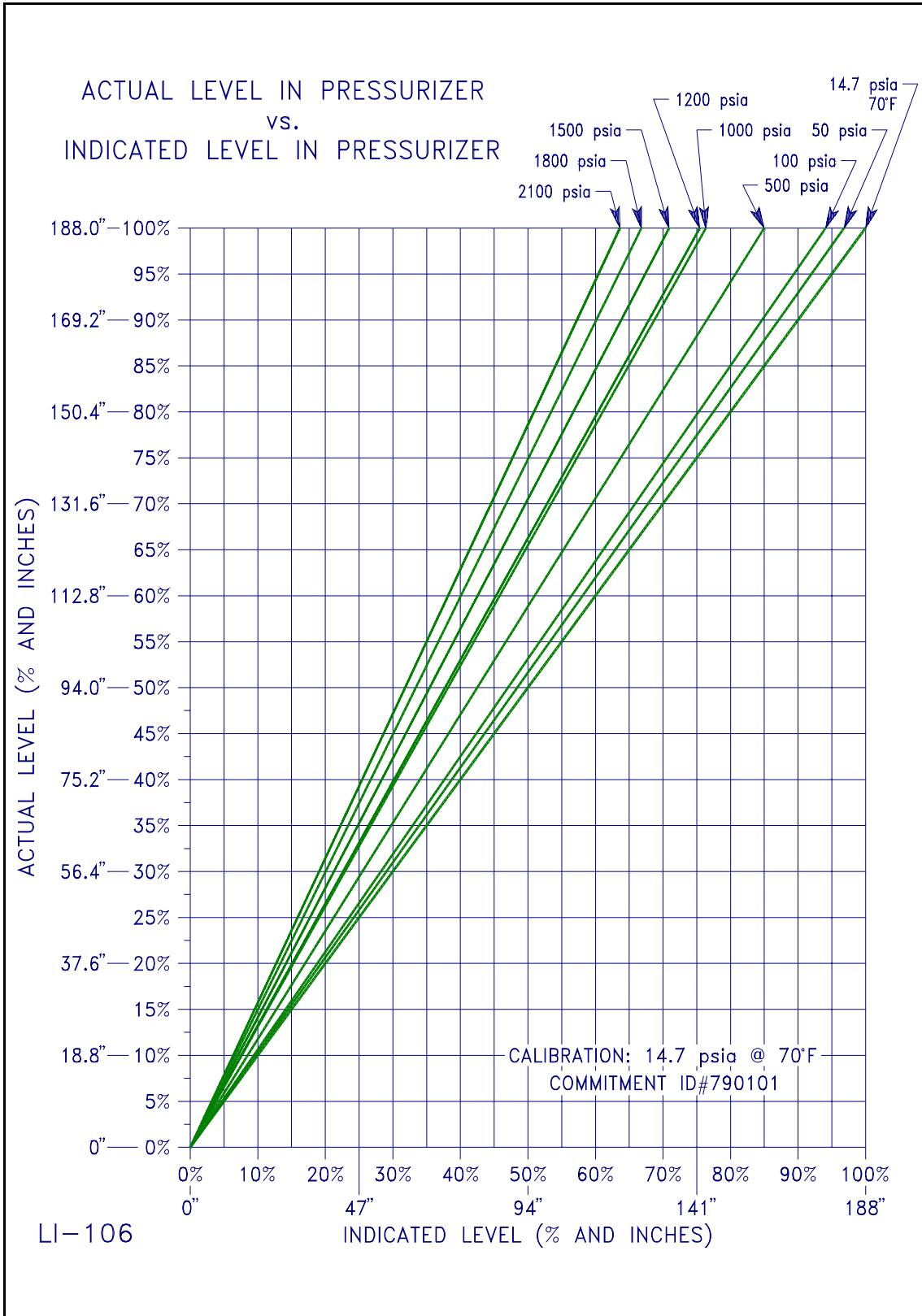
Source: NRC 01-1 EXAM

Reference: RCI STM

Handout: TDB-III-2

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QUESTION NUMBER: 017

A reactor trip has just occurred and the standard post trip actions are being performed.

Which one of the following parameters indicates that a safety function is NOT being satisfied?

- A.  All trippable CEAs except for B-15 and D-1 are inserted
- B. Instrument air pressure is 101 psig and stable
- C. Steam generator levels are 85% WR and stable
- D. CCW pump discharge pressure is 98 psig and stable

Question 17

KA # CE-E02 EK1.01

Knowledge of the operational implications of the following concepts as they apply to the (Reactor Trip Recovery) Components, capacity, and function of emergency systems.

RO Importance: 2.9      SRO Importance: 3.2      CFRSection: 41.8 / 41.10 / 45.3

FCS Objective 0718-10 01.13

GIVEN a set of plant conditions and the SPTA checklists, DETERMINE if the safety function meets the acceptance criteria listed.

**Distractor "D" changed per NRC comment regarding modified question**

KA#: CE-E02 EK1.01      Bank Ref #: 0718-10 047

LP# / Objective: 0718-10 01.13      Exam Level: BOTH

Cognitive Level: LOW      Source: MODIFIED

Reference: EOP-00      Handout: NONE

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QUESTION NUMBER: 018

Assume that a Total Loss of All Feedwater occurred while the plant was at 100% power.

What are the required actions regarding operation of the PORVs?

- A. No operator action will be required due to the fact that the PORVs will automatically open at 2350 psia.
- B. The operator will have to manually open the PORVs when BOTH Wide Range Steam Generator Levels lower to 20%.
- C. The PORV will automatically open but the operator will have to take manual control and CLOSE the PORVs prior to RCS pressure falling below 1350 psia to avoid Safety Injection.
- D. The operator will have to manually open the PORVs when EITHER Wide Range Steam Generator Level lowers to 20%.

Question 18

KA # CE-E06 EK1.03

Knowledge of the operational implications of the following concepts as they apply to the (Loss of Feedwater) Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Feedwater).

RO Importance: 3.2      SRO Importance: 3.7      CFRSection: 41.8 / 41.10 / 45.3

FCS Objective 0715-28 01.08

EXPLAIN the thermal-hydraulics and processes of "Feed-and-Bleed."

Stem reworded per NRC comment.

KA#: CE-E06 EK1.03

Bank Ref #: 07-15-28 029

LP# / Objective: 0715-28 01.08

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: EOP-06

Handout: NONE

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QUESTION NUMBER: 019

The plant was operating at 100% steady state power when the reactor tripped due to a loss of power to bus 1A3. All control room actions for Emergency Boration were taken. Assuming bus 1A3 remains deenergized, which one of the following local operations would result in emergency boration flow?

- A. Opening HCV-258, "CH-11B Gravity Feed Valve"
- B. Opening HCV-265, "CH-11A Gravity Feed Valve"
- C.  Opening HCV-268, "Boric Acid Pump Discharge Header Isolation Valve"
- D. Opening LCV-218-3, "Charging Pump Suction SIRWT Isolation Valve"

Question 19

KA # 000024 AK2.04

Knowledge of the interrelations between the Emergency Boration and the following:

Pumps

RO Importance: 2.6

SRO Importance: 2.5

CFRSection: 41.7 / 45.7

FCS Objective 0717-03 01.00

Use the Emergency Boration AOP to mitigate the consequences of an uncontrollable or unexplained positive reactivity addition.

KA#: 000024 AK2.04

Bank Ref #: 07-17-03 003

LP# / Objective: 0717-03 01.00

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: STM 12

Handout: NONE

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QUESTION NUMBER: 020

Control has been established at the Auxilliary Shutdown Panels (AI-179, AI-185 and AI-212) following a control room evacuation. Reactivity Control is being monitored using the WR NI indication on AI-212.

Power has been lost to AI-212. Plant operators report that instrument inverters B and D have tripped and static transfer to the bypass transformers failed.

Which one of the following actions, if successful, will restore indication at AI-212?

- A. Power instrument bus B from its bypass transformer.
- B. Power instrument bus D from its bypass transformer.
- C. Use the DC transfer switch on the back of AI-179 to switch to the alternate DC power supply.
- D. Return the 43 switch on AI-185 back to the REMOTE position.

Question 20

KA # 000032 AA1.01

Ability to operate and / or monitor the following as they apply to the Loss of Source Range Nuclear Instrumentation:

Manual restoration of power

RO Importance: 3.1\* SRO Importance: 3.4\* CFRSection: 41.7 / 45.5 / 45.6

FCS Objective 0712-18 02.13

Explain the indication provided on AI-212 provided by WR NIS.

KA#: 000032 AA1.01

Bank Ref #: N/A

LP# / Objective: 0712-18 02.13

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 29

Handout: NONE

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QUESTION NUMBER: 021

If a fuel handling incident occurs in the Auxiliary Building, which one of the following is the first action the operator is directed to perform at AI-44 by AOP-08?

- A. Stop VA-40C, Auxiliary Building Exhaust Fan
- B. Ensure all Auxiliary Building Exhaust Fans, VA-40A, VA-40B and VA-40C are running.
- C. Ensure both Auxiliary Building Supply Fans, VA-35A and VA-35B are running.
- D✓ Ensure VA-66, Spent Fuel Area Charcoal filter, is in the filtered mode.

Question 21

KA # 000036 2.4.49

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

RO Importance: 4.0      SRO Importance: 4.0      CFRSection: 41.10 / 43.2 / 45.6

FCS Objective 0717-08 01.06

Describe the two Technical Specification LCOs that are challenged by a fuel handling incident.

KA#: 000036 2.4.49

Bank Ref #: 07-17-08 012

LP# / Objective: 0717-08 01.06

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 02 EXAM

Reference: AOP-08

Handout: NONE

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QUESTION NUMBER: 022

The plant is operating at full power. All radiation monitors are operable with RM-052 aligned to monitor the containment when a waste gas decay tank ruptures.

Which one of the following radiation monitors will provide the initiating signal that ultimately results in automatically aligning Control Room ventilation to the filtered mode?

- A. RM-051
- B.  RM-062
- C. RM-063
- D. RM-065

Question 22

KA # 000060 AK2.01

Knowledge of the interrelations between the Accidental Gaseous Radwaste Release and the following:

ARM system, including the normal radiation-level indications and the operability status

RO Importance: 2.6      SRO Importance: 2.9\*      CFRSection: 41.7 / 45.7

FCS Objective 0712-03 04.01

LIST radiation monitors with automatic actuations and STATE the automatic actuations that occur.

KA#: 000060 AK2.01

Bank Ref #: N/A

LP# / Objective: 0712-03 04.01

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 33

Handout: NONE

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QUESTION NUMBER: 023

The following RM-078 setpoints are provided in in the technical data book, TDB-IV.8.

Normal <1.0 mrem  
Warn/Alert 10 mrem  
High 30 mrem

A radiation source is moved in Corridor 4 which causes the measured radiation level to rise to 45 mrem and then go back down to normal. What is the status of the alarm status lights on the RM-078 panel at AI-33 after the radiation levels have returned to normal? Assume no operator action has been taken.

- A.  The Alert and Alarm status lights are both lit and will stay lit until the Reset button is pushed.
- B. The Alert status light has automatically reset and is off. The Alarm status light is lit and will stay lit until the Reset button is pushed.
- C. The Alarm status light has automatically reset and is off. The Alert status light is lit and will stay lit until the Reset button is pushed.
- D. The Alert and Alarm status lights have automatically reset and are off.

Question 23

KA # 000061 AA2.01

Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms:

ARM panel displays

RO Importance: 3.5      SRO Importance: 3.7      CFRSection: 43.5 / 45.13

FCS Objective 0712-03 03.03C

Front panel controls/ indications

KA#: 000061 AA2.01

Bank Ref #: N/A

LP# / Objective: 0712-03 03.03C

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 33

Handout: NONE

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QUESTION NUMBER: 024

During a plant cooldown performed using AOP-07, "Evacuation of Control Room", the RCS is placed on shutdown cooling when the highest RCS temperature is less than 300°F. However, the cooldown is not continued until the boron concentration is greater than the \_\_\_\_\_ Cold Shutdown Boron Concentration.

- A. 2.6%ΔK/K
- B.  3.6%ΔK/K
- C. 4.6%ΔK/K
- D. 5.6%ΔK/K

Question 24

KA # 000068 AK3.17

Knowledge of the reasons for the following responses as they apply to the Control Room Evacuation:

Injection of boric acid into the RCS

RO Importance: 3.7      SRO Importance: 4.0      CFRSection: 41.5 / 41.10 / 45.6 / 45.13

FCS Objective 0717-07 01.05

Describe the Technical Specification LCO that is challenged by the Evacuation of Control Room AOP.

KA#: 000068 AK3.17

Bank Ref #: 07-17-07 005

LP# / Objective: 0717-07 01.05

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: AOP-07

Handout: NONE

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QUESTION NUMBER: 025

What are the potential consequences of defeating the automatic rampdown feature of the main feedwater regulating valves?

- A. AFAS actuation following a reactor trip.
- B. A steam generator water hammer following a reactor trip.
- C. A loss of RCS heat removal following a reactor trip.
- D.  Overcooling of the RCS following a reactor trip.

Question 25

KA # CE-A11 2.1.27

Knowledge of system purpose and or function.

RO Importance: 2.8      SRO Importance: 2.9      CFRSection: 41.7

FCS Objective 0711-11 02.05

EXPLAIN the operation of the Feedwater Control System following a turbine trip.

KA#: CE-A11 2.1.27

Bank Ref #: 07-11-11 018

LP# / Objective: 0711-11 02.05

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 01-1 EXAM

Reference: LP 0715-20

Handout: NONE

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QUESTION NUMBER: 026

During natural circulation, the operator should:

- A. Allow the steam dump and bypass valves to operate automatically.
- B. Take manual control of the steam dump and bypass valves and close them.
- C. Take manual control of the steam dump and bypass valves and use them to control average RCS temperature at 532°F.
- D. Take manual control of the steam dump and bypass valves and use them to control steam generator pressure at 900 psia.

Question 26

KA # CE-A13 AK3.03

Knowledge of the reasons for the following responses as they apply to the (Natural Circulation Operations)

Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.

RO Importance: 3.4      SRO Importance: 3.8      CFRSection: 41.5 / 41.10 / 45.6 / 45.13

FCS Objective 0715-16 02.04

EXPLAIN how the long RCS transit time during natural circulation can complicate RCS temperature control.

KA#: CE-A13 AK3.03

Bank Ref #: 07-15-16 030

LP# / Objective: 0715-16 02.04

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: LP 07-15-16

Handout: NONE

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QUESTION NUMBER: 027

Which one of the following is an indication that Reactor Vessel head O-rings are leaking?

- A.  High pressure sensed between the O-rings.
- B. High temperature sensed between the O-rings.
- C. High level in a standpipe that collects O-ring leakage.
- D. High flow in a line that directs O-ring leakage to the RCDDT.

Question 27

KA # CE-A16 AA1.02

Ability to operate and / or monitor the following as they apply to the (Excess RCS Leakage)

Operating behavior characteristics of the facility.

RO Importance: 3.0      SRO Importance: 3.5      CFRSection: 41.7 / 45.5 / 45.6

FCS Objective 0711-20 01.03

EXPLAIN the basic functions of the RCS components.

KA#: CE-A16 AA1.02

Bank Ref #: 07-11-20 015

LP# / Objective: 0711-20 01.03

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 01-1 EXAM

Reference: STM 39

Handout: NONE

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QUESTION NUMBER: 028

The following conditions exist during an RCS cooldown:

- RCS pressure is 2000 psia and lowering
- RCS temperature is 500°F and lowering
- Pressurizer level is 50% and steady
- Two charging pumps are running.
- Four reactor coolant pumps are running.

Which one of the following actions must be taken to continue the cooldown?

- A.  One reactor coolant pump must be tripped
- B. Two reactor coolant pumps must be tripped.
- C. One charging pump must be tripped.
- D. An additional charging pump must be started.

Question 28

KA # 003000 A1.07

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including:

RCS temperature and pressure

RO Importance: 3.4

SRO Importance: 3.4

CFRSection: 41.5 / 45.5

FCS Objective 0711-20 03.06

LIST the major steps required to shut down the Reactor Coolant System per OP-3A.

KA#: 003000 A1.07

Bank Ref #: 07-11-20 023

LP# / Objective: 0711-20 03.06

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 95 EXAM

Reference: OP-3A

Handout: NONE

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QUESTION NUMBER: 029

Which one of the following conditions will result in isolation of component cooling water to the reactor coolant pumps?

- A.  CIAS and low component cooling water pressure.
- B. CIAS and high component cooling water radiation levels.
- C. CRHS and low component cooling water pressure.
- D. CRHS and high component cooling water radiation levels.

Question 29

KA # 003000 K1.08

Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems:

Containment isolation

RO Importance: 2.7\* SRO Importance: 3.0\* CFRSection: 41.2 to 41.9 / 45.7 to 45.8

FCS Objective 0711-06 01.04

EXPLAIN standby operation of CCW pumps in terms of switch positions and automatic actions.

KA#: 003000 K1.08

Bank Ref #: 07-11-06 002

LP# / Objective: 0711-06 01.04

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 97 EXAM

Reference: STM 8

Handout: NONE

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QUESTION NUMBER: 030

In AOP-21, RCS High Activity, the operators direct the chemist to verify:

- A. RCS Boron concentration is within limits
- B.  The decontamination factor of the inservice CVCS ion exchanger is within limits
- C. The xenon-133 activity in the VCT gas space is within limits
- D. The RCS dissolved oxygen concentration is within limits

Question 30

KA # 004000 A2.09

Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use

procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

High primary and/or secondary activity

RO Importance: 3.0

SRO Importance: 3.9

CFRSection: 41.5 / 43.5 / 45.3 / 45.5

FCS Objective 0717-21 01.06

Describe the Technical Specification LCO that is challenged by high activity in the Reactor Coolant System.

KA#: 004000 A2.09

Bank Ref #: 07-17-21 008

LP# / Objective: 0717-21 01.06

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: AOP-21

Handout: NONE



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QUESTION NUMBER: 031

During a plant heatup following a refueling outage, the VCT is vented to the Waste Gas Disposal System to:

- A. Allow nitrogen to replace the fission gasses in the VCT
- B. Allow hydrogen to replace the fission gasses in the VCT
- C. Allow nitrogen to replace the hydrogen in the VCT
- D✓ Allow hydrogen to replace the nitrogen in the VCT

Question 31

KA # 004000 K6.15

Knowledge of the effect of a loss or malfunction on the following CVCS components:

Reason for venting VCT and pump casings while filling: vents must connect to LRS

RO Importance: 2.8      SRO Importance: 3.1      CFRSection: 41.7 / 45.7

FCS Objective 0711-02 03.02

EXPLAIN why a nitrogen or hydrogen gas overpressure is maintained in the VCT.

Draft question replaced with new question that directly addresses the K/A in response to NRC comment..

KA#: 004000 K6.15

Bank Ref #: 07-11-02 043

LP# / Objective: 0711-02 01.03

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: STM 12

Handout: NONE

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QUESTION NUMBER: 032

The plant is shutdown with shutdown cooling in operation with a normal shutdown cooling alignment. SDC heat exchanger outlet temperature is steady at 200°F. What action would normally be taken to lower the temperature?

- A. An additional SDC heat exchanger will be placed into service.
- B. An additional LPSI pump will be placed in operation.
- C. The flow setpoint for FCV-326 will be increased.
- D. HCV-341 will be throttled open.

Question 32

KA # 005000 A4.03

Ability to manually operate and/or monitor in the control room:

RHR temperature, PZR heaters and flow, and nitrogen

RO Importance: 2.8\*

SRO Importance: 2.7\*

CFRSection: 41.7 / 45.5 to 45.8

FCS Objective 0711-22 01.18

Given a current copy of OI-SC-1, explain the major steps, prerequisites and precautions for placing the Shutdown Cooling System in service.

KA#: 005000 A4.03

Bank Ref #: N/A

LP# / Objective: 0711-22 01.18

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 15

Handout: NONE

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QUESTION NUMBER: 033

The Containment Spray Pumps can be used as an alternate supply of safety injection should the Low Pressure Safety Injection Pumps fail. This is only allowed if which of the following conditions are met?

- A. RCS temperature is  $< 120^{\circ}\text{F}$  and RCS is vented through an area  $<$  PZR manway.
- B. RCS temperature is  $< 150^{\circ}\text{F}$  and RCS is vented through an area  $\geq$  PZR manway.
- C.  RCS temperature is  $< 120^{\circ}\text{F}$  and RCS is vented through an area  $\geq$  PZR manway.
- D. RCS temperature is  $< 150^{\circ}\text{F}$  and RCS is vented through an area  $<$  PZR manway.

Question 33

KA # 005000 K4.12

Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following:

Lineup for piggyback mode with CSS

RO Importance: 3.1\*      SRO Importance: 3.7\*      CFRSection: 41.7

FCS Objective 0711-22 01.17

Given a current copy of OI-CS-1, explain the major steps, prerequisites and precautions for operation of the Containment Spray System.

KA#: 005000 K4.12

Bank Ref #: 07-11-22 014

LP# / Objective: 0711-22 01.17

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: AOP-19

Handout: NONE

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QUESTION NUMBER: 034

Which one of the following sets of parameters will meet the Technical Specification 2.3 LCO for the Safety Injection and Refueling Water Tank when the reactor is critical?

	<u>SIRWT Boron Concentration</u>	<u>SIRWT Usable Volume</u>	<u>SIRWT Temperature</u>	<u>Burnup MWD/MTU</u>
A.	2000 ppm	288,000 gal	48°F	7000
B.	1950 ppm	278,000 gal	58°F	5000
C✓	1940 ppm	308,000 gal	68°F	3000
D.	1910 ppm	298,000 gal	78°F	1000

Question 34

KA # 006000 2.1.33

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

RO Importance: 3.4      SRO Importance: 4.0      CFRSection: 43.2 / 43.3 / 45.3

FCS Objective 0711-22 01.12

Given a copy of Technical Specifications, apply the applicable Limiting Conditions for Operation (LCO).

KA#: 006000 2.1.33

Bank Ref #: 07-11-22 047

LP# / Objective: 0711-22 01.12

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: TS 2.3

Handout: COLR TABLE 2

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## TECHNICAL SPECIFICATIONS

### 2.0 **LIMITING CONDITIONS FOR OPERATION**

#### 2.3 Emergency Core Cooling System

##### Applicability

Applies to the operating status of the emergency core cooling system.

##### Objective

To assure operability of equipment required to remove decay heat from the core.

##### Specifications

###### (1) Minimum Requirements

The reactor shall not be made critical unless all of the following conditions are met:

- a. The SIRW tank contains not less than 283,000 gallons of water with a boron concentration of at least the refueling boron concentration at a temperature not less than 50°F.
- b. One means of temperature indication (local) of the SIRW tank is operable.
- c. All four safety injection tanks are operable and pressurized to at least 240 psig and a maximum of 275 psig with tank level of at least 116.2 inches (67%) and a maximum level of 128.1 inches (74%) with refueling boron concentration.
- d. One level and one pressure instrument is operable on each safety injection tank.
- e. One low-pressure safety injection train is operable on each associated 4,160 V engineered safety feature bus.
- f. One high-pressure safety injection pump is operable on each associated 4,160 V engineered safety feature bus.
- g. Both shutdown heat exchangers are operable.
- h. Piping and valves shall be operable to provide two flow paths from the SIRW tank to the reactor coolant system.
- i. All valves, piping and interlocks associated with the above components and required to function during accident conditions are operable. HCV-2914, 2934, 2974, and 2954 shall have power removed from the motor operators by locking open the circuit breakers in the power supply lines to the valve motor operators. FCV-326 shall be locked open.

## TECHNICAL SPECIFICATIONS

### 2.0 **LIMITING CONDITIONS FOR OPERATION**

#### 2.3 Emergency Core Cooling System (Continued)

- (1) j. One high-pressure safety injection pump is operable on each safety injection refueling water tank-containment sump header.

**11.0 Refueling Boron Concentration**

The refueling boron concentration is required to ensure a shutdown margin of not less than 5% with all CEAs withdrawn. The refueling boron concentration must be at least **1,900 ppm** through the end of Cycle 21 operation and is valid until the beginning of core reload for Cycle 22.

Listed below in Table 2 are the refueling boron concentration values for cycle operations:

**Table 2**  
**Refueling Boron Concentrations**

Cycle Average Burnup (MWD/MTU)	Refueling Boron Concentration (ppm)
BOC	2,075
≥ 2,000	1,931
≥ 4,000	1,900

**12.0 Axial Power Distribution**

The axial power trip is provided to ensure that excessive axial peaking will not cause fuel damage. The Axial Shape Index is determined from the axially split excore detectors. The setpoint functions, shown in Figure 7 ensure that neither a DNBR of less than the minimum DNBR safety limit nor a maximum linear heat rate of more than 22 kW/ft (deposited in the fuel) will exist as a consequence of axial power maldistributions. Allowances have been made for instrumentation inaccuracies and uncertainties associated with the excore symmetric offset – incore axial peaking relationship. Figure 8 combines the LHR LCO tent from Figure 4, the DNB LCO tent from Figure 5, and the APD LSSS tent from Figure 7 into one figure for a visual comparison of the different limits.

**13.0 Shutdown Margin With  $T_{cold} > 210$  °F**

Whenever the reactor is in hot shutdown, hot standby or power operation conditions, the shutdown margin shall be  $\geq 3.6\% \Delta k/k$ . With the shutdown margin  $< 3.6\% \Delta k/k$ , initiate and continue boration until the required shutdown margin is achieved.

**14.0 Most Negative Moderator Temperature Coefficient**

The moderator temperature coefficient (MTC) shall be more positive than  $-3.05 \times 10^{-4} \Delta\rho/^\circ\text{F}$ , including uncertainties, at rated power.

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QUESTION NUMBER: 035

A plant cooldown is in progress in accordance with OP-3A. The pressurizer pressure has been lowered to 1550 psia when an RCS leak develops. The following plant conditions exist.

- Pressurizer pressure is 1550 psia and lowering on both channels
- Pressurizer level is 48% and steady on the "X" channel
- Pressurizer level is 38% and lowering on the "Y" channel
- All available charging pumps have been started
- Containment sump level is rising
- Containment pressure is 1.1 psig and rising.

Which one of the following actions is directed by AOP-22?

- A. Operate the Emergency Operate "THINK" switches
- B.  Place the PPLS Block switch in "EMER RESET"
- C. Manually start all available HPSI pumps
- D. Initiate Containment Spray using the CPHS Test Switches

Question 35

KA # 006000 A2.12

Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use

procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

Conditions requiring actuation of ECCS

RO Importance: 4.5

SRO Importance: 4.8

CFRSection: 41.5 / 45.5

FCS Objective 0712-14 03.01

STATE plant conditions that require manual initiation of engineered safeguards.

KA#: 006000 A2.12

Bank Ref #: 07-12-14 079

LP# / Objective: 0712-14 03.01

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: AOP-22

Handout: NONE

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QUESTION NUMBER: 036

Alarms were received in the control room due to rising pressure and level in the pressurizer quench tank. It was determined that the source of leakage into the PQT was NOT from the pressurizer PORVs or Safety valves. Which one of the following would be a possible source of water to the PQT?

- A. Backleakage through the Safety Injection Tank check valves
- B. CEDM leakage
- C. RCP controlled leakage relief valve, CH-208
- D  Letdown relief valve, CH-223

Question 36

KA # 007000 A2.02

Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

Abnormal pressure in the PRT

RO Importance: 2.6      SRO Importance: 3.2      CFRSection: 41.5 / 43.5 /45.3 /45.13

FCS Objective 0711-20 03.04a

DISCUSS the prerequisites and precautions for operating the quench tank.

KA#: 007000 A2.02

Bank Ref #: N/A

LP# / Objective: 0711-20 03.04A

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 12

Handout: NONE

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QUESTION NUMBER: 037

Which one of the instruments listed below allows identification of the specific pressurizer PORV or Safety Valve that is leaking?

- A. Downstream temperature detectors.
- B. Downstream pressure detectors.
- C. Downstream delta pressure flow detectors
- D  Downstream acoustic flow detectors.

Question 37

KA # 007000 A4.10

Ability to manually operate and/or monitor in the control room:

Recognition of leaking PORV/code safety

RO Importance: 3.6

SRO Importance: 3.8

CFRSection: 41.7 / 45.5 to 45.8

FCS Objective 0711-20 04.02h

Using the applicable P&ID, IDENTIFY each of the following RCS Instrumentation Subsystems: Acoustic monitors for the PORVs and safety valves

KA#: 007000 A4.10

Bank Ref #: 07-11-20 013

LP# / Objective: 0711-20 04.02H

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 01-1 EXAM

Reference: STM 36

Handout: NONE

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QUESTION NUMBER: 038

The plant is operating at 50% power with CCW pump AC-3A operating. The control switches for AC-3B and AC-3C are in the after-stop position. How will the CCW system respond to an overcurrent trip of AC-3A

- A. There will be no automatic pump starts.
- B. AC-3B will automatically start. AC-3C will start 30 seconds later if AC-3B failed to start.
- C. AC-3C will automatically start. AC-3B will start 30 seconds later if AC-3C failed to start.
- D. AC-3B and AC-3C will automatically start.**

Question 38

KA # 008000 A3.01

Ability to monitor automatic operation of the CCWS, including:

Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS

RO Importance: 3.2\*

SRO Importance: 3.0

CFRSection: 41.7 / 45.5

FCS Objective 0711-06 01.04

EXPLAIN standby operation of CCW pumps in terms of switch positions and automatic actions.

KA#: 008000 A3.01

Bank Ref #: 07-11-06 008

LP# / Objective: 0711-06 01.04

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-2 EXAM

Reference: STM 08

Handout: NONE

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QUESTION NUMBER: 039

Given the following plant conditions:

- 100% power
- Pressurizer safety valve, RC-142 has seat leakage
- Quench tank level is rising
- Quench tank pressure is 8 psig and increasing slowly

Which one of the following automatic actions will occur assuming no operator actions are taken?

- A.  Quench tank relief valve RC-125 will open resulting in increasing containment pressure.
- B. The quench tank vent valve HCV-155 will open and vent to the containment vent header and the RCDT outlet containment isolation valve will close.
- C. The quench tank relief valve RC-125 will open and relieve to the waste gas system.
- D. The quench tank vent valve HCV-155 will open and the quench tank disk will rupture resulting in increasing containment pressure.

Question 39

KA # 010000 K1.05

Knowledge of the physical connections and/or cause-effect relationships between the PZR PCS and the following systems:

PRTS

RO Importance: 3.4      SRO Importance: 3.6      CFRSection: 41.2 to 41.9 / 45.7 to 45.8

FCS Objective 0711-20 03.04

LIST the major steps for proper operation of the quench tank per OI-RC-6.

KA#: 010000 K1.05

Bank Ref #: 07-11-20 029

LP# / Objective: 0711-20 03.04

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 99 EXAM

Reference: STM 37

Handout: NONE

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QUESTION NUMBER: 040

The plant was operating at 80% power when a load reduction resulted in an increase in RCS average temperature, pressurizer level and pressurizer pressure. Immediately after the insurge the following conditions existed:

RCS T-cold had risen from 540°F to 545°F  
Pressurizer level had risen from 60% to 65%  
Pressurizer pressure had risen from 2100 to 2170 psia

Immediately following the insurge (before equilibrium conditions are reestablished), the average temperature of the water in the pressurizer would be:

- A. 540°F - 545°F
- B.  635°F - 640°F
- C. 650°F - 655°F
- D. 655°F - 660°F

Question 40

KA # 010000 K5.01

Knowledge of the operational implications of the following concepts as they apply to the PZR PCS:

Determination of condition of fluid in PZR, using steam tables

RO Importance: 3.5

SRO Importance: 4.0

CFRSection: 41.5 / 45.7

FCS Objective 0711-20 01.06a

STATE the purpose of the pressurizer.

Note: This question requires the candidates to understand that immediately following an insurge, the water in the pressurizer is subcooled.

KA#: 010000 K5.01

Bank Ref #: N/A

LP# / Objective: 0711-20 01.06A

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 37

Handout: STEAM TABLES

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QUESTION NUMBER: 041

Which one of the following conditions would prevent the steam generator RC-2A feedwater regulating valve (FCV-1101) rampdown following a reactor/turbine trip?

- A. Instrument air header pressure decreases to 90 psig.
- B. The Spec-200 controller for FCV-1101 has been placed in AUTO.
- C.  The steam dump valve Auto/Inhibit switch has been placed in INHIBIT.
- D. Steam Generator RC-2A downcomer level is low.

Question 41

KA # 012000 K1.08

Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems:

MFW

RO Importance: 2.9\*      SRO Importance: 3.1      CFRSection: 41.2 to 41.9 / 45.7 to 45.8

FCS Objective 0711-11 02.06

EXPLAIN the operation of the feedwater control system during a Steam Generator High Downcomer Level condition.

KA#: 012000 K1.08

Bank Ref #: 07-11-11 001

LP# / Objective: 0711-11 02.06

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 95 EXAM

Reference:

Handout: NONE

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QUESTION NUMBER: 042

The Reactor Protection System is designed to prevent exceeding a transient linear heat generation rate of 21 kw/ft. This limit is based on:

- A. Preventing DNBR from going above the limit.
- B. Preventing fretting of the fuel pins.
- C. Preventing cladding oxidation.
- D✓ Preventing fuel centerline melting.

Question 42

KA # 012000 K5.02

Knowledge of the operational implications of the following concepts as they apply to the RPS:

Power density

RO Importance: 3.1\*      SRO Importance: 3.3\*      CFRSection: 41.5 / 45.7

FCS Objective 0712-25 01.04

EXPLAIN the bases for each reactor trip.

KA#: 012000 K5.02

Bank Ref #: 07-12-25 025

LP# / Objective: 0712-25 01.04

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: LP 07-15-31

Handout: NONE

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QUESTION NUMBER: 043

An small break LOCA occurred during a normal plant cooldown with the RCS pressure at 1550 psia.

What would be the consequences of initiating safeguards using the "Emergency Think" switches to mitigate this accident? (assume no other operator action is taken).

- A. A Ventilation Isolation Actuation Signal (VIAS) would not be generated.
- B. The sequencers would not start the HPSI and LPSI pumps
- C. The Diesel Generators would not get a start signal when needed
- D✓ A Recirculation Actuation Signal (RAS) would not be generated when needed

Question 43

KA # 013000 2.1.32

Ability to explain and apply all system limits and precautions.

RO Importance: 3.4

SRO Importance: 3.8

CFRSection: 41.10 / 43.2 / 45.12

FCS Objective 0712-14 02.02

EXPLAIN the operation/function of ESC switches and controls located in the Control Room.

KA#: 013000 2.1.32

Bank Ref #: N/A

LP# / Objective: 0712-14 02.02

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 19

Handout: NONE

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QUESTION NUMBER: 044

A loss of coolant accident occurred at 0400. Safety injection and containment spray were automatically initiated. RAS actuated at 0530.

When can containment spray flow be terminated?

- A. As soon as containment pressure falls below the CPHS setpoint.
- B. As soon as containment pressure falls below 3.0 psig.
- C. At 0700 if containment pressure is below the CPHS setpoint.
- D. At 0900 if containment pressure is below 3.0 psig.

Question 44

KA # 013000 A1.02

Ability to predict and/or monitor changes in parameters (to Prevent exceeding design limits) associated with operating the ESFAS controls including:

Containment pressure, temperature, and humidity

RO Importance: 3.9      SRO Importance: 4.2      CFRSection: 41.5 / 45.5

FCS Objective 0712-14 02.00

DESCRIBE the operation of the Engineered Safeguards Control System during normal and emergency conditions.

KA#: 013000 A1.02

Bank Ref #: N/A

LP# / Objective: 0712-14 02.00

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: EOP-03

Handout: NONE

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QUESTION NUMBER: 045

A large LOCA has caused Safety Injection and Containment Spray Actuation.

Following RAS, What would be the expected trends in SIRWT level (LIC-381 and LIC-382) and Containment Sump levels (LI-387 and LI-388) if the seals on one of the Containment Spray Pumps failed?

	<u>SIRWT Level</u>	<u>Containment Sump Level</u>
A.	Steady	Steady
B✓	Steady	Lowering
C.	Rising	Lowering
D.	Lowering	Rising

Question 45

KA # 026000 A1.03

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including:

Containment Sump Level

RO Importance: 3.5      SRO Importance: 3.5      CFRSection: 41.5 / 45.5

FCS Objective 0715-23 01.00

EXPLAIN the plant response to a Loss of Coolant Accident.

KA#: 026000 A1.03

Bank Ref #: 07-14-03 002

LP# / Objective: 0714-03 02.01

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: OI-VA-6

Handout: NONE

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QUESTION NUMBER: 046

The main steam isolation valves are closed. Which one of the following statements is correct about operation of the manual shutoff valves in room 81?

- A. When placed in OPEN, the pneumatic cylinders are vented through the open solenoids and the valves remain closed. All automatic trips are defeated.
- B.  Placing the manual shutoff valve in OVERRIDE, the pneumatic cylinders are pressurized and the valves open. All automatic trips are defeated.
- C. Placing the manual shutoff valve in OPEN, the pneumatic cylinders are pressurized and the valves open. All automatic trips are operable.
- D. Placing the manual shutoff valve in OVERRIDE, the pneumatic cylinders are vented through the open solenoids and the valves remain closed. All automatic trips are operable.

Question 46

KA # 039000 K4.08

Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following:

Interlocks on MSIV and bypass valves

RO Importance: 3.3

SRO Importance: 3.4

CFRSection: 41.7

FCS Objective 0711-17 01.06

EXPLAIN how changes in plant conditions will effect the Main Steam System.

KA#: 039000 K4.08

Bank Ref #: 07-11-17 002

LP# / Objective: 0711-17 01.06

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-2 EXAM

Reference: STM 25

Handout: NONE

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QUESTION NUMBER: 047

The plant is at 30% reactor power and holding for chemistry after a startup from a maintenance shutdown. Suddenly the following indications and alarms are noted:

$T_{\text{cold}}$  decreasing rapidly, "High Power Rate of Change Channel Pretrip" alarm and a "Rod Withdrawal Prohibit" alarm, **AND** a "Variable Over Power Reset Demand" alarm.

Choose the statement that best describes what has happened.

- A. An inadvertent boration has occurred which lowered  $T_{\text{cold}}$ , adding positive reactivity which has caused power to increase.
- B. A dropped rod occurred which lowered  $T_{\text{cold}}$ , adding positive reactivity which caused power to increase.
- C. An inadvertent dilution has occurred which caused less neutron capture and more neutron leakage causing power as seen by the N.I.s to increase.
- D✓ An excess steam demand has occurred which lowered  $T_{\text{cold}}$ , adding positive reactivity which caused power to increase.

Question 47

KA # 039000 K5.08

Knowledge of the operational implications of the following concepts as they apply to the MRSS:

Effect of steam removal on reactivity

RO Importance: 3.6      SRO Importance: 3.6      CFRSection: 41.5 / 45.7

FCS Objective 0712-19 01.08

Explain the indications available for monitoring the operation of the Power Range NI System.

KA#: 039000 K5.08

Bank Ref #: 07-12-19 048

LP# / Objective: 0712-19 01.08

Exam Level: BOTH

Cognitive Level: HIGH

Source: FCS BANK

Reference: LP 07-15-20

Handout: NONE

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QUESTION NUMBER: 048

An inadvertent SGIS has isolated feedwater to both steam generators. One feedwater pump and one condensate pump are running. FW-6 and FW-10 are not running. Which one of the following actions results in water being provided to RC-2B's Feed Ring?

- A. Open HCV-1384, Override and open HCV-1104 and FCV-1102
- B. Open HCV-1384, Override and open HCV-1104 and HCV-1106
- C. Override and open HCV-1385 and FCV-1102
- D.  Override and open HCV-1385 and HCV-1106

Question 48

KA # 059000 A4.11

Ability to manually operate and monitor in the control room:

Recovery from automatic feedwater isolation

RO Importance: 3.1

SRO Importance: 3.3

CFRSection: 41.7 / 45.5 to 45.8

FCS Objective 0711-11 02.03

EXPLAIN the automatic features and interlocks associated with the feedwater components.

KA#: 059000 A4.11

Bank Ref #: 07-11-11 017

LP# / Objective: 0711-11 02.03

Exam Level: BOTH

Cognitive Level: LOW

Source: MODIFIED

Reference: STM 20

Handout: NONE

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QUESTION NUMBER: 049

The following plant conditions exist:

- A plant transient has occurred that resulted in an automatic reactor trip
- Pressure in the "A" S/G is 480 psia
- Level in the "A" S/G is 50% WR
- Pressure in the "B" S/G is 575 psia
- Level in the "B" S/G is 60% WR
- The MSIVs are closed

Assuming no operator action, which one of the following is the current status of the AFW system?

- A. AFW should be feeding the "A" S/G only.
- B. AFW should be feeding the "B" S/G only
- C. AFW should be feeding both S/Gs
- D✓ AFW should not have initiated yet

Question 49

KA # 061000 A1.02

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls

including:

S/G pressure

RO Importance: 3.3\*      SRO Importance: 3.6\*      CFRSection: 41.5 / 45.5

FCS Objective 0711-01 01.04

EXPLAIN the operation of the AFW System following an Engineered Safeguards AFAS.

KA#: 061000 A1.02

Bank Ref #: 07-11-01 008

LP# / Objective: 0711-01 01.04

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-2 EXAM

Reference: STM 19

Handout: NONE

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QUESTION NUMBER: 050

Fort Calhoun Station has both an AC sequencer and a DC sequencer on each train of engineered safeguards. What is the function of these sequencers?

- A. The AC sequencer starts the AC loads needed to maintain safe shutdown following a loss of offsite power. The DC sequencer starts the associated DC loads.
- B. The AC sequencer starts the AC loads needed to mitigate a loss of coolant accident. The DC sequencer starts the associated DC loads.
- C. The DC sequencer starts the AC loads needed to maintain safe shutdown following a loss of offsite power. The AC sequencer provides backup start signals.
- D. The DC sequencer starts the AC loads needed to mitigate a loss of coolant accident. The AC sequencer provides backup start signals.

Question 50

KA # 064000 A3.12

Ability to monitor automatic operation of the ED/G system, including:

Purpose of automatic load sequencer

RO Importance: 3.3\*

SRO Importance: 3.5

CFRSection: 41.7 / 45.5

FCS Objective 0712-14 01.00

APPLY operating principles to predict Engineered Safeguards Control (ESC) System response when given specific plant conditions.

KA#: 064000 A3.12

Bank Ref #: N/A

LP# / Objective: 0712-14 01.00

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: STM 19

Handout: NONE

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QUESTION NUMBER: 051

The Diesel Generator's each have an amber Governor Low Limit Light on CB-20. Which one of the following would indicate a failure of the associated relay?

- A. The amber light is on with the D/G in standby mode.
- B. The amber light is on following an automatic start during an uncomplicated reactor trip.
- C✓ The amber light stays on when D/G speed is raised from 500 rpm to 900 rpm during a surveillance test.
- D. The amber light goes off when D/G speed is raised from 500 rpm to 900 rpm during a surveillance test.

Question 51

KA # 064000 K4.03

Knowledge of ED/G system design feature(s) and/or interlock(s) which provide for the following:

Governor valve operation

RO Importance: 2.5

SRO Importance: 3.0

CFRSection: 41.7

FCS Objective 0713-05 01.13a

Explain the use of the instrumentation and controls at CB-20 and AI-30. Include in your explanation the following:

Interpretation of indication lights.

KA#: 064000 K4.03

Bank Ref #: N/A

LP# / Objective: 0713-05 01.13A

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 16

Handout: NONE

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QUESTION NUMBER: 052

A release of Waste Monitor Tank, WD-22A is in progress when the "RM-055 OVERBOARD DISCH WASTE TROUBLE" annunciator alarms.

The "RM-055 OVERBOARD DISCH WASTE HIGH RADIATION" annunciator is NOT in alarm.

Which one of the following actions is directed to be taken by the ARP?

- A. Secure the Waste Monitor Tank release. The tank can not be released until RM-055 is declared operable.
- B. Secure the Waste Monitor Tank release. The release may be resumed if ODCM sampling requirements are met.
- C. Continue the release. Direct Chemistry to begin periodic sampling.
- D. Continue the release. Report the trouble alarm to the OCC.

Question 52

KA # 073000 2.4.50

Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

RO Importance: 3.3      SRO Importance: 3.3      CFRSection: 45.3

FCS Objective 0712-03 04.01

LIST radiation monitors with automatic actuations and STATE the automatic actuations that occur.

KA#: 073000 2.4.50

Bank Ref #: 07-12 03 007

LP# / Objective: 0712-03 04.01

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: ARP AI-33C

Handout: NONE

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QUESTION NUMBER: 053

The plant is operating at 100% power. AC-10A and AC-10B are operating. An accident occurs which results in an OPLS signal being generated. The following bus voltages were noted.

Bus 1A1 4160 volts  
Bus 1A2 0 volts  
Bus 1A3 4160 volts  
Bus 1A4 4160 volts

How many Raw water pumps will be operating after sequencer operation is completed?

- A. 1
- B. 2
- C. 3
- D. 4

Question 53

KA # 076000 K2.01

Knowledge of bus power supplies to the following:

Service water

RO Importance: 2.7\* SRO Importance: 2.7 CFRSection: 41.7

FCS Objective 0711-19 01.05

EXPLAIN the automatic start features associated with the raw water pumps.

KA#: 076000 K2.01

Bank Ref #: N/A

LP# / Objective: 0711-19 01.05

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: STM 35

Handout: NONE

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QUESTION NUMBER: 054

A large rupture of the Raw Water system has resulted in a loss of system pressure. Which one of the following systems or components will lose cooling ?

- A.  Control room air conditioning
- B. Air compressors
- C. Diesel Generators
- D. Auxilliary Feedwater pumps

Question 54

KA # 076000 K3.07

Knowledge of the effect that a loss or malfunction of the SWS will have on the following:

ESF loads

RO Importance: 3.7      SRO Importance: 3.9      CFRSection: 41.7 / 45.6

FCS Objective 0717-11 01.02

Describe how the plant responds to a Loss of Component Cooling Water in terms of how specific equipment is affected and how it affects overall plant operation and reliability.

KA#: 076000 K3.07

Bank Ref #: N/A

LP# / Objective: 0717-11 01.02

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: STM 35

Handout: NONE

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QUESTION NUMBER: 055

Instrument Air Containment Isolation Valves, PCV-1849A and PCV-1849B, have automatically closed during a plant event which resulted in a CIAS and loss of instrument air pressure. Following the event, CIAS was reset and Instrument air pressure was raised to 75 psig. The operator attempted to open PCV-1849A, but it would not open. What additional action must be taken before PCV-1849A will open?

- A.  PCV-1849B must be opened.
- B. PCV-1753 must be opened.
- C. PCV-1749A & B must be opened.
- D. Instrument air pressure must be raised above 80 psig.

Question 55

KA # 078000 K3.02

Knowledge of the effect that a loss or malfunction of the IAS will have on the following:

Systems having pneumatic valves and controls

RO Importance: 3.4

SRO Importance: 3.6

CFRSection: 41.7 / 45.6

FCS Objective 0711-07 01.05

Explain the principles of Abnormal operation of the Compressed Air System in terms of flow paths, major parameters, (temperature, pressure, flow, etc.), alarms and control devices.

KA#: 078000 K3.02

Bank Ref #: 07-11-07 003

LP# / Objective: 0711-07 01.05

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: STM 43

Handout: NONE

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QUESTION NUMBER: 056

Which one of the following signals can cause a Rod Withdrawal Prohibit?

- A. Thermal Margin/Low Pressure pretrip
- B.  High Startup Rate pretrip
- C. Axial Power Distribution pretrip
- D. Asymmetric Steam Generator pretrip

Question 56

KA # 001000 K4.23

Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following:

Rod motion inhibit

RO Importance: 3.4

SRO Importance: 3.8

CFRSection: 41.7

FCS Objective 0712-26 01.02d

Describe the interface/interaction between the CRDS and the following systems/components: Reactor Protective System.

KA#: 001000 K4.23

Bank Ref #: 07-12-26 012

LP# / Objective: 0712-26 01.02D

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC EXAM 2001-2

Reference: STM 11

Handout: NONE

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QUESTION NUMBER: 057

What design features are provided to prevent a SIRWT overflow event from potentially contaminating the railroad dock area of the Auxiliary Building:

- A. An overflow pipe is provided to divert excess water to the spent fuel pool.
- B.  A drain system is provided to enable spilled water to be drained to the spent regenerent tank
- C. High SIRWT level will cause automatic isolation of the fill path from the borated water header blending tee.
- D. High SIRWT level will cause automatic isolation of the SIRWT vents

Question 57

KA # 002000 A4.06

Ability to manually operate and/or monitor in the control room:

Overflow level of the RWST

RO Importance: 2.9

SRO Importance: 2.7

CFRSection: 41.7 / 45.5 to 45.8

FCS Objective 0711-22 01.15

Given a current copy of OI-SI-1, explain the major steps, prerequisites and precautions for recirculating the SIRWT.

KA#: 002000 A4.06

Bank Ref #: N/A

LP# / Objective: 0711-22 01.15

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: STM 15

Handout: NONE

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QUESTION NUMBER: 058

The PZR Level Monitoring Floating Step in EOP-20 requires PZR level to be maintained within a certain band during a plant cooldown to maintain the pressurizer heaters covered, select the correct range from the choices below:

- A. 10-70%
- B. 25-60%
- C. 35-70%
- D.  45-60%

Question 58

KA # 011000 2.1.02

Knowledge of operator responsibilities during all modes of plant operation.

RO Importance: 3.0      SRO Importance: 4.0      CFRSection: 41.10 / 45.13

FCS Objective 0718-13 03.24

GIVEN a copy of the PZR Level Monitoring floating step, EXPLAIN the requirement for the listed actual PZR level band.

KA#: 011000 2.1.02

Bank Ref #: 07-18-13 051

LP# / Objective: 0718-13 03.24

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: EOP-20

Handout: NONE

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QUESTION NUMBER: 059

The bistables for channel "B" trip units 1, 9 and 12 have been bypassed. The bistables for channel "D" trip units 1, 9 and 12 have been placed in the "tripped" condition.

Which one of the following instrument failures will result in a reactor trip?

- A. "A" channel NIS power range input to the RPS fails high.
- B. "B" channel pressurizer pressure input to the RPS fails low.
- C. "C" channel cold leg temperature input to the RPS fails high.
- D. "D" channel RCS flow input to the RPS fails low.

Question 59

KA # 015000 K3.01

Knowledge of the effect that a loss or malfunction of the NIS will have on the following:

RPS

RO Importance: 3.9

SRO Importance: 4.3

CFRSection: 41.7 / 45.6

FCS Objective 0712-19 01.12

Explain the difference in the resultant coincidence if one channel in a 2 of 4 logic configuration is bypassed or de-energized.

KA#: 015000 K3.01

Bank Ref #: 07-12-19 006

LP# / Objective: 0712-19 01.12

Exam Level: BOTH

Cognitive Level: HIGH

Source: MODIFIED

Reference: STM 38

Handout: NONE

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QUESTION NUMBER: 060

When should the hydrogen purge system be placed into operation following a loss of coolant accident?

- A. Within 8 1/2 hours of the LOCA
- B. 30 days after the LOCA
- C.  When containment hydrogen concentration reaches 3%
- D. When containment hydrogen concentration reaches 4%

Question 60

KA # 028000 A2.03

Ability to (a) predict the impacts of the following malfunctions or operations on the HRPS; and (b) based on those predictions, use

procedures to correct, control or mitigate the consequences of those malfunctions or operations:

The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment

RO Importance: 3.4      SRO Importance: 4.0      CFRSection: 41.5 / 43.5 / 45.3 / 45.13

FCS Objective 0714-03 01.01

STATE the purpose of the Containment Hydrogen Purge System.

KA#: 028000 A2.03

Bank Ref #: N/A

LP# / Objective: 0714-03 01.01

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: STM 10

Handout: NONE

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QUESTION NUMBER: 061

The plant is in Cold Shutdown for a refueling outage with the containment purge system operating in the low purge rate mode using fan VA-77. A malfunction in radiation monitor RM-062 causes the monitor to exceed the high alarm setpoint.

Which of the following statements correctly describes the response of the containment purge system to this event?

- A. The inboard containment isolation valves only would close and VA-77 would trip.
- B. The outboard containment isolation valves only would close and VA-77 would trip.
- C✓ Both the inboard and outboard isolation valves would close and VA-77 would trip.
- D. VA-77 would trip but the inboard and outboard isolation valve would remain open

Question 61

KA # 029000 A3.01

Ability to monitor automatic operation of the Containment Purge System including:

CPS isolation

RO Importance: 3.8

SRO Importance: 4.0

CFRSection: 41.7 / 45.5

FCS Objective 0714-04 01.08

EXPLAIN the principles of Emergency operation of the Containment Purge System in terms of flowpaths, major parameters, (temperature, pressure, flow, etc.) alarms and control devices.

KA#: 029000 A3.01

Bank Ref #: 07-14-04 014

LP# / Objective: 0714-04 01.08

Exam Level: BOTH

Cognitive Level: HIGH

Source: FCS BANK

Reference: STM 10

Handout: NONE

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QUESTION NUMBER: 062

The backup cooling supply to the spent fuel pool is:

- A. The Component Cooling Water System.
- B.  The Shutdown Cooling System.
- C. The Containment Spray System.
- D. The Reactor Coolant Drain Tank Cooling System.

Question 62

KA # 033000 K1.02

Knowledge of the physical connections and/or cause-effect relationships between the Spent Fuel Pool Cooling System and the following systems:

RHRS

RO Importance: 2.5      SRO Importance: 2.7      CFRSection: 41.2 to 41.9 / 45.7 to 45.8

FCS Objective 0711-24 01.02

STATE the functional relationship between the Spent Fuel Pool Cooling System and the following:

KA#: 033000 K1.02

Bank Ref #: 07-11-24 011

LP# / Objective: 0711-24 01.02

Exam Level: BOTH

Cognitive Level: LOW

Source: FCS BANK

Reference: STM 44

Handout: NONE

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QUESTION NUMBER: 063

Choose the best answer for the following:

Due to a Loss of Instrument Air both MSIVs fail closed. Assuming no operator action which of the following Control Room indications would indicate that MS-291 and MS-292 [pneumatically operated safety valves] are open?

- A. The red position lights indicating they are open
- B. Safety tail pipe temperature indicating 300°F
- C. Safety valve acoustic monitors
- D. S/G pressure indicating approximately 1000 psia

Question 63

KA # 035000 A1.02

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/GS controls

including:

S/G pressure

RO Importance: 3.5

SRO Importance: 3.8

CFRSection: 41.5 / 45.5

FCS Objective 0711-17 01.06

EXPLAIN how changes in plant conditions will effect the Main Steam System.

KA#: 035000 A1.02

Bank Ref #: 07-11-17 032

LP# / Objective: 0711-17 01.06

Exam Level: BOTH

Cognitive Level: HIGH

Source: FCS BANK

Reference: STM 25

Handout: NONE

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QUESTION NUMBER: 064

Steam bypass valve controller, PIC-910, has been set to 870 psia. What cold leg temperature will be maintained in the RCS 15 minutes after the plant inadvertently trips from full power assuming all system operate as expected?

- A.  528°F
- B.  532°F
- C.  535°F
- D.  540°F

Question 64

KA # 041000 K5.02

Knowledge of the operational implications of the following concepts as they apply to the SDS:

Use of steam tables for saturation temperature and pressure

RO Importance: 2.5

SRO Importance: 2.8

CFRSection: 41.5 / 45.7

FCS Objective 0712-31 02.02

EXPLAIN the actions necessary to control main steam pressure using the steam dump and turbine bypass valves if the automatic pressure and temperature control outputs from the RRS are not available

KA#: 041000 K5.02

Bank Ref #: 07-12-31 004

LP# / Objective: 0712-31 02.02

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-2 EXAM

Reference: STM 25

Handout: STEAM TABLES

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QUESTION NUMBER: 065

Assume there was a fire in Diesel Generator Room #1 and the electric fire pump failed to start.

Select the statement below that correctly describes the sequence of alarms in the order in which they occurred due to this fire.

- A. Fire sprinkler diesel rooms low air pressure, Fire Main pressure low, Motor driven fire pump off normal overload trip
- B. Diesel Room dry pipe sprinkler system actuated, Fire or fire detector panel trouble. Fire main pressure low.
- C. Fire or fire detection panel trouble, Diesel Rms dry pipe sprinkler system actuated, Motor driven fire pump off normal overload trip.
- D. Fire main pressure low, Fire sprinkler diesel rooms low air pressure, Fire or fire detection panel trouble

Question 65

KA # 086000 K6.04

Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the :  
Fire, smoke, and heat detectors

RO Importance: 2.6      SRO Importance: 2.9      CFRSection: 41.7 / 45.7

FCS Objective 0717-10 01.03

Describe the major recovery actions of this AOP.

KA#: 086000 K6.04

Bank Ref #: 07-11-12 014

LP# / Objective: 0717-10 01.03

Exam Level: BOTH

Cognitive Level: HIGH

Source: FCS BANK

Reference: STM 21

Handout: NONE

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QUESTION NUMBER: 066

Which one of the following containment parameters can NOT be determined directly if the ERF computer is not operating?

- A. Containment purge flow
- B. Containment hydrogen concentration
- C. Containment dewpoint
- D✓ Containment temperature

Question 66

KA # 000000 2.1.19

Ability to use plant computer to obtain and evaluate parametric information on system or component status.

RO Importance: 3.0      SRO Importance: 3.0      CFRSection: 45.12

FCS Objective 0718-10 01.13

GIVEN a set of plant conditions and the SPTA checklists, DETERMINE if the safety function meets the acceptance criteria listed.

KA#: 000000 2.1.19

Bank Ref #: N/A

LP# / Objective: 0718-10 01.13

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: EOP-00

Handout: NONE

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QUESTION NUMBER: 067

A turbine startup is being performed in accordance with OI-ST-2.  
Which one of the following statements is correct concerning required sequence of prerequisites and procedural steps?

- A. Prerequisites and procedural steps must be satisfied or completed in sequence unless the procedure states otherwise.
- B. Prerequisites must be satisfied in sequence but procedure steps are not required to be completed in sequence unless specified in the procedure.
- C. Prerequisites are not required to be satisfied in sequence but procedure steps must be completed in sequence unless the procedure states otherwise.
- D. Prerequisites and procedure steps are not required to be satisfied or completed in sequence unless the procedure states otherwise.

Question 67

KA # 000000 2.1.20

Ability to execute procedure steps.

RO Importance: 4.3

SRO Importance: 4.2

CFRSection: 41.10 / 43.5 / 45.12

FCS Objective 0767-09 07.05

Prerequisites and Initial Conditions

KA#: 000000 2.1.20

Bank Ref #: ADM-O 012

LP# / Objective: 0767-09 07.05

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 97 EXAM

Reference: SO-O-1

Handout: NONE

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QUESTION NUMBER: 068

Which one of the following is a purpose of the 86/SVG1 relay?

- A. Provides a signal to trip the reactor following a main generator trip.
- B. Provides a signal to trip the reactor following a main turbine trip.
- C✓ Limits motoring of the main generator while preventing turbine overspeed if stop and/or intercept valves stay open following a turbine trip.
- D. Limits field overvoltage if the exciter field breaker stays closed following a main generator trip.

Question 68

KA # 000000 2.1.28

Knowledge of the purpose and function of major system components and controls.

RO Importance: 3.2      SRO Importance: 3.3      CFRSection: 41.7

FCS Objective 0711-18 01.01b

State the functional relationship between the turbine and the following systems: Main Electrical Generator.

KA#: 000000 2.1.28

Bank Ref #: N/A

LP# / Objective: 0711-18 01.01B

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: STM 14

Handout: NONE

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QUESTION NUMBER: 069

A surveillance test is being performed that measures the closure time of a containment isolation valve. A suggestion is made that the test be conducted first for "just in time training" prior to the actual surveillance test being conducted.

Is this in accordance with SO G-23?

- A. Yes, SO G-23 requires pre-cycling of the valves to ensure operability prior measuring the stroke time.
- B. Yes, this is a good practice although it is not required by SO G-23
- C. No, This is not a good practice because it involves excessive valve cycling.
- D. No, this is not allowed because SO G-23 requires the test be conducted from the "as found" condition.

Question 69

KA # 000000 2.2.12

Knowledge of surveillance procedures.

RO Importance: 3.0

SRO Importance: 3.4

CFRSection: 41.10 / 45.13

FCS Objective 0762-01 01.00

STATE the major sections of the Standing Orders.

KA#: 000000 2.2.12

Bank Ref #: N/A

LP# / Objective: 0762-01 01.00

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: SO G-23

Handout: NONE

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QUESTION NUMBER: 070

Which one of the following types of Tags will NOT be used for equipment tagging and clearance inside the protected area at Fort Calhoun Station?

- A. Caution Tags (yellow)
- B. Local Control Tags (red/blue)
- C. Testing Lift Tags (blue)
- D✓ Hold Order Tags (red/white)

Question 70

KA # 000000 2.2.13

Knowledge of tagging and clearance procedures.

RO Importance: 3.6

SRO Importance: 3.8

CFRSection: 41.10 / 45.13

FCS Objective 0762-01 01.00

STATE the major sections of the Standing Orders.

KA#: 000000 2.2.13

Bank Ref #: ADM-C 006

LP# / Objective: 0762-01 01.00

Exam Level: BOTH

Cognitive Level: LOW

Source: NEW

Reference: SO-G-20A

Handout: NONE

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QUESTION NUMBER: 071

An operator, who has previously received a TEDE of 720 mrem for the current year, was in containment during RCS venting. During this venting operation, the radioactive gas concentration in containment was estimated to be 15 times the Derived Airborne Concentration. The radiation in the area was 20 mr/hr. The operator was in containment for 2 hours with no respiratory equipment.

What contribution to his TEDE did the operator receive during this evolution and how does his annual dose compare to FCS administrative limits?.

(Note: 1 DAC-hour results in a 2.5 mrem CEDE)

- A. The operator received an additional TEDE of 70 mrem for this evolution and is within the FCS annual administrative limits.
- B. The operator received an additional TEDE of 70 mrem for this evolution and has exceeded the FCS annual administrative limits.
- C. The operator received an additional TEDE of 115 mrem for this evolution and is within the FCS annual administrative limits.
- D. The operator received an additional TEDE of 115 mrem for this evolution and has exceeded the FCS annual administrative limits.

Question 71

KA # 000000 2.3.01

Knowledge of 10CFR20 and related facility radiation control requirements.

RO Importance: 2.6      SRO Importance: 3.0      CFRSection: 41.12 / 43.4 / 45.9 / 45.10

FCS Objective 1924-03 03.00

EXPLAIN the federal and OPPD limits and guidelines for exposures.

KA#: 000000 2.3.01

Bank Ref #: ADM-R 007

LP# / Objective: 1924-03 03.00

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: SO G-101

Handout: NONE

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QUESTION NUMBER: 072

During the later part of cycle 19, condenser evacuation was routed to the auxiliary building stack. Why was that done?

- A. To provide filtering of radioactive noble gasses in case of a primary to secondary leak.
- B. To prevent an unmonitored release if RM-057 went offscale.
- C. To allow for modification of the normal condenser evacuation ducting.
- D. To improve condenser vacuum due to air in-leakage.

Question 72

KA # 000000 2.3.11

Ability to control radiation releases.

RO Importance: 2.7

SRO Importance: 3.2

CFRSection: 45.9 / 45.10

FCS Objective 0715-33 01.03

EXPLAIN the pathways for the transport of radioactivity to the environment during a steam generator tube rupture event.

KA#: 000000 2.3.11

Bank Ref #: ADM-R 006

LP# / Objective: 0715-33 01.03

Exam Level: BOTH

Cognitive Level: LOW

Source: NRC 01-1 EXAM

Reference: STM 09

Handout: NONE

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QUESTION NUMBER: 073

EOP-20 has been entered, and the status of the safety functions is being determined. In which one of the following is the reactivity control safety function being satisfied?

- A. All but two trippable CEAs are fully inserted. SUR is -0.33 dpm. Power is  $5 \times 10^{-3}\%$  power, emergency boration is not in progress.
- B. All but two trippable CEAs are fully inserted. SUR is +0.1 dpm. Power is  $5 \times 10^{-3}\%$  power, emergency boration is in progress.
- C. All but four trippable CEAs are fully inserted, SUR is 0 dpm, Power is  $8 \times 10^{-5}\%$  power, emergency boration is not in progress.
- D✓ All but four trippable CEAs are fully inserted, SUR is 0 dpm, Power is  $8 \times 10^{-6}\%$  power, emergency boration is not in progress.

Question 73

KA # 000000 2.4.17

Knowledge of EOP terms and definitions.

RO Importance: 3.1      SRO Importance: 3.8      CFRSection: 41.10 / 45.13

FCS Objective 0718-10 01.13

GIVEN a set of plant conditions and the SPTA checklists, DETERMINE if the safety function meets the acceptance criteria listed.

KA#: 000000 2.4.17

Bank Ref #: N/A

LP# / Objective: 0718-10 01.13

Exam Level: BOTH

Cognitive Level: HIGH

Source: NEW

Reference: EOP-20

Handout: NONE

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QUESTION NUMBER: 074

A total loss of CCW has occurred during a LOCA. When will Raw Water Backup cooling need to be provided to the Shutdown Cooling Heat Exchangers?

- A. When LPSI injection to the RCS loops begins.
- B. When Containment Spray flow begins.
- C. When the SI tanks begin to provide water to the RCS
- D✓ When RAS begins to recirculate sump water.

Question 74

KA # 000000 2.4.24

Knowledge of loss of cooling water procedures.

RO Importance: 3.3      SRO Importance: 3.7      CFRSection: 41.10 / 45.13

FCS Objective 0718-13 01.01

EXPLAIN the major strategy used to mitigate the consequences of a LOCA.

KA#: 000000 2.4.24

Bank Ref #: 07-18-13 067

LP# / Objective: 0718-13 01.01

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 02 EXAM

Reference: STM 08

Handout: NONE

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QUESTION NUMBER: 075

The plant is in mode 3 and surveillance tests are being performed. Annunciator window "flags" are being used in accordance with the OPD 6-04, "Annunciator Marking".

Which one of the following situations is unexpected and requires use of the Annunciator Response Procedures?

- A. A red flagged annunciator window is unlit
- B. A blue flagged annunciator window is unlit
- C✓ A green flagged annunciator window is unlit
- D. An red flagged annunciator window is lit

Question 75

KA # 000000 2.4.31

Knowledge of annunciators alarms and indications, and use of the response instructions.

RO Importance: 3.3      SRO Importance: 3.4      CFRSection: 41.10 / 45.3

FCS Objective 0767-05 02.00

DESCRIBE the Performance Standards listed in the OPD Manual.

KA#: 000000 2.4.31

Bank Ref #: ADM-E 024

LP# / Objective: 0767-05 02.00

Exam Level: BOTH

Cognitive Level: HIGH

Source: NRC 01-2 EXAM

Reference: OPD-6-04

Handout: NONE

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QUESTION NUMBER: 076

A pressurizer steam space LOCA has caused PPLS and SIAS actuation. CETs are stable at 550°F. RCS pressure is stable at 1300 psia, pressurizer level is 20% and rising. HPSI flow is 390 gpm. Two Reactor Coolant Pumps are running. Both steam generators are providing heat removal.

Which one of the following may result during the performance of HPSI Stop and Throttle from these conditions?

- A. RCS pressure will lower and may result in a loss of heat removal by the steam generators.
- B.  RCS pressure will lower and may result in a loss of NPSH for the reactor coolant pumps
- C. RCS pressure will remain steady. The reduced HPSI flow may result in lowering pressurizer level.
- D. RCS pressure will remain steady. The reduced HPSI flow may result in inadequate subcooling

Question 76

KA # 000008 AA2.22

Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident:

Consequences of loss of pressure in RCS; methods for evaluating pressure loss

RO Importance: 3.8

SRO Importance: 4.2

CFRSection: 43.5 / 45.13

FCS Objective 0718-13 01.04

GIVEN a copy of the Technical Basis Documents (TBDs), EXPLAIN the bases behind the major operator actions contained in EOP-03, LOCA.

KA#: 000008 AA2.22

Bank Ref #: 07-18-13 010

LP# / Objective: 0718-13 01.04

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: MODIFIED

Reference: LP 07-15-23

Handout: NONE

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QUESTION NUMBER: 077

The plant is operating at 65% power and all systems are aligned for normal operation.

The "CCW Surge Tank Hi/Low" alarm is received and the Auxiliary Building Operator reports that he hears a loud rumbling noise from the operating CCW pump, AC-3A. The primary RO reports fluctuating current and discharge pressure for AC-3A. The CCW surge tank level is 8 inches and lowering.

What action should you direct the RO to perform in addition to standard post trip actions once the reactor is tripped?

- A. Alternately run one RCP at a time until cooling water is restored.
- B. Trip one RCP in each loop immediately. Trip the remaining RCP's when high temperature alarms are received.
- C. Establish raw water backup cooling to the RCP's within 5 minutes.
- D. Shutdown all RCP's within 5 minutes

Question 77

KA # 000015 AA2.10

Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow):

When to secure RCPs on a loss of cooling or seal injection

RO Importance: 3.7      SRO Importance: 3.7      CFRSection: 43.5 / 45.13

FCS Objective 0715-16 01.02

EXPLAIN the response of primary and secondary parameters to a partial loss of flow event.

Minor rewording of bank question.

KA#: 000015 AA2.10

Bank Ref #: 07-17-11 001

LP# / Objective: 0715-16 01.02

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NRC 97 EXAM

Reference: AOP-11

Handout: NONE

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QUESTION NUMBER: 078

AOP-33 has been entered due to a CVCS leak. Charging and letdown have been isolated and LCV-218-2 has been closed. VCT level is continuing to lower.

AOP-33 has you direct the chemist to perform which one of the following samples?

- A. VCT liquid for dissolved oxygen
- B.  Auxilliary Building atmosphere for hydrogen
- C. RCS for boron concentration
- D. Steam generators for secondary activity

Question 78

KA # 000022 2.1.14

Knowledge of system status criteria which require the notification of plant personnel.

RO Importance: 2.5      SRO Importance: 3.3      CFRSection: 43.5 / 45.12

FCS Objective 0717-33 01.05

Given the caution statements and/or notes listed in this AOP, EXPLAIN the reason for

KA#: 000022 2.1.14

Bank Ref #: N/A

LP# / Objective: 0717-33 01.05

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: AOP-33

Handout: NONE

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QUESTION NUMBER: 079

If Off-Site power is lost during Shutdown Cooling System operation, what action should you direct the operator to perform after the Emergency Diesels start?

- A. Manually restart the LPSI pumps
- B. Un-isolate the system from the RCS and restart the LPSI pumps
- C✓ No action is necessary, the Emergency Diesel Generator(s) will pick up the LPSI pumps as a dead bus load.
- D. No action is necessary, the sequencers will restart LPSI pumps within one minute of the loss of power.

Question 79

KA # 000025 2.4.49

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

RO Importance: 4.0      SRO Importance: 4.0      CFRSection: 41.10 / 43.2 / 45.6

FCS Objective 0711-22 01.18

Given a current copy of OI-SC-1, explain the major steps, prerequisites and precautions for placing the Shutdown Cooling System in service.

KA#: 000025 2.4.49

Bank Ref #: 07-11-22 016

LP# / Objective: 0711-22 01.18

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: FCS BANK

Reference: STM 16

Handout: NONE

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QUESTION NUMBER: 080

A steam generator tube rupture has occurred in RC-2A. The ruptured steam generator has been isolated. A plant cooldown is in progress when condenser vacuum is lost.

How should you direct the Operators to continue the cooldown?

- A. All steaming paths should be isolated until condenser vacuum can be reestablished.
- B. The cooldown should be continued using HCV-1040 to steam to the atmosphere.
- C. The cooldown should be continued using MS-291. RM-064 should be aligned to RC-2A.
- D. The cooldown should be continued using MS-291. RM-064 should be aligned to RC-2B.

Question 80

KA # 000038 EA2.08

Ability to determine or interpret the following as they apply to a SGTR:

Viable alternatives for placing plant in safe condition when condenser is not available

RO Importance: 3.8      SRO Importance: 4.4      CFRSection: 43.5 / 45.13

FCS Objective 0718-14 01.01

EXPLAIN the major strategy used to mitigate the consequences of a SGTR.

KA#: 000038 EA2.08

Bank Ref #: N/A

LP# / Objective: 0718-14 01.01

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: EOP-04

Handout: NONE

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QUESTION NUMBER: 081

The following conditions exist in the plant:

- The reactor tripped from 100% power due to a small LOCA with a loss of offsite power.
- RCS pressure is 1000 psia
- S/G A pressure is 1100 psia
- S/G B pressure is 900 psia

Which one of the following statements is true?

- A. Natural Circulation flow is not possible in either loop
- B. Natural Circulation flow may be occurring in loop A but not in loop B
- C✓ Natural Circulation flow may be occurring in loop B but not in loop A
- D. Natural Circulation flow may be occurring in both loops

Question 81

KA # 000055 EA2.02

Ability to determine or interpret the following as they apply to a Station Blackout:

RCS core cooling through natural circulation cooling to S/G cooling

RO Importance: 4.4      SRO Importance: 4.6      CFRSection: 43.5 / 45.13

FCS Objective 0715-16 02.05

EXPLAIN how using only one steam generator as a heat sink can affect natural circulation at FCS

KA#: 000055 EA2.02

Bank Ref #: 07-15-16 003

LP# / Objective: 0715-16 02.05

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NRC 01-2 EXAM

Reference: LP 0715-16

Handout: NONE

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QUESTION NUMBER: 082

During power operations, Tech Specs allows either of the safeguards 4160 Volt Buses to be inoperable up to 8 hours provided that:

- A. The diesel generator associated with the inoperable bus is demonstrated operable immediately.
- B. The operability of the diesel generator associated with the operable bus be demonstrated immediately and there are no inoperable required engineered safeguards components associated with the operable bus.
- C. Both off-site power sources are verified immediately, and every 8 hours thereafter.
- D. No additional requirements other than 8 hour time limit.

Question 82

KA # 000056 2.1.33

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

RO Importance: 3.4      SRO Importance: 4.0      CFRSection: 43.2 / 43.3 / 45.3

FCS Objective 0713-02 01.06

Interpret the Technical Specifications associated with the 4160 Volt System.

KA#: 000056 2.1.33

Bank Ref #: 07-13-02 024

LP# / Objective: 0713-02 01.06

Exam Level: SRO ONLY

Cognitive Level: LOW

Source: FCS BANK

Reference: TS 2.7.2.C

Handout: NONE

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QUESTION NUMBER: 083

You have entered AOP-26 Due to lowering condenser vacuum. The following plant conditions exist:

- Condenser vacuum is 26.5" and lowering
- Generator load is 470 MWe
- All available condenser evacuation pumps are running
- Water is visible in the separator tank level gage
- The Circulating water system is operating normally
- There is no water in the steam seal drain trap
- VD-200 is closed
- A visible level is being maintained in the drip and drain tank
- Condensate storage tank level is 90%

What action should you direct the crew to perform to mitigate this event?

- A. Initiate an AOP-05, emergency shutdown
- B. Trip the reactor and turbine, enter EOP-00
- C. Stop and isolate the condenser evacuation pumps one at a time, and monitor condenser vacuum
- D. Isolate the steam seal drain trap.

Question 83

KA # 000051 AA2.01

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum:

Cause for low vacuum condition

RO Importance: 2.4\* SRO Importance: 2.7\* CFRSection: 43.5 / 45.13

FCS Objective 0717-26 01.03

Describe the major recovery actions of this AOP.

KA#: 000051 AA2.01

Bank Ref #: N/A

LP# / Objective: 0717-26 01.03

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: AOP-26

Handout: NONE

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QUESTION NUMBER: 084

A containment entry was made to add oil to the reactor coolant pumps. During containment exit, the inner PAL door could not be closed fully and maintenance support was required to open the outer door to allow the operators to exit.

Which one of the following actions is required by Technical Specifications to continue power operation?

- A. Both PAL doors must be closed within one hour
- B. Both PAL doors must be closed within eight hours
- C. The outer PAL door must be closed within one hour and locked closed within 24 hours
- D. The outer PAL door must be closed within 8 hours and locked closed within 24 hours

Question 84

KA # 000069 AA2.01

Ability to determine and interpret the following as they apply to the Loss of Containment Integrity:

Loss of containment integrity

RO Importance: 3.7      SRO Importance: 4.3      CFRSection: 43.5 / 45.13

FCS Objective 0711-08 02.03

DESCRIBE actions necessary if containment integrity is violated as per AOP-12 and Tech Spec 2.6

KA#: 000069 AA2.01

Bank Ref #: N/A

LP# / Objective: 0711-08 02.03

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: TS 2.6

Handout: NONE

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QUESTION NUMBER: 085

In which one of the following conditions do you to direct the use of SI-186 to establish "Alternate Hot Leg Injection" per EOP/AOP Attachment 11.

- A✓ A LOCA has existed for 8.5 to 11 hours, RAS has occurred and only one HPSI pump is available.
- B. A LOCA has existed for 8.5 to 11 hours, RAS has occurred and only one LPSI pump is available.
- C. A LOCA has existed for 8.5 to 11 hours, RAS has occurred and Instrument Air is not available
- D. A LOCA has existed for 8.5 to 11 hours, RAS has occurred and Component Cooling Water is not available

Question 85

KA # 000074 2.4.06

Knowledge symptom based EOP mitigation strategies.

RO Importance: 3.1

SRO Importance: 4.0

CFRSection: 41.10 / 43.5 / 45.13

FCS Objective 0715-28 01.09

EXPLAIN the problems associated with boron precipitation for a cold leg break, what actions are taken to minimize it and why it is not a problem for a hot leg break

KA#: 000074 2.4.06

Bank Ref #: N/A

LP# / Objective: 0715-28 01.09

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference:

Handout: NONE

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QUESTION NUMBER: 086

If RCS activity limits are exceeded, Technical Specification 2.1.3 directs that the plant be in hot shutdown with  $T_{avg} < 536^{\circ}\text{F}$  within 6 hours. What is the basis for the  $536^{\circ}\text{F}$  temperature?

- A. The letdown heat exchanger may not be able to cool the liquid sufficiently to allow effective ion exchanger operation if  $T_{avg}$  is  $> 536^{\circ}\text{F}$ .
- B. Iodine spiking is more severe if  $T_{avg}$  is  $> 536^{\circ}\text{F}$ .
- C. Opening of the steam generator safety valves is more likely following a tube rupture if  $T_{avg}$  is  $> 536^{\circ}\text{F}$ .
- D. Additional fuel damage due to reactor vessel void formation is more likely if  $T_{avg}$  is  $> 536^{\circ}\text{F}$ .

Question 86

KA # 000076 2.1.32

Ability to explain and apply all system limits and precautions.

RO Importance: 3.4      SRO Importance: 3.8      CFRSection: 41.10 / 43.2 / 45.12

FCS Objective 0717-21 01.05

Given the caution statements and/or notes listed in this AOP, explain the reason for each.

KA#:	000076 2.1.32	Bank Ref #:	07-17-21 006
LP# / Objective:	0717-21 01.05	Exam Level:	SRO ONLY
Cognitive Level:	LOW	Source:	FCS BANK
Reference:	TS BASIS 2.1.3	Handout:	NONE

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QUESTION NUMBER: 087

Technical specification 2.1.8 applies to the status of the reactor coolant gas vent system. What is the basis for the operability requirements?

- A. To assure the capability to remove steam and or non-condensable gasses from the reactor coolant system which may affect the accuracy of the Reactor Vessel Level Indication.
- B. To assure the capability to remove steam and/or non-condensable gasses from the reactor coolant system which may inhibit natural circulation.**
- C. To assure the capability to accurately monitor the RCS level in the hot legs to prevent an inadvertent loss of shutdown cooling.
- D. To assure the capability of the RCS vent path to prevent overpressurizing the RCS during shutdown cooling operation.

Question 87

KA # CE-E09 2.2.25

Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

RO Importance: 2.5      SRO Importance: 3.7      CFRSection: 43.2

FCS Objective 0711-20 01.11

EXPLAIN the purpose of the Reactor Coolant and Gas Vent System.

Note: EOP/AOP attachment, RCS void elimination, direct operators to OI-RC-12 which covers the operation of these vents.

KA#: CE-E09 2.2.25

Bank Ref #: N/A

LP# / Objective: 0711-20 01.11

Exam Level: SRO ONLY

Cognitive Level: LOW

Source: NEW

Reference: TS 2.1.8 BASIS

Handout: NONE

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QUESTION NUMBER: 088

In which one of the following situations would you need to direct the auxiliary building operator to operate the containment cooler's interface valves to restore containment cooling?

- A. One of the DC busses is deenergized due to a ground.
- B. The instrument air header pressure is "0" psig due to an air header leak.
- C. Component cooling water header pressure has been lost due to a header rupture.
- D. One of the containment cooling fans has tripped and will not restart.

Question 88

KA # 022000 2.1.14

Knowledge of system status criteria which require the notification of plant personnel.

RO Importance: 2.5      SRO Importance: 3.3      CFRSection: 43.5 / 45.12

FCS Objective 0717-11 01.03

Describe the major recovery actions of this AOP.

KA#: 022000 2.1.14

Bank Ref #: N/A

LP# / Objective: 0717-11 01.03

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: AOP-11

Handout: NONE

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QUESTION NUMBER: 089

How do the EOP actions reduce the probability of thermal shock to the steam generator tubes when restoring feedwater following a total loss of feedwater?

- A. Feedwater will only be restored to a steam generator that has greater than 10% wide range level.
- B. Feedwater will only be restored to one steam generator at a time.
- C. Once established, once-through cooling is required to be used to cool the RCS to shutdown cooling entry conditions.
- D. Initiating once-through cooling when required, maintains some water inventory in the steam generators.

Question 89

KA # 059000 A2.04

Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use

procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

Feeding a dry S/G

RO Importance: 2.9\*

SRO Importance: 3.4\*

CFRSection: 41.5 / 43.5 / 45.3 / 45.13

FCS Objective 0718-16 01.04

STATE from memory the two Contingency Actions in EOP-06 which require the operator to GO TO EOP-20, Functional Recovery.

KA#: 059000 A2.04

Bank Ref #: N/A

LP# / Objective: 0718-16 01.04

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: EOP-06

Handout: NONE

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QUESTION NUMBER: 090

A LOCA has occurred coincident with a significant electrical grid transient.

What would be the potential consequences of a failure of the OPLS lockout relays to actuate in this situation

- A✓ Excessive starting currents for ECCS pump motors
- B. Failure of the sequencers to start ECCS pump motors
- C. Failure of the Diesel-Generators to start when required
- D. Failure to shed non-essential 480 volt loads

Question 90

KA # 062000 A2.08

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those

predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

Consequences of exceeding voltage limitations

RO Importance: 2.7 SRO Importance: 3.0\* CFRSection: 41.5 / 43.5 / 45.3 / 45.13

FCS Objective 0713-02 01.09

Explain how the system responds automatically to malfunctions.

KA#: 062000 A2.08

Bank Ref #:

LP# / Objective: 0713-02 01.09

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: STM 19

Handout: NONE

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QUESTION NUMBER: 091

An EOP-20 event has occurred involving a loss of DC bus# 1. DC bus #2 is being powered by a battery charger. What action will you need to direct to be taken to satisfy the MVA-DC safety function?

- A. DC bus #1 must be reenergized.
- B. DC loads must be minimized.
- C. Instrument buses associated with DC bus #1 must be powered.
- D. Switchgear DC control power must be supplied by DC bus #2.

Question 91

KA # 063000 2.4.06

Knowledge symptom based EOP mitigation strategies.

RO Importance: 3.1

SRO Importance: 4.0

CFRSection: 41.10 / 43.5 / 45.13

FCS Objective 0718-18 01.06

EXPLAIN how the Resource Assessment Trees are used in terms of Safety Function priority and success path priority within each tree.

KA#: 063000 2.4.06

Bank Ref #: 07-18-18 005

LP# / Objective: 0718-18 01.06

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NRC 01-1 EXAM

Reference: EOP-20

Handout: NONE

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QUESTION NUMBER: 092

Technical Specifications contain operability requirements and RPS Limited Safety System Settings for the Steam Generator Differential Pressure channels.

These requirements are based on preventing core damage during which one of the following events?

- A. A steam line break outside of containment.
- B. A loss of feedwater to one steam generator.
- C. A simultaneous trip of both RCPs in the same loop.
- D.  An inadvertant closure of one MSIV

Question 92

KA # 016000 2.2.25

Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

RO Importance: 2.5      SRO Importance: 3.7      CFRSection: 43.2

FCS Objective 0712-25 01.04

EXPLAIN the bases for each reactor trip.

KA#: 016000 2.2.25

Bank Ref #: N/A

LP# / Objective: 0712-25 01.04

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: TS 1.3 BASIS

Handout: NONE

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QUESTION NUMBER: 093

RM-052 and RM-062 are being used for monitoring during a waste gas decay tank release. RM-052 is aligned to the stack and is powered by its preferred power supplies. What action would be required to continue monitoring the release if power were lost to the MCC supplying power to RM-062 (MCC-4C2)

- A.  The release would continue to be monitored in this alignment.
- B. RM-052 would need to have its MCC power supply switched to its alternate source.
- C. RM-052 would have to have its instrument bus power supply switched to its alternate source.
- D. RM-063 would need to be placed into service.

Question 93

KA # 071000 A2.05

Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System ; and (b) based on those

predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

Power failure to the ARM and PRM Systems

RO Importance: 2.5\*

SRO Importance: 2.6

CFRSection: 41.5 / 43.5 / 45.3 / 45.13

FCS Objective 0711-31 03.00

In a classroom discussion, EXPLAIN the steps taken by Control Room operators during a waste gas release; use OI-WDG-2 as a guide.

KA#: 071000 A2.05

Bank Ref #: N/A

LP# / Objective: 0711-31 03.00

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: OI-RM-1

Handout: NONE

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QUESTION NUMBER: 094

The STA has just informed you the the Peak Linear Heat Rate is exceeding the COLR limit of 15.5 kw/ft. Which one of the following actions are you required to take per Technical Specifications?

- A. Trip the Reactor Immediately
- B✓ Lower power to reduce the Peak Linear Heat Rate below the limit within one hour.
- C. Direct the STA to perform an additional CECOR run to confirm the limits.
- D. Direct a plant shutdown to place the plant in hot standby within 12 hours.

Question 94

KA # 000000 2.1.11

Knowledge of less than one hour technical specification action statements for systems.

RO Importance: 3.0      SRO Importance: 3.8      CFRSection: 43.2 / 45.13

FCS Objective 0762-08 07.00

STATE all LCOs with an action requirement of one hour or less.

KA#: 000000 2.1.11

Bank Ref #: N/A

LP# / Objective: 0762-08 07.00

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: TS 2.6

Handout: NONE

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QUESTION NUMBER: 095

Six different shutdown conditions are defined in SO-O-21, Shutdown Operations Protection Plan (SOPP). What information is provided in the SO for each of these defined shutdown conditions?

- A. The SOPP contains a table for each shutdown condition that specifies the minimum control room staffing for the condition.
- B. The SOPP contains a table for each shutdown condition that specifies the minimum required available equipment for the condition.
- C. The SOPP contains a table for each shutdown condition that specifies the expected plant radiation levels for the condition.
- D. The SOPP contains a table for each shutdown condition that specifies the appropriate emergency action levels for the condition.

Question 95

KA # 000000 2.2.18

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

RO Importance: 2.3      SRO Importance: 3.6      CFRSection: 43.5 / 45.13

FCS Objective 0707-42 10.07

Support systems for the above success paths, especially electrical power, cooling and instrument air

KA#: 000000 2.2.18

Bank Ref #: N/A

LP# / Objective: 0707-42 10.07

Exam Level: SRO ONLY

Cognitive Level: LOW

Source: NEW

Reference: SO-O-21

Handout: NONE

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QUESTION NUMBER: 096

During core reload, a foreign object falls into the core. In order to allow retrieval of the foreign object, a plan is formulated which requires moving a new fuel bundle from its final core location to a temporary location. What restrictions, if any, are placed on the temporary location for the fuel bundle?

- A. The temporary location can not be in the core.
- B. The temporary location must be rated for a K-infinity value equal to or greater than that of the fuel bundle.
- C. The temporary location must be closer to a Wide Range NI detectors than the final location
- D. The temporary location must be further from the center of the core than the final location

Question 96

KA # 000000 2.2.28

Knowledge of new and spent fuel movement procedures.

RO Importance: 2.6      SRO Importance: 3.5      CFRSection: 43.7 / 45.13

FCS Objective 0711-13 02.01

Discuss the prerequisites and precautions associated with fuel handling equipment and the refueling machine.

KA#: 000000 2.2.28

Bank Ref #: N/A

LP# / Objective: 0711-13 02.01

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: OP-12

Handout: NONE

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QUESTION NUMBER: 097

An accident has occurred in the plant which has resulted in core damage. A General Emergency has been declared based on projected radiological conditions offsite. A release is in progress. Command and control is in the EOF.

The release can be terminated by isolation of a manual valve. It is estimated that it will take 10 minutes to isolate the valve. The radiation field at the valve is 35 R/hr.

Who must approve a dose extension to allow this activity to be performed?

- A. This activity may be performed without a dose extension.
- B. The dose extension must be approved by the Site Director.
- C. The dose extension must be approved by the Emergency Director
- D. The dose extension must be approved by the NRC.

Question 97

KA # 000000 2.3.04

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

RO Importance: 2.5      SRO Importance: 3.1      CFRSection: 43.4 / 45.10

FCS Objective      ERO-085 00.00

Generic Objective - allows linking Task or KA to Lesson Plan

KA#:                      000000 2.3.04

Bank Ref #:            N/A

LP# / Objective:      ERO-085 00.00

Exam Level:            SRO ONLY

Cognitive Level:      HIGH

Source:                      NEW

Reference:              EPIP EOF-11

Handout:                    NONE

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QUESTION NUMBER: 098

A waste gas release is planned. FR-758, the Stack Total Flowrate Recorder on AI-44 is not working. What additional actions are required to perform this release due to this recorder being inoperable?

- A.  Manual stack flow readings must be recorded on the gas discharge log per the ODCM.
- B. No additional actions are required as long as FR-532, Waste Gas Release Rate Recorder on AI-100 is operable
- C. The stack flow must be determined by multiplying the number of running AB exhaust fans by a value given in the ODCM.
- D. The release is not allowed until FR-758 is repaired.

Question 98

KA # 000000 2.3.08

Knowledge of the process for performing a planned gaseous radioactive release.

RO Importance: 2.3      SRO Importance: 3.2      CFRSection: 43.4 / 45.10

FCS Objective 1950-04 08.02

STATE the required actions if radioactive gaseous wastes are discharged without processing in accordance with the ODCM.

KA#: 000000 2.3.08

Bank Ref #: N/A

LP# / Objective: 1950-04 08.02

Exam Level: SRO ONLY

Cognitive Level: HIGH

Source: NEW

Reference: OI-WDG-2

Handout: NONE

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QUESTION NUMBER: 099

The following instructions are included as a contingency action in EOP-20, MVA-IA

"If instrument air pressure is less than 90 psig, then IMPLEMENT AOP-17, LOSS OF INSTRUMENT AIR"

What should you do?

- A. Exit EOP-20 and enter AOP-17.
- B. Exit EOP-20 and enter AOP-17. Reenter EOP-20 when you reach the AOP-17 exit conditions.
- C. Complete the actions in EOP-20. Enter AOP-17 when you reach the EOP-20 exit conditions.
- D.  Perform AOP-17 actions in parallel with EOP-20.

Question 99

KA # 000000 2.4.08

Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.

RO Importance: 3.0      SRO Importance: 3.7      CFRSection: 41.10 / 43.5 / 45.13

FCS Objective 0718-10 01.06

GIVEN a set of plant conditions, DETERMINE if the Standard Post Trip Actions (SPTA's), the Optimal Recovery Guidelines or the Functional Recovery Guideline (FGR) should be used.

KA#: 000000 2.4.08

Bank Ref #: N/A

LP# / Objective: 0718-10 01.06

Exam Level: SRO ONLY

Cognitive Level: LOW

Source: NEW

Reference: OPD 4-09

Handout: NONE

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QUESTION NUMBER: 100

An alarm card is being pulled due to a nuisance condition caused by a faulty pressure switch. A new pressure switch has been ordered and is expected to be installed in 3-4 days.

What actions must be performed along with pulling the alarm card?

- A. A blue flag must be posted on the annunciator window and the associated alarm response procedure must be (or have been) reviewed.
- B.  An annunciator status tag must be posted on the annunciator window and the associated alarm response procedure must be (or have been) reviewed.
- C. An annunciator status form must be filled out and placed in the associated Annunciator Response Procedure book.
- D. An annunciator status form must be filled out and forwarded to the Work Week Manager.

Question 100

KA # 000000 2.4.33

Knowledge of the process used track inoperable alarms.

RO Importance: 2.4

SRO Importance: 2.8

CFRSection: 41.10 / 43.5 / 45.13

FCS Objective 0762-11 01.01

DESCRIBE the operator actions for an annunciator in alarm.

KA#: 000000 2.4.33

Bank Ref #: N/A

LP# / Objective: 0762-11 01.01

Exam Level: SRO ONLY

Cognitive Level: LOW

Source: NEW

Reference: SO O-40

Handout: NONE

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