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March 14, 2000

Mr. Julian Williams
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Williams:

Enclosed for your review are the examination materials to support the NRC Examination currently scheduled for the week of May 1, 2000. The materials are organized as follows:

Book Number	Contains	How Arranged
1	Written Examination	<ol style="list-style-type: none">1) Written Examination QA Checklist Form ES-401-72) Proposed schedule for the examination week.3) Individual questions followed by an appropriate reference unless the reference is from Technical Specifications, EOPs, Steam Tables, or the EAL chart, in which case, these documents are submitted in their entirety.
2	Operating Examination Part A	<ol style="list-style-type: none">1) Operating Tests Quality Checklist, Form ES-301-3 (5).2) Administrative Topics Outline, Form ES-301-1.3) Individual Administrative JPMs followed by required references and documentation.

Book Number	Contains	How Arranged
3	Operating Examination Part B	1) Control Room Systems and Facility Walk-Through Test Outline, Form ES-301-2. 2) Individual JPMs followed by required references and documentation.
4	Operating Examination Part C	1) Simulator Scenario Quality Checklist, Form ES-301-4 (5). 2) Transient and Event Checklist, Form ES-301-5 (5). 3) Competencies Checklist, Form ES-301-6 (5). 4) Individual scenarios follow each set of checklist forms.
5	Written Examination	This is a copy of the examination only (not a key) in a ready-to-give condition.
6	Technical Specifications	Complete tabbed set of Technical Specifications.
7	Technical Specifications	Tabbed set of Technical Specifications minus definitions, safety limits, bases, and administrative section. (Set of Technical Specifications to be given to candidates taking the exam.)
8	Various Reference Material	1) EAL Charts (2) 2) Steam Tables (2) 3) Full Set of EOPs 4) Set of EOPs Minus Entry Conditions. (EOPs to be given to candidates taking the exam.)

The facility is proposing that the following material be supplied to the candidates taking the written examination:

- 1) Emergency Action Level Classification Chart
- 2) Steam Tables
- 3) Technical Specifications minus definitions, safety limits, bases, and administrative section.
- 4) EOPs minus Entry Conditions
- 5) Calculator
- 6) M-216 Sheet 1 (TBCCW)
- 7) PNPS 2.2.87, Page 110 of 128 (HCU Location Matrix)
- 8) EP-IP-400, Pages 11-12 of 16 (Protective Action Recommendation Process)

Per ES-201 Attachment 1, regarding exam security, I would request that the enclosed materials be withheld from public disclosure until after the examinations have been completed.

If I can provide any additional assistance, please feel free to call Scott Willoughby at (508) 830-7638 or myself at (508) 830-7656.

Sincerely yours,



Vincent P. Magnatta
Senior Facility Representative

SRO Exam Answer Key

Question Number: 1

The plant is in refuel and fuel is currently being moved from the core to the spent fuel pool when power is lost to the 'C' Refuel Floor Radiation Monitor. Which ONE of the following would allow continued refuel operations?

- a. Isolating the Secondary Containment and starting SBT system.
- b. Entering an active 7-day LCO.
- c. Verifying that the 'A' Refuel Floor Radiation Monitor is operable.
- d. Entering a tracking LCO.

Answer: a

References:

Tech Spec Table 3.2.D
10CFR55.43.(b)(4)

Explanation:

- a. Correct answer. Required action in accordance with Tech Spec Table 3.2.D action 'B'.
- b. While T.S. action is required, immediate action is required.
- c. Since only two instruments exist per channel and two are required, the status of the 'A' monitor is not required to be known in order to determine required action.
- d. While T.S. action is required, it is an action condition.

Objective: O-RO-02-03-02, EO-14

K/A: 295003G2310

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 2

A plant transient has initiated a reactor scram. Which ONE of the following describes when the reactor is determined to be shutdown?

- a. When APRM downscale lights are ON.
- b. When APRM's indicate below 3% and lowering.
- c. When power is in the SRM range.
- d. When power is on or below range 7 of IRM's and lowering.

Answer: d

References:

PNPS 2.1.6 (page 5/13)
10CFR55.41.(b)(10)

Explanation:

- a. This action is required on reactor scram, but does not assure reactor is shutdown.
- b. This action corresponds to verifying that APRM recorders read below downscale setpoint.
- c. Power would be expected to reach SRM range, but not required to verify shutdown.
- d. Definition of shutdown.

Objective: O-RO-03-04-04, EO-16

K/A: 295006A201

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 3

With the plant initially operating at 100% power, a malfunction in the selected feedwater level control instrument has caused indicated RPV level to rise with a sustained reduction in feedwater flow to the RPV. No other malfunctions occur. Following are plant conditions:

- Feedwater flow is 1.0×10^6 lbm/hr
- Actual RPV level is 30" and lowering
- Indicated RPV level is 35" and rising

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system and the bases for that response?

- Reactor Recirc Runback to 26% Pump Speed to ensure adequate Recirc pump NPSH.
- Reactor Recirc Runback to 26% Pump Speed to prevent a reactor scram.
- Reactor Recirc Runback to 44% Pump Speed to prevent a reactor scram.
- Reactor Recirc Runback to 44% Pump Speed to ensure adequate Recirc pump NPSH.

Answer: a

References:

Recirc Flow Control Reference Text (page 8/21)
10CFR55.41.(b)(3)

Explanation:

- Reactor Recirc Runback to 26% Pump Speed will start immediately upon feedwater flow going less than 20%.
- The Reactor Recirc Runback to 26% Pump Speed is based on NPSH considerations for the Reactor Recirc pumps not preventing a reactor scram.
- The Reactor Recirc Runback to 44% Pump Speed requires a RPV level of 19" to initiate.
- The Reactor Recirc Runback to 44% Pump Speed requires a RPV level of 19" to initiate.

Objective: O-RO-02-06-10, EO-8.

K/A: 295009K102

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 4

A plant startup is in progress and reactor power is 20% with the following conditions:

- Primary containment inerted IAW PNPS 2.1.1 and 2.2.70
- Drywell equipment drain leakage at 8 GPM for the past 3 shifts
- Drywell floor drain leakage increased from 1.2 GPM to 3.4 GPM over the past 3 shifts

Based on current plant conditions, which ONE of the following actions are required:

- Reduce the leakage to within acceptable limits within 12 hours or be in hot shutdown within the following 24 hours.
- Identify the source of leakage within 4 hours or be in hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.
- Immediately commence a reactor shutdown and be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours without regard to the source of leakage.
- Identify the source of leakage within 6 hours or be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours.

Answer: b

References:

Tech Spec 3.6.C.1.C
10CFR55.43.(b)(2)

Explanation:

- Variation of T.S. 3.5.C.1.b (attached).
- Correct answer per attached T.S. 3.6.C.1.C.
- While a shutdown may be required based on leak identification, an immediate shutdown is NOT required.
- Identifying the source of the leakage is limited to 4 hours per T.S. 3.6.C.1.C.

Objective: O-RO-02-08-09, EO-8

K/A: 295010A102

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 5

The plant is at power when drywell pressure starts to rapidly rise. Subsequent investigation reveals that the 'A' reactor recirculation pump seals have both failed catastrophically. Based on plant conditions, what actions are required, and what is the bases for these actions?

- a. Close the recirc suction valve before the discharge valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.
- b. Close the recirc suction valve before the discharge valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.
- c. Close the recirc discharge valve before the suction valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.
- d. Close the recirc discharge valve before the suction valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.

Answer: a

References:

PNPS 2.4.22 (page 3/4)
10CFR55.41.(b)(5)

Explanation:

- a. The discharge valve has greater capability to close against system ΔP than the suction valve. Therefore, during a seal failure event, the suction valve is closed prior to the discharge valve when isolating the Recirc pump.
- b,c,d Variations of a. above

Objective: O-RO-02-06-02, EO-15

K/A: 295010K304

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 6

A RCIC surveillance is in progress with the 'A' loop of RHR being placed in torus cooling. Based on plant conditions, which ONE of the following actions is required and the bases for that action?

- a. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.
- b. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop LPCI injection valves.
- c. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.
- d. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop drywell spray valves.

Answer: c

References:

PNPS 2.2.19 (page 14/148)

LER 98-007

10CFR55.43.(b)(5)

Explanation:

- a. While it is true that the suppression pool cooling valves would be opened, this would not require drywell spray to be declared inoperable.
- b. LPCI injection valves would still have power.
- c. Correct answer.
- d. While it is true that the 'A' loop drywell spray valves will lose power, this would not require declaring drywell spray inoperable.

Objective: O-RO-02-09-01, EO-12

K/A: 295013A101

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 7

The plant is operating at 100% power on the 100% load line when a loss of feedwater heating occurs resulting in reactor power peaking at 105%. Reactor Recirculation pump speed is being lowered in accordance with station procedures.

Based on plant conditions, which ONE of the following describes when to stop lowering Reactor Recirculation pump speed?

- a. When reactor power lowers to 80%.
- b. When core flow reaches 39 Mlbm/hr.
- c. When core flow reaches 36 Mlbm/hr.
- d. Only when Reactor Recirculation pump speed reaches minimum (26%).

Answer: b

References:

PNPS 2.4.150 (page 2/12)
PNPS 2.1.14, (page 32/36)
10CFR55.41.(b)(10)

Explanation:

- a. In accordance with PNPS 2.4.150 reactor power is required to be lowered to 25% below PRETRANSIENT LEVEL (i.e., 75% not 80%).
- b. Correct answer. In accordance with PNPS 2.1.14, if reactor power is at or above the 67% load line, reactor power is lowered until core flow is \geq 39 Mlbm/hr.
- c. Old number for core flow.
- d. It would obviously stop here, but flow is only allowed to be lowered to 39 Mlbm/hr. at this point.

Objective: O-RO-02-04-09, EO-12

K/A: 295014K206

Tier #: 1 **Group: 1**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 8

The plant is operating at 100% power when an ATWS occurs concurrent with a loss of both RPS buses. Following are plant conditions:

- RPV pressure is being maintained by keeping three (3) SRVs open and cycling the 4th SRV
- Suppression pool temperature is 110°F and rising
- APRM downscale lights are ON

Based on plant conditions, boron injection is:

- a. Not required.
- b. Required by EOP-02.
- c. Not required by EOP-02, but is required by Operations Policy Standards using RWCU.
- d. Not required by EOP-02, but is required by Operations Policy Standards using SBLC.

Answer: b

References:

EOP-02

10CFR55.43.(b)(5)

Explanation:

- a. Boron injection is required.
- b. Correct answer. Power is ~ 15-20% (5% power/SRV). With the torus at 110° F and power at ~15-20%, the BIIT curve has been exceeded and boron injection is required.
- c. Required by EOP-02.
- d. Required by EOP-02.

Objective: O-RO-03-04-04, EO-23

K/A: 295015A201

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 9

The plant was operating at 100% power when a fire requiring the evacuation of the control room occurs. Additionally, RCIC Outboard Injection Valve (MO-1301-48) isolates on a spurious signal and cannot be re-opened.

Based on these conditions, which ONE of the following describes the use the RCIC system?

- a. May be run in pressure control, but without cooling water.
- b. May be run in pressure control, but without minimum flow protection.
- c. May be run in pressure control, but not lined up for injection.
- d. May not be run in either pressure control or injection mode.

Answer: d

References:

RCIC Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. Cooling water line taps off before 48 valve.
- b. Min. flow line taps off before 48 valve.
- c. Full flow test line (pressure control) taps off between the 48 valve and 49 valve, with 48 valve closed, cannot line up for pressure control.
- d. 48 valve prevents both pressure control and injection mode (see c. explanation above)

Objective: O-RO-02-09-04, EO-2

K/A: 295016A105

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 10

A plant startup is in progress with the mechanical vacuum pump being placed in service per station procedures when chemistry technicians report that reactor water samples indicate high levels of coolant activity.

Under these conditions, the main steam line radiation monitors:

- a. Are not required to be operable.
- b. Will trip the mechanical vacuum pump when the HI setpoint is reached.
- c. Will trip the mechanical vacuum pump when the HI-HI setpoint is reached.
- d. Would not show an increase since no steam is flowing through the main steam lines.

Answer: c

References:

PNPS 2.1.1 (page 33/125)

Tech Spec 3.8.2

10CFR55.41.(b)(7)

Explanation:

- a. Required to be operable if MSIVs open and steam flow past, the procedure requires turbine seals establish prior to starting mechanical vacuum pump.
- b. HI setpoint is alarm only.
- c. Correct answer. HI-HI setpoint will trip the mechanical vacuum pump.
- d. Since turbine seals are established, there is steam flowing past detectors.

Objective: O-RO-02-03-02, EO-4a

K/A: 295017K209

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 11

The plant is starting up following a refueling outage with Reactor Engineering performing an in-sequence shutdown margin demonstration. Shutdown margin has been determined to be .20% ΔK with the most reactive rod withdrawn.

Based on this information, which ONE of the following actions is required?

- a. Manually scram the reactor and be in cold shutdown within 24 hours.
- b. Initiate an orderly shutdown and remain in hot shutdown until the cause has been determined.
- c. Initiate an orderly shutdown and be in cold shutdown within 24 hours.
- d. Manually scram the reactor and remain in hot shutdown until the cause has been determined.

Answer: c

References:

Tech Spec 3.3.A and 3.3.F
10CFR55.43.(b)(2)

Explanation:

- a. A manual scram is not required.
- b. The plant is required to be placed in cold shutdown.
- c. Correct answer per Tech Spec 3.3.F.
- d. A manual scram is not required. The plant is required to be placed in cold shutdown.

Objective: O-RO-03-04-05, EO-14

K/A: 295023K102

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 12

The plant is in refuel with the following conditions:

- New fuel is being loaded into the core
- All SRM shorting links have been removed
- SRM count rate is at $1E+5$ and increasing
- SRM rod block generated

Based on plant conditions, which ONE of the following describes the response of the SRM system as the count rate increases to $5E+5$ CPS?

- a. A SRM Hi-Hi alarm and no other automatic actions.
- b. A full reactor scram will not occur until any 2 SRM channels reach $5E+5$ CPS.
- c. A full reactor scram will not occur until either 'A' or 'C' AND either 'B' or 'D' SRM reaches $5E+5$ CPS.
- d. When any one SRM channel reaches $5E+5$ counts, a full reactor scram will occur.

Answer: d

References:

M1N prints

SRM Reference Text (page 17/35)

10CFR55.41.(b)(7)

Explanation:

- a. A non-coincident scram will occur when any SRM channel reaches $5E+5$ CPS
- b. Scram is non-coincident.
- c. Scram is non-coincident.
- d. Correct answer. A non-coincident scram will occur when any SRM channel reaches $5E+5$ CPS

Objective: O-RO-02-07-01, EO-9d

K/A: 295023K304

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 13

A loss of coolant accident has occurred and drywell spray was initiated in accordance with EOP-03. As drywell temperature and pressure are decreasing, the unacceptable region on the Drywell Spray Initiation Limit curve is entered at a drywell temperature of 250°F.

Based on plant conditions, which ONE of the following actions is the required?

- a. Secure drywell spray when drywell pressure drops below 2.2 psig.
- b. Secure drywell spray when torus bottom pressure drops below 2.2 psig.
- c. Adjust drywell spray as necessary to maintain operation within the Drywell Spray Initiation Limit curve.
- d. Immediately secure drywell spray.

Answer: a

References:

O-RO-03-04-02 (page IG-68)
10CFR55.43.(b)(5)

Explanation:

- a. Correct answer per EOP-3.
- b. Torus spray is secured when torus press drops below 2.2 psig, not drywell pressure.
- c. No requirements or capability to adjust or throttle DW spray.
- d. No requirement to secure drywell sprays if DSIL entered. Only required when DW pressure drops below 2.2 psig.

Note: 1997 NRC SRO Exam - Question #56

Objective: O-RO-03-04-02, EO-23

K/A: 295024K101

Tier #: 1 **Group:** 1

Question Source: Bank

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 14

The plant was operating at 100% power when a loss of coolant accident occurred. Following are plant conditions:

- Drywell temperature is 275°F
- Drywell pressure is 10 psig
- Torus water level is 130 inches
- Torus bottom pressure is 15 psig
- Reactor water level is being maintained +20 to +40 with condensate
- H₂ Concentration is 7% in the drywell and 2% in the torus
- O₂ Concentration is 6.5% in the drywell and 2% in the torus

Based on plant conditions, which ONE of the following describes the use of drywell spray?

- a. Allowed by the drywell temperature control leg of EOP-03, but not allowed by the primary containment pressure control and hydrogen/oxygen control legs of EOP-03.
- b. Allowed by the primary containment pressure control leg of EOP-03, but not allowed by the drywell temperature control and hydrogen/oxygen control legs of EOP-03.
- c. Allowed by the hydrogen/oxygen control and drywell temperature control legs of EOP-03, but not allowed by the primary containment pressure control leg of EOP-03.
- d. Allowed by the drywell temperature control and primary containment pressure control legs of EOP-03, but not allowed by the hydrogen/oxygen control leg of EOP-03.

Answer: c

References:

EOP-03

10CFR55.43.(b)(5)

Explanation:

- a-d Operation is in safe region of DSIL. Drywell temperature allows spraying above 150 degrees and before 280 degrees. Primary Containment Pressure Control requires torus bottom to reach 16 psig prior to spraying. Combustible gas mixture combined with inability to lower it requires drywell spray provided that these pumps are not needed for adequate core cooling.

Objective:

K/A: 500000A106

Tier #: 1 Group: 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 15

Which ONE of the following actions and/or processes could jeopardize containment integrity following a sustained period of inadequate core cooling?

- a. Operation of reactor building-torus and torus-drywell vacuum breakers.
- b. Radiolysis of water due to hydrogen injection prior to the loss of adequate core cooling.
- c. Initiation of LPCI to restore adequate core cooling.
- d. A feedwater leak into containment when hydrogen injection is in service.

Answer: a

References:

Transient and Accident Studies Reference Text
10CFR55.41.(b)(5)

Explanation:

- a. Would introduce oxygen when hydrogen is already present.
- b. Radiolysis of water not caused by hydrogen injection.
- c. This is a correct action and would not result in introducing hydrogen or oxygen.
- d. Would introduce hydrogen only which is already present.

Objective: None identified

K/A: 500000K101

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 16

The plant was operating at 100% when an ATWS occurred. All steps of the RPR array have been successfully completed. Which ONE of the following is the recommended method for inserting the remaining rods assuming this will not excessively delay rod insertion?

- a. Insert rods starting in the center of the core and spiraling outward.
- b. Insert rods starting at the core periphery and spiraling inward.
- c. Insert all rods in one bank, then all rods in the other bank.
- d. Insert rods in the reverse order of the pull sheets.

Answer: d

References:

PNPS 5.3.23 (page 6/19)
10CFR55.41.(b)(10)

Explanation:

a-d Per PNPS 5.3.23, the recommended method for inserting the remaining rods, assuming this will not excessively delay rod insertion, is in the reverse order of the pull sheets. Spiraling is a practice that is not used at PNPS.

Objective: O-RO-03-04-04, EO-24

K/A: 295037A105

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 17

The plant was operating at 100% power when a DBA LOCA occurred. Following are plant conditions:

- Suppression pool temperature is 115°F.
- Panel Y-3 is de-energized

Based on plant conditions, which ONE of the following describes the availability of the suppression pool temperature recorder on C170?

- a. Available for use.
- b. Not available unless power is restored.
- c. Not available because it is not a post accident monitor, otherwise, it is fully functional.
- d. Not available because it has lost power. If power is restored, it is still not available because it is not a post accident monitor.

Answer: b

References:

120 VAC Reference Text, Table 4
10CFR55.41.(b)(7)

Explanation:

- a-d This instrument receives power from Y-3. It is a PAM qualified instrument. The reference lists loads from Y-3 and Y-4. Y-3 supplies C-170 and Y-4 supplies C-171. Therefore, the instrument on C-170 is powered from Y-3.

Objective: None identified

K/A: 295026A201

Tier #: 1 **Group: 1**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 18

The plant was operating at 100% power when an inadvertent closure of the MSIV's occurred with a failure of control rods to insert. Following are plant conditions:

- RPV pressure being maintained 1000 psig to 1050 psig with 3 SRV's
- RPV level being maintained at 15" with FWLC in automatic
- SBLC has been initiated based on reaching BIIT with a suppression pool temperature of 115°F
- Blue scram lights are off

Based on plant conditions, which ONE of the following actions is required?

- Verify both reactor recirculation pumps are run back to minimum speed.
- Stop and prevent injection into the RPV from all sources except boron and CRD.
- Perform an alternate depressurization in accordance with EOP-27 due to exceeding the HCTL.
- Stop and prevent injection into the RPV from all sources except boron, CRD and RCIC.

Answer: b

References:

EOP-02
PNPS 5.3.23 (page 5/19)
10CFR55.43.(b)(5)

Explanation:

- Not required before tripping the pumps because MSIVs are closed.
- Required since you meet condition for level/power control.
- Not required since HCTL not exceeded.
- Not required since stopping injection from CRD, boron and RCIC is for the 'P' leg of EOP-02.

Objective: O-RO-03-04-04, EO-23

K/A: 295031A202

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 19

The plant was operating at 100% power when a transient caused both recirc pumps to trip, resulting in a small break LOCA. Following are plant conditions:

- RPV level at -75" on Fuel Zone indication
- RPV pressure at 1000 psig
- Drywell temperature at 212°F.

Based on plant conditions, which ONE of the following describes the reliability of the Fuel Zone Level instrument?

- a. Will be unreliable since the reference leg has reached saturation temperature.
- b. Will read erroneously low since it is calibrated with both reactor recirculation pumps running.
- c. Will read erroneously low since it is calibrated at a reactor water temperature of 212°F.
- d. Will read erroneously high since it is calibrated at a reactor water temperature of 212°F.

Answer: c

References:

PNPS 2.2.80
10CFR55.41.(b)(7)

Explanation:

- a. 212°F is saturation temperature for 0 psig, not for 1000 psig.
- b. Fuel zone level is calibrated with Reactor Recirculation pumps off.
- c. Correct answer. Fuel zone is calibrated at 212°F reactor water temperature.
- d. 212°F is saturation temperature for 0 psig, not for 1000 psig.

Objective: O-RO-02-06-01, EO-5i

K/A: 295001A107

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 20

The plant was operating at 100% when a loss of main condenser vacuum occurred.
Following are plant conditions:

- Main condenser at 5" Hg vacuum and stable
- RPV level at +50" and lowering slowly
- RPV pressure at 1050 psig and rising
- All scram actions complete

Based on plant conditions, which ONE of the following system(s) is(are) available for RPV pressure control?

- a. SRVs only.
- b. SRVs and Bypass Valves.
- c. SRVs and Main Steam Line Drains.
- d. SRVs, Main Steam Line Drains, HPCI and RCIC.

Answer: c

References:

Tech Spec Table 3.2 series
10CFR55.41.(b)(10)

Explanation:

- a. In addition to SRVs, Main Steam Line Drains are available.
- b. Bypass valves go closed at 7" Hg condenser vacuum.
- c. SRVs and Main Steam Line Drains both are available, Group I isolation does not occur until 55 inches.
- d. HPCI and RCIC trip at +45 inches RPV level.

Objective: O-RO-02-09-03, EO-5

K/A: 295002K103

Tier #: 1 Group: 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 21

The plant is operating at 100% power with the 'A' oil pump on the 'B' Recirculation MG set out of service when a loss of D-5 occurs. Following are plant conditions:

- DC lube oil pump on the 'B' Recirculation MG set fails to start
- Amps peg high on the 'B' Recirculation MG set

Based on plant conditions, which ONE of the following describes the method for securing the 'B' Recirculation MG set and the bases for that action?

- Scramming the plant since this will de-energize bus A-4.
- Opening the field breaker locally since it cannot be opened from the control room.
- Opening the drive motor breaker locally since it cannot be opened from the control room.
- Scramming the plant since this will automatically trip the drive motor breaker when RPV level drops below +12".

Answer: a

References:

PNPS 5.3.12
10CFR55.41.(b)(10)

Explanation:

- Correct action in accordance with PNPS 5.3.12.
- Same as c. below.
- This action would be correct only if the 'B' recirculation system DC emergency bearing oil pump was running, which it is not.
- Correct action, but wrong reason, drive motor.

Objective: None identified

K/A: 295004K302

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 22

☐ A plant startup is in progress with the following conditions:

- Reactor power at 16%
- RPV level at 52" and rising due to FWLC malfunctions
- All efforts to reverse the rising RPV level trend have been unsuccessful

Based on plant conditions, which ONE of the following actions is now required?

- a. Transfer RPV level control to the startup feed reg flow valve.
- b. Close 1st point feedwater heater A & B outlet block valves.
- c. Trip the running feed pump.
- d. Scram the reactor.

☐ **Answer:** d

References:

PNPS 2.4.49 and 2.2.82
10CFR55.41.(b)(10)

Explanation:

- a. Reactor power is greater than the capacity of the startup feed regulating flow valve.
- b. The purpose of shutting the block valves would be to direct flow through the startup regulating flow control valve which cannot be used at this power level.
- c. The feed pump(s) shall not be tripped with the mode switch in run. The mode switch would have been placed in run at ~10-12% reactor power.
- d. Correct action per PNPS 2.4.49 when RPV level is approaching the high turbine water level trip setpoint.

☐ **Objective:** O-RO-02-04-10, EO-15

K/A: 295008K202

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 23

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

- STATOR COOLING WATER TROUBLE
- STATOR COOLING INLET FLOW LO
- TURBINE RUNBACK

There is no reactive load (0 MVAR) on the main generator. Due to a failure of the speed/load changer motor, main generator load remains constant.

Which ONE of the following is the expected automatic response of the system if no operator action is taken?

- a. A turbine trip in 3 ½ minutes.
- b. A generator lockout in 2 minutes.
- c. A turbine trip in 2 minutes.
- d. A generator lockout in 3 ½ minutes.

Answer: c

References:

PNPS 2.4.156 (page 4/5)
10CFR55.41.(b)(7)

Explanation:

a-d If the main generator fails to runback to 14,845 amps in 2 minutes or 4410 amps in 3 ½ minutes, a turbine trip will occur. Stator amps are approximately 16,000 at 100% power, therefore a turbine trip will occur in approximately 2 minutes.

Note: 1998 NRC SRO Exam - Question #41

Objective: O-RO-02-01-08, EO-8

K/A: 295005A104

Tier #: 1 **Group:** 2

Question Source: Bank Modified

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 24

The plant has been operating at 100% power for the last month when an instrument air header leak above the capacity of the K110, K111 and K104A, B, C air compressor occurs. The Atlas Copco air compressor must be placed in service to prevent which ONE of the following?

- a. Closure of inboard MSIVs.
- b. Repositioning of the reactor head vent valves (AO-220-46 and 47).
- c. RBCCW surge tank level control valves failing closed.
- d. Lockup of the 'A' and 'B' feedwater regulating valves (FV-642-A and B).

Answer: d

References:

PNPS 5.3.8, Attachment 1
10CFR55.41.(b)(7)

Explanation:

- a. Inboard MSIV's on N₂.
- b. Head vents fail closed, but are already closed for plant conditions.
- c. RBCCW makeup valve fails open.
- d. Correct answer. To preclude the 'A' and 'B' feedwater regulating valves (FV-642-A and B) from locking up on a loss of instrument air the Atlas Copco air compressor must be placed in service.

Objective: O-RO-02-02-04, EO-9

K/A: 295019A101

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 25

The plant is operating at 100% power when an inadvertent Group I isolation occurs resulting in the following conditions:

- RPV level being maintained at +20" to +40"
- All control rods fully inserted
- RPV pressure peaks at 1240 psig and starts to lower
- DW temperature at 150°F and rising
- Torus temperature has remained stable during the transient

Based on plant conditions, which ONE of the following describes the response of the safety and safety/relief valves?

- All SRVs actuated in the ADS mode.
- All SRVs actuated in the relief mode.
- Safety valves actuated and relief valves failed to actuate as designed.
- Safety valves and SRVs actuated as designed.

Answer: c

References:

Tech Spec 3.6.D.1
10CFR55.41.(b)(7)

Explanation:

- ADS would not actuate with normal reactor water level.
- SRV's did not operate properly (1095-1115 psig).
- Correct answer. Safety valves lifted at 1240 psig, SRV's should have opened in safety mode (1095-1115 psig) but didn't.
- SRV's should have opened in relief mode.

Objective: O-RO-02-04-01, EO-5

K/A: 295020K303

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 26

The plant is shutdown with reactor coolant temperature at 190°F when a loss of shutdown cooling occurs with both reactor recirculation pumps secured.

Based on plant conditions, which ONE of the following describes the acceptable RPV level band?

- a. +20" to +25"
- b. +35" to +60"
- c. +30" to +40"
- d. +65" to +75"

Answer: d

References:

PNPS 2.2.19 (page 117)
10CFR55.41.(b)(7)

Explanation:

a-d PNPS 2.2.19 requires that; "If water temperature is less than 212°F OR if a heat sink is not available, then water level must be maintained above +60 inches.

Note: 1998 NRC RO Exam - Question # 12

Objective: O-RO-02-09-01, TO-4

K/A: 295021K104

Tier #: 1 **Group:** 2

Question Source: Bank

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 27

The plant is in startup at 780 psig when the 'A' CRD pump trips. After several attempts the operators start the 'B' CRD pump. The following annunciators have alarmed on C905:

- CHARGING WTR PRESSURE LO
- CRD PUMP 'A' TRIP
- Accumulator Trouble Lights for HCU's 06-19 and 10-23

Based on current plant conditions, which ONE of the following actions is required?

Note: Refer to attached PNPS 2.2.87, Attachment 9, HCU Location Matrix

- Immediately commence an orderly shutdown and declare the accumulators for the alarming HCU's INOP.
- Declare the control rods for the alarming HCU's INOP and continue with the startup.
- Immediately scram the reactor.
- Declare the control rods for the alarming HCU's INOP and enter LCO to commence an orderly shutdown and be in cold shutdown within 24 hours.

Answer: b

References:

PNPS 2.4.4 and 2.2.87
Tech Spec 3.3.D
10CFR55.43.(b)(5)

Explanation:

- (a,b,d) Tech Spec actions (or variations thereof) may be appropriate for accumulators NOT in a nine rod array, however, accumulators 06-19 and 10-23 are within a nine rod array and RPV pressure is <950 psig, therefore, these choices are incorrect.
- c. Correct answer. PNPS 2.4.4 requires that, "If reactor pressure is <950 psig AND as indicated by accumulator trouble lights there is more than one inoperable accumulator in a nine rod array, THEN SCRAM the reactor AND ENTER PNPS 2.1.6". Accumulators 06-19 and 10-23 are within a nine rod array and RPV pressure is <950 psig, therefore, a scram is required.

Objective: O-RO-06-01-03, EO-3

K/A: 295022K301

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 28

Alternate Depressurization is required when the drywell temperature cannot be maintained below 280°F. Which ONE of the following describes the bases for this action?

- a. Prevent damage to the reactor recirculation pump seals.
- b. Prevent damage to DC valve motors in the drywell.
- c. Prevent failure of the drywell coolers upon restoration.
- d. Prevent failure of the containment structure.

Answer: d

References:

O-RO-03-04-05 (page IG-18)
10CFR55.43.(b)(5)

Explanation:

- a. Reactor recirculation pump seals could fail at high temperatures; however, this is not the bases for Alternate Depresurization when drywell temperature cannot be maintained below 280°F.
- b. Same as a. above.
- c. Not likely to fail and procedures do exist for slowly restoring cooling following a loss of RBCCW. However, this is not the bases for Alternate Depresurization when drywell temperature cannot be maintained below 280°F.
- d. Correct answer. Containment temperatures above 280°F for extended periods of time will cause containment wall failure due to overheating.

Objective: O-RO-03-04-05, EO-11

K/A: 295028K102

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 29

The plant was operating at 100% power when a small break LOCA occurs causing drywell and torus bottom pressure to start rising. Drywell sprays have been placed in service in accordance with EOP-03, Primary Containment Pressure Control Leg. Immediately after placing drywell spray in service a point is reached in the torus level leg of EOP-03 which requires securing drywell spray. Following are plant conditions:

- RPV pressure is 1000 psig
- Torus water level has stabilized

Based on plant conditions, which ONE of the following describes the correct Emergency Plan classification?

- a. Unusual Event
- b. Alert
- c. Site Area Emergency
- d. General Emergency

Answer: b

References:

EOP-03
EAL Chart
10CFR55.43.(b)(5)

Explanation:

- a. A UE (3.3.2.1) is required only when torus water level cannot be maintained <132" and primary containment integrity is required. Drywell sprays requiring termination based on high torus water level is indication that level cannot be maintained <180" not 132".
- b. Correct answer. Drywell sprays requiring termination based on high torus water level is indication that level cannot be maintained <180" which requires an Alert classification (3.3.1.2).
- c. A SAE (3.3.1.3) is required only when both torus water level and RPV pressure cannot be maintained below the "SRV Tail Pipe Level Limit" EOP figure 2. With the RPV pressure at 1000 psig and torus water level at 180" this limit has not been exceeded.
- d. A GE (3.3.1.4) is required only when primary containment water level cannot be maintained <77 ft. Maintaining containment water level <77 ft. is not a concern based on current plant conditions.

Objective: O-RO-07-02-01, EO-2

K/A: 295029G2114

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 30

In accordance with station procedures which ONE of the following conditions would require the component to be isolated?

- a. HPCI being used to provide core cooling when the pump develops a severe packing leak causing water level on the floor of the HPCI quad to rise to 2".
- b. HPCI being used to provide core cooling when a steam leak develops causing the HPCI compartment to become contaminated.
- c. CRD being used to insert one control rod which failed to insert on a reactor scram when a severe packing leak develops causing CRD quad water level to rise to 2".
- d. A fire hose rigged to fight a fire in the RCIC quad when a leak occurs at a fitting that causes water level in the RCIC quad to rise to 2". At the same time, RCIC turbine area temperature is 200°F.

Answer: c

References:

EOP-04
10CFR55.43.(b)(5)

Explanation:

- (a,b,d) In accordance with EOP-04 any area above the maximum normal limit is required to be isolated except to shutdown the reactor, assure core cooling, suppress fire, emergency vent primary containment or vent RPV. HPCI is being used to provide core cooling in a. and b. and a fire is being suppressed in d.
- c. CRD is not being used for any of the reasons stated above therefore it is required to be isolated. The reactor is considered shutdown with one control rod fully withdrawn.

Objective: O-RO-03-04-06, EO-11

K/A: 295032A105

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 31

As CRS you have been assigned for the past 12 months to outage planning and have not actively been performing the functions of a SRO. Additionally, you have been scheduled to supervise refuel floor activities during the upcoming refuel outage. Prior to relieving the refuel floor SRO and assuming the watch, which ONE of the following are you required to perform?

- a. Complete a minimum of 40 hours of shift functions under the direction of a SRO in the control room, including a complete plant tour and all required shift turnover procedures.
- b. Complete a minimum of one shift under the direction of a SRO on the refuel floor, including review of control room logs for the past 30 days and all required shift turnover procedures.
- c. Complete a minimum of 6 hours under the direction of a SRO in the control room, including a complete plant tour and review of control room logs for the past 30 days.
- d. Complete a minimum of 40 hours of refuel activities under the direction of a SRO on the refuel floor, including all required shift turnover procedures.

Answer: a

References:

10CFR55.53
10CFR55.43.(b)(1)

Explanation:

- a. Correct answer. 10CFR55.53e states that if a licensee has not been actively performing the functions of an operator or senior operator, the licensee may not resume activities authorized by a license issued under this part except as permitted by paragraph (f) of this section. (f) If paragraph (e) of this section is not met, before resumption of functions authorized by a license under this part, an authorized representative of the facility shall certify: (1) That the qualifications and status of the licensee are current and valid; and (2) That the licensee has completed a minimum of 40 hours of shift functions under the direction of an operator or senior operator as appropriate and in the position to which the individual will be assigned. The 40 hours must have included a complete tour of the plant and all required shift turnover procedures.
- b. This requirement is specific to senior operators limited to fuel handling (LSRO).
- c. This requirement is specific to operators at test and research reactors.
- d. This is a variation of a. above and does not include all requirements.

Objective: O-RO-06-06-01, EO-24

K/A: G.2.1.3

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 32

Given that all the following systems respond and operate as designed, which ONE of the following conditions would require manual operation to isolate?

- a. Valid RB Ventilation Radiation Hi and Hi-Hi alarm.
- b. Valid Refuel Floor Ventilation Radiation Hi alarm.
- c. Valid Off-Gas Pre-Treat Radiation Hi and Hi-Hi alarms with the Off-gas PRM selector switch on CP-600 in the Pre-treat position.
- d. Valid Off-Gas Post-Treat Radiation Hi and Hi-Hi alarms with the Off-Gas PRM selector switch on CP-600 in the Post-Treat position.

Answer: a

References:

ARP C904LC A-5
EOP-04
10CFR55.41.(b)(7)

Explanation:

- a. Reactor Building ventilation does not isolate on high radiation. This requires a manual isolation.
- b-d All other primary Process Radiation Monitor's cause auto isolations.

Objective: O-RO-02-03-02, EO-4e

K/A: 295034K102

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 33

The plant was operating at 100% power when a LOCA occurs. Due to fuel failure the torus water is highly contaminated. Subsequently, a leak develops in the 'A' RHR quad that can only be isolated by manually closing the 1001-6A (RHR pump 'A' Torus Manual Suction Valve). Following are plant conditions:

- The 'A' RHR pump is necessary to provide core cooling.
- The 'A' RHR quad has 9 inches of water on the floor and a radiation level of 1200 mr/hr.

Based on plant conditions, which ONE of the following actions is required?

- Manually close the 1001-6A valve.
- Operate all available sump pumps.
- Open breakers for the RB floor drain and equipment drain pumps
- Defeat low RPV water level isolation interlocks.

Answer: c

References:

EOP-04
10CFR55.41.(b)(10)

Explanation:

- Isolation not allowed since "A" RHR is supplying core cooling.
- Action is directed by EOP-04, but is overridden by step to open sump pump breaker.
- Corrective action per override SC-1, this prevents spread of highly contaminated water outside the secondary containment.
- Not allowed by override SC-1 since high radiation exists in reactor building.

Objective: O-RO-03-04-06, EO-11

K/A: 295033K102

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 34

Both RHR quadrants have water levels above the maximum safe values caused by a primary system discharging into secondary containment. Based on this condition EOP-04 requires that Alternate RPV Depressurization be performed.

Which ONE of the following is the bases for Alternate RPV Depressurization?

- a. To prevent failure of the secondary containment.
- b. To ensure that RHR pumps are available for use in the shutdown cooling.
- c. To prevent further RPV inventory loss.
- d. To ensure that RHR pumps are available for use in the LPCI mode.

Answer: a

References:

O-RO-03-04-06 (page IG-19)
10CFR55.43.(b)(5)

Explanation:

- a-d The bases for Emergency RPV Depressurization in EOP-04 is to reduce the discharge into the secondary containment to protect the secondary containment from failing not to protect the RHR pumps or prevent inventory loss.

Objective: O-RO-03-04-06, EO-5

K/A: 295036K301

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 35

Vital Area access keys (MEDECO) assigned to Operations are inventoried and accounted for:

- a. Each shift and an entry made in the Primary Access Control Point Log.
- b. Daily and an entry made in the CRS log.
- c. Each shift and an entry made in the CRS log.
- d. Daily and an entry made in the Primary Access Control Point Log.

Answer: c

References:

PNPS 1.3.10 (page 6/10)
10CFR55.41.(b)(10)

Explanation:

- a. Vital Area access keys assigned to Operations are inventoried each shift; however, they are accounted for in the CRS log not the Primary Access Control Point Log.
- b. Vital Area access keys assigned to Operations are inventoried each shift not daily.
- c. Correct answer. Vital Area access keys assigned to Operations are inventoried each shift and accounted for in the CRS log.
- d. Same as b. above

Objective: O-RO-06-06-01, EO-5a

K/A: G.2.1.13

Tier #: 3 **Group:**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 36

Hotwork is to be performed in the RCIC Quad. The Maintenance Work Plan contain no requirement to disable the smoke detectors in the RCIC Quad. As a result, the smoke detectors actuate after the job has commenced. Based on this information, alarm(s) will occur in which ONE of the following panels?

- a. Panel C223 in the Makeup Demin Room only.
- b. Panel C220 in the Control Room only.
- c. Panel C114 in the Control Room only Panel C223 in the Makeup Demin Room.
- d. Panel C220 in the Control Room and Panel C223 in the Makeup Demin Room.

Answer: d

References:

PNPS 8.B.4.91, Attachment 1
10CFR55.41.(b)(7)

Explanation:

a-d Fire alarms are local (panel C223) and in the control room (panel C220).

Objective: O-RO-02-10-01, EO-2a

K/A: 600000A209

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 37

The plant is at 40% power when a feedwater line break occurs in the drywell resulting in the following conditions:

- RPV level at +20" and rising from HPCI Injection
- Drywell pressure at 3.2 psig
- All available feedwater pumps have tripped on overcurrent

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system with no operator action?

- 'A' Recirc pump runback to 44% speed and the 'B' Recirc pump trips.
- 'A' and 'B' Recirc pumps runback to 26% speed.
- 'A' Recirc pump runback to 26% and the 'B' Recirc pump trips.
- 'A' and 'B' Recirc pumps runback to 44% speed.

Answer: c

References:

Recirc Flow Control Reference Text (page 13)
RHR Reference Text (figure 21)
10CFR55.41.(b)(7)

Explanation:

- 'A' Recirc pump would be at 26% due to <20% feedwater flow.
- 'B' Recirc pump would be tripped since LPCI loop select would select 'B' for injection and close the 'B' loop discharge valve.
- Correct answer. 'A' Recirc pump would be at 26% due to <20% feedwater flow and 'B' Recirc pump would be tripped since LPCI loop select would select 'B' for injection and close the 'B' loop discharge valve.
- 'B' Recirc pump would be tripped due to LPCI loop select, 'A' would be at 26% due to feed flow less than 20%.

Objective: O-RO-02-06-10, EO-5

K/A: 202002A303

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 38

The 'B' RHR Pump Discharge check valve (1001-67B) seating surface is degraded causing leakage from the RHR system into the Torus. All other valves in the RHR system are in their normal standby lineup and seating properly. Which ONE of the following describes the source of water entering into the Torus?

- a. Condensate Transfer.
- b. The RPV.
- c. RHR full flow test line.
- d. Fuel Pool Cooling cross-tie.

Answer: a

References:

P&ID M-241 (RHR)
10CFR55.41.(b)(7)

Explanation:

- a. Condensate transfer is lined up (ECCS keep fill) to pressurize the system back to the 1001-67B.
- b. RPV pressure would not be felt at the 1001-67B since the 1001-29B is normally closed.
- c. HPCI/core spray/RCIC in full flow test could pressurize the RHR system, but would be stopped at the 1001-34B and 1001-36B which are both closed.
- d. Would not be connected during normal standby lineup.

Objective: O-RO-02-09-01, EO-15

K/A: 203000K302

Tier #: 2 Group: 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 39

The plant was operating at 100% power when a steam line break in the HPCI room occurs. Automatic and manual isolation has failed.

The high pressure condition caused by this break is designed to be relieved via which ONE of the following?

- a. Blowout panels into the 23' Aux. Bay and then through the Aux. Bay rollup door.
- b. Vent pipes from the HPCI room to the 'B' RHR quad and then through the blowout panels on the RB roof.
- c. Blowout panels from the HPCI room to the 23' RB and then through the blowout panels on the RB roof.
- d. Blowout panels into the RB truck lock and then through the RB truck lock rollup door.

Answer: a

References:

LER 97-010-00
10CFR55.41.(b)(9)

Explanation:

- a. Correct answer.
- b. While vent pipes exist they are not sufficient for pressure relief.
- c. Blowout panels go through the Aux. Bay.
- d. Blowout panels go through the Aux. Bay.

Objective: O-RO-02-09-03, EO-25

K/A: 295035K204

Tier #: 1 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 40

HPCI is being used in the pressure control mode following a reactor scram. A leak in the drywell occurs causing drywell pressure to rise to 3.0 psig. Reactor water level is currently at -10" and stable. Which ONE of the following actions would now be effective in re-establishing a means of RPV pressure control?

- a. Manually realign HPCI or pressure control.
- b. Manually align RCIC in pressure control.
- c. Establish RWCU blowdown to the main condenser.
- d. Manually cycle SRVs as required.

Answer: d

References:

HPCI Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. Not possible with initiation signal present.
- b. Not possible with HPCI initiation signal present. The HPCI full flow test line is isolated, preventing RCIC full flow to torus.
- c. A group VI isolation occurs at +12" RPV level isolating RWCU.
- d. Correct answer. SRV's are still available.

Objective: O-RO-02-09-03, EO-4

K/A: 206000A202

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 41

A change to procedure PNPS 2.2.20, Core Spray System, requires clarification of procedural steps to more accurately reflect Core Spray System equipment configuration. Based on this procedure change, which ONE of the following applies with regards to a Safety Evaluation?

- a. A Safety Evaluation is required based on this being an intent change.
- b. A Safety Evaluation is not required based on this being a non-intent change.
- c. A Preliminary Evaluation Checklist is required to be completed to determine the need for a Safety Evaluation.
- d. The Operations Review Committee is required to determine the need for a Safety Evaluation.

Answer: b

References:

NOP 98A1
10CFR55.43.(b)(3)

Explanation:

- a. A Safety Evaluation is not required for non-intent changes to procedures.
- b. Correct answer. This is a non-intent change as per NOP98A1. Non-intent changes to procedures do not require a safety evaluation.
- c. A Preliminary Evaluation Checklist is required to be completed if it is determined that an intent change is applicable.
- d. The Operations Review Committee would be required to review the change only if it were an intent change (Box C checked on PCF) and safety related (Box D checked on PCF).

Objective: O-RO-06-06-01, EO2b

K/A: G.2.2.6

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 42

The plant was operating at 100% power when a transient occurred resulting in an ATWS. Following are the operator actions taken and plant conditions:

- The SBLC control switch on C905 was taken to the SYS 'A' position, then through OFF to SYS 'B', then through OFF to SYS 'A'.
- The piping just downstream of the 'A' SBLC squib valve is completely obstructed.

Based on plant conditions, which ONE of the following describes the response of the 'A' SBLC pump?

- a. SBLC pump 'A' never injected to the RPV.
- b. SBLC pump 'A' did not inject to the RPV the first time the control switch was placed in SYS 'A', but did inject to the RPV the second time the control switch was placed in SYS 'A'.
- c. SBLC pump 'A' did inject to the RPV the first time the control switch was placed in SYS 'A', but did not inject to the RPV the second time the control switch was placed in SYS 'A'.
- d. SBLC pump 'A' injected to the RPV the first time the control switch was placed in SYS 'A', and also injected to the RPV the second time the control switch was placed in SYS 'A'.

Answer: b

References:

Standby Liquid Control Reference Text (figure 1)
10CFR55.41.(b)(6)

Explanation:

- a. The SBLC pump 'A' will inject to the RPV after the control switch is placed in SYS 'B' and the 'B' squib valve opens. The SBLC pump 'A' and 'B' discharge into a common header and can discharge to the RPV through either squib valve.
- b. Correct answer. The SBLC pump 'A' will not inject to the RPV when the control switch is placed to SYS 'A' with the piping downstream the 'A' squib valve obstructed. However, the SBLC pump 'A' will inject to the RPV after the control switch is placed in SYS 'B' and the 'B' squib valve opens. The SBLC pump 'A' and 'B' discharge into a common header and can discharge to the RPV through either squib valve.
- c. The SBLC pump 'A' will not inject to the RPV when the control switch is placed to SYS 'A' with the piping downstream the 'A' squib valve obstructed.
- d. The SBLC pump 'A' will not inject to the RPV when the control switch is placed to SYS 'A' with the piping downstream the 'A' squib valve obstructed.

Note: 1998 NRC RO Exam - Question #16

Objective: O-RO-02-06-06, EO-8

K/A: 211000K504

Tier #: 2 **Group:** 1

Question Source: Bank

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 43

The plant is in Refuel (Cold Shutdown) with all electrical and fluid systems aligned normally. Additionally, the following conditions exist:

- Hi Level in the east Scram Discharge Instrument Volume
- The Scram Discharge Instrument Volume Hi Level Scram Bypass Switch is in Bypass
- The Mode Switch is in Shutdown with the Scram Reset

Based on plant conditions, which ONE of the following would result in a full reactor scram?

- a. Loss of bus Y-1.
- b. Loss of power to Scram Discharge Instrument Volume thermocouples.
- c. Loss of bus B-23.
- d. High level in the west Scram Discharge Instrument Volume.

Answer: c

References:

Reactor Protection System Reference Text (figure 3 & 5)
10CFR55.41.(b)(7)

Explanation:

- a. Y-1 only supplies the SDIV test/isolate switch and has no scram function but would prevent resetting a scram.
- b. SDIV High Level Keylock Bypass Switch bypasses the scram that occurs due to loss of thermocouple power.
- c. Correct answer. The Scram Discharge Instrument Volume Hi Level Scram Bypass Switch can only bypass the east and west SDV Hi Water Level scram if both RPS busses are energized (see attached figure 5). If RPS 'A' de-energizes with a Hi Level in the east Scram Discharge Instrument Volume a full scram will occur.
- d. The Hi Level scram for the west Scram Discharge Instrument Volume is bypassed with the scram reset and the Scram Discharge Instrument Volume Hi Level Scram Bypass Switch in Bypass.

Note: (1) 1998 NRC RO Exam - Question #17, and (2) SRO Upgrade Exam Week #4 - Question #21

Objective: O-RO-02-07-07, EO-3j

K/A: 212000K201

Tier #: 2 **Group:** 1

Question Source: Bank Modified

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 44

With the plant operating at 100% power a leak develops between the high and low pressure sensing points on the shutdown level transmitter. The deviation from calibration conditions prior to the leak will cause the instrument to read erroneously ____ (1) ____; and after the leak to read erroneously ____ (2) ____.

- a. (1) high
(2) high
- b. (1) low
(2) high
- c. (1) high
(2) low
- d. (1) low
(2) low

Answer: b

References:

Nuclear Boiler Instrumentation Text
10CFR55.41.(b)(7)

Explanation:

- a-d Instrument is calibrated cold so it reads low at higher temperature. The pinhole leak will equalize d/p across the detector causing indicated level to rise.

Objective: O-RO-02-06-01, EO-5a

K/A: 216000A204

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 45

During a plant startup with SRM counts at 1E+3, the recorder pen for SRM Channels A and C fails downscale. All other equipment is functioning normally.

Which ONE of the following describes the affect on SRM Channels A and C?

- a. Loss of recorder indication only.
- b. Loss of recorder indication and a SRM downscale rod block
- c. Loss of recorder indication and the inability to withdraw SRM Channel A and C detectors.
- d. Loss of recorder indication and the inability to receive an SRM upscale rod block.

Answer: a

References:

SRM Reference Text (figure 10)
10CFR55.41.(b)(6)

Explanation:

a-d SRM recorder gives indication only, does not affect any trips.

Objective: O-RO-02-07-01, EO-3h

K/A: 215004A206

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 46

The plant is operating at 100% power when an LPRM fails upscale. The LPRM is placed in bypass and no other operator action is taken.

Which ONE of the following describes the expected condition of the upscale lights on panel C937 and the full core display for this LPRM?

- a. C937 Upscale Light ON
Full Core Display Upscale Light ON
- b. C937 Upscale Light OFF
Full Core Display Upscale Light OFF
- c. C937 Upscale Light OFF
Full Core Display Upscale Light OFF
- d. C937 Upscale Light ON
Full Core Display Upscale Light OFF

Answer: d

References:

LPRM Reference Text
10CFR55.41.(b)(7)

Explanation:

- a-d Bypassing the LPRM inhibits the upscale trip. Panel C937 alarms must be manually reset while panel C905 full core display alarms auto reset.

Objective: O-RO-02-07-03, EO-8

K/A: 215005A105

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 47

The plant is operating at 100% power when an SRV is suspected to have spuriously opened. The acoustic monitor for the SRV indicates all red lights on. Which ONE of the following would be the approximate tailpipe temperature for the affected SRV?

- a. 110°F
- b. 295°F
- c. 340°F
- d. 545°F

Answer: b

References:

Steam Tables

Hatch event 1/26/00

10CFR55.41.(b)(14)

Explanation:

- a. 110°F is the approximate drywell ambient temperature.
- b. Correct answer. 295°F is the approximate tailpipe temperature for an open SRV at power
- c. 340°F is obtained by following point on the left side of the saturation curve across to the right side of the saturation curve and finding the corresponding constant temperature line.
- d. 545°F is RPV saturation temperature for 1000 psig (Normal operating pressure).

Objective: O-RO-02-04-01, EO-19

K/A: 218000A407

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 48

The plant is operating at power when a total loss of TBCCW occurs. Which ONE of the following describes how RPV pressure and level should be controlled in accordance with station procedures?

- a. RCIC should be used in the level control mode and HPCI should be used in the pressure control mode.
- b. HPCI should be used in the level control mode and RCIC should be used in the pressure control mode.
- c. HPCI should be used in the level control mode and SRV's should be used to control pressure. RCIC remains shutdown.
- d. RCIC should be used in the level control mode and SRV's should be used to control pressure. HPCI remains shutdown.

Answer: a

References:

PNPS 2.4.41, Section 4.0
10CFR55.41.(b)(10)

Explanation:

- a-d In accordance with PNPS 2.4.41 (see attached), if a total loss of TBCCW occurs then place the HPCI turbine in the pressure control mode and RCIC turbine in the injection mode for level control.

Objective: O-RO-02-09-04, EO-13

K/A: 217000K507

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 49

A worker in the Emergency Response Organization had 100mRem TEDE for the current year and 2.5 Rem TEDE lifetime prior to the declaration of an emergency. Which ONE of the following is the MAXIMUM TEDE this worker can receive over the course of the emergency without special authorization?

- a. 2.4 Rem
- b. 2.5 Rem
- c. 4.9 Rem
- d. 5.0 Rem

Answer: d

References:

EP-IP-440
10CFR55.41.(b)(12)

Explanation:

- a-d EP-IP-440, Emergency Exposure Controls states that from the time an emergency is declared, ERO personnel are considered emergency workers and that emergency workers are allowed to receive 5 Rem TEDE (Whole Body) over the course of the emergency, exclusive of previous exposure and without special authorization. Choices a-c are variations of current lifetime dose and exposure limits stated in EP-IP-440.

Objective: O-RO-07-01-06, EO-3

K/A: G.2.3.4

Tier #: 3 **Group:**

Question Source: Bank

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 50

The plant is in a refuel outage with a fuel assembly being lowered into the core. Based on these conditions, which ONE of the following actions is required by the control room reactor operator?

- a. Verify all SRM's are fully inserted, on scale and record SRM reading on C905.
- b. Verify the correct fuel assembly serial number against the Fuel Movement Schedule.
- c. Inform the NOS in the main control room of the fuel bundle serial number and the "From" and "To" coordinates of that bundle.
- d. Continuously monitor SRM instrumentation for count rate increase until the fuel assembly has been loaded into the core and the grapple is visibly clear of fuel.

Answer: d

References:

PNPS 4.3 (page 20/44)
10CFR55.41.(b)(7)

Explanation:

- a-b These actions are performed prior to the fuel being moved, not when its being loaded into the core.
- c. This action is performed by the members of the fuel handling crew not the control room reactor operator
- d. Correct answer. In accordance with PNPS 4.3, control room personnel shall continuously monitor SRM instrumentation for count rate increase from the time the fuel bundle enters the core until the fuel assembly has been loaded into the core and the grapple is visibly clear of fuel.

Objective: O-RO-02-08-06, EO-6

K/A: G.2.2.30

Tier #: 3 **Group:**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 51

During a loss of coolant accident, the drywell-torus vacuum breakers will open to prevent which ONE of the following?

- a. Collapsing the drywell.
- b. Collapsing the torus.
- c. Excessive drywell internal pressure.
- d. Excessive torus internal pressure.

Answer: a

References:

Primary Containment Structure Reference Text
10CFR55.41.(b)(9)

Explanation:

a-d The drywell-torus vacuum breakers open to relieve negative pressure in the drywell and prevent collapsing the drywell.

Objective: O-RO-02-08-01, EO-2g

K/A: 223001A302

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 52

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Reactor power at 20%
- MSIV's isolated on hi steam flow
- All rods not full in
- RPV level at 25"
- Torus temp at 111°F

Based on plant conditions, which ONE of the following systems are available for RPV pressure control?

- a. Bypass valves after bypassing the RPV Lo Level interlock and opening the MSIV's.
- b. Safety relief valves.
- c. RWCU in blowdown mode.
- d. Main steam line drains.

Answer: b

References:

EOP-02
10CFR55.41.(b)(10)

Explanation:

- a. Opening the MSIV's with indication of a steam line leak is not allowed by EOP-02.
- b. Correct answer. SRV's are available
- c. RWCU would have isolated on SLC initiation (BIIT exceeded).
- d. Opening the MSIV's with indication of a steam line leak is not allowed by EOP-02.

Objective: O-RO-03-04-04, EO-15

K/A: 223002K408

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 53

In response to a leak in the drywell both loops of RHR have been placed into the "Maximized Torus Cooling" and "Drywell Spray" modes. Reactor water level then lowers from +12" to -50" and is maintained at that level for 14 minutes with RCIC injection. At -46" RPV level ADS is inhibited. Assuming that no additional operator action is taken, and that the reactor stays at operating pressure, which ONE of the following describes the minimum flow requirements and protection for the RHR pumps?

- a. RHR system minimum flow is 3600 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- b. RHR system minimum flow is 7200 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- c. RHR system minimum flow is 3600 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.
- d. RHR system minimum flow is 7200 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

Answer: d

References:

PNPS 2.2.19 (page 22/148)
10CFR55.41.(b)(10)

Explanation:

- a. Since all RHR pumps start on a LOCA signal, minimum flow is 7200 GPM.
- b. Flow through only the minimum flow valves is only allowed for 2 hours.
- c. Same as a. above.
- d. Correct answer.

Objective: O-RO-02-09-01, EO-9

K/A: 226001K405

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 54

A plant startup is in progress. Which ONE of the following occurs at approximately 940 psig?

- a. The EPR setpoint is lowered to 940 psig, which results in the main turbine bypass valves starting to open.
- b. The MPR setpoint is lowered to 940 psig, which results in the main turbine bypass valves starting to open.
- c. The main turbine bypass valves start to open since the EPR setpoint was previously set at 940 psig.
- d. The main turbine bypass valves start to open since the MPR setpoint was previously set at 940 psig.

Answer: c

References:

PNPS 2.1.1 (page 39/126)
10CFR55.41.(b)(7)

Explanation:

- a. The EPR setpoint is already at 940 psig.
- b. The MPR setpoint is 40-90 psi above reactor pressure.
- c. Correct answer per PNPS 2.1.1.
- d. The MPR setpoint is above EPR setpoint.

Objective: O-RO-02-05-04, EO-14

K/A: 241000A402

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 55

With the plant operating at 100% power, the 'A' and 'B' feedwater flow detectors are inadvertently bypassed. Which ONE of the following actions will occur?

- a. A reactor scram on low reactor level.
- b. A reactor recirc pump runback terminating at 44%.
- c. A reactor recirc pump runback terminating at 26%.
- d. An initiation of a Group isolation I on high reactor level resulting in a reactor scram.

Answer: c

References:

FWLC Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. Actual RPV level will be increasing.
- b. RPV level must be <19" and <3 RFP running to get the 26% runback.
- c. Correct answer. Zero feed flow causes initiation of #1 speed limiter due to <20% feed flow.
- d. Will only get the Group I on high level if you are ≤810 psig.

Note: (1) 1998 NRC SRO Exam - Question #27, and (2) SRO Upgrade Exam Week #5 - Question #1

Objective: O-RO-02-04-10, EO-33

K/A: 259002K304

Tier #: 2 **Group:** 1

Question Source: Bank Modified

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 56

The plant is operating at 100% power with the following conditions:

- The 'A' SBTG fan is in AUTO
- The 'B' SBTG fan is in STBY
- The 'A' and 'B' refuel floor radiation monitor fail upscale
- The 'A' SBTG initiates, runs for 10 seconds, then trips

Based on plant conditions, which ONE of the following describes the expected automatic response of the 'B' SBTG fan?

- Will start when the initiation signal is received, run for 65 seconds, stop, then restart.
- Will start immediately after the 'A' SBTG fan trips and continue running uninterrupted.
- Will start after 65 seconds and continue to run uninterrupted.
- Will start when the initiation signal is received and continue running uninterrupted.

Answer: a

References:

Standby Gas Treatment Reference Text (page 14/25)
10CFR55.41.(b)(7)

Explanation:

- Correct answer. The 'B' SBTG fan would start upon an initiation signal, stop after 65 seconds, then restart based upon an initiation signal present and low discharge flow (<2100 scfm).
- The 'B' SBTG fan would initially start upon an initiation signal not only after the 'A' SBTG fan trips.
- The 'B' SBTG fan would stop after 65 seconds.
- The 'B' SBTG fan would trip after 65 seconds, then restart on low flow.

Note: (1) 1998 NRC SRO Exam - Question #61, and (2) SRO Upgrade Exam Week #6 - Question #15

Objective: O-RO-02-08-03, EO-12

K/A: 261000K108

Tier #: 2 **Group:** 1

Question Source: Bank

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 57

The plant was operating at 100% when a LOCA concurrent with a loss of offsite power has occurred. The 'B' EDG failed to start. The SBO diesel generator is started and loaded onto bus A-6. Bus A-5 is being supplied by the 'A' EDG. Based on plant conditions, which ONE of the following describes the load limit for the SBO diesel generator and the bases for that limit?

- a. 1700 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.
- b. 1700 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.
- c. 2000 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.
- d. 2000 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.

Answer: b

References:

PNPS 2.2.146 (page 7/44)
10CFR55.41.(b)(7)

Explanation:

- a. Correct limit, however, the secured pump will be in PTL.
- b. Correct answer per PNPS 2.2.146.
- c. Correct reason with a load limit that is applicable only when A-5 or A-6 is being supplied.
- d. Secured RHR pump will be in PTL, load limit is applicable only when A-5 or A-6 is being supplied.

Objective: O-RO-02-09-11, EO-8b

K/A: 262001A104

Tier #: 2 **Group: 1**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 58

The plant is operating at 100% power with the 'A' SBGT Train out of service and in day 3 of a 7 day LCO when the 'B' EDG jacket water cooling system fails. All other systems are fully operable and all surveillances complete.

Based on plant conditions, which ONE of the following is the MAXIMUM amount of time allowed before the plant must reach cold shutdown?

- a. 24 hours.
- b. 36 hours.
- c. 72 hours.
- d. 36 hours following the expiration of the original SBGT 7 day LCO.

Answer: b

References:

Tech Spec 3.7.B.1.c
10CFR55.43.(b)(2)

Explanation:

- a. PNPS equivalent of T.S. 3.0.3
- b. Correct answer per T.S. 3.7.B.1.c
- c. Time limit before shutting down with one EDG and the SBODG Inop.
- d. Time limit before shutting down if the EDG never went Inop.

Objective: O-RO-06-01-03, EO-3

K/A: 264000K104

Tier #: 2 **Group: 1**

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 59

A control rod is withdrawn one notch. Which ONE of the following describes the sequence in which the control rod drive SETTLE, Rod IN, and Rod OUT lights will energize?

- a. Rod SETTLE, Rod IN, Rod OUT
- b. Rod IN, SETTLE, Rod OUT
- c. Rod IN, Rod OUT, SETTLE
- d. Rod OUT, SETTLE, (Rod IN light remains de-energized)

Answer: c

References:

Reactor Manual Control Reference Text (page 13)
10CFR55.41.(b)(7)

Explanation:

- a-d The sequence for a rod withdrawal is; (1) drive the rod in far enough to release the collet fingers from the index tube notch so that the rod can be withdrawn past that notch – Rod IN light (2) drive the rod out past the index tube notch – Rod OUT light, and (3) allow the next notch in the index tube to settle onto the collet fingers - SETTLE.

Objective: O-RO-02-06-08, EO-3

K/A: 201002A103

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 60

The plant is being started up. Reactor power is 15% with the mode switch in Run. Three control rods, which are known to be fully withdrawn and at their withdrawal limits per the rod sequence, have reed switch failures such that the Rod Worth Minimizer does not know the current position.

Which ONE of the following is allowed and would be effective in allowing continued control rod withdrawal?

- a. Bypass the rod worth minimizer.
- b. Fully insert the three affected control rods.
- c. Enter substitute position for the affected control rods.
- d. Raise reactor power above the low power setpoint using reactor recirculation pumps.

Answer: c

References:

PNPS 2.2.90 (page 9/34)
10CFR55.41.(b)(10)

Explanation:

- a. This action is not allowed per Tech Specs
- b. Inserting the 3 control rods will cause an insert block and a withdraw block.
- c. Correct answer.
- d. Not possible due to #1 speed limiter.

Objective: O-RO-02-07-06, EO-9c

K/A: 201006K603

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 61

The plant is shutdown with the 'B' loop of RHR in shutdown cooling. The 'A' reactor recirculation pump is running. Due to improper maintenance activities MO-1001-18B, RHR loop 'B' minimum flow valve, opens, which results in the RPV level lowering to +10".

Based on plant conditions, which ONE of the following would provide accurate indication of reactor water temperature?

- a. Reactor vessel flange temperature.
- b. 'B' reactor recirc pump suction temperature.
- c. Reactor vessel bottom drain temperature.
- d. 'A' reactor recirc pump suction temperature.

Answer: d

References:

P&ID M252 (sheet 2)
10CFR55.41.(b)(7)

Explanation:

- a. With the RPV level at +10 inches, it is nowhere near the RPV flange.
- b. SDC isolates at +12" and the fact that the recirc pump discharge valve is closed would prevent any natural circulation through the loop.
- c. RWCU isolates at +12", therefore there is no flow through the vessel bottom drain.
- d. Correct answer.

Objective: O-RO-02-09-01, EO-15

K/A: 205000K304

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 62

The operators are lowering CRD drive water ΔP that results in a sufficient enough change in CRD cooling water ΔP to cause control rod 06-19 to drift. Control rod 06-19 is currently selected, is not being moved by RMCS, and had an original position of 46.

Based on these conditions, which ONE of the following describes the response of the rod drift alarm for rod 06-19 and bases for that response?

- a. Will not alarm based on the rod being selected.
- b. Will alarm when the reed switch for notch position 46 opens.
- c. Will alarm when the reed switch for notch position 45 opens.
- d. Will alarm when the reed switch for notch position 47 closes.

Answer: b

References:

ARP C905LA3
RPIS Reference Text (page 9/22)
10CFR55.41.(b)(7)

Explanation:

- a. Rod being selected does not inhibit drift alarm. Must also be moving rod with RMCS.
- b. Correct answer.
- c. Incorrect since reed switch for notch position 45 should close.
- d. Incorrect since rod would be drifting in and reed switch for odd position should close.

Objective: O-RO-02-09-01, EO-15

K/A: 214000K501

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 63

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Torus water level at 130"
- Drywell temperature at 150°F
- Torus bottom pressure at 60 psig and rising
- Drywell pressure at 55 psig

Based on plant conditions, which ONE of the following describes the requirement and use of containment sprays?

- Drywell and torus sprays are both required. Pumps required for adequate core cooling may be directed to the torus and drywell.
- Torus spray is required. Pumps required for adequate core cooling may be diverted to spray the torus. Drywell spray is prohibited.
- Drywell and torus sprays are both required. RHR pumps required for adequate core cooling may NOT be diverted to spray the torus and drywell.
- Torus spray is required. RHR pumps required to provide adequate core cooling may NOT be diverted to spray to torus. Drywell spray is prohibited.

Answer: a

References:

EOP-03
10CFR55.43.(b)(5)

Explanation:

- Correct answer per EOP-03, Step P-18.
- Drywell spray is required (without the DSIL curve).
- Can sacrifice adequate core cooling to establish containment sprays.
- Same as b. and c. above.

Objective: O-RO-03-04-02, EO-3i

K/A: 230000G2419

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 64

The plant is operating at 100% power with drywell pressure at 1.6 psig and slowly rising. Following are plant conditions:

- The 'B' RHR pump is in torus cooling
- RPV level at +30" and stable.

The reactor is then manually scrammed. One minute later a loss of bus D-5 occurs. Two minutes following the loss of D-5 drywell pressure reaches 2.2 psig

Which ONE of the following describes the expected automatic response of the 'B' RHR pumps and the MO-1001-34B, RHR Loop 'B' torus block valve?

- The 'B' RHR pump will trip when D-5 de-energizes and MO-1001-34B will close when drywell pressure reaches 2.2 psig.
- The 'B' RHR pump will remain running and MO-1001-34B will close when drywell pressure reaches 2.2 psig.
- The 'B' RHR pump will trip and MO-1001-34B will close when D-5 de-energizes.
- The 'B' RHR pump will remain running and MO-1001-34B will remain open.

Answer: d

References:

M1H-40 (sheet 18/19)
M1H-9-12 (sheet 5/19)
10CFR55.41.(b)(7)

Explanation:

- a-d RHR pump 'B' cannot trip and MO-1001-34B will not go closed on a high drywell pressure signal of 2.2 psig.

Objective: O-RO-03-04-02,EO-3i

K/A: 219000K203

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 65

The plant was operating at 20% power when a transient occurred requiring the operators to manually scram the reactor. Following are plant conditions:

- Reactor power is on IRM range 5 and decreasing
- Three control rods are at position 06 and all other control rods are fully inserted
- No other scram signals exist

Which ONE of the following actions is required to insert the three control rods at position 06?

- Execute PNPS 2.1.6, "Reactor Scram" only
- Enter EOP-01, then exit EOP-01 and enter EOP-02 at R-1.
- Enter PNPS 2.1.6, "Reactor Scram" and then EOP-02 at R-1.
- Execute PNPS 2.1.6, "Reactor Scram" and then PNPS 5.3.23, "Alternate Rod Insertion".

Answer: d

References:

PNPS 2.1.6 (page 5 & 6/13)
10CFR55.41.(b)(10)

Explanation:

- PNPS 2.1.6 requires PNPS 5.3.23 to be executed when any control rod is not fully inserted.
- Execution of EOP-01 and EOP-02 is not required based on reactor power being < 3%.
- EOP-02 entry from PNPS 2.1.6 is only required if the reactor is not shutdown.
- Correct answer. PNPS 2.1.6 requires that any control rod not fully inserted be inserted using the methods detailed in PNPS 5.3.23, Alternate Rod Insertion.

Note: 1997 NRC SRO Exam - Question # 43

Objective: O-RO-03-04-04, EO-24

K/A: G.2.4.11

Tier #: 3 **Group:**

Question Source: Bank

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 66

The plant was operating at 100% power when a loss of TBCCW has occurred. Attempts to start the temporary air compressor have failed.

Based on plant conditions, which ONE of the following may be used to pressurize the instrument air header in accordance with PNPS procedures?

- a. Using demineralized water to cool instrument air compressor K-111.
- b. Using fire water to cool instrument air compressor K-111.
- c. Using demineralized water to cool instrument air compressor K-104A.
- d. Using fire water to cool instrument air compressor K-104A.

Answer: a

References:

PNPS 2.2.36 (page 19/67)
10CFR55.41.(b)(10)

Explanation:

- a. Correct answer.
- b. Wrong cooling system.
- c. Wrong compressor.
- d. Wrong cooling system and wrong compressor.

Objective: O-RO-02-02-04, EO-9

K/A: 300000K104

Tier #: 2 **Group: 2**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 67

Upon receipt of a turbine trip, water flashing in the 1st point heaters will NOT cause a turbine overspeed condition based on which ONE of the following?

- a. The Combined Intermediate Valves going shut.
- b. A MOV in the 1st point heaters extraction steam line going shut.
- c. An AOV in the 1st point heaters extraction steam line going shut.
- d. The water in the 1st point heater is of a low enough energy that flashing is not a problem.

Answer: a

References:

Feedwater Heating Reference Text
10CFR55.41.(b)(4)

Explanation:

- a. Correct answer.
- b. The 1st point heater MOV does not close on a turbine trip.
- c. The 2nd, 3rd, and 4th point heaters have AO's in line.
- d. This is the reason why the 5th point heater does not need non-return protection.

Objective: O-RO-02-04-09, EO-13

K/A: 259001K402

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 68

The plant is operating at 100% power when a loss of all annunciators occurs. Based on plant conditions, which ONE of the following actions is required?

- a. Log A-5 and A-6 buses every ½ hour. Restore the alarms or be in cold shutdown within 24 hours.
- b. Log A-5 and A-6 bus voltages every ½ hour until the annunciators are restored.
- c. Immediately commence an orderly shutdown and be in cold shutdown within 24 hours.
- d. Jumper circuitry such that a LOCA signal will initiate a load shed.

Answer: b

References:

Tech Spec Table 3.2.B.1
10CFR55.43.(b)(2)

Explanation:

- a. Contains correct answer plus the Pilgrim version of Tech Spec 3.0.3.
- b. Correct answer. Tech Spec Table 3.2.B.1 requires that in the event that the alarm system is determined inoperable, commence logging safety related bus voltage every ½ hour until such time as the alarm is restored to operable status.
- c. Pilgrim version of Tech Spec 3.0.3.
- d. This is why parameter is maintained (for load shed purposes), but this is not required.

Objective: O-RO-06-01-03, EO-3

K/A: G.2.4.32

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 69

Which ONE of the following is the bases for maintaining the Turbine Building Ventilation System in operation while executing EOP-05?

- a. Prevents Reactor Building Ventilation from entering the Turbine Building.
- b. Prevents a direct reactor scram due to high temperature in the MSL tunnel.
- c. Prevents having an unmonitored ground release from the Turbine Building.
- d. Ensures adequate dilution of the gases discharged through the stack.

Answer: c

References:

O-RO-03-04-07 (page 7-8)
10CFR55.43.(b)(4)

Explanation:

- a. Maintaining the secondary containment at a negative pressure prevents this.
- b. MSL high temperature is Group I Isolation.
- c. Correct answer. Operation of the TB HVAC preserves TB accessibility and helps minimize potential for an undesirable non-elevated release.
- d. Concerned with ground release.

Objective: None identified

K/A: 259038A106

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 70

The plant is starting up from a refuel outage. At 104 psig RPV pressure, the RCIC system is placed in standby operation. When placing RCIC in standby operation, in accordance with station procedures, operators are required to _____ (1) _____ to avoid _____ (2) _____.

- a. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system initiation.
- b. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) overpressurizing downstream piping.
- c. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system isolation.
- d. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) excessive heatup of downstream piping.

Answer: c

References:

PNPS 2.2.125, Attachment 5
LER 99-010
10CFR55.41.(b)(7)

Explanation:

- a. The procedure requires that the operator slowly jog open MO-1301-16 to preclude a system isolation on high steam flow not a system initiation.
- b. MO-1301-17, outboard steam isolation valve, seals-in to open/close (no throttle capabilities) and does not have a bypass equalizing valve. Additionally, MO-1301-17 is opened prior to MO-1301-16 by procedure.
- c. Correct answer (LER 99-010).
- d. MO-1301-17, outboard steam isolation valve, seals-in to open/close (no throttle capabilities) and does not have a bypass equalizing valve. Additionally, MO-1301-17 is opened prior to MO-1301-16 by procedure.

Objective: O-RO-02-09-04, EO-10

K/A: G.2.1.32

Tier #: 3 **Group:**

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 71

The plant is operating at 100% power when a SRV opens. In accordance with station procedures, which ONE of the following actions is required?

- a. Scram the reactor if Torus water temperature rises 5°F to prevent exceeding HCTL.
- b. Simultaneously de-energize bus D-4 and bus D-5 to interrupt power to the SRV solenoids.
- c. Simultaneously open breaker 1 on bus D-4 and breaker 1 on bus D-5 to interrupt power to the SRV solenoids.
- d. Separately cycle breaker 1 on bus D-4 followed by breaker 1 on bus D-5 to interrupt power to the ADS logic.

Answer: c

References:

PNPS 2.4.29
10CFR55.43.(b)(5)

Explanation:

- a. A scram is required if the SRV is open for 5 minutes.
- b. De-energizing the busses is not required.
- c. Correct answer.
- d. Sequentially cycling breakers will not de-energize logic or solenoids.

Objective: O-RO-03-04-09, EO-5

K/A: 239002G219

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 72

The plant was operating at 100% power when a transient resulting in an ATWS occurs. Following are plant conditions:

- Boron is being injected with the SBLC system
- Initial SBLC tank level was 4100 gallons. Current SBLC tank level is 3000 gallons
- RPV level is -100" and is being lowered to reduce reactor power

Based on plant conditions, which ONE of the following actions is required?

- Raise RPV level to the +12" to +45" band and perform Alternate Depressurization.
- Maintain RPV level at its current value. Do not perform Alternate Depressurization.
- Maintain RPV level at its current value and perform Alternate Depressurization.
- Raise RPV level to the +12" to +45" band. Do not perform Alternate Depressurization.

Answer: d

References:

EOP-02

Risk Significant Human Error Probabilities, Table A.1-1-Component XDEPRESSXY
10CFR55.43.(b)(5)

Explanation:

- Alternate Depressurization not required.
- Since HSBW has been injected EOP-2 requires that RPV level be increased to +12" to +45" band.
- Correct answer.

Note: 1997 NRC SRO Exam - Question # 44

Objective: O-RO-03-04-04, EO-25

K/A: 295037G246

Tier #: 1 **Group:** 1

Question Source: Bank

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 73

While executing EOP-01, it is determined that Alternate Depressurization is anticipated. Based on these conditions, which ONE of the following describes the opening of the bypass valves?

- a. Bypass valves should be opened without regard to the effect on RPV level and cooldown rate.
- b. Bypass valves should be opened while maintaining RPV level in the desired band. Cooldown rate limitations may be exceeded.
- c. Bypass valves should be opened while maintaining cooldown rate within limits. RPV level may be allowed to go outside the desired band.
- d. Bypass valves should be opened while maintaining reactor water level in the desired band and cooldown rate within limits.

Answer: b

References:

Operations Policy Standards (page 10-11)
Risk Significant Human Error Probabilities, Table A.1-1-Component XDEPRESSXY
10CFR55.41.(b)(7)

Explanation:

- a. Not allowed to exceed the desired level band.
- b. Correct answer.
- c. Cooldown rate may be disregarded. Reactor water level not allowed to exceed the desired band.
- d. Cooldown rate may be disregarded.

Objective: O-RO-03-04-03, EO-17

K/A: 239001A409

Tier #: 2 **Group: 3**

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 74

The plant was operating at 100% power when a loss of coolant occurs resulting in the following plant conditions:

- Torus water level is 150" and stable.
- Containment pressure is rising rapidly.

Which ONE of the following describes the vent path and requirement for venting the primary containment?

The primary containment is vented through the:

- Torus before torus bottom pressure reaches 60 psig.
- Torus, but only after torus bottom pressure exceeds 60 psig.
- Drywell before torus bottom pressure reaches 60 psig.
- Drywell, but only after torus bottom pressure exceeds 60 psig.

Answer: a

References:

EOP-03

Risk Significant Human Error Probabilities, Table A.1-1-Component MXXDTVOPRY
10CFR55.43.(b)(5)

Explanation:

- Correct answer.
- Must be done before 60 psig torus bottom pressure.
- Incorrect vent path for 130 inches torus level.
- Incorrect vent path for 130 inches torus level. Must be done before 60 psig torus bottom pressure.

Objective: O-RO-03-04-05, EO-13

K/A: 223001A207

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 75

Which ONE of the following describes the effect of leaving the Mechanical Pressure Regulator sensing line isolation valve closed during a reactor startup?

- a. EPR will control reactor pressure when it exceeds 200 psig.
- b. Turbine bypass valves can only be opened by raising the MPR setpoint.
- c. Turbine bypass valves would not open when steam pressure increased to MPR setpoint.
- d. There will be no adverse effect because the turbine stop valves are closed.

Answer: c

References:

MHC Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. EPR does not control pressure at this setpoint.
- b. Turbine bypass valves will not receive an open signal from the MPR regardless of MPR setpoint.
- c. Correct answer. MPR will be sensing a low pressure due to isolation valve being closed and will not respond to increasing pressure.
- d. Turbine stop valves are not a consideration for this question.

Objective: O-RO-02-05-04, EO-5

K/A: 295007K201

Tier #: 3 **Group:**

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 76

✓ The primary containment is required to be vented regardless of radioactive release rate:

- a. If drywell hydrogen concentration reaches 6% with drywell oxygen concentration of 3%.
- b. If more than two general areas in the reactor building exceed 135°F.
- c. Before Torus pressure and Torus level exceeds the pressure suppression pressure limit.
- d. Before Torus bottom pressure exceeds the primary containment pressure limit.

Answer: d

References:

EOP-3

10CFR55.43.(b)(5)

Explanation:

- a. Venting the containment regardless of radioactive release rate requires a hydrogen concentration of 6% and an oxygen concentration of 5%.
- b. Greater than 135°F in more than two general areas in the reactor building requires Alternate Depressurization not venting the containment regardless of radioactive release rate.
- c. Torus pressure and torus level exceeding the pressure suppression pressure limit requires Alternate Depressurization not venting the containment regardless of radioactive release rate.
- d. Correct answer. In accordance with EOP-3 venting the containment regardless of radioactive release rate is required before torus pressure exceeds the primary containment pressure limit.

Objective: O-RO-03-04-05, EO-14

K/A: 295017A109

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 77

The plant is operating at 100% power when a loss of bus Y-1 occurs. Bus Y-1 has been transferred to B-15. Based on plant conditions, which ONE of the following feedwater heaters will require extraction steam to be re-established?

- a. 2nd and 3rd point heaters.
- b. 1st and 2nd point heaters.
- c. 3rd and 4th point heaters.
- d. 4th and 5th point heaters.

Answer: a

References:

PNPS 2.4.150 (page 5/12)
History of Loss of FW Heating since last outage
10CFR55.41.(b)(10)

Explanation:

a-d Only the 2nd and 3rd point heaters lose extraction steam on a loss of Y-1. Motor operated valves closed.

Objective: O-RO-02-04-09, EO-13

K/A: 295014A203

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 78

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- RPV level at -50" and stable
- Torus water level at 98" and lowering

Based on plant conditions _____ (1) _____ is (are) required to be secured at _____ (2) _____ to prevent _____ (3) _____.

- (1) HPCI; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.
- (1) SRV's; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.
- (1) HPCI; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.
- (1) SRV's; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.

Answer: a

References:

O-RO-03-04-05 (page 28 &29)
10CFR55.43.(b)(5)

Explanation:

- Correct answer.
- SRV's can be operated at a torus level of 95".
- HPCI is required to be secured at a torus level of 95" to prevent exceeding PCPL, not PSPL.
- SRV's can be operated at a torus level of 90".

Note: 1998 NRC SRO Exam - Question #67

Objective: O-RO-03-04-05, EO-7

K/A: 295030G246

Tier #: 1 **Group:** 1

Question Source: Bank Modified

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 79

The plant was operating at 100% power when a DBA loss of coolant accident occurred resulting in the declaration of a General Emergency. Following are plant conditions:

- Primary containment is being vented IAW EOP-3 step H-13 and PNPS 5.4.6
- CHRM's are indicating $2.8E4$ R/Hr.
- Wind direction is from 090°

Based on plant conditions, which ONE of the following Protective Action Recommendations is required?

Note: Refer to attached EP-IP-400, Attachment 1

- Evacuate sub-areas 1, 12 and 3. Shelter all other sub-areas.
- Evacuate sub-areas 1, 12, 2, 3, 4, 6, 7, 8 and 11. Shelter all other sub-areas.
- Evacuate sub-areas 1 and 12. Shelter all other sub-areas.
- Evacuate sub-areas 1, 12, 2, 3 and 4. Shelter all other sub-areas.

Answer: b

References:

EP-IP-400, Attachment 1
10CFR55.43.(b)(5)

Explanation:

- The criteria for only evacuating the 2 mile ring has not been met.
- Correct answer – criteria for evacuating 5 mile ring has been met.
- Same as "a." above.
- Sub-areas stated for evacuation are calculated from a wind direction of 270° .

Objective: O-RO-03-04-05, EO-7

K/A: G.2.4.44

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 80

An Alert has been declared. Which ONE of the following is an Emergency Director responsibility which may be delegated?

- a. Approval of press releases
- b. Off-site Protection Action Recommendations
- c. Termination of an Alert
- d. Authorizing the use potassium iodine by on-site personnel

Answer: d

References:

EP-IP-200, Section 4.0
10CFR55.43.(b)(5)

Explanation:

a-d EP-IP-200, On-Call Emergency Director, Section 4.0 defines authorizing the use of potassium iodide as a delegable responsibility of the Emergency Director.

Note: 1998 NRC SRO Exam - Question #99

Objective: O-RO-07-04-01, EO-6

K/A: G.2.4.38

Tier #: 3 **Group:**

Question Source: Bank Modified

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 81

The plant was operating at 100% power when a loss of coolant accident occurred causing a RPV depressurization and rapid increase in drywell temperature. Following are plant conditions:

- Drywell temperature is approaching 280°F
- Drywell Pressure is 20 psig
- RPV level is unknown

Based on plant conditions, which ONE of the following describes the use of the RHR pumps?

- Use both loops of RHR to spray the drywell before drywell temperature reaches 280°F.
- Use both loops of RHR to spray the drywell, but only after drywell temperature reaches 280°F.
- Use both loops of RHR to inject to the RPV.
- Close the MO-1001-19 RHR cross-tie valve. Use one loop of RHR to spray the drywell before drywell temperature reaches 280°F. Use the other loop of RHR to inject to the RPV.

Answer: c

References:

Operations Policy Standards
EOP-03 and 16
10CFR55.43.(b)(5)

Explanation:

- a-d The Operations Policy Standards states that RPV flooding conditions has priority over primary containment control actions unless the associated EOP-3 action(s) includes the icon for "Core Uncovery Allowed" is present. In this case, it is not present.

Objective: O-RO-03-04-08, EO-9b

K/A: G.2.4.16

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 82

The plant is operating normally at 100% power when a leak occurs on the suction line of RCIC. Water level is 3 inches in the RCIC quadrant when the leak is discovered. Level in the RCIC quadrant is currently approaching 6 inches. In accordance with Emergency Operating Procedures, the leak (1) required to be isolated and a reactor scram (2) required before reaching 6 inches in the RCIC quadrant.

- a. (1) is, (2) is
- b. (1) is, (2) is not
- c. (1) is not, (2) is
- d. (1) is not, (2) is not

Answer: b

References:

EOP-04 and 01
O-RO-03-04-06 (page IG-17)
10CFR55.43.(b)(5)

Explanation:

- a. Correct if the system is incorrectly classified as a primary system.
- b. Correct answer.
- c. Correct if the system was incorrectly determined to be needed for adequate core cooling and incorrectly classified the system as a primary system.
- d. Correct if the system was incorrectly determined to be needed for adequate core cooling.

Objective: O-RO-03-04-06, EO-4

K/A: G.2.4.17

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 83

ADS has been initiated and a blowdown is in progress. Which ONE of the following actions would terminate the blowdown and prevent ADS from re-initiation?

- a. Placing the core spray and RHR pumps in pull-to-lock.
- b. Depressing the ADS initiation logic reset pushbutton.
- c. Placing the ADS initiation inhibit switch to inhibit and placing the core spray and RHR pumps in pull-to-lock.
- d. Depressing the ADS initiation logic reset pushbutton and placing the ADS initiation inhibit switch to inhibit.

Answer: d

References:

ADS Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. Once ADS has been initiated, the LPCS/RHR pump running interlock is sealed in. Placing the core spray and RHR pumps in pull-to-lock would have no effect on terminating ADS.
- b. Depressing the ADS initiation logic reset pushbutton would only reset the 105 second timer. ADS would re-initiate after 105 seconds when the timer timed out.
- c. Variation of a. and b.
- d. Correct answer.

Objective: O-RO-02-09-05, EO-15

K/A: 209001K302

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 84

The plant is operating at 100% power when it is discovered that the keylock switch for opening the HPCI alternate shutdown panel has been tampered with. In accordance with PNPS 5.3.14, "Security Incidents", which ONE of the following is to be immediately informed of this condition?

- a. The Emergency Off-Site Manager
- b. The Federal Bureau of Investigation
- c. The SAS or CAS operator
- d. The Plymouth Police Department

Answer: c

References:

PNPS 5.3.14 (page 2/12)
10CFR55.41.(b)(10)

Explanation:

a-d In accordance with PNPS 5.3.14, the immediate action is to inform the SAS or CAS operator.

Objective: None identified

K/A: G.2.4.28

Tier #: 3 **Group:**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 85

The plant was operating at 100% power when a transient causes a loss of feedwater concurrent with a Group I isolation. Based on decay heat generation and SRV operation, which ONE of the following system(s) is(are) designed to provide the minimum makeup requirements to the RPV to maintain RPV level above top of active fuel?

- a. RCIC only.
- b. RCIC and ADS.
- c. HPCI only.
- d. ADS and low pressure injection.

Answer: a

References:

PNPS FSAR Volume 2, Section 4.7.5
10CFR55.41.(b)(8)

Explanation:

- a. Correct answer. After a loss of feedwater and vessel isolation the RCIC system is sufficient to maintain reactor water level above TAF.
- b. Only RCIC is required to maintain RPV level above TAF after a loss of feedwater and vessel isolation event, not RCIC and HPCI.
- c. HPCI is provided to ensure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break LOCA that does not result in the rapid depressurization of the RPV.
- d. ADS is only required when other means, including RCIC and/or HPCI, are incapable of maintaining RPV water level.

Objective: O-RO-02-09-04, EO-5

K/A: 295025K104

Tier #: 1 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 86

It is desired to isolate the makeup to the TBCCW head tank to allow maintenance inside the tank during an outage. Which ONE of the following would allow the use of LV-4141 as an isolation point when preparing this DANGER tagout?

Note: Refer to attached P&ID M-216, Sheet 1

- a. Setting LV-4141 at the minimum level position.
- b. DANGER tagging the air supply of LV-4141 in the open position.
- c. DANGER tagging the air supply to LV-4141 in the closed position.
- d. Applying a gag to LV-4141 to prevent it from opening.

Answer: d

References:

P&ID M-216, Sheet 1
PNPS 1.4.5 (page19/80)
10CFR55.41.(b)(10)

Explanation:

- a. While this would close the valve, it could still fail open on loss of air.
- b. While this would prevent air isolation, a loss of air system would result in valve failing open.
- c. This would cause the valve to fail open.
- d. Correct answer. In accordance with PNPS 1.4.5.

Objective: O-RO-06-06-01, EO-12

K/A: G.2.1.24

Tier #: 3 **Group:**

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 87

A test is being planned that would introduce the possibility of an accident not previously evaluated in the FSAR. Based on this condition, permission from which ONE of the following is required prior to performing the test?

- a. OSS
- b. Operations Department Manager
- c. Plant Manager
- d. U.S. Nuclear Regulatory Commission

Answer: d

References:

10CFR50.59
NOP 83ES (page 10/56)
10CFR55.43.(b)(3)

Explanation:

a-d In accordance with 10CFR50.59, a licensee shall obtain a license amendment pursuant to 10CFR 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would create a possibility for an accident of a different type than any previously evaluated in the final safety analysis report (as updated)

Objective: None identified

K/A: G.2.2.7

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 88

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- Drywell hydrogen concentration at 6.5%
- Drywell oxygen concentration at 2%
- Torus hydrogen concentration at 3%
- Torus oxygen concentration at 5.5%

While venting primary containment in response to these conditions it (1) permissible to exceed the release rate LCO. Jumper installation (2) permitted in order to bypass isolations allowing the venting to take place.

- a. (1) is, (2) is
- b. (1) is, (2) is not
- c. (1) is not, (2) is
- d. (1) is not, (2) is not

Answer: a

References:

EOP-03
10CFR55.43.(b)(5)

Explanation:

a-d In accordance with EOP-03, Step A-13, allows exceeding release rates and installation of jumpers based on these plant conditions.

Objective: O-RO-03-04-05, EO-14

K/A: G.2.3.8

Tier #: 3 **Group:**

Question Source: New

Exam Level: SRO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 89

The plant is operating at 100% power when the "TORUS ROOM TROUGH HI/LO" alarm is received in the control room. Investigation reveals that the water level in the trough is below the bottom of the two pipes located in the torus troughs.

If a LOCA in the drywell were to occur, which ONE of the following would be of potential concern with regards to the condition of the torus trough?

- a. Loss of pressure suppression pressure capability.
- b. Over-pressurization of the secondary containment.
- c. Ground release through the secondary containment.
- d. Vent path directly from the drywell to torus room.

Answer: c

References:

PNPS FSAR Volume 2, Section 5.3.3.3
10CFR55.41.(b)(7)

Explanation:

- a. Pressure suppression pressure capability is a function of the torus not the torus trough.
- b. Based on the low torus trough level, there is even less likelihood that pressurization of the secondary containment will occur.
- c. Correct answer. The torus trough provide for a water seal between the secondary containment (dewatering lines) and the torus room. Based on stated conditions this water seal has been lost and a path to outside the secondary exists.
- d. Loss of the water seal results in a vent path from the secondary containment to the torus room, not the drywell to the torus room.

Objective: None identified

K/A: 290001K301

Tier #: 2 **Group:** 1

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 90

A lead in a safety related system is to be lifted and you have been directed to verify this activity. Which ONE of the following describes how this verification is to be performed?

- a. Independent and direct.
- b. Non-independent and direct.
- c. Independent and indirect.
- d. Non-independent and indirect.

Answer: b

References:

PNPS 1.3.34 (page 40/48)
10CFR55.41.(b)(10)

Explanation:

a-d In accordance with PNPS 1.3.34 , Conduct of Operations, this action is to be non-independent and direct.

Note: 1998 NRC SRO Exam - Question #92

Objective: O-RO-06-06-01, EO-12

K/A: G.2.1.1

Tier #: 3 **Group:**

Question Source: Bank

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 91

A plant transient has occurred resulting in an Alert declaration and a control room evacuation. An operator is being dispatched from the OSC to enter a High Radiation Area for local operation of equipment and has reviewed the applicable, job specific RWP and current survey map of the area. No additional dosimetry requirements have been identified.

Which ONE of the following is(are) the MINIMUM personnel monitoring requirement(s) for making this High Radiation Area entry?

- a. TLD.
- b. TLD and Self-Indicating Dosimeter.
- c. An escort who has a TLD.
- d. An escort who has a Self-Indicating Dosimeter.

Answer: b

References:

PNPS 6.1-014 (page 10/29)
10CFR55.41.(b)(12)

Explanation:

a-d In accordance with PNPS 6.1-014, TLD and dose rate device which has alarm function will allow entry.

Objective: None identified

K/A: 295016G235

Tier #: 1 **Group: 1**

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 92

The plant is in refuel with core reload complete and the Reactor Building truck lock doors open in support of a control rod drive shipment. Based on current plant conditions, which ONE of the following activities is allowed to be performed?

- a. Movement of new fuel to the spent fuel pool.
- b. Replacement of LPRM's.
- c. Replacement of control rod blades.
- d. Control rod scram time testing.

Answer: b

References:

Tech Spec 1.0 & 3.7.C
10CFR55.43.(b)(7)

Explanation:

- a. Secondary containment integrity does not exist based on both RB truck lock doors being open. As such, movement of fuel (core alteration) is not permitted.
- b. Correct answer. Replacement of LPRM's is not considered a core alteration, therefore, secondary containment integrity is not required.
- c. Secondary containment integrity does not exist based on both RB truck lock doors being open. As such, control rod blade replacement (core alteration) is not permitted.
- d. Secondary containment integrity does not exist based on both RB truck lock doors being open. Additionally, core reload is completed, and as such, control rod movement is not permitted.

Objective: O-RO-06-01-03, EO-3

K/A: 215005G218

Tier #: 2 **Group: 1**

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 93

The plant is operating at 100% power when instrument air is lost to the following valves:

- AO-7011A, Drywell Equipment Drain Sump Discharge to Radwaste
- AO-7017A, Drywell Floor Drain Sump Discharge to Radwaste.

Based on these conditions, which ONE of the following actions is(are) required?

Note: All other systems are fully operable.

- Ensure that AO-7011B, Drywell Equipment Drain Sump Discharge to Radwaste, and AO-7017B, Drywell Floor Drain Sump Discharge to Radwaste are open and that administrative controls are placed on the operation of AO-7011B and AO-7017B.
- Gag open AO-7011A and AO-7017A.
- Be in hot shutdown within 12 hours and in cold shutdown within the following 24 hours.
- Be in cold shutdown within 24 hours.

Answer: c

References:

Tech Spec 3.6.C.2.b.1
PNPS 5.3.8 (page 11/11)
10CFR55.43.(b)(2)

Explanation:

- This action is contrary to the requirements of Tech Spec 3.7.A.2.B that in the event any automatic Primary Containment Isolation Valve becomes inoperable, at least one containment isolation valve in each line having an inoperable valve shall be deactivated in the isolated condition.
- Gagging open AO-7011A and AO-7017A allows pumping of the sumps but does not address the requirements of Tech Spec 3.7.A.2.B.
- Correct Answer. Tech Spec 3.6.C.2.b.1 requires that at least one drywell sump monitoring system shall be operable; otherwise, be in Hot Shutdown within the next 12 hours and in Cold Shutdown within the following 24 hours.
- This action would only be required if no leakage detection systems were operable (Tech Spec 3.6.C.2.c).

Note: SRO Upgrade On-Shift Exam - Question #18

Objective: O-RO-06-01-03, EO-3

K/A: 268000K602

Tier #: 2 **Group:** 3

Question Source: Bank Modified

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 94

The plant is operating at 90% power with the Reactor Feed Pump Tripping Sequence switch in the ABC position. If the 'B' condensate pump tripped, which ONE of the following automatic actions would occur?

- a. The 'A' feed pump only would trip.
- b. The 'B' feed pump only would trip.
- c. The 'C' feed pump only would trip.
- d. All 3 feed pumps would trip.

Answer: a

References:

Feedwater and Condensate Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. With the RFP tripping sequence in the ABC position, when any condensate pump trips, the first RFP to trip will be the 'A' pump.
- b-d Same as above.

Note: SRO Upgrade Exam Week #4 - Question #11

Objective: O-RO-02-04-02, EO-9b

K/A: 256000A304

Tier #: 2 **Group:** 1

Question Source: Bank

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 95

The plant was operating at 100% power when a loss of 480 VAC bus B-21 occurred. Based on the loss of bus B-21, which ONE of the following describes the response of the Reactor Building Ventilation System and secondary containment pressure?

- a. RB supply and exhaust fans de-energize and the secondary containment becomes less negative.
- b. Only the RB exhaust fans de-energize and the secondary containment becomes less negative.
- c. RB supply and exhaust fans remain running and the secondary containment pressure remains constant.
- d. Only the RB supply fans de-energize and the secondary containment becomes more negative.

Answer: d

References:

PNPS 2.2.40, Attachment 2
10CFR55.41.(b)(7)

Explanation:

a-d Reactor Building supply fans supplied by B-21. Reactor Building exhaust fans supplied by B-19. Supply fans will lose power. With exhaust fans still running, containment will become more negative.

Objective: O-RO-02-08-05, EO-14

K/A: 288000K304

Tier #: 2 Group: 3

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 96

The plant is operating at 100% power. Which ONE of the following conditions would cause automatic closure of the condenser vapor valves and subsequent loss of main condenser vacuum?

- a. 70 psig steam pressure to the SJAE inlet.
- b. 10 psig downstream of the SJAE condenser.
- c. 2600 lbm/hr steam flow to the jet compressor.
- d. 225°F downstream of the SJAE condenser.

Answer: c

References:

Main Condenser Vacuum and Air Removal Reference Text (page 20/33)
10CFR55.41.(b)(7)

Explanation:

- a. Setpoint is 40 psig.
- b. Setpoint is 35 psig.
- c. Correct answer (<2750 lbm/hr)
- d. Setpoint is 250°F.

Note: (1) 1998 NRC RO Exam - Question #50, and (2) SRO Upgrade Exam Week #7 - Question #7

Objective: O-RO-02-04-03, EO-10

K/A: 271000A202

Tier #: 2 **Group:** 2

Question Source: Bank

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 97

The plant is at 30% power with RPV pressure at 955 psig. A shutdown is in progress following a record breaking 600 day run when an inadvertent main turbine trip occurs. Assuming no operator action is taken, which ONE of the following describes the expected RPV pressure several minutes following the turbine trip?

- a. 810 psig
- b. 940 psig
- c. 955 psig
- d. 1095 psig

Answer: b

References:

RPS Reference Text
MHC Reference Text
10CFR55.41.(b)(7)

Explanation:

- a. Group I isolation setpoint.
- b. Correct answer. Since at 30% power, first stage pressure will be above 108 psig, a turbine trip will cause a reactor scram. This will result in MHC controlling pressure at 940 psig.
- c. Pre-transient reactor pressure.
- d. Relief valve setpoint.

Objective: O-RO-02-07-02, EO-22

K/A: 245000A105

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 98

During normal plant operations the control room is maintained at a (1) pressure and during accident conditions (with initiation of the CREAM) at a (2) pressure.

- a. (1) positive, (2) negative
- b. (1) negative, (2) negative
- c. (1) negative, (2) positive
- d. (1) positive, (2) positive

Answer: d

References:

PNPS FSAR Volume 4 Section 10.17
10CFR55.41.(b)(7)

Explanation:

a-d During all modes of operation the control room is maintained at a positive pressure relative to the surrounding areas.

Objective: None identified

K/A: 290003A104

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Memory - Fundamental

SRO Exam Answer Key

Question Number: 99

The plant is in power ascension operating at 78% power with total core flow at 49×10^6 lbm/hr with recirculation pump speeds matched when a transient occurs resulting in the following:

- Total core flow drops to 46×10^6 lbm/hr
- Reactor power decreases to 76%
- Jet pump #5 and #10 at 2.6×10^6 lbm/hr each
- Jet pump #15 at 2.1×10^6 lbm/hr
- Jet pump #20 at 1.7×10^6 lbm/hr
- 'A' Jet Pump Total Flow at 26×10^6 lbm/hr
- 'B' Jet Pump Total Flow at 20×10^6 lbm/hr

Based on plant conditions, which ONE of the following describes the cause of the transient and the required actions?

- a. A failure of the 'A' recirculation loop flow instrumentation. Restore recirculation loop flows to within limits or be in Cold Shutdown within 24 hours.
- b. A failure of the 'B' recirculation loop flow instrumentation. Restore recirculation loop flows to within limits or be in Cold Shutdown within 24 hours.
- c. A failure of a 'B' recirculation loop jet pump. An orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.
- d. A failure of an 'A' recirculation loop jet pump. An orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.

Answer: c

References:

Tech Spec 3.6.E.1
10CFR55.43.(b)(2)

Explanation:

- a-b Although an instrumentation failure may account for the flow indications, it would not account for the power decrease. Additionally, the required action is for a mismatch of recirc pump speeds not recirc loop flows.
- c. Correct answer
- d. The jet pump riser failure occurred on the #20 jet pump which is on the 'B' recirculation loop. Therefore, failure of the 'A' recirculation loop jet pump is incorrect.

Objective: O-RO-06-01-03, EO-3

K/A: 202001K601

Tier #: 2 **Group: 2**

Question Source: New

Exam Level: SRO

Cognitive Level: Comprehension-Analysis

SRO Exam Answer Key

Question Number: 100

The plant is operating at 100% power when a loss of bus D-16 occurs. All other systems are aligned normally. Five minutes later bus D-16 is restored.

The expected response of 125 VDC panel D-6 upon the loss of D-16 will be to (1) and upon restoration of D-16 to (2).

- a. (1) immediately transfer D-17
(2) transfer back to D-16 after 2 minutes
- b. (1) transfer after 2 minutes to D-17
(2) immediately transfer back to D-16
- c. (1) immediately transfer to D-17
(2) immediately transfer back to D-16
- d. (1) immediately transfer to D-17
(2) remain on D-17 indefinitely unless manual action is taken to transfer back to D-16

Answer: a

References:

PNPS 2.2.14 (page 8/200)
10CFR55.41.(b)(7)

Explanation:

- a. Correct answer.
- b. Immediately transfers on a loss of 'A' 125 VDC battery, 2 minute delay on transfer back of 'A'
- c. The 2 minute delay occurs before the transfer back to the 'A' supply
- d. Upon restoration of the 'A' 125 VDC battery panel D-6 will auto transfer back after 2 minutes

Objective: O-RO-02-01-02, EO-3e

K/A: 263000K401

Tier #: 2 **Group:** 2

Question Source: New

Exam Level: RO

Cognitive Level: Comprehension-Analysis