

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #1 (1.0)

The following plant conditions exist:

Reactor Power = 6%, MODE 1  
 $T_{AVG} = 549^{\circ}\text{F}$   
Pressurizer Pressure = 2235 psig  
RCS Subcooling =  $98^{\circ}\text{F}$   
All 4 RCPs operating

34 RCP trips on overcurrent. In accordance with the Technical Specifications, what action, if any, is required?

- a. None. Technical Specifications allow operation with only 2 RCPs up to 10% reactor power.
- b. Immediately reduce reactor power to less than 5%.
- c. Restore 34 RCP to operation OR be in MODE 3 within 6 hours.
- d. None. Technical Specifications allow operation with no RCPs up to 10% reactor power.

ANSWER:

- c. Restore 34 RCP to operation OR be in MODE 3 within 6 hours.

KA: 015AA1.03 [3.7/3.8] 10 CFR 55.41(7)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: TS 3.4.5  
Question Source: IP3 Bank

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #2 (1.0)

Which of the symptoms below correctly describes an entry condition for ONOP-CVCS-3, Emergency Boration?

- a. Reactor critical and Rod Insertion Limit Low alarm on.
- b. Reactor power at 2% with Control Bank B at 124 steps.
- c. Reactor sub-critical and Rod Insertion Limit Low-Low alarm on.
- d. Reactor power at 20% with Control Bank D at 100 steps.

ANSWER:

- b. Reactor power at 2% with Control Bank B at 124 steps .

KA: 024 AK1.02

[3.6/3.9]

10CFR55.41(8,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-CVCS-3; Graph - RPC-1

Question Source: IP3 Bank

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QUESTION: #3 (1.0)

The unit is stable at 100% power and vacuum has started to decrease. The CRS suspects that an air ejector may be backfiring and dispatches you to determine if this is so. Which one of the following indications will you use to determine if backfiring is occurring?

- a. You can hear the air ejector backfire.
- b. The steam supply will oscillate rapidly on a backfiring air ejector.
- c. The air ejector suction piping will be hot to the touch.
- d. The steam pressure to the backfiring air ejector will be higher than the other air ejectors.

ANSWER:

- c. The air ejector suction piping will be hot to the touch.

KA: E05EA1.2 [3.7/4.0] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive level: H

Reference: ONOP-C-1 Note prior to step 5.5.1

Question Source: IP3 Bank

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QUESTION: #4 (1.0)

A fire in the flight panel forces evacuation of the control room. Which one of the statements below describes the actions necessary if the alternate source range indications do not come on scale after 15 minutes.

- a. Trip Reactor trip breakers locally or de-energize MG sets.
- b. Line up emergency power supply to the alternate source range channel 39.
- c. Locally emergency borate for approximately 35 minutes.
- d. Trip reactor coolant pumps to minimize flow through the core.

ANSWER:

- c. Locally emergency borate for approximately 35 minutes.

KA: 068AK3.17

[3.7/4.0]

10 CFR 55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-FP-1A Safe Shutdown from outside the control room, Att.1 - step 7 & Att.12., FP1A-10, E.O.s:1618.6 (LIC-ONP-01);

Question Source: IP3 Bank

FACILITY: Indian Point 3

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**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #5 (1.0)

Indian Point Unit 3 is operating at 100% power when a health physics technician informs the operating crew that the containment personnel airlock became stuck open when an at-power containment entry was attempted. The SRO recognizes that containment integrity does not exist. How long does the crew have to restore containment integrity before a plant shutdown to the Hot Shutdown condition must be started?

- a. 24 hours.
- b. 8 hours.
- c. 4 hours.
- d. 1 hour.

ANSWER:

- d. 1 hour.

KA: 069AK2.03 [2.8/2.9] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-CB-1; TS.

E.O.s: 6418.1 (LIC-ONP-12)

Question Source: IP3 Bank ONP-C #19

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QUESTION: #6 (1.0)

During a startup with the reactor critical at 1E-8 amps, the breaker from the No. 32 static inverter supply to instrument bus No. 32 trips open and the inverter fails to reverse transfer to MCC-33.

The result of the above will be:

- a. A reactor trip due to the de-energizing of Intermediate Range channel N35.
- b. The de-energizing of several nuclear instrument channels, with no effect on nuclear power.
- c. A source range high flux reactor trip due to the de-energizing of permissive P-6.
- d. A reactor trip due to the de-energizing of Intermediate Range channel N36.

ANSWER:

- a. A reactor trip due to the de-energizing of Intermediate Range channel N35.

KA: 015A3.02 [3.7/3.9] 10 CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-3, 3.0; System Description 27.5, pg. 15,16

Question Source: IP3 Bank **Modified**

FACILITY: Indian Point 3 Exam Date:

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QUESTION: #7 (1.0)

Main feedwater regulating valves are in automatic control and the plant is at 100% power.

Which of the following describes the effect, if any, on the Main Feedwater Regulating Valves (MFRV) if instrument bus 34 lost power?

- a. All four MFRVs would fail open due to a loss of power to their three element controllers.
- b. All four MFRVs would fail "as is" due to a loss of power to their three element controllers.
- c. All four MFRVs would fail closed due to a loss of power to their three element controllers.
- d. No effect, the MFRV three element controllers are not powered from this instrument bus.

ANSWER:

- c. All four MFRVs would fail closed due to a loss of power to their three element controllers.

KA: 016A2.03 [3.0/3.3] 10CFR55.41(5), 43(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-3, 3.0; E.O.s: 5146.4 (LIC-ONP-02);

Question Source: IP3 Bank ONP-C #159

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #8 (1.0)

Which of the following describes the fire system operation with all fire pumps in automatic?

- a. The jockey pumps cycle on and off as necessary to maintain header pressure. If pressure drops, the electric pump starts before the diesel pump.
- b. The jockey pumps cycle on and off as necessary to maintain header pressure. If pressure drops, the diesel pump starts before the electric pump.
- c. The jockey pumps run constantly, circulating water in the fire header. If pressure drops, the electric pump starts before the diesel pump.
- d. The jockey pumps run constantly, circulating water in the fire header. If pressure drops, the diesel pump starts before the electric pump.

ANSWER:

- a. The jockey pumps cycle on and off as necessary to maintain header pressure. If pressure drops, the electric pump starts before the diesel pump.

KA: 086A1.01 [2.9/3.3] 10CFR55.41(10), 43(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: SOP-FP-1, DBD 321 I section 1.0

Question Source: NRC Exam 11/20/98

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Comment: The jockey pumps cycle between 115 - 125 psig. To maintain pressure. The electric pump starts at 105 psig. And the diesel pump at 95 psig.

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QUESTION: #9 (1.0)

The plant is operating at 100% power in a normal electrical lineup. A Loss of 31 DC power panel results in a unit trip. The RO notices that 345 kV Breaker 3 indicates it is still closed.

Assuming 1 minute has elapsed since the trip, why is Breaker 3 still indicating closed and what action, if any, must be taken?

- a. Breaker 3 is still closed since not enough time has elapsed for it to receive a bus transfer signal to open. Wait 30 sec. for bus transfer.
- b. Breaker 3 is really open however the breaker indication did not change due to the loss of DC - No action required.
- c. Breaker 3 did not open since it lost control power when the DC was lost. Operator should force a trip by manually actuating relay F721.
- d. Breaker 3 did not open due to a loss of control power and cannot be opened. Operator should open MOD F1-3 to protect the turbine and generator.

ANSWER:

- c. Breaker 3 did not open since it lost control power when the DC was lost. Operator should force a trip by manually actuating relay F721.

KA:063A3.01

[2.7/3.1]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: Higher

Reference: ONOP-EL-5, Step 4.1.1; E.O.s: 5030.3 (LIC-ONP-22)

Question Source: IP3 Bank ONP-C #191

FACILITY: Indian Point 3

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QUESTION: #10 (1.0)

A plant startup is in progress with normal startup equipment alignment. At 6% power, both Main Boiler Feed Pumps trip. In accordance with ONOP-FW-1, Loss of Feedwater, which one of the following actions would be correct.

- a. Start the ABFW pumps as needed to maintain SG levels.
- b. Attempt a restart of one of the Main Boiler Feed Pumps.
- c. Trip the reactor, and go to E-0, Reactor Trip or Safety Injection.
- d. Trip the reactor if any SG level drops below 20%.

ANSWER:

- a. Start the ABFW pumps as needed to maintain SG levels.

KA: 059A1.03 [2.7/2.9] 10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-FW-1, Loss of Feedwater (4.1.a RNO); E.O.s: 1773.3 (LIC-ONP-04);

Question Source: IP3 Bank ONP-C #248 Modified

FACILITY: Indian Point 3 Exam Date:

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QUESTION: #11 (1.0)

Station Air (SA) system pressure decreases and stabilizes at 85 psig.

Which one of the following describes the effect on Instrument Air (IA) and SA systems if the instrument Air system pressure decreased to 88 psig?

- a. IA system pressure will stabilize at 88 psig and SA system pressure will increase to 88 psig when PCV-1142 opens at 90 psig SA pressure.
- b. SA system pressure will remain at 85 psig and IA system pressure will remain at 88 psig when PCV-1142 opens at 90 psig IA pressure.
- c. IA system pressure will decrease to 85 psig and SA system pressure will remain at 85 psig when PCV-1142 opens at 90 psig IA pressure.
- d. SA system pressure will remain at 85 psig and IA system pressure will remain at 88 psig when PCV-1142 opens at 90 psig SA pressure.

ANSWER:

- b. SA system pressure will remain at 85 psig and IA system pressure will remain at 88 psig when PCV-1142 opens at 90 psig IA pressure.

K/A: 079 K1.01 [3.0/3.1] 10CFR55.41(2-9)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-IA-1

Question Source: IP3 Bank ONP-C #266

FACILITY: Indian Point 3 Date:

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QUESTION: #12 (1.0)

Plant Operating and Emergency procedures require the operator to check if the intermediate range (IR) instruments are under-compensated if the source range (SR) instruments fail to energize within the expected time frame .

Which of the following indicates how this check is performed?

- a. Check the NR-45 Recorder Trace against the reference trace available in the graphs book.
- b. An under-compensated IR will indicate a slightly positive SUR as flux level approaches the SR.
- c. An under-compensated IR will level off at a flux level higher than the normal amp level.
- d. I & C only can determine if the IR is under-compensated.

ANSWER:

- c. An under-compensated IR will level off at a flux level higher than the normal amp level.

KA: 015K6.02

[2.6/2.9]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-NI-1, Nuclear Instrumentation Malfunction; LIC-IXC-05, Nuclear Instrumentation System; E.O.s: 5242.11 (LIC-ONP-28)

Question Source: IP3 Bank ONP-C #343

FACILITY: Indian Point 3

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QUESTION: #13 (1.0)

Which one of the following is a consequence of transferring pressurizer backup (B/U) heater group 31 to local control?

- a. The low level-heater cutout is shifted from 18% to 15% causing possible heater damage.
- b. The low pressure Reactor Trip signal is bypassed from PT-455 changing the coincidence to 2/2 for the trip signal.
- c. All B/U heater groups become inoperable and only the 31 B/U heater group can be operated.
- d. The SI stripping signal to 31 B/U heater group is defeated causing the 31 EDG to be declared inoperable.

ANSWER:

- d. The SI stripping signal to 31 B/U heater group is defeated causing the 31 EDG to be declared inoperable.

KA: 027AK2.03 [2.6/2.8] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RCS-2 Caution prior to step 3.3.6; E.O.s: 2326.1 (LIC-ONP-29)

Question Source: IP3 Bank ONP-C #412

FACILITY: Indian Point 3 Exam Date:

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QUESTION: #14 (1.0)

The unit is at 190 degrees F and on RHR when Offsite Power is lost and the Emergency Diesels fail to supply power to the 480V buses. Power is subsequently restored from offsite and equipment lineups are returned to normal. When starting the CCW pumps, the pump control switch is placed to the STOP/OFF position before attempting to start the pump. What happens when the switch is placed in STOP/OFF?

- a. It resets the pumps 86 lockout relay.
- b. It charges the breaker closing spring.
- c. It resets the annunciator.
- d. It bypasses the Low Pressure Start signal for 60 seconds.

ANSWER:

- a. It resets the pumps 86 lockout relay.

KA: 026AK3.03 [4.0/4.2] 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-4 Step 5.40; E.O.s: 5469.3 (LIC-ONP-21);

Question Source: IP3 Bank ONP-C #181

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QUESTION: #15 (1.0)

The reactor is at 100% steady state conditions when indications of a RCS leak is received. Which of the following conditions would require a manual reactor trip and safety injection actuation?

- a. One charging pump is operating at maximum speed with letdown isolated and pressurizer level is slowly decreasing (rate of about 5 gpm).
- b. Two charging pumps are operating with a 75 gpm orifice in service and pressurizer level stabilizes at 20%.
- c. Pressure level decreases to 15% with one charging pump running at maximum speed.
- d. RCS pressure decreases to 1800 psig with two charging pumps running at maximum speed.

ANSWER:

- d. RCS pressure decreases to 1800 psig with two charging pumps running at maximum speed.

KA: 074EK3.03

[3.4/3.8]

10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RCS-7, Foldout page

Question Source: NEW

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QUESTION: #16 (1.0)

During performance of ONOP-CC-1, Loss of Component Cooling, if there is a loss of component cooling water flow to the non-regenerative heat exchanger, charging and letdown should be isolated and excess letdown placed in service. Why is excess letdown placed in service?

- a. To allow continued RCS purification.
- b. To keep thermal sleeves at equilibrium.
- c. To permit RCS boron adjustments.
- d. To compensate for RCP seal injection .

ANSWER:

- d. To compensate for RCP seal injection.

KA: 022AK3.03 [3.1/3.3] 10CFR55.4195,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-CC-1, Loss of Component Cooling, Step 5.3; E.O.s: 245.1 (LIC-ONP-14)

Question Source: IP3 Bank ONP-C #37

FACILITY: Indian Point 3 Exam Date:

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QUESTION: #17 (1.0)

The plant is operating at 100% power when a total loss of main feedwater initiates a reactor trip signal, but the reactor fails to trip. The following events occur:

- All attempts to force a reactor trip fail.
- The AFW system actuates, with AFW pumps operating.
- The turbine remains on-line.
- Reactor power remains near 100%.
- RCS coolant temperature and pressure slowly increase from 100% values.

For the operator to mitigate this transient, the appropriate action in accordance with EOPs is to :

- a. Open the PORVs immediately because the increasing temperature will cause a severe RCS overpressure.
- b. Reduce turbine load slowly to avoid a rapid RCS temperature and pressure increase.
- c. Manually actuate safety injection to start the high head safety injection pumps and isolate containment.
- d. Trip the turbine to maintain steam generator inventory and limit the RCS temperature transient.

ANSWER:

- d. Trip the turbine to maintain steam generator inventory and limit the RCS temperature transient.

KA: 054 AK3.04 [4.4/4.6] 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

References: EOP Bases EOP-FR-S-1

Question Source: NRC exam 11/98 #28

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QUESTION: #18 (1.0)

A Monitor Tank release is in progress. Which of the following would require an immediate termination of the release per ONOP-RM-1, Failures of Radiation Monitors?

- a. FT-1064, Release Line Flow Transmitter, has been declared inoperable and tank level is decreasing.
- b. R-18, Waste Disposal Liquid Activity Monitor, has been declared inoperable.
- c. The Monitor Tank Level transmitter has been declared inoperable, but FT-1064, Release Line Flow Transmitter, is operable.
- d. The Monitor Tank low level alarm has been declared inoperable.

ANSWER:

- b. R-18, Waste Disposal Liquid Activity Monitor, has been declared inoperable.

KA: 059AK3.03 [2.7/2.8] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RM-1, Attachment 1, step 4.3

Question Source: IP3 Bank ONP-C #495

FACILITY: Indian Point 3 Exam Date:

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QUESTION: #19 (1.0)

An excessive load decrease has just occurred due to a failed closed Turbine Stop valve. Unit load has decreased to 550 MW and Tavg is 3°F less than Tref. If the Turbine Stop valve that failed closed is the Lower Right valve and the Upper Left Turbine Stop valve failed closed during the load decrease, what action must you take per ONOP-TG-1, "Excessive Load Increase or Decrease? "

- a. Lower turbine load to approximately 450 MW using the load limiter.
- b. Stabilize the unit and do not let load increase to 560 MW.
- c. Trip the unit and perform E-0, Reactor Trip or Safety Injection.
- d. Reset Steam Dump and reduce load at least 50 MW using manual control.

ANSWER:

- c. Trip the unit and perform E-0, Reactor Trip or Safety Injection.

KA: 007EA1.01 [3.7/3.4] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-TG-1, Step 3.3.3; E.O.s: 6146.1 (LIC-ONP-43)

Question Source IP3 Bank ONP-C #823

FACILITY: Indian Point 3

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QUESTION: #20 (1.0)

An RCS sample was drawn 2 hours ago while at 50%. The activity results were:

Dose Equivalent I-131 at 145  $\mu\text{Ci/g}$

How long may the plant continue to operate per Technical Specifications assuming the above sample results do not change? Refer to the handout for Technical Specification 3.4.16.

- a. Must immediately place the plant in MODE 3.
- b. May operate up to 48 hours up to 60%, then must go to MODE 3 within 6 hours.
- c. May operate up to 46 hours up to 60 %, then must go to MODE 3 within 4 hours.
- d. The plant may stay at 50 % power indefinitely.

ANSWER:

- b. May operate up to 48 hours up to 60%, then must go to MODE 3 within 6 hours.

KA: 076AK3.05 [2.9/3.6] 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

Reference: Tech Spec 3.1.D; E.O.s: 6179.3 (LIC-ONP-30);

Question Source: IP3 Bank ONP-C #448 - MOD.

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**ENSURE TECHNICAL SPECIFICATION 3.1.D AND FIGURE 3.1-3 PROVIDED**

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QUESTION: #21 (1.0)

The following plant conditions exist:

Plant is in refueling mode.  
Transfer tube gate is open.  
Isolation gate valve is open.  
An irradiated fuel assembly is in the RCCA change fixture.

The following changes in plant conditions occur:

Reactor pit sump pump indicates on  
"High Level Reactor Pit" alarm annunciates  
Containment sump and Recirculation sump levels are increasing slowly.  
R-2 is in alarm and increasing  
R-7 is in alarm and increasing

What action(s), in accordance with ONOP-RP-3, must the crew take based upon the above plant conditions?

- a. Place the irradiated fuel assembly in the upender in a vertical position.
- b. Place the irradiated fuel assembly directly west of the RCCA change fixture and unlatch the fuel from the crane.
- c. Place the irradiated fuel assembly in any accessible spent fuel pit location.
- d. Place the irradiated fuel assembly in any accessible core location.

ANSWER:

- d. Place the irradiated fuel assembly in any accessible core location.

KA: 036AK2.02 [3.4/3.9] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RP-3 STEP 5.2

Question Source: IP3 Bank ONP-C #621- MOD

FACILITY: Indian Point 3

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QUESTION: #22 (1.0)

The plant is operating at 45% steady state power. Which one of the following, in accordance with ONOP-RCS-5, requires an immediate manual reactor trip if conditions continue to degrade as listed?

- a. RCP 31 seal injection temperature is 138 degrees F and is increasing at one (1) degree F/hr.
- b. RCP 32 frame vibration is 4 mils and stable.
- c. RCP 33 upper bearing temperature is 200 degrees F and increasing at 60 degrees F/hr.
- d. RCP 34 shaft vibration is 18 mils and is increasing at 0.4 mil/hr.

ANSWER:

- c. RCP 33 upper bearing temperature is 200 degrees F and increasing at 60 degrees F/hr.

KA: 003K4.04 [2.8/3.1] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System Description 1.3 "Reactor Coolant Pump," pg.19; E.O.1016.6; LIC-NSS-3

Question Source: IP3 Bank NSS #91 Modified

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #23 (1.0)

Which of the following is the reason why a nitrogen blanket is maintained on the Pressurizer Relief Tank (PRT)?

- a. To provide an additional volume of gas to ensure that the PRT Rupture disc relieves at its design pressure.
- b. To provide the driving force necessary for the sampling system.
- c. To eliminate the possibility of any air inleakage.
- d. To ensure the water volume in the PRT remains subcooled if a PZR PORV or Safety Valve lifts.

ANSWER:

- c. To eliminate the possibility of any air inleakage.

KA: 007A1.02 [2.7/2.9] 10 CFR 41.5, 45.5

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 1.4 "Pressurizer and PRT", pg.26

Question Source: New

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #24 (1.0)

Select the expected plant response following a steam generator (SG) tube leak.

- a. The Steam Jet Air Ejector Blower receives an automatic trip signal.
- b. Continued R-19 (SG Blowdown) trend up after R-19 alarm received.
- c. Main Steam to Hoggers Pressure Regulator Valve (PCV-1133) closes.
- d. Steam Jet Air Ejector exhaust redirected through filter prior to exhaust.

ANSWER:

- c. Main Steam to Hoggers Pressure Regulator Valve (PCV-1133) closes.

KA: 037AK3.10 [3.3/3.7] 10 CFR 41.5, 41.10, 45.6, 45.13

Exam Level: RO/SRO

Cognitive Level: F

Reference: CNOP-SG-1, Section 3.0; E.O.s: 5031.3 (LIC-ONP-42)

Question Source: IP3 Bank ONP-C #784

FACILITY: Indian Point 3

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QUESTION: #25 (1.0)

Given the following conditions:

The plant is conducting a controlled shutdown due to excessive SG tube leakage.  
Reactor power is currently 45%.

WHICH ONE of the following conditions requires an immediate manual reactor trip and safety injection actuation per ONOP-SG-1, "Steam Generator Tube Leak"?

- a. Pressurizer level, presently at 18%, is slowly decreasing (about 1% in 3 minutes) with one charging pump operating at maximum speed and letdown isolated.
- b. Pressurizer level has slowly decreased to 20% with two charging pumps operating at maximum speed and 75 gpm letdown flow.
- c. Pressurizer level decreases to 10% with one charging pump running at maximum speed.
- d. Pressurizer level steady with current primary to secondary leakrate determined to be 60 gpm.

ANSWER:

- d. Pressurizer level steady with current primary to secondary leakrate determined to be 60 gpm.

KA: G2.4.49

[4.0/4.0]

10 CFR 41.1, 43.2, 45.6

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-SG-1, Section 4.0; Foldout Page 1.0

Question Source: IP3 Bank ONP-C #786 Modified

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QUESTION: #26 (1.0)

Which of the following do the Emergency Operating Procedures use as an indication of natural circulation flow occurring within the reactor coolant system (RCS)?

1. RCS pressurizer level DECREASING or STABLE.
2. S/G pressures STABLE.
3. Core exit thermal couples STABLE.
4. RCS T-hot's at T-sat for S/G PRESSURE.

- a. 1 and 3.
- b. 1, 2, and 4.
- c. 2 and 3.
- d. 2, 3, and 4.

ANSWER:

- c. 2 and 3.

KA: G2.4.21 [3.7/4.3] 10 CFR 43.5/45.12

Exam Level: RO/SRO

Cognitive Level: F

Reference: ES-1.2, Post LOCA Cooldown and Depressurization, Attachment 1

Question Source: New

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #27 (1.0)

The plant was operating at 100% power when a Rx Trip and Safety Injection occurred. The following conditions now exist:

'31' S/G pressure is decreasing rapidly.

'31' S/G steam flow is 2.5E6 lbm/hr.

RCS cold leg temperatures are 238 degrees F and decreasing.

Containment pressure is 8.5 psig and increasing.

All MSIVs and bypass valves are closed.

Total AFW flow is 395 gpm.

Highest reading power range instrument is 1.5% and decreasing.

Assuming all emergency equipment functioned as designed and no operator action, which Critical Safety Function is applicable?

- a. RCS Integrity.
- b. Heat Sink.
- c. Subcriticality.
- d. Containment.

ANSWER:

- a. RCS Integrity.

KA: G2.4.5

[2.9/3.6]

10 CFR 41.10, 43.5, 45.13

Exam Level: RO/SRO

Cognitive Level: H

Reference:

Question Source: New

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #28 (1.0)

Regarding the Fuel and Core Component Handling System, which one of the following correctly describes the MAXIMUM Bridge speed limits.

NOTE: The Boundary Zone Bypass Pushbutton has NOT been ENABLED

- a. 10 FPM when the bridge is located outside of the boundary zone limits.
- b. 3 FPM when bridge is located outside of the boundary zone limits.
- c. 10 FPM when the bridge is inside the core area and the gripper is not at full up loaded or inside the mast and unloaded.
- d. 3 FPM when the bridge is inside the core area and the gripper is not at full up loaded or inside the mast and unloaded.

ANSWER:

- d. 3 FPM when the bridge is inside the core area and the gripper is not at full up loaded or inside the mast and unloaded.

KA: G2.2.27

[2.6/3.5]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: Lesson Plan-FHD- L01-page 24-step D.8.b.

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #29 (1.0)

Which one of the following explains why it is preferable to leave the RCPs running during a small break LOCA if RCS subcooling is less than 40°F, but no HHSI pumps are running?

- a. To enable use of pressurizer spray.
- b. To delay the onset of inadequate core cooling.
- c. To limit single phase inventory loss out the break.
- d. To decrease loop transit time for emergency boration.

ANSWER:

- b. To delay the onset of inadequate core cooling.

KA: E07 EA1.2 [3.2/3.7] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP-E-1 step 1 basis

Question Source: IP3 Bank EOP-C Q#235

FACILITY: Indian Point 3 Exam Date:

COMMENTS:

- a. – aux spray is available if needed. Would not increase inventory loss out break to make spray available.
- c. – increases inventory loss out break.
- d. – this isn't a concern.
- b. – this helps provide heat removal through the break and the SGs.

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #30 (1.0)

The crew has entered FR-P.1, Response to Imminent Pressurized Thermal Shock Conditions, and are attempting to depressurize the RCS. Why is it preferred that the pressurizer PORVs be used to depressurize the RCS instead of using auxiliary spray?

- a. It is easier to control pressure with the PORVs.
- b. PORV blocks can be used to limit pressure decrease.
- c. Letdown is not in service to preheat auxiliary spray.
- d. It is easier to control pressurizer level with the PORVs.

ANSWER:

- c. Letdown is not in service to preheat auxiliary spray.

KA: E08 EK1.1 [3.5/3.8] 10CFR55.41(8)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP Bases-FR-P.1 step 16

Question Source: IP3 Bank EOP-C Q#250

FACILITY: Indian Point 3 Exam Date:

COMMENTS:

Letdown is not in service to preheat the aux spray.

- a. – aux spray provides better pressure control than the PORVs.
- b. – procedure does not mention blocks and blocks are slower to stop excursion than the PORVs.
- d. – FR-P.1 places charging in service in an earlier step.

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #31 (1.0)

The unit trips on a loss of condenser vacuum. Vacuum eventually levels off at 22 inches of Hg. The operator transfers the steam dump control from temperature mode to pressure mode. The output signal from the pressure controller is at 50%.

What effect will these conditions have on the high pressure (HP) and low pressure (LP) steam dumps?

- a. The HP steam dumps are open. The LP steam dumps are open.
- b. The HP steam dumps are open. The LP steam dumps are closed.
- c. The HP steam dumps are closed. The LP steam dumps are open.
- d. The HP steam dumps are closed. The LP steam dumps are closed.

ANSWER:

- c. The HP steam dumps are closed. The LP steam dumps are open.

KA: 035 A1.02

[3.5/3.8]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 18.1 Sect. 2.1.1

Question Source: IP3 NRC exam 11/98 #9

FACILITY: IP3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #32 (1.0)

Which one of the following is an indication that recombination is occurring after having placed the Hydrogen Recombiners in service?

- a. Hydrogen Recombiner power increases to 20 KW.
- b. Containment dewpoint decreases after Hydrogen Recombiners are placed in service.
- c. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.
- d. Containment pressure decreases after Hydrogen Recombiners are placed in service.

ANSWER:

- c. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.

KA: 028 A1.01

[3.4/3.8]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System Description 10.9 Sect. 2.2 and 3.1, SOP-CB-007

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #33 (1.0)

Which one of the following describes the power supplies for the Hydrogen Recombiners?

- a. 31 Hydrogen Recombiner is supplied from MCC-36A.  
32 Hydrogen Recombiner is supplied from MCC-36B.
- b. 31 Hydrogen Recombiner is supplied from MCC-36C.  
32 Hydrogen Recombiner is supplied from MCC-36A.
- c. 31 Hydrogen Recombiner is supplied from MCC-36B.  
32 Hydrogen Recombiner is supplied from MCC-36C.
- d. 31 Hydrogen Recombiner is supplied from MCC-36C.  
32 Hydrogen Recombiner is supplied from MCC-36B.

ANSWER:

- d. 31 Hydrogen Recombiner is supplied from MCC-36C.  
32 Hydrogen Recombiner is supplied from MCC-36B.

KA: 028 K2.01

[2.5/2.8]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 10.9 Sect. 2.2

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #34 (1.0)

Thermal barrier cooling is being restored to the Reactor Coolant Pumps (RCPs) after isolation. Seal leakoff temperatures are in the range of 240 - 250°F. Component Cooling Water (CCW) to the seals must be:

- a. Established slowly to prevent the introduction of steam into the CCW system.
- b. Restored as soon as possible to make the RCPs available for cooldown.
- c. Established after seal injection established to prevent thermal shocking seals.
- d. Restored as soon as possible to reduce the possibility of a seal LOCA.

ANSWER:

- a. Established slowly to prevent the introduction of steam into the CCW system.

KA: 008 K3.03

[4.1/4.2]

10CFR55.41(10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RCS-5 CAUTION

Question Source: IP3 Bank ONP-C Q#481

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #35 (1.0)

Indian Point Unit 3 is in MODE 4 with the RCS at 225 degrees F and 400 psig and RHR in service. The operating crew observes decreasing level in component cooling water (CCW) surge tanks 31 and 32. Where could a leak have developed which would provide these indications?

- a. The Non-regenerative heat exchanger.
- b. The Seal Water Return heat exchanger.
- c. The Thermal Barrier heat exchanger.
- d. The RHR heat exchanger.

ANSWER:

- b. The Seal Water Return heat exchanger.

KA: 005 K1.01

[3.2/3.4]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-CC-1

Question Source: IP3 Bank ONP-C Q#46, NRC SRO EXAM 4/15/96

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #36 (1.0)

The smoke alarm has actuated for the 31 EDG. The fire location has not been confirmed. The correct initial response to this alarm IAW ONOP-FP-1 would be which one of the following?

- a. Sound the fire alarm immediately.
- b. Send an NPO to investigate the suspected area(s).
- c. Send the fire brigade to investigate the suspected area(s).
- d. Announce the suspected fire location over the PA system.

ANSWER:

- b. Send an NPO to investigate the suspected area(s).

KA: 067 AA2.03

[3.3/3.5]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-FP-1, step 4.1

Question Source: IP3 Bank ONP-C Q#213, Modified

FACILITY: Indian Point 3

Exam Date:

### IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #37 (1.0)

The Unit is operating at 100% power. Following a surveillance test, Emergency Diesel Generator (EDG) 31 is shutdown and placed in automatic, but the NON-SI BLACKOUT LOGIC was NOT reset (lamp is NOT lit). The logic is reset for the other EDGs. Subsequently a Loss of Offsite Power/Generator Trip occurs with NO Safety Injection. Select the answer which correctly states the plant response to NOT resetting the NON-SI BLACKOUT LOGIC.

- a. All three EDGs will start and energize 480 VAC buses. Pumps (SW, CCW, and AFW) will AUTOMATICALLY sequence onto buses 5A and 6A.
- b. Only EDGs 32 and 33 will start and energize 480 VAC buses. Pumps (SW, CCW, and AFW) will NOT AUTOMATICALLY sequence onto any 480 VAC buses.
- c. All three EDGs will start and energize 480 VAC buses. Pumps (SW, CCW, and AFW) will NOT AUTOMATICALLY sequence onto ANY of the 480 VAC buses.
- d. Only EDGs 32 and 33 will start and energize 480 VAC buses. Pumps (SW, CCW, and AFW) will AUTOMATICALLY sequence onto buses 5A and 6A.

ANSWER:

- a. All three EDGs will start and energize 480 VAC buses. Pumps (SW, CCW, and AFW) will AUTOMATICALLY sequence onto buses 5A and 6A.

KA: 064 A2.16

[3.3/3.7]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: SOP-EL-1, System Description 27.3 alarm table

Question Source: IP3 Bank ESS-C Q#23

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #38 (1.0)

The Diesel Generator (DG) Automatic Voltage Control Rheostat is used to \_\_\_\_\_. (fill in the blank)

- a. Adjust DG KVARs when the DG is in parallel with another power source.
- b. Adjust DG Voltage when the DG is in parallel with another power source.
- c. Adjust DG KVARs when the bus load is being carried only by the DG.
- d. Adjust DG KVARs and Voltage when the bus load is being carried only by the DG.

ANSWER:

- a. Adjust DG KVARs when the DG is in parallel with another power source.

KA: 064 A1.03

[3.2/3.3]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: SOP-EL-1, NOTE at step 4.2.5

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #39 (1.0)

Which one of the following describes, IAW EOPs, the operation of Containment Spray Pump 31 during the RECIRCULATION MODE of Safety Injection.

- a. Containment Spray Pump 31 continues to operate until RWST level reaches <1.5', then it must be MANUALLY secured.
- b. Containment Spray Pump 31 is AUTOMATICALLY secured when RECIRCULATION SWITCH NO. 8 is positioned to ON.
- c. Containment Spray Pump 31 continues to operate until RWST level reaches <11.5', then it must be MANUALLY secured.
- d. Containment Spray Pump 31 is AUTOMATICALLY secured when RECIRCULATION SWITCH NO. 1 is positioned to ON.

ANSWER:

- a. Containment Spray Pump 31 continues to operate until RWST level reaches <1.5', then it must be MANUALLY secured.

KA: 026 A2.07

[3.6/3.9]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System Description 10.2, Section 3.0 - system operation, ES1.3 Att. 6

Question Source: IP3 Bank EOP-C-Q#45 Modified

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #40 (1.0)

All of the analog position indicators on the flight panel have failed to zero and all of the rod bottom lights are NOT lit, indicating a loss of power. What method is available for determining the actual rod position?

- a. Use the digital step counters.
- b. Swap to the backup power supply.
- c. Use the plant computer.
- d. Have I&C use a digital voltmeter.

ANSWER:

- b. Swap to the backup power supply.

KA: 014 A1.02

[3.2/3.6]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: SOP-RC-1 step 4.6

Question Source: NRC exam 11/98 #66

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #41 (1.0)

While performing subsequent action steps of ONOP-RPC-1, Instrument Failures, it cautions you to check redundant channel trip status lights when preparing to take a protection instrument channel out of service. What is the reason for the caution?

- a. If redundant bistables are already tripped, the coincidence for a reactor trip will be made up by tripping the bistables for the second channel.
- b. If redundant bistables are not in the tripped condition, it will cause a protection channel trip when removing the failed channel from service.
- c. If redundant bistables are already tripped, the minimum channel redundancy required by TS will not be met if the second channel is removed from service.
- d. If redundant bistables are not in the tripped condition, it will cause a trip when the channel is removed from service by eliminating the redundancy.

ANSWER:

- a. If redundant bistables are already tripped, the coincidence for a reactor trip will be made up by tripping the bistables for the second channel.

KA: 012 K4.01

[3.7/4.0]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RPC-1 Caution at the start of each attachment.

Question Source: IP3 Bank ONP-C Q#645

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #42 (1.0)

The plant is cooled down to MODE 5. Shortly after RHR is placed in service, RCS pressure begins to increase. Before the operators can determine the cause of the pressure increase, a PRZR PORV opens. A few minutes later, pressure is noted to be 650 psig and stable.

While evaluating this event the operators check the status of the RHR Loop isolation valves 730/731. Given the above conditions, these valves should be \_\_\_\_\_ in order to \_\_\_\_\_. (fill in the blanks)

- a. Open; ensure adequate suction head for the RHR pumps.
- b. Open; provide a pressure relief path for RCS.
- c. Closed: prevent over pressurization of the RHR system.
- d. Closed: prevent RHR cooling from aggravating this Cold Overpressure concern.

ANSWER:

- c. Closed; prevent over pressurization of the RHR system.

KA: 006 K3.01

[4.1/4.2]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RHR-1, LIC-ONP-06

Question Source: IP3 Bank ONP-C Q#645

FACILITY: Indian Point 3

Exam Date: REFERENCES:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #43 (1.0)

You are performing a natural circulation cooldown and depressurization IAW ES-0.3 "Natural Circulation Cooldown With Steam Void in the Vessel (with RVLIS)". Which one of the following conditions must be maintained to prevent possible loss of natural circulation due to steam binding of the Steam Generators?

- a. RVLIS (full range) level must be maintained less than 75%.
- b. Pressurizer level must be maintained between 29% and 90%.
- c. Upper head void must be maintained above the level of the cold leg penetration.
- d. Upper head void must be maintained above the level of the hot leg penetration.

ANSWER:

- d. Upper head void must be maintained above the level of the hot leg penetration.

KA: E10 EK2.2

[3.6/3.9]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP lesson plan section XXXIII.

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #44 (1.0)

Given the following:

SG level is decreasing.  
Loop Delta-T is constant.  
Containment pressure is increasing.  
Steam Generator pressure is decreasing.

Which ONE (1) of the following transients is indicated by the above conditions?

- a. Steam Break inside containment.
- b. Feed Break inside containment.
- c. Steam Generator Tube Rupture.
- d. LOCA inside containment.

ANSWER:

- b. Feed Break inside containment.

KA: E12 EA1.2- RO, 009 EA2.2-SRO

[3.5/3.7]

10CFR55.41(7), 43(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP E-0 Lesson plan

Question Source: IP3 Bank EOP-C Q#217

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #45 (1.0)

While in ONOP-CVCS-3, Emergency Boration, Initial Operator Actions, it directs the operator to "Close Boric Acid Storage Tank Recirculation Flow Controllers, HCV-104 and HCV-105." The reason this action is taken is to...

- a. prevent the Boric Acid Storage Tanks (BAST) from over-flowing.
- b. prevent cavitation of the Boric Acid Transfer Pump's (BATPs)
- c. maximize Boric Acid flow to the suction of the Charging Pumps.
- d. ensure only the highest Boric Acid concentration is available to the BATPs.

ANSWER:

- c. maximize Boric Acid flow to the suction of the Charging Pumps.

KA: 024 AK2.03

[2.5/2.6]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-CVCS-3, LIC-ONP-18, Emergency Boration

Question Source: IP3 Bank ONP-C Q#112

FACILITY: Indian Point 3

Exam Date:

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #46 (1.0)

Given the following:

- $\Delta I$  is at the middle of the target band.
- The unit has been at 50% power for the past seven (7) days.
- Tavg and Tref are matched.
- Bank D is at 160 steps.
- The unit experiences a continuous rod withdrawal event.

The difference between the actual  $\Delta T$  and OT $\Delta T$  (overtemperature delta T) trip setpoint will:

- a. decrease because pressurizer pressure will increase.
- b. decrease because  $\Delta I$  will become more positive.
- c. increase because Tavg will increase.
- d. increase because  $\Delta I$  will become more negative.

ANSWER:

- b. decrease because  $\Delta I$  will become more positive.

KA: 001 AA2.04

[4.2/4.3]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: LP-LIC-IXC-13 section II.A.6.d

Question Source: NRC exam 11/98 #17

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #47 (1.0)

Which one of the following describes the effect on the Engineered Safeguards System for a loss of DC power to the sequencing relays?

- a. Blackout loading will occur instead of SI loading.
- b. There will be no stripping or starting signal on any 480V Bus.
- c. Bus overloading will occur because there will be no Bus stripping signal.
- d. The timing sequencer will cycle but will not actuate any equipment.

ANSWER:

- b. There will be no stripping or starting signal on any 480V Bus.

KA: 013 A2.05 [3.7/4.2] 10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ESS-01 lesson plan, System description 10.0

Question Source: NRC exam 7/96

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #48 (1.0)

The following conditions exist:

The plant is at 100% power.  
VCT level is 46% with no makeup in progress.  
VCT makeup control is inadvertently left in MANUAL.  
Assume RCS leak rate of 0.3 gpm

Which one of the following describes the response of the system if no operator actions are taken?

- a. The VCT level will fluctuate between 29% and 46%.
- b. The VCT level will rise and the high level alarm will actuate.
- c. The VCT level will remain stable unless there is power change.
- d. The VCT level will decrease and the low level alarm will actuate.

ANSWER:

- d. The VCT level will decrease and the low level alarm will actuate.

KA: 004 A1.06 [3.0/3.2] 10CFR55.41(5)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: LIC-PSA-01 step E.13  
Question Source: NRC exam 7/96

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #49 (1.0)

Which one of the following describes the power supplies for the reactor protection system bistables and for the operation of the reactor trip breakers?

- a. Reactor Protection Bistables are powered from 118 VAC Instrument Bus.  
Reactor trip breakers are powered from 125 VDC Distribution Panels
- b. Reactor Protection Bistables are powered from 125 VDC Instrument Bus.  
Reactor trip breakers are powered from 125 VDC Distribution Panels
- c. Reactor Protection Bistables are powered from 118VAC Instrument Bus.  
Reactor trip breakers are powered from 118 VAC Distribution Panels
- d. Reactor Protection Bistables are powered from 125VDC Instrument Bus.  
Reactor trip breakers are powered from 118 VAC Distribution Panels

ANSWER:

- a. Reactor Protection bistables are powered from 118 VAC Instrument Bus.  
Reactor trip breakers are powered from 125 VDC Distribution Panels

KA: 012 K2.01 [3.3/3.7] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 28.0 section 2.4.1

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #50 (1.0)

The plant is critical at twenty-five percent power with normal system lineups. If NO operator action is taken, how will the plant respond if a leak of 50 gpm develops just downstream of LCV-459 on the letdown line in the containment? Assume indicated letdown flow remains at 75 gpm.

- a. A reactor trip will occur on low PRZR pressure, due to the large drop in PRZR level caused by the leak.
- b. The speed of the in-service charging pump will increase and PRZR level will stabilize.
- c. Si will automatically actuate on low PRZR level.
- d. The reactor will trip on high PRZR level.

ANSWER:

- d. The reactor will trip on high PRZR level.

KA: 011 K5.13 [3.2/3.7] 10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RCS-7

Question Source: IP3 Bank ONP-C 507

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #51 (1.0)

Which one of the following statements describes how the Pressurizer Pressure Control System would respond if the Controlling pressure channel were to fail full scale high? Assume No operator action.

- a. Both PRZR PORVs would open until actual pressure decreased below 2185 psig.
- b. The PRZR PORV for that channel would open and remain open.
- c. Both PRZR spray valves would open until actual pressure dropped below 2185 psig.
- d. Both PRZR spray valves would open and remain open.

ANSWER:

- d. Both PRZR spray valves would open and remain open.

KA: 010 A3.02 [3.6/3.5] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RPC-1

Question Source: IP3 Bank ONP-C 659

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #52 (1.0)

Which one of the following describes the reset and re-initiation logic for the Containment Phase "A" isolation signal and valves if the signal exists in conjunction with a SI actuation signal ?

Assume plant conditions would allow for either or both signals to be reset.

- a. Once the Containment Phase "A" isolation signal is reset, containment isolation valves will reposition automatically and the containment isolation initiation signal will automatically be re-enabled.
- b. Once the Containment Phase "A" isolation and SI actuation signals are reset, containment isolation valves will reposition automatically and the containment isolation initiation signal will automatically be re-enabled.
- c. Once the Containment Phase "A" isolation signal is reset, the containment isolation initiation signal will automatically be re-enabled. Containment isolation valves must be re-positioned manually
- d. Once the Containment Phase "A" isolation and SI actuation signals are reset, the containment isolation initiation signal will automatically be re-enabled. Containment isolation valves must be repositioned manually.

ANSWER:

- d. Once the Containment Phase "A" isolation and SI actuation signals are reset, the containment isolation initiation signal will automatically be re-enabled. Containment isolation valves must be repositioned manually.

KA: 006 K4.30

[3.6/3.9]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System description 10 section 2.3.6

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #53 (1.0)

Which one of the following describes your responsibilities for procedure usage IAW AP-4, Procedure Use and Adherence.

- a. Informational Use procedures may be performed from memory and a copy at the work site is required.
- b. Reference Use procedures, unless designated Continuous Use, may be performed from memory and a copy at the work site is required.
- c. Continuous use procedures may NOT be performed from memory and a copy at the work site is required.
- d. Multiple Use procedures, unless designated Informational Use, may NOT be performed from memory and a copy at the work site is NOT required.

ANSWER:

- c. Continuous use procedures may NOT be performed from memory and a copy at the work site is required.

KA: G2.1.20 [3.6/3.9] 10CFR55.41(10), 43(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: AP-4 Rev.20 Section 4.

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #54 (1.0)

Which one of the following correctly describes the RO/BOP responsibilities IAW OD-36, "Operator Rounds and Log Sheets"

- a. The RO is responsible for maintaining the Unit Log Book and the Control Room Log readings
- b. The BOP is responsible for maintaining the High Tension Log and maintaining charts and light bulbs.
- c. The RO is responsible for maintaining the High Tension Log and the Weld Channel Calculation.
- d. The BOP is responsible for maintaining the Weld Channel Calculation and the Control Room Log readings.

ANSWER:

- c. The RO is responsible for maintaining the High Tension Log and the Weld Channel Calculation.

KA: G2.1.18 [2.9/3.0] 10CFR55.41(10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: OD-36 Rev. 18 section 5.4

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #55 (1.0)

Which one of the following describes the most limiting accident for the Shutdown Margin requirements in accordance with Technical Specifications?

- a. A guillotine break of a main steam line inside containment at the end of core life.
- b. A guillotine break of a main steam line inside containment at the beginning of core life.
- c. An uncontrolled rod withdrawal from subcritical or low power conditions at the end of core life.
- d. An uncontrolled rod withdrawal from full power conditions at the beginning of core life.

ANSWER:

- a. A guillotine break of a main steam line inside containment at the end of core life.

KA: G2.2.25 [2.5/3.7] 10CFR55.41(5) 43(2)

Exam Level: RO/SRO

Cognitive Level: F

Reference: TS Bases 3.1.1

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #56 (1.0)

The following stable conditions are encountered when surveying a room located in the auxiliary building:

General Area Radiation level in room	60 mrem/hr
Radiation level at 30 cm from pipe	375 mrem/hr
Radiation level on contact with pipe elbow	400 mrem/hr
Contamination levels	850 dpm/cm <sup>2</sup> - beta-gamma
	0 dpm/cm <sup>2</sup> - alpha
Airborne radiation level	0.6 DAC

What are the correct radiological postings or labels required to reflect the current radiological conditions for this room in accordance with 10 CFR 20 requirements?

- a. "DANGER, HIGH RADIATION AREA"  
"CAUTION, AIRBORNE RADIOACTIVITY AREA".
- b. "CAUTION, RADIATION AREA"  
"CAUTION, CONTAMINATED AREA".
- c. "DANGER, HIGH RADIATION AREA"  
"CAUTION, CONTAMINATED AREA".
- d. "CAUTION, RADIATION AREA"  
"AIRBORNE RADIOACTIVITY AREA".

ANSWER:

- a. "DANGER, HIGH RADIATION AREA"  
"CAUTION, AIRBORNE RADIOACTIVITY AREA".

KA: G2.3.1 [2.6/3.0] 10CFR55.41(12),43(4)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: 10 CFR 20  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #57 (1.0)

An operator received the following radiation exposure at IP3 during the year. The exposure record until the last day of the year is:

Deep Dose Equivalent (DDE)	275 mrem
Lens Dose Equivalent (LDE)	15 mrem
Committed Effective Dose Equivalent (CEDE)	120 mrem
Shallow dose Equivalent (SDE)	25 mrem
Committed Dose Equivalent (CDE)	25 mrem

On the last day of the year the individual was requested to work in an area where the known radiation dose rate is 280 mR/hr.

If the worker takes 15 minutes to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

- a. 345 mrem
- b. 465 mrem
- c. 515 mrem
- d. 530 mrem

ANSWER:

- b. 465 mrem

KA: G2.3.4 [2.5/3.1] 10CFR55.41(12),43(4)

Exam Level: RO/SRO

Cognitive Level: H

Reference: 10 CFR 20 Table 3-1 TEDE = DDE + CEDE

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #58 (1.0)

The following conditions exist for a job to be performed on a system.

The general area radiation levels are 10 mrem/hr in the room.  
The hot spot in the room is a pipe elbow that has radiation levels of 100 mrem/hr.  
The job will be performed near the hot spot area.

(Assumptions: ALL 4 cases below have the same transition time to and from destinations. All shielding placement and removal is at a dose rate of 100 mrem/hr)

Choose the method that best reduces personnel exposure.

- a. Two Radiation Control personnel hang and remove 1 tenth thickness of lead shielding on the hot spot in 1.5 hours for the job. The job is performed after the lead shielding is in place by using 2 operators for 3 hrs each on the job.
- b. The job is performed by 3 operators for 1 hr each on the job at the hot spot and a fourth operator reading instructions in the general room area for 1 hr.
- c. The job is performed by 2 operators for 2 hrs each on the job at the hot spot and a third operator reading instructions in the general room area for 2 hrs.
- d. The job is performed by using 2 operators for 3 hrs each on the job at the hot spot.

Answer:

- b. The job is performed by 3 operators for 1 hr each on the job at the hot spot and a fourth operator reading instructions in the general room area for 1 hr.

KA: G2.3.10

[2.9/3.3]

10CFR55.41(12),43(4)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ALARA program

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #59 (1.0)

Given the following conditions:

The reactor is steady-state at 100% power.  
Control Bank D rods are at 223 steps.  
All plant control systems are in AUTO.  
A rod in Control Bank D drops to the bottom, inserting 300 pcm negative reactivity.  
Current total power defect for 100% power is 2000 pcm.

Which one of the following states automatic actions that will occur for this event if NO operator action is taken?

- a. Control Bank D rods will be withdrawn to offset the reactivity of the dropped rod.
- b. ONLY a turbine runback and minor pressurizer pressure/level control adjustments will occur.
- c. ONLY a turbine runback and automatic insertion of Control Bank D rods will occur.
- d. A turbine runback, automatic insertion of Control Bank D rods, and steam dump arming will occur.

ANSWER:

- d. A turbine runback, automatic insertion of Control Bank D rods, and steam dump arming will occur.

KA: 001 A2.03 [3.5/4.2] 10CFR55.41(5), 43(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RC-1, Page 5

Question Source: IP3 Bank ONP-C Q#361, NRC EXAM-7/96, question 5

FACILITY: Indian Point 3 Exam Date:

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #60 (1.0)

The unit was operating at 90% power when a steam generator (SG) tube leak greater than the Technical Specification limits occurred. The plant has now been shutdown as per procedure ONOP-SG-1, Steam Generator Tube Leak. While performing the Subsequent Actions, the following NOTE appears prior to commencing a reactor coolant system (RCS) cooldown to 493°F.

**NOTE**

*SG(s) leakage to the RCS should be considered when determining adequate shutdown margin.*

Which one of the following is the correct reason for this NOTE?

- a. Additional boron may be required to the RCS to compensate for the boron that has been lost to the SG through the tube leak.
- b. Less boron may be required to the RCS following depressurization due to the SG water (that contains boron) flowing back into the RCS.
- c. Additional boron may be required to compensate for the dilution effect of the SG water flowing back into the RCS upon depressurization.
- d. Less boron may be required following the cooldown due to the Safety Injection water that injected boron into the RCS and the leaking SG.

ANSWER:

- c. Additional boron may be required to compensate for the dilution effect of the SG water flowing back into the RCS upon depressurization.

KA: E03 EK3.4

[3.5/3.9]

CFR41.5,10;45.6,13

Exam Level: RO/SRO

Cognitive Level: H

Reference: LIC-ONP-32, ONOP-SG-1, Note prior to step 26, E.O.s:6174.1 (LIC-ONP-42)

Question Source: IP3 Bank ONP-C #798

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: 61 (1.0)

The following plant conditions exist:

The plant is in MODE 4.  
A cooldown on RHR has just been commenced.  
A LOCA occurs inside containment.

What actions must be taken by the control room operators per ONOP-RHR-1 "Loss of Residual Heat Removal Flow"?

- a. Trip RHR pumps and close the RHR loop suction valves.
- b. Immediately enter E-0, "Reactor Trip or Safety Injection."
- c. Manually align RHR for ECCS injection.
- d. Immediately enter FR-Z.1, "Response to High Containment Pressure."

ANSWER:

- c. Manually align RHR for ECCS injection.

KA: E03 EK2.2 [3.7/4.0] CFR 41.7,45.7

Exam Level: RO/SRO

Cognitive Level: H

References: ONOP-RHR-1, FOLD-OUT PAGE, E.O.s: 6286.2 (LIC-ONP-06)

Question Source: IP3 Bank #525

COMMENTS: Basis: Foldout page for RHR-1 addresses a Loss of Coolant accident while in cold shutdown. The procedure requires the operator to open SI-MOV-882 and ensure at least one RHR pump is running.

FACILITY: Indian Point 3

Exam Date:

### IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #62 (1.0)

The plant is operating at 80% power with normal system alignment when one of the operating component cooling water (CCW) pumps trips. Which one of the following actions would you expect (as specified in ONOP-CC-1, Loss of Component Cooling) to occur automatically following this event?

- a. Non-regenerative heat exchanger cooling valve, TCV-130, will modulate closed and cause letdown temperature to increase to cause an automatic diversion of letdown to the CVCS holdup tanks.
- b. Reactor Coolant Pump thermal barrier return valve, FCV-625, will throttle open to maintain required CCW flow to the thermal barriers.
- c. Standby CCW pump will automatically start upon trip of operating CCW pump.
- d. If CCW pump discharge header pressure should decrease to 100 psi, the standby CCW pump will automatically start.

ANSWER:

- d. If CCW pump discharge header pressure should decrease to 100 psi, the standby CCW pump will automatically start.

KA: 026AA2.03 [2.6]

Exam Level: RO only

Cognitive Level: F

Reference: REFERENCE: ONOP-CC-1, Loss of Component Cooling, section 3.0;  
EO(LIC-ONP-14)

Question Source: IP3 Bank

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #63 (1.0)

In accordance with ECA-2.1 "Uncontrolled Depressurization of all Steam Generators", a Caution prior to the step 2 states "A Minimum Feed Flow of 100 gpm must be maintained to each Steam Generator With a Narrow Range Level Less Than 9% [14%]... Which of the following is the basis for this caution?"

- a. Ensures minimum feed flow to SGs so as to maintain SG components in a wet condition to reduce thermal shock when higher AFW flows are re-initiated.
- b. Ensures adequate total cooling water flow to Steam Generators to remove all the design Reactor Coolant heat load under this set of conditions.
- c. Flow is to prevent Steam Generator dry out which could lead to high airborne radiation levels inside the faulted steam generators.
- d. Ensures an even heat load on each RCS loop, thereby ensuring the proper  $\Delta T$  needed to maintain natural circulation if a loss of off-site power occurred at same time.

ANSWER:

- a. Ensures minimum feed flow to SGs so as to maintain SG components in a wet condition to reduce thermal shock when higher AFW flows are re-initiated.

KA: E12EA2.2 [3.4] 10CFR55.41(5)

Exam Level: RO only

Cognitive Level: F

Reference: LIC-ONP-18, Emergency Boration, II.D.12  
ECA-2.1, Uncontrolled Depressurization of All Sgs  
E.O.s: 1459.1 (LIC-ONP-18); (LIC-EOP-34)

Question Source: IP3 Bank

Facility: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #64 (1.0)

A heat trace channel failure caused boric acid to solidify in the BA filter. Following the heat trace channel failure, the VCT level control channel demanded an automatic makeup. Assuming BOL, no operator action, and all controls in automatic, which one of the following actions will occur?

- a. The makeup concentration will be "light" but not enough dilution will occur to move control rods.
- b. Control bank D will drive in and Tavg will end up 1 degree F above Tref when stable conditions are reached.
- c. The power range channel  $\Delta I$  channels will move toward the positive limit and may go out of band.
- d. The plant will trip on either Overtemperature  $\Delta T$  or Power Range High Flux trip setpoints.

ANSWER:

- b. Control bank D will drive in and Tavg will end up 1 degree F above Tref when stable conditions are reached.

KA: 004A2.08 [3.0/3.7]

Exam Level: RO Only

Cognitive Level: Higher

References: ONOP-CVCS-2, step 5; E.O.s: 5118.4 (LIC-ONP-11);

Question Source: IP3 Bank

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #65 (1.0)

What is the basis for the Technical Specifications requirement that no more than one 120 volt AC Instrument Bus be on the backup power supply when above the cold shutdown condition?

- a. Prevent a reactor trip signal from being generated on a voltage transient on the unregulated backup power supplies.
- b. Ensure adequate safety-related monitoring instrumentation in the event of a Station Blackout.
- c. Ensure minimum operable safety injection actuation channels.
- d. Ensure minimum operable containment spray actuation channels.

ANSWER:

- d. Ensure minimum operable containment spray actuation channels.

KA: 026K3.01 [3.9] 10CFR55.41(7)

Exam Level: RO Only

Cognitive Level: F

Reference: .S. 3.7 Bases; E.O.4817.3; 0288.2; IC-TSP-25

Question Source: IP3 Bank TSP-37

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #66 (1.0)

During a reactor startup, with reactor power low in the source range, the high voltage power supply for N-35 fails. What action is required with regard to the startup in accordance with Technical Specifications?

- a. Startup may proceed provided the inoperable channel is placed in a tripped condition.
- b. Startup may proceed provided the inoperable channel High Flux Trip and Rod Stop are bypassed by placing the Level Trip Bypass Switch in the BYPASS position.
- c. Restore the inoperable channel prior to increasing thermal power above the P-6 setpoint.
- d. Trip the reactor and enter E-0, "Reactor Trip or Safety Injection."

ANSWER:

- b. Startup may proceed provided the inoperable channel High Flux Trip and Rod Stop are bypassed by placing the Level Trip Bypass Switch in the BYPASS position.

KA: 033AA2.09 [3.4/3.7] CFR43.5, 45.13

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-NI-1, Nuclear Instrumentation Malfunction, Attachment 2, Technical Specification 3.3.1, NI1-49, E.O.s: 5242.9 (LIC-ONP-28);

Question Source: IP 3 Bank

COMMENTS:

Basis: Source and Intermediate range detectors are not credited in accident analysis. Tech Specs only require one detector to be operable to startup. The ONOP requires that the trip and rod stop be bypassed.

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #67 (1.0)

Which one of the following major actions IAW ECA-2.1 "Uncontrolled Depressurization of All Steam Generators" has the most significant influence on preventing pressurized thermal shock of the reactor coolant system?

- a. Reinitiate SI.
- b. Reestablish any secondary pressure boundary.
- c. Cooldown the reactor.
- d. Place RHR in service.

ANSWER:

- b. Reestablish any secondary pressure boundary.

KA: E08 G2.4.7

[3.1]

10CFR55.41(10)

Exam Level: RO

Cognitive Level: H

Reference: ECA-2.1

Question Source: IP3 Bank EOP-C Q#123

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #68 (1.0)

Which one of the following explains why the ROD CONTROL URGENT FAILURE annunciator does NOT alarm when a dropped rod in Shutdown Bank D is being recovered?

- a. Shutdown Bank D has only one group of rods.
- b. Shutdown banks have NO multiplexing thyristors.
- c. Shutdown Bank D operates without a Master Cyclor input.
- d. Shutdown banks receive NO input from the bank overlap unit.

ANSWER:

- a. Shutdown Bank D has only one group of rods.

KA: 003 AA1.02

[3.4]

10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: ONOP-RC-1, Dropped or Misaligned Rods, Att.1 Note prior to step 4.0

Question Source: IP3 Bank ONP-C Q#358, NRC EXAM 7/96

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #69 (1.0)

With the plant at 100% power and containment closed, containment radiation monitor R-11 alarms and is found to have peaked in the ALERT range. Which one of the following actions must you verify and/or take IAW ONOP-RM-2, High Activity - Radiation Monitoring System.

- a. Verify the containment evacuation alarm annunciated, the containment purge and exhaust valves closed, and direct personnel to report to the Containment Access Facility.
- b. Verify the containment evacuation alarm annunciated.
- c. Verify the containment evacuation alarm annunciated, the containment purge and exhaust valves closed, the containment pressure relief valves closed, and direct personnel to report to the Containment Access Facility.
- d. Verify the containment evacuation alarm annunciated, and direct personnel to report to the Containment Access Facility.

ANSWER:

- b. Verify the containment evacuation alarm annunciated.

KA: E16G2.4.49

[4.0]

10CFR55.41(10)

Exam Level: RO

Cognitive Level: F

Reference: Procedure ONOP-RM-2 Step 4

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #70 (1.0)

A SGTR is in progress, and the control room operators are performing E-3, Steam Generator Tube Rupture. The operators have identified and isolated the ruptured S/G, and they have cooled down and depressurized the RCS. When conditions indicate that SI flow is no longer required, the operators stop all but one charging pump, but inadvertently leave the SI pumps running. What effect will this error have on continued operation if left uncorrected?

- a. The RCS will quickly repressurize and experience an overpressure transient.
- b. The ruptured S/G will eventually fill with water, and the atmospheric relief valves will lift.
- c. The ruptured S/G will fill with water until the ruptured tube is covered; S/G water level will then stabilize as equilibrium conditions are reached.
- d. The RWST water inventory will be rapidly depleted to the point that not enough water will be available to complete long-term plant recovery.

ANSWER:

- b. The ruptured S/G will eventually fill with water, and the atmospheric relief valves will lift.

KA: E13 EA1.3

[3.1]

10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: EOP E-3, Steam Generator Tube Rupture, Steps 26 and 27, E-3, "Steam Generator Tube Rupture" WOG, ERG Background Document

Question Source: IP3 Bank EOP-C Q#65

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #71 (1.0)

Which one of the following will generate an Engineered Safeguards System Actuation signal?

- a. Referenced power is 50%, indicated steam flow is 70%, and all steam generator pressures are 615 psig.
- b. Containment radiation is 4 R/Hr and Containment temperature is 185 degrees F.
- c. Steam Generator pressures are 1003 psig, 1000 psig, 990 psig, and 900 psig.
- d. Pressurizer pressure is stable at 1740 psig.

ANSWER:

- a. Referenced power is 50%, indicated steam flow is 70%, and all steam generator pressures are 615 psig.

KA: 013 K1.01 [4.2] 10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: ESS System description 10.0

Question Source: NRC exam 7/96

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #72 (1.0)

Which one of the following Containment Recirculation Fan Cooler Unit (FCU) motor operations is permitted during a plant outage given the conditions in each choice listed below?

- a. If motor enclosure is opened without Service Water supply to the fan motor cooler heat exchanger then FCU motor operation shall be limited to 30 minutes.
- b. If motor enclosure is opened AND Vapor Containment air can enter the motor air inlets, then the FCU motor can be operated indefinitely without Service Water supply to the fan motor cooler heat exchanger.
- c. If motor enclosure is established AND Service Water is NOT supplying the fan motor cooler heat exchanger, then FCU motor operation may be operated indefinitely.
- d. If motor enclosure is established AND Service Water is NOT supplying the fan motor cooler heat exchanger, then FCU motor operation shall be limited to 60 minutes.

Answer:

- b. If motor enclosure is opened AND Vapor Containment air can enter the motor air inlets, then FCU motor can be operated indefinitely without Service Water supply to the fan motor cooler heat exchanger.

KA: 022 A4.01 [3.6] 10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: SOP-CB-010 Rev.16, caution prior to step 4.2.6 and step 2.10

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #73 (1.0)

Which one of the following conditions would be symptomatic of a Reactor Coolant Makeup system malfunction requiring entry into ONOP-CVCS-2, Reactor Coolant Makeup Control System Malfunction?

- a. A change in reactor power following the addition of 200 gallons of Primary Water.
- b. An increase in rod position following the addition of 50 gallons of Boric Acid.
- c. A change in Tav<sub>g</sub> following an automatic make-up with control rods in manual.
- d. A reduction in turbine load following an automatic make-up with rods in automatic.

ANSWER:

- c. A change in Tav<sub>g</sub> following an automatic make-up with control rods in manual.

KA: 004 K5.15 [3.3] 10CFR55.41(5)

Exam Level: RO

Cognitive Level: H

Reference: ONOP-CVCS-2 step 2.0.b

Question Source: IP3 Bank ONP-C Q#87

FACILITY: Indian Point 3 Exam Date:

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #74 (1.0)

Which one of the following lists two conditions, each of which will prevent MANUAL rod withdrawal?

- a. Nuclear flux decrease of greater than 5% in 5 seconds.  
Any power range nuclear instrumentation channel at 106%.
- b. Any intermediate range channel equivalent to 20% power and P-10 not blocked.  
1 of 4 OT $\Delta$ T channel setpoints exceeded.
- c. 1 of 4 OT $\Delta$ T channel setpoints exceeded.  
Any first stage turbine impulse pressure channel below 15%.
- d. Any first stage turbine impulse pressure channel below 15%.  
Any rod at the rod bottom position signal.

Answer:

- b. Any intermediate range channel equivalent to 20 % power and P-10 not blocked.  
1 of 4 OT $\Delta$ T channel setpoints exceeded.

KA: 001 K3.02 [3.4] 10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: LP-LIC-IXC-07 Section II.E, ARP 3& 4

Question Source: NRC Exam 11/20/98

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #75 (1.0)

The plant is at 100% power. Given the following component configuration:

NIS Channel N43 (Power Range) out of service (OOS) for maintenance with the instrument and control power fuses pulled.  
Pressurizer Level Channel 460 failed low.  
ALL actions per ONOP-RPC-1 "Instrument Failures", have been taken.  
A voltage dip from 120V to 30V, occurs for 10 seconds on instrument bus 34.

Select the answer below which describes how the plant will respond to the above event.

- a. The plant will trip on NIS OVERPOWER 2/4.
- b. A Turbine Runback to 70% will occur due to NIS DROPPED ROD RUNBACK.
- c. The plant will trip on 2/4 OVERPOWER DELTA T.
- d. The plant will trip on HIGH PRZR LEVEL 2/3.

ANSWER:

- d. The plant will trip on HIGH PRZR LEVEL 2/3

KA: 016 K3.02 [3.4] 10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: ONOP-EL-3, 3.0

Question Source: IP3 Bank ONF-C-Q#158

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #76 (1.0)

The following plant conditions exist:

The unit is at 100% power.  
No bus faults exist.  
Bus fault relays are reset.  
Breaker 2AT3A Overcurrent Trip relay is reset.  
The 2AT3A breaker isolation switch is in the NORMAL position.

Based upon the above conditions, which one of the following sets of conditions are the MINIMUM which must be met to allow the manual closure of Bus 3A Emergency Feed Breaker 2AT3A from the control room?

- a. No voltage exists on bus 2A AND  
No voltage exists on bus 3A AND  
Synch Selector Switch on 31 EDG panel ON.
- b. No voltage exists on bus 2A OR  
No voltage exists on bus 3A AND  
Synch Selector Switch on 31 EDG panel ON.
- c. No voltage exists on bus 2A AND  
No voltage exists on bus 3A.
- d. No voltage exists on bus 2A OR  
No voltage exists on bus 3A.

ANSWER:

- d. No voltage exists on bus 2A OR  
No voltage exists on bus 3A.

KA: 062 K4.01

[3.3]

10CFR55.41(7)

Exam Level: RO

Cognitive Level: H

Reference: System Description 27.4, Section 2.4.6

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #77 (1.0)

Which one of the following sets of indications are expected to occur in the event of a gross loss of refueling cavity level during refueling?

- a. Containment Area Radiation Monitor, R-2.  
Fuel Storage Building Area Rad Monitor, R-5.
- b. Fuel Storage Building Area Rad Monitor, R-5.  
Vapor Containment Particulate, R-11.
- c. Vapor Containment Particulate, R-11.  
Plant Vent Wide Range Gas radiation monitor, R-27.
- d. Plant Vent Wide Range Gas radiation monitor, R-27.  
Containment Area Radiation Monitor, R-2.

ANSWER:

- a. Containment Area Radiation Monitor, R-2.  
Fuel Storage Building Area Rad Monitor, R-5.

KA: 073 G2.2.30 [3.5] 10CFR55.41(11)

Exam Level: RO

Cognitive Level: H

Reference: ONOP-RP-3, Section 2.0

Question Source: IP3 Bank ONP-C Q#624

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #78 (1.0)

Which one of the following groups describes the components and associated header supplied by the Service Water System under normal plant conditions?

- a. Emergency Diesel Generator via the Essential Header.  
Component Cooling Water Heat Exchanger Via the Essential Header.  
Containment Fan Cooler Units via the Essential Header.
- b. Emergency Diesel Generator via the Essential Header.  
Component Cooling Water Heat Exchanger Via the Non-Essential Header.  
Containment Fan Cooler Units via the Non-Essential Header.
- c. Emergency Diesel Generator via the Non-Essential Header.  
Component Cooling Water Heat Exchanger Via the Essential Header.  
Containment Fan Cooler Units via the Essential Header.
- d. Emergency Diesel Generator via the Essential Header.  
Component Cooling Water Heat Exchanger Via the Non-Essential Header.  
Containment Fan Cooler Units via the Essential Header.

ANSWER:

- d. Emergency Diesel Generator via the Essential Header.  
Component Cooling Water Heat Exchanger Via the Non-Essential Header.  
Containment Fan Cooler Units via the Essential Header.

KA: 076 K1.19 [3.6] 10CFR55.41(4)

Exam Level: RO

Cognitive Level: F

Reference: IP3 SW System Description - Table of contents

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #79 (1.0)

Which one of the following actions occurs automatically when Station Air pressure decreases to 102 psig?

- a. PCV-1142 Station Air backup supply valve will open.
- b. The standby instrument air compressor will start.
- c. The Ingersoll-Rand diesel air compressor will start.
- d. The Instrument air dryers will be bypassed.

ANSWER:

- c. The Ingersoll-Rand diesel air compressor will start.

KA: 078 K4.03 [3:2] 10CFR55.41(5)

Exam Level: RO

Cognitive Level: F

Reference: ONOP-IA-1 step 2.3

Question Source: IP3 Bank ONP-C Q#263

FACILITY: Indian Point 3 Exam Date: REFERENCE:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #80 (1.0)

E-0, "Reactor Trip or Safety Injection", requires manually closing PHASE B isolation valves if not automatically closed by the PHASE B signal. Select the valve below that would be checked and manually closed, if required, following a PHASE B isolation signal.

- a. RCP Seal Injection Valve (MOV-250A).
- b. Letdown Isolation Valve (AOV-201).
- c. CCW Outlet from Excess Ltdn. Htx. (AOV-796).
- d. RCP Seal Water Return (MOV-222).

ANSWER:

- d. RCP Seal Water Return (MOV-222).

KA: 103 K1.02 [3.9] 10CFR55.41(7)

Exam Level: RO

Cognitive Level: F

Reference: E-0 step 8a, LIC-ESS-03 (Containment Isolation System), II.E.6.a

Question Source: IP3 Bank #EOP-C 215

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #81 (1.0)

Which one of the following conditions correctly describes your responsibilities regarding control room annunciators IAW AP-21, Conduct of Operations?

- a. For expected alarms that have been discussed among the operators, the operators shall initially reference the alarm response procedure and make announcements for subsequent repeat alarms.
- b. For expected alarms that have been discussed among the operators, the operators shall initially reference the alarm response procedure and make an announcement. No actions are required for subsequent repeat alarms.
- c. Prior to removing ANY nuisance alarm from service, an approved Temporary Modification is required.
- d. Prior to removing a nuisance alarm from service, an approved Temporary Modification is required ONLY if the nuisance alarm is a Technical Specification or EOP required alarm.

ANSWER:

- a. For expected alarms that have been discussed among the operators, the operators shall initially reference the alarm response procedure and make announcements for subsequent repeat alarms.

KA: G2.1.1 [3.7] 10CFR55.41(10)

Exam Level: RO

Cognitive Level: F

Reference: AP-21 Rev.48 Section 4.11

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #82 (1.0)

Which one of the following sets of tags can be hung simultaneously on the same component, in accordance with AP-10.1, "Protective Tagging."

- a. A Test & Maintenance tag and a Caution tag.
- b. A Test & Maintenance tag and a Hold tag.
- c. A Danger tag and a Caution tag.
- d. A Caution tag and a Hold Tag.

ANSWER:

- d. A Caution tag and a Hold Tag.

KA: G2.2.13 [3.6/3.8] 10CFR55.41(10)

Exam Level: RO

Cognitive Level: F

Reference: AP-10.1 Rev.24 Section 4.7.2.4 and 4.7.3.5.

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #83 (1.0)

In accordance with AP-10.1, Protective Tagging, which one of the following would require two valves in series to be closed and tagged to isolate the system properly?

- a. A system containing radioactive liquid at 150°F and 250 psig.
- b. A system containing 100 curies of radioactive gas at 90°F and 400 psig.
- c. A system containing circulating cooling water at 120°F and 350 psig.
- d. An auxiliary steam system operating at 381°F and 195 psig.

ANSWER:

- d. An auxiliary steam system operating at 381°F and 195 psig.

KA: G2.2.13 [3.6] 10CFR55.41(10)

Exam Level: RO

Cognitive Level: F

Reference: AP-10.1 step 4.10.9 requires two valve protection if >200°F OR > 500 psig. Only d meets this requirement.

Question Source: IP3 Bank ADP-C Q#39

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #84 (1.0)

If an Auxiliary Boiler Feed Pump (ABFP) building temperature instrument failed causing PCV-1310A, " ABFP Steam Supply Isolation Valve" to close, the procedure directs the operator to open the local bypass valve (MS-176), then select open on the control switch. What is the reason for opening the manual bypass valve?

- a. Equalize pressure across PCV-1310A to allow opening valve.
- b. Ensure adequate steam flow to 32 ABFP in the event that PCV-1310A fails to open.
- c. The bypass must be opened to satisfy an interlock to open PCV-1310A.
- d. Prevent water hammer due to condensation in the steam line to 32 ABFP.

ANSWER:

- a. Equalize pressure across PCV-1310A to allow opening valve.

KA: 061 K6.01

[2.5/2.8]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-ES-1 Step 5.2.1 meets this requirement.

Question Source: IP3 Bank ONP-C #207

FACILITY: Indian Point 3

Exam Date: REFERENCE:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #85 (1.0)

Which one of the following conditions would cause an automatic start of the #32 Auxiliary Boiler Feedwater Pump?

- a. Low-Low level (8%) on 2 of 3 detectors on any steam generator.
- b. Low-Low level (8%) on 2 of 3 detectors on 2 of 4 steam generators.
- c. Automatic trip of a Main Boiler Feedwater Pump.
- d. A Safety Injection signal.

ANSWER:

- b. Low-Low level (8%) on 2 of 3 detectors on 2 of 4 steam generators.

KA: 061 K1.01

[4.1/4.1]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 21.2, section 2.4, 2.5

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #86 (1.0)

The following conditions exist:

The reactor is in MODE 3.  
RCS pressure is 2235 psig.  
Tavg is 547 degrees F, being maintained by the HP steam dumps.  
All four RCPs are running.

If a complete loss of condenser vacuum occurs, RCS Tavg will stabilize at which one of the following temperatures? (Assume NO operator action is taken.)

- a. 545 degrees F.
- b. 547 degrees F.
- c. 549 degrees F.
- d. 551 degrees F.

ANSWER:

- c. 549 degrees F.

KA: E05EK2.1 [3.7/3.9] CFR 41.7,45.7

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-C-1 ; E.O.s: 6194.4 (LIC-ONP-10)

Question Source: IP3 Bank ONP-C #6

FACILITY: Indian Point 3

Exam Date:

COMMENTS: NRC RO EXAM for ILO 94-1, 12/11/95, question 28

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #87 (1.0)

The unit is initially at 80% power when a loss of condenser vacuum occurs. Assuming no operator action is taken, the main boiler feed pumps will trip at:

- a. 3" Hg differential between condensers.
- b. 18" Hg in any condenser.
- c. 25.0" Hg in any condenser.
- d. 25.5" Hg in 31 or 33 condensers.

ANSWER:

- b. 18" Hg in any condenser.

KA: 059 A4.01

[3.1/3.1]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-C-1, step 3.2

Question Source: IP3 Bank ONP-C #3

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #88 (1.0)

IP3 was shutdown five days ago, after a three month run of 100% power operations. The plant is currently in mid-loop operations and RCS temperature is 140 degrees F. If the one running RHR pump trips, and no operator is taken, approximately how long will it take the water in the reactor vessel to reach 200 degrees F?

- a. 10 minutes
- b. 1 hour.
- c. 10 hours.
- d. 1 day.

ANSWER:

- a. 10 minutes

KA: 002 A1.08

[3.7/3.8]

10CFR55. 41(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RHR-2 Attachment1

Question Source: IP3 Bank #43

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #89 (1.0)

Complete the following statement.

The In-core thermocouple system consists of: \_\_\_\_\_.

- a. Qualified and Non-Qualified thermocouples that ONLY provide input to the Critical Function Monitoring System (CFMS)
- b. Qualified and Non-Qualified thermocouples that ALL provide input to the Reactor Vessel Level Indication System (RVLIS).
- c. Qualified thermocouples that ONLY provide input to the Critical Function Monitoring System (CFMS) and Non-Qualified thermocouples that ONLY provide input to the Reactor Vessel Level Indication System (RVLIS).
- d. Qualified thermocouples that ALL provide input to the Reactor Vessel Level Indication System (RVLIS) and Non-Qualified thermocouples that ALL provide input to the Critical Function Monitoring System (CFMS)

ANSWER:

- d. Qualified thermocouples that ALL provide input to the Reactor Vessel Level Indication System (RVLIS) and Non-Qualified thermocouples that ALL provide input to the Critical Function Monitoring System (CFMS)

KA: 017 A4.01

[3.8/4.1]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 14.0 section 2.2.1

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #90 (1.0)

Which one of the following, in the Rod Control System, correctly describes a Non-Urgent Alarm condition and the reset requirement for that alarm.?

- a. A simultaneously current order going to the movable firing card and the stationary firing card. The alarm must be manually reset once the condition is corrected.
- b. A simultaneously current order going to the movable firing card and the stationary firing card. The alarm will automatically reset once the condition is corrected.
- c. The failure of one +25 VDC power supply or one -25 VDC power supply. The alarm must be manually reset locally once the condition is corrected.
- d. The failure of one +25 VDC power supply or one -25 VDC power supply. The alarm will automatically reset once the condition is corrected.

ANSWER:

- d. The failure of one +25 VDC power supply or one -25 VDC power supply. The alarm will automatically reset once the condition is corrected.

KA: 001 K6.11

[2.9/3.2]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 16.1 section 2.2.1.3

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #91 (1.0)

Which one of the following groups describes the power supplies to the Component Cooling Water pumps as specified in SOP-CC-001B "Component Cooling System Operation"?

- a. Pump #31 is powered from bus 5A.  
Pump #32 is powered from bus 2A with an alternate supply from MCC 312A.  
Pump #33 is powered from bus 6A.
- b. Pump #31 is powered from bus 2A with an alternate supply from MCC 312A.  
Pump #32 is powered from bus 5A.  
Pump #33 is powered from bus 6A.
- c. Pump #31 is powered from bus 6A.  
Pump #32 is powered from bus 5A.  
Pump #33 is powered from bus 2A with an alternate supply from MCC 312A.
- d. Pump #31 is powered from bus 2A.  
Pump #32 is powered from bus 5A with an alternate supply from MCC 312A.  
Pump #33 is powered from bus 6A.

ANSWER:

- a. Pump #31 is powered from bus 5A.  
Pump #32 is powered from bus 2A with an alternate supply from MCC 312A.  
Pump #33 is powered from bus 6A.

KA: 003 K2.02

[2.5/2.6]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 4.1 section 2.2

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #92 (1.0)

Which one of the following correctly describes why the main turbine is tripped during all ATWS conditions?

- a. To initiate a reactor shutdown from Doppler defect.
- b. To mitigate the consequences of a loss of feed ATWS.
- c. To prevent excessive cooldown of the RCS.
- d. To minimize the RCS pressure transient.

ANSWER:

- b. To mitigate the consequences of a loss of feed ATWS.

K/A: 029 EK3.12 (4.4/4.7) 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: LIC-EOP-10.1.6.2 (d), BD-FR-S.1 (Verify)

Question Source: IP3 Bank #134 EOP-C.WP 134/218

FACILITY: Indian Point 3

Exam Date:

IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #93 (1.0)

Given the following conditions:

Pressurizer pressure is 985 psig.  
Pressurizer relief tank (PRT) pressure is 5 psig.  
PRT temperature is 90 deg.F.  
The reactor is shutdown.

Assume ambient heat losses are negligible and the steam quality in the pressurizer bubble is 100%. Also assume that pressurizer and PRT conditions do not change.

Which one of the following downstream temperatures would be expected for a leaking pressurizer safety valve?

- a. 230 deg F
- b. 300 deg F
- c. 340 deg F
- d. 550 deg F

Answer:

- b. 300 deg F

K/A: 008 AK1.01

[3.2/3.7]

10CFR55.41(8,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: Steam tables

Question Source: Bank -NRC exam 11/98

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #94 (1.0)

The plant has experienced a large break LOCA. Approximately 25 minutes after the initial trip, the crew attempts to perform ES-1.3, but neither internal nor external recirculation is available. What minimum injection flowrate must be maintained to ensure adequate core cooling? Refer to the provided ECA-1.1, attachment 2.

- a. 500 gpm.
- b. 425 gpm.
- c. 340 gpm.
- d. 278 gpm.

Answer:

- b. 425 gpm

K/A: E11 EA1.3

[3.7/4.2]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ECA-1.1

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #95 (1.0)

Which one of the following would cause a main feedwater perturbation on a loss of 13.8 kV.

- a. The loss of the condensate booster pumps.
- b. The loss of both heater drain pumps.
- c. Starting of the motor driven Aux Boiler Feedwater Pumps.
- d. CD-AOV-519, Facility Bypass Valve, fails closed.

ANSWER:

- a. The loss of the condensate booster pumps.

KA: 056K1.03 [2.6] CFR41.2-9

Exam Level: RO Only

Cognitive Level: H

Reference: ONOP-EL-2 step 4.1, E.O.s: 5134.1 (LIC-ONP-20);

Question Source: IP3 Bank ONP-C 140

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #96 (1.0)

The plant is in MODE 5. RCS Tave is 140 degrees F with RHR in service, RCS pressure is 300 psig. A loss of instrument air occurs. With no operator action, what will be the effect on the plant?

- a. Pressurizer level and pressure will rise until a safety lifts.
- b. Pressurizer level and pressure will rise until the OPS actuates.
- c. Pressurizer level and pressure will decrease until letdown isolates.
- d. Pressurizer will empty due to seal leakoff and core uncovering will eventually occur.

Answer:

- b. Pressurizer level and pressure will rise until the OPS actuates.

KA: 065 AA2.08 [2.9] 10CFR55.41(5)

Exam Level: RO Only

Cognitive Level: H

Reference: CVCS system description & ONOP-IA-1

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

COMMENTS: Loss of IA results in loss of normal charging and letdown; seal injection increases inventory; seal leakoff is negligible at this pressure so pwr level increases

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

**QUESTION: #97 (1.0)**

Where do the containment sump pumps discharge to?

- a. Reactor Coolant Drain Tank.
- b. CVCS Holdup Tank.
- c. Reactor Cavity Sump Pumps suction.
- d. Waste Holdup Tanks.

**ANSWER:**

- d. Waste Holdup Tanks.

KA: 068 K1.07

[2.7]

10CFR55.41(2-9)

Exam Level: RO Only

Cognitive Level: F

Reference: LRW system description

Question Source: NEW

**FACILITY:** Indian Point 3

**Exam Date:** K/A: 068K1.07 2.7/2.9

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #98 (1.0)

Given the following conditions:

A large break LOCA has occurred.

Containment pressure reached 30 psig, but a common mode failure prevented actuation of the high-high containment pressure signal.

There are no other failures or equipment out of service.

Without any operator action, what will be the effect of the above on Containment?

- a. Pressure and temperature will start decreasing a few minutes after safety injection actuates.
- b. Pressure and temperature will increase until containment fails.
- c. Pressure and temperature will increase. When recirculation is initiated, temperature will start decreasing and pressure will continue to increase.
- d. Pressure and temperature will increase. When recirculation is initiated, pressure and temperature will start decreasing.

ANSWER:

- a. Pressure and temperature will start decreasing a few minutes after safety injection actuates.

KA: 022G2.1.28

[3.2]

CFR 41.7

Exam Level: RO Only

Cognitive Level: H

Reference: E.O.0480.2, LIC-ESS-4, T.S. 3.3 bases The five FCUs are capable of providing sufficient cooling during a DBA to reduce containment pressure, FSAR 3.6.1 The VC pressure starts decreasing approximately 500 seconds after LBLOCA with minimum safeguards.

Question Source: IP3 Bank ESS-C 97

FACILITY: Indian Point 3

Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #99 (1.0)

A LOCA is in progress. What effect does core voiding or uncovering have on source range nuclear instrument (SRNI) indications?

- a. SRNI indication will INCREASE because a greater neutron flux will reach the detectors than if the core were fully covered.
- b. SRNI indication will DECREASE because more fast neutrons escape the core without being thermalized, and the SRNIs detect thermal neutron flux.
- c. SRNI indication will INCREASE due to increased gamma flux from the uncovered core.
- d. SRNI indication will DECREASE due to detector degradation caused by excessive gamma and neutron flux.

ANSWER:

- a. SRNI indication will INCREASE because a greater neutron flux will reach the detectors than if the core were fully covered.

KA: 015 A2.05 [3.3] 10CFR55.41(5)

Exam Level: RO Only

Cognitive Level: H

Reference: System Description 13. Sect. 3.1.5

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #100 (1.0)

Which one of the following is NOT an Initial Operator Action per ONOP-CVCS-1, if one charging pump is running, but charging flow is not established.

- a. Isolate letdown via 459 & 460.
- b. Open HCV-142, charging line flow control valve.
- c. Decrease charging pump speed to minimum.
- d. Maintain seal injection flow between 6- 12 gpm.

ANSWER:

- b. Open HCV-142, charging line flow control valve.

KA: 004A4.08 [3.8/3.4] CFR41.7, 45.5 - .8

Exam Level: RO Only

Cognitive Level: F

References: ONOP-CVCS-1

Question Source: IP 3 Exam Bank Modified #74

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #1 (1.0)

You have transitioned to FR-P.1 responding to an orange path on INTEGRITY. Identify which condition would warrant you to transition out of FR-P.1 prior to its completion.

- a. An orange path on heat sink.
- b. A yellow path on subcriticality.
- c. A red path on inventory.
- d. An orange path in containment.

ANSWER:

- a. An orange path on heat sink.

KA: 069AA2.01 [4.3] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: F

Reference: EOP's-FR-P.1 - While in an orange path if an orange path of higher priority arises, transition.

Question Source: IP3 Bank EOP-C- Q#2

NOTE: Distractor C: - No red path in inventory

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #2 (1.0)

Complete the following statement.

Procedure ES-0.0, "Rediagnosis", is implemented:

- a. When directed to do so by an optimal recovery procedure step or foldout page.
- b. When directed to do so by a function recovery procedure step.
- c. At the discretion of the CRS/SM anytime the EOPs are in use.
- d. When ordered to do so by the STA.

ANSWER:

- c. At the discretion of the CRS/SM anytime the EOPs are in use.

KA: G2.4.16 [3.9] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: F

Reference: EOP lesson plan 32, page 80

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #3 (1.0)

Which of the following RCS conditions would require the plant to be in Mode 3 with  $T_{AVG} < 500^{\circ}F$  in 6 hours in accordance with Technical Specifications?

- a. Chloride concentration exceeds 1.25 ppm.
- b. Activity exceeds  $100/\bar{E}$   $\mu Ci/cc$ .
- c. Activity is 0.50  $\mu Ci/cc$  Dose Equivalent I-131.
- d. Oxygen concentration exceeds 0.10 ppm.

ANSWER:

- b. Activity exceeds  $100/\bar{E}$   $\mu Ci/cc$ .

KA: 027 G2.1.34

[2.9]

10CFR55.43(2)

Exam Level: SRO

Cognitive Level: F

Reference: Tech Specs 3.4.16

Question Source: Modified - IP3 bank TSP-C Q#19

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #4 (1.0)

The plant has experienced a large-break LOCA. The operators have taken appropriate action in accordance with the EOPs.

ECCS is now operating in the cold leg recirculation mode. RCS pressure is stable at approximately 40 psig.

In this mode, core decay heat is being removed in accordance with EOP\_\_\_\_\_ primarily by\_\_\_\_\_.

- a. E-0; Heat transfer between the RCS and the S/Gs due to forced circulation flow.
- b. E-0; The condensation of reflux boiling in the S/Gs.
- c. E-1; Heat transfer between the RCS and the S/Gs due to natural circulation flow.
- d. ES-1.3; The injection of water from the recirculation sump and the removal of steam/water out from the break.

ANSWER:

- d. ES-1.3; The injection of water from the recirculation sump and the removal of steam/water out from the break.

KA: E03 EA2.1 [4.2] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference:

- 1) ERG-HP/LP Background, E-1, Loss of Reactor or Secondary Coolant, p. 28 and 30
- 2) WOG 000-011-005 Tech Specs 3.1

Question Source: MODIFIED - IP3 exam bank EOP-C Q#31

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #5 (1.0)

Under which of the following conditions may the plant continue to operate in MODE 1, at 100% power, with Control Bank D at 224 steps, in accordance with Technical Specifications?

- a. Two control rods have been declared inoperable. Their combined reactivity worth is less than or equal to the most reactive rod.
- b. Control Bank D Group 2 Demand Counter is inoperable.
- c. One Group 1 rod in each of Control Banks A and C are misaligned from their bank demand by greater than (-12) steps.
- d. RPIs inoperable as follows: 1 in Shutdown Bank A Group 1, 1 in Shutdown Bank A Group 2, and 2 in Control Bank D Group 1.

ANSWER:

- b. Control Bank D Group 2 Demand Counter is inoperable.

KA: 005 AK3.04 [4.1] 10CFR55.43(2)

Exam Level: SRO

Cognitive Level: H

Reference: Tech Spec 3.1.4, 3.1.6, ONOP-RC-1

Question Source: IP3 exam bank, ONP-C Q#347

FACILITY: Indian Point 3 Exam Date:

### IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #6 (1.0)

At 0800 today the plant was operating at 65% power with a shutdown in progress. At 0830, the crew enters ONOP-RC-1 due to a dropped control rod. Reactor power stabilizes at 48%. The Turbine Generator is still on-line.

Which one of the following describes the main turbine response and required action per ONOP-RC-1 due to the dropped rod?

- a. A turbine runback has occurred. Direction must be given to monitor plant vent activity and to have the Watch Chemist initiate monitoring of Reactor Coolant Dose Equivalent I-131.
- b. A turbine runback has NOT occurred. Direction must be given to monitor plant vent activity and to have the Watch Chemist initiate monitoring of Reactor Coolant Dose Equivalent I-131.
- c. A turbine runback has occurred. Direction must be given to manually trip the reactor and go to E-0.
- d. A turbine runback has NOT occurred. Direction must be given to manually trip the reactor and go to E-0.

ANSWER:

- b. A turbine runback has NOT occurred. Direction must be given to monitor plant vent activity and to have the Watch Chemist initiate monitoring of Reactor Coolant Dose Equivalent I-131.

KA: 003 G2.3.10

[3.3]

10CFR55.43(4)

Exam Level: SRO

Cognitive Level: H

Reference: ONOP- RC-1

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

03/30/2011

03/30/2011

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #7 (1.0)

A large-break LOCA has occurred. The control room operators have progressed through EOP E-O, Reactor Trip or Safety Injection, and are implementing EOP E-1, Loss of Reactor or Secondary Coolant. The RWST LOLO level alarm is received, and RWST level indicates 11.5 ft.

Your required action in accordance with the EOPs is to:

- a. Continue in E-1 until directed to ES-1.2, Post-LOCA Cooldown and Depressurization.
- b. Immediately implement ES-1.4, Transfer to Hot Leg Recirculation.
- c. Immediately implement ES-1.3, Transfer to Cold Leg Recirculation.
- d. Immediately implement FR-C.2, Response to Degraded Core Cooling.

ANSWER:

- c. Immediately implement ES-1.3, Transfer to Cold Leg Recirculation.

KA: E06 EA2.1 [4.2] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference:

- 1) EOPs, Foldout Page for E-1 Series
- 2) ERG-HP/LP Background, ES-1.3, Transfer to Cold Leg Recirculation, p.1
- 3) ARP-5 Alarm Response, Window #32
- 4) WOG 000-011-003
- 5) See LRQ Exam Bank, Type B, E.O. #3.1.7.22

Question Source: IP3 Bank - EOP-C Q#47

FACILITY: Indian Point 3 Exam Date:

## IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #8 (1.0)

Given the following plant conditions:

Core Exit CETs indicate 175 degrees F  
RHR is in operation  
Pressurizer level is off-scale high  
RCS pressure is 325 psig  
Pressure being maintained by charging and letdown  
MOV-730 begins to go closed

The operators trip the running charging pump. Additionally, in accordance with ONOP-RHR-1, you must direct the operators to:

- a. Attempt to re-open MOV-730 by taking the control switch to open.
- b. Verify proper RHR valve lineup and reposition as necessary.
- c. Have the NPO de-energize MOV-730 at its' associated MCC.
- d. Trip the operating RHR pump(s).

ANSWER:

- d. Trip the operating RHR pump(s).

KA: 005 G2.4.48 [3.8] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: ONOP-RHR-1, Section 4.0 and Foldout page criteria

Question Source: IP3 Bank - ONP-C Q#512

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #9 (1.0)

The unit is at 100% power and LCV-459, Letdown Isolation Valve has failed shut due to a ruptured air diaphragm. You are performing ONOP-CVCS-1, Charging and Letdown Malfunctions, when pressurizer level reaches 70%. Which one of the following action(s) must you direct due to this condition IAW ONOP-CVCS-1?

- a. Place all charging pumps in Trip-Pull-Out (TPO).
- b. Trip the reactor and enter E-0, Reactor Trip or Safety Injection.
- c. Dispatch an NPO to throttle close the charging pump discharge valve.
- d. Commence a plant shutdown using ONOP-TG-3, Rapid Shutdown.

ANSWER:

- a. Place all charging pumps in Trip-Pull-Out (TPO).

KA: 004 G2.4.47 [3.7] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: ONOP-CVCS-1, Attachment 1, step 9.c

Question Source: IP3 Bank - ONP-C Q#85

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #10 (1.0)

Given the following:

The unit tripped from 100% power 20 minutes ago.  
Both intermediate ranges indicate 1 E-11 amps.  
Both source ranges are not indicating on scale.

The proper action regarding the source range detectors would be to :

- a. Wait three more minutes for P-6 to clear.
- b. Wait five more minutes for P-6 to clear.
- c. Press the intermediate range permissive defeat pushbuttons on the NI drawers.
- d. Press the intermediate range permissive defeat pushbuttons on the Flight Panel.

ANSWER:

- d. Press the intermediate range permissive defeat pushbuttons on the Flight Panel.

KA: 032 AA2.04

[3.5]

10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: LP-LIC-IXC-04 section II.E.6.k, EOP-ES-0.1, step 2

Question Source: NRC SRO EXAM 11/20/98, question 25

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #11 (1.0)

Given the following:

A small break LOCA has occurred.

Operators are responding IAW ES-1.2, "Post LOCA Cooldown and Depressurization".

Which one (1) of the following actions are directed, IAW ES 1.2, to prevent an inadequate core cooling condition?

- a. Maintain PZR level greater than 20% and pressure greater than 1000 psig to ensure subcooling can be maintained while steaming the S/Gs.
- b. Reduce ECCS flow and lower RCS pressure to increase heat removal through the break while maintaining a constant S/G pressure.
- c. Increase heat removal via the S/Gs to increase cooldown and depressurization of the RCS allowing increased ECCS flow.
- d. Stabilize S/G pressure and level, increase ECCS injection and RCS pressure to increase heat removal through the break.

ANSWER:

- c. Increase heat removal via the S/Gs to increase cooldown and depressurization of the RCS allowing increased ECCS flow.

KA: 009 G2.4.6

[4.0]

10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: ES1.2

Question Source: IP3 bank EOP-C Q#44

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #12 (1.0)

The plant is operating at 75% power and the latest leak rate data shows:

Total RCS leakage rate is 7.60 GPM  
Leakage to the PRT is 4.60 GPM  
Leakage to the RCDT is 1.20 GPM  
Leakage to #31 SG is 0.24 GPM  
Leakage to #32 SG is 0.00 GPM  
Leakage to #33 SG is 0.00 GPM  
Leakage to #34 SG is 0.00 GPM

Which one of the following Technical Specification Leakage limits, if any, have been exceeded?

- a. Unidentified Leakage.
- b. Identified Leakage.
- c. Reactor-to-Secondary Leakage.
- d. None, all leakage limits are met.

ANSWER:

- a. Unidentified Leakage

Basis: Total SG tube leakage is less than 1 GPM; identified leakage limits of 10 GPM and unidentified leakage limit of 1.56 GPM; thus, the unidentified leakage TS is exceeded.

KA: 037 AA2.10 [4.1] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: T.S. 3.4.13

Question Source: IP3 bank ONP-C Q#506, modified

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #13 (1.0)

Assuming emergency work was necessary in the middle of the night, which one of the following describes your responsibilities, as the SRO, in accordance with SPO-SD-01, "Work Control Process"?

- a. After the work is performed, a PID and a DER, shall be generated detailing the emergency work.
- b. Ensure the PID and work package are completed. No additional reporting is required.
- c. If Category I or M equipment was involved in the emergency work, the Shift Manager could waive the requirement for QA coverage.
- d. The Operations Manager is the highest level of notification the Shift Manager must make.

ANSWER:

- a. After the work is performed a PID and a DER shall be generated detailing the emergency work.

KA: G2.2.17 [3.5] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: F

Reference: SPO-SD-01, "Work Control Process"

Question Source: IP3 bank ADP-C Q#37

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #14 (1.0)

The plant is recovering from a station blackout. Normal power has been restored to all electrical buses and static inverters with the exception of DC Power Panel 31.

What action, if any, must you direct to ensure power is supplied to INSTRUMENT BUS 31?

- a. No action is required because INSTRUMENT BUS 31 will be energized automatically via an inverter static transfer switch from MCC-34.
- b. No action is required because INSTRUMENT BUS 31 will be energized automatically via an inverter static transfer switch from MCC-33.
- c. Direct the closure of the manual transfer switch between MCC-34 and INSTRUMENT BUS 31.
- d. Direct the closure of the manual transfer switch between MCC-33 and INSTRUMENT BUS 31.

ANSWER:

- a. No action is required because INSTRUMENT BUS 31 will be energized automatically via an inverter static transfer switch from MCC-34.

KA: 055 EA2.03 [4.7] 10CFR55.43(5)

Exam Level: RO/SRO (NOT USED on RO EXAM)

Cognitive Level: H

Reference: LIC-ONP-0202, Section III.C.1.

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #15 (1.0)

Which one of the following describes when an RCP would be restarted while performing FR-C.1, "RESPONSE TO INADEQUATE CORE COOLING".

- a. Blowdown of the steam generators to atmospheric pressure has been unable to reduce thermocouple temperatures below 1200°F.
- b. All three HHSI pumps have failed to start and thermocouple temperatures are above 1200°F.
- c. Blowdown of the steam generators to 100 psig has been unsuccessful in reducing thermocouple temperatures below 715°F.
- d. RCPs must be started any time thermocouple temperatures exceed 1200°F.

ANSWER:

- a. Blowdown of the steam generators to atmospheric pressure has been unable to reduce thermocouple temperatures below 1200°F.

KA: EPE074 G2.4.11 [3.6] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: EOP FR-C.1

Question Source: IP3 Bank EOP-C Q#140

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #16 (1.0)

Procedure ES-1.2, Post LOCA Cooldown and Depressurization, is implemented when:

- a. A small break LOCA has been isolated, and safety injection has been reset and terminated.
- b. A small break LOCA has occurred and RCS pressure has stabilized above RHR pump shutoff head.
- c. Natural circulation cannot be established and conditions for starting RCPs cannot be established.
- d. A LOCA outside containment has occurred, greatly limiting the availability of recirculation fluid.

ANSWER:

- b. A small break LOCA has occurred and RCS pressure has stabilized above RHR pump shutoff head.

KA: E07 G2.4.22 [4.0] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: F

Reference: ES 1.2 entry conditions

Question Source: NRC exam 11/98

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #17 (1.0)

The following plant conditions currently exist:

Reactor is tripped.  
E-3, "Steam Generator Tube Rupture" has been entered.  
SI was reset in accordance with E-3.  
RCS pressure is 1200 psig.  
RCS subcooling (based on core exit TCs) is 80 degrees F.  
Pressurizer level is 13% and trending down slowly.

Based upon the above conditions, which one of the following is the first action required by the EOPs at this time.

- a. Manually start the SI pumps and go to ECA 3.1.
- b. Continue in E-3 and reset Containment Isolation Phase "A" and "B".
- c. Initiate an RCS cooldown, exceeding the Tech Spec limit is permitted.
- d. Initiate an RCS cooldown, exceeding the Tech Spec limit is NOT permitted.

ANSWER:

- a. Manually start the SI pumps and go to ECA 3.1.

KA: 038 G2.4.48 [3.8] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level:H

Reference: EOP E-3 SI Reinitiation Criteria

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #18 (1.0)

The plant is at 100% power, steady state conditions when a failure in the actuation circuit for pressurizer PORV 455C results in the valve being declared inoperable. According to the Technical Specifications, what is the required action?

- a. Maintain pressurizer PORV 455C closed and remove its power within 1 hour.
- b. Verify pressurizer PORV 456 is operable within 1 hour.
- c. Verify pressurizer PORV 455C block valve is operable within 1 hour.
- d. Close pressurizer PORV 455C block valve and remove its power within 1 hour.

ANSWER:

- d. Close pressurizer PORV 455C block valve and remove its power within 1 hour.

KA: G2.1.12 [4.0] 10CFR55.43(2)

Exam Level: SRO

Cognitive Level: F

Reference: T.S. 3.4.11.B.

Question Source: IP3 Bank TSP-#18

FACILITY: Indian Point 3 Exam Date:

## IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #19 (1.0)

During a refueling operation, a spent fuel assembly's top nozzle separates from the rest of the element as it is being transported in the spent fuel pool. The assembly drops on the top of the fuel racks and a fuel handler reports a large amount of bubbles coming from the element. Local radiation monitors are offscale high and a Spent Fuel Building evacuation is ordered. The offsite dose calculation reveals that the site boundary dose rate is expected to be 750 mRem/hr whole body.

As Emergency Director, the IP3 Event Classification Guide requires you classify this event as which one of the following.

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

ANSWER:

- c. Site Area Emergency

KA: 073 G2.4.38 [4.0] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: ONOP-RP-2, Section 1.0, E-Plan - Block 5.2.4

Question Source: IP3 Bank ONP-C Q#605

FACILITY: Indian Point 3 Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #20 (1.0)

While at 100% power, circuit 11 from DC Distribution Panel 31 has tripped removing power to annunciator panels SAF through SOF. Within one minute, the Reactor Operator reports one rod bottom light with rod position indication (RPI) for that rod indicating 0 steps. Which one of the following actions are you required to direct in accordance with ONOP-EL-6?

- a. Dispatch an operator to attempt re-closure of circuit 11 from Distribution Pnl 31.
- b. Manually trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- c. Maintain a continuous walk-down of the panels until the plant returns to steady state.
- d. Test annunciator panels to determine the extent of the annunciator failure.

ANSWER:

- b. Manually trip the reactor and go to E-0, Reactor Trip or Safety Injection.

KA: 063 G2.4.11 [3.6] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: ONOP-EL-6, Section 3.0

Question Source: IP3 Bank ONP-C Q#193

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #21 (1.0)

Which one of the following describes the Engineered Safety Feature Actuation System (ESFAS) Instrumentation operability and logic channel requirements IAW IP3 Technical Specifications.

- a. 2 Channels of Safety Injection Pressurizer Pressure Low are required in MODE 3 below the Pressurizer Pressure Interlock.
- b. 2 Channels of Steam Line Isolation due to Containment Pressure HI-HI are required in MODE 2 when all MSIV's are closed.
- c. 3 Channels of Safety Injection Pressurizer Pressure Low are required in MODE 3 above the Pressurizer Pressure Interlock.
- d. 3 Channels of Steam Line Isolation due to Containment Pressure HI-HI are required in MODE 3 when all MSIV's are closed.

ANSWER:

- c. 3 Channels of Safety Injection Pressurizer Pressure Low are required in MODE 3 above the Pressurizer Pressure Interlock

KA: 013 K5.02 [3.3] 10CFR55.43(2)

Exam Level: SRO

Cognitive Level: F

Reference: IP# TS Table 3.3.2 -1

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: 22 (1.0)

Given the following sequence of events:

The unit is operating at 100% power when annunciator "STATION AUX XFMR SUDDEN PRESS" actuates. Offsite power is lost 10 seconds later.

Which one of the following describes the unit response, if any, to this event?

- a. Reactor trips due to loss of 2 RCPs.
- b. Reactor trips due to activation of main generator 86BU relay.
- c. No reactor trip, but Tech Spec LCO entry is required for offsite power sources.
- d. No reactor trip, but Tech Spec LCO entry is required for loss of power to ECCS equipment.

ANSWER:

- c. No reactor trip, but Tech Spec LCO entry is required for offsite power sources.

KA: 056 G2.2.23 [3.8] 10CFR55.43(2)

Exam Level: SRO

Cognitive Level: F

Reference: ONOP-EL-4, part A, Tech Specs 3.7

Question Source: IP3 Bank - ONP-C Q#174/ NRC exam 5/19/97

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #23 (1.0)

The plant is at 100% power with all systems in automatic. The following alarms actuate:

Pressurizer Low Level.  
Volume Control Tank Low Level.

You verify pressurizer level to be at 3%. Which of the following would be the proper operator action, in accordance with ONOP-RCS-7, in response to this event?

- a. Open LCV-112B, Charging Pump Suction from the RWST and start a second charging pump.
- b. Open LCV-112B, Charging Pump Suction from the RWST, start a second charging pump, and ensure letdown is isolated.
- c. Trip the reactor, trip all reactor coolant pumps, then go to E-0, Reactor Trip or Safety Injection.
- d. Trip the reactor, initiate safety injection, then go to E-0, Reactor Trip or Safety Injection.

ANSWER:

- d. Trip the reactor, initiate safety injection, then go to E-0, Reactor Trip or Safety Injection.

KA: 028 AA2.2.11 [3.6] 10CFR55.43(5)

Exam Level: SRO

Cognitive Level: H

Reference: ONOP-RCS-7, Foldout page

Question Source: IP3 Bank - ONP-C Q#502, NRC exam 5/97

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #24 (1.0)

When implementing ONOP-FP-1A, Safe Shutdown From Outside The Control Room, at what point do we attempt to regain control from the control room?

- a. The Shift Manager periodically checks the control room for habitability and determines when reentry is feasible.
- b. The procedure does not address reentry. This decision would be made by the TSC staff.
- c. The CRS attempts to reenter the control room and regain control after the FSS relieves the CRS in the PAB.
- d. The RO will attempt to reenter the control room once the SG levels are stable between 50% and 70% NR level.

ANSWER:

- c. The CRS attempts to reenter the control room and regain control after the FSS relieves the CRS in the PAB.

KA: 068G2.4.26 [3.3] 10CFR55.43(5)

Exam Level: SRO Only

Cognitive Level: F

Reference: ONOP-FP-1A, Foldout page item 2; E.O.s:1618.1 (LIC-ONP-01);

Question Source: IP3 Bank ONP-C Q#219

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #25 (1.0)

The Heat Flux Hot Channel Factor ( $F_q(Z)$ ) is a Power Distribution Limit which \_\_\_\_\_ .  
(complete the sentence)

- a. Limits the local peak power density to ensure that the initial total peaking factor safety analyses remains valid.
- b. Limits the gross radial power distribution and ensures it remains consistent with the design values used in the safety analyses.
- c. Limits the power density at any point in the core so that the fuel design criteria are not exceeded.
- d. Limits axial power skewing to minimize core peaking factors.

ANSWER:

- a. Limits the local peak power density to ensure that the initial total peaking factor safety analyses remains valid.

KA: G2.1.10 [3.9] 10CFR55.43(2)

Exam Level: SRO  
Cognitive Level: F  
Reference: TS Bases B3.2  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #26 (1.0)

According to AP-3, "IP3 Procedure Preparation, Review, and Approval", an advanced TPC is for:

- a. Intent changes to be incorporated as a subsequent procedure revision.
- b. Substantive non-intent change(s) to be incorporated at the next procedure revision.
- c. Non-intent changes to correct spelling, punctuation, will be incorporated in next procedure revision.
- d. Non-intent change(s) to address temporary conditions in current procedure. Will not be incorporated in the next procedure revision.

ANSWER:

- b. Substantive non-intent changes to be incorporated at the next procedure revision.

KA: G2.2.6 [3.3] 10CFR55.43(3)

Exam Level: SRO

Cognitive Level: F

Reference: Procedure AP3 - Procedure preparation, review, and approval

Question Source: IP3 Bank ADP-C Q#22

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #27 (1.0)

Which one of the following, in accordance with AP-21.9, describes the mechanism by which IP-3 records, documents, and tracks inoperable tech spec equipment?

- a. The LCO tracking system.
- b. The system status deviation log.
- c. The LCO status sheet.
- d. The shift turnover sheet.

ANSWER:

- a. The LCO tracking system.

KA: G2.2.23 [3.8] 10CFR55.43(2)

Exam Level: SRO

Cognitive Level: F

Reference: Procedure AP-21.9

Question Source: IP3 Bank ADP-C Q#64

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #28 (1.0)

Which of the following identifies the individual(s) who must give written approval for a Planned Special Exposure (PSE)?

- a. The Vice President Operations and the Plant Manger.
- b. The Radiation and Environmental Services Manager and the Vice President Operations.
- c. The Plant Manager and the Radiation and Environmental Services Manager.
- d. The Vice President Nuclear Operations ONLY.

ANSWER:

- b. The Radiation and Environmental Services Manager and the Vice President Operations.

KA: G2.3.4 [3.1] 10CFR55.43(4)

Exam Level: SRO

Cognitive Level: F

Reference: Procedure AP-7 Rev.24

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #29 (1.0)

The following plant conditions exist:

Reactor Power = 6%, MODE 1  
 $T_{AVG} = 549^{\circ}\text{F}$   
Pressurizer Pressure = 2235 psig  
RCS Subcooling = 98°F  
All 4 RCPs operating

34 RCP trips on overcurrent. In accordance with the Technical Specifications, what action, if any, is required?

- a. Restore 34 RCP to operation OR be in MODE 3 within 6 hours.
- b. Immediately reduce reactor power to less than 5%.
- c. None. Technical Specifications allow operation with only 2 RCPs up to 10% reactor power.
- d. None. Technical Specifications allow operation with no RCPs up to 10% reactor power.

ANSWER:

- a. Restore 34 RCP to operation OR be in MODE 3 within 6 hours.

KA: 015AA1.03 [3.7/3.8] 10 CFR 55.41(7)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: TS 3.1.A.1 "e & f"  
Question Source: IP3 Bank

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #30 (1.0)

Which of the symptoms below correctly describes an entry condition for ONOP-CVCS-3, Emergency Boration?

- a. Reactor critical and Rod Insertion Limit Low alarm on.
- b. Reactor power at 2% with Control Bank B at 124 steps.
- c. Reactor sub-critical and Rod Insertion Limit Low-Low alarm on.
- d. Reactor power at 20% with Control Bank D at 100 steps.

ANSWER:

- b. Reactor power at 2% with Control Bank B at 124 steps . .

KA: 024 AK1.02

[3.6/3.9]

10CFR55.41(8,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-CVCS-3; Graph - RPC-1

Question Source: IP3 Bank

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #31 (1.0)

The unit is stable at 100% power and vacuum has started to decrease. The CRS suspects that an air ejector may be backfiring and dispatches you to determine if this is so. Which one of the following indications will you use to determine if backfiring is occurring?

- a. You can hear the air ejector backfire.
- b. The steam supply will oscillate rapidly on a backfiring air ejector.
- c. The air ejector suction piping will be hot to the touch.
- d. The steam pressure to the backfiring air ejector will be higher than the other air ejectors.

ANSWER:

- c. The air ejector suction piping will be hot to the touch.

KA: E05EA1.2 [3.7/4.0] 10CFR55.41(7)  
Exam Level: RO/SRO  
Cognitive level: H  
Reference: ONOP-C-1 Note prior to step 5.5.1  
Question Source: IP3 Bank

FACILITY: Indian Point 3 Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #32 (1.0)

A fire in the flight panel forces evacuation of the control room. Which one of the statements below describes the actions necessary if the alternate source range indications do not come on scale after 15 minutes.

- a. Locally emergency borate for approximately 35 minutes.
- b. Line up emergency power supply to the alternate source range channel 39
- c. Trip Reactor trip breakers locally or de-energize MG sets.
- d. Trip reactor coolant pumps to minimize flow through the core.

ANSWER:

- a. Locally emergency borate for approximately 35 minutes.

KA: 068AK3.17

[3.7/4.0]

10 CFR 55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-FP-1A Safe Shutdown from outside the control room, Att.1 - step 7 & Att.12., FP1A-10, E.O.s:1618.6 (LIC-ONP-01);

Question Source: IP3 Bank

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #33 (1.0)

Indian Point Unit 3 is operating at 100% power when a health physics technician informs the operating crew that the containment personnel airlock became stuck open when an at-power containment entry was attempted. The SRO recognizes that containment integrity does not exist. How long does the crew have to restore containment integrity before a plant shutdown to a MODE 3 condition must be started?

- a. 24 hours.
- b. 8 hours.
- c. 4 hours.
- d. 1 hour.

ANSWER:

- d. 1 hour.

KA: 069AK2.03 [2.8/2.9] 10CFR55.41(7)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: ONOP-CB-1; TS.  
E.O.s: 6418.1 (LIC-ONP-12)  
Question Source: IP3 Bank ONP-C #19

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #34 (1.0)

During a startup with the reactor critical at  $1E-8$  amps, the breaker from the No. 32 static inverter supply to instrument bus No. 32 trips open and the inverter fails to reverse transfer to MCC-33.

The result of the above will be:

- a. A source range high flux reactor trip due to the de-energizing of permissive P-6.
- b. The de-energizing of several nuclear instrument channels, with no effect on nuclear power.
- c. A reactor trip due to the de-energizing of Intermediate Range channel N35.
- d. A reactor trip due to the de-energizing of Intermediate Range channel N36.

ANSWER:

- c. A reactor trip due to the de-energizing of Intermediate Range channel N35.

KA: 015A3.02 [3.7/3.9] 10 CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-3, 3.0; System Description 27.5, pg. 15,16

Question Source: IP3 Bank **Modified**

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #35 (1.0)

Main feedwater regulating valves are in automatic control and the plant is at 100% power.

Which of the following describes the effect, if any, on the Main Feedwater Regulating Valves (MFRV) if instrument bus 34 lost power?

- a. All four MFRVs would fail open due to a loss of power to their three element controllers.
- b. All four MFRVs would fail "as is" due to a loss of power to their three element controllers.
- c. All four MFRVs would fail closed due to a loss of power to their three element controllers.
- d. No effect, the MFRV three element controllers are not powered from this instrument bus.

ANSWER:

- c. All four MFRVs would fail closed due to a loss of power to their three element controllers.

KA: 016A2.03 [3.0/3.3] 10CFR55.41(5), 43(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-3, 3.0; E.O.s: 5146.4 (LIC-ONP-02);

Question Source: IP3 Bank ONP-C #159

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #36 (1.0)

Which of the following describes the fire system operation with all fire pumps in automatic?

- a. The jockey pumps cycle on and off as necessary to maintain header pressure. If pressure drops, the electric pump starts before the diesel pump.
- b. The jockey pumps cycle on and off as necessary to maintain header pressure. If pressure drops, the diesel pump starts before the electric pump.
- c. The jockey pumps run constantly, circulating water in the fire header. If pressure drops, the electric pump starts before the diesel pump.
- d. The jockey pumps run constantly, circulating water in the fire header. If pressure drops, the diesel pump starts before the electric pump.

ANSWER:

- a. The jockey pumps cycle on and off as necessary to maintain header pressure. If pressure drops, the electric pump starts before the diesel pump.

KA: 086A1.01 [2.9/3.1] 10CFR55.41(10), 43(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: SOP-FP-1, DBD 321 I section 1.0

Question Source: NRC Exam 11/20/98

FACILITY: Indian Point 3 Exam Date:

Comment: The jockey pumps cycle between 115 - 125 psig. To maintain pressure. The electric pump starts at 105 psig. And the diesel pump at 95 psig.

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #37 (1.0)

The plant is operating at 100% power in a normal electrical lineup. A Loss of 31 DC power panel results in a unit trip. The RO notices that 345 kV Breaker 3 indicates it is still closed.

Assuming 1 minute has elapsed since the trip, why is Breaker 3 still indicating closed and what action, if any, must be taken?

- a. Breaker 3 is still closed since not enough time has elapsed for it to receive a bus transfer signal to open. Wait 30 sec. for bus transfer.
- b. Breaker 3 is really open however the breaker indication did not change due to the loss of DC - No action required.
- c. Breaker 3 did not open since it lost control power when the DC was lost. Operator should force a trip by manually actuating relay F721.
- d. Breaker 3 did not open due to a loss of control power and cannot be opened. Operator should open MOD F1-3 to protect the turbine and generator.

ANSWER:

- c. Breaker 3 did not open since it lost control power when the DC was lost. Operator should force a trip by manually actuating relay F721

KA:063A3.01 [2.7/3.1] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-5, Step 4.1.1;E.O.s: 5030.3 (LIC-ONP-22)

Question Source: IP3 Bank ONP-C #191

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #38 (1.0)

A plant startup is in progress with normal startup equipment alignment. At 6% power, both Main Boiler Feed Pumps trip. In accordance with ONOP-FW-1, Loss of Feedwater, which one of the following actions would be correct.

- a. Start the ABFW pumps as needed to maintain SG levels.
- b. Attempt a restart of one of the Main Boiler Feed Pumps.
- c. Trip the reactor, and go to E-0, Reactor Trip or Safety Injection.
- d. Trip the reactor if any SG level drops below 20%.

ANSWER:

- a. Start the ABFW pumps as needed to maintain SG levels.

KA: 059A1.03 [2.7/2.9] 10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-FW-1, Loss of Feedwater (4.1.a RNO); E.O.s: 1773.3 (LIC-ONP-04);

Question Source: IP3 Bank ONP-C #248 Modified

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #39 (1.0)

Station Air (SA) system pressure decreases and stabilizes at 85 psig.

Which one of the following describes the effect on Instrument Air (IA) and SA systems if the instrument Air system pressure decreased to 88 psig?

- a. IA system pressure will stabilize at 88 psig and SA system pressure will increase to 88 psig when PCV-1142 opens at 90 psig SA pressure.
- b. SA system pressure will remain at 85 psig and IA system pressure will remain at 88 psig when PCV-1142 opens at 90 psig IA pressure.
- c. IA system pressure will decrease to 85 psig and SA system pressure will remain at 85 psig when PCV-1142 opens at 90 psig IA pressure.
- d. SA system pressure will remain at 85 psig and IA system pressure will remain at 88 psig when PCV-1142 opens at 90 psig SA pressure.

ANSWER:

- b. SA system pressure will remain at 85 psig and IA system pressure will remain at 88 psig when PCV-1142 opens at 90 psig IA pressure.

K/A: 079 K1.01 [3.0/3.1] 10CFR55.41(2-9)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: ONOP-IA-1  
Question Source: IP3 Bank ONP-C #266

FACILITY: Indian Point 3 Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #40 (1.0)

Plant Operating and Emergency procedures require the operator to check if the intermediate range (IR) instruments are under-compensated if the source range (SR) instruments fail to energize within the expected time frame .

Which of the following indicates how this check is performed?

- a. Check the NR-45 Recorder trace against the reference trace available in the graphs book.
- b. An under-compensated IR will indicate a slightly positive SUR as flux level approaches the SR.
- c. An under-compensated IR will level off at a flux level higher than the normal amp level.
- d. I & C only can determine if the IR is under-compensated.

ANSWER:

- c. An under-compensated IR will level off at a flux level higher than the normal amp level.

KA: 015K6.02

[2.6/2.9]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-NI-1, Nuclear Instrumentation Malfunction; LIC-IXC-05, Nuclear Instrumentation System; E.O.s: 5242.11 (LIC-ONP-28)

Question Source: IP3 Bank ONP-C #343

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #41 (1.0)

Which one of the following is a consequence of transferring pressurizer backup (B/U) heater group 31 to local control?

- a. The low level-heater cutout is shifted from 18% to 15% causing possible heater damage.
- b. The low pressure Reactor Trip signal is bypassed from PT-455 changing the coincidence to 2/2 for the trip signal.
- c. All B/U heater groups become inoperable and only the 31 B/U heater group can be operated.
- d. The SI stripping signal to 31 B/U heater group is defeated causing the 31 EDG to be declared inoperable.

ANSWER:

- d. The SI stripping signal to 31 B/U heater group is defeated causing the 31 EDG to be declared inoperable.

KA: 027AK2.03 [2.6/2.8] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RCS-2 Caution prior to step 4.5; E.O.s: 2326.1 (LIC-ONP-29)

Question Source: IP3 Bank ONP-C #412

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #42 (1.0)

The unit is at 190 degrees F and on RHR when Offsite Power is lost and the Emergency Diesels fail to supply power to the 480V buses. Power is subsequently restored from offsite and equipment lineups are returned to normal. When starting the CCW pumps, the pump control switch is placed to the STOP/OFF position before attempting to start the pump. What happens when the switch is placed in STOP/OFF?

- a. It resets the pumps' 86 lockout relay.
- b. It charges the breaker closing spring.
- c. It resets the annunciator.
- d. It bypasses the Low Pressure Start signal for 60 seconds.

ANSWER:

- a. It resets the pumps' 86 lockout relay.

KA: 026AK3.03 [4.0/4.2] 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-EL-4 Step 5.40; E.O.s: 5469.3 (LIC-ONP-21);

Question Source: IP3 Bank ONP-C #181

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #43 (1.0)

The reactor is at 100% steady state conditions when indications of a RCS leak is received. Which of the following conditions would require a manual reactor trip and safety injection actuation?

- a. One charging pump is operating at maximum speed with letdown isolated and pressurizer level is slowly decreasing (rate of about 5 gpm).
- b. Two charging pumps are operating with a 75 gpm orifice in service and pressurizer level stabilizes at 20%.
- c. Pressure level decreases to 15% with one charging pump running at maximum speed.
- d. RCS pressure decreases to 1800 psig with two charging pumps running at maximum speed.

ANSWER:

- d. RCS pressure decreases to 1800 psig with two charging pumps running at maximum speed.

KA: 074EK3.03

[3.4/3.8]

10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RCS-7 Foldout page

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #44 (1.0)

During performance of ONOP-CC-1, Loss of Component Cooling, if there is a loss of component cooling water flow to the non-regenerative heat exchanger, charging and letdown should be isolated and excess letdown placed in service. Why is excess letdown placed in service?

- a. To allow continued RCS purification.
- b. To keep thermal sleeves at equilibrium.
- c. To permit RCS boron adjustments.
- d. To compensate for RCP seal injection .

ANSWER:

- d. To compensate for RCP seal injection.

KA: 022AK3.03 [3.1/3.3] 10CFR55.4195,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-CC-1, Loss of Component Cooling, Step 5.3; E.O.s: 245.1 (LIC-ONP-14)

Question Source: IP3 Bank ONP-C #37

FACILITY: Indian Point 3 Exam Date:

### IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #45 (1.0)

The plant is operating at 100% power when a total loss of main feedwater initiates a reactor trip signal, but the reactor fails to trip. The following events occur:

- All attempts to force a reactor trip fail.
- The AFW system actuates, with AFW pumps operating.
- The turbine remains on-line.
- Reactor power remains near 100%.
- RCS coolant temperature and pressure slowly increase from 100% values.

For the operator to mitigate this transient, the appropriate action in accordance with EOPs is to :

- a. Open the PORVs immediately because the increasing temperature will cause a severe RCS overpressure.
- b. Reduce turbine load slowly to avoid a rapid RCS temperature and pressure increase.
- c. Manually actuate safety injection to start the high head safety injection pumps and isolate containment.
- d. Trip the turbine to maintain steam generator inventory and limit the RCS temperature transient.

ANSWER:

- d. Trip the turbine to maintain steam generator inventory and limit the RCS temperature transient.

KA: 054 AK3.04 [4.4/4.6] 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

References: EOP Bases EOP-FR-S-1

Question Source: NRC exam 11/98 #28

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #46 (1.0)

A Monitor Tank release is in progress. Which of the following would require an immediate termination of the release per ONOP-RM-1, Failures of Radiation Monitors?

- a. FT-1064, Release Line Flow Transmitter, has been declared inoperable and tank level is decreasing.
- b. R-18, Waste Disposal Liquid Activity Monitor, has been declared inoperable.
- c. The Monitor Tank Level transmitter has been declared inoperable, but FT-1064, Release Line Flow Transmitter, is operable.
- d. The Monitor Tank low level alarm has been declared inoperable.

ANSWER:

- b. R-18, Waste Disposal Liquid Activity Monitor, has been declared inoperable..

KA: 059AK3.03 [2.7/2.8] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RM-1, Attachment 1, step 4.3

Question Source: IP3 Bank ONP-C #495

FACILITY: Indian Point 3 Exam Date:

### IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #47 (1.0)

An excessive load decrease has just occurred due to a failed closed Turbine Stop valve. Unit load has decreased to 550 MW and Tavg is 3°F less than Tref. If the Turbine Stop valve that failed closed is the Lower Right valve and the Upper Left Turbine Stop valve failed closed during the load decrease, what action must you take per ONOP-TG-1, "Excessive Load Increase or Decrease? "

- a. Lower turbine load to approximately 450 MW using the load limiter.
- b. Stabilize the unit and do not let load increase to 560 MW.
- c. Trip the unit and perform E-0, Reactor Trip or Safety Injection.
- d. Reset Steam Dump and reduce load at least 50 MW using manual control.

ANSWER:

- c. Trip the unit and perform E-0, Reactor Trip or Safety Injection.

KA: 007EA1.01 [3.7/3.4] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-TG-1, Step 3.3.3; E.O.s: 6146.1 (LIC-ONP-43)

Question Source IP3 Bank ONP-C #823

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #48 (1.0)

An RCS sample was drawn 2 hours ago while at 50%. The activity results were:

Dose Equivalent I-131 at 145  $\mu\text{Ci/g}$

How long may the plant continue to operate per Technical Specifications assuming the above sample results do not change? Refer to the handout for Technical Specification 3.4.16.

- a. Must immediately place the plant in MODE 3.
- b. May operate up to 48 hours up to 60%, then must go to MODE 3 within 6 hours.
- c. May operate up to 46 hours up to 60 %, then must go to MODE 3 within 4 hours.
- d. The plant may stay at 50% power indefinitely.

ANSWER:

- b. May operate up to 48 hours up to 60%, then must go to MODE 3 within 6 hours.

KA: 076AK3.05 [2.9/3.6] 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: H

Reference: Tech Spec 3.4.16; E.O.s: 6179.3 (LIC-ONP-30);

Question Source: IP3 Bank ONP-C #448 - MOD

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #49 (1.0)

The following plant conditions exist:

Plant is in refueling mode.  
Transfer tube gate is open.  
Isolation gate valve is open.  
An irradiated fuel assembly is in the RCCA change fixture.

The following changes in plant conditions occur:

Reactor pit sump pump indicates on.  
"High Level Reactor Pit" alarm annunciates.  
Containment sump and Recirculation sump levels are increasing slowly.  
R-2 is in alarm and increasing.  
R-7 is in alarm and increasing.

What action(s), in accordance with ONOP-RP-3, must the crew take based upon the above plant conditions?

- a. Place the irradiated fuel assembly in the upender in a vertical position.
- b. Place the irradiated fuel assembly directly west of the RCCA change fixture and unlatch the fuel from the crane.
- c. Place the irradiated fuel assembly in any accessible spent fuel pit location.
- d. Place the irradiated fuel assembly in any accessible core location.

ANSWER:

- d. Place the irradiated fuel assembly in any accessible core location.

KA: 036AK2.02 [3.4/3.9] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RP-3 STEP 5.3

Question Source: IP3 Bank ONP-C #621

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #50 (1.0)

The plant is operating at 45% steady state power. Which one of the following in accordance with ONOP-RCS-5, requires an immediate manual reactor trip if conditions continue to degrade as listed?

- a. RCP 31 seal injection temperature is 138 degrees F and is increasing at one (1) degree F/hr.
- b. RCP 32 frame vibration is 4 mils and stable.
- c. RCP 33 upper bearing temperature is 200 degrees F and increasing at 60 degrees F/hr.
- d. RCP 34 shaft vibration is 18 mils and is increasing at 0.4 mil/hr.

ANSWER:

- c. RCP 33 upper bearing temperature is 200 degrees F and increasing at 60 degrees F/hr.

KA: 003K4.04 [2.8/3.1] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System Description 1.3 "Reactor Coolant Pump," pg.19; ONOP-RCS-5

Question Source: IP3 Bank NSS #91 Modified

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #51 (1.0)

Which of the following is the reason why a nitrogen blanket is maintained on the Pressurizer Relief Tank (PRT)?

- a. To eliminate the possibility of any air inleakage.
- b. To provide the driving force necessary for the sampling system.
- c. To provide an additional volume of gas to ensure that the PRT Rupture disc relieves at its design pressure.
- d. To ensure the water volume in the PRT remains subcooled if a PZR PORV or Safety Valve lifts.

ANSWER:

- a. To eliminate the possibility of any air inleakage.

KA: 007A1.02 [2.7/2.9] 10 CFR 41.5, 45.5

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 1.4 "Pressurizer and PRT", pg.26

Question Source: New

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #52 (1.0)

Select the expected plant response following a steam generator (SG) tube leak.

- a. The Steam Jet Air Ejector Blower receives an automatic trip signal.
- b. Continued R-19 (SG Blowdown) trend up after R-19 alarm received.
- c. Main Steam to Hoggens Pressure Regulator Valve (PCV-1133) closes.
- d. Steam Jet Air Ejector exhaust redirected through filter prior to exhaust.

ANSWER:

- c. Main Steam to Hoggens Pressure Regulator Valve (PCV-1133) closes

KA: 037AK3.10

[3.3/3.7]

10 CFR 41.5, 41.10, 45.6, 45.13

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-SG-1, Section 3.0; E.O.s: 5031.3 (LIC-ONP-42)

Question Source: IP3 Bank ONP-C #784

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #53 (1.0)

Given the following conditions:

The plant is conducting a controlled shutdown due to excessive SG tube leakage. Reactor power is currently 45%.

WHICH ONE of the following conditions requires an immediate manual reactor trip and safety injection actuation per ONOP-SG-1, "Steam Generator Tube Leak"?

- a. Pressurizer level, presently at 18%, is slowly decreasing (about 1% in 3 minutes) with one charging pump operating at maximum speed and letdown isolated.
- b. Pressurizer level has slowly decreased to 20% with two charging pumps operating at maximum speed and 75 gpm letdown flow.
- c. Pressurizer level decreases to 10% with one charging pump running at maximum speed.
- d. Pressurizer level steady with current primary to secondary leakrate determined to be 60 gpm.

ANSWER:

- d. Pressurizer level steady with current primary to secondary leakrate determined to be 60 gpm.

KA: 2.4.49

[4.0/4.0]

10 CFR 41.1, 43.2, 45.6

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-SG-1, Section 4.0; Foldout Page 1.0

Question Source: IP3 Bank ONP-C #786 Modified

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #54 (1.0)

Which of the following do the Emergency Operating Procedures use as an indication of natural circulation flow occurring within the reactor coolant system (RCS)?

1. RCS pressurizer level DECREASING or STABLE.
  2. S/G pressures STABLE.
  3. Core exit thermal couples STABLE.
  4. RCS T-hot's at T-sat for S/G PRESSURE.
- a. 1 and 3.
- b. 1, 2, and 4.
- c. 2 and 3.
- d. 2, 3, and 4.

ANSWER:

- c. 2 and 3.

KA: 2.4.21 [3.7/4.3] 10 CFR 43.5/45.12

Exam Level: RO/SRO

Cognitive Level: F

Reference: ES-1.2, Post LOCA Cooldown and Depressurization, Attachment 1

Question Source: New

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #55 (1.0)

The plant was operating at 100% power when a Rx Trip and Safety Injection occurred. The following conditions now exist:

- '31' S/G pressure is decreasing rapidly.
- '31' S/G steam flow is 2.5E6 lbm/hr.
- RCS cold leg temperatures are 238 degrees F and decreasing.
- Containment pressure is 8.5 psig and increasing.
- All MSIVs and bypass valves are closed.
- Total AFW flow is 395 gpm.
- Highest reading power range instrument is 1.5% and decreasing.

Assuming all emergency equipment functioned as designed and no operator action, which Critical Safety Function is applicable?

- a. RCS Integrity
- b. Heat Sink
- c. Subcriticality
- d. Containment

ANSWER:

- a. RCS Integrity

KA: 2.4.5 [2.9/3.6] 10 CFR 41.10, 43.5, 45.13

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: EOP lesson plans  
Question Source: New

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #56 (1.0)

Regarding the Fuel and Core Component Handling System, which one of the following correctly describes the MAXIMUM Bridge speed limits.

NOTE: The Boundary Zone Bypass Pushbutton has NOT been ENABLED

- a. 10 FPM when the bridge is located outside of the boundary zone limits.
- b. 3 FPM when the bridge is located outside of the boundary zone limits.
- c. 10 FPM when the bridge is inside the core area and the gripper is not at full up loaded or inside the mast and unloaded.
- d. 3 FPM when the bridge is inside the core area and the gripper is not at full up loaded or inside the mast and unloaded.

ANSWER:

- d. 3 FPM when the bridge is inside the core area and the gripper is not at full up loaded or inside the mast and unloaded.

KA: G2.2.27

[2.6/3.5]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: Lesson Plan-FHD- L01-page 24-step D.8.b.

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #57 (1.0)

Which one of the following explains why it is preferable to leave the RCPs running during a small break LOCA if RCS subcooling is less than 40°F, but no HHSI pumps are running?

- a. To enable use of pressurizer spray.
- b. To delay the onset of inadequate core cooling.
- c. To limit single phase inventory loss out the break.
- d. To decrease loop transit time for emergency boration.

ANSWER:

- b. To delay the onset of inadequate core cooling

KA: E07 EA1.2 [3.2/3.7] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP-E-1 step 1 basis

Question Source: IP3 Bank EOP-C Q#235

FACILITY: Indian Point 3 Exam Date:

COMMENTS:

- a. - aux spray is available if needed. Would not increase inventory loss out break to make spray available.
- c. - increases inventory loss out break.
- d. - this isn't a concern.
- b. - this helps provide heat removal through the break and the SGs.

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #58 (1.0)

The crew has entered FR-P.1, Response to Imminent Pressurized Thermal Shock Conditions, and are attempting to depressurize the RCS. Why is it preferred that the pressurizer PORVs be used to depressurize the RCS instead of using auxiliary spray.

- a. It is easier to control pressure with the PORVs.
- b. PORV blocks can be used to limit pressure decrease.
- c. It is easier to control pressurizer level with the PORVs.
- d. Letdown is not in service to preheat auxiliary spray.

ANSWER:

- d. Letdown is not in service to preheat auxiliary spray.

KA: E08 EK1.1 [3.5/3.8] 10CFR55.41(8)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP Bases-FR-P.1 step 16

Question Source: IP3 Bank EOP-C Q#250

FACILITY: Indian Point 3 Exam Date:

COMMENTS:

Letdown is not in service to preheat the aux spray.

- a. – aux spray provides better pressure control than the PORVs.
- b. – procedure does not mention blocks and blocks are slower to stop excursion than the PORVs.
- d. – FR-P.1 places charging in service in an earlier step.

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #59 (1.0)

The unit trips on a loss of condenser vacuum. Vacuum eventually levels off at 22 inches of Hg. The operator transfers the steam dump control from temperature mode to pressure mode. The output signal from the pressure controller is at 50%.

What effect will these conditions have on the high pressure (HP) and low pressure (LP) steam dumps?

- a. The HP steam dumps are open. The LP steam dumps are open.
- b. The HP steam dumps are open. The LP steam dumps are closed.
- c. The HP steam dumps are closed. The LP steam dumps are open.
- d. The HP steam dumps are closed. The LP steam dumps are closed.

ANSWER:

- c. The HP steam dumps are closed. The LP steam dumps are open.

KA: 035 A1.02

[3.5/3.8]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 18.1 Sect. 2.1.1

Question Source: IP3 NRC exam 11/98 #9

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #60 (1.0)

Which one of the following is an indication that recombination is occurring after having placed the Hydrogen Recombiners in service?

- a. Hydrogen Recombiner power increases to 20 KW.
- b. Containment dewpoint decreases after Hydrogen Recombiners are placed in service.
- c. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.
- d. Containment pressure decreases after Hydrogen Recombiners are placed in service.

ANSWER:

- c. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.

KA: 028 A1.01

[3.4/3.8]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System Description 10.9 Sect. 2.2 and 3.1, SOP-CB-007

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #61 (1.0)

Which one of the following describes the power supplies for the Hydrogen Recombiners

- a. 31 Hydrogen Recombiner is supplied from MCC-36A.  
32 Hydrogen Recombiner is supplied from MCC-36B.
- b. 31 Hydrogen Recombiner is supplied from MCC-36C.  
32 Hydrogen Recombiner is supplied from MCC-36A.
- c. 31 Hydrogen Recombiner is supplied from MCC-36B.  
32 Hydrogen Recombiner is supplied from MCC-36C.
- d. 31 Hydrogen Recombiner is supplied from MCC-36C.  
32 Hydrogen Recombiner is supplied from MCC-36B.

ANSWER:

- d. 31 Hydrogen Recombiner is supplied from MCC-36C.  
32 Hydrogen Recombiner is supplied from MCC-36B.

KA: 028 K2.01 [2.5/2.8] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 10.9 Sect. 2.2

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #62 (1.0)

Thermal barrier cooling is being restored to the Reactor Coolant Pumps (RCPs) after isolation. Seal leakoff temperatures are in the range of 240 - 250°F. Component Cooling Water (CCW) to the seals must be:

- a. restored as soon as possible to reduce the possibility of a seal LOCA.
- b. restored as soon as possible to make the RCPs available for cooldown.
- c. established slowly to prevent the introduction of steam into the CCW system.
- d. established after seal injection established to prevent thermal shocking seals.

ANSWER:

- c. established slowly to prevent the introduction of steam into the CCW system.

KA: 008 K3.03

[4.1/4.2]

10CFR55.41(10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RCS-5 CAUTION

Question Source: IP3 Bank ONP-C Q#481

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #63 (1.0)

Indian Point Unit 3 is in the MODE 4 Condition with the RCS at 225 deg. F. and 400 psig and RHR in service. The operating crew (you) observes decreasing level in component cooling water (CCW) surge tanks 31 and 32. Where could a leak have developed which would provide these indications?

- a. The Non-regenerative heat exchanger.
- b. The Seal Water Return heat exchanger.
- c. The Thermal Barrier heat exchanger.
- d. The RHR heat exchanger.

ANSWER:

- b. The Seal Water Return heat exchanger.

KA: 005 K1.01

[3.2/3.4]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-CC-1

Question Source: IP3 Bank ONP-C Q#46, NRC SRO EXAM 4/15/96

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #64 (1.0)

The smoke alarm has actuated for the 31 EDG. The fire location has not been confirmed. The correct initial response to this alarm IAW ONOP-FP-1 would be to:

- a. sound the fire alarm immediately.
- b. send an NPO to investigate the suspected area(s).
- c. send the fire brigade to investigate the suspected area(s).
- d. announce the suspected fire location over the PA system.

ANSWER:

- b. send an NPO to investigate the suspected area(s).

KA: 067 AA2.03

[3.3/3.5]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-FP-1, step 4.1

Question Source: IP3 Bank ONP-C Q#213, Modified

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #65 (1.0)

The Unit is operating at 100% power. Following a surveillance test, Emergency Diesel Generator (EDG) 31 is shutdown and placed in automatic, but the NON-SI BLACKOUT LOGIC was NOT reset (lamp is NOT lit). The logic is reset for the other EDGs. Subsequently a Loss of Offsite Power/Generator Trip occurs with NO Safety Injection. Select the answer which correctly states the plant response to NOT resetting the NON-SI BLACKOUT LOGIC.

- a. All three EDGs will start and energize 480 VAC busses. Pumps (SW, CCW, and AFW) will AUTOMATICALLY sequence onto busses 5A and 6A.
- b. Only EDGs 32 and 33 will start and energize 480 VAC busses. Pumps (SW, CCW, and AFW) will NOT AUTOMATICALLY sequence onto any 480 VAC busses.
- c. All three EDGs will start and energize 480 VAC busses. Pumps (SW, CCW, and AFW) will NOT AUTOMATICALLY sequence onto ANY of the 480 VAC busses.
- d. Only EDGs 32 and 33 will start and energize 480 VAC busses. Pumps (SW, CCW, and AFW) will AUTOMATICALLY sequence onto busses 5A and 6A.

ANSWER:

- a. All three EDGs will start and energize 480 VAC busses. Pumps (SW, CCW, and AFW) will AUTOMATICALLY sequence onto busses 5A and 6A.

KA: 064 A2.16

[3.3/3.7]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: SOP-EL-1, System Description 27.3 alarm table

Question Source: IP3 Bank ESS-C Q#23

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #66 (1.0)

The Diesel Generator (DG) Automatic Voltage Control Rheostat is used to \_\_\_\_\_. (fill in the blank)

- a. Adjust DG KVARs when the DG is in parallel with another power source.
- b. Adjust DG Voltage when the DG is in parallel with another power source.
- c. Adjust DG KVARs when the bus load is being carried only by the DG.
- d. Adjust DG KVARs and Voltage when the bus load is being carried only by the DG.

ANSWER:

- a. Adjust DG KVARs when the DG is in parallel with another power source.

KA: 064 A1.03

[3.2/3.3]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: SOP-EL-1, NOTE at step 4.2.5

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #67 (1.0)

Which one of the following describes, IAW EOPs, the operation of Containment Spray Pump 31 during the RECIRCULATION MODE of Safety Injection.

- a. Containment Spray Pump 31 continues to operate until RWST level reaches <1.5', then it must be MANUALLY secured.
- b. Containment Spray Pump 31 is AUTOMATICALLY secured when RECIRCULATION SWITCH NO. 8 is positioned to ON.
- c. Containment Spray Pump 31 continues to operate until RWST level reaches <11.5', then it must be MANUALLY secured.
- d. Containment Spray Pump 31 is AUTOMATICALLY secured when RECIRCULATION SWITCH NO. 1 is positioned to ON.

ANSWER:

- a. Containment Spray Pump 31 continues to operate until RWST level reaches <1.5', then it must be MANUALLY secured.

KA: 026 A2.07

[3.6/3.9]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System Description 10.2, Section 3.0 - system operation, ES1.3 Att. 6

Question Source: IP3 Bank EOP-C-Q#45 Modified

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #68 (1.0)

All of the analog position indicators on the flight panel have failed to zero and all of the rod bottom lights are NOT lit, indicating a loss of power. What method is available for determining the actual rod position?

- a. Use the digital step counters.
- b. Swap to the backup power supply.
- c. Use the plant computer.
- d. Have I&C use a digital voltmeter.

ANSWER:

- b. Swap to the backup power supply.

KA: 014 A1.02

[3.2/3.6]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: SOP-RC-1 step 4.6

Question Source: NRC exam 11/98 #66

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #69 (1.0)

While performing subsequent action steps of ONOP-RPC-1, Instrument Failures, it is cautioned to check redundant channel trip status lights when preparing to take a protection instrument channel out of service. What is the reason for the caution?

- a. If redundant bistables are already tripped, the minimum channel redundancy required by TS will not be met if the second channel is removed from service.
- b. If redundant bistables are not in the tripped condition, it will cause a protection channel trip when removing the failed channel from service.
- c. If redundant bistables are already tripped, the coincidence for a reactor trip will be made up by tripping the bistables for the second channel.
- d. If redundant bistables are not in the tripped condition, it will cause a trip when the channel is removed from service by eliminating the redundancy.

ANSWER:

- c. If redundant bistables are already tripped, the coincidence for a reactor trip will be made up by tripping the bistables for the second channel.

KA: 012 K4.01

[3.7/4.0]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RPC-1 Caution at the start of each attachment.

Question Source: IP3 Bank ONP-C Q#645

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #70 (1.0)

The plant is cooled down to MODE 5. Shortly after RHR is placed in service, RCS pressure begins to increase. Before the operators can determine the cause of the pressure increase, a PRZR PORV opens. A few minutes later, pressure is noted to be 650 psig and stable.

While evaluating this event the operators check the status of the RHR Loop isolation valves 730/731. Given the above conditions, these valves should be \_\_\_\_\_ in order to \_\_\_\_\_. (fill in the blanks)

- a. Open; ensure adequate suction head for the RHR pumps
- b. Open; provide a pressure relief path for RCS.
- c. Closed: prevent over pressurization of the RHR system.
- d. Closed: prevent RHR cooling from aggravating this Cold Overpressure concern.

ANSWER:

- c. Closed; prevent over pressurization of the RHR system.

KA: 006 K3.01

[4.1/4.2]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RHR-1, LIC-ONP-06

Question Source: IP3 Bank ONP-C Q#645

FACILITY: Indian Point 3

Exam Date: REFERENCES:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #71 (1.0)

You are performing a natural circulation cooldown and depressurization IAW ES-0.3 "Natural Circulation Cooldown With Steam Void in the Vessel (with RVLIS)". Which one of the following conditions must be maintained to prevent possible loss of natural circulation due to steam binding of the Steam Generators?

- a. RVLIS (full range) level must be maintained less than 75%.
- b. Pressurizer level must be maintained between 29% and 90%.
- c. Upper head void must be maintained above the level of the cold leg penetration.
- d. Upper head void must be maintained above the level of the hot leg penetration.

ANSWER:

- d. Upper head void must be maintained above the level of the hot leg penetration.

KA: E10 EK2.2

[3.6/3.9]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP lesson plan section XXXIII.

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #72 (1.0)

Given the following:

SG level is decreasing.  
Loop Delta-T is constant.  
Containment pressure is increasing.  
Steam Generator pressure is decreasing.

Which ONE (1) of the following transients is indicated by the above conditions?

- a. Steam Break inside containment.
- b. Feed Break inside containment.
- c. Steam Generator Tube Rupture.
- d. LOCA inside containment.

ANSWER:

- b. Feed Break inside containment.

KA: E12 EA1.2

[3.6/3.7]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: EOP E-0 Lesson plan

Question Source: IP3 Bank EOP-C Q#217

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #73 (1.0)

While in ONOP-CVCS-3, Emergency Boration, Initial Operator Actions, it directs the operator to "Close Boric Acid Storage Tank Recirculation Flow Controllers, HCV-104 and HCV-105." The reason this action is taken is to...

- a. maximize Boric Acid flow to the suction of the Charging Pumps.
- b. prevent cavitation of the Boric Acid Transfer Pumps (BATPs).
- c. prevent the Boric Acid Storage Tanks from over-flowing.
- d. ensure only the highest Boric Acid concentration is available to the BATPs.

ANSWER:

- a. maximize Boric Acid flow to the suction of the Charging Pumps.

KA: 024 AK2.03

[2.5/2.6]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-CVCS-3, LIC-ONP-18, Emergency Boration

Question Source: IP3 Bank ONP-C Q#112

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #74 (1.0)

Given the following:

$\Delta I$  is at the middle of the target band.  
The unit has been at 50% power for the past seven (7) days.  
 $T_{avg}$  and  $T_{ref}$  are matched.  
Bank D is at 160 steps.  
The unit experiences a continuous rod withdrawal event.

The difference between the actual  $\Delta T$  and  $OT\Delta T$  (overtemperature delta T) trip setpoint will:

- a. decrease because pressurizer pressure will increase.
- b. decrease because  $\Delta I$  will become more positive.
- c. increase because  $T_{avg}$  will increase.
- d. increase because  $\Delta I$  will become more negative.

ANSWER:

- b. decrease because  $\Delta I$  will become more positive.

KA: 001 AA2.04

[4.2/4.3]

10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: LP-LIC-IXC-13 section II.A.6.d

Question Source: NRC exam 11/98 #17

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

**QUESTION: #75 (1.0)**

Which one of the following describes the effect on the Engineered Safeguards System for a loss of DC power to the sequencing relays?

- a. Blackout loading will occur instead of SI loading.
- b. There will be no stripping or starting signal on any 480V Bus.
- c. Bus overloading will occur because there will be no Bus stripping signal.
- d. The timing sequencer will cycle but will not actuate any equipment.

**ANSWER:**

- b. There will be no stripping or starting signal on any 480V Bus.

**KA: 013 A2.05 [3.7/4.2] 10CFR55.41(5)**

Exam Level: RO/SRO

Cognitive Level: H

Reference: ESS-01 lesson plan, System description 10.0

Question Source: NRC exam 7/96

**FACILITY: Indian Point 3 Exam Date:**

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #76 (1.0)

The following conditions exist:

The plant is at 100% power.  
VCT level is 46% with no makeup in progress.  
VCT makeup control is inadvertently left in MANUAL.  
Assume RCS leak rate of 0.3 gpm.

Which one of the following describes the response of the system if no operator actions are taken?

- a. The VCT level will fluctuate between 29% and 46%.
- b. The VCT level will rise and the high level alarm will actuate.
- c. The VCT level will remain stable unless there is power change.
- d. The VCT level will decrease and the low level alarm will actuate.

ANSWER:

- d. The VCT level will decrease and the low level alarm will actuate.

KA: 004 A1.06 [3.0/3.2] 10CFR55.41(5)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: LIC-PSA-01 step E.13  
Question Source: NRC exam 7/96

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #77 (1.0)

Which one of the following describes the power supplies for the reactor protection system bistables and for the operation of the reactor trip breakers?

- a. Reactor Protection Bistables are powered from 118 VAC Instrument Bus.  
Reactor trip breakers are powered from 125 VDC Distribution Panels
- b. Reactor Protection Bistables are powered from 125 VDC Instrument Bus.  
Reactor trip breakers are powered from 125 VDC Distribution Panels
- c. Reactor Protection Bistables are powered from 118VAC Instrument Bus.  
Reactor trip breakers are powered from 118 VAC Distribution Panels
- d. Reactor Protection Bistables are powered from 125VDC Instrument Bus.  
Reactor trip breakers are powered from 118 VAC Distribution Panels

ANSWER:

- a. Reactor Protection bistables are powered from 118 VAC Instrument Bus.  
Reactor trip breakers are powered from 125 VDC Distribution Panels

KA: 012 K2.01 [3.3/3.7] 10CFR55.41(7)

Exam Level: RO/SRO  
Cognitive Level: F  
Reference: System Description 28.0 section 2.4.1  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #78 (1.0)

The plant is critical at twenty-five percent power with normal system lineups. If NO operator action is taken, how will the plant respond if a leak of 50 gpm develops just downstream of LCV-459 on the letdown line in the containment? Assume indicated letdown flow remains at 75 gpm.

- a. A reactor trip will occur on low PRZR pressure, due to the large drop in PRZR level caused by the leak.
- b. The speed of the in-service charging pump will increase and PRZR level will stabilize.
- c. SI will automatically actuate on low PRZR level.
- d. The reactor will trip on high PRZR level.

ANSWER:

- d. The reactor will trip on high PRZR level.

KA: 011 K5.13 [3.2/3.7] 10CFR55.41(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RCS-7

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #79 (1.0)

Which one of the following statements describes how the Pressurizer Pressure Control System would respond if the Controlling pressure channel were to fail full scale high? Assume No operator action.

- a. Both PRZR PORVs would open until actual pressure decreased below 2185 psig.
- b. The PRZR PORV for that channel would open and remain open.
- c. Both PRZR spray valves would open until actual pressure dropped below 2185 psig.
- d. Both PRZR spray valves would open and remain open.

ANSWER:

- d. Both PRZR spray valves would open and remain open.

KA: 010 A3.02 [3.6/3.5] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RPC-1

Question Source: IP3 Bank ONP-C 659

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #80 (1.0)

Which one of the following describes the reset and re-initiation logic for the Containment Phase "A" isolation signal and valves if the signal exists in conjunction with a SI actuation signal ?

Assume plant conditions would allow for either or both signals to be reset.

- a. Once the Containment Phase "A" isolation signal is reset, containment isolation valves will reposition automatically and the containment isolation initiation signal will automatically be re-enabled.
- b. Once the Containment Phase "A" isolation and SI actuation signals are reset, containment isolation valves will reposition automatically and the containment isolation initiation signal will automatically be re-enabled.
- c. Once the Containment Phase "A" isolation signal is reset, the containment isolation initiation signal will automatically be re-enabled. Containment isolation valves must be repositioned manually.
- d. Once the Containment Phase "A" isolation and SI actuation signals are reset, the containment isolation initiation signal will automatically be re-enabled. Containment isolation valves must be repositioned manually.

ANSWER:

- d. Once the Containment Phase "A" isolation and SI actuation signals are reset, the containment isolation initiation signal will automatically be re-enabled. Containment isolation valves must be repositioned manually.

KA: 006 K4.30 [3.6/3.9] 10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: System description 10 section 2.3.6

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #81 (1.0)

Which one of the following describes your responsibilities for procedure usage IAW AP-4, Procedure Use and Adherence.

- a. Informational Use procedures may be performed from memory and a copy at the work site is required.
- b. Reference Use procedures, unless designated Continuous Use, may be performed from memory and a copy at the work site is required.
- c. Multiple Use procedures, unless designated Informational Use, may NOT be performed from memory and a copy at the work site is NOT required.
- d. Continuous use procedures may NOT be performed from memory and a copy at the work site is required.

ANSWER:

- d. Continuous use procedures may NOT be performed from memory and a copy at the work site is required.

KA: G2.1.20 [3.6/3.9] 10CFR55.41(10), 43(5)

Exam Level: RO/SRO  
Cognitive Level: F  
Reference: AP-4 Rev.20 Section 4.  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #82 (1.0)

Which one of the following describes RO/BOP responsibilities IAW OD-36, "Operator Rounds and Log Sheets".

- a. The RO is responsible for maintaining the Unit Log Book and the Control Room Log readings.
- b. The BOP is responsible for maintaining the High Tension Log and maintaining charts and light bulbs.
- c. The RO is responsible for maintaining the High Tension Log and the Weld Channel Calculation.
- d. The BOP is responsible for maintaining the Weld Channel Calculation and the Control Room Log readings.

ANSWER:

- c. The RO is responsible for maintaining the High Tension Log and the Weld Channel Calculation.

KA: G2.1.18 [2.9/3.0] 10CFR55.41(10)

Exam Level: RO/SRO  
Cognitive Level: F  
Reference: OD-36 Rev.18 section 5.4  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #83 (1.0)

Which one of the following describes the most limiting accident for the Shutdown Margin requirements in accordance with Technical Specifications?

- a. A guillotine break of a main steam line inside containment at the end of core life.
- b. A guillotine break of a main steam line inside containment at the beginning of core life.
- c. An uncontrolled rod withdrawal from subcritical or low power conditions at the end of core life.
- d. An uncontrolled rod withdrawal from full power conditions at the beginning of core life.

ANSWER:

- a. A guillotine break of a main steam line inside containment at the end of core life.

KA: G2.2.25 [2.5/3.7] 10CFR55.41(5) 43(2)

Exam Level: RO/SRO  
Cognitive Level: F  
Reference: TS Bases 3.1.1  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #84 (1.0)

The following stable conditions are encountered when surveying a room located in the auxiliary building:

General Area Radiation level in room	60 mrem/hr
Radiation level at 30 cm from pipe	375 mrem/hr
Radiation level on contact with pipe elbow	400 mrem/hr
Contamination levels	850 dpm/cm <sup>2</sup> - beta-gamma 0 dpm/cm <sup>2</sup> - alpha
Airborne radiation level	0.6 DAC

What are the correct radiological postings or labels required to reflect the current radiological conditions for this room in accordance with 10 CFR 20 requirements?

- a. "DANGER, HIGH RADIATION AREA"  
"CAUTION, AIRBORNE RADIOACTIVITY AREA".
- b. "CAUTION, RADIATION AREA"  
"CAUTION, CONTAMINATED AREA".
- c. "DANGER, HIGH RADIATION AREA"  
"CAUTION, CONTAMINATED AREA".
- d. "CAUTION, RADIATION AREA"  
"AIRBORNE RADIOACTIVITY AREA".

ANSWER:

- a. "DANGER, HIGH RADIATION AREA"  
"CAUTION, AIRBORNE RADIOACTIVITY AREA".

KA: G2.3.1 [2.6/3.0] 10CFR55.41(12),43(4)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: 10 CFR 20  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #85 (1.0)

An operator received the following radiation exposure at IP3 during the year. The exposure record until the last day of the year is:

Deep Dose Equivalent (DDE)	275 mrem
Lens Dose Equivalent (LDE)	15 mrem
Committed Effective Dose Equivalent (CEDE)	120 mrem
Shallow dose Equivalent (SDE)	25 mrem
Committed Dose Equivalent (CDE)	25 mrem

On the last day of the year the individual was requested to work in an area where the known radiation dose rate is 280 mR/hr.

If the worker takes 15 minutes to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

- a. 345 mrem
- b. 465 mrem
- c. 515 mrem
- d. 530 mrem

ANSWER:

- b. 465 mrem

KA: G2.3.4 [2.5/3.1] 10CFR55.41(12),43(4)

Exam Level: RO/SRO

Cognitive Level: H

Reference: 10 CFR 20 Table 3-1 TEDE = DDE + CEDE

Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #86 (1.0)

The following conditions exist for a job to be performed on a system.

The general area radiation levels are 10 mrem/hr in the room.  
The hot spot in the room is a pipe elbow that has radiation levels of 100 mrem/hr.  
The job will be performed near the hot spot area.

(Assumptions: ALL 4 cases below have the same transition time to and from destinations. All shielding placement and removal is at a dose rate of 100 mrem/hr)

Choose the method that best reduces personnel exposure.

- a. Two Radiation Control personnel hang and remove 1 tenth thickness of lead shielding on the hot spot in 1.5 hours for the job. The job is performed after the lead shielding is in place by using 2 operators for 3 hrs each on the job.
- b. The job is performed by 3 operators for 1 hr each on the job at the hot spot and a fourth operator reading instructions in the general room area for 1 hr.
- c. The job is performed by 2 operators for 2 hrs each on the job at the hot spot and a third operator reading instructions in the general room area for 2 hrs.
- d. The job is performed by using 2 operators for 3 hrs each on the job at the hot spot.

Answer:

- b. The job is performed by 3 operators for 1 hr each on the job at the hot spot and a fourth operator reading instructions in the general room area for 1 hr.

KA: G2.3.10 [2.9/3.3] 10CFR55.41(12),43(4)

Exam Level: RO/SRO  
Cognitive Level: H  
Reference: ALARA program  
Question Source: NEW

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #87 (1.0)

Given the following conditions:

The reactor is steady-state at 100% power.  
Control Bank D rods are at 223 steps.  
All plant control systems are in AUTO.  
A rod in Control Bank D drops to the bottom, inserting 300 pcm negative reactivity.  
Current total power defect for 100% power is 2000 pcm.

Which one of the following states automatic actions that will occur for this event if NO operator action is taken?

- a. Control Bank D rods will be withdrawn to offset the reactivity of the dropped rod.
- b. ONLY a turbine runback and minor pressurizer pressure/level control adjustments will occur.
- c. ONLY a turbine runback and automatic insertion of Control Bank D rods will occur.
- d. A turbine runback, automatic insertion of Control Bank D rods, and steam dump arming will occur.

ANSWER:

- d. A turbine runback, automatic insertion of Control Bank D rods, and steam dump arming will occur.

KA: 001 A2.03 [3.5/4.2] 10CFR55.41(5), 43(5)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-RC-1, Page 5

Question Source: IP3 Bank ONP-C Q#361, NRC EXAM-7/96, question 5

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #88 (1.0)

The unit was operating at 90% power when a steam generator (SG) tube leak greater than the Technical Specification limits occurred. The plant has now been shutdown as per procedure ONOP-SG-1, Steam Generator Tube Leak. While performing the Subsequent Actions, the following NOTE appears prior to commencing a reactor coolant system (RCS) cooldown to 493° F.

**NOTE**

*SG(s) leakage to the RCS should be considered when determining adequate shutdown margin.*

Which one of the following is the reason for this NOTE?

- a. Additional boron may be required to the RCS to compensate for the boron that has been lost to the SG through the tube leak.
- b. Less boron may be required to the RCS following depressurization due to the SG water (that contains boron) flowing back into the RCS.
- c. Less boron may be required following the cooldown due to the Safety Injection water that injected boron into the RCS and the leaking SG.
- d. Additional boron may be required to compensate for the dilution effect of the SG water flowing back into the RCS upon depressurization.

ANSWER:

- d. Additional boron may be required to compensate for the dilution effect of the SG water flowing back into the RCS upon depressurization.

KA: E03 EK3.4

[3./3.9]

CFR41.5,10;45.6,13

Exam Level: RO/SRO

Cognitive Level: H

Reference: LIC-ONP-32, ONOP-SG-1, Note prior to step 26,E.O.s:6174.1 (LIC-ONP-42)

Question Source: IP3 Bank ONP-C #798

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: 89 (1.0)

The following plant conditions exist:

The plant is in MODE 4.  
A cooldown on RHR has just been commenced.  
A LOCA occurs inside containment.

What actions must be taken by the control room operators per ONOP-RHR-1 "Loss of Residual Heat Removal Flow"?

- a. Manually align RHR for ECCS injection.
- b. Immediately enter E-0, "Reactor Trip or Safety Injection."
- c. Trip RHR pumps and close the RHR loop suction valves.
- d. Immediately enter FR-Z.1, "Response to High Containment Pressure."

ANSWER:

- a. Manually align RHR for ECCS injection.

KA: E03 EK2.2 [3.7/4.0] CFR 41.7,45.7

Exam Level: RO/SRO

Cognitive Level: H

References: ONOP-RHR-1, FOLD-OUT PAGE, E.O.s: 6286.2 (LIC-ONP-06)

Question Source: IP3 Bank #525

COMMENTS: Basis: Foldout page for RHR-1 addresses a Loss of Coolant accident while in cold shutdown. The procedure requires the operator to open SI-MOV-882 and ensure at least one RHR pump is running.

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #90 (1.0)

If an Auxiliary Boiler Feed Pump (ABFP) building temperature instrument failed causing PCV-1310A, "ABFP Steam Supply Isolation Valve" to close, the procedure directs the operator to open the local bypass valve (MS-176), then select open on the control switch. What is the reason for opening the manual bypass valve?

- a. Equalize pressure across PCV-1310A to allow opening valve.
- b. Ensure adequate steam flow to 32 ABFP in the event that PCV-1310A fails to open.
- c. The bypass must be opened to satisfy an interlock to open PCV-1310A.
- d. Prevent water hammer due to condensation in the steam line to 32 ABFP.

ANSWER:

- a. Equalize pressure across PCV-1310A to allow opening valve.

KA: 061 K6.01

[2.5/2.8]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-ES-1 Step 5.2.1 meets this requirement.

Question Source: IP3 Bank ONP-C #207

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #91 (1.0)

Which one of the following conditions would cause an automatic start of the #32 Auxiliary Boiler Feedwater Pump?

- a. Low-Low level (8%) on 2 of 3 detectors on any steam generator.
- b. Low-Low level (8%) on 2 of 3 detectors on 2 of 4 steam generators.
- c. Automatic trip of a Main Boiler Feedwater Pump.
- d. A Safety Injection signal.

ANSWER:

- b. Low-Low level (8%) on 2 of 3 detectors on 2 of 4 steam generators.

KA: 061 K1.01

[4.1/4.1]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 21.2, section 2.4, 2.5

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY

QUESTION: #92 (1.0)

The following conditions exist:

The reactor is in MODE 3.  
RCS pressure is 2235 psig.  
Tavg is 547 degrees F, being maintained by the HP steam dumps.  
All four RCPs are running.

If a complete loss of condenser vacuum occurs, RCS Tavg will stabilize at which one of the following temperatures? (Assume NO operator action is taken.)

- a. 545 degrees F
- b. 547 degrees F
- c. 549 degrees F
- d. 551 degrees F

ANSWER:

- c. 549 degrees F

KA: E05EK2.1 [3.7/3.9] CFR 41.7,45.7

Exam Level: RO/SRO

Cognitive Level: H

Reference: ONOP-C-1 ; E.O.s: 6194.4 (LIC-ONP-10)

Question Source: IP3 Bank ONP-C #6, NRC EXAM 12/95, question 28

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #93 (1.0)

The unit is initially at 80% power when a loss of condenser vacuum occurs. Assuming no operator action is taken, the main boiler feed pumps will trip at:

- a. 3" Hg differential between condensers.
- b. 18" Hg in any condenser.
- c. 25.0" Hg in any condenser.
- d. 25.5" Hg in 31 or 33 condensers.

ANSWER:

- b. 18" Hg in any condenser

KA: 059 A4.01

[3.1/3.1]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-C-1, step 3.2

Question Source: IP3 Bank ONP-C #3

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

**QUESTION: #94 (1.0)**

IP3 was shutdown five days ago, after a three month run of 100% power operations. The plant is currently in mid-loop operations and RCS temperature is 140 degrees F. If the one running RHR pump trips, and no operator is taken, approximately how long will it take the water in the reactor vessel to reach 200 degrees F?

- a. 10 minutes.
- b. 1 hour.
- c. 10 hours.
- d. 1 day.

**ANSWER:**

- a. 10 minutes

KA: 002 A1.08

[3.7/3.8]

10CFR55. 41(5)

Exam Level: RO/SRO

Cognitive Level: F

Reference: ONOP-RHR-2 Attachment1

Question Source: IP3 Bank #43

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #95 (1.0)

Complete the following statement.

The In-core thermocouple system consists of: \_\_\_\_\_.

- a. Qualified and Non-Qualified thermocouples that ONLY provide input to the Critical Function Monitoring System (CFMS)
- b. Qualified and Non-Qualified thermocouples that ALL provide input to the Reactor Vessel Level Indication System (RVLIS).
- c. Qualified thermocouples that ONLY provide input to the Critical Function Monitoring System (CFMS) and Non-Qualified thermocouples that ONLY provide input to the Reactor Vessel Level Indication System (RVLIS).
- d. Qualified thermocouples that ALL provide input to the Reactor Vessel Level Indication System (RVLIS) and Non-Qualified thermocouples that ALL provide input to the Critical Function Monitoring System (CFMS)

ANSWER:

- d. Qualified thermocouples that ALL provide input to the Reactor Vessel Level Indication System (RVLIS) and Non-Qualified thermocouples that ALL provide input to the Critical Function Monitoring System (CFMS)

KA: 017 A4.01

[3.8/4.1]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 14.0 section 2.2.1

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #96 (1.0)

Which one of the following, in the Rod Control System, describes a Non-Urgent Alarm condition and the reset requirements for that alarm.?

- a. A simultaneously current order going to the movable firing card and the stationary firing card. The alarm must be manually reset once the condition is corrected.
- b. A simultaneously current order going to the movable firing card and the stationary firing card. The alarm will automatically reset once the condition is corrected.
- c. The failure of one +25 VDC power supply or one -25 VDC power supply. The alarm must be manually reset locally once the condition is corrected.
- d. The failure of one +25 VDC power supply or one -25 VDC power supply. The alarm will automatically reset once the condition is corrected.

ANSWER:

- d. The failure of one +25 VDC power supply or one -25 VDC power supply. The alarm will automatically reset once the condition is corrected.

KA: 001 K6.11

[2.9/3.2]

10CFR55. 41(7)

Exam Level: RO/SRO

Cognitive Level: F

Reference: System Description 16.1 section 2.2.1.3

Question Source: NEW

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

**QUESTION: #97 (1.0)**

Which one of the following groups describes the power supplies to the Component Cooling Water pumps as specified in SOP-CC-001B "Component Cooling System Operation"?

- a. Pump #31 is powered from bus 5A  
Pump #32 is powered from bus 2A with an alternate supply from MCC 312A.  
Pump #33 is powered from bus 6A.
- b. Pump #31 is powered from bus 2A with an alternate supply from MCC 312A.  
Pump #32 is powered from bus 5A.  
Pump #33 is powered from bus 6A.
- c. Pump #31 is powered from bus 6A.  
Pump #32 is powered from bus 5A.  
Pump #33 is powered from bus 2A with an alternate supply from MCC 312A.
- d. Pump #31 is powered from bus 2A.  
Pump #32 is powered from bus 5A with an alternate supply from MCC 312A.  
Pump #33 is powered from bus 6A.

**ANSWER:**

- a. Pump #31 is powered from bus 5A  
Pump #32 is powered from bus 2A with an alternate supply from MCC 312A.  
Pump #33 is powered from bus 6A.

**KA: 003 K2.02**

**[2.5/2.6]**

**10CFR55. 41(7)**

**Exam Level: RO/SRO**

**Cognitive Level: F**

**Reference: System Description 4.1 section 2.2**

**Question Source: NEW**

**FACILITY: Indian Point 3**

**Exam Date:**

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #98 (1.0)

Which one of the following describes why the main turbine is tripped during all ATWS conditions?

- a. To initiate reactor shutdown from Doppler defect.
- b. To mitigate the consequences of a loss of feed ATWS.
- c. To prevent excessive cooldown of the RCS.
- d. To minimize the RCS pressure transient.

ANSWER:

- b. To mitigate the consequences of a loss of feed ATWS.

K/A: 029 EK3.12 (4.4/4.7) 10CFR55.41(5,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: LIC-EOP-10.1.6.2 (d), BD- FR-S.1

Question Source: IP3 Bank #134 EOP-C.WP 134/218

FACILITY: Indian Point 3 Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

QUESTION: #99 (1.0)

Given the following conditions:

Pressurizer pressure is 985 psig.  
Pressurizer relief tank (PRT) pressure is 5 psig.  
PRT temperature is 90 deg. F.  
The reactor is shutdown.

Assume ambient heat losses are negligible and the steam quality in the pressurizer bubble is 100%. Also assume that pressurizer and PRT conditions do not change.

Which one of the following downstream temperatures would be expected for a leaking pressurizer safety valve?

- a. 230 deg F
- b. 300 deg F
- c. 340 deg F
- d. 550 deg F

Answer:

- b. 300 deg F

K/A: 008 AK1.01

[3.2/3.7]

10CFR55.41(8,10)

Exam Level: RO/SRO

Cognitive Level: F

Reference: Steam tables

Question Source: Bank -NRC exam 11/98

FACILITY: Indian Point 3

Exam Date:

**IP3 - SENIOR REACTOR OPERATOR LICENSE EXAM - REFERENCE/ANSWER KEY**

**QUESTION: #100 (1.0)**

The plant has experienced a large break LOCA. Approximately 25 minutes after the initial trip, the crew attempts to perform ES-1.3, but neither internal nor external recirculation is available. What minimum injection flowrate must be maintained to ensure adequate core cooling? Refer to the provided ECA-1.1, attachment 2.

- a. 500 gpm.
- b. 425 gpm.
- c. 340 gpm.
- d. 278 gpm.

**Answer:**

- b. 425 gpm.

K/A: E11 EA1.3

[3.7/4.2]

10CFR55.41(7)

Exam Level: RO/SRO

Cognitive Level: H

Reference: ECA-1.1

Question Source: NEW

**FACILITY:** Indian Point 3

**Exam Date:**